

seanda



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seanda

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Avenue to the heavens?

An excavation along the N22 Tralee Bypass in County Kerry may have uncovered rare evidence of prehistoric ritual processions.



Bridging the new with the old

Recent works on Macroom Bridge, Co. Cork, have provided a case study in historic bridge modification.



Who ran away with the spoon?

The chance discovery of high-status early medieval tableware in County Wicklow has dished up an intriguing archaeological mystery.

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Cover images: (main) Bronze human head on an early medieval ladle from Ballynapark, Co. Wicklow (Photo: Claudia Koehler, National Museum of Ireland); (top) drawing of the Ballynapark ladle by Alva Mac Gowan (Image: Irish Archaeological Consultancy Ltd); (left) aerial view of Mackney ringfort, Co. Galway (Photo: Hany Mazouk).

Welcome to the Eighth Edition of *Seanda*

Fred Barry, Chief Executive of the National Roads Authority

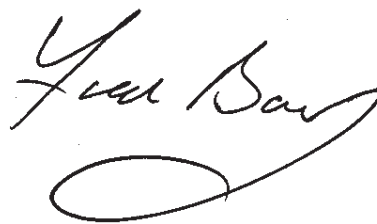


Fred Barry

Archaeological works on national road schemes can necessitate considerable public expenditure, thus a key element of overseeing the archaeological implications of new road schemes is achieving value for money. This entails the efficient management of all archaeological aspects of national road projects, the avoidance of claims owing to delays and compliance with domestic and European legislation and regulations. But this is just the beginning of the story when it comes to archaeology, for it is only when the findings of archaeological investigations are communicated to the general public and fellow professionals that the full value of this expenditure can be realised.

Since 2006 this magazine has been a vital instrument in a growing toolkit that enables the NRA to fulfil its obligations to Ireland's archaeological heritage in a manner that seeks to maximise the return on the significant investment made. The latest issue brings news of further successes in this regard, highlighting several new publications featuring or dedicated to the results of NRA-funded archaeological investigations.

Issue 8 also reminds us that even after the excavation reports and various publications have been produced, the new data therein can still be profitably mined by researchers for many years to come (see pages 14, 21 and 34). This vital scholarly activity, sometimes involving field archaeologists directly involved in the original excavations, will surely deliver important and novel insights and re-interpretations well into the future. The NRA is keen to support this work to the fullest extent possible in these straitened times and is fully cognisant of the added value such research can generate. The discoveries—old and new—reported in this latest edition will hopefully spark much interest among general and specialist readers alike.



NEWS



Archaeological science seminar

Archaeology owes much to science in terms of theory and practice, and as a source of investigative techniques. The subfield of archaeological science draws on various branches of science and has shed much light on the archaeological works commissioned by the NRA. The occasion of Dublin hosting the international conference 'Euroscience Open Forum' in July 2012 was celebrated with Dublin City of Science 2012—a year-long programme of science-related events (for further information see www.dublinscience2012.ie/). The NRA contributed to this prestigious festival of science with 'Futures and Pasts: archaeological science on Irish road schemes', a seminar held on 23 August 2012, which showcased a magnificent array of scientific techniques currently employed in Irish archaeology.

This free public seminar took place at the City Wall Space, Wood



Rónán Swan, NRA Head of Archaeology, giving his opening remarks at the 'Futures and Pasts' seminar. (Photos: Michael Stanley)



Quay Venue, Dublin Civic Offices, and coincided with National Heritage Week. Twelve 20-minute papers, specifically catered for a non-specialist audience, were presented on the use

of various methods of scientific analysis and new technologies for investigating archaeological discoveries on road schemes. The topics covered included geophysical survey, airborne laser scanning (or lidar) and geographical information systems, 3D laser scanning and printing, artefact conservation, osteoarchaeology, isotope analysis, radiocarbon dating, optically stimulated luminescence dating, dendrochronology (tree-ring dating), environmental archaeology and geoarchaeology. The full seminar programme can be viewed at <http://tinyurl.com/prgv5e2>.



Some of the speakers at the 'Futures and Pasts' seminar: (left to right) Jonny Geber, Aoife Daly, Susannah Kelly, Susan Lyons, Ellen O'Carroll, Ken Hanley, Steve Lancaster, Niamh Daly and Will Megarry.

The publication of the seminar proceedings in August 2013 will be the 10th volume produced in the Archaeology and the National Roads Authority Monograph Series. *Futures and Pasts: archaeological science on Irish road schemes*, edited by Bernice Kelly, Niall Roycroft and Michael Stanley and published by the NRA, will be available through bookshops or directly from Wordwell Books, Unit 9, 78 Furze Road, Sandyford, Dublin 18 (tel: +353 1 2947860; e-mail: office@wordwellbooks.com).

Michael Stanley, NRA Archaeologist, NRA Head Office.



Contributing authors Paul Stevens (left) and Frank Prendergast (right), with Professor Charlotte Damm at the launch of *Encounters between Peoples*. (Photo: Michael Stanley)

proceedings we encounter early prehistoric farming communities in County Wexford, Iron Age assembly and ritual in County Meath and the diverse peoples who inhabited one County Tipperary townland over six millennia. The new book—the ninth volume to be published in the Archaeology and the National Roads Authority Monograph Series—also presents material evidence

for interactions between communities of differing religion and ethnicity during the historic period. Whether native or newcomer, however defined, profound cultural, social and economic change affected all the peoples of Ireland.



Encounters between Peoples is published by the NRA and is available through bookshops or directly from

Wordwell Books, Unit 9, 78 Furze Road, Sandyford, Dublin 18 (tel: +353 1 2947860; e-mail: office@wordwellbooks.com).

Michael Stanley, NRA Archaeologist, NRA Head Office.

Encounters between Peoples

Encounters between Peoples, the proceedings of the NRA National Archaeology Seminar 2011, was launched by Professor Charlotte Damm, Head of the Department of Archaeology, NUI Galway, on Thursday 23 August 2012 at the City Wall Space, Wood Quay Venue, Dublin Civic Offices. Edited by

Bernice Kelly, Niall Roycroft and Michael Stanley, *Encounters between Peoples* contains seven papers by a number of archaeologists and a historian who were invited to address the multifaceted nature of our archaeological heritage and the varied peoples that contributed to its creation. In these

The 'Kingdom' of discovery

The latest volume of the *Journal of the Kerry Archaeological and Historical Society* (Series 2, Vol. 12, 2012) features a number of significant papers describing the results of recent NRA-funded investigations in County Kerry. Senior Archaeologist Patricia Long summarises the findings made during excavations conducted by Rubicon Heritage Services Ltd in advance of the construction of the N22 Tralee Bypass—the most substantial infrastructural project to be undertaken in Kerry in recent years. A varied range of archaeological remains ranging in date from the Late Mesolithic/Early Neolithic transition to the post-medieval period were uncovered at 31 sites (see *Seanda*, Issue 6 [2011], pp. 29–31). Colm

Moloney, Managing Director of Rubicon Heritage Services Ltd, highlights one of the most noteworthy of these sites in a subsequent paper. This concerns a possible prehistoric ceremonial 'avenue' at Ballingowan, which also features in this issue of *Seanda* (see p.10).

A second paper by Patricia Long describes evidence of Early Bronze Age and medieval activity discovered south-east of Kilflyn village in advance of a realignment of the N69 Tralee to Listowel road, between the townlands of Rea and Tullig. Archaeologist Rob O'Hara, co-director of Archer Planning Ltd, is the principal author of a fourth paper in the journal dealing with 'road archaeology'. Discoveries on the route

of another short realignment—in this instance the N86 between Annascaul and Gortbreagoge on the Dingle Peninsula—have provided what the author describes as 'a small but nevertheless important dataset for prehistoric and early medieval settlement in this region'.

To purchase a copy of this edition of the journal, the production of which was part funded by the NRA, e-mail journal@kerryhistory.ie or write to The Hon. Editor, The Kerry Archaeological and Historical Society Journal, Kerry County Library, Moyderwell, Tralee, Co. Kerry.

Michael Stanley, NRA Archaeologist, NRA Head Office.

NEWS

Scheme monographs launched in Clare Museum

There is an unworldly feeling to a museum at night that is deliciously spooky. In a twilight world of polished display cases the eye is drawn to gold and bronze artefacts in spotlight pools of light and the surroundings feel more like an Aladdin's cave than a public institution. This was the setting in Ennis, Co. Clare, on Friday 21 September 2012, when John Rattigan, the Curator of Clare Museum, opened its doors for international Culture Night and hosted the launch of two new NRA scheme monographs.

Our book launches are always well attended but an especially large crowd had come to hear our guest speaker at this event, journalist and author Fintan O'Toole. They were rewarded by Mr O'Toole's embracing Clare as "Ireland's most cultured county". He continued to deliver a thoughtful rumination on the nature of change, the dangers of looking only to the future, and the important role of archaeology in enlarging and perpetuating Ireland's long cultural memory. His key message was that "heritage belongs to all of us" and he applauded the publication of new-found archaeological discoveries by the NRA in attractive and accessible publications.

The two new books are *Borderlands* by Shane Delaney, David Bayley, Ed Lyne, Siobhán McNamara, Joe Nunan and Karen Molloy, and *Beneath the Banner* by Nóra Bermingham, Graham Hull and Kate Taylor. They both describe archaeological investigations along the route of the M18 motorway: the first is concerned with the transitional lands between Galway and Clare (thus also between Connacht and

Munster) and the second with the hinterland of Ennis in the Fergus river valley. The discoveries they describe amount to a complete panorama of human life in the region, from early prehistory to the modern period, ranging from early prehistoric house sites and cremation cemeteries to industrial-period brickfields and lime kilns. As with previous titles in this series, the new books are lavishly illustrated in full colour.

Representing the authors of *Borderlands*, Shane Delaney spoke about the human story of archaeological investigations, recalling all of the team members who had contributed to fieldwork, analyses

and the publication itself. As most of the excavations took place in wintertime, it had been an especially challenging project for the fieldworkers. Nóra Bermingham continued this theme when she spoke for the authors of *Beneath the Banner*, saying that an archaeological project unites us with the past but, like the new road itself, also unites people in the present and especially by enlarging their shared understanding of the place where they live.

Borderlands: archaeological investigations along the route of the M18 Gort to Crusheen road scheme (NRA Scheme Monographs 9) was produced by Irish Archaeological Consultancy Ltd and *Beneath the Banner: archaeology of the M18 Ennis Bypass and N85 Western Relief Road, Co. Clare* (NRA Scheme Monographs 10) was produced by TVAS (Ireland) Ltd. Both are published by the NRA and are available through bookshops or directly from Wordwell Books, Unit 9, 78 Furze Road, Sandyford, Dublin 18 (tel: +353 1 2947860; e-mail: office@wordwellbooks.com).

Jerry O'Sullivan, NRA Archaeologist, North-west Team.



At the launch of *Borderlands* and *Beneath the Banner* in Clare Museum on international Culture Night (21 September 2012) were: (left to right) Karen Molloy, Michael O'Connell and Jim McKeon (authors), John Rattigan (Curator), Kate Taylor and Nóra Bermingham (authors), Sébastien Joubert (NRA Archaeologist), Fintan O'Toole (guest speaker), David Bayley, Graham Hull and Shane Delaney (authors), Sheelagh Hughes (Editorial Solutions Ltd) and Róisín McAuley (LSD Ltd). (Photo: John O'Neill for Clare County Council)



At the launch of *Settlement and Community in the Fir Tulach Kingdom* at the Westmeath County Buildings, Mullingar: (left to right) NRA Head of Archaeology Rónán Swan, Dr Tim Young (contributor), Emeritus Professor Michael Herity, Paul Stevens (author), NRA Archaeologist Orlaith Egan and John Channing (author). (Photo: Ellis Ryan, *Westmeath Examiner*)

New book on the *Fir Tulach* kingdom

The *Fir Tulach* ('Men of the hills') ruled an early medieval territory nestled in the heart of the Irish midlands. Part of ancient Mide (Meath), it lay at the very centre of early Irish ecclesiastical affairs and political power. Characterised as a landscape of rolling glacial eskers, interspersed with lakes, such as Lough Ennell, low-lying bog and fertile meadows, the territory was home to once-powerful ruling families which were superseded by the Anglo-Norman Tyrrells. Later, the Kingdom became part of the Barony of Fartullagh in the modern County of Westmeath. Last October the NRA and Westmeath County Council published *Settlement and Community in the Fir Tulach Kingdom* by Paul Stevens and John Channing, a new book describing three significant excavations on the routes of the M6 and N52, which cross through this ancient territory.

Valerie J Keeley Ltd carried out numerous archaeological excavations along the M6 (Kinnegad to Kilbeggan) and N52 (Mullingar

to Belvedere) routes; however, this book describes the excavation results from three significant early medieval sites. Rochfort Demesne provided a fascinating insight into the development of an enclosed settlement (ringfort). A remarkable collection of over 1,000 early to late medieval burials within a mainly local and agrarian population is revealed at Ballykilmore. Finally, a high level of art and industry is accredited to a monastic community at Clonfad, culminating in unique evidence for the manufacture of a brazed iron handbell. The excavations are individually described and illustrated in detail in this book, with full interpretations, discussion and analysis of the archaeological, historical, scientific and environmental background in the wider early medieval context. The book is also



accompanied by a CD which includes two additional scientific and technical chapters on the large assemblage of human remains and highly significant metallurgical analysis.

