NRA ARCHAEOLOGY MAGAZINE
2008 Issue 3

National Roads Authority
An tÚdarás um Bóithre Náisiúnta

seanda

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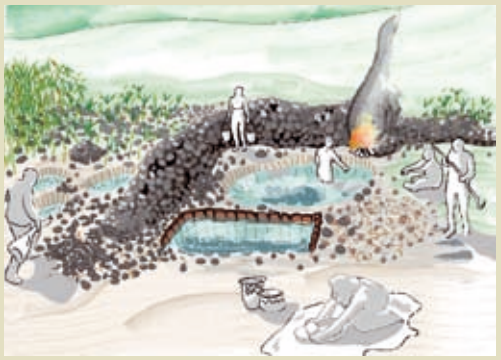
Mairead McLaughlin and Sheelagh Conran, NRA Assistant Archaeologists with the Southern Team, describe new evidence of Iron Age society in south Munster from archaeological discoveries made on road schemes in recent years.



James Eogan, NRA Senior Archaeologist with the Southern Team, describes the use of micro-archaeology to identify plant remains on a prehistoric quern-stone discovered on the N9/N10 Kilcullen–Waterford Scheme: Waterford to Knocktopher.

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Cover image: An Edward I silver long-cross penny, c. AD 1279–1307, found in the ditch of a medieval enclosure excavated at Busherstown, Co. Offaly, on the N7 Castletown–Nenagh: Derrinsallagh to Ballintotty road scheme. (Photo: John Sunderland)

Welcome to the
Third Edition Of *Seanda*

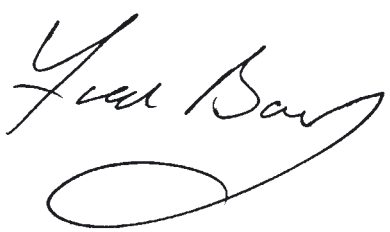
FRED BARRY, Chief Executive of the National Roads Authority


Fred Barry

In a general sense all archaeological investigation is a form of research and the principle aim of *Seanda* magazine is to communicate the results of NRA-funded archaeological research to the widest possible audience. As some of our readers may be aware, the NRA has also funded specific, formal research projects such as the Ballyhanna Research Project (see *Seanda* Issue 1 [2006], pages 60–66). This project, through the application of a suite of scientific analyses, will endeavour to learn as much as possible about the population of a medieval cemetery excavated along the route of the N15 Bundoran–Ballyshannon Bypass. Preliminary results of this research, conducted by researchers from Queen's University Belfast (QUB) and Institute of Technology, Sligo, were published recently in the latest volume in the Archaeology and the National Roads Authority Monograph Series—*Roads, Rediscovery and Research* (see page 3). This new book, which explores the theme of archaeological research in its broadest sense, also contains papers by archaeological and historical researchers contributing to the M3 Research Framework, which is ensuring that the maximum knowledge will be extracted from the information being generated by the M3 excavations.

The current edition of *Seanda* brings news of further research initiatives to which the NRA Archaeology Section is contributing to (see page 5). A new research project being undertaken by the Botany Department of Trinity College Dublin is receiving funding as part of the NRA Research Fellowship Programme and the NRA also became a research partner in a project led by the School of Geography, Archaeology and Palaeoecology at QUB that is funded through the newly established Irish National Strategic Archaeological Research programme. The 2009 issue of *Seanda* will include feature articles describing these projects in greater detail.

The NRA is committed to ensuring that all NRA-funded archaeological work is conducted to the best possible standards and that the results are published widely so as to expand and enrich our understanding of Ireland's past. Research collaborations with the private and academic sectors have been and will continue to be built and developed by the NRA, with the goal of participating in internationally significant research. The fruits of these studies will feed back into the NRA's core archaeological work so that it can be informed by current research thinking and provide 'value-added' benefit.



Project Updates

Searching for the Lost Kingdom of Mide

In April 2008 Belvedere House in County Westmeath opened its doors to a much-anticipated NRA archaeological exhibition entitled *Hidden Landscape: Searching for the Lost Kingdom of Mide*. Between 2004 and 2006 archaeologists uncovered very interesting and exciting evidence from excavations carried out in advance of the N6 Kinnegad–Kilbeggan and N52 Mullingar–Belvedere road schemes. The results from many of these excavations were presented at the exhibition, providing a fascinating picture of early medieval life in the ancient kingdom of Mide, which extends into present-day County Westmeath.

Hidden Landscape focused on three sites: an early monastic site at Clonfad, a church and cemetery at Ballykilmore and an enclosure at Rochfort Demesne. Audio-visual footage, graphic panels and replica artefacts were used to tell the many stories of early medieval Mide. One very interesting element was a replica hand bell that was produced by metalworking specialist Dr Tim Young, using the techniques of Early Christian craftsmen. The sound of the bell being rung was very evocative, helping visitors to visualise the monks at Clonfad being called for prayer. A selection of original artefacts was also displayed, among them highly decorated objects such as beautifully crafted ring-pins and bone combs. The showcasing of these objects gave a unique opportunity for people to come face-to-face with their local heritage.

This valuable and informative exhibition was developed by Valerie J Keeley Ltd in association with the NRA and Westmeath County Council. It concluded at the end of September, when it moved from Belvedere House to Locke's Distillery Museum in Kilbeggan, Co. Westmeath, where it will run until May 2009.

For further information on the *Hidden Landscape* exhibition contact Orlaith Egan (tel: 044 9334250; e-mail: oegan@nra.ie).

Orlaith Egan, NRA Archaeologist, Mid-west Team.

A section of the *Hidden Landscape: Searching for the Lost Kingdom of Mide* exhibition at Belvedere House, Co. Westmeath.

Catherine Kelly presenting a prize to Emma Carter, prize winner of a schools art competition held to coincide with the launch of the exhibition.

Catherine Kelly, Arts Officer, Westmeath County Council, Michael Dollard, Cathaoirleach, Westmeath County Council, Dr Aidan O'Sullivan, UCD School of Archaeology, Rónán Swan, NRA Head of Archaeology (acting) and Orlaith Egan, NRA Archaeologist, at the opening of the exhibition in April 2008.

Denis Slatter with son Karl chatting with Alan Montague, Montague Heritage Services, at the launch of exhibition.

Photos: Studio Lab

New NRA archaeology publications

On 28 August 2008; Professor Richard Bradley, Department of Archaeology, University of Reading, launched two new NRA archaeology publications: *The Archaeology of Life and Death in the Boyne Floodplain* by Neil Carlin, Linda Clarke and Fintan Walsh; and *Roads, Rediscovery and Research*, edited by Jerry O'Sullivan and Michael Stanley.

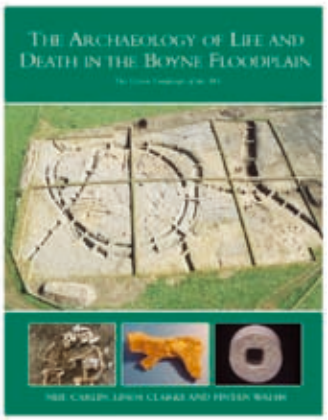
The Archaeology of Life and Death in the Boyne Floodplain: the linear landscape of the M4 is the second publication in the NRA scheme-specific monograph series. The new book describes the results of archaeological investigations on the route of the M4 Kinnegad–Enfield–Kilcock motorway scheme conducted in 2002 by Archaeological Consultancy Services Ltd and Irish Archaeological Consultancy Ltd. This publication represents a substantial contribution to our understanding of the early medieval period in particular, but also of the early Iron Age and of later developments. An accompanying CD-ROM incorporates all the final excavation and specialist reports.

The publication of the fifth volume in the Archaeology and the National Roads Authority Monograph Series, *Roads, Rediscovery and Research*, was cause for much celebration. It records the proceedings of the NRA National Archaeology Seminar, held in August 2007. In addition to describing the discovery of many previously unknown sites, such as a prehistoric hillfort at Rahally, Co. Galway, and a rare Iron Age ceremonial post enclosure at Lismullin, Co. Meath, this volume also contains introductions to and preliminary results from two important NRA research initiatives—the Ballyhanna Research Project and the M3 Research Framework.

When launching the new publications, Professor Bradley remarked that 'Irish archaeology has been transformed in a number of ways, which has been extremely good … We now see rapid dissemination of the primary data and a quality of fieldwork which, it is fair to say, could not have been achieved by earlier generations. This is because it's now possible to fund certain projects adequately, which is crucial.'

Both books are published by the NRA and are available through bookshops or directly from Wordwell Book Sales, Wordwell Limited, Media House, South County Business Park, Leopardstown, Dublin 18 (tel: +353 01 2947860; e-mail: helen@wordwellbooks.com).

Michael Stanley, NRA Archaeologist, NRA Head Office.



Professor Richard Bradley pictured with some of the archaeologists who played a part in bringing *The Archaeology of Life and Death in the Boyne Floodplain* to publication: (left to right) Antoine Giacometti, Dermot Nelis, Rónán Swan, Deirdre Murphy, Donald Murphy, Michelle Comber, Fintan Walsh, Vicky Ginn, Neil Carlin, Richard Bradley, Jonathan Kinsella, Linda Clarke, Robert O'Hara, Orlaith Egan, Eoin Grogan and Martin Halpin.

Neil Carlin, Linda Clarke and Fintan Walsh, the authors of *The Archaeology of Life and Death in the Boyne Floodplain*.

Photos: John Sunderland

Project Updates

Sixth World Archaeological Congress and the NRA

The NRA, as one of the key commissioners of archaeological work in Ireland, was one of the sponsors of the Sixth World Archaeological Congress (WAC-6), held at University College Dublin from 29 June to 4 July 2008. The World Archaeological Congress (WAC) is the only representative, fully international organisation of practising archaeologists. Founded in 1986, WAC has a special interest in protecting the cultural heritage of Indigenous peoples, minorities and economically disadvantaged countries, to which end it encourages the participation of Indigenous peoples, researchers from economically disadvantaged countries and members of the public. One of its primary functions is to hold a congress every four/five years to facilitate indepth discussion of new archaeological research plus archaeological policy, practice and politics. This was the first time the congress was held in Ireland and it proved to be an outstanding success, with over 1,600 delegates from over 70 countries participating in a multitude of academic sessions, poster and art exhibitions, field-trips and social events.

During the congress delegates were given the opportunity to find out about the NRA's archaeological work through a variety of papers, posters and exhibitions. NRA archaeologists and various archaeological consultancies presented 28 papers and displayed numerous posters relating to NRA projects. In addition, James Eogan, NRA Senior Archaeologist, co-organised one of the academic sessions, entitled *Archaeology and development: a new resource?*, with Dr Timothy Champion of the University of Southampton.

The NRA also set up two exhibition rooms containing many of the displays, audio-visual presentations, replica artefacts and models from three recent NRA exhibitions: *Hidden Landscape: Searching for the Lost Kingdom of Mide,* which is currently on display in Locke's Distillery Museum, Kilbeggan, Co. Westmeath (see page 2) and showcases the archaeology discovered on the N52 Mullingar–Belvedere and the N6 Kinnegad–Kilbeggan road schemes; *Migrants Mariners Merchants* from the Waterford Museum of Treasures, based on the N25 Waterford City Bypass excavations; and the *Life and Death in Monaghan* exhibition from Monaghan County Museum, featuring the excavation results from the N2 Carrickmacross Bypass. A selection of panels illustrating the excavation results from the N4 Dromod–Roosky road scheme, focusing on significant excavations at Edercloon, Co. Longford (see *Seanda* Issue 2 (2007), pages 20–21), was also displayed.

The exhibition rooms also provided delegates with an opportunity to view the various publications produced by the NRA Archaeology Section and to enjoy an exclusive preview of the recently launched NRA Archaeological Database (see pages 6 and 13). Comments received from delegates have helped to inform the database as presented. Throughout the congress NRA archaeologists were in attendance in the exhibition spaces and at a dedicated information stand in the main conference area to discuss the NRA's role in archaeology in Ireland.

The NRA's archaeologists also contributed to the debate surrounding the M3 Clonee–North of Kells motorway by submitting a position paper and making presentations during the WAC Ethics Forum and also by debating M3-related resolutions made during the plenary session at the close of the congress. On 14 July 2008 WAC issued a press release in which it expressed its 'opposition to any further development alongside the new stretch of motorway in the wider landscape zone surrounding the historical site of Tara'. WAC also reported that prior to the congress two senior WAC representatives had visited Ireland to investigate the M3 issue and had 'found that all the archaeological work had been done to the highest professional standards'. However, it also stated that owing to the number of competing and contradictory claims made during the forum, WAC has subsequently commissioned a report on the Tara discussions.

Further details regarding NRA involvement in WAC-6 are available on the NRA website at www.nra.ie/Archaeology/WAC-6/.

Rónán Swan, NRA Head of Archaeology (acting), NRA Head Office.

NRA Archaeologists Jerry O'Sullivan and Richard O'Brien chatting with a delegate at the NRA information stand at WAC-6.

One of the NRA exhibition rooms at WAC-6, which gave delegates the opportunity to view the various NRA archaeology literature and to access the NRA Archaeological Database.

Photos: Deirdre McCarthy

National Archaeology Seminar 2008

On 28 August 2008 the NRA Archaeology Section held its annual National Archaeology Seminar at the Gresham Hotel in Dublin, to coincide with National Heritage Week. This popular seminar series, which caters specifically for a non-specialist audience, showcased a range of archaeological discoveries made on national road schemes throughout Ireland in recent years. In common with last year's seminar, the event revolved around a particular theme—*Dining and Dwelling*, addressing the archaeological evidence for food production, processing and consumption and settlement in Ireland from the earliest farmers through to the 19th century. Speakers from a range of disciplines described a wealth of previously unknown archaeological remains uncovered in counties Carlow, Cork, Galway, Kildare, Kilkenny, Roscommon and Tipperary on new sections of the N6, N7, N8, N9/N10 and N17 routes.

As with previous years, all available places at the seminar were fully booked well in advance of the event. It was very well attended by members of the public and by professional archaeologists, the former providing a large number of the questions posed to the speakers at the end of each session. The NRA would like to express its gratitude to all the speakers and attendees for participating in and ensuring the success of the day.

Abstracts and some extracts from the presentations delivered at the seminar can be viewed on the NRA website, at www.nra.ie/Archaeology/ArchaeologySeminar2008/. All of the papers given at the *Dining and Dwelling* seminar will be published in autumn 2009 in the Archaeology and the National Roads Authority Monograph Series.

Michael Stanley, NRA Archaeologist, NRA Head Office.

Photo: John Sunderland

One of the questions and answers sessions at the *Dining and Dwelling* seminar.

NRA participates in new research initiatives

In April 2006 the NRA initiated a Research Fellowship Programme to enable universities and institutes to apply for financial support for PhD and post-doctoral programmes covering subjects relevant to the aims of the NRA. This year the NRA has awarded funding to a project entitled *Understanding environmental and landscape change in the midlands of Ireland through the cultural use of woodland*. This research is being conducted by the Botany Department of Trinity College Dublin and will use palaeoecological techniques and associated archaeological data (including information generated by NRA-funded excavations) to quantify woodland use and its impact on the Irish midlands since the Mesolithic period.

Also this year, the NRA became a research partner in a new INSTAR project—*Cultivating societies: assessing the evidence for agriculture in Neolithic Ireland*—led by the School of Geography, Archaeology and Palaeoecology at Queen's University Belfast (QUB). The Irish National Strategic Archaeological Research programme, or INSTAR, is a new archaeological research fund, established in early 2008 by the Minister for the Environment, Heritage and Local Government, Mr John Gormley TD. The programme, administered by the Heritage Council, is intended to fund thematic research that contributes to a better understanding of Ireland's archaeological heritage and facilitates collaboration between archaeological consultancies, academic institutions, international academic and research bodies and State bodies. The QUB project will examine the extent and nature of Neolithic farming in Ireland by drawing upon unpublished and published archaeobotanical, zooarchaeological, palaeoecological, C14, stable isotope and archaeological data from the commercial, state and academic sectors.

These projects will allow the NRA to further build and develop research collaborations within the academic sector, to participate in internationally significant research projects and to allow its excavation work to be informed by current research thinking, providing 'value-added' benefit to the NRA's archaeological work.

Michael Stanley, NRA Archaeologist, NRA Head Office.

Project Updates

Comprehensive new database of archaeological sites is launched

A new, web-based database of archaeological sites excavated on NRA road schemes was launched on 28 August 2008 as part of the NRA's ongoing information dissemination strategy. The NRA Archaeological Database contains important baseline information relating to excavations carried out on road schemes throughout the country, and will allow for comparison between site types, locations and dating periods. The database can be accessed in the NRA Archaeological Database section of the NRA website, at *www.nra.ie/Archaeology/NRAArchaeologicalDatabase/*. NRA Assistant Archaeologist Deirdre McCarthy describes the content and operation of the database in more detail on page 13.

Michael Stanley, NRA Archaeologist, NRA Head Office.

Hidden beneath the waves

Eachtra Archaeological Projects is currently engaged by DirectRoute (Limerick) Construction Ltd (a joint venture of Strabag International GmbH, John Sisk and Son Ltd, Roadbridge Ltd and Lagan Construction Ltd) to conduct archaeological monitoring of construction works on the N7 Limerick Southern Ring Road (Phase II). This has included monitoring dredging operations for a tunnel that will run beneath the River Shannon. The tunnel section, including its approaches, is c. 1 km in length, the immersed portion being 500 m. The construction of the tunnel entailed dredging a trench to a maximum width of 110 m and a maximum depth of -15.6 m below sea level. Although pre-development riverbed investigations produced no archaeological remains, there was still a potential for encountering sub-surface archaeology, as attested to by an array of prehistoric and medieval artefacts and wooden structures recorded in the nearby inter-tidal zone of the Shannon Estuary.

The dredging was carried out using a cutter suction dredger. The cutter-head moved over the riverbed, churning sediment, which was then sucked into a pipeline and pumped to the shore. The dredged material was discharged into a settlement pond, from where the water was filtered back into the river. All of the dredging works were monitored by an archaeologist stationed on board the dredging vessel, while a dive support team remained on stand-by for the duration of the project. Although the cutter-head operated below the surface of the water, it was anticipated that archaeological remains might float upon impact and release from the sediment. Occasionally, large material became wedged in the cutter-head or pump, whereupon dredging ceased, the pump was shut down, the cutter-head was raised and the material assessed by the archaeologist before dredging was permitted to resume. A modern anchor was the only item recovered in this manner.

In addition to the monitoring, it is proposed to undertake an investigation of the settlement ponds once the dredged material has dried sufficiently. It is hoped that a programme of metal detection and excavation will facilitate the recovery of artefacts that, due to their small size, may have passed through the pump undetected.

Julianna O'Donoghue, Excavation Director, Eachtra Archaeological Projects.

View of the Limerick Tunnel under construction, facing south-west.

View of dredger operating at the north bank.

Photos: Eachtra Archaeological Projects

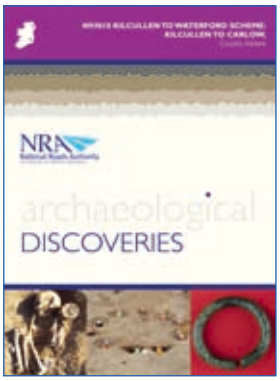
New additions to brochure and poster series

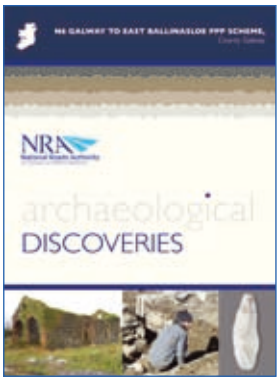
Last July the NRA Archaeology Section further expanded the *Archaeological Discoveries* brochure and poster series (established in 2005) with the addition of nine new brochures and eight new posters. The latest road schemes to feature in the brochure series are: M8/N8 Cullahill–Cashel road scheme; N6 Ballinasloe–Athlone road scheme; N6 Galway to East Ballinasloe PPP Scheme; N7 Castletown–Nenagh: Derrinsallagh to Ballintotty road scheme; N7 Nenagh–Limerick High Quality Dual Carriageway (HQDC); N9/N10 Kilcullen–Waterford Scheme: Kilcullen to Carlow; and N9/N10 Kilcullen–Waterford Scheme: Waterford to Knocktopher. A new M3 Clonee–North of Kells motorway scheme brochure provides an update on information contained in two previous brochures published in 2005 and 2006. A previous brochure on the N8 Cashel Bypass & N74 Link Road, published in 2005, has also been updated following post-excavation analysis.

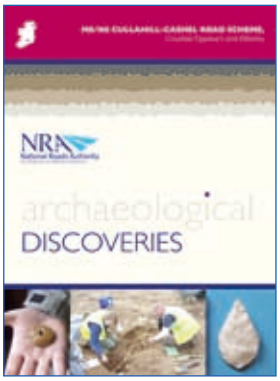
Of the new posters, three deal with the M3 in County Meath. These include a scheme overview and two site-specific posters describing fish baskets recovered from a Mesolithic site at Clowanstown and an Iron Age post enclosure discovered at Lismullin. Two of the posters deal with the results of excavations on the N8 Cashel Bypass & N74 Link Road: one highlights the prehistoric sites uncovered, while the other describes sites from the historic period. Another of the posters takes a similarly themed approach, showcasing the Ballyhanna Research Project—an innovative, NRA-funded research initiative—which is investigating human remains from a medieval cemetery excavated on the N15 Bundoran–Ballyshannon Bypass. The two remaining posters provide an overview of discoveries made on the N4 Sligo Inner Relief Road and the N7 Nenagh–Limerick HQDC.

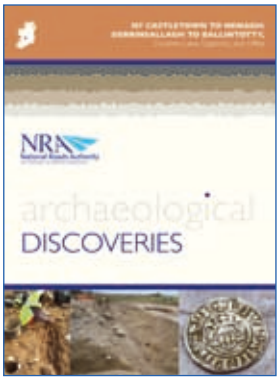
The brochures and posters are well illustrated with photographs and drawings and written with a general audience in mind. The brochures are eight-page, A5 size colour fold-outs; the posters are A1 size. Hard copies of both can be obtained free of charge by contacting Lillian Butler, Archaeology Section, NRA, St Martin's House, Waterloo Road, Dublin 4 (tel: +353 01 6658859; e-mail: lbutler@nra.ie), or by contacting the relevant NRA archaeologists based in the regional National Roads Design Offices (for a full list, please visit www.nra.ie/Archaeology/ContactInformation/). Alternatively, visit www.nra.ie/Archaeology/BrochureandPosterSeries/ to view or download PDF versions of the brochures and posters.

Michael Stanley, NRA Archaeologist, NRA Head Office.









Compression and Archaeology Seminar

On 21–22 July 2008 Bedfordshire in England was the venue for a seminar entitled *Compression and Archaeology,* hosted by English Heritage, the statutory advisor on the historic environment in England. Scientific knowledge of the impacts of compression on buried archaeological remains is very limited, especially in Ireland, yet it has been Irish State policy to preserve archaeological remains *in situ* (i.e. undisturbed and unexcavated), either by avoidance or by depositing layers of protective material on top of the affected archaeology and building over it.

The first day of the seminar consisted of papers and a tour of the soil laboratories in Cranfield University, which study how soils and archaeological features/artefacts are compressed through high-load pressures. The second day involved further papers and a number of round-table workshops.

NRA Archaeologist Richard O'Brien was one of a number of speakers from across Europe who made presentations at the seminar. He gave two illustrated papers on new Irish data gathered from NRA-funded road projects.

The first paper related to the N8 Cashel–Mitchelstown Road Improvement Project, the second dealt with County Waterford road projects, particularly a Hiberno-Norse settlement discovered at Woodstown, on the N25 Waterford City Bypass, and an Early Christian church site at Kill Saint Lawrence, on the re-alignment of the Waterford Airport Road. The papers given at the seminar will be made available on the internet in 2009, and it is planned that a position paper on this critical topic will be formulated by English Heritage.

Richard O'Brien, NRA Archaeologist, Mid-west Team.

Found! Ireland's smallest castle

Bone 'castle' discovered at Twomileborris, Co. Tipperary.

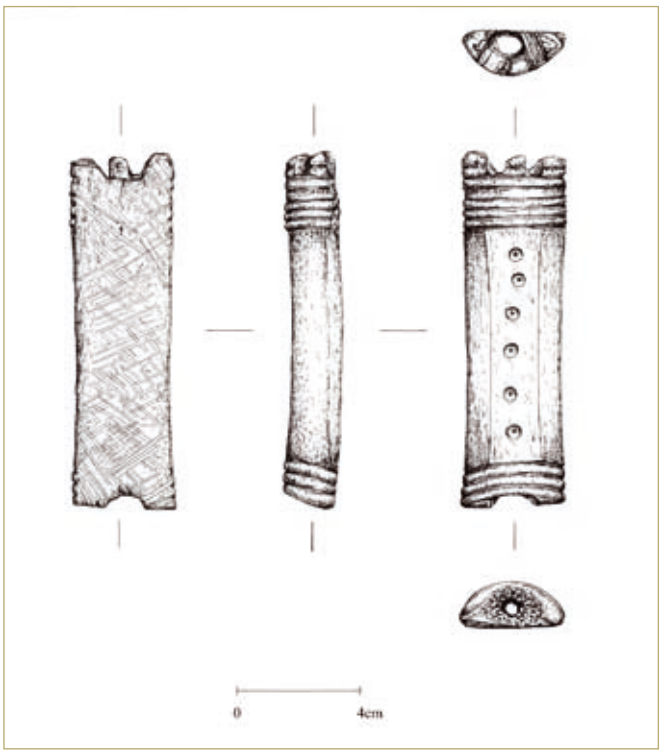
Mícheál Ó Droma, an Excavation Director with Valerie J Keeley Ltd (VJK Ltd), highlights the discovery of a minor fortification in Twomileborris, Co. Tipperary.

At 116 mm high, 31 mm wide and 7 mm thick, this surely ranks as the most diminutive castle in the country. Furthermore, unlike most medieval castles this example was found in a deep pit containing a hoard of silver pennies.

The castle and coin hoard were excavated by VJK Ltd, in advance of construction of the M8/N8 Cashel–Cullahill road scheme in County Tipperary, from an area rich in archaeological features, situated on the periphery of the late medieval settlement of Burgage Leith—modern-day Twomileborris. Other late medieval features were excavated, including three cereal-drying kilns, a vertical watermill with well-preserved timbers, metalworking features and enclosures, in addition to substantial early medieval and prehistoric remains.

The 'castle' was fashioned from a cow metacarpal or forelimb bone. It is D-shaped in section with a central perforation, which may have allowed the object to be suspended from a length of cord or leather. The front of the object is carved into the likeness of a medieval castle tower, complete with crenellations at the top. The upper 22 mm and the lower 12 mm are decorated with incised linear grooves, which may represent string courses (projecting horizontal bands in a wall). Six small, circular holes are incised into the centre of the piece, between the upper and lower incised grooves. The object displays no evidence of wear or use.

The function of this interesting little object is unknown. It may represent the handle of a composite object, such as a toy, a chess piece or horse furniture, or perhaps even the badge of office of a reeve or bailiff. To its contemporaries the castle tower would have been a symbol of lordship, temporal power and military strength. To the modern mind castles are symbolic of the whole feudal world. To the inhabitant of a small rural settlement such as existed at Twomileborris, this object would have been a token that represented the greater feudal society of lords, knights and castles to which both the inhabitant and the object belonged.



Drawing of the castle-shaped object.

Images: VJK Ltd

The castle-shaped object with the hoard of 53 silver long-cross pennies and the copper-alloy pin it was discovered with.

The castle-shaped object was found with a copper-alloy pin and a hoard of 53 silver pennies, provisionally identified as English long-cross pennies of Edward I and Edward II. The hoard is thought to have been deposited sometime before the end of the reign of Edward II (AD 1307–1327). This was a turbulent period in Ireland, exacerbated by the Black Death, the campaigns of Edward de Bruce (AD 1315–1318), poor weather and widespread crop failure leading to famine. Against this backdrop this curious hoard was placed in a deep pit and, for whatever reason or reasons, was never retrieved.

Settlement and burial at Faughart Lower

Peter Bowen, an Excavation Director with Archaeological Development Services Ltd (ADS Ltd), describes the excavation results from an early medieval cemetery-settlement at Faughart Lower, Co. Louth, on the A1/N1 Newry–Dundalk Link Road.

Faughart Lower, some 3 km north of Dundalk in County Louth, overlooks the main route from Dundalk to the Cooley Peninsula, and an important early medieval ecclesiastical site lies nearby, in the adjacent townland of Faughart Upper. The townland of Faughart Lower was the scene of archaeological excavations from May 2005 to April 2006 along the route of the A1/N1 Newry–Dundalk Link Road. A large, previously unidentified early medieval enclosed settlement and an associated burial-ground were identified here during test-trenching, and approximately three-quarters of the complex was excavated fully in advance of construction (some 25% of the site extended beyond the excavation area, to the south-east). Multiple phases of activity were recorded at the site, which was defined by a series of enclosing ditches, with a large, rubble-cored, stone-faced wall built within one of the ditches along the western side of the site. It is probable that only two of these enclosing features would have been in use at any one time. Also uncovered were two souterrains (one well preserved, the other very fragmentary), several large pits, a kiln, two small metalworking furnaces and a large well.

Although no traces of domestic structures survive, the recovered artefacts suggest that the site had been used for habitation. Over 1,000 sherds of pottery known as Souterrain Ware were found, as well as personal items such as ring-pins made from iron, bronze and bone, blue glass beads, metal knives, bone combs and belt buckles. Evidence for the daily activities of the occupants is indicated by spindle whorls, mill-stone fragments, a large iron ploughshare and coulter, a small clay crucible and iron slag. The site was also used as a cemetery. Almost 800 burials were excavated, concentrated mostly in the north-eastern area of the site, with a well located nearby and possibly associated with the cemetery.

A multiphase site

The first phase identified at the site was the construction of a double-ditched enclosure that continued beyond the southern extent of the excavation area. This consisted of an inner enclosure defined by an earth- and rock-cut ditch encircled by a much larger ditch. The inner example was generally V-shaped in profile, although along the north-western side, where the natural bedrock was at its highest, there was little or no attempt made to quarry through it. Instead the shallow overlying soil was simply scraped off and presumably piled along the inner edge to form a bank. This avoidance of rock-quarrying

Photo: ADS Ltd

Aerial view of the excavated cemetery-settlement at Faughart Lower, Co. Louth.

Three of the stone-lined graves during excavation.

was apparent in all the enclosing ditches, which became much less substantial where rock was encountered. A single gap to the north, created by an un-dug causeway, was the only entrance into the inner enclosure. It enclosed an area almost oval in plan and measuring 29 m north–south internally.

A second, larger concentric ditch, lying some 5–6 m outside the first, formed the outer extent of the site during this phase. This was much more substantial, enclosing an area that was 40 m in internal diameter. Its sides were generally very steep, with the base being either flat or slightly concave. No entrance was apparent within the excavated portion.

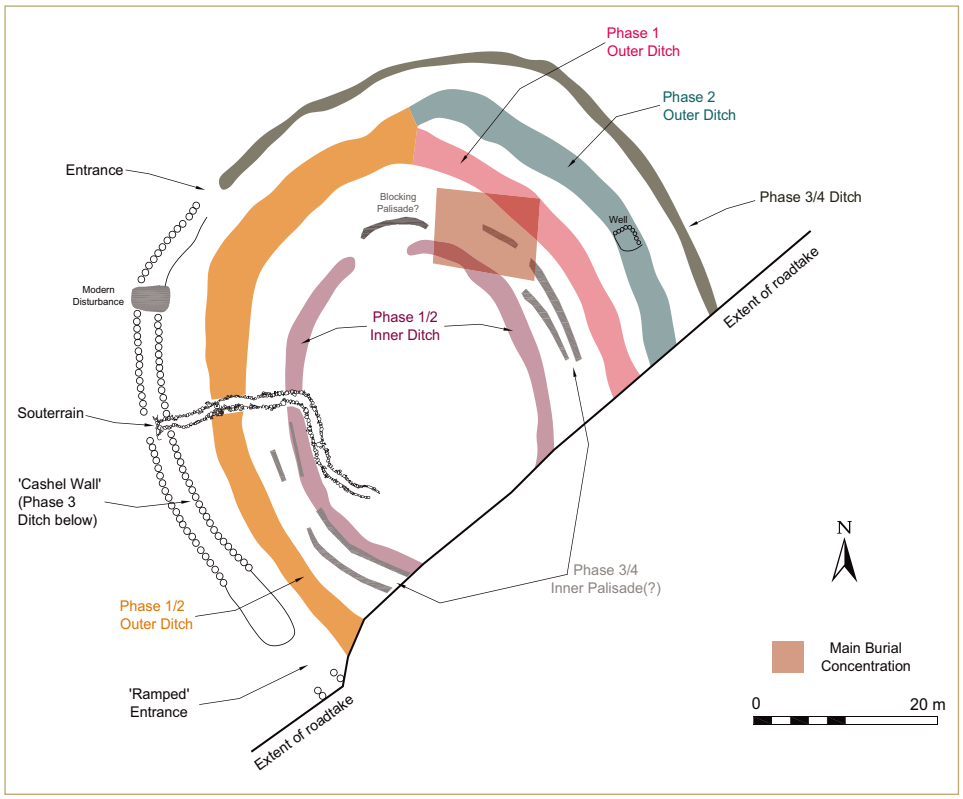
During the second phase of occupation the site continued as a double-ditched enclosure, with the original defining features being re-used and altered slightly. Both first-phase ditches became substantially infilled through a process of natural erosion and silting along with a limited amount of deliberate dumping of material, mostly in the south-western edge of the outer ditch. The inner ditch was re-cut but not cleaned out in its entirety. The inner edge of the ditch was then lined with stones, creating a stone face. The entrance into the inner enclosure continued in use, although it was narrowed slightly. Directly north of the entrance a shallow, curving slot was probably constructed at this time, acting as a blocking element to the entrance, perhaps to prevent large animals from entering the inner enclosure.

The outer enclosing ditch was also re-cut during this second phase. As with the inner ditch, it was re-dug along the same lines as the original, the only exception being the eastern edge of the site, where it was extended and ran 5 m beyond the Phase 1 outer ditch. The extension gave the outer enclosure an overall internal diameter of 45 m. Similar to the inner ditch, evidence was identified showing that attempts had been made, apparently unsuccessfully, to line the inner edge of the ditch with stone. The original Phase 1 outer ditch in this area was completely backfilled with material from the extension ditch.

The third phase of occupation saw the overall size of the enclosed area increase to 55 m internally. The enclosing ditches from the previous phases were no longer in use and were now replaced by a single ditch, signifying a shift in the form of the enclosure. Up until this point the site could be classed as a fairly typical bivallate ringfort (defined by two ramparts or banks and two ditches), but from this phase on the occupants sought to project an image of strength westwards, with the ditch along the western side of the site being substantially larger than that found on the northern and eastern sides.

Two entrances were uncovered within the Phase 3 outer ditch. The smaller example, 4 m wide, was located to the north-west, with a second, grander example to the south-west, which may have been the main formal entrance. It was formed by a causeway of un-dug bedrock, while the bedrock itself had been deliberately altered to create a ramp-like feature into the site. Beyond the limit of the road corridor traces of a small ditch were found running along the southern edge of this ramp, perhaps suggesting some form of 'avenue' into the site.

During the fourth phase of activity emphasis was again placed on projecting an image of strength towards the west. Built into the Phase 3 ditch on the west of the site was a large, rubble-cored,



Schematic plan of the excavated features at Faughart Lower.

stone-faced wall that was cashel-like in its form. This wall was found only along the western side of the site, with slight traces visible running beyond the excavation area to the south. Any enclosing feature on the northern and eastern sides must have re-used the much less substantial Phase 3 ditch.

Built into this 'cashel wall' was the end of a souterrain, in this instance a single stone-lined passageway with an entrance at each end. The main entrance, located within the main part of the site, comprised of a 'scooped-out' oval area. Two sides of this were lined with stones, with a gap in the south marking the entrance, while the stones merged into the main passageway. The passageway ran from this entrance before turning sharply to the west and merging into the 'cashel wall'. Presumably, a removable stone in the outer face of the wall provided egress. No evidence of any roofing material was found, but it is likely that the passageway was covered with large capstones, which were deliberately removed and the souterrain backfilled. From among the infilling material were fragments of three mill-stones that were deliberately broken before deposition, a ploughshare and coulter, a clay crucible, pottery and personal items.

The cemetery

A total of 772 burials were excavated at Faughart Lower. The majority of these were concentrated in the north-eastern area of the site, lying between and over the Phase 1 and Phase 2 enclosing ditches. While there was no evidence for any features demarking a burial area, it is clear that this part of the site was set aside for burial. The burials were found placed on top of one another—in places up to 12 successive burials were identified. Over time burial activity eventually extended to the south and south-west, into the main inner part of the enclosure, presumably once occupation there had ceased.

Preliminary analysis suggests that 530 adults, 150 juveniles and 90 infants were buried in this area. They include all age groups and both sexes, with a concentration of infant interments in the northern area, suggesting the continued use of the site as a *cillín* (burial-ground for children). The majority of the burials were aligned west–east, with the head to the west, although in some cases the underlying bedrock dictated the position in which people were interred. Most burials were in simple earth-cut graves, but a good number were in stone-lined or partially stone-lined graves, while eight were placed in natural crevices. A number of the burials have been radiocarbon-dated: the earliest was dated to AD 390–550, the latest dated to AD 790–1000, giving a potential range of 600 years of burial activity on-site.

Immediately east of the main burial concentration was a large well. It was dug through the infilled Phase 2 outer ditch and into the underlying bedrock, where a large boulder was removed creating a depression that retained water. The northern and eastern sides of this pool were lined with stones, and although none was evident around the remaining sides, they may have collapsed into the well. Furthermore, there may have been a ramped access to the base.

Conclusion

The site at Faughart Lower was clearly in use for an extended period of time, during which it underwent a series of changes represented by the re-cutting of ditches and the later emphasis on projecting an imposing physical image westwards. This may reflect changing social and political circumstances within the wider landscape. The enclosure was located towards the southern extent of the tribal area of the Uí Connaille Muirthemne, who were linked to tribes further north, beyond the Cooley Mountains. Towards the latter part of the first millennium the Uí Connaille Muirthemne came under pressure from other tribes to the west and south-west. Thus the attempts made to project an image of strength westwards may have been a physical manifestation of the pressure felt by the inhabitants during this period.

As the earliest burials were located within the area lying between the Phase 1 and Phase 2 enclosure ditches, this suggests that burial activity at the site may have started not long after the construction of the original ringfort. The date of AD 390–550 established from one of the early burials may, therefore, provide an indication of the date of the founding of the site.

As for the closing chapters of the story of this enclosure in Faughart Lower, there is a tradition that suggests the site may have played a role in the Battle of Faughart (1318), during which Edward de Bruce, a younger brother of King Robert I of Scotland, was defeated and killed. According to local sources, prior to the battle de Bruce camped at a pre-existing settlement in the field in which the site was located. The current available evidence indicates that the enclosure itself had long been abandoned by this time, but it is likely there would have been substantial remains still in existence and these may indeed have provided a suitable place for Bruce's men to make camp.


View of the stone-lined souterrain and the 'cashel wall', facing east.

Images: ADS Ltd

Everyday life in early medieval Galway

Liam McKinstry, an Excavation Director with Headland Archaeology Ltd, outlines evidence of daily life in Galway during the early medieval period, as revealed by the excavation of a ringfort on the N17 Tuam Bypass.

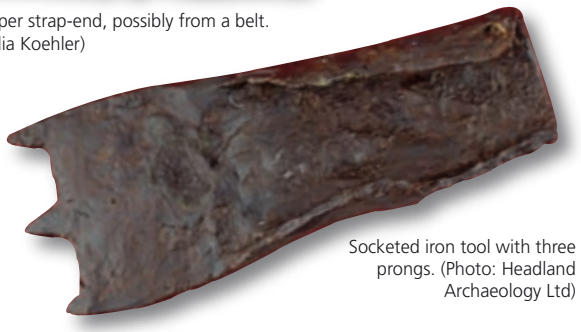
Archaeological excavation sometimes unearths evidence that tells us about the lives of those who once occupied the highest strata in society—exotic and luxurious artefacts and imposing settlements or burial monuments signify wealth and high status and usually generate much excitement. More often, however, the work of the archaeologist is about finding traces of the lives of ordinary people, which then allows us to piece together the minutiae of their daily existence. And so it is that the excavation of a ringfort at Kilcloghans, just north of Tuam, Co. Galway, has provided an opportunity to investigate and understand the lives of the ordinary farming communities who resided here during the early medieval period (AD 450–1169).

The site at Kilcloghans was excavated in 2007 by a team of archaeologists from Headland Archaeology Ltd, in advance of the N17 Tuam Bypass. The site consisted of a ringfort, almost 35 m in diameter, with an associated stone-lined souterrain or underground passage. The single ditch defining the fort was V-shaped in profile and up to 3.6 m wide and 1.5 m deep. The soil and other material that lay in the ditch and souterrain contained large amounts of animal bone and a significant number of small, mostly metal, artefacts.

The metal finds form a diverse assemblage representing the many different activities that would have taken place at the ringfort. Items of personal adornment included two iron dress pins and an inscribed copper strap-end, possibly from a belt. Domestic activities are represented by several iron knife blades and curious socketed tools with prongs, possibly used in the processing of cattle hides. Other finds, including an iron hook and metal hoops (possibly part of a stave-built vessel, such as a bucket or barrel), may be evidence of the storage of food or other materials.

All of the finds from the Kilcloghans ringfort indicate an early medieval date and, along with other evidence from the site, add to our knowledge of daily life in that period. A fuller understanding of the somewhat humble lives that were lived out here will hopefully follow on completion of ongoing post-excavation analysis.

Inscribed copper strap-end, possibly from a belt. (Photo: Claudia Koehler)



Socketed iron tool with three prongs. (Photo: Headland Archaeology Ltd)

Elevated view of the ringfort at Kilcloghans, Co. Galway. (Photo: AirShots Ltd)

In Brief
SOUTERRAIN

The word souterrain (from the French *sous terrain*, meaning underground) is a term used to describe a specific kind of early medieval underground structure. You may have heard these structures being described as 'caves' or 'tunnels' or recall hearing stories of how they lead to buildings or other archaeological sites up to several miles away. This is not the case, in fact; souterrains rarely reach over 20 m in length.

In its basic form a souterrain is a relatively narrow passage dug into the earth or cut into bedrock, lined (where necessary) and roofed with stone or timber and re-covered with earth to disguise its presence. Souterrains can have one or more concealed entrances at ground level, multiple passages and, in the more complex examples, small side- or end-chambers. The passages are normally about 1 m wide and 1 m high, although the chambers can be up to 2 m in height.

The function of souterrains is not completely clear. The most likely use was as a food store because they would have maintained a consistently cool temperature, or as a hiding place during times of danger because they were hidden and could be easily defended. In Ireland souterrains are often found within or close to ringforts or are associated with ecclesiastical sites, and are generally contemporary with them, in other words in use from about AD 600 to AD 1200.

Martin Jones, NRA Assistant Archaeologist, North-west Team.

The NRA Archaeological Database

Deirdre McCarthy

Deirdre McCarthy, NRA Assistant Archaeologist with the North-west Team, explains the content and operation of a newly created web-based database of archaeological sites excavated on NRA road schemes.

A new web-based database of archaeological sites excavated on NRA road schemes was launched on 28 August 2008 as part of the NRA's ongoing information dissemination strategy. The NRA Archaeological Database contains important baseline information relating to excavations carried out on road schemes throughout the country, and will allow for comparison between site types, locations and dating periods of the archaeological sites excavated. It will also facilitate a nationwide assessment of site types, to see what patterns emerge, and indeed may help in the future prediction of site locations in the landscape.

The database can be accessed on the NRA website, at www.nra.ie/Archaeology/NRAArchaeologicalDatabase/. The database homepage contains a map of Ireland, where an individual county can be selected in which to carry out a site search or all counties can be selected for a general search of the country. Once this selection has been made, the database can be searched in three ways.

1. A simple search, where items can be selected using drop-down menus in one or more categories, including County, Townland, Site Type and Dating Period.
2. An advanced search, where items can be selected using drop-down menus in one or more of the above plus Licence Number, Licence Holder, Excavation Year, Archaeological Consultancy and Site Name.
3. A full text search, where entries containing a specified word or phrase are extracted.

The search results display a list of sites relevant to the query. A site can be selected individually from the list and information relating to that particular site, including location, description, artefacts, environmental analysis results, dating evidence and published references, can be accessed. It should be noted that each separate period within a site gets a separate database entry sheet. For instance, if a site contains a Neolithic house and a Bronze Age *fulacht fiadh*/burnt mound, a separate database entry will be entered for the Neolithic period (Part 1) and the Bronze Age (Part 2).

To date, almost 500 sites from over 32 road schemes in 18 counties (in all provinces) excavated in the last 16 years have been entered into the database. Analysis of this information has revealed that the Bronze Age is the most frequently represented period (33%). There are some sites (21%) not assigned to any period, generally because of a lack of datable evidence. It was also revealed that the most frequently encountered site type was isolated remains (31%), such as pits and hearths scattered along the routes. The next most frequent site type was, perhaps unsurprisingly, *fulachta fiadh*/burnt mounds and burnt spreads (28%). These site types are found on almost all road schemes, in varying numbers, with a date range spanning 4,000 years.

The NRA Archaeological Database is a work in progress and will be updated regularly as final excavation reports become available. As the roads programme continues, the database will, of course, continue to expand as new discoveries are made and recorded. The NRA Archaeological Section welcomes any feedback about the operation of the database from the general public and professional archaeologists. Please direct any comments to NRA Archaeologist Michael Stanley (tel: 353 01 6658860; e-mail: mstanley@nra.ie).

Hair of the Dog

Tara Doyle, an Excavation Director with Headland Archaeology Ltd, reports on a remarkable artefact recovered on the N9/N10 Kilcullen–Waterford Scheme: Kilcullen to Carlow.

In the summer of 2007 a previously unknown ringfort was excavated in the townland of Ballyvass, Co. Kildare, in advance of a new section of the N9/N10. An organic deposit from the base of the ringfort ditch has returned a radiocarbon date of AD 660–810. Approximately 150 high- and low-status artefacts were recovered from both the interior and exterior of the ringfort. The most impressive discovery was a zoomorphic, or 'animal-like', terminal mount from a drinking horn.

Originally, the drinking horn was part of a Europe-wide pagan tradition associated with drinking and feasting. It was a composite object comprising of an animal horn, with ornate metal fittings or mounts attached at the rim, and pointed terminal. Terminal mounts are often in the form of stylised animals and, to date, approximately 14 have been found in Ireland. The zoomorphic mount found at Ballyvass depicts a hound or dog. This animal was often referred to in Irish folklore and law texts as a revered and highly valued member of a household. Charred material found with the mount has been radiocarbon-dated to AD 770–980. Post-excavation analysis of the Ballyvass site is ongoing.

Reconstruction of a drinking horn, with the Ballyvass terminal mount attached. (Drawing: Sara Nylund, Headland Archaeology Ltd)

The zoomorphic drinking-horn terminal from Ballyvass, Co. Kildare, following conservation. (Photos: John Sunderland)

The sherd of Phocaean Red Slip Ware from Collierstown 1, Co. Meath. (Photo: John Sunderland)

A Turkish import in County Meath: Mediterranean pottery on the M3

Amanda Kelly, Post-doctoral Fellow in Mediterranean and Near Eastern Studies at Trinity College Dublin, discusses the significance of her identification of a pottery sherd from western Turkey, which was discovered on the route of the M3 Clonee–North of Kells motorway scheme.

Analysis of a pottery fragment discovered on the M3 has revealed evidence of ancient trade between Ireland and the eastern Mediterranean. A sherd from the rim of an imported pottery vessel recovered from an early medieval cemetery at Collierstown 1, Co. Meath (excavated by Robert O'Hara of Archaeological Consultancy Services Ltd), has been identified recently as Phocaean Red Slip Ware (PRSW) Form 3. The type is named after a major production centre at Phocaea, in western Turkey. The Collierstown sherd comes from a vessel manufactured there some 1,500 years ago.

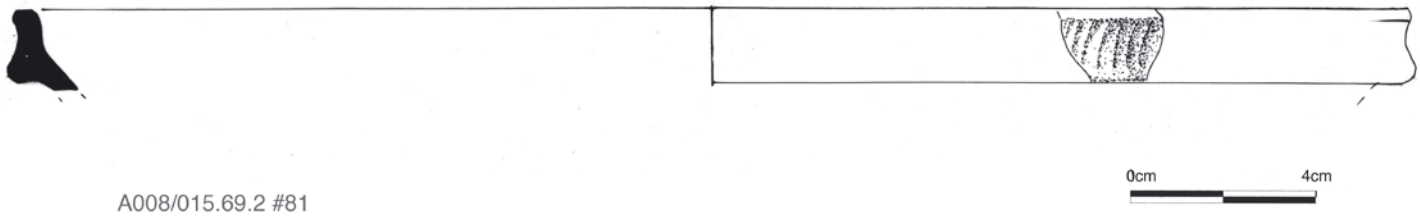
Phocaean Red Slip Ware is a category of red-slipped fine wares, comprised of a large array of shallow bowls or dishes. (Slip is thinned potter's clay used for decorating or coating ceramics. The umbrella term 'red-slipped fine wares' covers a range of tablewares in which the slip can vary from a high gloss to a dull finish.) This type of pottery became extremely common throughout the eastern Mediterranean in the fifth to seventh centuries AD.

What does it look like?

PRSW Form 3 is characterised by a wedged or flanged rim that is generally concave on the outer face and incorporates a pronounced ledge where the rim meets the body of the pot. The complete form is open with a curved or slightly angled flaring wall and a low, to almost imperceptible, foot. The average-sized versions have diameters of 190–360 mm; the Collierstown vessel would have had a diameter of 300 mm.

Decoration usually features a stamped motif on the interior floor of the pot, often combined with grooves and rouletting (a form of impressed decoration) on the outer surface of the rim—as is clearly visible on the Collierstown sherd. The rouletted decoration, common on this ware in the fifth and early sixth centuries, would have been applied using an implement with a series of parallel teeth, capable of producing whole bands of decoration simultaneously.

A stamped PRSW bowl from Crete depicting a stamped-deer motif on the interior floor. The Collierstown vessel may have been similarly decorated. (Photo: Amanda Kelly)



The Collierstown sherd. (Drawing: Amanda Kelly)

Broader circulation

The main concentration of PRSW pottery focuses on the wider area of the Aegean Sea. Traditionally, its distribution stretches from Sicily to Syria and from the Black Sea to North Africa. Assemblages from Athens and Thessaloniki in Greece and Istanbul in Turkey attest that in the mid-fifth to early sixth centuries the ware almost monopolised the fine-ware trade in the Aegean region. Its distribution pattern indicates a sea-borne dispersal: in the East it featured predominantly in the ceramic assemblages of major cities, such as Antioch and Tarsus, while in Egypt it did not penetrate beyond the Delta region.

The distribution of PRSW in western Europe suggests a coastal trade route from Italy (south-eastern Sicily) to southern France (Marseille), towards the south-eastern coast of Spain (Valentia, Alicante, Murcia and Baelo) and northwards along the coast of Portugal and, ultimately, to Ireland and south-western Britain. One of the most significant concentrations of PRSW outside of the Mediterranean was discovered at Conímbriga, in Portugal. This and other sporadic finds in Portugal may serve to provide the vital link between the Mediterranean distribution and its occasional presence—previously unexplained in terms of any distinctive trade route or distribution pattern—on sites in Ireland and Britain.

Chronology

Tracing the circulation of PRSW away from its Turkish origin, the first major wave of imports, both in Italy and Portugal, post-dates AD 450. An example of PRSW from Dinas Powys in Wales, dating to c. AD 460–490, constitutes the earliest import found in Britain. The profile of the Collierstown sherd is similar to numerous examples found throughout the Aegean, dating to the late fifth and early sixth century. On the basis of form and fabric alone, the production, rather than the actual deposition, of the Collierstown rimsherd can be confidently dated to this period.

Irish distribution

The first documented find of PRSW in Ireland was a rimsherd found in the early 1940s during the excavation of a high-status ringfort at Garranes, Co. Cork. PRSW has also been found at Clogher, Co. Tyrone, Mount Offaly Cemetery at Cabinteely in Dublin and, most recently, at Collierstown 1. Even from this limited distribution it seems that this foreign trade can be associated with high-status settlement sites, often interpreted as royal sites.

The triple-ramparted ringfort at Garranes (measuring over 100 m in diameter), known as Lisnacaheragh, has been traditionally identified as Ráth Raithleann or Raithliú, a royal site of the Uí Eachach Muman, associated with Eóghanacht Raithlind, who reigned in the third quarter of the fifth century. This loosely concurs with the original central date attributed to the site by its excavator, Seán P Ó Ríordáin.

Clogher represents one of the sites marked as *regia* (royal) on Ptolemy's mid-second-century map of Ireland—a status that is maintained through the centuries, as reflected by the artefacts from the site. Certainly, at Clogher a high degree of wealth is indicated c. AD 500 by the presence of PRSW, a Syrian wine amphora (Bii ware) and the accoutrements of a specialist metal workshop producing, amongst other artefacts, decorated bronze penannular brooches. Clogher is traditionally interpreted as the seat of the Síl nDaimíni, of the Airgíalla, a people initially allied with, or subject to, the Ulaid, but who subsequently shifted allegiance to the Northern Uí Neill.

Royal sites and trade

Royal sites exerted much influence over trade networks, stimulating long-distance importation and secondary redistribution locally. Such sites have been classified as gateway sites, controlling and monitoring access to prestige or luxury items and facilitating the filtering of foreign imports throughout a tiered network of affluent sites within their broader hinterlands. With regard to this model, Collierstown's proximity to the Hill of Tara cannot be overemphasised. Its physical connectivity to this focal-point makes the site an unsurprising addition to the distribution.

Royal sites seem to be stamped with the insignia of high status, incorporating a suite of material that includes brooches, glass and various ceramic imports. Similarly, the PRSW discovered at these sites are among these indicators of high status. Distributions of PRSW sherds do not exist in isolation but dovetail with distributions of various foreign imports and prestige commodities. Counties Cork, Meath and Down/Tyrone have been noted for their high densities of sites producing evidence of precious metalworking and these broad regional groups correspond with distributions of imported ceramics.

Elsewhere in Europe, notably in regions closer to its source of manufacture, the presence of PRSW is interpreted within a framework of regular trade. High concentrations found at Eleutherna, in Crete, are explained by their possible use as ballast in ships, which were carrying, on their outward journey, some eastern food products (including wine, oil or even grain) and, on their return trip, some Cretan products (such as honey, dairy products, wine and olive oil). Naturally, the circulation of the PRSW wares in the Mediterranean piggy-backed on trade in other commodities, such as wine, oil or other luxury items, and the framework for trade in Ireland should not deviate greatly from this pattern.

What was being traded in Ireland? This is not clear archaeologically, although the dearth in the archaeological record suggests perishable materials, as is attested by written sources, whereby animals and various products (including cereals, beer, salt and clothing, such as animal hides and textiles) were exchanged regularly. A text relating events of the seventh century *(Life of St Philibert of Noirmoutier)* mentions a ship coming from Ireland to Noirmoutier Island in France: 'Not much later an Irish ship filled with various merchandise came to shore and supplied the brothers with an abundance of shoes and clothing'.

The presence of PRSW in Ireland has significant implications for communication and trade between Ireland and the fringes of western Europe and the Mediterranean in the late fifth and early sixth centuries and, by association, for the status of Tara as a trading centre. The rising numbers and variety of PRSW identified in north-western Europe clearly points towards an established network of regular trade.