Emeritus Professor Michael Herity, University College Dublin, launched *Settlement and Community in the Fir Tulach Kingdom* at the Westmeath County Buildings in Mullingar on 30 November 2012. The event was well attended by the local community and heritage groups, who were treated to short presentations by the principal authors and excavation directors Paul Stevens and John Channing of Valerie J Keeley Ltd.

Settlement and Community in the Fir Tulach Kingdom: archaeological excavation on the M6 & N52 road schemes is published by the NRA and Westmeath County Council and is available through bookshops or directly from Wordwell Books, Unit 9, 78 Furze Road, Sandyford, Dublin 18 (tel: +353 1 2947860; e-mail: office@wordwellbooks.com).

Orlaith Egan, NRA Archaeologist, Eastern Team.

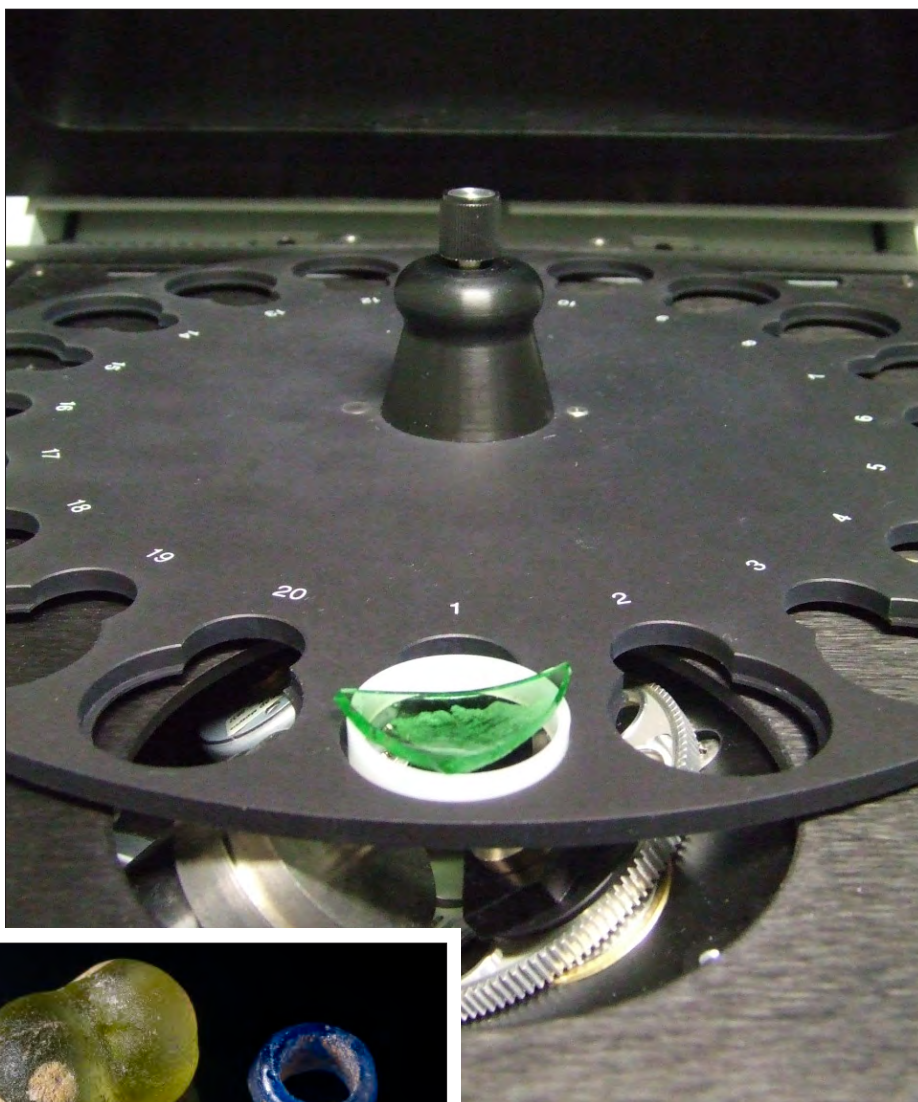
NEWS



Gazing back through a crystal ball

Glass is an amorphous, non-crystalline solid that can be cut and shaped in almost any way depending on the skill of the crafter. Different components can be incorporated into its structure to affect the colour, transparency and hardness. Owing to these properties and its attractive appearance, glass has been a highly valued object and status item for thousands of years. By using scientific analytical techniques such as X-ray fluorescence or scanning electron microscopy with energy dispersive X-ray, elements in archaeological glass can be determined and light shed on production techniques, trading patterns and other such information. Research currently being undertaken at the Institute of Technology, Sligo, by the author is investigating a range of glass artefacts including items recovered during archaeological excavations on national road schemes.

The research methodology primarily involves using scientific techniques to determine trace elements within glass artefacts and fragments thereof. The analytical instruments chosen for the study provide qualitative and quantitative elemental analysis that is thorough and non-destructive. The data generated will then be used to investigate the social and economic context in which the artefacts were created and used. Extensive work on modern glass samples is currently underway to optimise the techniques and procedures for analysing the archaeological material. With the rich amount and variety of glass finds available, there is great scope for carrying out analytical work on



Glass fragment undergoing X-ray fluorescence analysis. (Photo: Sinead Middleton)



Early medieval glass beads recovered at Castlefarm 1, Co. Meath, on the M3 motorway. (Photo: John Sunderland)

archaeological glass in Ireland and great potential to significantly enrich knowledge of these artefacts.

The fruits of this research will be presented in a thesis entitled 'The characterisation and classification of archaeological glass samples using multi-elemental analysis' and a summary of the final results will be reported in a future edition of *Seanda*. It is also intended to compile a database of the results from analysed samples to which future samples can be compared.

Sinead Middleton, MSc student, Institute of Technology, Sligo.



Outside Academy House at the launch of *Harvesting the Stars*: (front row from left) Sir Barry Cunliffe, NRA Senior Archaeologist Mary Deevy, Aidan O'Connell (excavation director and author), NRA CEO Fred Barry, Órla Scully (contributor); (back row from left) NRA Head of Archaeology Rónán Swan, NRA Chairman Cormac O'Rourke, Dr Frank Prendergast (contributor), Rob O'Hara (contributor), Dr Eoin Grogan (contributor and academic editor) and Helen Roche (contributor). (Photos: Johnny Bambury)



A large crowd gathered in the Royal Irish Academy, Dublin, on Thursday 14 March 2013 to hear one of the stars of international archaeology, Sir Barry Cunliffe, Emeritus Professor of European Archaeology at the University of Oxford, launch the 11th NRA scheme monograph *Harvesting the Stars: a pagan temple at Lismullin, Co. Meath*, written by Aidan O'Connell of Archer Heritage Planning Ltd.

Professor Cunliffe is renowned internationally as one of the foremost scholars of British and European prehistoric archaeology, and is the acknowledged leading authority on the Iron Age. He described the new book as “a microcosm of good archaeology at work”. Playing on the title of the monograph he said “some sites are star sites and this site has received star treatment”. Professor Cunliffe praised it as an attractive model of how to publish a complex excavation being designed to make the excavation results available to a wide readership while, at the same time, providing the specialist with the supporting data necessary to interrogate the evidence.

Harvesting the Stars: a pagan temple at Lismullin, Co. Meath is published by the NRA and is available from bookshops or directly from Wordwell Books, Unit 9, 78 Furze Road, Sandyford, Dublin 18 (tel: +353 1 2947860; e-mail: office@wordwellbooks.com).

Mary Deevy, NRA Senior Archaeologist, Eastern Team.

‘Star treatment’ for *Harvesting the Stars*



Sir Barry Cunliffe and author Aidan O'Connell.

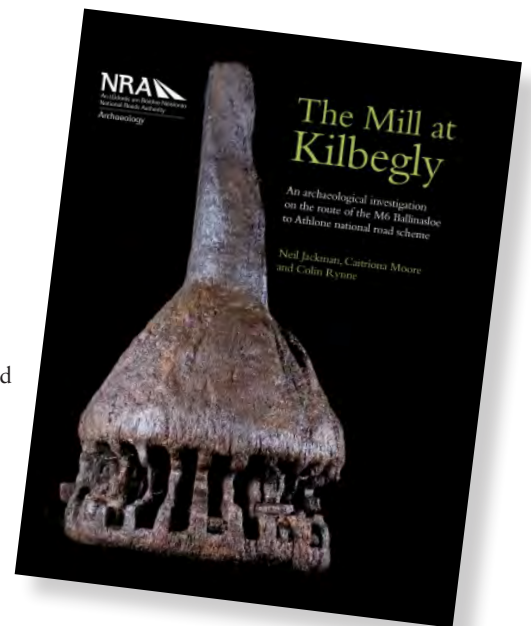
NEWS

The Mill at Kilbegly

Roscommon County Library hosted a large audience on 6 June 2013 for the launch of *The Mill at Kilbegly* by Neil Jackman, Caitriona Moore and Colin Rynne, the latest title in the NRA Scheme Monographs series. The mill site was excavated by archaeologists from Valerie J Keeley Ltd in 2007. At the time, there was intense local interest in the spectacularly well-preserved remains of this early medieval horizontal-wheeled mill and hence the high local interest in the full publication of the investigation results. The book was launched by distinguished scholar and author Professor Fergus Kelly, of the Dublin Institute for Advanced Studies. Excavation Director Neil Jackman addressed the audience with warm and often humorous recollections of life on the excavation site. Councillor Tom Crosby, Mayor of County Roscommon, said he hoped one day to see the preserved mill timbers (currently stored at the National Museum of Ireland) exhibited in the county.

The Mill at Kilbegly: an archaeological investigation on the route of the M6 Ballinasloe to Athlone national road scheme (NRA Scheme Monographs 12) is published by the NRA and is available through bookshops or directly from Wordwell Books, Unit 9, 78 Furze Road, Sandyford, Dublin 18 (tel: +353 1 2947860; e-mail: office@wordwellbooks.com).

Jerry O'Sullivan, NRA Archaeologist, North-west Team.

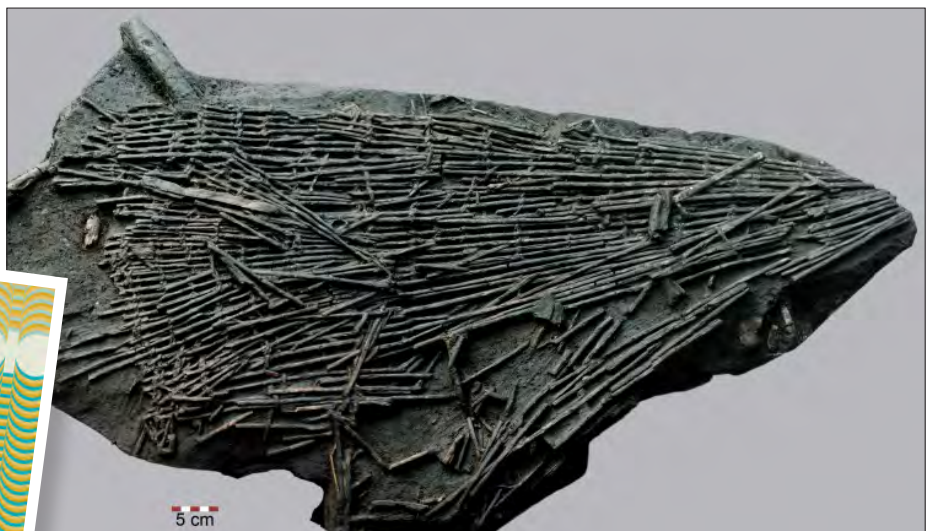
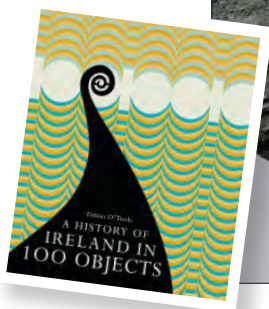


One in a hundred

'It does not look like much: some small smooth interwoven sticks embedded in the turf from a bog at Clowanstown, Co. Meath.'

But this 7,000-year-old Late Mesolithic fish-trap, a miraculous survival and one of four found during archaeological investigations in advance of the construction of the M3 motorway, is the first of 100 objects chosen to unearth

the long history of our island one object at a time. Fintan O'Toole's sumptuous publication *A History of Ireland in 100 Objects* was published recently by the Royal Irish Academy, the National Museum of Ireland and The Irish Times (for more information see www.100objects.ie/). The fish-traps also feature in an app to accompany the book, which was offered freely 'from the people of Ireland to the world' to celebrate the Irish Presidency of



The woven basketry fish-trap from Clowanstown, Co. Meath, which is the first entry in Fintan O'Toole's *A History of Ireland in 100 Objects*. (Photo: John Sunderland)

the Council of the European Union and St Patrick's Day. To download the app visit <http://eu2013.ie/100objects/>.