The significance of a sherd

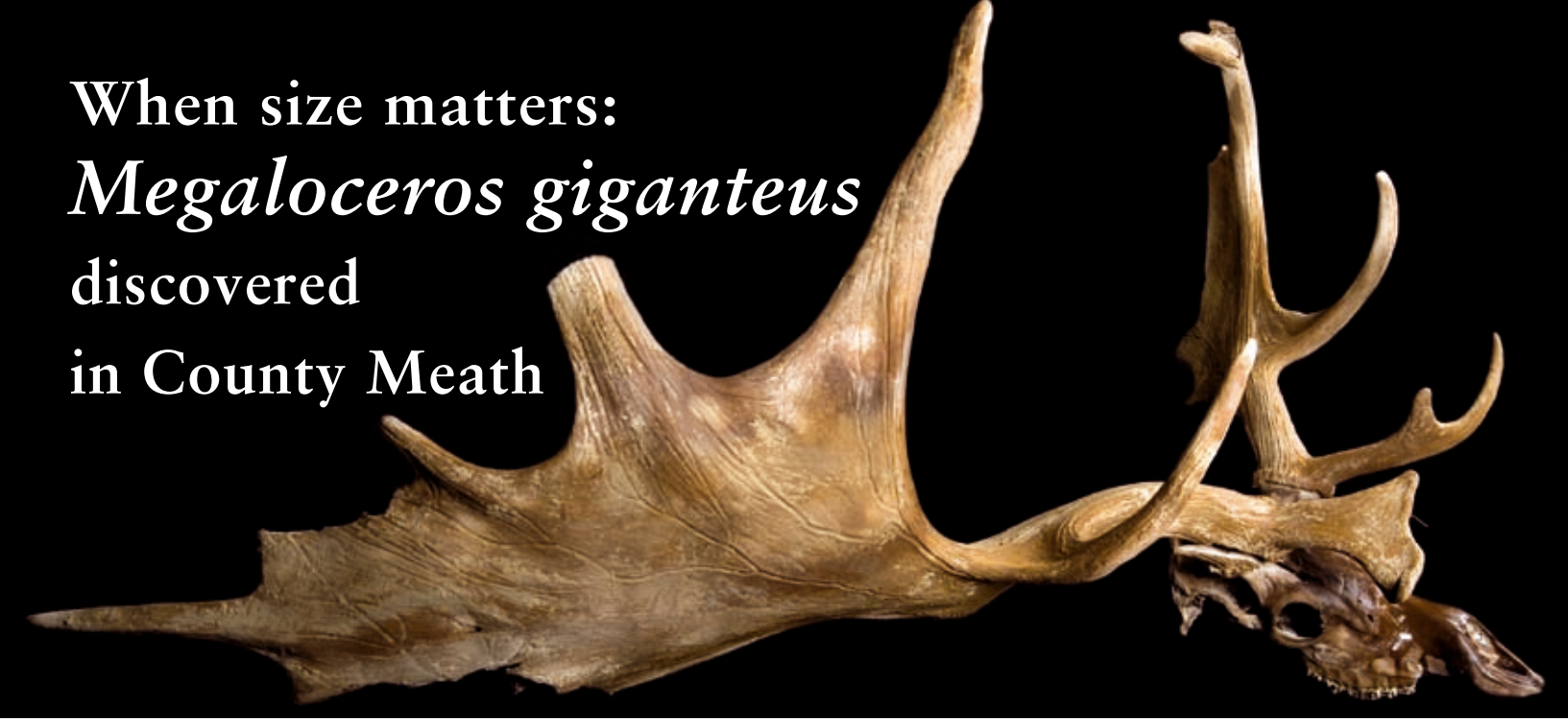
It seems that in Atlantic Europe at this time trade with the Mediterranean region was facilitated by high-status secular centres along the western Atlantic seaboard. Initial acquisition of foreign imports was followed by a secondary redistribution to satellite sites in the hinterlands, in turn instigating a variety of local imitation. A complex trade network is revealed when we combine the distributions of PRSW with Bii ware (sherds of which were also found at Collierstown) and the glass vessel trade. It is reasonable to assume that ships embarking originally from the eastern Mediterranean region travelled westwards through the Straits of Gibralta, where they were relieved of much of their remaining cargo along the Portuguese coast.

Between Conímbriga and Cork there is still an absence of sites yielding PRSW, and here the theory of coastal connectivity seems to run aground. It is still plausible, however, that the Gallo-Hibernian glass trade piggy-backed on a much wider shipping network, and that any remaining cargo from the eastern Mediterranean galleys was redistributed among smaller local vessels in the ports of western France, from whence they sailed to southern Britain and Ireland. At these final destinations the vessels were then emptied completely and restocked with largely perishable materials to distribute on their return journeys.

Regardless of the exact trade route to Ireland, it is certain that the sherd discovered at Collierstown was produced in Turkey in the late fifth or early sixth century and that its presence in Ireland represents the regular movement of goods through the Mediterranean and along the western Atlantic seaboard. Moreover, the presence of this imported pottery in Ireland is undeniably a signature of prestige, since what is easily acquired, commonly used and ultimately mundane in one society acquires status in another through novelty, rarity, distance from source of manufacture and difficulty of acquisition.

Post-excavation aerial view of the Collierstown 1 early medieval cemetery where the Turkish pottery sherd was discovered. (Photo: Studio Lab)

When size matters: *Megaloceros giganteus* discovered in County Meath



Kevin Martin

Kevin Martin, NRA Assistant Archaeologist with the Eastern Team, reports on the discovery of skeletal remains of Giant Irish Deer on the M3 Clonee–North of Kells motorway scheme.

As a child I can vividly remember walking through the main doors of the Natural History Museum, on Merrion Street in Dublin, and gazing, awestruck, at the towering skeleton of the Giant Irish Deer that greeted people on their way through the main foyer. It's funny how working in archaeology never stops throwing up surprises and links to the past, for what I didn't realise back then in the museum was that 25 years later I would be reliving my childhood experiences, this time in a bog in County Meath.

In November 2007, during archaeological monitoring of construction topsoil-stripping on the M3 motorway scheme, the remains of at least two Giant Irish Deer (*Megaloceros giganteus*) were found by archaeologist Liam Darcy of Archaeological Consultancy Services Ltd. The remains were sealed in a marl deposit at a depth of over 2.5 m beneath a peat bog on the Kells Bypass section of the M3, at Newrath Little. They consisted of a complete skull with antlers (Specimen 1), a fragment of skull with a single antler attached (Specimen 2) and a fragment of antler (Specimen 3).

The remains have since been assessed by animal bone specialist Rachel Sloane. It was evident that both animals were carrying fully grown antlers at the time of death, which indicates that they died during the autumn/spring period, the time when stags exhibit full-grown antlers. Previous research indicates that malnutrition during the colder months increased the vulnerability of the animals to starvation, contracting disease and suffering fatal accidents. The autumn rutting between the males also likely accounted for a number of deaths as a result of injuries sustained and huge energy depletion. A fragment of antler tine from one of the specimens was submitted for radiocarbon-dating and returned a date of 11430 ± 70 BP (Before Present).

It is recorded that the Giant Irish Deer stood about 2.1 m tall at the shoulders and had the largest antlers of any known deer species (approximately 3.65 m from tip to tip and weighing up to 40 kg). Giant Irish Deer are known from over 400 different locations countrywide, and a large assemblage can be found in the Natural History Museum of Ireland. In terms of NRA road-scheme excavations, the finding of Giant Irish Deer remains is not without precedent. In August 2004 the remains of six adult males were discovered at Ballyoran Bog, Co. Cork, along the route of the M8 Rathcormac/Fermoy Bypass (see *Seanda* Issue 1 (2006), pages 58–9).

Following specialist analyis, radiocarbon-dating and photographic recording, the antlers from Newrath Little bog were deposited with the Kells Museum.

Photos: John Sunderland

A slice through time: prehistoric settlement and ritual near Kells, Co. Meath

Gill McLoughlin and Fintan Walsh, Excavation Directors with Irish Archaeological Consultancy Ltd (IAC Ltd), provide an overview of prehistoric discoveries on the Navan–Kells section of the M3 motorway in County Meath.

A range of important and previously unknown sites was excavated along the Navan–Kells section of the M3 motorway in County Meath. The majority of these sites dated to the Neolithic period (c. 4000–2400 BC) and the Bronze Age (c. 2400–800 BC), with some medieval activity also represented. Of particular interest is a high concentration of Neolithic and Bronze Age activity in the adjoining townlands of Kilmainham and Cookstown Great, approximately 1.5 km south-west of Kells, representing a previously unidentified and expansive prehistoric landscape. A large interchange in the road design in this area has resulted in a valuable opportunity to look at what lies beyond the usual narrow ribbon of lands acquired for a new road.

The excavations mentioned in this article were directed by David Bayley (Kilmainham 1B, Kilmainham 2, Gardenrath 2), Tim Coughlan (Phoenixtown 5), Amanda Kelly (Grange 3, Grange 5), Patricia Lynch (Cakestown Glebe 2, Grange 1), Ed Lyne (Phoenixtown 1, Phoenixtown 3, Phoenixtown 6, Kilmainham 1A), Gill McLoughlin (Cookstown Great 2, Cookstown Great 3), Fintan Walsh (Kilmainham 1C) and Yvonne Whitty (Townparks 5, Townparks 6, Kilmainham 3, Newrath Little 3). These sites were identified during test-trenching directed by Shane Delaney, Sian Keith, Dermot Nelis and Jo Ronayne.

Neolithic domestic buildings

Five Neolithic buildings were found in the townlands of Kilmainham and Cookstown Great. Two others were excavated c. 2.3 km to the north-west, at Townparks, and a building excavated at Gardenrath, less than 1 km to the north-west, could also belong to this cluster of activity. (A circular, post-built structure in Kilmainham may not have been a domestic building, but this is discussed by Ed Lyne in the next article, on page 23.)

Two of the buildings in Kilmainham were defined by rectangular arrangements of post-holes. Finds associated with these included a polished stone axehead, a quartz-crystal scraper, flint tools and pottery sherds. Numerous pits and hearths surrounded one of the buildings and further Neolithic pits, post-holes, hearths and a possible slot-trench were distributed throughout the townland. Other structures defined by small clusters of post-holes were also identified and distinct lines of stake-holes, respecting the position of the main Neolithic features, may represent fences defining areas of different activities.

The remains of two rectangular buildings, c. 10 m apart and defined by wall foundation trenches and posts, were excavated at Cookstown Great. Associated finds included a small quantity of pottery. The two rectangular buildings in Townparks, outside the main cluster of settlement activity in this area, were c. 20 m apart. The first comprised of wall foundation trenches containing packing stones. Finds included pottery and a chert javelin head. The second building was defined by eight post-holes in pairs at the four corners.

Neolithic pottery in large pit during excavation at Kilmainham. (Photo: IAC Ltd)

All of the rectangular buildings were generally orientated either north-east–south-west or east–west and ranged in extent from 6.5 m by 4.5 m to 9 m by 7 m. Central internal hearths were identified in only two cases.

The building at Gardenrath consisted of a slot-trench, post-holes and a possible floor surface with a central hearth. It was roughly square in plan, measuring c. 4 m by c. 4 m. Pottery was recovered from the slot-trench, while flint scrapers and débitage (waste material resulting from the manufacture of stone tools) were recovered from the general vicinity.

Neolithic ritual sites

A possible ritual site in Kilmainham townland was located less than 1 km north-east of the main Kilmainham/Cookstown Great group. This comprised two post-built structures: a possible ceremonial timber circle, c. 15 m in diameter, composed of double post-holes with four central post-holes; and a subrectangular structure measuring 6.4 m by 2.5 m. High concentrations of burnt bone and stone tools were recovered here and a series of pits, containing pottery, burnt bone and flint, was also excavated. The presence of possible Grooved Ware pottery in adjacent/associated pits suggests that the site dates to the Late Neolithic period. (Preliminary pottery identifications in this article are courtesy of prehistoric pottery expert Dr Eoin Grogan.)

Neolithic buildings at Cookstown Great. (Photo: Hawkeye)

A circular, post-built structure, c. 10 m in diameter, was excavated in Phoenixtown, where Grooved Ware pottery was recovered from the fill of a large linear pit in front of the circle. The possible ritual nature of this structure is described by Ed Lyne in the next article. Grooved Ware was also recovered from a group of pits at a nearby site, also in Phoenixtown. In Ireland this type of pottery has predominantly been found associated with ritual sites.

Bronze Age settlement

As with the Neolithic activity, there was a concentration of Bronze Age activity in the Kilmainham/Cookstown Great area, and a previously recorded earthen burial mound, or barrow, located beyond the new road, c. 400 m to the north, may be contemporary. Sherds of decorated Bronze Age pottery were recovered from isolated pits at Kilmainham and Cookstown Great. A hearth at Kilmainham was surrounded by stake-holes, which may represent a 'tepee'-like construction, however the dating of this feature is unclear at present.

At Cookstown Great there was evidence of two small D-shaped structures within 10 m of each other that may have been associated with burnt mound activity at that site. Structure C was post-built with a central hearth, while Structure D was constructed of smaller posts or stakes. Both structures were c. 4 m in diameter and one of the posts in Structure C contained a sherd of Bronze Age pottery. The focus of Structure D was a subcircular pit, interpreted as a possible roasting pit or hearth pit. This feature contained a large quantity of heat-affected stones and was oxidised around the edges. Structure D has been tentatively interpreted as a tented sauna or sweathouse, with the fire pit as the focus. Sherds of Bronze Age pottery were recovered from a pit close to this structure.


One of the Neolithic buildings at Townparks. (Photo: Hawkeye)

Bronze Age Cordoned Urn pottery from a large pit at Kilmainham. (Photo: IAC Ltd)

Flint barbed-and-tanged arrowhead from a burnt mound at Phoenixtown. (Photo: IAC Ltd)

Evidence of Bronze Age settlement activity at Kilmainham was dispersed over a wide area and included a stone platform, a possible structure defined by stake-holes, pits containing Bronze Age pottery (including Cordoned Urn pottery from a large pit) and two burnt mounds. Possible Bronze Age settlement was also found in the form of a cobbled surface at Grange and pits containing Early Bronze Age pottery at Phoenixtown.

Two circular structures defined by post-holes and slot-trenches were excavated at Grange. Structure 1 was c. 10 m in diameter and had an entrance to the east. Finds included a stone adze (a tool similar to an axe, but with the blade set at right-angles to the shaft) and a saddle quern (a curved stone used for grinding grain). Structure 2 was c. 7–8 m in diameter. These structures were associated with cobbled surfaces that may represent working areas.

Bronze Age burnt mounds

Burnt mounds/*fulachta fiadh* were represented at 17 sites distributed along this section of the motorway. The function of this site type is traditionally described as cooking or bathing, which is achieved through the process of placing heated stones into troughs of water. Most of the burnt mounds excavated were associated with troughs, pits and waterholes. Evidence of wood-lined troughs was found at sites in the townlands of Townparks, Newrath Little and Kilmainham. Flint scrapers were recovered from a burnt mound at Grange and a barbed-and-tanged arrowhead and a thumbnail-shaped scraper were found at sites in Phoenixtown.

Bronze Age ritual

Two ring-ditches were excavated at Cakestown Glebe and Grange. The Cakestown Glebe ditch was 16.5 m in diameter, c. 2 m wide and up to 1.4 m deep. The ring-ditch was associated with two possible structures, hearths, pits and post-holes located in a distinct cluster to the east. These features may be the remains of funerary pyres and pyre platforms; a large deposit of cremated bone was recovered from the ring-ditch fills. The ring-ditch at Grange was also 16.5 m in diameter and was c. 3–4 m wide by 1.3 m deep. Four post-holes at the centre of the enclosure indicated a structure 2.5 m by 3.5 m. Burnt bone, flint scrapers, antler and animal bone were recovered from the fills of the ditch.

The fuller picture

The sites identified along the Navan–Kells section of the M3 provide a remarkable insight into what must be an extensive prehistoric landscape around Kells. The results from the archaeological excavations suggest there was continuous activity from the Early Neolithic period through to the early medieval/medieval periods, particularly in the Kilmainham/Cookstown Great area. This part of Meath is well recognised for its major prehistoric ritual foci, in this case the passage tomb cemetery at Loughcrew, to the north-west. The results from these excavations prove that the Neolithic–Bronze Age settlement throughout this landscape was extensive. Post-excavation work is ongoing, but it is hoped that comprehensive specialist analysis of the finds and environmental material, along with scientific dating, will create a clear picture of the prehistoric landscape in this part of Meath.

Ring-ditch at Cakestown Glebe. (Photo: Hawkeye)

Built according to plan: two enigmatic Neolithic structures on the M3

Ed Lyne, an Excavation Director with Irish Archaeological Consultancy Ltd (IAC Ltd), discusses two similar Neolithic buildings uncovered at different sites on the M3 Clonee–North of Kells motorway scheme.

Evidence of Neolithic settlement (c. 4000–2400 BC) unearthed during archaeological investigations conducted on the M3 in County Meath was relatively scarce. The section between Navan and Kells, however, produced a notable concentration of Neolithic activity. Sites discovered in the townlands of Phoenixtown and Kilmainham have provided tantalising remains of two Neolithic circular buildings. But were they houses?

The sites of Phoenixtown 3B and Kilmainham 1A were located some 4.5 km apart and were excavated between August 2006 and March 2007. The former was one of six multiperiod sites in Phoenixtown, while the latter was at the centre of a large complex of significant prehistoric sites—a prehistoric landscape that is discussed in the preceding article by Gill McLoughlin and Fintan Walsh (page 20).

The two circular structures at Phoenixtown 3B and Kilmainham 1A seem to have been laid out according to very similar plans. They were both post-built structures, 8.5–10 m in diameter, with entrances facing south-east. In both cases stake-holes seem to have been used to divide and organise the internal space and to screen the entrances.

Phoenixtown 3B

This site was defined by a circle of 10 main post-holes flanked by an incomplete curvilinear footing trench, or drip gully, with an entrance to the south-east. An annexe to the entrance was formed by two larger post-pits outside the main circle of post-holes, along with a number of exterior post-holes suggestive of some kind of 'porch'. A series of stake-holes inside the entrance screened the doorway from the rest of the structure.

The structure had an overall diameter of about 10 m and within this the ring of

Post-excavation plan of Phoenixtown 3B. (Drawing: IAC Ltd)

The field crew provide a sense of scale to Phoenixtown 3B, facing north-west. (Photo: IAC Ltd)

post-holes had a diameter of just over 8 m. A large, shallow pit was positioned between the entrance screen and the porch and a possible stone lamp or bowl was recovered from this feature. No trace of a central hearth was found, although a fire might have been raised off the floor, perhaps on stone flags. (The site had been ploughed frequently in the past and any evidence there was for such a feature has not survived.)

Also uncovered at Phoenixtown 3B was a linear pit or ditch some 10 m in length and 1 m wide, aligned north-east–south-west. This was 10 m to the south-east of the entrance, effectively crossing the path of anyone coming directly out of or into the building. This feature contained over 500 sherds of prehistoric pottery, some extremely fragmentary, which have been provisionally identified as a Late Neolithic type known as Grooved Ware (c. 2800–2500 BC). A few sherds of Grooved Ware also came from the circular structure itself, from one of the post-holes at the entrance.

This type of pottery originates in Orkney, Scotland, but it is generally accepted that in Ireland, unlike in Orkney, Grooved Ware is found mainly in ceremonial rather than domestic contexts. This suggests that a circular structure found in association with Grooved Ware must have a ritual function. But perhaps, in some instances, Grooved Ware in Ireland may also occur in a domestic setting, just as in Orkney.

Kilmainham 1A

A series of prehistoric features was excavated at Kilmainham 1A, including at least two buildings and associated activity, a curvilinear trench (possibly a palisade) that snaked its way across the site at its highest point, north-east of the buildings, and a number of cremation burials in the environs of a natural rock outcrop, west of the structures. The two structures consisted of a circular post-built building (Structure 1) and, less than 10 m to the south-west, a rectangular house (Structure 2).

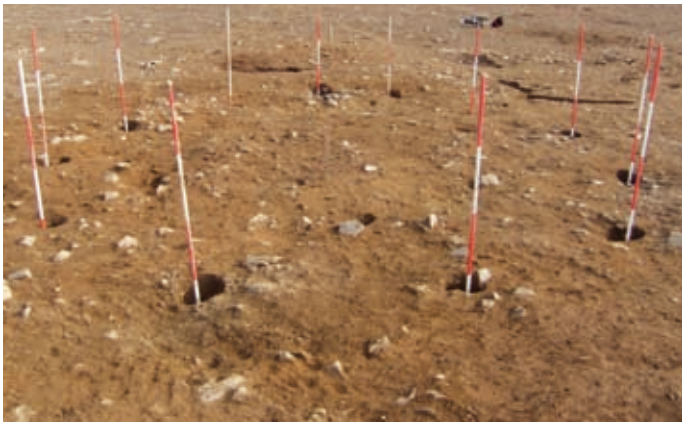
Structure 1 was of similar construction to the Phoenixtown 3B building. It was formed by a circle of 10 post-holes, with an overall diameter of approximately 8.5 m. It too had a south-east-facing entrance and a porch defined by two larger post-pits slightly outside the main circle. The floor had a poorly preserved layer of metalling (a

Possible stone lamp or bowl from Phoenixtown 3B. (Photo: IAC Ltd)

surface of small stones) still *in situ*. No trace of a central hearth was found but, once again, a fire might have been raised off the floor. As with the Phoenixtown example, the entrance appeared to have been screened from the interior by a series of stake-holes.

A large, shallow pit in the entrance area was possibly metalled at its base and contained a small saddle quern and a possible grinding stone. This pit may represent some kind of working area, where work such as grain-processing may have been carried out. It is also possible that the placing of the quern in this feature was deliberate, perhaps a symbolic 'burial' to mark the end of the life of the building.

The rectangular house, Structure 2, was defined by a rectangular arrangement of post-holes and floor deposits. It measured approximately 6.5 m by 4.5 m and was located some 10 m south-west of Structure 1. Many artefacts were recovered from this house, including sherds of plain prehistoric pottery, some stone tools, such as a quartz-crystal scraper, and a polished stone axehead. This axehead was found lying horizontally near the base of a post-hole in the south-east corner. Again, this is likely to have been a deliberate deposit, perhaps as a foundation offering.



Post-excavation view of Structure 1 at Kilmainham 1A, from the rear, facing south-east. (Photo: IAC Ltd)

The proximity of these two structures suggests that Structure 1 was also a house. Pending scientific-dating results, it is not yet certain that they were contemporary, though this seems likely. At other Neolithic sites, such as Lough Gur, Co. Limerick, circular and rectangular Neolithic structures have been found to be contemporary.

Four cremation pits were found in the environs of a natural limestone outcrop to the west of the structures. These produced significant quantities of charcoal and burnt human bone. It is likely that more cremations once existed in the vicinity of this outcrop as it was a natural landmark in the landscape, but 19th-century quarrying has disturbed it to a large extent. It has yet to be established if these cremations were contemporary with the buildings. Structure 2 was the closest to the outcrop, at a distance of some 25 m.

Post-excavation plan of Structure 1 at Kilmainham 1A. (Drawing: IAC Ltd)

Comparison of the buildings

The plans of the circular structures at Phoenixtown 3B and Kilmainham 1A are almost identical. Differences include a slight variation in scale and the lack of any external footing-trench at Kilmainham 1A. In both cases stake-holes within the buildings suggest the screening of the interior from the entrance porch, and it appears that in the case of the Phoenixtown example, this partition guided the visitor to the left upon entering the structure.

While many finds were recovered from features around the buildings, the interiors produced few finds. An intriguing parallel, however, is that both structures had shallow pits in the entrance area, and in each case these produced a single stone (probably domestic) artefact. This suggests that the porch area was being used for domestic activity, perhaps in order to take advantage of the light from outside while at the same time availing of the shelter of the roof above. An alternative to this mundane explanation should also be considered. Doorways often held symbolic significance in prehistoric structures, as they mark the boundary between the outside world and the private world within. Perhaps it was inappropriate for raw or unprocessed foodstuffs to cross this boundary. Hence grain might have been ground into flour in the entrance area before being taken inside. Such a scenario is purely hypothetical, of course, but perhaps it is nonetheless an idea that warrants consideration in the future, when similar sites are being examined.

Ritual or domestic?

It is tempting to view these structures as having a purely ritual function: perhaps they were timber circles rather than domestic dwellings? There are, however, differences between the structures at Phoenixtown and Kilmainham and some previously identified timber circles. As mentioned above, finds were largely absent from the interiors. This contrasts with other possible ritual timber circles, such as an example at Balgatheran, Co. Louth, excavated by archaeologist Cóilín Ó Drisceoil in 2001. At Balgatheran, Grooved Ware sherds, a large number of flint artefacts and a stone axehead fragment were recovered from the post-holes that comprised the structure. Also, this example was oval in plan—a key difference in the layout of these sites. Similar finds were recovered from the post-pits at a timber circle at Knowth, Co. Meath, excavated in the early 1990s by Professor George Eogan and Helen Roche. Again, this example was oval in plan, whereas the structures at Phoenixtown and Kilmainham were near-perfect circles. Such differences in shape may be significant and perhaps a general re-examination of the criteria used to classify what constitutes a timber circle is warranted.

At Kilmainham a rectangular house is located next to the circular structure and produced a large amount of Neolithic domestic artefacts, suggesting a strong domestic element to the site. However, an approach that designates Neolithic structures as either ritual or domestic is perhaps inappropriate because these aspects of prehistoric life are likely to have been intertwined.

All told, it seems possible that these structures may have been part of the normal layout of a Neolithic settlement. Their function may have had a ritual element to it, but perhaps in an 'everyday' manner. They are clearly built to an accepted plan (with slight variations) and they may have been plentiful in this region, considering that the route of the M3 motorway has happened to pass over two of them. Perhaps every community would have had one such building—a communal space where discussions would be held, alcohol consumed, a venue for any communal occasions. Alternatively, they may have been structures in which people confined themselves at particular points in their life, during childbirth for example. Clearly there are many possibilities as to the function of these structures; simply tagging them as 'ritual' is, perhaps, too simplistic.

Quartz-crystal scraper from Kilmainham 1A. (Photo: Danny Lyne)

Cleansing body and soul? Part II

Following James Eogan's article, 'Cleansing body and soul?', in the previous issue of Seanda, *Graeme Laidlaw, an Excavation Director with Valerie J Keeley (VJK Ltd), draws attention to a strikingly similar prehistoric sweathouse excavated at Ballykeoghan, Co. Kilkenny, on the route of the N9/N10 Kilcullen–Waterford Scheme: Waterford to Knocktopher.*

The use of burnt mounds/*fulachta fiadh* as bathing places or as sweathouses has been accepted for some time as a possible function for these sites. Many of the examples previously identified as sweathouses—generally comprised of simple rectangular troughs surrounded by stake-holes—have been slightly unconvincing, however. The sweathouse excavated at Rathpatrick, Co. Kilkenny, by Catríona Gleeson (Headland Archaeology Ltd), and described by James Eogan in *Seanda* Issue 2 (2007), pages 38–9, appears to be one of the first sites identified in which all the necessary features for a sweathouse seem to be in place. Another excavation in County Kilkenny has recently unearthed a sweathouse that closely resembles the Rathpatrick example.

The site in question was located in the townland of Ballykeoghan, in southern County Kilkenny, on the route of the N9/N10, approximately 8 km north-west of the Rathpatrick sweathouse excavated in advance of the N25 Waterford City Bypass. As with the Rathpatrick site, the main feature at Ballykeoghan was a flat-based, circular pit that constituted the main sweathouse structure. The sweathouse measured approximately 4.5 m in diameter, with a maximum depth of 0.6 m below the natural subsoil. A small paved area was located in the south-eastern corner of the pit and appears to have been used as a hearth. A linear arrangement of five stake-holes was located next to the hearth, all of which contained the remains of burnt oak stakes. There were also several flat pieces of unburnt

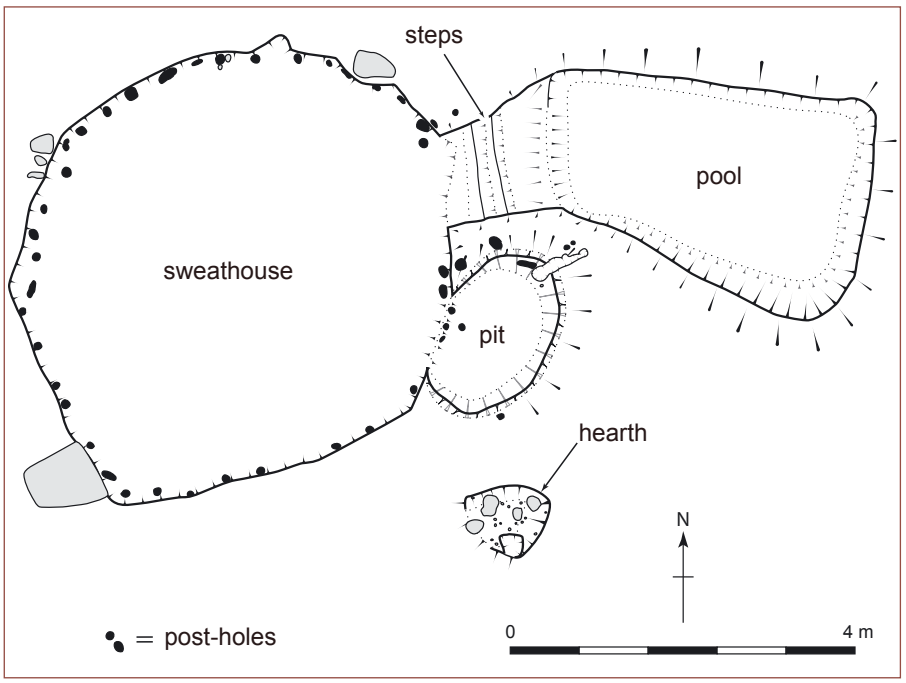
Post-excavation view of the sweathouse at Ballykeoghan, Co. Kilkenny, facing north-west. (Photo: VJK Ltd)

oak at the base of the pit, which suggests that it originally had a wood lining.

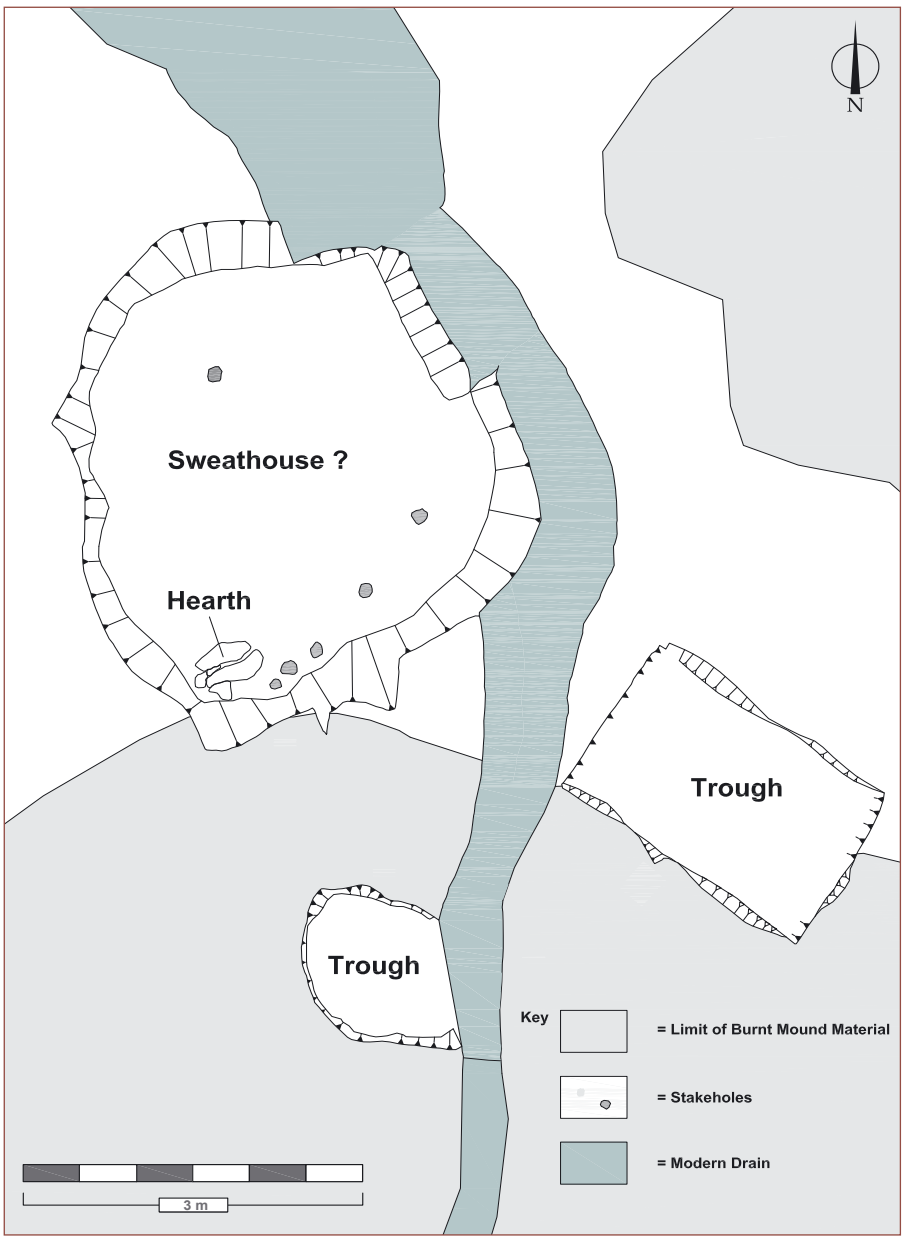
A rectangular trough or plunge pool, 2.7 m long and 1.5 m wide, was located 1.5 m from the south-eastern edge of the sweathouse structure. This feature may also have been wood-lined, although evidence of wood survived only intermittently along the edges and base of the trough. A second, smaller trough, 1.3 m long and 1.2 m wide, was located 1.8 m from the southern edge of the sweathouse, but its function is unknown. It was suggested that a small pit on the edge of the sunken circular area at Rathpatrick could have contained heated stones intended to radiate heat inside the sweathouse. At Ballykeoghan the small paved area within the sunken area could have fulfilled a similar function.

The site at Ballykeoghan shares many similarities with the Rathpatrick sweathouse. The large sunken features are of similar diameter and depth, and both have internal stakes that could have supported a lightweight roof structure. Hazel rods may have been used to create a flexible dome structure at Rathpatrick, whereas at Ballykeoghan the use of sturdy oak stakes may indicate the presence of a slightly pitched structure. As hazel is almost absent from the charcoal record from Ballykeoghan, perhaps the different approach to the problem of roofing the sweathouse was the result of availability of different wood species in the two areas. Oak is often used to line troughs associated with burnt mounds, but in many cases appears to have been re-used, possibly from nearby structures. This may also be the case at Ballykeoghan, where two of the surviving stakes appear to have been re-used. The radiocarbon dates from the sites provide another point of comparison, revealing the sweathouses to be broadly contemporary. The Rathpatrick site appears to date from between the eighth and seventh centuries BC, while the Ballykeoghan sweathouse is earlier in date, dating from the mid-ninth to the eighth centuries BC.

Burnt mounds/*fulachta fiadh* are the most numerous site type in Ireland and constitute the type of site encountered most frequently by archaeologists working on large infrastructural projects. Alongside the characteristic mound of heat-shattered stones and charcoal, burnt mounds can display a great diversity of features. They may have functioned as sweathouses throughout the country, but could have taken different forms depending on the period in which they were used or prevailing regional variations and fashions. It remains to be seen if similar sites are identified throughout the country in the future, or if this style of sweathouse represents a regional variation lasting just a few hundred years.



Post-excavation plan of the sweathouse and associated features excavated at Rathpatrick, Co. Kilkenny, on the N25 Waterford City Bypass. (Drawing: Headland Archaeology Ltd)



Post-excavation plan of the sweathouse at Ballykeoghan, Co. Kilkenny. (Drawing: VJK Ltd)

Drying the harvest: cereal-drying kilns on the N9/N10

Jonathan Monteith and Joanna Wren, Excavation Directors with Valerie J Keeley Ltd (VJK Ltd), make some observations on a number of cereal-drying kilns discovered in south County Kilkenny on the N9/N10 Kilcullen–Waterford Scheme: Waterford to Knocktopher.

A wealth of archaeological sites of prehistoric and historic date have been identified in south County Kilkenny during excavations undertaken by VJK Ltd on the route of the Waterford to Knocktopher section of the N9/N10. In particular, 12 cereal-drying kilns were identified on sites in four different townlands. Eight of the kilns were of figure-of-eight or dumb-bell form, a type that dates from the late Iron Age to the early medieval period, and four were of the classic keyhole variety found in the high medieval and early post-medieval periods. The excavation results show a distinct continuity of large-scale cereal production both before and after the arrival of the Anglo-Normans in south Kilkenny.

All of the kilns were used to dry grain, as evidenced by oats, wheat and barley recovered from their primary fills. The drying of grain would have been necessary to facilitate threshing and milling and to prevent germination during storage. Charcoal from the fills of the kilns shows that a wide variety of wood species were used for fuel, including oak, ash, birch, hazel, holly and yew, as well as plum and cherry.

Photo: VJK Ltd

Figure-of-eight cereal-drying kiln at Scart 3, with post-hole in the base that may have supported a drying platform.

Figure-of-eight kilns

Figure-of-eight drying kilns start appearing in Ireland in the later Iron Age. The two that have been dated on this project come from the later early medieval period. Three figure-of-eight-shaped kilns were found in Milltown, one in Ballykeoghan and four in Scart. This form of kiln was earth-cut and consisted of a single oval pit or two conjoined pits, having a waisted or rough figure-of-eight shape in plan. The deepest area held the fire spot, from which heat would have risen naturally towards the shallower drying area, where the grain was laid to dry.

The drying areas of these kilns would have needed a superstructure to protect the grain during drying and to allow access for filling and emptying the chamber. Evidence for such a structure survived at one kiln, Scart 3, which had a post-hole in the kiln floor that could have supported a drying platform. Two linear slot-trenches outside the same kiln may represent an associated granary. Extended use was seen at the Ballykeoghan kiln, where the original drying chamber was walled in and a second one built along a different orientation.

The orientation of these kilns from fire bowl to drying chamber varied considerably, probably taking advantage of very localised differences in the landscape or prevailing wind direction. Four kilns (Milltown 2 and 3 and Scart 1 and 3) were close to recognisable field boundaries. In the case of Milltown 2, the boundary was part of an early field system that was probably contemporary with the kiln. It is equally possible that all these boundaries respected the line of earlier field systems and that the kilns were deliberately sited to protect them from the elements and regulate the flow of air. Similar practical considerations probably influenced the siting and orientation of the rest of these kilns. Radiocarbon-dating of grain from Scart 1 and Scart 3 indicates date ranges of AD 860–1000 and AD 940–1000 respectively for the use of these kilns.

Photo: VJK Ltd

Keyhole-shaped kiln at Ballykeoghan 3, showing fire spot and step into stokehole.

Keyhole kilns

As the medieval period progressed, a new form of cereal-drying kiln appeared. This was the 'keyhole type', so-called because the fire hearth is separated from the circular drying chamber by a linear flue, giving the structure a 'keyhole' shape in plan. The reasons for this shape were: 1) to remove the drying chamber from the heat source and reduce the risk of the grain becoming alight; and 2) a flue, in association with a chimney or exit vent from the drying chamber, creates a suction draught that actually pulls the heat into the drying chamber.

Four keyhole-shaped kilns were excavated on the N9/N10 in south Kilkenny—two in Ballykeoghan, one in Scart and one in Coolmore. All were similar in design, each exhibiting a well-defined drying chamber, a linear flue and a stokehole where the fire was laid for drying the grain. All four drying chambers and three of the flues were lined with rough drystone walling.

Two keyhole kilns were located in Ballykeoghan—one at the centre of a field and the other by a field boundary to the north-east. The ground level on the site sloped upwards from the north-east to the south-west and the kiln-builders exploited this to facilitate draught, orientating the kilns so that the flue entrances were to the north-east.

In both Ballykeoghan kilns a stone was positioned to further narrow the flue at the entrance to the drying chamber. A narrowing flue would have had the effect of increasing the in-draught of heat being sucked into the drying chamber. Ballykeoghan 2 also had a slot in the floor of the chamber, just inside the entrance, which probably held a baffle (barrier) of timber or stone, and further in there were two small stone slots. The baffle was used primarily to prevent the grain from becoming alight; both Ballykeoghan kilns showed evidence of their flues having been substantially damaged by fire. In the Ballykeoghan 2 kiln, however, the baffle may also have combined with an inner stone barrier to create a channel through which the heat circulated below the drying platform, giving a more even roasting to the grain. The fire for this kiln was set in a small pit dug into the floor of the stokehole at the entrance

Photo: VJK Ltd

Figure-of-eight cereal-drying kiln at Ballykeoghan 1, showing stone-blocking of the primary drying chamber.

to the flue. A square socket halfway up the south-west wall of the chamber and a post-hole in its floor may have held supports for a roof to the kiln or for a drying platform for the grain. Similarly, two post-holes by the second kiln, Ballykeoghan 3, may have supported a superstructure. The drying chamber in this kiln had been re-floored and walled at some stage, perhaps in preparation for a new season's harvest.

There was no evidence of a superstructure at the examples from Scart or Coolmore. The kiln at Scart was located against the southern boundary of the townland, close to a known ringfort. It took advantage of the local slope, with the flue built at a lower level than the drying chamber. Around the circumference of the drying chamber the floor was raised, forming a circular ledge upon which the lining stones were set. This ledge might also have supported a timber drying platform, with hot air circulating in the gap below. At the mouth of the stone-lined flue an area of heavily oxidised subsoil survived, representing the fire spot; the stones here were shattered from the heat of the fire.

At the Scart kiln the base of the flue and the drying chamber were covered with a thick layer of clay that showed frequent charcoal inclusions and pieces of burnt clay, probably remnants from the final use or abandonment of the kiln. Charred barley, wheat and oat grains were identified in this material, as were two sherds of a type of pottery called Leinster Cooking Ware. The pottery has a date range from the mid-12th to the mid-14th century, and a sample of the charred grain produced a radiocarbon date of AD 1270–1320. A date sometime in the 13th or 14th century is likely for the use of this kiln.

The kiln at Coolmore was much simpler in design. It had a shorter flue and a smaller drying chamber, with no evidence of stone lining. Interestingly, the floor of the drying chamber was heavily oxidised, suggesting either that the fire was lit directly beneath the drying grain or that the kiln had been destroyed by fire during the drying process.

Photo: VJK Ltd

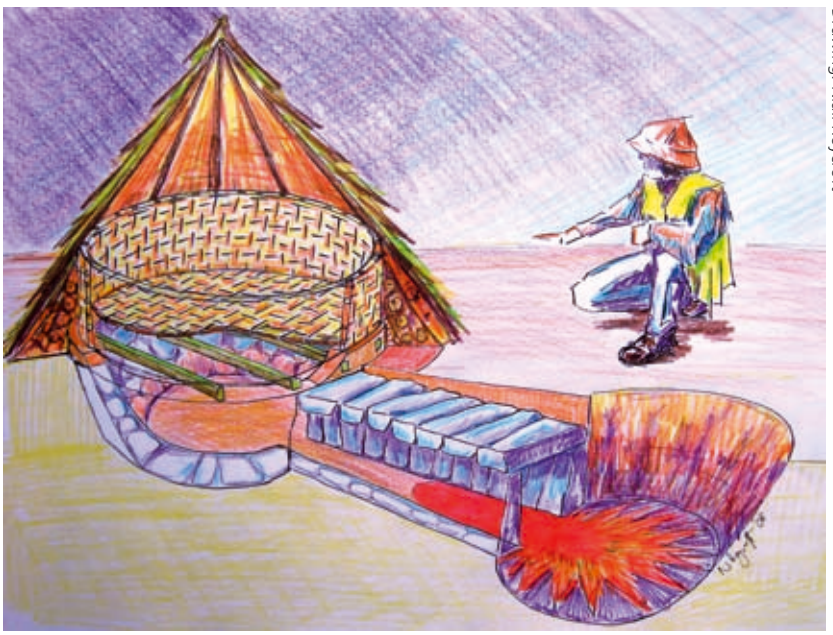
Keyhole-shaped kiln at Ballykeoghan 2, showing the stokehole and pit for a fire hearth at the entrance to the flue.

What the kilns tell us

Excavation of these cereal-drying kilns has provided a valuable insight into medieval crop-production and processing in south Kilkenny. Charred grain reveals what farmers were harvesting from their fields, while charcoal allows us to reconstruct the surrounding landscape.

Samples from all of the kilns are being sent for scientific dating. Results obtained thus far indicate that two of the figure-of-eight kilns were used sometime between the late ninth and the early 11th century, and that one of the keyhole kilns dates to the 13th/14th century. An increasing number of figure-of-eight kilns are being found on excavations and it is hoped that the dates from the kilns on the N9/N10 will help to establish a precise chronology for the form in Ireland.

For thousands of years south County Kilkenny's rich farmland was managed by its inhabitants for rearing livestock and producing grain. Other sites on this scheme have provided evidence of settlement and farming from the Early Neolithic period onwards. A study of these cereal-drying kilns brings our knowledge of Kilkenny's farming heritage into the second millennium AD.



Drawing: Niall Roycroft

An archaeologist examines the details of a keyhole-shaped cereal-drying kiln: 'This is a sophisticated, medieval cereal-drying kiln of the "keyhole" variety. The fire was lit in the open pit or stokehole at the end of the flue. The fuel was laid flat on the ground or set within in a small pit close to the mouth of the flue. The pit was left open to the air, allowing people in to stoke the fire during the drying process. The hot air passed up the narrowing stone-lined flue into the drying chamber, where the flaring stone walls helped disperse the heat. The drying floor probably consisted of a wicker screen, made of small wooden rods laid on a platform of beams. Grain was placed on straw or a coarse cloth placed over the screen. Grain could have been piled over the drying floor in a layer up to 0.15 m deep. The enclosing walls were probably of wickerwork or stone, supported from the outside by a small earthen bank. To protect the grain from rain and to help disperse the damp heat a roof of light thatch was placed over the drying grain. A door would have been incorporated into the roof to allow access to the chamber so the grain could be turned regularly to ensure even drying and allow moist air to escape.' (Drawing: Niall Roycroft)

The illustrated timeline that greets visitors on entering the *New Roads New Discoveries* exhibition in Cork Public Museum. (Photo: Sheelagh Conran)

New Roads, New Discoveries

Sheelagh Conran, NRA Assistant Archaeologist with the Southern Team, describes the highlights of an exhibition currently on display at the Cork Public Museum, which showcases archaeological discoveries made on road schemes in County Cork.

An exhibition entitled *New Roads, New Discoveries: Archaeological excavations on National Road Schemes in County Cork 2001–2007* was launched by Mr Batt O'Keeffe TD, Minister of Education and Science, on 10 June 2008 in Cork Public Museum. The exhibition is funded by the NRA, in association with Cork Public Museum and the National Museum of Ireland, and aims to present and explain the archaeological discoveries from six recent road schemes in County Cork in a manner that will appeal to as wide an audience as possible. The featured schemes include the N8 Fermoy–Mitchelstown, the M8 Rathcormac/Fermoy Bypass, the N8 Glanmire–Watergrasshill, the N8 Mitchelstown Relief Road, the N25 Youghal Bypass and the N22 Ballincollig Bypass. Judging from the number of people who arrived from all over the country to view the new exhibition on the night of the launch, it achieved its aim. The display space was crammed with over 200 artefacts, an array of eye-catching colourful and informative display boards and computer-generated 3D reconstructions of exciting, newly discovered archaeological sites. The audience were whisked back in time on a fascinating journey that began in the Mesolithic era and culminated during the post-medieval period.

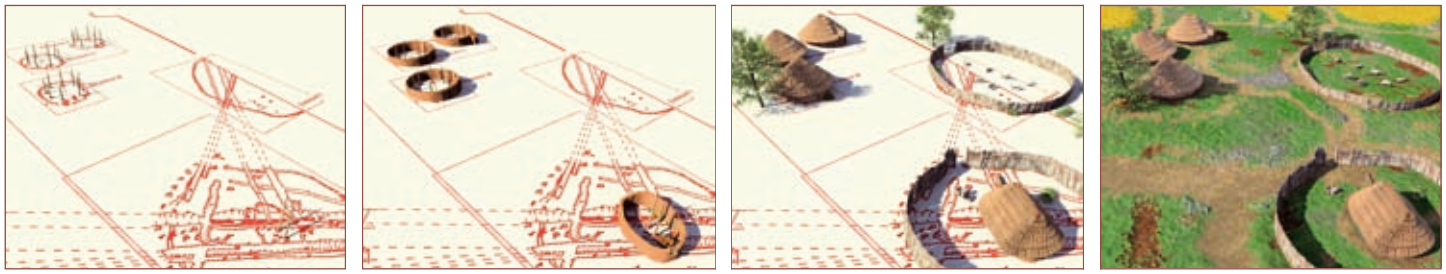
Photo: Sheelagh Conran

Some sections of the *New Roads, New Discoveries* exhibition.

In all, 178 sites were investigated, revealing a wide range of previously unrecorded areas of archaeological interest. Prehistoric highlights include three Mesolithic sites, five Neolithic houses, 12 Bronze Age houses, four Bronze Age enclosures and two Iron Age structures. Highlights from the historic period include five large early medieval enclosed settlements, two medieval settlements and two post-medieval settlements.

On entering the exhibition, the visitor experiences Cork's rich history through a vibrant and colourfully illustrated timeline that discusses each archaeological period in the county from both a national and an international perspective. For example, one can see that it was during the Neolithic period that the first farmers lived in permanent houses in Cork, at the same time as the pyramids of Egypt were being built. The timeline is accompanied by a series of display cases holding numerous artefacts that correspond to each period, showing the progression of tool technology and craftsmanship throughout that time.

Another exciting display, *Life in Cork*, tells the story of how our ancestors made tools, produced food and buried their dead. Anyone who has seen the exhibition could not fail to be impressed by Early Bronze Age ceramic urns from Ballynacarriga, near Fermoy (some of which contained the cremated remains of the dead), a decorated rotary quern-stone discovered at Mondaniel, near Rathcormac, and a fine spindle whorl uncovered at Ballynamona, near Mitchelstown.



The exhibition culminates with five computer-generated, 3D-animated site reconstructions. These stills show a Bronze Age village at Ballybrowney Lower discovered on the M8 Rathcormac/Fermoy Bypass. (Images: Digitale Archäologie)

The work of archaeologists and life on a typical excavation site are explained in vivid detail in the *It's a dirty job* section. Visitors gain an insight into the day-to-day work of an archaeologist through the story of the excavation of a Bronze Age village discovered at Ballybrowney Lower, near Rathcormac. This combines information on the tools and methods used on-site with archaeologists' own stories and experiences of their 'dirty jobs', helping the audience to understand what working on a site is like.

Visitors also learn about some of the new discoveries from NRA-funded road schemes that have made an impact on all periods of archaeology in Cork, from the Mesolithic to the post-medieval period. Relatively little is known about Mesolithic people in Munster, so the discovery of three new sites has been greeted with much excitement. Mesolithic artefacts on display in the exhibition include a piece of worked antler from a Giant Irish Deer, which may represent the first evidence of humans in Munster, and a selection of Mesolithic stone tools from Gortore and Caherdrinny, near Fermoy, which contains enigmatic points thought to have been an early form of spear used for hunting or fishing.

From the Neolithic period we are introduced to the first farmers in County Cork, who built their houses at Barnagore, near Ballincollig, and at Gortore, Ballinglanna and Caherdrinny, near Fermoy. Before the NRA schemes uncovered this evidence there was only one Neolithic house known from Cork.

A fascinating Bronze Age sweathouse was discovered at Scartbarry, near Rathcormac. Other Bronze Age discoveries featured in the exhibition include a settlement at Mitchelstown and two roundhouses at Ballynamona, near Mitchelstown. All visitors to the exhibition are amazed by the very rare and unusual 'cup' in the shape of a face that was discovered in a pit near Mitchelstown, close to the Gradoge River. Why was this cup placed here? Was it an offering to a river god during the Bronze Age? Experts are still trying to understand the mystery of this astonishing cup, the style of which is unique in Ireland and very rare in western Europe. Whatever secrets they continue to hold, these new sites have added greatly to our knowledge of the Bronze Age in County Cork.

The rare and unusual Mitchelstown Face Cup, which is on display in the exhibition. (Photo: John Sunderland)

New and exciting sites from the 'elusive' Iron Age are also featured in the exhibition, including a roundhouse discovered at Ballinaspig More, near Ballincollig, and a hut or shelter found at Muckridge, near Youghal. These sites are explained with the help of vibrant reconstruction drawings that illustrate how these buildings would have looked originally and how they were built. It provides a very interesting picture of how daily life may have been during the Iron Age.

An assortment of settlement sites, ringforts and souterrains are some of the discoveries exhibited from the early medieval period. There is a description of how prosperous families lived in unusual rectangular enclosures at Ballynacarriga, near Youghal, and information on similarly dated enclosures at Curaheen, near Ballincollig, and at Ballinacarriga, near Fermoy.

Rare undefended houses, a moated settlement and charcoal-production pits are just some of the fascinating medieval discoveries on display. Two undefended medieval farmsteads were found at Mondaniel, near Fermoy, dating from between the 13th and 14th centuries when Anglo-Normans were consolidating their hold on many parts of Cork. Alongside these finds are pieces of pottery retrieved from the excavation of a moated settlement at Ballinvinny South, near Glanmire.

Evidence on display from the post-medieval period includes a rare 17th-century settlement, also uncovered at Ballinvinny South. An intriguing find from this site was a hoard of so-called 'gun money', which dates to a very turbulent time in Irish history. Gun money refers to coins issued by King James II during the war against King William III (William of Orange). In June 1689, when he was desperate to fund his military campaign, James ordered the minting of coins from cheap metal. He planned to redeem them for gold and silver when he regained the throne. However, his subsequent defeat by William at the Battle of the Boyne rendered the coins valueless. Visitors to the exhibition can learn where this hoard was uncovered and ponder why it was buried and by whom.

The exhibition culminates in spectacular, computer-generated, 3D-animated reconstructions of five sites: the Neolithic house at Gortore, the Bronze Age settlement at Mitchelstown, the Scartbarry sweathouse and Bronze Age village at Ballybrowney Lower and the medieval moated settlement at Ballinvinny South. Through the use of advanced computer technology and visualisation software, visitors can travel back in time to see for themselves how life was lived in Cork over the last 6,000 years (see Ken Hanley's article on page 62 to learn how the reconstructions were generated).

New Roads, New Discoveries will run until 19 December 2008 in Cork Public Museum, Fitzgerald Park, Mardyke, Cork. Admission to the museum is free and opening hours are: Monday–Friday, 11.00am–1.00pm and 2.15–5.00pm; Saturday, 11.00am–1.00pm and 2.15–4.00pm; and Sunday, 3.00–5.00pm. The NRA warmly welcomes feedback from the public, and visitors are asked to record their comments on leaving the exhibition.

Photos: Leigh Barker

The possible alder wood ladder during excavation.


The cherry wood hand pick during excavation.

Cashel's earliest wooden artefacts

Joanne Hughes, a freelance archaeologist based in Cashel, Co. Tipperary, reports on two significant wooden artefacts recovered during excavations on the N8 Cashel Bypass.

Recent post-excavation analysis of wooden artefacts discovered on the N8 Cashel Bypass in south County Tipperary has yielded exciting new dates. During excavations in 2003 an area known locally as 'the Convent field' was investigated in advance of construction. The field, containing two ponds, was located in Owen's and Bigg's-Lot townland, below a hilltop enclosure on Windmill Hill, a prominent landmark 2 km south-west of the Rock of Cashel.

Archaeological testing identified a cluster of seven *fulachta fiadh*/ burnt mounds near the ponds, which were subsequently excavated by the author for Judith Carroll Network Archaeology Ltd. Two of the mounds each overlay a large clay- and wood-lined pit. Dumped into each pit were numerous pieces of wood, many of which were worked. Two wooden artefacts discovered within the pits are worthy of special mention.

The first artefact consists of a long piece of split alder wood. It is pointed at one end and the opposing end is flat. Deep notches are cut along one edge, creating a step-like effect. Irish parallels for this artefact are few, but it does resemble a type of ladder still in use in parts of sub-Saharan Africa. As the Cashel artefact has been radiocarbon-dated to the Middle Bronze Age (1390–1120 BC), this could be one of the earliest ladders discovered in Ireland.

The second artefact is carved from cherry wood and is likely to have been a hand pick. It was found in five pieces and has a number of toolmarks at both ends. This is quite a significant find as there is very little archaeological evidence for the use of cherry wood in Ireland at this time. The hand pick has been radiocarbon-dated to the Early Bronze Age (2440–2140 BC), at the very beginning of the Beaker period in Ireland. Beaker pottery was recovered from Windmill and a number of nearby townlands during the Cashel Bypass excavations (see *Seanda* Issue 1 (2006), page 6).

Both artefacts are currently undergoing conservation at the National Museum of Ireland Conservation Department. It is hoped that once this process has been completed they will go on display in the County Museum, Clonmel.

Conjectural reconstruction of the *shaduff* discovered at Camlin, Co. Tipperary. (Drawing: Niall Roycroft)

Before, during and after the Kingdom of Ely

Niall Roycroft

Niall Roycroft, NRA Archaeologist with the Eastern Team, provides an overview of archaeological discoveries on the N7 Castletown–Nenagh: Derrinsallagh to Ballintotty road scheme in counties Laois, Offaly and Tipperary.

Olioll Ollum, king of Munster, founded the kingdom of Ely (Eile) in the third century AD. Ely of south Offaly and north Tipperary was formally established into baronies by the Anglo-Normans in the 12th century, after which the kings of Ely were known as the O'Carroll (Uí Chearbhail) until they were wiped out by Williamite forces at the end of the 17th century.

The N7 Castletown–Nenagh road scheme is 35 km long and passes through the Ely baronies of Ikerrin, Clonlisk and Upper Ormond. Eachtra Archaeological Projects and Valerie J Keeley Ltd (VJK Ltd) identified 60 archaeological sites along the proposed route and excavated them between spring 2007 and summer 2008. The discoveries made there illuminate the landscape as it was before, during and after Ely.