The successful conservation of the woven basketry fish-traps was a considerable achievement. National Museum of Ireland conservators Kasia Bernaciak and Karena Morton described the process at

the International Council of Museums Committee for Conservation conference on Wet Organic Archaeological Materials held in Istanbul, Turkey, on 13–17 May 2013. A summary of their paper features in this issue of *Seanda* (see p. 32).

Mary Deevy, NRA Senior Archaeologist, Eastern Team.



Archaeologists taking palaeoenvironmental samples during the excavation of a Bronze Age roundhouse at Ballymona, Co. Cork, on the M8. (Photo: John Sunderland)

were written by Dr Meriel McClatchie and Dr Ellen O'Carroll with contributions from Dr Eileen Reilly, all of which have extensive experience in their respective fields and have contributed significantly to archaeological excavations on national roads. Dr O'Carroll was the recipient of an NRA Research Fellowship (see *Seanda*, Issue 4 [2009], p. 6) and aspects of her doctoral research are reflected in the new document.

The guidelines seek to provide a comprehensive approach for the assessment of palaeoenvironmental remains often found during archaeological excavations on road schemes. The purpose of the guidance is to ensure that a standardised approach is adopted to palaeoenvironmental sampling, analysis and reporting. A key objective is to ensure that on-site environmental sampling strategies and post-excavation analysis and reporting conform to the best standard and are focused on achieving high-quality and scientifically meaningful results in the context of the Department of Finance approved Standard Conditions of Engagement for Consultancy Services (Archaeological).

NRA Archaeology would welcome feedback on the guidelines, which will be available for consultation at: www.nra.ie/archaeology/.

Rónán Swan, NRA Head of Archaeology, Head Office.

Bag it!

In September 2013 NRA Archaeology intends to put out for consultation its forthcoming guidelines relating to environmental sampling during archaeological works on national road schemes. The NRA Palaeoenvironmental

Sampling Guidelines set out a comprehensive methodology for the retrieval, analysis and reporting of plant macro remains (e.g. seeds), wood, charcoal, pollen and insects from archaeological investigations. The guidelines

Questions of shared language

From 2013 to 2016 a research team based at Aberystwyth, Oxford, London and Bangor will examine the questions of how, where and when the Proto-Celtic branch of language emerged from Proto-Indo-European. The Atlantic Europe and the Metal Ages project, funded by the Arts and Humanities Research Council, will use a multi-disciplinary approach to seek an archaeological context for a known historical linguistic process. In traditional thinking, Celtic emerged and spread from the earliest Iron Age of west-central Europe during what is classified as the Hallstatt C1a period (c. 800–750 BC).

This does not, however, take into account the evidence, most acutely in the Iberian Peninsula, where no Hallstatt C1a material culture occurs but where there is diverse, early, and archaic Celtic languages by at least the mid-seventh century BC.

To feed into this debate the research team will collate Ancient Celtic written evidence relevant to the reconstruction of Proto-Celtic, including its archaeological context, but also gather and interpret archaeological evidence for inter- and supra-regional connections throughout Ireland, Britain,

Armorica and the western Iberian Peninsula during the Copper and Bronze Ages, c. 2900–800 BC. This project therefore affords the opportunity to not only collate the Irish data, much of which has been generated by NRA excavations, but to also access it within its wider Atlantic European context.

Check out updates on the project website (www.aemap.ac.uk) and if you feel you have a site that can contribute to the project, email Kerri.Cleary@wales.ac.uk.

Kerri Cleary, Research Fellow, University of Wales Centre for Advanced Welsh and Celtic Studies.



Reconstruction drawing by Jonathan Millar showing a 'moonrise ritual' at the Ballingowan avenue, Co. Kerry. (Images: Rubicon Heritage Services Ltd)

Avenue to the heavens?

An excavation along the N22 Tralee Bypass in County Kerry may have uncovered rare evidence of prehistoric ritual processions.

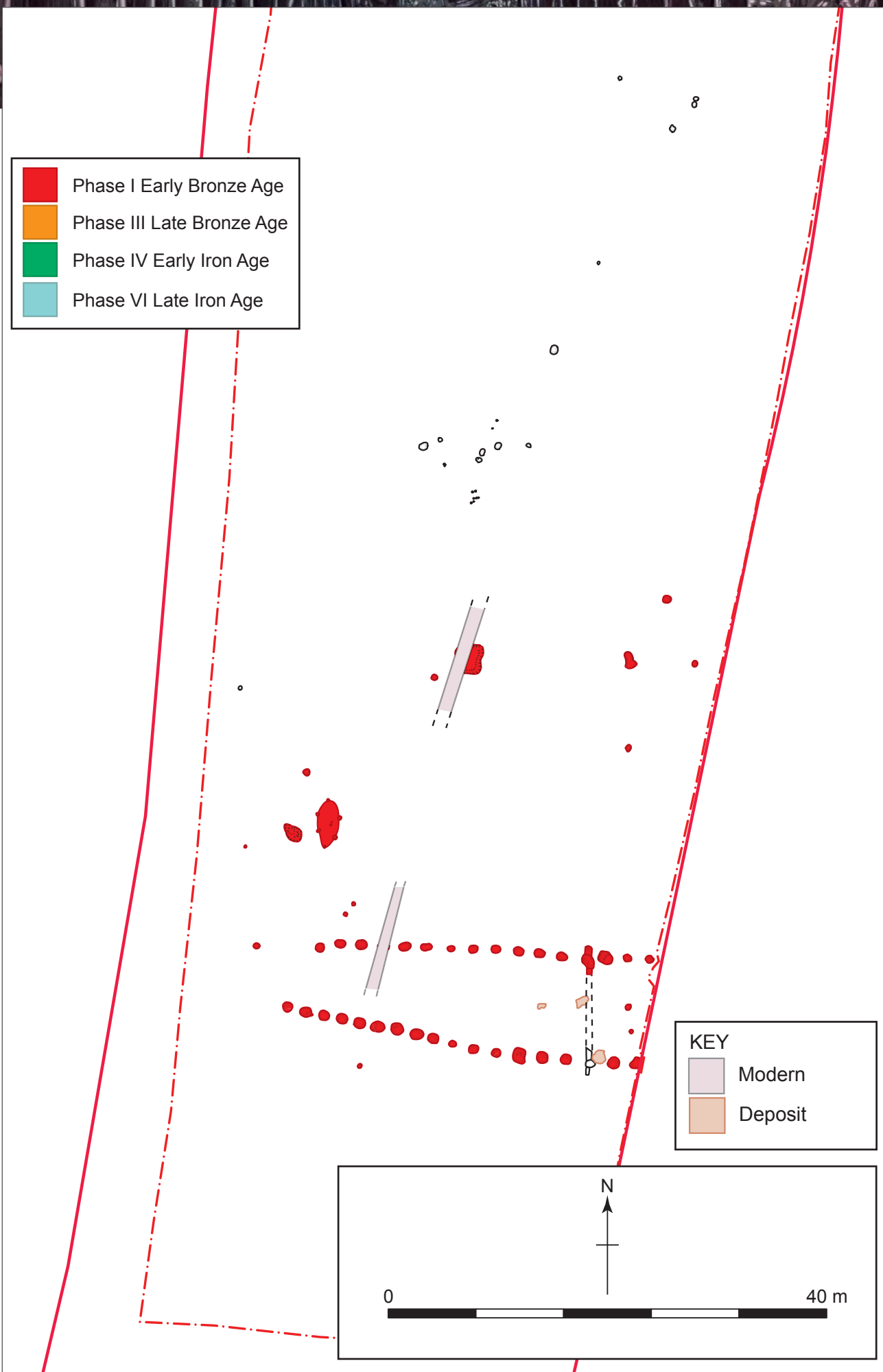
By Colm Moloney, Managing Director with Rubicon Heritage Services Ltd

Many fascinating sites were identified during archaeological investigations undertaken along the route of the Tralee Bypass in 2011 (see *Seanda*, Issue 6 [2011], pp. 29–31). By far the most enigmatic of these monuments was a possible ritual 'avenue' uncovered in the townland of Ballingowan, just east of Tralee town, which was defined by pits that once held wooden posts.

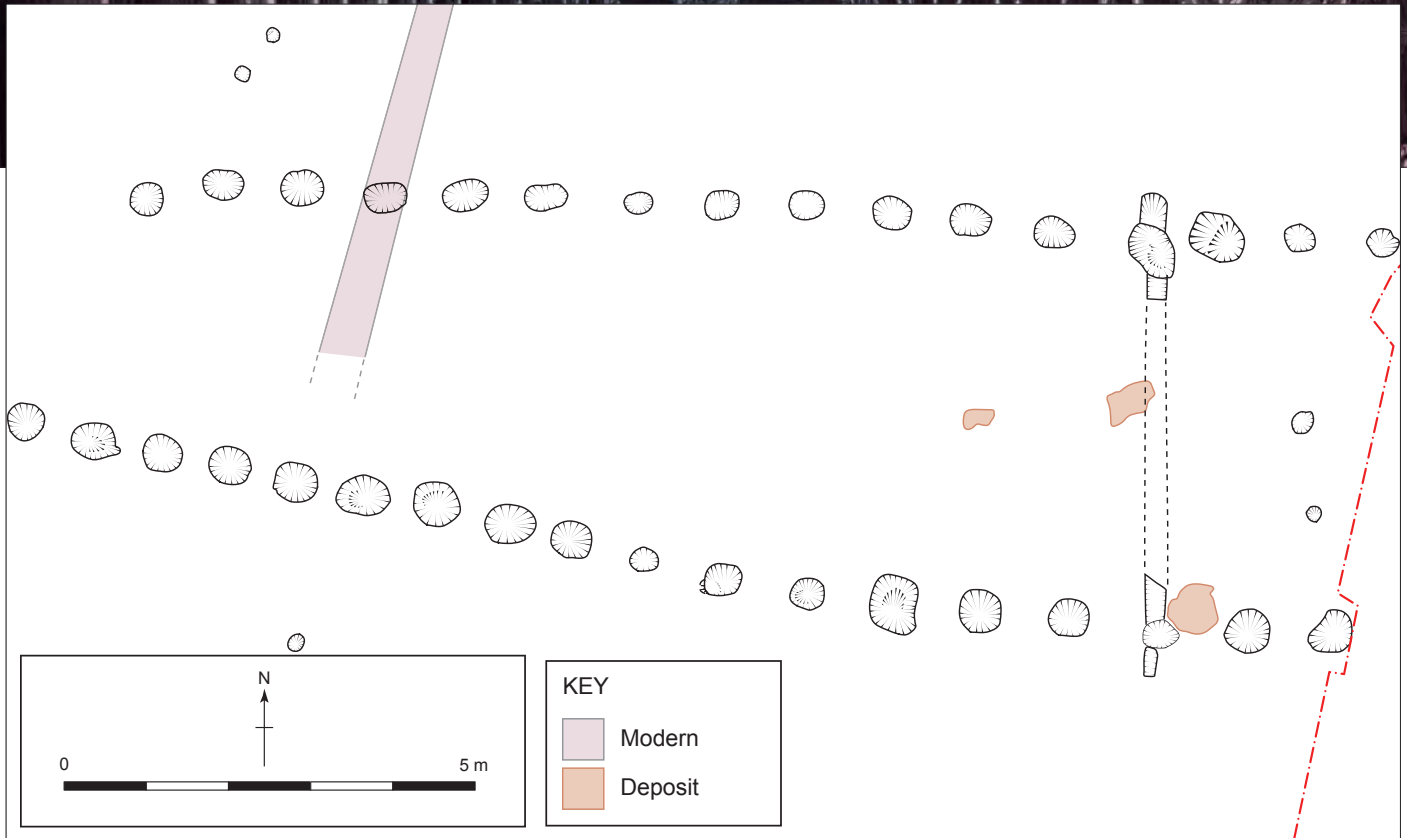
Two parallel rows of pits, which appeared to form an avenue, were identified at the extreme south of the Ballingowan site, on an alignment that was 8° south of an east–west axis. The distance between the two rows was 8.6 m at the eastern extent of excavation. It increased to a maximum of 9 m just to the west of the limit of excavation and gradually narrowed to a

minimum of 5.1 m at the western end of the avenue. Within the excavation area, the avenue was 30 m long, but extended to the east, beyond the road corridor. A geophysical survey undertaken in this unexcavated area appeared to indicate that both rows continued to the east. The spacing between the pits was on average 1 m (roughly a pace). No datable artefacts or material suitable for radiocarbon dating was retrieved from the pits and no comparable site has been identified previously in Ireland. These pits are likely to have functioned as post-pits as there was evidence of packing stones and post-pipes (marks showing where a wooden post had decayed) in a number of them.

A small oval arrangement of six post-holes was located 10 m north of the pit avenue. The area enclosed by these features measured 4 m north–south by 1 m east–west and did not seem to have the size and shape practical for a domestic structure.



Overall plan of the avenue and other features excavated at Ballyingowan.



Detailed plan of the pit avenue.