Physically, the project lay on the plains east of Nenagh, towards Moneygall; on the hills south of Roscrea (part of the Devil's Bit range); and on the wetlands and marginal land between Roscrea and Borris-in-Ossory. The excavations were directed by Jacinta Kiely, Laurence McGowen, Gerry Mullins, Simon O'Faoláin, Jo Ronayne and John Tierney of Eachtra Archaeological Projects, alongside Gary Conboy, Colm Flynn, Colum Hardy, Sinead Marshall and Liam O'Seaghdha of VJK Ltd.

Nenagh to Moneygall

Extensive topsoil-stripping in this area revealed a wide range of dispersed and clustered archaeological sites. This zone clearly had been important for arable farming in the prehistoric and early medieval periods, with flat, open fields interspersed with woods and localised wetlands. The townlands of Derrybane and Park, Co. Tipperary, produced Bronze Age settlements and a cremation cemetery. Burnt mounds were found in association with natural pockets of bog near Moneygall and one site, at Clashnevin, Co. Tipperary, had a very large Bronze Age well.

A ploughed-out ringfort, with associated droveway and field system, was exposed at Killeisk, Co. Tipperary, an area associated with a cluster of early medieval sites around Ballymackey, on the River Ollatrim. A cropmark showed the Killeisk enclosure was unusually 'stadium-shaped'. The site contained several decorated quern-stone fragments, perhaps placed deliberately in the ditches as a form of closure ritual.

Park also showed remains of a possibly early medieval/medieval square enclosure and a whole mass of cereal-drying kilns and associated saddle and rotary querns.

Moneygall to Roscrea

This hilly section showed the densest amount of archaeology.

Decorated early medieval quern-stone from Killeisk, Co. Tipperary. (Photo: Niall Roycroft)

Bronze Age palstave axehead from Camlin, before conservation. (Photo: Studio Lab)

Bronze Age houses were found at Drumbaun, Co. Tipperary, and additional Bronze Age settlements occurred at Moatquarter, Rathnaveoge Lower and Ballygorteen, also in Tipperary, and at Castleroan, Co. Offaly. All of these sites were unenclosed, located on hillside terraces and had fantastic views. From their distribution, a typical pattern emerges of Bronze Age settlements targeting the heads of all the small, fertile valleys in this area.

South of Roscrea some evidence for Neolithic settlement was found, but there was also a startling discovery: a cluster of important Bronze Age sites at Camlin, Co. Tipperary. Two palisade enclosures (both containing buildings), a very large ditched enclosure, at least seven other buildings, 11 burnt mounds and a beautiful palstave axehead showed concentrated settlement across a wide area. The large, ditched enclosure had external associated cremations, one in an intact Bronze Age pottery vessel. The Camlin occupation focussed on a series of natural springs and overlooked the Monaincha–Timoney wetlands. One of these springs had been modified into a large well, which appeared to contain the remains of a large *shaduff* or water-lifting crane. A *shaduff* is often associated with Ancient Egypt and North Africa c. 1500 BC onwards. The possible *shaduff* at Camlin perhaps lifted water to top up an adjacent artificial pond, almost 20 m across, which had been dug to access another natural spring. The pond was approached by a sloping ramp and was filled with a mixture of burnt mound material and peat. It could possibly have formed a huge, open-air hot-tub! A vast burnt mound, 40 m across and up to 1 m deep, covered this site.

During the early medieval period Camlin was on the major communication route from Connaught, through Roscrea towards Cashel. Roscrea itself was also situated on the main trans-Ireland routeway, known as the Slíghe Dála. Camlin was a core zone of the O'Meachairs, Lords of Ikerrin, who had their coronation site at adjacent Sean Ross Abbey. Two ringforts were excavated at Camlin, the larger containing a potential wooden church and an extensive cemetery, including, perhaps, the burial of a priest (laid with the head to the east rather than to the west). This ringfort had been reinforced with a huge ditch, probably during the 10th century AD when a series of Viking raids culminated in the Battle of Roscrea in AD 942.

The area straddling Busherstown, Co. Offaly, and Moatquarter, Co. Tipperary, is reputed to have been the coronation point of the O'Carroll kings before the arrival of the Anglo-Normans. At Busherstown, part of a 13th-century Anglo-Norman defended settlement, known as a moated site, was found. (This settlement is described by Tori McMoran in the next article, page 36.) The moated site measured approximately 50 m by 50m, as seen by a cropmark beyond the excavation area, and was associated with a further enclosure in which was found many large cereal-drying kilns and several buildings. This was clearly a major crop-processing/distribution centre, presumably associated with the Anglo-Norman manor of Dunkerrin, and it is likely that a mill once stood on the nearby stream. The site appears to have been abandoned in the early 14th century, coinciding with the Gaelic Resurgence in the area. A large iron bearded axe, probably of 14th–15th-century date, was found in isolation at Camlin. Perhaps this was a hidden trophy of the skirmishes of Teige O'Carroll, who defeated the Anglo-Normans in 1325, before he himself was killed in battle in 1346.

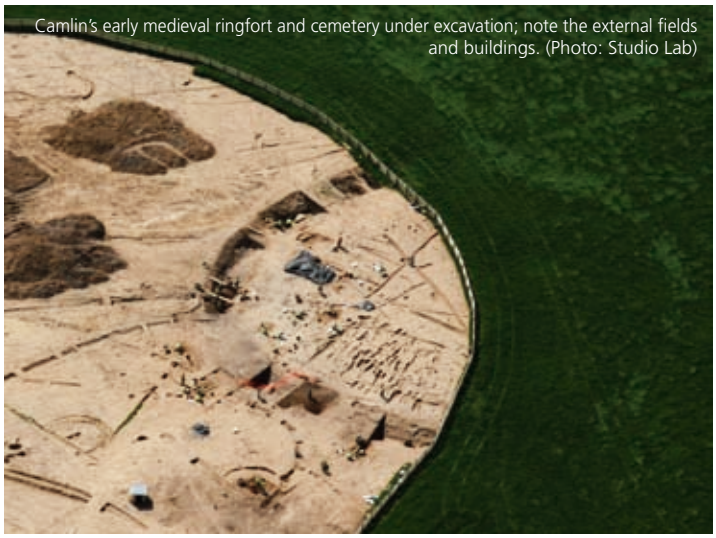
Roscrea to Borris-in-Ossory

The now-drained wetlands in and around Monaincha–Timoney Bog contained a few burnt mounds, but this zone had been stripped of overlying peat and no wetland sites were found. A settlement at Ballykelly, Co. Tipperary, was probably associated with a series of burnt mounds lining the stream that forms the county boundary between Tipperary and Laois.

The past and the future

The excavation results demonstrate a massive expansion of Bronze Age settlement in the area. If post-excavation analysis confirms the remains of a *shaduff* in Ireland, this would lead to a re-examination of other large Bronze Age wells to see if they, too, employed such water-lifting cranes. It is now clear that during the early medieval and medieval periods the area from Nenagh to Moneygall was tremendously rich in cereal production. This will lead to a further examination of the early medieval economy. The medieval period is also excellently represented, with Anglo-Norman Dunkerrin manor attempting, through the Busherstown moated site, to supplant the importance of the Moatquarter–Busherstown link to the O'Carroll kings. There is also the evidence for the 14th-century Gaelic Resurgence and re-establishment of the O'Carroll kings through the abandonment of the Busherstown site and the find of the military axe at Camlin.

Two Bronze Age enclosures at Camlin, looking towards Slieve Bloom. (Photo: AirShots Ltd)



Camlin's early medieval ringfort and cemetery under excavation; note the external fields and buildings. (Photo: Studio Lab)

Medieval iron axehead from Camlin, after conservation. (Photo: Niall Roycroft)

Anglo-Norman colonisers

Tori McMoran, an Excavation Director with Eachtra Archaeological Projects, describes the preliminary results of her excavation of a moated site discovered on the N7 Castletown–Nenagh: Derrinsallagh to Ballintotty road scheme.

The townland of Busherstown, Co. Offaly, is situated on and around the summit of a low hill on the northern edge of the rolling uplands of south Offaly and north Tipperary. The excavated site that is discussed here is situated at the foot of the hill and is surrounded on three sides by higher ground, but opens to the north. Prior to test-trenching there was no previous indication of a site at this location, but what was subsequently discovered has proven to be the remains of an Anglo-Norman defended settlement, known as a moated site. Post-excavation analysis is ongoing and may yet provide important insights into the lives of the medieval colonisers who settled in this part of Offaly (formerly within the kingdom of Ely O'Carroll), following the establishment of the Anglo-Norman manor of Dunkerrin, to the north-east, at the end of the 12th century.

The site was located within the barony of Clonlisk, the central homeland of the native Irish O'Carroll kings, whose larger territorial claims on Ely shifted dramatically several times between the third and the 16th centuries. The townland is variously recorded as Busherstown, Bouchardstown, Butcherstown and Baile an Bhúiséaraigh: names derived from Bouchard de Marisco, an early Anglo-Norman settler. It is known that de Marisco retained the lands at Busherstown until the 14th century, when they were recovered by Teige O'Carroll; the O'Carrolls later forfeited them under the 17th-century Cromwellian settlement.

The earliest phase of activity at Busherstown was the use of the area for cereal-processing, as evidenced by the discovery of 16 cereal-drying kilns. A small number of the kilns had double firing chambers, possibly indicating that they were re-cut or that a new firing chamber was dug re-using an older drying chamber. Some kilns were enclosed or partially enclosed by slot-trenches and linear features. These may have held upright posts and planks that would have acted as wind-breaks. The large 'blank' areas on-site may represent spaces set aside for other activities associated with cereal-processing. Six quern-stone fragments were recovered from various features across the site, which suggests that grinding was carried out at the site, as well as drying the grain.

The second phase of activity was the construction of several deep, wide ditches, some of which formed a large enclosure, probably dating to the medieval period. An Edward I silver long-cross penny, c. 1279–1307, was found in an upper ditch fill. The ditch of the enclosure cut through several cereal-drying kilns and therefore post-dated the use of the kilns. It is possible that by the time it was constructed the area was no longer in use for cereal-processing.

An Edward I silver long-cross penny, c. 1279–1307, found in the upper ditch fill of the enclosure. (Photo: John Sunderland)

at Busherstown, Co. Offaly

Background: Excavation of some of the cereal-drying kilns at Busherstown, Co. Offaly. (Photo: Eachtra Archaeological Projects)

A massive ditch (5.5 m wide and 1.7 m deep) formed the moat of the moated site. It enclosed a subrectangular area that was only partly located within the excavation area. Aerial photography shows that the entire outline of this monument measures around 50 m by 50 m: it is clearly visible in the adjoining field as a cropmark. The foundation trenches and post-holes of a small structure and two cereal-drying kilns were located in the interior.

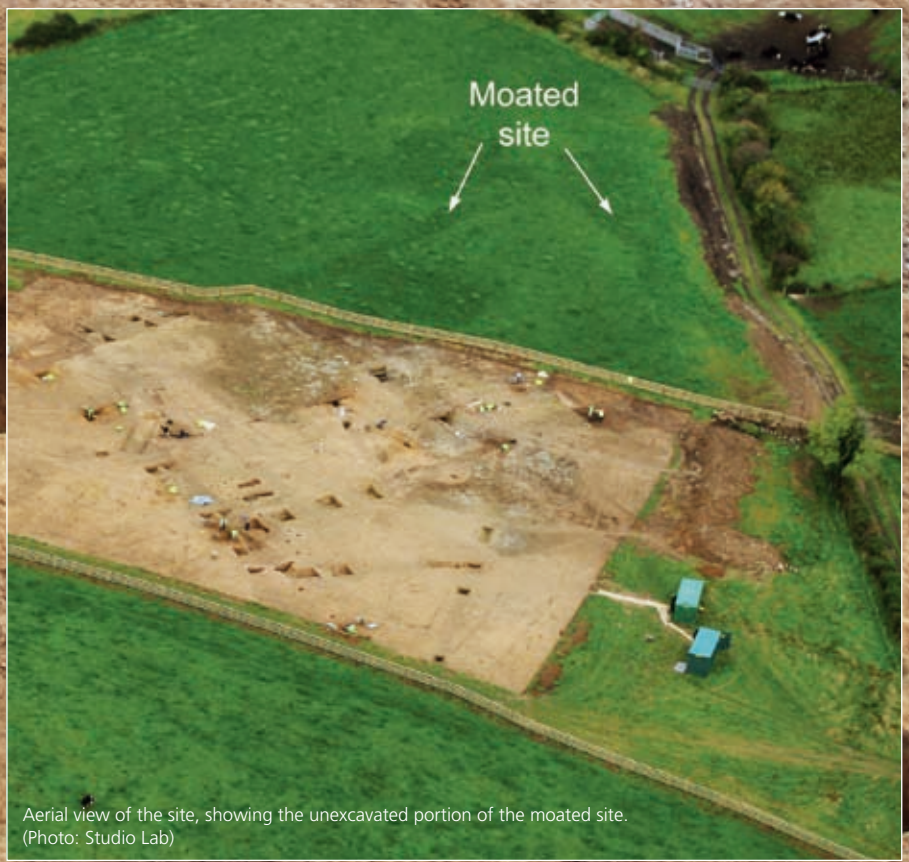
Moated sites are defended rectangular or square settlements, originally characterised by a water-filled moat. They are generally situated on low-lying, marshy ground, although several examples in south Offaly are located in higher, rocky areas with dry moats. The material dug to form the moat would have been used to create a raised platform inside the ditch. The traditional view of settlements at moated sites suggests they were occupied by small communities or extended families. The surrounding lands were farmed, while the domestic dwellings and livestock were protected within the enclosure. Most of the evidence recovered from excavated examples elsewhere indicates that these sites were built during the 13th and 14th centuries.

The majority of Irish moated sites are situated on the periphery of areas of Anglo-Norman influence. The Busherstown site is overlooked to the east by an impressive Anglo-Norman fortification known as a motte (comprised of a large, steep-sided, flat-topped earthen mound surrounded by a ditch), located in Moatquarter, Co. Tipperary. As the homes of colonisers, the defensive elements of the site have been repeatedly interpreted as a response to the threat, or the perceived threat, of Gaelic Irish incursions and raids. The defensive capabilities of the moats were probably fairly limited, however, and they may simply have been designed to deter raiders from stealing livestock and to protect the herds from wild animals.

Most Irish moated sites were situated in the frontier zone, on the periphery of the Anglo-Norman colony. Documentary evidence indicates that these settlements belong to the early 13th-century expansion of Anglo-Norman settlement. A moated site therefore suggests a border that was both territorial—marking the edge of areas of Anglo-Norman control—and cultural—colonisers on one side and native Irish on the other.

A programme of post-excavation analysis is currently in progress. Hopefully the conclusion of all the specialist analyses and scientific dating will further elucidate the story of the Anglo-Norman colonisers at Busherstown, and the history of the highly contested Ely O'Carroll territory.

Aerial view of the site at Busherstown, with the motte in Moatquarter, Co. Tipperary, in the background. (Photo: Studio Lab)



Aerial view of the site, showing the unexcavated portion of the moated site. (Photo: Studio Lab)

The horizontal holes bored into the ends of the frame. Fragments of hazel rods were found within these. (Photo: Krzysztof Werema, Headland Archaeology Ltd)

The movable oak panels with the 'teeth'. (Photo: Krzysztof Werema, Headland Archaeology Ltd)

The trap as it was discovered in the river floodplain.

Image: Headland Archaeology Ltd

Ancient Hunting in County Kildare

Patricia Long, an Excavation Director with Headland Archaeology Ltd, describes an elaborate wooden animal trap recovered on the N9/ N10 Kilcullen–Waterford Scheme: Kilcullen to Carlow.

A significant range of archaeological features was identified recently on either side of the River Lerr in the townlands of Woodlands West and Prumplestown Lower, near Castledermot, Co. Kildare. The remains dated from as early as the Mesolithic period, with remarkable continuity through to the post-medieval period.

Within the waterlogged river floodplain burnt mounds, wooden trackways and a small number of wooden artefacts were excavated. One of these artefacts is currently being interpreted as an animal trap. The object comprises of two movable oak panels, which slot into a rectangular oak frame with a central opening. A lattice of 'teeth', made from animal bone, was inserted into the edges of the panels and held in place by a resin, which is currently undergoing analysis. Two horizontal holes were bored into either end of the frame and fragments of hazel rods were found within these. Two vertical holes were bored into one end and linear grooves between them on the top and bottom surfaces of the frame appear to be the impression of some kind of binding, the purpose of which is currently unclear. Perhaps these features represent an effort to repair a large crack in the frame, or they may be evidence of the trap having to be tethered when in use.

Research is currently being conducted into how this trap would have worked. It is likely that the hazel rods were used to spring the trap by forcing open the panels. It may then have been baited, in which case the head of an animal eating the bait would have been trapped. Alternatively, it may have been set in the ground and the mechanism triggered when an animal placed its leg into the central opening.

While the intended prey of this trap has yet to be determined, red deer bones were the only wild animal remains identified in the floodplain deposits where the trap was discovered. This may be significant as carvings on an early medieval grave slab from Clonmacnoise and on a high cross from Banagher, both in County Offaly, show deer being trapped by the leg in a rectangular frame that bears similarities to the trap recovered at Prumplestown Lower.

While aspects of the Prumplestown Lower trap (such as the presence of bone 'teeth') appear to be unique in the archaeological

record, a number of similar wooden traps have been recovered as chance finds from wetland contexts throughout Europe. Such finds were first reported by antiquarians in the later part of the 19th century, and were initially referred to mainly as otter or beaver traps. The most significant find was a group of nine such traps in Larkhill bog, Co. Fermanagh. The Larkhill traps, as well as the majority of other reported examples, were notably longer than the Prumplestown Lower trap and tapered at either end, but all have movable panels set in a frame with a central opening.

The dating of this trap is also currently under investigation. A Scottish example from Aberdeenshire with similarities to the Prumplestown Lower trap has been radiocarbon-dated to AD 530–680, and at least one of the Larkhill traps has been dated to the same period. These dates, combined with the grave slab and cross carvings mentioned above, point to an early medieval date for the Prumplestown Lower trap.

The underside of the rectangular oak frame with the central opening. (Photo: Krzysztof Werema, Headland Archaeology Ltd)

The underside of the assembled trap. (Photo: Krzysztof Werema, Headland Archaeology Ltd)

The upper surface of the assembled trap. (Photo: Krzysztof Werema, Headland Archaeology Ltd)

Illustration of the trap. (Drawing: Sara Nylund, Headland Archaeology Ltd)

A medieval copper-alloy stick-pin discovered by Frantisek during the excavation of a cereal-drying kiln complex at Marlhill, Co. Tipperary, on the N8 Cashel–Mitchelstown Road Improvement Scheme. (Photo: John Sunderland)

Irish Archaeology: a view from Central Europe

Frantisek Zak Matyasowszky

Frantisek Zak Matyasowszky, NRA Assistant Archaeologist at NRA Head Office, offers a personal view of Irish archaeology in relation to his native Slovakia.

Archaeology around the world has the same basic objective: the study of human culture through material remains from humans in the past. Every continent, and even every country, has its own way of doing archaeological work. After years of experience in Irish and Slovak archaeology, I would like to compare the two. What does archaeology in Slovakia look like? And what is different about Irish archaeology? What are the main tasks and problems facing archaeologists in each country?

Archaeological practice in Ireland and Slovakia has a number of similarities, the chief one being that the protection of the archaeological heritage is the responsibility of certain State institutions. The main State bodies that oversee archaeological practice in Ireland are the National Monuments Service of the Department of Environment, Heritage and Local Government and the National Museum of Ireland. Archaeology in Slovakia is supervised by the Monuments Board of the Slovak Republic in collaboration with the Institute of Archaeology of Slovak Academy of Sciences. While not directly comparable, these institutions do share many features—both oversee the conduct of archaeological excavations, the treatment of artefacts and the protection of archaeological monuments.

One of the main differences between Irish and Slovak archaeology is the range of organisations involved in archaeological investigation. In Ireland this includes the National Monuments Service, the National Museum of Ireland, archaeology departments in various third-level institutions, the Discovery Programme (a State-funded archaeological research institution), numerous commercial archaeological consultancies, local authority archaeologists and archaeologists working for State agencies, such as the NRA and the Railway Procurement Agency. Unfortunately, I sense some disconnection between these organisations, which may present difficulties for the future of Irish archaeology, although having said that there are a number of very positive examples of collaboration between State archaeological bodies, universities, archaeology companies and State agency archaeologists. In Slovakia, the conduct of archaeological work is far more centralised and State-managed, with a central archive for any information relating to archaeological sites, reports, artefacts, etc. There is a stronger connection between the State archaeological bodies (the Monuments Board, the Institute of Archaeology, museums and universities), which means there is very successful collaboration on various projects as it is these bodies that conduct the vast majority of archaeological investigations.

Most archaeological excavations in Ireland and Slovakia are development-led, but the number of excavations undertaken in Ireland is by far the greatest in Europe and, most likely, the world (especially in the last decade). There is one main difference, however, which is that development-led excavations in Ireland are conducted almost exclusively by private companies. In Slovakia commercial archaeology is at a very early stage (there are only three archaeology companies, all established in the last three years), therefore most excavations are undertaken by public institutions. Private-sector archaeologists in Ireland have now established very good relations with engineers, architects and builders. This is a very positive aspect of Irish archaeology, one that is unfortunately lacking in Slovakia and most of Central Europe. The rest of Europe could benefit greatly from the experience of Irish archaeologists and the many professional archaeological consultancies involved in development-led archaeology.

Aerial view of a medieval settlement at Roestown, Co. Meath, on the M3 Clonee–North of Kells motorway scheme. This is one of a number of excavations that Frantisek has participated in during his time in Ireland. (Photo: Studio Lab)

Another key difference between Irish and Slovak archaeology is the scale of funding each receives. By international standards Irish society provides very generous funding to archaeology. Slovak archaeology is considerably less well financed. But then, financial resources cannot solve every problem. Presently, Slovakia, and almost all Central European countries, can only dream of the budgets made available for archaeological investigation in Ireland in recent years. Despite this the publication of archaeological results is far more common in Slovakia than in Ireland. Lack of publication is a problem elsewhere in Europe, but the scale of the problem would appear to be greatest in Ireland. Given my own background, the low rate of publication versus the very high rate of excavation can only be described as alarming.

Many organisations in Ireland are attempting to address this deficit through the publication of various books, magazines, brochures and posters (in paper and/or electronic formats), and by making the content of final excavation reports available on the internet in various forms. Of particular note is the *Significant Unpublished Irish Excavations 1930–1997* section of The Heritage Council's website (www.heritagecouncil.ie/archaeology/unpublished_excavations/), which provides invaluable information. This initiative and others like it, such as the National Monuments Service website (www.archaeology.ie), create an accessible bridge between the general public and professional archaeologists. All of this represents an important contribution towards moving Irish archaeology from information generation to knowledge creation.

A very interesting feature of Irish archaeology is the very high number of archaeologists from different countries around the world who have chosen to work here. Archaeology in Slovakia, and Central Europe generally, is very much the preserve of native archaeologists. I have had a very positive experience of working with various archaeological consultancies around Ireland as part of international crews on a number of development-led excavations, and I strongly believe that this international collaboration and exchange of information will be of great benefit to Irish archaeology, and to European archaeological practice generally. In comparison to the rest of Europe, Irish archaeology is extraordinary in this regard.

Buildings through the ages in north Cork

Penny Johnston and John Tierney of Eachtra Archaeological Projects provide an overview of newly discovered prehistoric and historic settlements unearthed during excavations on the N8 Mitchelstown–Fermoy road scheme.

The remains of 11 previously unknown prehistoric and historic buildings were revealed by excavations along the route of the N8 Mitchelstown–Fermoy road scheme in 2006 and 2007. These remains have been dated (on the basis of artefacts and the size and form of the buildings) to the Early Neolithic, the Final Neolithic/Early Bronze Age, the Bronze Age and the early medieval and post-medieval periods. The discoveries provide an opportunity to assess the basic form and size of these buildings, found within a small corridor through the north Cork landscape.

The sites mentioned in this article were directed by Nik Bower (Caherdrinny 3), Linda Hegarty (Ballynamona 2), John Lehane (Ballynacarriga 3), James Lyttleton (Kilshanny 1), Julianna O'Donoghue (Gortore 1b and Gortnahown 2) and John Tierney (Ballinaglanna North 3).

Early Neolithic houses

A total of four Early Neolithic rectangular houses were found at Gortore 1b, Ballinglanna North 3 and Caherdrinny 3 in 2006 and 2007. Another Early Neolithic building was previously excavated by Excavation Director Julianna O'Donoghoe at Gortore 1 in 2004, on the route of the M8 Rathcormac/Fermoy Bypass, south of the N8 Mitchelstown–Fermoy road scheme.

The first house found at Ballinglanna North 3 was aligned roughly east–west and consisted of wall foundation trenches, pits and post-holes. The entrance, at the centre of the southern wall, was on the long axis of the house. Post-holes were found immediately outside the house walls and this suggests that the roof extended beyond the walls and was supported by external uprights, providing shelter for an exposed wall. Associated finds included Early Neolithic pottery.

A second Early Neolithic building at Ballinglanna North 3 was also aligned east–west. It comprised a series of wall foundation trenches, post-holes, stake-holes and pits. The entrance appeared to be marked by two large post-holes within the southern wall, suggesting that the entrance was also on the long axis of this house, facing south. There were external post-holes at the western end of the structure.

The Early Neolithic house at Caherdrinny 3 was sub-rectangular and aligned north-east–south-west. It comprised a wall foundation trench and post-holes within the trench and around it. Internal features included two large post-holes. The foundation trench petered out at the eastern wall and this was possibly the location of the entrance. Artefacts included pottery, crystal fragments, burnt bone and nut shells. No internal hearths were found but two external hearths were excavated nearby.

One of the Early Neolithic houses excavated at Ballinglanna North 3. (Photo: John Sunderland)

Early Neolithic house excavated at Caherdrinny 3. (Photo: John Sunderland)

The partial remains of a fourth Early Neolithic building were found at Gortore 1b. As only the northern part of the house survived it was impossible to discern the full layout. The structural remains comprised three wall foundation trenches, nine post-holes and four stake-holes. The surviving slot-trench appears to have supported a plank wall and a flint scraper was recovered from the fill.

The other Early Neolithic building excavated in this townland, at Gortore 1 in 2004, was c. 30 m to the south of the house at Gortore 1b. This house was also aligned roughly east–west and charcoal associated with it has been radiocarbon-dated to 3928–3655 BC.

These five rectangular houses were all found just north of Fermoy. The buildings were all located within 7 km of one another and they demonstrate a significant presence in this area during the Early Neolithic period.

Beaker period structures

An enclosed settlement site at Ballynacarriga 3 was dated to the Final Neolithic/Early Bronze Age on the basis of Beaker pottery and stone artefacts recovered from the site. The enclosure was defined by a narrow rectangular ditch. There were several concentrations of features within the southern half of the enclosure, some of which were identified as possible structures. Many were disturbed, however, and the exact nature of the buildings is uncertain. One structure comprised a double arc of stake-holes, open to the north-west. It was quite flimsy and small and it is possible that it was used as a temporary structure. Comparative structures associated with Beaker pottery are relatively rare and in general there does not appear to be a common construction pattern for Beaker period structures.

Bronze Age houses

Three Bronze Age roundhouses were excavated at sites at Ballynamona 2 and Kilshanny 1, approximately 1 km south-east of the town of Mitchelstown. Two further buildings were discovered at Ballynamona 2, the first of which comprised a narrow wall foundation trench outlining the perimeter of a circular building. Traces of upright planks or panels of wattle and daub (c. 1 m

Bronze Age roundhouse excavated at Ballynamona 2. (Photo: John Sunderland)

Early medieval roundhouses at Gortnahown 2. (Photo: John Sunderland)

in length) were visible at regular intervals along the top of the wall foundation trench. This trench was insubstantial and it is likely that most support for the roof came from a series of deep post-holes associated with the structure. A hearth was recorded in the interior. One end of the structure was truncated by pits and post-holes that contained saddle querns, rubbing stones and abundant charred grain. Part of this house lay outside the road corridor and the area of excavation was extended to ascertain its full extent. A second Bronze Age roundhouse was discovered nearby during topsoil removal and its layout was recorded but the building was not excavated as it lay outside the road corridor.

The third Bronze Age circular house was excavated at Kilshanny 1. It was defined by a shallow trench. There was an entrance to the east and two interior and four external post-holes. A group of pits lay to the north and west.

Three Bronze Age roundhouses were excavated by Excavation Director Eamonn Cotter at Mitchelstown 1 in 2004, in advance of the N8/N73 Mitchelstown Relief Road. With the three new additions from the N8 Mitchelstown–Fermoy, six Bronze Age roundhouses are now known within a 2 km radius of the town of Mitchelstown.