It is difficult to find Irish sites comparable to the Ballingowan avenue, particularly as no dating evidence was recovered from the post-pits. Parallel lines of pits/post-holes have been identified in association with Late Neolithic (c. 2850–2450 BC) timber

enclosures at Ballynahatty, Co. Down, and Newgrange, Co. Meath. These were elements of complex ritual monuments, whereas the Ballingowan avenue appears to be a 'stand-alone' example. A circular enclosure at Lugg, Co. Dublin, also had a possible

avenue formed by large posts which led to the entrance of the enclosure. This has been dated to the Late Bronze Age (c. 1100–800 BC). Circular post-built enclosures reappear as a monument type c. 100 BC, during the Iron Age, and have been excavated at Site B,



Aerial view of the Ballingowan avenue.



Navan Fort (Emain Macha), Co. Armagh, Dún Ailinne, Co. Kildare, and at Lismullin, Raffin and the Rath of the Synods, Tara, in County Meath. None of the above examples, however, are comparable to the Ballingowan avenue.

Parallels for post-built avenues are known in the United Kingdom (UK). A double pit alignment was excavated in 1998–9 at Thornborough in North Yorkshire, England. Here 88 pits were excavated over a distance of 350 m. Post-pipes and stone packing were noted in the pit fills indicating that the pits originally held upright timbers. Double pit alignments in the UK generally date from the Early Bronze Age (c. 2450–1600 BC) and the Thornborough example was consistent with this chronology.

The pits here contained stone tools and pottery typical of the period and produced two Early Bronze Age radiocarbon dates. The Ballingowan avenue has many similarities to the Thornborough pit

alignment. Both monuments appear to have comprised two parallel lines of posts and would have had the same visual appearance in the landscape. The alignments were similar distances apart and both curved near the terminus. The Thornborough example is the largest of four in the Ure-Swale area of North Yorkshire, but other examples are known elsewhere in England and in Scotland. Avenues of this date are believed to have had a ritual function relating to processions through sacred landscapes. No ritual monuments are known in Ballingowan that would constitute such a ritual landscape. The small oval structure identified immediately north of the western terminus of the alignment may have been related to the activities associated with the avenue.

It is believed that similar pit alignments in Cambridgeshire defined immense ceremonial spaces related to large-scale gatherings of people during the Bronze Age. Interestingly, the Cambridgeshire avenues were located on the edge of a river floodplain, as is the Ballingowan example.

The possibility also exists that the Ballingowan avenue may have been aligned on a celestial body at a significant time of the year. For instance, the sun rises along the centre of the avenue on 21 March and in September the sun, moon and Mercury all break the horizon at this point around the 16th day of the month. The moon would have risen at this point on the horizon on 1 November at the beginning of the second millennium BC—an important date in the pastoralist calendar. This date marked the end of the grazing season when flocks and herds were brought together and animals that could not be maintained through the winter months were slaughtered and consumed through feasting.

Taking all of the available evidence into consideration, it would seem that the Ballingowan avenue is similar to a number of British examples dating from the Early Bronze Age. This would suggest that a hitherto unrecognised prehistoric sacred landscape may survive to the east of Tralee, elements of which may still be detectable through further archaeological investigation.

A version of this article appeared previously on the Rubicon Heritage Blog (<http://www.rubiconheritage.com/2012/11/07/the-ballingowan-avenue-all-in-the-mind/>).

The Ballingowan avenue may have been aligned on a celestial body at a significant time of the year.



Sunrise along the avenue.

Underground,



overground

Geophysicist James Bonsall conducting an earth resistance survey at Kilmurry, Co. Kilkenny. (Photo: Earthsound Archaeological Geophysics)

A recently launched online database has made the results of NRA-funded geophysical surveys accessible to all.

By James Bonsall, Thomas Sparrow, Chris Gaffney and Ian Armit, University of Bradford, and Rónán Swan, NRA Head of Archaeology

A new online database of geophysical surveys on Irish national roads was formally launched at the Institute of Archaeologists of Ireland spring conference—entitled ‘The Legacy of Development-led Archaeology’—on 6 April 2013. The NRA Archaeological Geophysical Survey Database contains an archive of each archaeological geophysical survey report carried out for the NRA in advance of new road schemes between 2001

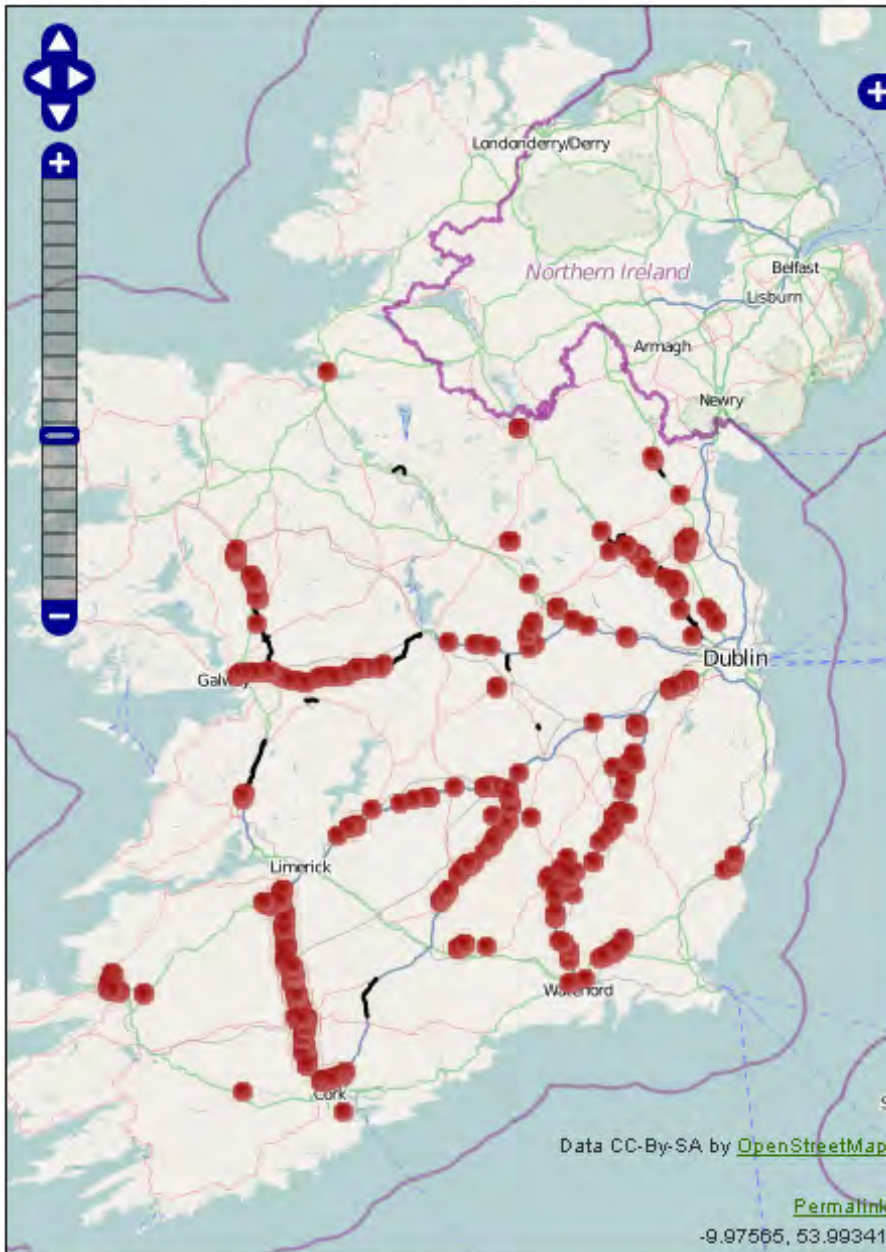
and 2010. The new database complements the existing NRA Archaeological Database (www.nra.ie/archaeology/nra-archaeological-database/), which currently holds data on more than 800 excavations and will shortly be supported by downloadable PDF reports.

James Bonsall, Dr Chris Gaffney and Professor Ian Armit at the University of

Bradford were commissioned to review archaeological geophysical surveys on NRA road schemes from 2001 to 2010 as part of an NRA Fellowship Programme (see *Seanda*, Issue 6 [2011], pp. 38–9). One of the key deliverables of the research Fellowship was an online database from which the geophysical reports could be viewed. The NRA Archaeological Geophysical Survey Database has been designed by James Bonsall and Thomas Sparrow to meet this need and can be currently accessed at www.field2archive.org/nra/.

The background to the database is that geophysical surveys have been used by the NRA between 2001 and 2010 to prospect for previously unknown archaeological sites

National Roads Authority Archaeological Geophysical Survey Database



Method of Investigation

Magnetic Gradiometry

Geology

- Sedimentary
- All geologies
- Igneous
- Metamorphic & Igneous
- Sedimentary**
- Sedimentary & Igneous
- Sedimentary & Metamorphic
- Sedimentary, Metamorphic & Igneous

road schemes). When clicked, each result will return some basic meta-data (data that describes other data) for the survey report, including land use, geology, contractor, survey techniques used, area coverage, spatial resolution, a report summary and a link to the full report.

The database will make a valuable contribution to promoting a greater awareness of the past among local communities through which national road schemes pass.

The NRA has assembled a vast quantity of archaeological information from its road-building activity and a key objective of its work is to ensure that the knowledge generated not only feeds back into the decision-making and project-planning process, but also is disseminated. It aims to be transparently accountable to the general public, who have funded much of the work. Information on all of the reports has been made available by the NRA; some of this information is limited to basic details, but numerous reports are available as a PDF document that may be downloaded freely by the public for personal use or for educational purposes. The database will make a valuable contribution to promoting a greater awareness of the past among local communities through which national road schemes pass. The cumulative effect of the professional geophysical survey work ensures that the NRA not only fulfils its statutory obligations (as set down in legislation and national policy), but also demonstrates a commitment to meaningful compliance. These efforts also serve to place the NRA at the cutting edge of the development and application of new archaeological geophysical investigation technologies and techniques, with direct benefits for the efficiency of its work on road schemes.

Within three months of going live, the database had 237 visits, of which 59% were 'returning visitors', which shows that it is being used as a resource. Some 54% of visitors were from Ireland, 27% from the UK, 12% from mainland Europe and 7% were from the USA, Russia, Japan and Australia. The database is a testament to the quality of work and the dedication of the geophysical surveyors; without their initial hard work on the road schemes—and the collection of some truly outstanding geophysical data—this project would not have been possible. The NRA and the University of Bradford would like to thank all of the geophysical consultants that worked on Irish road schemes between 2001 and 2010, culminating in this important archive.

A screen view of the online NRA Archaeological Geophysical Survey Database (www.field2archive.org/nra/).

and/or to investigate known or potential archaeological sites on 70 new roads across Ireland, covering more than 1,700 hectares of survey. The geophysical surveys were carried out by a number of consultancies from Ireland, the UK and Germany, resulting in more than 170 individual reports.

The database can be queried to identify survey reports that used a specific geophysical technique and/or upon a specific geology; the results are presented in an OpenLayers viewer (with data supplied from OpenStreetMap) as a clickable point source (for isolated surveys) or a polygon (for entire

Plan of the upper layer of mainly children's burials from a children's burial ground (*cillín*) at Tonybaun, Co. Mayo. (Drawing: Mayo County Council)



The excavation of children's burial grounds on national roads has afforded poignant opportunities for acts of remembrance across the country.

By Orlaith Egan, NRA
Archaeologist with the
Eastern Team

A silent memory

*Broken my heart, lonely my life
With my darling child lying here and me tormented
It is the end of my world, my little red-haired girl
Laid out in Crucán na bPáiste*

The mournful words of *Crucán na bPáiste* (Burial Place of the Children), a song composed by Brendan Graham, recall a children's burial ground in Mayo and a mother's heartbreak and grief on the tragic loss of her child during Famine times (see www.youtube.com/watch?v=RomFfK33v3U and www.youtube.com/watch?v=g7LrYOS-Qk0). It evokes feelings of great anguish and pain on the death of a child and speaks of the isolation of their resting place in a children's burial ground, also commonly known as a *cillín*. Other names include *ceallunach*, *calluragh*, *caldrag*, *cealltrach*, *kileens* and *lisin*.



Remains of a stone *leacht* or altar cairn at the Tonybaun *cillin*. (Photo: Mayo County Council)



Aerial view of the multi-period cemetery-settlement enclosure at Johnstown, Co. Meath, with the mill-race ditch which contained post-medieval children's burials at top left. (Photo: Archaeological Consultancy Services Ltd)

In Ireland children's burial grounds (*cillíní*) are mainly associated with the burial of unbaptised children and other members of society whom the Church considered unsuitable for burial in consecrated ground. This funerary distinction was practised widely from the later medieval period up to modern times. *Cillíní* often included strangers or persons of unknown religion, criminals, victims of famine, murder or suicide, women who died in childbirth, excommunicates and individuals with an intellectual disability. Local traditions and historical studies largely associate these sites with post-medieval and modern times, but it is widely thought that their origins can be traced back to the early medieval period and may even have developed in pagan times before the introduction of Christianity. Evidence from archaeological excavations on national road schemes, such as those at Raystown and Laytown, Co. Meath, and Carrowkeel, Co. Galway, suggests that the

burial rite of segregating children from adults was practised in the early medieval period. Similar segregation practices were also evident on pre-Christian sites such as Ballydavis, Co. Laois, dating from the Late Iron Age/early medieval period, and Moone, Co. Kildare, dating from the Iron Age.