Early medieval houses

Two early medieval roundhouses were excavated at Gortnahown 2, c. 2 km south of Mitchelstown. The larger of the two buildings comprised a circular wall foundation trench with an entrance located on the eastern side. An internal central hearth was surrounded by a cluster of stake-holes. There was a shallow, discontinuous outer trench at the south-east and north-west of the building, possibly a gully where water ran off from the roof. An adjacent house, 1.9 m to the north-west, comprised five post-holes set within a wall foundation trench. The entrance was located on the north side of the building. Only one feature, a large pit, was identified inside, but this appeared to pre-date the construction of the house. Slag was recovered from the foundation trenches of both buildings and this suggests that occupation of the houses was contemporaneous, and that it was associated with an iron-working area recorded further to the north.

A number of stake-and-wattle roundhouses were found within two ringforts excavated at Lisleagh I and II by archaeologist Michael Monk, University College Cork, in the early 1990s. These were located 4 km to the south-west of Gortnahown 2. At both Lisleagh ringforts the structures were associated with metalworking debris, similar to the results from Gortnahown 2.

Post-medieval houses

The remains of two possible post-medieval houses were uncovered in another excavation area at Gortnahown 2. The first building was represented by a rectangular sunken floor and five post-holes. It was cut into a slope to make a level habitation surface, but the north-western part of the structure did not survive, presumably because it did not cut the subsoil. An area of scorched subsoil probably represented an internal domestic hearth.

Evidence of a second house was found 20 m to the north-west. Here again the floor level was cut into the slope and three post-holes and 28 stake-holes made up the northern wall. Once again, no evidence of a north-west wall survived. As the entire houses did not survive, the full ground plan of these buildings is not known.

Artefacts found in the area of these two houses, including pottery and clay pipes, indicate an 18th- or 19th-century date. Most excavated examples of post-medieval buildings are stone-built, but many poorer houses of this period were earth-/clay-built and do not often survive. The houses at Gortnahown 2 are therefore unusual and fortuitous survivals, simply because they were cut into the slope, through the subsoil.

Conclusion

The excavations along the route of the N8 Mitchelstown–Fermoy have given us some insight into the types of buildings in use in this part of north Cork over a lengthy period of time. The main form of the buildings (rectangular or circular) follow the common pattern for excavated house sites in Ireland: the Early Neolithic houses were rectangular, the Bronze Age and early medieval houses were circular and the post-medieval houses were rectangular. Post-excavation analysis of these buildings is ongoing and we look forward to many more interesting results from north Cork.

The partial remains of post-medieval houses at Gortnahown 2, with internal domestic hearth. (Photo: John Sunderland)

Bronze Age burial at Ballynacarriga 3

The two ring-ditches excavated at Ballynacarriga 3, Co. Cork, looking south. The burial of a pregnant woman was found at the centre of the larger barrow in the foreground.

John Lehane and Ian Magee of Eachtra Archaeological Projects report on a cremation cemetery discovered on the route of the N8 Mitchelstown–Fermoy road scheme, which offers a new insight into Bronze Age funerary practices.

Two ring-ditches and six cremation burials in pits and cists were excavated at Ballynacarriga 3, Co. Cork, c. 3 km north of Fermoy, on the route of the N8 Fermoy–Mitchelstown road scheme. Pottery vessels from the site were identified by prehistoric pottery experts Helen Roche and Dr Eoin Grogan as Food Vessels of the Vase tradition and Encrusted Urns, both Early Bronze Age pottery types usually associated with funerary contexts. At Ballynacarriga 3 two of the cremation burials were associated with these vessels and another two stone-lined cists contained pottery vessels, but no cremated bone.

A pit at the centre of the largest ring-ditch contained two decorated pottery vessels—a Vase Food Vessel and an Encrusted Urn—that had been placed upside-down. Cremated bones were contained within the inverted Encrusted Urn, and these were identified as the remains of a young adult female and a mid-term foetus. It is highly likely that the cremation was of a pregnant woman. If so, this is one of the only identified examples of a Bronze Age cremation burial of this kind from Western Europe. Osteological analysis of the remaining burial deposits from the site is ongoing and will hopefully tell us much more about this fascinating find.

Photos: John Sunderland

A composite image showing the process of excavating one of the inverted Encrusted Urns containing a cremation burial.

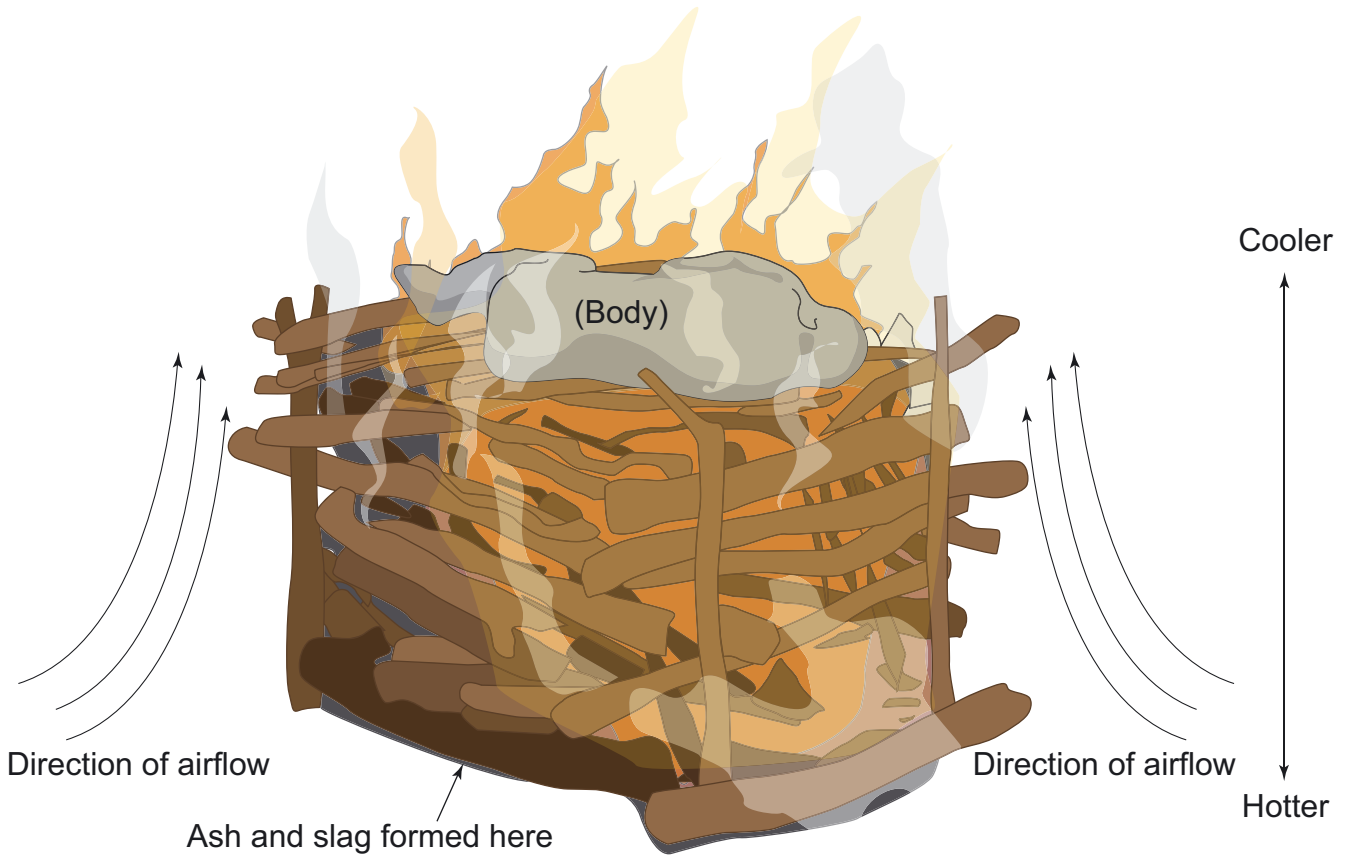
Trade routes and grave goods: a unique Bronze Age burial in County Offaly

Susan Lalonde, an Osteoarchaeologist with Headland Archaeology Ltd, describes a Bronze Age cremation burial in County Offaly that provides new evidence of connections between the Wessex Culture of southern England and the Irish midlands.

During the winter of 2006–7, Headland Archaeology Ltd undertook excavations in advance of the construction of the N52 Tullamore Bypass. Excavations in the townland of Screggan, c. 2.5 km south-west of Tullamore, were directed by archaeologist Linda Hegarty and revealed a single cremation burial in a pit. Post-excavation analysis confirmed that the burial contained the remains of at least two individuals, as well as grave goods unique in Irish archaeology.

Cremation burial

Cremation burials are a common feature of prehistoric archaeology in Ireland. It is thought that until the Iron Age (c. 600 BC) cremation was the predominant funerary rite. The remains would have been placed on a large pyre and burnt for a number of hours to achieve full cremation. The pyre would have required tending and would have reached temperatures of up to 1000°C. Sometimes objects of personal or social significance were burnt along with the body; these are known as pyre goods to distinguish them from objects placed, unburnt, into the grave (grave goods). Once the pyre had cooled sufficiently the remains would have been collected—either hand-picked or raked—and placed into the grave. In the Early Bronze Age (c. 2400–1700 BC) remains tend to be found within pottery vessels, sometimes placed upside-down in the grave. In the Middle and Late Bronze Age (c. 1700–700 BC) only part of the remains tend to be found, along with fragments of pottery. The meaning behind this form of partial deposition is unclear, but it may be that the majority of the remains were retained for use in secondary funerary rites for which no archaeological evidence remains.



Reconstruction of a typical cremation pyre. (Drawing: Eavan Ó Dochartaigh, Headland Archaeology Ltd)

The Screggan burial

The cremated remains represent a child, estimated to be 6–8 years old, and an adult, possibly a female, although not all the features used in an osteological sex assessment, such as the pelvis or skull, were present and complete.

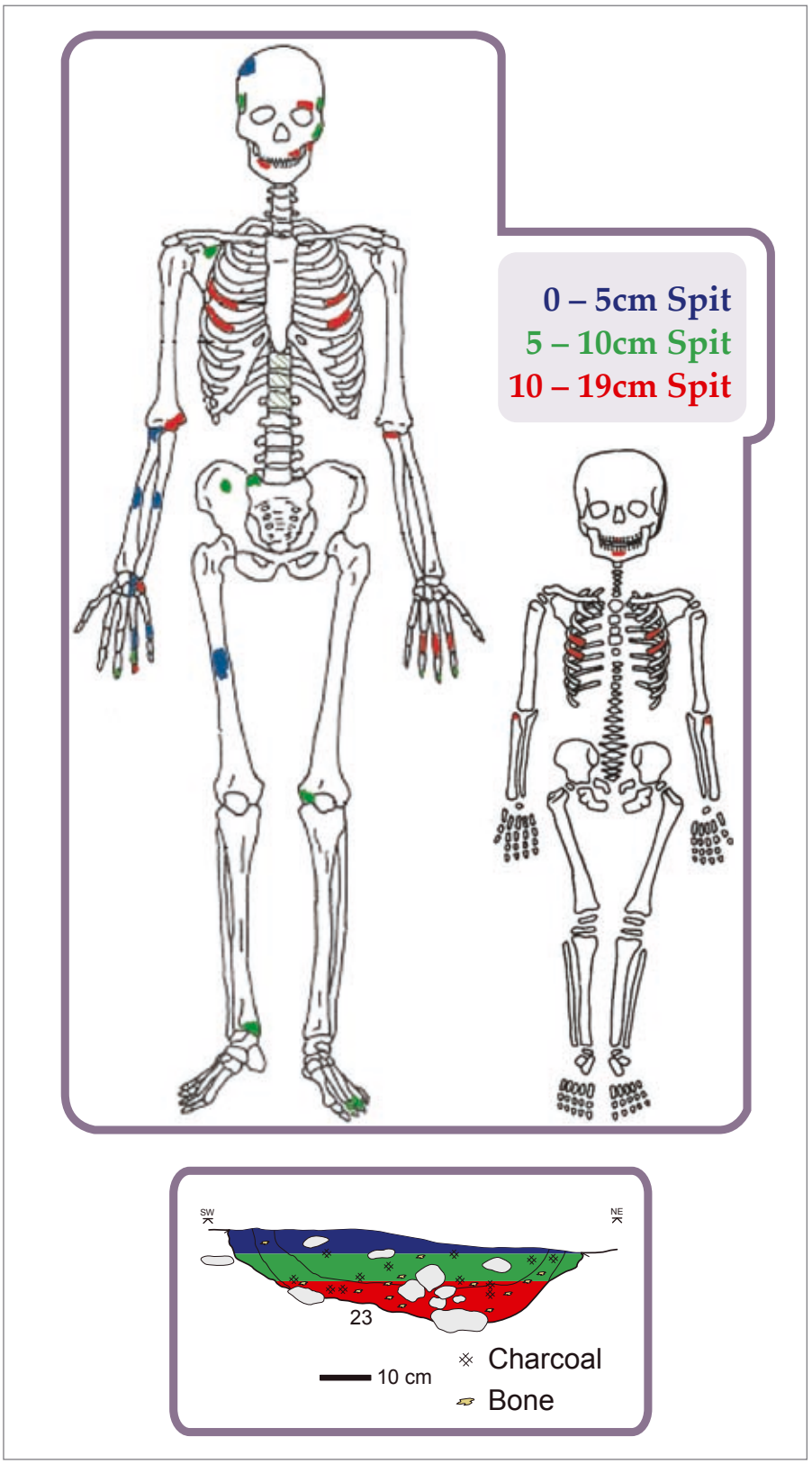
The burial was excavated in three sections or spits. This allowed for the accurate reconstruction of the order of deposition. The remains of the child were all found in the lowest level, suggesting that this individual was placed into the grave first. In total, 1,340.2 g of bone was retrieved from the burial. This is relatively large for an archaeological cremation burial, which can weigh from 250 g to 2,500 g. The modern cremation process normally produces around 2,430 g for fully developed adults, with males tending to weigh above 2,750 g, and females below 1,887 g. The total weight of the Screggan burial was estimated to represent around 55% of a full adult cremation. Average weights of child cremation burials from archaeological contexts are not readily available because they are a relatively rare find, but as the burial contains a minimum of two individuals, this weight suggests it is probably a partial interment. Almost 20% of the material could be positively identified to skeletal element.

The pyre used to cremate the remains was of variable efficiency. It is estimated that parts of the pyre reached over 1000°C. Copper fragments recovered from the burial suggest that the pyre reached a minimum of 1084°C to cause the copper to melt. However, 4% of the skeletal material was only charred, indicating that certain areas of the pyre must have been cooler (around 400°C). Variations of temperature such as these are not uncommon in archaeological cremations. Factors such as the prevailing wind, general weather conditions, pyre construction and any coverings on the body (clothing or pyre goods) would have an effect. The adult remains show that the hands, in particular, were less well burnt, suggesting the adult individual may have had his/her hands covered in some way or positioned in a manner that prevented full cremation, or else the hands fell from the central (and therefore hottest) part of the pyre during the cremation process.

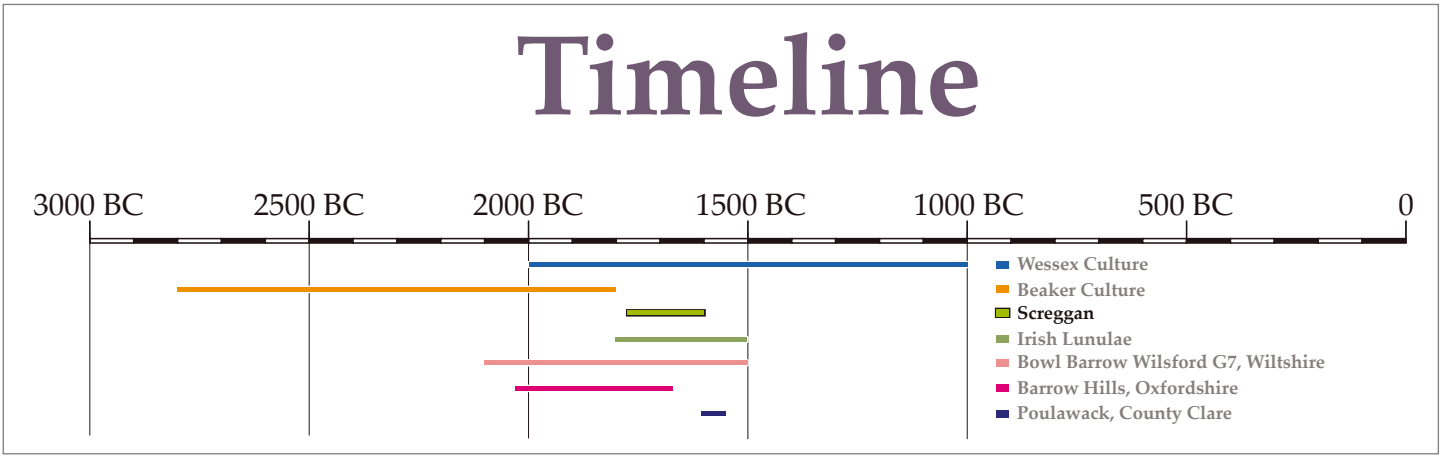
Levels of fragmentation within assemblages of cremated remains can indicate pre- and post-depositional processes. The majority of material from Screggan is over 10 mm in size, suggesting that the material was not fragmented deliberately prior to burial. Cremated bone can be fragile, especially while hot. During the cremation process fissures appear along the bone, normally at muscle attachment sites. When the pyre collapses, is tended or raked over, the bone shatters along these weak points. After-burial factors, such as the presence of groundwater, repeated freezing and thawing and pressure from the overlying earth can also have an effect on fragment size.

Patterns of warping and cracking on cremated remains provide information on the state of bone at the time of cremation. Dry or defleshed bones form a 'check' pattern of horizontal and vertical cracks. But bones that have been burned while fleshed form a characteristic random pattern of cracking and warping. The patterns of warping present in the material from Screggan indicate that the bone was fleshed when cremated, suggesting that these individuals died at around the same time.

A small sample of bone was radiocarbon-dated. The results indicate that these individuals lived and died around 1776–1601 BC. This places the burial in the Middle Bronze Age, at the period when the Beaker Culture was beginning to wane and the Wessex Culture of southern England was in its early stages.



Section drawing of the Screggan burial and skeletal elements represented. (Drawing: Headland Archaeology Ltd)



Timeline for Bronze Age Europe, showing the cultures contemporary with the Screggan burial. (Drawing: Headland Archaeology Ltd)

Funerary practice

The presence of two individuals in one burial raises questions of relationships and manner of deposition. It is especially tempting when faced with the burial of a child and adult to ascribe a familial relationship to the pair. Their relationship may have been one of parent and child, or of extended family members. Equally, they may have had no relationship at all aside from belonging to the same community and dying around the same time.

The identifiable child remains were all found in the lowest spit level. This suggests that the remains of this individual were collected separately from the adult. This could mean they were cremated on separate pyres or, indeed, on separate occasions.

The burial also contains pyre goods typical of the period in the form of an awl made from antler, copper fragments and animal bone. These were likely burnt alongside one or both of the individuals and collected with the remains. As this is only a partial burial, it is likely that not all the pyre goods were collected. The only pyre debris present was charcoal; further evidence of the partial collection of pyre material, and the clearance or dumping elsewhere of the remainder, which would have included burnt stone and clay as well as fuel ash slag.

Fuel ash slag has been recognised in cremation deposits across Britain and Ireland and is frequently observed in Bronze Age cremation burials from the Northern Isles of Scotland. First described in the 18th century, it is defined as a general hearth slag that occurs when burning takes place on sandy soils.

A unique grave good

A gold grave good was found in the lowest level of the burial. It was analysed by Mary Cahill of the National Museum of Ireland and found to be a bead cover, probably for a bead or button of shale or lignite. While it was somewhat misshapen, it did not show any signs of heat damage. It was made from a sheet of gold foil, decorated with triple repoussé lines on the upper and lower aspects, which were produced by hammering up projections from the back of the sheet. The gold was found to be very pure: 91% gold, 8% lead and 1% copper. This is typical for gold from this period.

It is unusual to find a gold artefact from this period in a mortuary context. The majority of Bronze Age burials are found with associated ceramics, and metalworking of any kind is exceedingly rare. In a survey of Bronze Age burials across England, only 42 of the 602 examined (7%) contained metalwork of any kind.

Screggan in context

The bead cover is unique in Ireland, but has parallels with a pair of conical bead-covers from a cremation at Barrow Hills, Oxfordshire, and similar objects from female Wessex Culture inhumations at Wilsford, Wiltshire. Barrow Hills is a complex of Late Neolithic and Early Bronze Age funerary monuments excavated from the 1930s to 1980s. The bead covers came from the central burial in Barrow 2, which contained 829 g of cremated bone, representing an adult female. It also contained a bronze awl. The bead covers are thought to be part of a cultural package from Wessex, in southern England. Wessex burials date from around 1600 BC and are usually inhumations beneath round barrows, accompanied by unusually rich grave goods. Although the Screggan awl is antler, not Bronze, its presence mirrors the Barrow Hills cremation burial.

The Screggan awl is practical in its function and design, and was probably used in the working of leather or textiles. A similar awl was found in the cremation burial of a young adult female in an Early Bronze Age cist at Poulawack, Co. Clare. Bronze awls have notable female associations in both Beaker and Wessex burials. A survey of all sexed Beaker period burials from England showed awls accompanied 16% of the females, but only 6% of the males. Beaker burials pre-date the Wessex Culture by around 400 years and represent a cultural phenomenon that swept across Europe in the Early Bronze Age. Fine 'beaker-shaped' pottery began to accompany burials along with a range of other fine-quality artefacts, such as weapons, tools and jewellery. These changes were originally understood to be the result of invasion, however it is now thought to be part of a cultural package that provided status and prestige to local populations as they adopted this 'foreign' style of burial.

It is becoming clear that prehistoric cultures participated in wide-ranging trade and exchange networks across the Atlantic seaboard, Central and Eastern Europe and possibly the Mediterranean. The presence of the bead cover in the Screggan burial suggests a link between the Irish midlands and southern England, and ties Ireland into an almost Europe-wide communication network during this period.


The gold bead cover recovered from the burial. (Photo: Headland Archaeology Ltd)

Guest Writer

Re-populating a vernacular cottage

Niall Kenny, a Research Archaeologist with Archaeological Consultancy Services Ltd (ACS Ltd), appraises the archaeological, historical and local folk evidence for a 19th-/20th-century vernacular cottage excavated in Palmershill, Co. Laois, in advance of the M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme.

In the 18th and 19th centuries the majority of Ireland's population lived in modest vernacular structures, buildings whose form and style were derived from local traditions and materials and which served local needs. In contrast, a very small, privileged minority (i.e. the landed and professional classes) lived in larger, architect-designed houses. Ironically, the building traditions and houses of this minority have been well studied and researched, whereas the dwellings of the majority of the population have received very little attention. Consequently, the excavation of vernacular dwellings allows for a much more intimate analysis of rural Irish domestic settlement in the post-medieval and early modern periods.

One such dwelling was excavated by Ed Danaher, formerly of ACS Ltd, in the townland of Palmershill, Co. Laois, c. 1 km south-west of Aghaboe. The Palmershill cottage is depicted on the 1841 first edition Ordnance Survey (OS) map. This area was actually surveyed in 1839 and the cottage is shown as a NW–SE-orientated structure, with an outbuilding located to the immediate south-west. We know that the cottage was definitely standing in 1839, however its origins most likely lie in the early part of the 19th century.

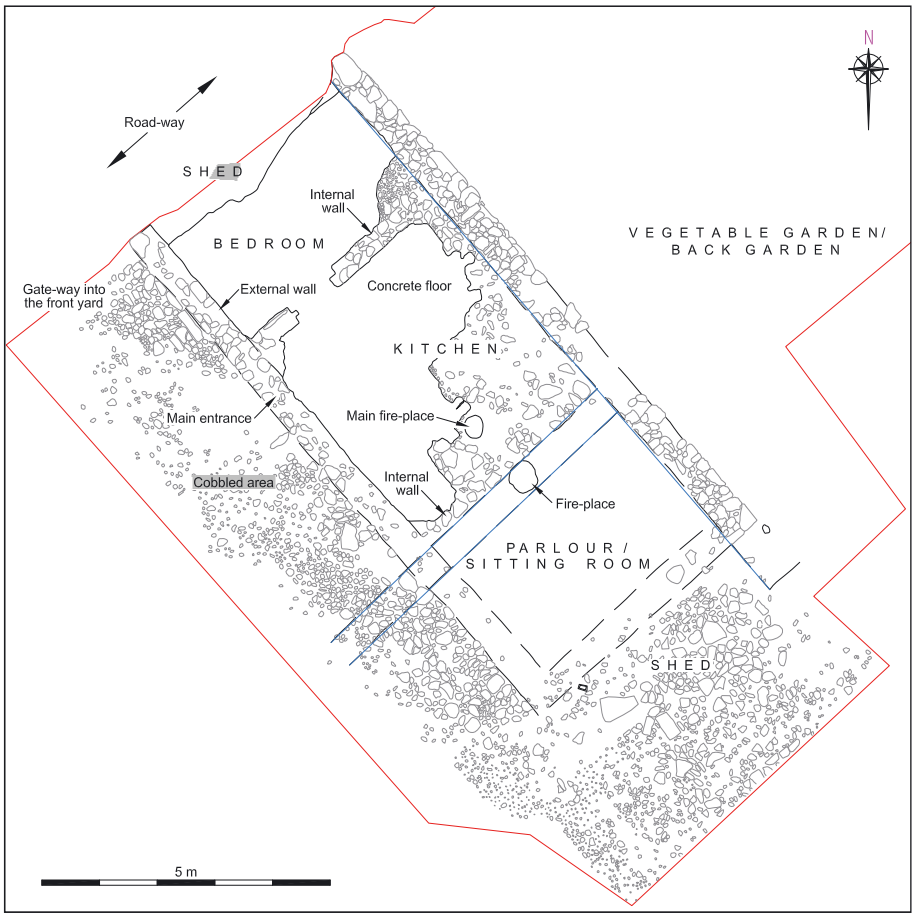
The excavated remains

The Palmershill cottage is an example of a typical, stone-built, rural vernacular house, which can be classified, based on the archaeological evidence, as a direct-entry house. There were no evident remains of a lobby or porch, and on passing the doorway one entered the main household area. Excavation revealed a small, rectangular cottage, c. 10 m long and c. 4.7 m wide. The house was subdivided into three rooms and it was found that the main structural walls had a shallow foundation. The basal remains of the four outer walls and the two inner walls were composed of compact grey stones, held together with mortar comprised of clay and horsehair. The sole entrance was along the south-western wall and led into the central room, which contained the main fireplace. A second fireplace in the south-eastern room was positioned back-to-back with this, on the opposing side of the partition wall. Concrete floors were excavated within the central and the north-western rooms and were identified as later additions because they occurred above earlier earthen floors. A byre/shed was excavated at the south-eastern gable, while a stone-cobbled surface was uncovered south-west of the cottage. A clay pipe and a candlestick fragment were recorded in the northernmost wall, while a sharpening stone, a button, a belt buckle and a shoe fragment were recorded in one of the earthen floor layers. Other artefacts recovered from the site included a pair of spectacles and iron tools.

Reconstructing the house from local memory

Two local men, Padraig Keeshan (the current landowner) and Michael Hyland (a neighbour), were able to furnish valuable descriptions of the cottage and numerous stories about its last occupants. They recounted that the house was roofed with thatch right up until it was demolished in the 1960s. The outer and inner walls of the cottage were white-washed—this apparently served both an aesthetic and a hygienic function because the lime acted as a disinfectant. Three small windows, with sturdy oak frames, were located both at the front and the rear of the house. The front door was a traditional half-door: the bottom part would have been kept closed most of the time to keep animals out, whereas the top half would have been left open to let light into the main room. The cottage had a central chimney with two flues or openings, which would have serviced the fireplaces in the central and south-eastern

Location of the Palmershill cottage on the 1841 first edition Ordnance Survey map. (Ordnance Survey Ireland)



Post-excavation plan of the Palmershill cottage. (Drawing: ACS Ltd)

rooms. Ancillary sheds were built at both ends of the house—one of these was excavated at the south-eastern gable, whereas the one that had existed at the north-western gable lay just outside of the excavation limits. Both sheds were used for housing animals and for general storage.