The practice of interring unbaptised infants and others in unconsecrated ground was largely adopted from Canon Law in the 13th century, which stipulated that those who could not receive a Christian burial were to be laid in a place set apart. The laws associated with unbaptised infants included the doctrine of 'limbo' (a place between heaven and hell), which was based on the belief that baptism was considered essential to cleanse a person of 'original sin'. The souls of unbaptised infants were not absolved of original



Post-excavation plan of the cemetery-settlement at Owenbristry, Co. Galway. (Drawing: Eachtra Archaeological Projects)



Elevated view of the cemetery area at Owenbristry after the removal of the cashel wall. (Photo: John Sunderland)

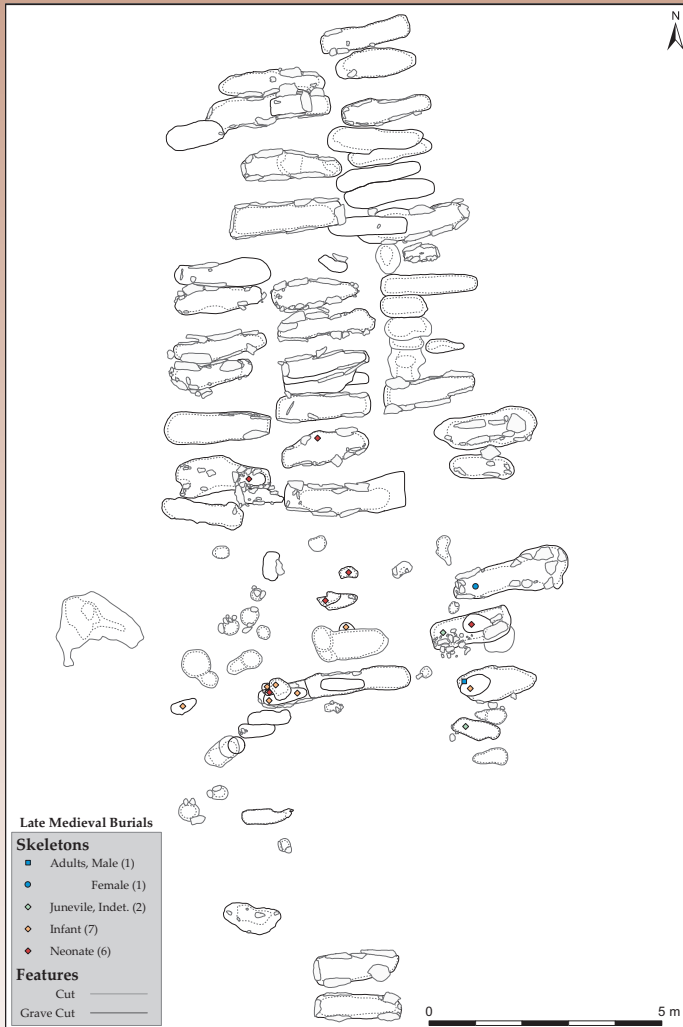


Figure 16: Post-excavation plan showing the age and sex of the later burials. Plan showing late medieval *cillín* burials at Owenbristy. (Drawing: Eachtra Archaeological Projects)



Aerial view of Mackney ringfort and *cillín*. (Photo: Hany Mazouk)

sin therefore they were condemned to limbo and could not receive a Christian burial.

Children's burial grounds are found at diverse locations such as old churches and graveyards, natural landmarks, crossroads and boundaries; the most common location being abandoned settlements. There are thousands of *cillín* sites around the country, many of which are recorded on old maps and in local historical records. Many, however, remain unrecorded and only survive as part of local tradition within a community. They are often secret places that are not spoken of widely owing to the stigma and superstition that can be associated with them. The burials there sometimes took place in the dead of night, with only parents or immediate family members present, and without any religious ceremony.

Several *cillíní* have been discovered and excavated along national roads over the last decade and include examples such as Tonybaun, Co. Mayo, Johnstown, Co. Meath, Owenbristy and Mackney, Co. Galway, Kill, Co. Kildare, and Ballykilmore, Co. Westmeath. Most of these sites were unknown prior to their excavation, but Tonybaun and Kill were recorded on early 19th-century maps. Most of the excavated sites (excluding the 19th/20th-century *cillín* at Kill) were associated with some form of previous burial, settlement or religious activity. The majority of the *cillíní* burials were of infants and children; few adult interments were identified. The bodies were mainly buried in simple east-west aligned pit graves, although some individuals were buried with stone head supports. Evidence from surviving wood, nails and metal brackets and bands suggests that some of them were coffin burials, while recovered shroud pins suggest that many were buried wrapped in shrouds.

Tonybaun, Co. Mayo

The children's burial ground excavated at Tonybaun by Joanna Nolan was a known *cillín* at the edge of a large field on the banks of the River Moy, 6 km south of Ballina. Over 248 burials were excavated, most of which were infants. The cemetery was demarcated by a 19th-century stone wall, with remnants of the foundations of an earlier boundary wall inside the modern walls. Many of the burials had rectangular grave markers, some of which had linear stone settings infilled with smaller stones, while others were small stone spreads set haphazardly in a loose rectangular arrangement. Numerous burials were interred in coffins or wrapped in simple shrouds. Wood and nails survived from some of the coffins and numerous pins used to fasten the shrouds were recovered. The burials dated from the late 15th century to the mid 20th century.



Cillin burials of premature twins buried in a single grave at Mackney. (Photo: Eachtra Archaeological Projects)

A very interesting rectangular stone structure was identified at the Tonybaun *cillin*. This consisted of an altar-like cairn or *leacht*, which is a feature often found at early medieval burial grounds. Such cairns may have been used as pilgrimage stations, reliquary shrines, altars or burial markers. The *leacht* at Tonybaun appeared to pre-date the modern burial phase, but is likely to have continued in use throughout the existence of the burial ground. Several hundred small, water-rolled stones of quartz were found surrounding the *leacht*. These were probably placed on the monument by mourners as part of a spiritual or commemorative ritual. The practice of depositing small quartz stones in burials and at burial sites is an age-old custom in the Christian church, originating during early medieval times and continuing even today.

Other evidence that further suggests that this children's burial ground may have been located on an earlier site included the presence of early medieval plough ridges, rotary quern-stones and metal-working evidence. Activity relating to Iron Age metal-working was also found close to the site.

Johnstown, Co. Meath

The *cillin* excavated at Johnstown by Linda Clarke was a previously undocumented burial ground south-west of Enfield, situated on the summit of a low promontory that overlooked the marshy floodplain of the River Blackwater. Although there is no historical record of the site, there was a strong local association with it being a sacred place known locally as 'Scaruppa'. The *cillin* was located at a much older site, which was a focus for burial, settlement and industry for over 1,000 years. The site began as a central burial mound containing

the earliest burials dating from the Late Iron Age/early medieval period and continued in use as a large cemetery-settlement enclosure up to the 17th century. Over 461 burials were recorded, 63 of which are associated with the children's burial ground.

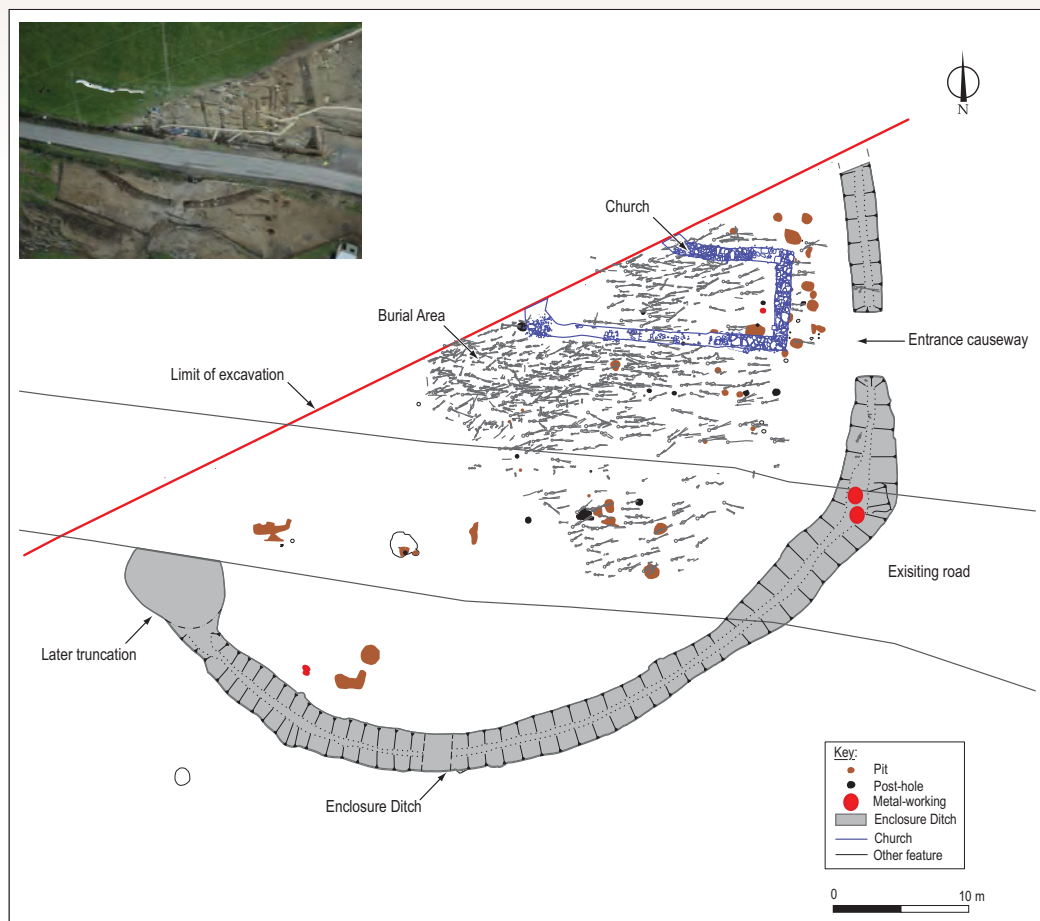
The *cillin* burial area was just outside the main enclosure, within a defunct mill-race ditch and gravel bank. The mill-race was used in the 12th century to supply water to a horizontal-wheeled watermill, but was filled in during the 17th century. A total of 61 infants and two adults were buried here between the post-medieval and early modern periods. The infants were mainly laid to rest in either coffins or shrouds, as evidenced by finds of wood, coffin nails, metal brackets and bands, and copper-alloy shroud pins.

Many infant burials were also found in the earlier cemetery-settlement enclosure, indicating that, at this time, it was acceptable to bury unbaptised infants alongside baptised individuals. This practice appears to have changed after the 17th century with the creation of the *cillin* beyond the main enclosure.

Owenbristy, Co. Galway

The Owenbristy *cillin*, c. 3 km west of Ardrahan village in south Galway, was in a low-lying area on a small promontory that projected out into a seasonal lake or turlough. It was a previously unknown site, long forgotten within local memory, and was only identified during archaeological testing as a partly upstanding circular stone enclosure or cashel. Finn Delaney excavated the site.

The *cillin* was located at an earlier site dating from the early medieval period; though artefactual evidence suggests that there had also been prehistoric activity in the area. The site evolved as a cemetery-settlement enclosed by a circular stone wall, with domestic activity at the centre of the enclosure and a clearly defined cemetery area in the eastern sector. Over 96 burials were present, most dating from the mid sixth century to the 10th century. These were largely placed in simple pit graves and slab-lined graves, some of which had stone lintels.



Schematic plan and inset aerial photo of Ballykilmore cemetery site, Co. Westmeath. (Image: Valerie J Keeley Ltd)

Following the early medieval phase of settlement and burial the site appears to have been inactive for a period of 250 years until it was reused for *cillín*-type burials during the medieval period. Over 17 *cillín* burials were interred in simple graves in the southern half of the cemetery and were mainly of infants and children (only two adult burials were identified). These dated from the early 13th century to the mid 15th century. Two child burials dating from the post-medieval period were also excavated, reflecting a continuation of the *cillín* tradition into later times.

Mackney, Co. Galway

This previously unknown site, c.1.5 km south-west of Ballinasloe, was situated on a level area on the side of a low hillock. It was identified as a possible site during field survey and testing and was excavated by Finn Delaney. The *cillín* was sited at what proved to be a ringfort with an associated souterrain, which had extensive evidence for early medieval occupation, including a central roundhouse, several other structures and metal-working activity. The ringfort dated from the eighth century, with some later activity continuing into the 17th century.

Following the abandonment of the settlement, the site was reused as a burial ground for mainly children and infants. The majority of the burials were interred in the south-eastern arc of the enclosing ditch of the ringfort, with only a few buried in the southern part of the ringfort interior. Many of the burials were contained in coffins and/or shrouds.

A total of 143 burials were excavated, which primarily included infants and children under the age of six (only three adult burials were uncovered). Of these burials, 116 were infants and included many who died premature or at full term. A rather tragic example of premature infant deaths was that of twins interred in a single grave. The excavation of such burials makes us think of the immense tragedy and sadness associated with the loss of a child and their place of burial. They also remind us of the high infant mortality rate that was part of everyday life in the not so distant past.

Commemorating children's burial grounds

The children's burial grounds excavated on national road schemes have afforded an opportunity to learn more about the origins and longevity of this burial custom and provided a wealth of information on the health and high mortality rates of infants and children over several hundred years. These discoveries highlight that there are many children's burial grounds around the country that remain forgotten and undocumented.



The bog oak sculpture erected in Tyrrellspass cemetery to commemorate the *cillín* and all those buried at the Ballykilmore site. (Photo: Orlaith Egan)

Children's burial grounds are found at diverse locations such as old churches and graveyards, natural landmarks, crossroads and boundaries; the most common location being abandoned settlements.

Several of the *cillín* burials excavated on road schemes have since been laid to rest through reburial in modern cemeteries and include those found at Tonybaun, Johnstown and Kill. The most recent reinterments were from the *cillín* at Ballykilmore, south

of Tyrrellspass, Co. Westmeath, excavated by John Channing. As with the sites described above, there was almost no local knowledge of this *cillín*, which had been established within an early medieval ecclesiastical enclosure.

Following the archaeological excavation and scientific analysis of the human remains from the Ballykilmore *cillín*, the local community and Westmeath County Council requested that the infant remains should be given a dignified and respectful reburial. The proposal to reinter the infants at Tyrrellspass cemetery was accepted by the National Museum of Ireland (which is ultimately responsible under legislation for all human remains recovered from archaeological sites). An ecumenical ceremony was held in Tyrrellspass church on a Saturday evening in June 2012, followed by the reburial of over 94 infants from the *cillín*. This ceremony represented a deep emotional and spiritual engagement by the people of Tyrrellspass who now have the opportunity to acknowledge and finally lay to rest ancestors who were buried in often clandestine and sorrowful circumstances over several centuries. A bog oak sculpture was erected in the cemetery to commemorate the *cillín* and all those buried at the Ballykilmore site.

Harvesting Galway's arable heritage



Aerial view of Mackney ringfort in east Galway excavated on the M6 motorway. (Photo: Hany Marzouk)

New archaeobotanical research is seeking to illuminate regional patterns of early medieval arable farming in south and east Galway.

By Penny Johnston, freelance archaeobotanist

Archaeobotanical studies use the remains of plants to gather information about how arable agriculture was practised at different archaeological sites. We know that there must have been regional differences in Ireland in the past (because there are differences in climate, soil types, and in the social and economic ways that farming was managed across the country), but these have not always been easy to identify because there were not enough sites or archaeobotanical assemblages to compare.

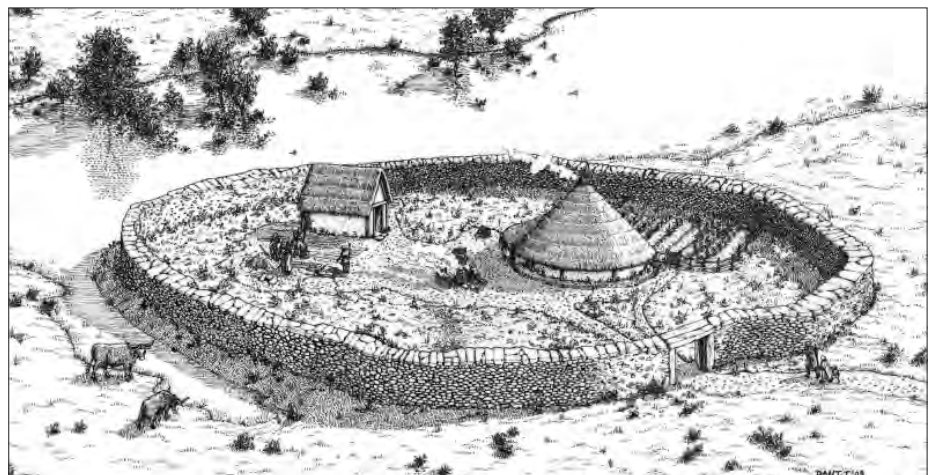
All this has changed in the past two decades as archaeobotanical analysis became a routine aspect of excavation methodology. This means that the range of data available to researchers has increased exponentially. For the early medieval period, archaeobotanists have known for a long time that high percentages of oats and barley are common, whereas wheat and rye tend to be found in much smaller amounts. However, it has only recently been possible to examine the differences in early medieval archaeobotanical data from a regional perspective. Evidence collated from each of the four provinces suggests that oat and barley were common in assemblages from all provinces during this period, but that wheat was more common in Leinster and Connaught than in Munster and Ulster (for more information see <http://tinyurl.com/leqs5oq>). New work, which is in its infancy, will examine one of these regions in more detail, taking a local perspective and examining archaeobotanical results from early medieval sites in south and east Galway.

This research, which is funded by a grant from the Royal Irish Academy, will pool archaeobotanical results from numerous early medieval sites in Galway, many of which were excavated along the routes of roads such as the M6 and the N18. It will concentrate on enclosed settlement sites (ringforts and cashels) such as those uncovered at Mackney and Loughbown 1 (see *Seanda*, Issue 2 [2007], pp. 27–9) and Owenbristry (see *Seanda*, Issue 4 [2009], pp. 36–9). The results from these sites will be compared to a comparative regional study carried out in south-west Ireland in the late 1990s, where plant remains from six ringforts and cashels were examined. The same site-types (enclosed settlements) have been chosen for both of these studies in order to ensure that any differences and patterns

noted are (as far as can be ascertained) linked to regional and local patterns in agriculture, rather than to other factors such as social hierarchy.

Many other early medieval sites, particularly cereal-drying kilns, have also been excavated in Galway. This study will use the results from such sites to assess whether ringforts and cashels, which may have been relatively high status, reveal a noticeably different pattern in their plant remains in comparison to other sites.

This work is in its very early stages; there will hopefully be interesting results to present in the pages of this magazine next year.



Reconstruction of Owenbristry cashel in south Galway excavated on the N18 road scheme. (Drawing: Dan Tietzsch-Tyler)

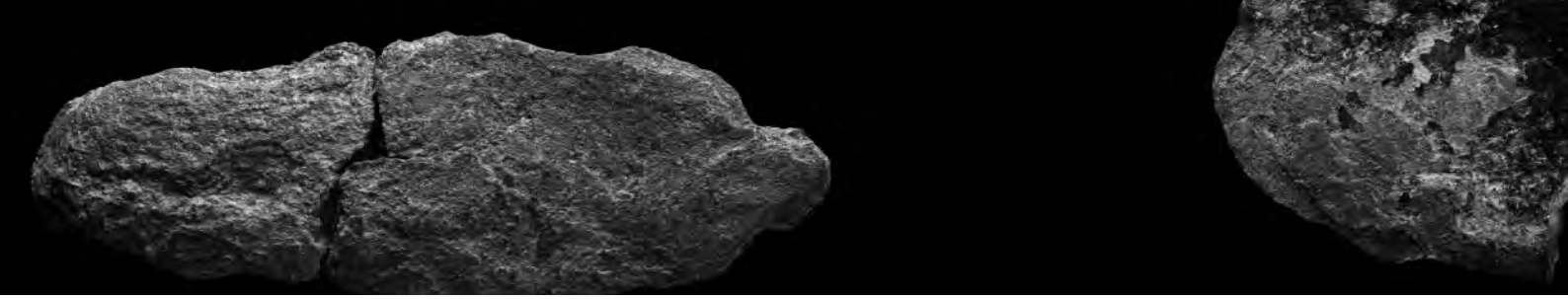


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Death with a close shave?



The opposing faces of the two bronze razors recovered from a cremation burial at Peafield, Co. Limerick. (Photo: John Sunderland)



Male grooming in prehistoric Ireland may have had more to do with sacred rites than simply maintaining one's physical appearance.

By Michael Stanley, NRA Archaeologist at NRA Head Office

The customary morning shave will be familiar to most men, but how long has this been a daily routine in Ireland? We have good evidence that the removal of facial (and perhaps cranial) hair has been practised here since at least the Early Bronze Age. More than 40 double-edged bronze razors of very thin cross-section are known from this period on the island and these implements are thought to have been in use around 1900–1400 BC. Three razors recovered during excavations on national road projects bring the total to 47. These discoveries, however, appear to reveal more about ritual than routine.

The majority of Early Bronze Age razors have been found as grave goods accompanying cremation burials, sometimes contained within ceramic pots known as cordoned urns and placed in simple pits. Bone from four burials with razors (one being an inhumation) has been identified as being that of adult males. In 2002, not one, but two razors were recovered during the excavation of a pit burial at Peafield, Co. Limerick, directed by Frank Coyne of Aegis Archaeology. This was an unprecedented discovery in an Irish context. The burial at Peafield was part of a Bronze Age 'flat' cemetery discovered during archaeological monitoring of sand extraction for the construction of the Limerick Southern Ring Road. The burial ground comprised 10 pits, nine of which contained cremated bone identified as human or probable human. The bone assemblage most likely represents nine adults of indeterminate sex. Eight of the pits with cremated remains, but no grave goods, were distributed around a sandstone boulder; the pit containing the razors was 100 m south-east of this and yielded the largest amount of bone (more than

1 kg). A long-bone fragment from this pit was radiocarbon-dated to 1727–1503 BC (towards the end of the Early Bronze Age) and the pair of razors that accompanied the burial strongly suggests that the remains are that of an adult male.

Charles Mount, an expert in Bronze Age archaeology, has analysed the Peafield razors; both of which are broken in two. One of them survives to a length of 59 mm, but is missing a portion of its broad blade and its butt and tang, onto which a short handle would have been fitted. Both faces of the razor are decorated with two near parallel lines. A rivet hole near the end of the blade indicates an attempt to repair this precious implement, presumably after the original handle had broken off. This razor is similar to examples from counties Galway, Mayo and Wicklow. The second razor survives to a length of 58 mm, but is different in form, being narrower and undecorated. It is less fragmentary, but the blade point and tang end are missing. This razor resembles two blades recorded from County Westmeath.

The third razor discovered on a national road was found in the post-hole of a Middle Bronze Age house excavated in 2007 by Kate Taylor of TVAS (Ireland) Ltd, at Carrigatoher Ryan, Co. Tipperary, on the N7 Nenagh–Limerick scheme. This razor was accompanied by potsherds of cordoned urn type and burnt animal bone, and may have been part of a 'foundation deposit'. That is to say, these objects were deliberately placed here in a ritual act that perhaps sought to confer good fortune upon the inhabitants. It is thought that this razor may have been burned on a funeral pyre prior to being used as an offering in the house foundation. Such ritual behaviour highlights the significance accorded to these implements.

Archaeologist Rhoda Kavanagh, who published a definitive study of Early Bronze Age razors in 1991, noted that no other Bronze Age artefact exhibits as much evidence of adjustment and repair in order to prolong its working life. Such items would not have been relinquished lightly, so placing the pair of razors in the grave at Peafield must have been an act of great import. Clearly, not everyone had the resources necessary to possess a bronze razor—they must have been prized personal items restricted to a small élite. If this was the case, it follows that being clean-shaven was quite transformative and would have set an individual apart within their community. But perhaps the very act of removing facial or other hair was subject to strict social and spiritual conventions, which may have dictated when this could be done and by whom? Kavanagh has argued that shaving was not a daily or frequent exercise during prehistory, but was most likely a ritual act reserved for specific ceremonies and funerary rites performed by a barber-surgeon with perceived magical abilities akin to a medicine man or shaman. The man buried at Peafield with two razors was evidently someone of great social standing. One wonders if he was ritually shaven with these very razors prior to being placed on the funeral pyre and, if so, what was the significance of this to those who buried him? What's more, might he have been a revered, razor-wielding shaman?

The Peafield cremation cemetery is one of numerous sites described in *River Road: the archaeology of the Limerick Southern Ring Road* by Nóra Bermingham, Frank Coyne, Graham Hull, Fiona Reilly and Kate Taylor, which will be published by the NRA in autumn 2013.



The majority of Early Bronze Age razors have been found as grave goods accompanying cremation burials.

Small-scale road schemes around the country, like those at 'Bolane Bends', Co. Limerick, continue to produce locally important archaeological discoveries.

By Fintan Walsh, Excavation Director with Irish Archaeological Consultancy Ltd

During the summer—or monsoon season as it has now seemingly become—of 2012 the construction of a partial realignment of the N69, just west of Kildimo, offered a great opportunity to peek into the archaeological landscape of this part of County Limerick. Although what we found—a series of burnt mounds and two charcoal-production kilns—are very common archaeological features of the Irish landscape, they are actually quite important for the local area. The relatively low level of development/infrastructure projects in this region affords few opportunities for new archaeological discoveries to be made. Apart from the newly discovered burnt mounds, the only other evidence we have of prehistoric settlement in the immediate area includes a cist grave, a standing stone and a few other burnt mounds. Significant early historic settlement is more evident in the landscape here and the N69 investigations have also added to our knowledge of this period.