Mr Keeshan and Mr Hyland confirmed that the middle room of the house functioned as the kitchen and was the main domestic area. The north-west room was a bedroom and the south-east room was a parlour/sitting room. It is likely that in earlier, more impoverished times (i.e. the 19th century) both end rooms would have been used as bedrooms and storage areas and there would have been no parlour. The kitchen floor would originally have been an uneven clay floor and the fireplace would have comprised of a large flagstone. The concrete floor was most likely added in the 1950s; Mr Hyland remembers being in the house in 1946/7 when the floor consisted of a clay surface only. The main fireplace in the kitchen once contained a traditional metal crane with pots and kettles suspended from it. The central room would have been the most frequently used room in the house. It was the room where the people of the house cooked, cleaned, ate and socialised, and was also the public room of the house where visitors were greeted and entertained. Life and conversation would have centred around the daily use of this room and, indeed, around the main fireplace during the evening times.

In the village of Clogh, south-east of Palmershill, a vernacular cottage still stands today and according to Mr Keeshan is very similar to the cottage excavated at Palmershill. The house at Clogh, combined with the archaeological and local folk evidence, provides a very clear idea of what the Palmershill cottage would originally have looked like.

A history of occupancy at Palmershill

A study of records held in the Valuation Office identified all the previous owners/occupants of the Palmershill cottage since 1855. These were: James Sheridan, who occupied the house from (at least) 1855 until 1873; Michael Delany, who occupied the house from 1873 until 1911; Mary Delany, who owned the house from 1911 until 1915; and Timothy Maher, who owned the house from 1915 until 1963.

The last occupants of the house survive in local memory and this has allowed for a more personal insight into their lives. Mr Keeshan and Mr Hyland recalled that Timothy Maher lived in the cottage with his wife, Mary Maher (*née* Delany). Mary Maher had lived in the house all her life, and when she married Timothy Maher in 1915 they both became the main occupants. Timothy (Tim) Maher worked for a local man named Sean Furney, driving and operating a threshing machine. He was often absent from the house from October to January, travelling and working, leaving his wife Mary in charge of the household and smallholding.

The Mahers of Palmershill were known in the neighbourhood for two things: their really strong tea and their fine white potatoes. On 1 June every year the Mahers harvested their fresh white potatoes and were famous in the area for the early, high-quality potatoes grown in their vegetable garden. Mr Keeshan also recalled that Timothy Maher wore spectacles, which is interesting in light of the pair of spectacles recovered during the excavation: might they once have been worn by Timothy Maher?

Mr Maher, the last occupant of Palmershill cottage, died on 21 March 1963, aged 82. He is buried in nearby Clogh graveyard. Mary Maher died some time before Timothy and was buried in her own family plot in a different cemetery. Following Mr Maher's death the house fell into disrepair, was demolished and much of the stone was re-used for the construction of farm buildings.

Conclusion

The vernacular house was an essential component of the 18th- and 19th-century rural Irish landscape. The 1841 OS map indicates that various other vernacular cottages existed in the vicinity of the cottage at Palmershill. Unfortunately, these no longer survive. The few upstanding examples, such as the house in the village of Clogh, and partially surviving remains, like those at Palmershill, are important testaments to a very significant period in Irish cultural, social and political history.


A vernacular cottage still standing in the village of Clogh, south-east of Palmershill. (Photo: Niall Kenny)

The emerging Iron Age of south Munster

Mairead McLaughlin and Sheelagh Conran, NRA Assistant Archaeologists with the Southern Team, describe new evidence of Iron Age society in south Munster from archaeological discoveries made on road schemes in recent years.

New Iron Age evidence

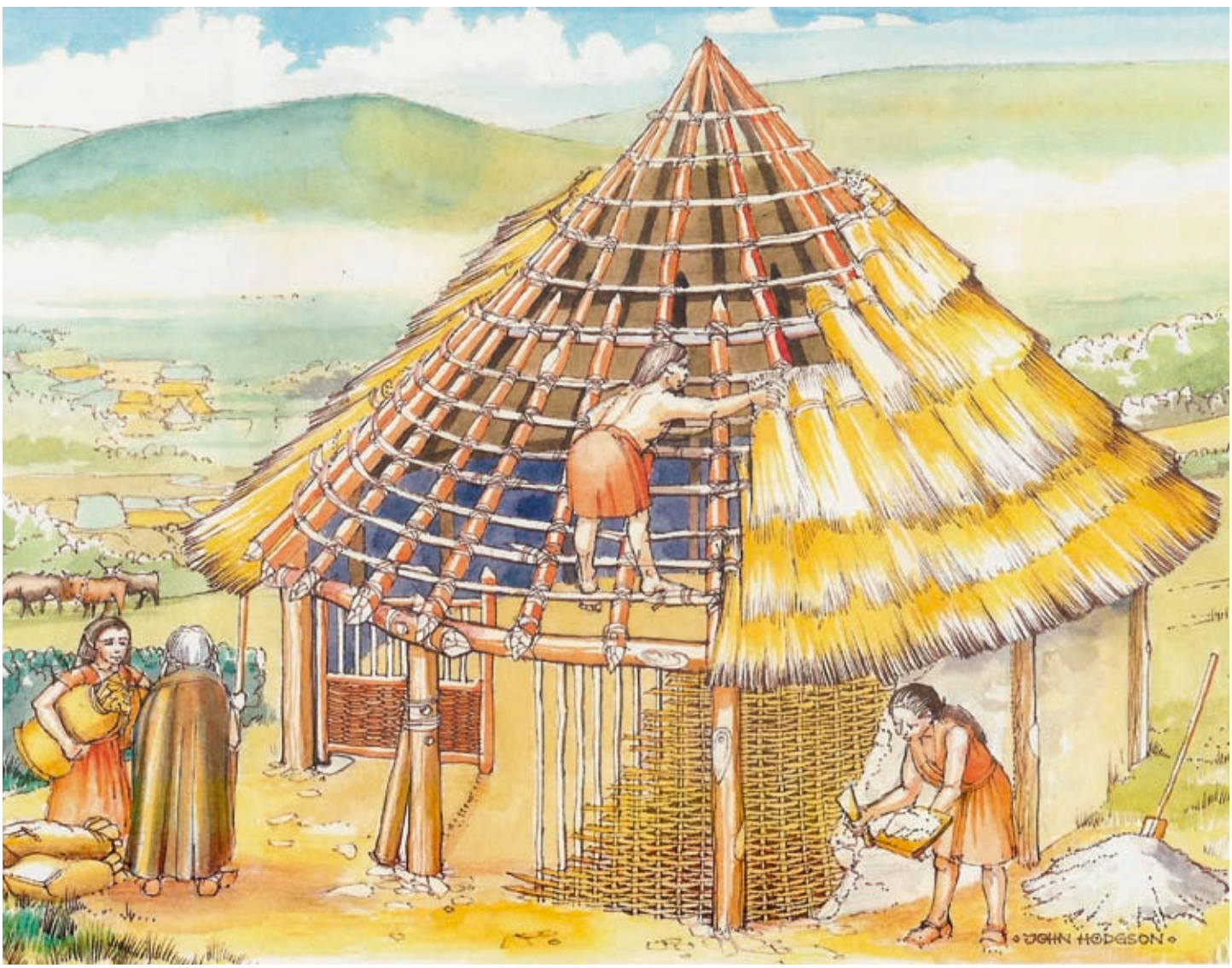
Of the 500 or so sites excavated on NRA road schemes currently listed in the new NRA Archaeological Database (see page 13), 10% have produced Iron Age dates (c. 600 BC–AD 400). Recent excavations on NRA schemes have led to the identification of 30 new Iron Age sites in Munster, which include settlement, ritual, burial and industrial sites. Until now Munster has had a paucity of evidence for activity in the Iron Age, therefore these new findings are of major importance.

All of the sites discussed below have been confirmed as being of Iron Age date on the basis of radiocarbon dating. They were identified on road schemes in counties Cork, Limerick and Tipperary, which included the N7 Nenagh–Limerick High Quality Dual Carriageway (HQDC), the M8 Rathcormac/Fermoy Bypass, the N8 Glanmire–Watergrasshill road scheme, N8 Cashel–Mitchelstown Road Improvement Scheme, the M8/N8 Cullahill–Cashel road scheme and the N22 Ballincollig Bypass. The excavations were conducted by Archaeological Consultancy Services Ltd (ACS Ltd), Eachtra Archaeological Projects, Margaret Gowen & Co. Ltd, Sheila Lane & Associates, TVAS (Ireland) Ltd and Valerie J Keeley Ltd (VJK Ltd).

Settlement

'Elusive' is a word that has been used frequently to describe Iron Age settlement and while it remains appropriate, to date 15 sites associated with Iron Age settlement have been discovered on NRA schemes in Munster. Many of these contain evidence for domestic structures, both single farmsteads and clustered settlement.

The first Iron Age structure discovered on a Munster road scheme was at Muckridge, Co. Cork, excavated by Dan Noonan of ACS Ltd. The house, radiocarbon-dated to AD 20–350, consisted of a circular



Reconstruction of the Iron Age house at Ballinaspig More, Co. Cork, found on the N22 Ballincollig Bypass. (Drawing: John Hodgson)


Enclosure at Knockcommane, Co. Limerick, on the M8/N8 Cullahill–Cashel road scheme. (Photo: Hawkeye)

arrangement of 10 post-holes, which were all that remained of a timber-built structure that measured 6 m in diameter. A centrally located hearth contained a fragment of a blue glass bead.

A similar structure, excavated by Ed Danaher, formerly of ACS Ltd, was discovered at Ballinaspig More, Co. Cork (360–60 BC). Two timber structures were revealed here, the largest (7.4 m in diameter) has been interpreted as the remains of a probable roundhouse. The second structure was likely to have been an agricultural outbuilding, such as a store. More recently three subcircular structures and a series of associated features were excavated by Melanie McQuade, of Margaret Gowen & Co. Ltd, at a multiperiod site at Ballydrehid, Co. Tipperary. The Iron Age activity at this site may represent the remains of a clustered settlement dating to AD 240–392.

Evidence for enclosed settlement in the Munster area dating to 357–47 BC was identified at Knockcommane, Co. Limerick. An enclosure (15 m in diameter), defined by four discontinuous gully features, was excavated by Bernice Molloy of Margaret Gowen & Co. Ltd. The remains of a possible structure, composed of a slot-trench and five post-holes, were uncovered within the enclosed gully area. This structure measured 8.5m in diameter. A blue glass bead was recovered from one of the gullies.

A large, D-shaped, ditched enclosure (170 BC–AD 30) at Ballywilliam, Co. Tipperary, was excavated recently by Kate Taylor of TVAS (Ireland) Ltd (see page 54). The enclosure measured 49 m across internally and had a 4 m wide, south-east-facing entrance. Within the enclosure were at least three partial gullies, possibly indicating internal palisades.

Burnt mounds

Burnt mounds have long been synonymous with the Bronze Age, even though evidence for hot-stone technology spans the Neolithic to the medieval period. Evidence for the use of burnt mounds during the Iron Age is not uncommon: sites of this type were discovered at Brackbaun, Co. Limerick (789–425 BC) and at Curaheen (185 BC–AD 85), Ballynahina (900–430 BC) and Fermoy Wood (384–203 BC), all in County Cork. (These sites were excavated by Bernice Molloy of Margaret Gowen & Co. Ltd, Ed Danaher and Annette Quinn of ACS Ltd and Bruce Sutton of Eachtra Archaeological Projects.) Some of these sites were located in close proximity to burnt mounds dating to the Bronze Age, suggesting a continuity of burnt mound activity at these locations.

Iron production

So what of the metal that defined this period? The evidence for metalworking is dominated by 13 bowl furnaces, some of which contained slag (see below). A bowl furnace consists of a clay-lined hollow in the ground in which iron ore was heated by burning charcoal. The average size of the excavated furnaces was 0.54 m long, 0.45 m wide and 0.23 m deep, and they were either subcircular or oval in shape. As the temperature in the furnace is raised by the use of a bellows, the impurities liquefy and flow to the bottom to form slag, leaving behind a spongy mass of iron, referred to as the bloom, which is the primary product of the smelting process. This bloom then needs to be reheated and hammered to remove any remaining impurities before it can be hot-hammered, or forged, by an ironsmith into a usable tool or weapon. There are six main stages in the ironworking process, from ore to artefact: prospecting, extraction, processing, smelting, smithing and forging.

There is no evidence for the operation of iron-ore mines in Ireland during the Iron Age. Bog iron ore (impure iron deposits that develop in bogs) was a more readily available resource and most, if not all, of the iron objects produced in the country at this time would have been manufactured from bog ore. At Kilrussane, Co. Cork, a group of four bowl furnaces excavated by Rory Sherlock of Sheila Lane and Associates produced slag and charcoal. Analysis of the metallurgical waste from the site indicated that the furnaces were used to process bog iron ore. Radiocarbon dates for the 13 bowl furnaces range from 395 BC to 4 BC. Most of these sites were located on high ground and were probably in close proximity to wooded areas.

Burial

While much of an archaeologist's time is spent excavating the material remains of past


Enclosure at Ballywilliam, Co. Limerick, on the N7 Nenagh–Limerick HQDC. (Photo: AirShots Ltd)

Ring-ditch at Knockcommane, Co. Limerick, found on the N8 Cashel–Mitchelstown Road Improvement Scheme. (Photo: Hawkeye)

societies, in most cases the people of these societies remain anonymous. So when burials are discovered, they afford archaeologists a much appreciated opportunity to deal directly with the people they have been investigating so arduously. This was the case in south Munster, where a variety of burial practices were identified across five burial sites.

At Knockcommane, Co. Limerick, Bernice Molloy excavated a ring-ditch with a north-east-facing entrance. A central cremation pit held the remains of a female, aged 18–44 years old. Three further cremations were uncovered within the ditch fills, one of which was identified as a person of approximately 18 years of age. Ten blue glass beads and two fragments of fused glass were recovered during the excavation. A date of 354–43 BC was returned for this site. A ring-ditch in Knockgraffon, Co. Tipperary, excavated by Colm Moriarty of Margaret Gowen & Co. Ltd, contained a central cremation along with cremation deposits in the ditch. This site, dating to 343 BC–AD 395, also yielded two small blue glass beads. A second cremation burial in an isolated pit was also discovered at Knockgraffon.

At Marlhill, Co. Tipperary, a ring-ditch (350–50 BC) with a south-facing entrance was excavated by Bernice Molloy. It contained the cremated remains of two individuals, aged 18–44 years old. Two intercutting cremation pits containing token burials were located at the entrance, possibly representing the last burial activity associated with this monument. Blue glass beads, nail shanks, copper-alloy fragments and two possible mount fragments of copper alloy were recovered here. At Ballybrowney, Co. Cork, Fiona Riley of Eachtra Archaeological Projects excavated a narrow slot-trench that cut into the inner edge of a ring-ditch (349–43 BC), which contained the cremated remains of an adult individual.

From the limited evidence for burial discovered, we can tentatively state that Iron Age funerary activities in parts of Munster tended to be placed away from contemporary settlements, suggesting a division of the landscape. There also appears to have been a preference for prominent positions within the landscape, particularly in areas close to low hill summits or ridges.

What we now know

The information offered here is just a brief synopsis of the 30 Iron Age sites discovered on road schemes in Munster. These new discoveries will greatly enhance the existing, albeit scant, evidence for Iron Age society in the region. Many of the sites discussed in this article are in relatively close proximity to a very significant tribal boundary—an Iron Age linear earthwork known as the Claidh Dubh, which stretches for 22.5 km from the Nagle Mountains in Cork to the Ballyhoura Hills of Tipperary. Together these sites reflect the scale and spread of Iron Age society in the region, which may have been a centre of regional or provincial power during the period.

It would appear that Iron Age people continued to carry out practices used during the Bronze Age, such as dwelling in roundhouses and cremating their dead. A continuity of activity from the Bronze Age to the Iron Age was noted at a number of sites, such as Ballydrehid, Ballynahina and Curraheen. From the limited burial evidence we can conclude that people of this period seemed to favour small cemeteries or burial in isolated pits, with a propensity towards token cremation burials within ring-ditches.

There was a distinct lack of artefacts discovered in association with these sites and when found, the range was limited. The lack of iron objects from these sites may attest to the corrosive nature of this metal. It is also likely that valuable iron objects would not have been discarded readily and that broken artefacts would have been repaired or melted down. The discoveries made in south Munster through development-led excavation and research programmes over the past decade have the potential to make a significant contribution not just to our understanding of the Iron Age in this region but the country as a whole. Continued assimilation of all emerging new information and future discoveries is vital and can only serve to enhance our knowledge and understanding of an exciting, and hopefully less elusive, Iron Age society.

Blue glass beads from Marlhill, Co. Tipperary. (Photo: John Sunderland)

Elevated view of the enclosure at Ballywilliam, looking south-west. (Photo: AirShots Ltd)

At home and on the road:
two Iron Age sites in County Tipperary

Kate Taylor, an Excavation Director with TVAS (Ireland) Ltd, reports on the discovery of two significant Iron Age sites on the route of the N7 Nenagh–Limerick High Quality Dual Carriageway (HQDC).

Evidence of life in Ireland during the Iron Age (c. 600 BC–AD 400) is notoriously difficult to identify. It is therefore especially exciting that two previously unknown sites excavated during 2007 by TVAS (Ireland) Ltd in advance of the N7 Nenagh–Limerick HQDC have proved to belong to this period.

At home

In Ballywilliam townland, 8 km south-west of Nenagh, a large ditched enclosure was excavated on the edge of a plateau overlooking the Kilmastulla River valley, with expansive views towards the Silvermines Mountains to the east. The enclosure was D-shaped, measured 49 m across and the entrance opened to the south-east. There was evidence of three possible internal palisades or fences, one of which would have had a substantial gate at the enclosure entrance. Inside the enclosure were a stone-lined cereal-drying kiln, the remains of a circular building with a diameter of 6–7 m and a very large pit (6 m by 2.75 m and 1.42 m deep), the function of which is unknown, although it did contain a number of quern-stone fragments. Small charcoal-rich pits indicated domestic or industrial activity, and several substantial post-holes and short lengths of gully probably represent other structures.

As well as evidence of people living and working in the enclosure, 11 parallel, elongated pits may possibly have been graves, although due to the acidic nature of the soil no bone has survived. Two pits

Elevated view of the Annaholty trackway. Modern drains and a bog road have destroyed much of the site, but its size is still impressive. (Photo: Hawkeye)

Recording the Iron Age trackway. (Photo: TVAS [Ireland] Ltd)

containing cremated bone may also be burials, although the bone has not yet been identified to species. One of these pits truncated the internal edge of the enclosure ditch and also produced a fragment of a lignite bracelet, whilst the other contained a number of corroded iron objects.

A radiocarbon date of 170 BC–AD 30 was obtained from the enclosure ditch, demonstrating that the site was occupied during the Iron Age. A Middle Bronze Age house (1,500 years earlier than the enclosure) was excavated nearby and some of the features within the Iron Age enclosure appear to be later in date, so it will be interesting to see, as our research progresses, how long the immediate area was occupied.

On the road

The second Iron Age site lay in Annaholty Bog, a large expanse of deep, impassable raised bog that straddles the boundary between counties Limerick and Tipperary, 15 km south-west of Ballywilliam. This seemingly marginal landscape has proven to be rich in archaeology, with a wooden trackway and artefacts previously found during turf-cutting in the 1940s. This bog also produced the medieval leather shoe described in Issue 2 (2007) of *Seanda* (page 47).

The most substantial archaeological site found in the bog to date was discovered during archaeological monitoring of construction work and, despite having been damaged by bog roads and drains, was remarkably well preserved. To the delight of the archaeologists, removal of peat overlying the site revealed a large timber trackway, or togher, which has subsequently been confirmed as dating to the Iron Age. Dendrochronological (tree-ring) analysis by Queen's University Belfast has proven that large oak planks used in the trackway construction were felled around 40 BC.

The trackway ran between two gravel islands within the bog and although neither end survived, it is possible to estimate that it would have been 65–70 m long in order to reach dry ground at both ends. At 7 m wide, this was a particularly large example of a timber trackway—wide enough for two carts to pass each other with room to spare. The method of construction was the same as that of a renowned Iron Age example at Corlea, Co. Longford: two lines of oak and birch roundwood runners were laid along the length of the track and large oak planks were laid side-by-side on top, held in place by pegs. Towards the centre of the site, halfway between the dry islands, the underlying peat was wetter and softer. In this area several layers of roughly parallel timbers underlay the main structure and bundles of brushwood were also used to bolster the foundation. At one end of the togher a concentration of timbers, mainly oak, birch and hazel, beneath the main structure was uncovered where the trackway widened as it approached dry ground.

A total of 1,112 pieces of wood were recorded and lifted from the site, all of which have been identified to species by environmental specialist Susan Lyons. Of these, over 350 were worked, including planks with mortice holes at the ends for the pegs, which had finely sharpened points, numerous cut branches and logs and a number of broken wooden artefacts that appear to have been used in the trackway foundation layers once they had reached the end of their useful lives. The artefacts have been examined by wetland archaeologist Caitríona Moore and include domestic items, such as fragments of at least two tubs with handles, a rare early example of a vessel stave and part of a carved trough, all of alder. Agricultural items include a broken yoke carved from ash and a large alder object that is probably part of a cart, similar to one found at Corlea. Other items are less easily identified, but are broken parts of larger composite wooden objects.

This substantial structure would have taken a large amount of labour and resources to construct and it was clearly important for people at the time to be able to traverse the narrow crossing-point between the two gravel islands. It is likely that the excavated trackway was part of a large network of such structures (a road network, even) that used the natural islands as 'stepping stones' across the bog, meaning that what we now see as a desolate area of poor quality land was once a bustling highway, perhaps even used by the people living a few miles up the road at Ballywilliam.

Rediscovering the rich past of County Cavan on the N3

Kevin Martin, NRA Assistant Archaeologist with the Eastern Team, provides a brief summary of the prehistoric archaeology discovered on the N3 Belturbet Bypass.

From February to May 2008 a team of 24 archaeologists from Archaeological Consultancy Services Ltd (ACS Ltd), led by Excavation Directors Derek Gallagher and Gearoid Kelleher, descended on the drumlins, lakes and hills around Belturbet, Co. Cavan, to excavate 15 sites along the route of the new bypass. The excavations uncovered the remains of several *fulachta fiadh*/burnt mounds, along with prehistoric burial and settlement evidence.

Gearoid Kelleher and his crew braved the marshy, and oftentimes boggy, fields along the western shores of Putiaghan Lough, just south of Belturbet town, while conducting excavations on a series of *fulachta fiadh*/burnt mounds and possible industrial sites. Three sites in the townland of Putiaghan Upper have been interpreted as representing a probable lakeshore industrial complex. Evidence for the potential extraction and industrial use of bog iron ore was uncovered at a site known as Putiaghan Upper 2, while nearby, at Putiaghan Upper 3, a furnace-type feature was uncovered, containing charcoal, ash and burnt bone. Similar findings were made at Putiaghan Upper 4.

Excavation of a possible furnace at Putiaghan Upper 2, with Putiaghan Lough in background. (Photo: Kevin Martin)

Archaeologists excavating troughs/wells under a burnt mound at Putiaghan Upper 1. (Photo: Kevin Martin)

A large *fulachta fiadh*/burnt mound complex was excavated at Putiaghan Upper 1, c. 500 m south of the Lough. It comprised a 13 m (diameter) spread of charcoal and heat-affected stone overlying three troughs. Four further troughs/wells were discovered just beyond the spread. As only approximately 40 *fulachta fiadh* sites have been identified previously in County Cavan, the radiocarbon dating and post-excavation analysis of these sites is eagerly anticipated.

Further south, in the townland of Bun, a fascinating multiphase site, including Bronze Age burial and settlement evidence, was excavated by Derek Gallagher and his team. The site (Bun 4) commands a fantastic vista overlooking the River Erne as it meanders through the landscape. Indeed, access to the Erne is likely to have been a significant reason in prehistoric people's decision to settle here.

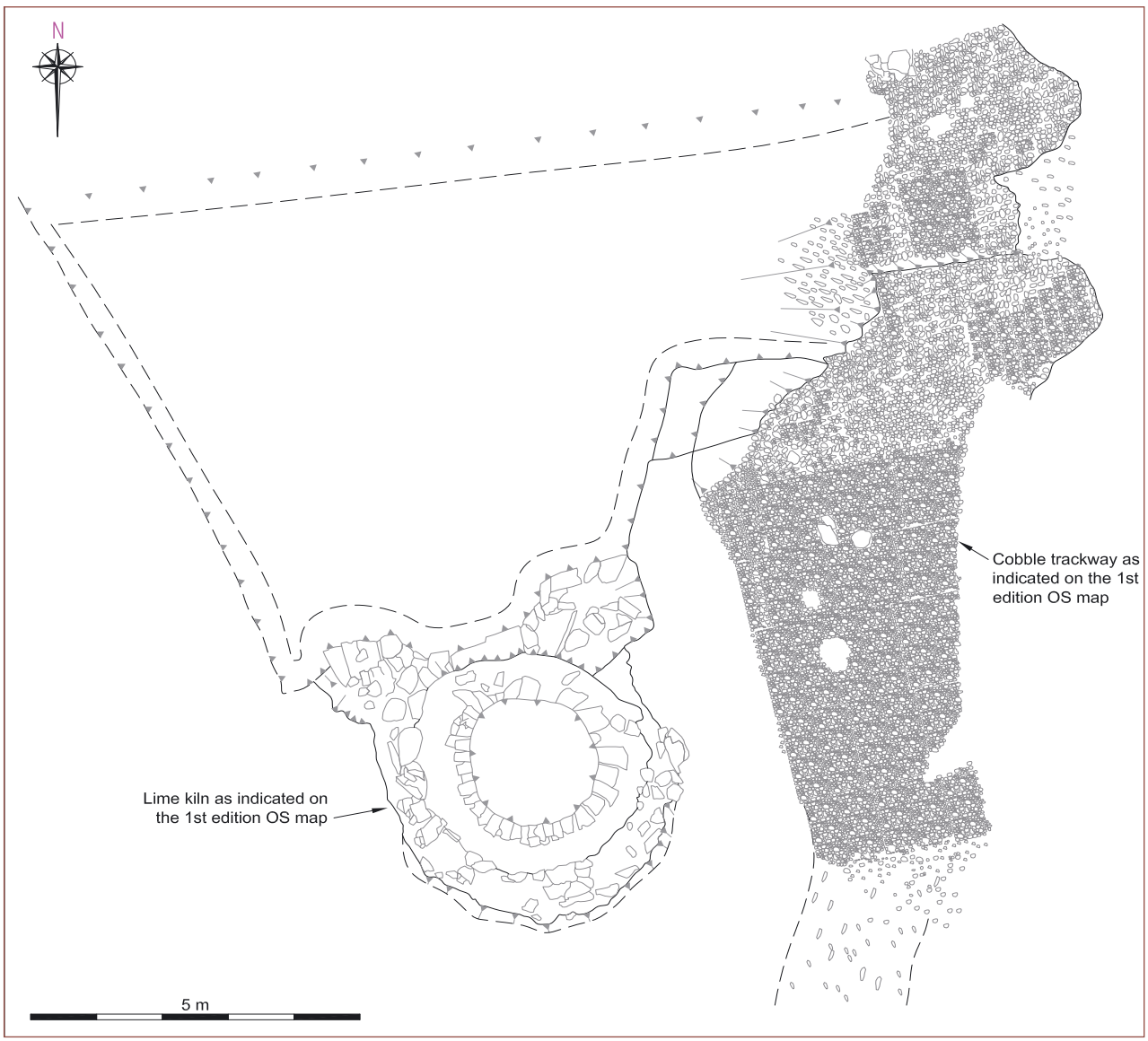
Archaeologists getting used to the rain in Cavan while excavating a trough/well at Putiaghan Upper 1. (Photo: Kevin Martin)

Bun 4 sits on a natural high ridge that would have offered a dry and comfortable location above the river valley to settle and carry out ritual burial practices. The remains of a 13 m (diameter) Bronze Age ring-ditch were uncovered here. During the excavation it was evident that the monument was originally defined by a continuous circular ditch, which was subsequently deepened and widened and further altered to incorporate a causeway across the ditch. These later modifications have been interpreted as possibly representing a change in ritual or meaning for the monument-builders. The area enclosed by the ditch contained up to 60 pits, with most showing traces of cremated bone—token burial deposits. A number of the pits contained prehistoric pottery sherds, with one pit in particular producing 112 pieces. The pottery has been provisionally assessed and is thought to be Middle–Late Bronze Age in date. The pits and the ditch also contained worked stone, flint tools and unburnt cattle, deer, pig and horse bones.

Another phase of activity at the site was represented by the construction of a C-shaped enclosure ditch abutting the ring-ditch, which was later re-cut into a D-shaped enclosure. Settlement evidence, in the form of stake-holes, slot-trenches and areas of scorched earth, possibly representing hearths, was identified within the areas enclosed and is thought to represent the remains of two structures. All of these features were partially covered by a later burnt mound.

Post-excavation analysis is well underway and the final results of the excavations on the N3 Belturbet Bypass should add significantly to the local and regional archaeological record of County Cavan.

Elevated view, looking south, of the ring-ditch and enclosure at Bun 4. Note the River Erne in background. (Photo: Eagle Ltd)



Mid-excavation plan of the limekiln and associated cobble trackway. (Drawing: ACS Ltd)

Excavations at Derryvorrigan: a window on lime production, agriculture and the landscape in 19th-century Laois

Niall Kenny, a Research Archaeologist with Archaeological Consultancy Services Ltd (ACS Ltd), discusses the regional importance of a 19th-century limekiln excavated at Derryvorrigan, Co. Laois, on the route of the M7 Portlaoise–Castletown/M8 Portlaoise–Cullahill motorway scheme.

The limekiln is considered one of the most common types of kiln present in the rural Irish landscape and as such must have played an important and integral part in the lives of many agricultural communities in the early modern period. Limekilns were used to reduce limestone to a powder through a process of burning. This powder was then used as a fertiliser and spread on fields to reduce the acidity of the soil. It was also important for building, being used for mortar and lime-wash. There were two main types: small round kilns and larger rectangular kilns. The structures often vary in size and quality and tend to survive as rubble-stone structures with a cylindrical cavity opening at the top. It was into this cavity that layers of broken limestone rock and fuel (coal or wood) were piled on top of each other and set alight.

A limekiln, an associated cobble trackway and two field boundary ditches were excavated by Anne-Marie Lennon of ACS Ltd in the townland of Derryvorrigan, Co. Laois, in advance of the M7/M8 motorway scheme. The site (Derryvorrigan 1) was located on the lower northern slopes of Knockseera Hill and the excavated limekiln was a large example of the small round type. It was c. 4 m in diameter and constructed of large subrectangular slab stones on the exterior, with small square limestone blocks on the interior.

The limekiln, trackway and field boundaries at Derryvorrigan 1 are all indicated on the first edition (1841) Ordnance Survey map. Interestingly, it appears that a whole series of other limekilns in the Derryvorrigan/Knockseera area is also depicted on the first edition map, the majority of these being located to the east of Derryvorrigan 1. Most of the kilns were deliberately situated on or close to field boundaries so as to minimise their impact on other agricultural activities, such as grazing and tillage, and to provide a degree of shelter from the elements. The cobbled trackway leading upslope to

The Derryvorrigan limekiln (blue circle) and a series of other limekilns (red circles) on the lower slopes of Knockseera Hill, as depicted on the first edition (1841) Ordnance Survey map. (Ordnance Survey Ireland)

the limekiln at Derryvorrigan 1 would have facilitated carts drawing limestone and fuel up to the kiln and transporting processed lime to where it was needed. This indicates that there was extensive use of this particular kiln. By producing quantities of lime, the limekiln at Derryvorrigan 1, along with the many other kilns in the vicinity, played a vital role in land-reclamation works in the surrounding lower-lying areas.

Limekilns played a particularly important role in County Laois in the 19th century. Indeed, in some parts of Laois every farm or group of farms had its own kiln. The lime produced from these kilns enabled the extensive land reclamation of the rough acidic uplands and the low-lying boglands of the county. While the production of lime on the farm for agricultural use has since been replaced by more commercial and industrial lime production, many of these kilns remain dotted throughout the Laois landscape today. Fine examples include a large rectangular limekiln still standing in the village of Clogh, south of Aghaboe, and a limekiln situated on the green opposite Cullahill Castle. The recently excavated limekiln at Derryvorrigan 1 is yet another testament to the relic agrarian landscape of 19th-century Laois.

The importance of the limekiln to 19th-century rural Laois (and indeed Ireland), especially in bogland areas, cannot be understated. Dr John Feehan of the UCD School of Biology and Environmental Science sums up their contemporary and past importance in his book, *Laois: an environmental history*, when he states that they are 'handsome pieces of local stonework worthy of conservation not only because of their intrinsic simple functional beauty, but because they are a relic of an important phase in the development of Laois agriculture'.

Mid-excavation view of the limekiln at Derryvorrigan 1. (Photo: ACS Ltd)

Back to the old grindstone

James Eogan

James Eogan, NRA Senior Archaeologist with the Southern Team, describes the use of micro-archaeology to identify plant remains on a prehistoric quern-stone discovered on the N9/N10 Kilcullen–Waterford Scheme: Waterford to Knocktopher.

Saddle querns (so-called due to the similarity in shape of the bed stone to a saddle) are often found during the excavation of prehistoric settlement sites on road schemes. In recent years the discovery of saddle querns has been reported in a number of papers on such sites published in the Archaeology and the National Roads Authority Monograph Series and in various scheme information brochures. Archaeologist Anne Connolly, who has studied saddle querns, identified 228 examples from the island of Ireland; those found during archaeological excavation came from sites dating from the Early Neolithic period to the Late Bronze Age. In the early medieval period saddle querns were superseded by the superior technology of the rotary disc quern.

The interpretation of the use of these objects as querns for grinding grain by hand was established by antiquarians in the 19th century on the basis of analogy with contemporary 'primitive societies' in Africa, tomb paintings and models showing similar objects in use in Pharonic Egypt. It was further reinforced by evidence from the excavations, in the 19th and early 20th centuries, of ancient Egyptian 'bakeries', which had saddle querns placed on purpose-built settings.

Saddle querns operated on the basis that grain placed on the bed stone was ground into flour when a rubbing stone was pushed back and forth over it. There is no direct evidence from prehistoric Ireland for the use of saddle querns to grind grain; unsurprisingly, neither grain nor flour has ever survived to be archaeologically recorded in association with a saddle quern. Further afield, however, archaeologists working in south-east Asia and South America have found that starch granules can sometimes survive on tools and objects used to process and store plants and plant-derived foodstuffs. While starch granules are tiny, typically ranging in size from 5 to 100 microns (one-millionth of a metre), research has shown that they are robust and can sometimes survive for thousands of years in a variety of conditions. Starch granules from different plant families display distinctive patterns, which can be seen in polarised light under a high-powered optical microscope.

Starch is a carbohydrate that plants use to store energy. Underground storage organs, such as the tubers, corms, roots and rhizomes produced by many plants, are rich in starch; other plants produce nuts, grains and seeds, many of which are also starch-rich. Today it is estimated that starch-based foodstuffs, such as bread, pasta, potatoes and rice, contribute approximately one-third of the total weight of our dietary intake; it is likely that starchy foods played an equally important role in our ancestors' diets.

The opportunity arose on the N9/N10 project to take residue samples from the surface of a broken saddle quern that had been deposited in a pit in the Late Neolithic period (about 4,400 years ago). An excavation team, under the direction of archaeologist Jonathan

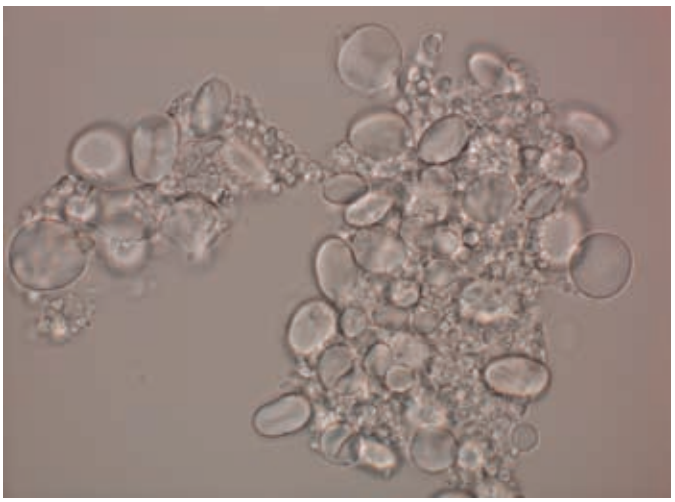
Photo: James Eogan

Dr Karen Hardy collecting samples for analysis from the surface of the saddle quern.

Monteith of Valerie J Keeley Ltd, found the quern during excavations at Scart, Co. Kilkenny. The broken quern, which had been placed upside-down in the pit, was lifted carefully and well wrapped after excavation to prevent contamination from modern sources of starch. Dr Karen Hardy, ICREA Research Professor at the Universidad Autonoma de Barcelona, took 14 samples, using ultra pure water, of soil adhering to the quern and preserved them in ethanol. The samples were taken from different locations on the quern, including both the grinding and the non-grinding surfaces. Low levels of starch were identified from the samples taken from the grinding surface of the quern. No starch granules were identified from the non-grinding surfaces, which suggests that the starch granules are very unlikely to be the result of modern contamination and could be related to its original use.

Dr Hardy has identified at least two different types of starch in the samples analysed. At least one type is suggestive of a tuber of some sort, though further work is needed to clarify this. Dr Hardy's analysis has yielded a number of significant results. It has demonstrated, for the first time, the presence of plant remains on a saddle quern—this adds greater weight to their interpretation as equipment for processing plant-derived

Photo: Karen Hardy



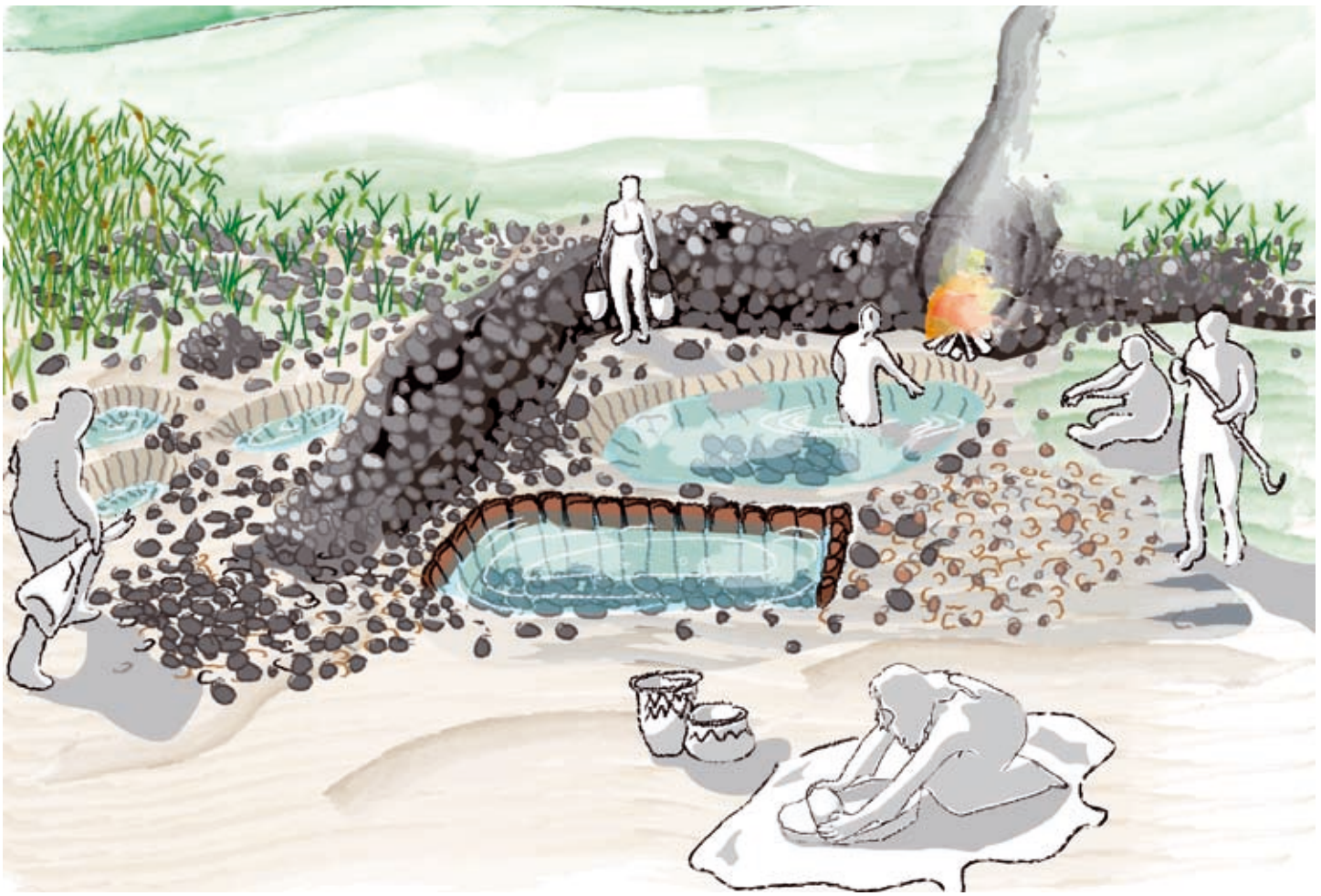
Cereal starch, probably barley, found in the dental calculus, or tartar, extracted from the teeth of a medieval skeleton excavated at Tarbat, Portmahomack, Scotland.

Photo: Studio Lab

A saddle quern and rubbing stone found in the trough of a *fulacht fiadh*/burnt mound at Ballyduff East, Co. Waterford, on display in the exhibition *Migrants Mariners Merchants: archaeological discoveries on the N25 Waterford Bypass.* The quern was displayed with unprocessed bread wheat, wheat grains and a sample of flour ground on a replica saddle quern.

foodstuffs. The identification of starch granules that may be characteristic of a tuberous plant reminds us that our ancestors may have derived starch for their diet not just from cereals but from various sources, both wild and cultivated. The work also shows the potential for this sort of analysis to be carried out on other saddle querns that are found in secure archaeological contexts and excavated in controlled circumstances. The key recommendation for any excavator who encounters a saddle quern is to ensure that it is not contaminated during excavation (clean, starch-free gloves should be used). It should not be washed after lifting and should be wrapped securely in plastic and stored in a cool (preferably refrigerated) environment until it can be examined by a specialist.

In the absence of a reference collection of starch it has not been possible to identify the starch grains found on the Scart saddle quern to genus or species. Through its 2008 Archaeology Grants Programme, The Heritage Council has funded a project to review the evidence for the use of starchy tuberous plants and to enable the creation of a reference collection of ancient starchy tuberous plant remains from Ireland. This research is being undertaken by Dr Karen Hardy, Dr Meriel McClatchie and the author, and thus far has identified 61 species of wild plants that produce tuberous roots containing starch. The project has identified the remains of, or references to the use of, the tuberous roots of 28 of these species of wild plants from excavated archaeological contexts and historical and folklore sources. It is hoped that the creation of a reference collection will enable the identification of the plants that were processed on the Scart quern-stone, and will open up new horizons in our understanding of the foods used by our ancestors.



Artist's reconstruction of the *fulacht fiadh*/burnt mound at Ballyduff East, showing the saddle quern and rubbing stone in use in the foreground. (Drawing: Headland Archaeology Ltd)

Digital evolution:
3D-animated reconstructions from County Cork

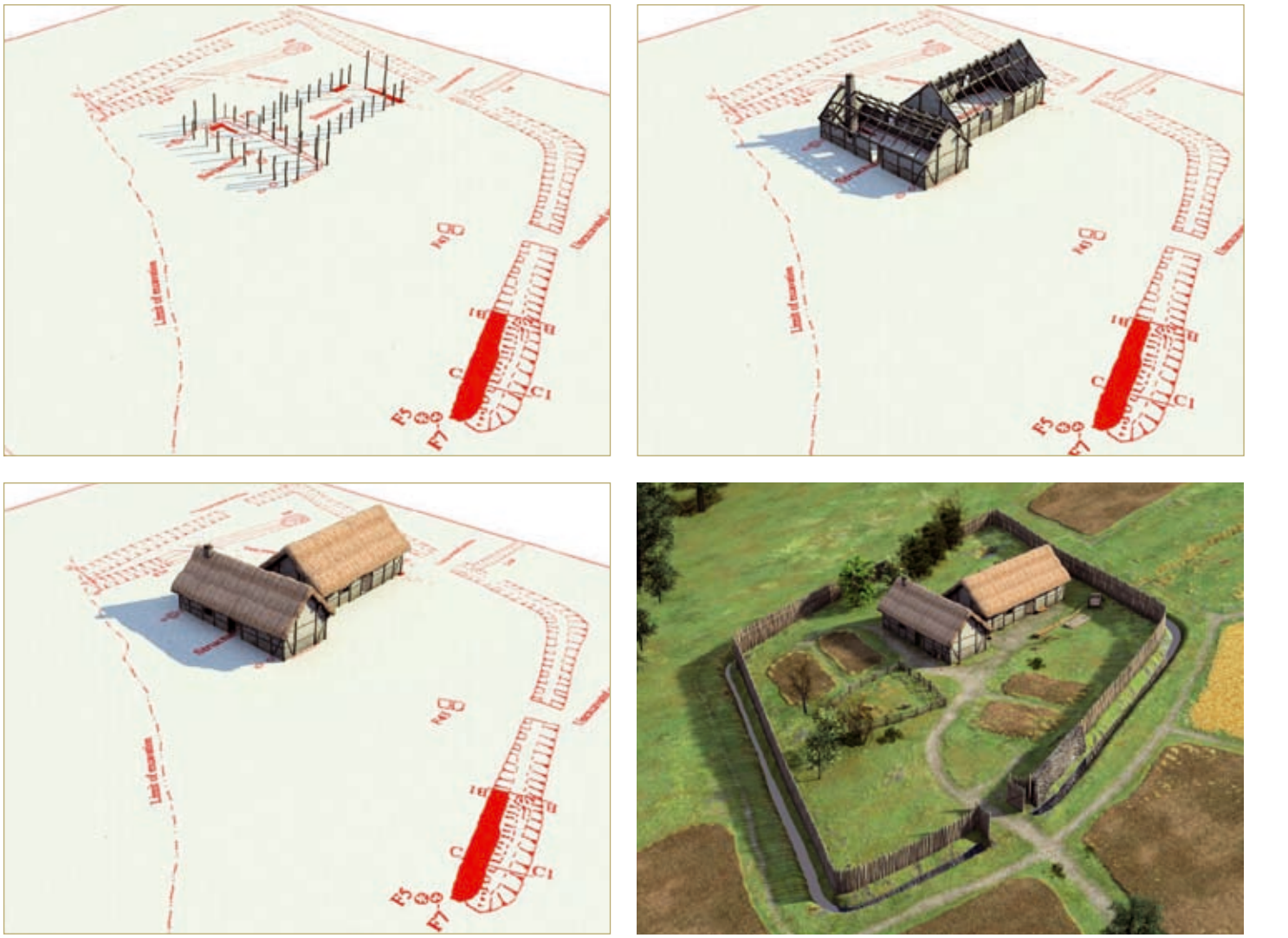
Ken Hanley

Ken Hanley, NRA Archaeologist with the Southern Team, explains how the use of advanced computer technology and visualisation software has allowed us to travel back in time to see how life was lived in Cork over the last 6,000 years.

Recent excavations on road schemes in County Cork have unearthed a spectacular variety of previously unknown archaeological sites. In most cases, however, the partial remains represent an incomplete picture of how the sites would have looked or functioned. Traditionally, two-dimensional (2D), hand-drawn sketches have been used to create artists' impressions of sites, but recent developments in computer technology have enabled archaeologists to recreate sites, in stunning detail, using three-dimensional (3D) animated models.

How are 3D digital reconstructions carried out?

In 2003 the remains of a fascinating medieval settlement, surrounded by a moat, were excavated at Ballinvinny South, near Watergrasshill, on the N8 Glanmire–Watergrasshill road scheme. The remains of two rectangular houses were revealed within the enclosure. The NRA decided that this important site warranted a 3D digital reconstruction. For this project, German company Digitale Archäologie, specialists in 3D archaeological visualisations, was commissioned to help recreate how the site at Ballinvinny South may have looked at the end of the 13th century. So how was this reconstruction achieved?



Stills from the 3D-animated reconstruction of the medieval moated site at Ballinvinny South, Co. Cork, showing how the two-dimensional site plan is gradually brought to life. (Digitale Archäologie, based on excavated evidence from Eamonn Cotter)

Step one: the first task was to plan the project carefully by asking some simple but important questions, such as: why are the reconstructions needed? For whom are they intended? What type of reconstruction is needed? What budget is available?

Step two: the next phase was to gather all the available data—background mapping, digital site plans, excavation reports, environmental reports and so on. At this stage discussions were held with the Excavation Director, Eamonn Cotter, to determine how he had interpreted the site and how it may have looked and functioned in the medieval period. This was the critical phase, and in some ways the most difficult, as most of what was to be reconstructed no longer survived and therefore required a degree of informed conjecture.

Step three: once Digitale Archäologie had been appointed and fully briefed on the requirements, their experts began by designing the geometrics, or basic 3D frame model, of the site. For the houses, this was the basic layout of the walls, roofs and any internal features.

Step four: once the frame model was completed, surfaces were then created to represent the physical walls, floors, timbers, ceilings and so on. Textures were added to represent the roughness and type of surface material, for example, the coarse thatch for the roofs, the rough plastered walls or the stone-flagged floor. Lighting and shadow effects were applied to give the whole model a more realistic appearance.

Step five: the next phase was to give the site the 'lived-in look' by adding animals and household objects. The background environment (trees, fields, sky) was then added.

Step six: from here things really began to move—literally! This next phase involved setting up camera angles and flight paths and rendering the scene to produce the completed 3D-animated reconstruction. This was a very exciting moment in the project, when we got to witness something extraordinary—the sight of archaeological remains coming back to life before our very eyes.

Digitale Archäologie produced reconstructions for four other sites discovered in Cork: a Neolithic house at Gortore, near Fermoy; a Bronze Age farmstead at Mitchelstown; a Bronze Age sweathouse at Scartbarry, near Rathcormac; and a Bronze Age village, also near Rathcormac. These sites were excavated by Archaeological Consultancy Services Ltd, Eachtra Archaeological Projects and Sheila Lane & Associates. The 3D-animated reconstructions are on display at the *New Roads, New Discoveries* exhibition at the Cork Public Museum until 19 December 2008. (For a full description of this fascinating exhibition, see page 31.)

Neolithic house at Gortore. (Digitale Archäologie, based on excavated evidence from Julianna O'Donoghue)

Bronze Age farmstead at Mitchelstown. (Digitale Archäologie, based on excavated evidence from Eamonn Cotter)

GLOSSARY	
Amphora	A two-handled ceramic jar with a narrow neck used to carry wine or oil.
Anglo-Norman	The Anglo-Normans were the descendents of the Normans who ruled England following the conquest by William of Normandy in AD 1066. In AD 1169 Ireland was invaded by the Anglo-Normans.
Archaeological feature	Any component of an archaeological site, such as a post-hole, pit, wall, ditch, or any deposit that may have accumulated on-site.
Artefact	Any movable object that has been used, modified or manufactured by humans.
Beaker pottery	A type of beaker-shaped pottery drinking vessel introduced from the Continent and associated with the Beaker period, from the later Neolithic period to the Early Bronze Age.
Bowl furnace	A small, open air, bowl-shaped furnace, in which the flames are fanned by bellows. Used for heating minerals and metals, or for making glass.
Bronze Age	The era (c. 2400–600 BC) succeeding the Neolithic period, which saw the introduction of bronze for tools and weapons.
Collared Urn	A type of Bronze Age pottery vessel with a flat base, a conical body and a heavy, overhanging rim or collar.
Cordoned Urn	A type of Bronze Age pottery probably derived from Collared Urns (see above). The outer face is decorated with applied cordons or raised ribs.
Coulter	The cutting element of a plough that is positioned in front of the ploughshare.
Cremation	The practice of burning the bodies of the dead. In prehistory the ashes were commonly placed in a pottery vessel and buried in a pit.
Crucible	A small, coarse pottery vessel for holding molten metal during smelting or casting.
Fill	A term used to describe the individual layer(s) of material contained within archaeological features, such as post-holes, pits or ditches.
Fulacht fiadh	A site, generally dating from the Bronze Age, consisting of a horseshoe-shaped mound of burnt stones, a hearth(s) and a trough(s). These sites were used to heat water for a variety of possible purposes. Also known as ancient cooking places.
Grooved Ware	A type of Late Neolithic pottery consisting of flat-bottomed, tub-shaped pots, some decorated with parallel grooved lines.
In situ	Archaeological artefacts are said to be *in situ* when they are found in the location where they were last deposited, i.e. undisturbed and unexcavated.
Iron Age	Final period of prehistory, beginning around 600 BC. In this period iron superseded bronze for the manufacture of tools and weapons.
Lignite bracelet	A bracelet made from polished lignite, or jet. Lignite is soft, brownish-black coal in which the alteration of vegetable matter has proceeded further than in peat, but not as far as in bituminous coal.
Medieval	Period succeeding the Iron Age, which in Ireland is dated from the advent of Christianity in the fifth century up to the 16th century AD.
Mesolithic	The Middle Stone Age, c. 7000–4000 BC, when Ireland was first settled by early hunters and foragers.
Neolithic	The New Stone Age, c. 4000–2400 BC, preceded the introduction of metalworking and is characterised by the beginnings of farming.

Ploughshare	The detachable part of a plough that cuts the undersurface of the sod from the ground.
Quern-stone	A large stone used for grinding grain into flour. The four main categories of querns found in Ireland are, in chronological order: the saddle quern, beehive quern, rotary quern and pot quern.
Radiocarbon dating	A scientific method of dating by measuring the decay of the radioactive isotope Carbon 14, which is present in all organic material.
Ring-barrow	A barrow is an earthen burial mound, generally dating to the Bronze Age and Iron Age. Ring-barrows are the most common form and consist of a low, circular mound of earth, 15–20 m in diameter, surrounded by a ditch with an external bank.
Ring-ditch	A small, circular enclosure, defined by a ring-shaped ditch, which is often associated with prehistoric burials. Many have been discovered to be ploughed-out ring-barrows.
Ring-pin	An early medieval dress- or cloak-fastener, usually of copper alloy, with a swivel ring inserted through a perforation or loop at the top of the pin. The ring of the pin is sometimes decorated.
Post-hole	The void or soil-filled hole where a post once stood.
Post-medieval	The period after the medieval period, often taken to be the period after the dissolution of the monasteries in the mid-16th century.
Prehistoric	Any period for which there is no contemporary documentary evidence.
Slag	Glassy, non-metal residue and waste material left behind after the smelting of a metal.
Souterrain	A long, narrow, subterranean passage, usually with a slab roof, dating from the early medieval period. Some have small chambers off the main passage.
Spindle whorl	A small, perforated disc of stone or pottery used as a weight attached to the end of a spindle (a metal rod or wooden stick) for spinning yarn or thread from wool, cotton, or other material.
Viking *(Vikingur)*	Scandinavian word for seafaring raiders from Norway, Sweden and Denmark who ravaged the coasts of Europe from the seventh century AD onwards.

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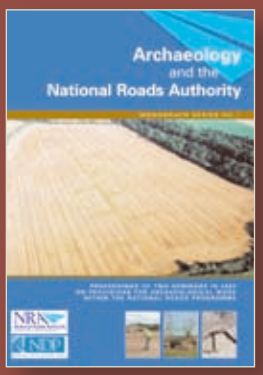
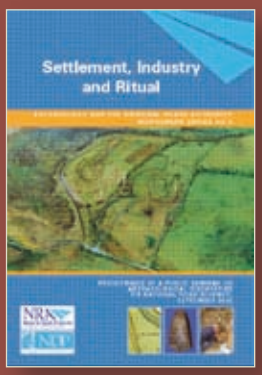
OTHER ARCHAEOLOGICAL PUBLICATIONS AVAILABLE FROM THE NRA

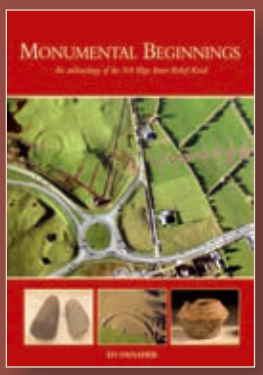




Archaeology and the National Roads Authority Monograph Series

The NRA initiated its Archaeology and the National Roads Authority Monograph Series in 2003 to publish the papers given at its annual National Archaeology Seminars. In common with the seminars, the monographs are presented in an informal and easily understood format and contain numerous colour illustrations. The fifth monograph in the series was published in August 2008 and the sixth volume is currently in preparation.

NRA SCHEME MONOGRAPHS



The NRA launched its scheme-specific monograph series in December 2007. These monographs detail the results of discovery and archaeological excavation along specific national road schemes. An accompanying CD-ROM to each publication incorporates all the final excavation reports and specialist reports. The second monograph in the series was published in August 2008 and the third volume is currently in press.

All of the above publications are available through bookshops, or directly from Wordwell Books (www.wordwellbooks.com or tel: +353-1-2947860).