At a place known locally as 'Bolane Bends', amongst large rock outcrops and hollows, three separate burnt mound sites were discovered, two of which were clearly reused and revisited a number of times over many centuries. Burnt mounds are traditionally thought to have been ancient cooking sites, where meat was boiled in water-filled troughs heated using hot rocks. The hot water could, of course, have been used for a variety of purposes, not least of which is bathing. Indeed, one of the troughs at Glenameade was roughly the same size as a modern bath—perfectly illustrated in the photograph below. We would expect, and indeed commonly find, that

Round the bend at Bolane



A bath-sized trough at Glenameade 1, Co. Limerick. (Photos: Irish Archaeological Consultancy Ltd)



A burnt mound at Bolane 2, Co. Limerick, unusually positioned on a steep slope.

the majority of such sites are found in low-lying areas close to water. Unusually, however, one of the burnt mounds on this project (Bolane 2) was on the steep-sided slope of a rock outcrop. The other two mounds were on marginal ground: Bolane 1 beside former bogland and Glennameade 1 beside a small turlough (seasonal body of water). These had multiple troughs and each had at least two phases of use, the earliest being in the Chalcolithic period (Copper Age, c. 2500 BC), while Glennameade 1 was still in use in the Late Bronze Age (c. 1000 BC). There is good radiocarbon dating evidence indicating that these sites were all in use at the same time, suggestive of a continuous presence in this area throughout the Bronze Age. Investigations on the N69 Robertstown Junction Scheme, c. 15 km to the west, also uncovered evidence of Bronze Age activity in this area. Here a cremation pit burial containing the partial remains (total weight 5.9 g) of a young juvenile, perhaps an infant, were excavated in advance

Although the burnt mounds and charcoal-production kilns are very common archaeological features of the Irish landscape, they are quite important for the local area.

of road widening. The bone was radiocarbon-dated to 2283–2038 BC (Early Bronze Age).

Much later, during the early medieval period, Glennameade 1 was chosen as the location of two charcoal-production kilns, which have been dated to sometime between the eighth and ninth century AD. Charcoal kilns are commonly identified as black, charcoal-stained rectangular areas marking the location of the intense burning/ smouldering of wood (commonly oak) to manufacture charcoal. Charcoal was a very important fuel used in cereal-drying kilns and metal-working furnaces at this time.

We did not find any other evidence of early medieval settlement during our excavations. However, there are a number of ringforts (enclosed farmsteads) in Glennameade dating from this period. More intriguingly, a church site, dating from between the eighth and 10th centuries, is only a stone's throw to the north-west. This is considered to be one of the oldest churches in the county. The charcoal-production kilns excavated at Glennameade are broadly contemporary with this church, so perhaps they represent a fragment of the industrial activity associated with and on the periphery of this religious centre?



The troughs at Bolane 1 during excavation.



Cleaning-back at a charcoal-production kiln at Glennameade 1 during our glorious summer weather.



Elevated view of the multi-period settlement at Ballydawmore 5, Co. Wexford, looking north. The medieval enclosure ditch was the most prominent feature on the site, which lies just south of a meandering stream. (Photo: Gavin Duffy, AirShots Ltd)

Elusive hunter-fisher- gatherers

An excavation on the M11 Clogh to Enniscorthy motorway has unearthed important evidence for the presence of Mesolithic settlers in County Wexford.

By Farina Sternke, freelance lithic finds specialist

Evidence for Mesolithic settlement sites in County Wexford remains elusive, with the exception of a spectacular Early Mesolithic (c. 8000–5500 BC) stone axehead recovered during archaeological monitoring at Killybegs in 2004 and a handful of Late Mesolithic (c. 5500–4000 BC) stray finds. There are many reasons for this apparent near absence of Mesolithic hunter-fisher-gatherer settlement in the region (e.g.

archaeological recovery biases and the intensity of agricultural practices during the last two millennia), but it is not thought to reflect the prehistoric reality.

The stone artefact assemblage excavated by Leigh Barker at a multi-period settlement site in the townland of Ballydawmore on the route of the M11, thus far represents the most substantial evidence for Early and

Late Mesolithic settlers in the county. The assemblage consists of 270 stone items and is associated with the remains of Early Neolithic and Bronze Age settlement, a medieval enclosure and a large number of associated pits. It contains Mesolithic and Neolithic finds and one possible early medieval artefact.

Early Mesolithic stone tools

Given the classic Early Mesolithic site location—on a small hill overlooking a stream—it is not surprising that almost 50% of the flaked flints date from the Early Mesolithic period, most likely to the middle or latter part of this era (7500–7000 BC). The assemblage is generally comparable with Early Mesolithic material found throughout the island of Ireland. Unfortunately, as is so often the case, the artefacts were recovered from the topsoil and secondary contexts (e.g. from the fill of the medieval enclosure ditch). This circumstance is also reflected in their condition. The finds are predominantly patinated (tarnished on the surface) and burnt; some are heavily weathered.

The assemblage contains six flint cores that are related to the production of small blades typical of the period. They are very uniform in size. The cores are classified as follows:

two single-platform cores (E4171:352:1 and 1559:8), three dual-platform cores (E4171:51:1, 261:2 and 1557:99) and one multi-platform core (not illustrated). ('Platform' refers to the surface of the core from which pieces were struck off.) The multi-platform core is of particular interest as it is the remnant of a single or dual-platform blade core that was reused and reworked by a novice or a beginner knapper. Two of the dual-platform cores were also passed on to and reworked by novice knappers, who (unlike experienced knappers) were unable to repair their knapping mistakes. This is a common phenomenon in prehistory, yet it is rarely identified in Irish

stone assemblages. It is thought to reflect one of the methods of transmitting vital flint-knapping skills from one generation to the next.

In addition to the cores, at least 14 blades (e.g. E4171:172:1) and 14 flakes show the typical technological characteristics associated with Early Mesolithic stone tool production. These are careful preparation/abrasion of the platform edge and the use of a soft (stone) hammer for blade and flake removal from the cores. Some blades and many of the flakes relate to core preparation and core front rejuvenation. The latter are important for the correction of mistakes

and for the maintenance of a successful workflow, which in turn conserves raw material, time and energy. This degree of core preparation and the particular attention paid to core maintenance is a distinct characteristic of Early Mesolithic knapping. It is almost never observed in Neolithic and Bronze Age lithic manufacture in Ireland.

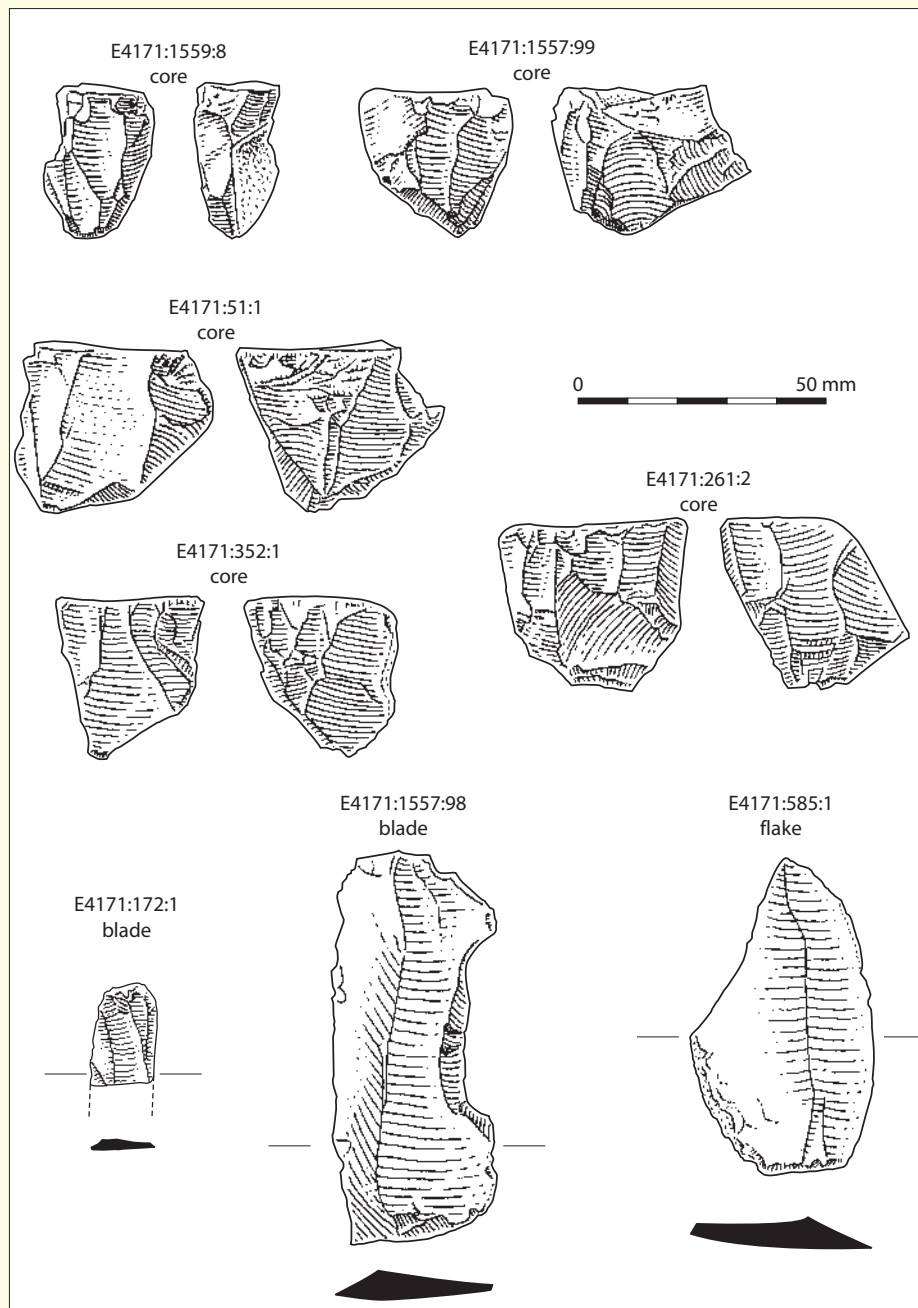
Numerous pieces of small production waste (débitage) together with primary or secondary core products—blades and flakes that retain some cortex (outer nodule surface) on their outer sides—confirm that flint-knapping took place at Ballydawmore. Flint is available in small to medium-sized nodules along the Wexford coast or in the glacial tills. A dozen or so larger beach flint pebbles appear to have been brought to the site in an unmodified state and reduced *in situ*, with the purpose of producing suitable blades and flakes that were then retouched into microliths or used as knives. (Microliths are very small blade tools, typically 2–3 cm in length, which would have been inserted into wooden hafts. Retouching refers to the trimming done to the edge of an implement in order to make it into a functional tool.) Two possible microliths—a fragment of a backed bladelet and an atypical example—were identified in the assemblage as well as a possible piercer or small borer. While it is possible that the artefacts were redeposited from a settlement site beyond the excavation area, the lack of a substantial amount of retouched artefacts, particularly scrapers, within the assemblage may indicate that the site represents a location where retooling took place (i.e. the replacement and repair of hunting gear). As such, it was perhaps a short-term seasonal hunting camp, rather than a settlement site like Mount Sandel, Co. Derry.

Late Mesolithic stone tools

The assemblage contained four finds that are securely dated to the end of the Late Mesolithic period (c. 5000–4000 BC). These are a blade (E4171:1557:98) and three flakes that were struck off from large single-platform flint cores, with a medium hard or hard (stone) hammer. One of the flakes is a classic broad leaf-shaped example (E4171:585:1) and another is an excellent blade core rejuvenation flake. These Late Mesolithic artefacts were not made at the site, but were most likely imported from further north, where large flint nodules were more abundant.

The blade and two flakes bear evidence of use, perhaps as knives, but as with so many other Late Mesolithic find spots, it is impossible to ascertain if the location represents a short-term settlement site or merely a location where retooling took place. At any rate, the four finds must be regarded as another important addition to the evidence for the presence of Mesolithic hunter-fisher-gatherers in County Wexford.

The stone artefact assemblage excavated at Ballydawmore represents the most substantial evidence so far for Early and Late Mesolithic settlers in the county.



The Early and Late Mesolithic flint tool assemblage from Ballydawmore 5. (Drawing: Conor McHale)

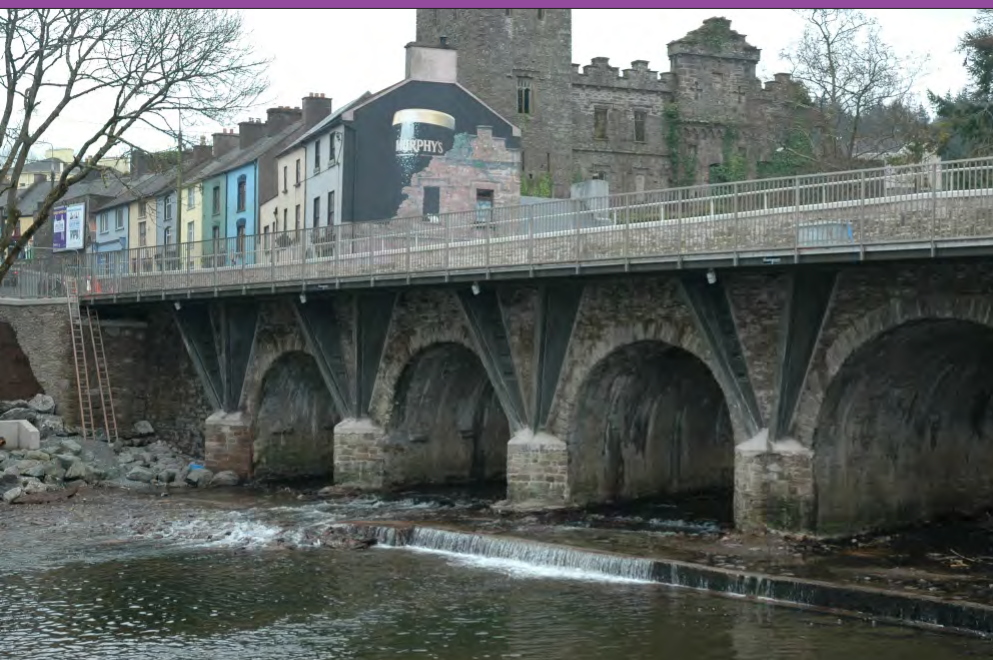


Macroom Bridge, Co. Cork, spanning the River Sullane, with site of Macroom Castle in the background. (Photo: Cork County Council)

Bridging the new with the old

Recent works on Macroom Bridge, Co. Cork, have provided a case study in historic bridge modification.

By Ken Hanley, NRA Archaeologist, and Sheila Lane, Lane Purcell Archaeology



New footbridge in place with support struts and deflector plates mounted on the cutwaters. (Photo: Ken Hanley)

In December 2010 Macroom Town Council published notice of its intent to construct a pedestrian footbridge against the northern side of Macroom Bridge, at Macroom, Co. Cork. From an archaeological/architectural perspective, the project would be a particular challenge: how could a footbridge, for which there was a demonstrable public need, be connected to an historic structure in a manner both sensitive and befitting to its status as a prominent architectural feature of cultural heritage value? This article examines the approaches taken and offers an appraisal of its outcome.

About the bridge

Macroom Bridge is a masonry arch structure on the route of the N22 road, where it crosses the River Sullane. A bridge crossing at this location was in existence since at least the later medieval period, as the crossing was protected by Macroom Castle since at least the 16th century, possibly earlier. The current bridge, a much more recent structure, was constructed predominantly of sandstone rubble; it measures approximately 82 m long and has eight semicircular arches with two segmental arches to their west. In addition, the remains of two blocked semicircular arches survive in the fabric of the bridge, on the western bank.

The bridge had over time been widened to the north. The structure's other notable architectural features are its two viewing platforms/refuges added to the south parapet side, the cobbling on the river bed beneath the bridge and the so-called 'hangman's hole', located under the third arch from the east. The bridge springs from abutments at either end where both Castle Street (east side) and New Street (west side) slope down towards the river.

Significance and protective measures

The bridge receives statutory protection as it is a monument in the ownership of Cork County Council that is listed in the Record of Protected Structures (ref. RPS22) within the Macroom Town Development Plan 2009–2015. It is also in the Record of Monuments and Places (ref. CO071-048), as set out in the National Monuments (Amendments) Acts, 1930–2004. During the project planning phase David Slattery Conservation Architects and Historic Buildings Consultants was commissioned to undertake an architectural and historical assessment of the bridge and to recommend measures to help ensure a sensitive approach was taken with respect to the proposed works.



Looking south at detail of partly rebuilt cutwaters with struts supporting footbridge decking. (Photo: Ken Hanley)

The footbridge design

Roughan and O'Donovan, Consulting Engineers, were appointed to design the footbridge and associated works. The footbridge was to comprise a slender steel deck, held against the existing bridge by a combination of steel support struts and anchors. The footbridge would have a steel-panelled riverside parapet and a pedestrian guardrail on the bridge parapet. Consent to carry out the works was granted by the

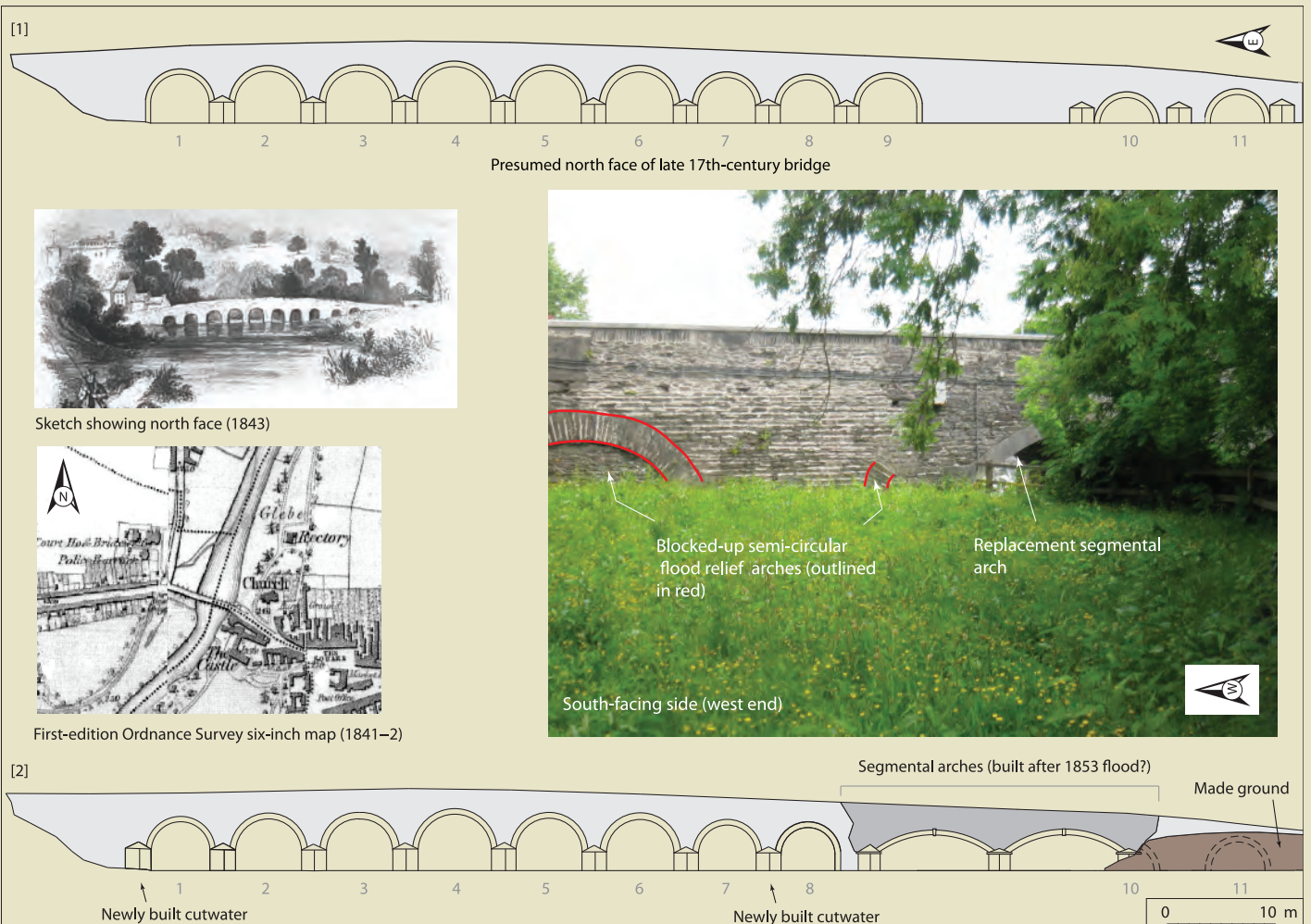
Department for Environment, Heritage and Local Government in March 2011, with conditions, including a requirement that the site works would be archaeologically monitored and that the Architectural Heritage Unit of the Department be consulted regarding the specifics of the works. As part of a broader consultation process, including with the various statutory bodies, plans and details of the proposal were also made available in Macroom Town

Hall for viewing and comment during the period 16 December 2010 to 11 February 2011. Planning permission was granted by Macroom Town Council in July 2011.

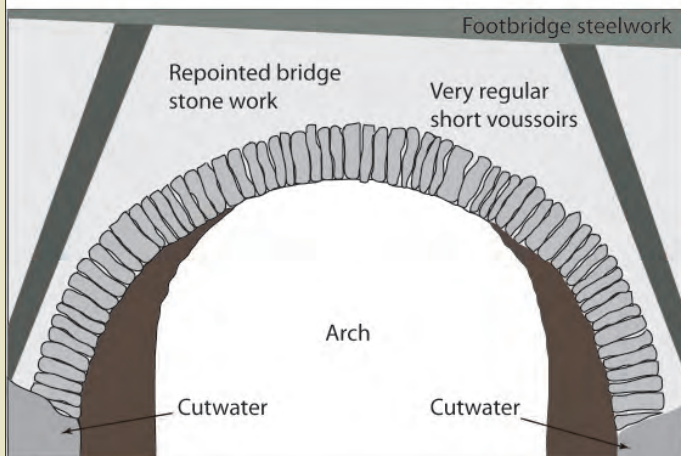
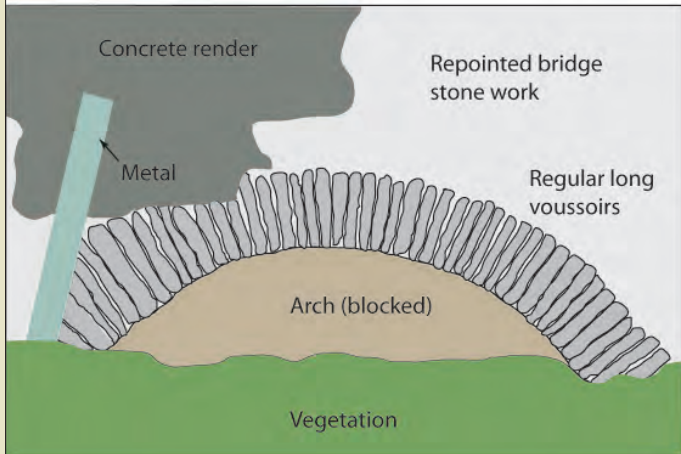
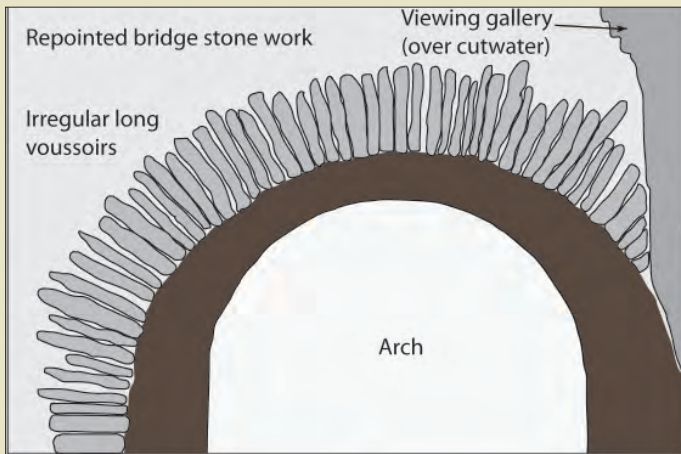
Archaeological monitoring

Works to the bridge were archaeologically monitored by Lane Purcell Archaeology in late 2012/early 2013. The existing bridge was completely cleared of vegetation and the masonry cleaned, repaired and re-pointed, with lime mortar used in the re-pointing. In order to attach the footbridge, the existing cutwaters on the north side of the bridge were partly taken down and replaced by concrete plinths, which were then clad by the retained cutwater stone. A base plate of steel was bolted into the core of each cutwater. Two struts were sprung at an angle from each cutwater to the footbridge deck. Deflector plates were inserted between the struts and the bridge face, as required in order to help prevent water-borne debris snagging in the event of flooding. A cutwater was missing on the third last pier on the west end of the bridge and a replacement cutwater was added. A new cutwater was also constructed on the first pier from the east.

The riverbed cobbling, all of which was retained, was in reasonably good condition. While no excavation of the riverbed took



Original late 17th-century stone bridge [1], with modifications following 1853 flood [2]. Former semicircular flood relief arches visible on photographic image to right. (Image: Ken Hanley)



Sample of semicircular arches on Macroom Bridge: (top) south-facing arch on original late 17th-century bridge, (middle) south-facing blocked arch at the western end, corresponding to Arch 10, and (bottom) arch on northern extension of bridge. (Image: Ken Hanley)

place during the works, protective rock armour was placed along the sides of some piers. At each end of the bridge a new abutment was inserted to strengthen the existing abutment. All embankment material was removed from against the existing abutments to the level of the old riverbank and piles were cored under each new abutment. These new abutments were clad with stone matching the bridge and then soil was banked up against their north faces. No archaeological finds or features of significance were noted in relation to the abutment works or to any other ancillary works associated with the project. The parapet wall on each side of the bridge is constructed of random rubble and the

internal face of each wall (facing away from the river) is rendered with concrete. This render was left in place (as required under the terms of the Ministerial Consent) and was only repaired where necessary. The entire facade was then whitewashed. The external faces were cleaned and re-pointed and the render on internal faces was cleaned and repaired, where appropriate. The soldier course on top of each parapet was in fair to poor condition with a weathered cement capping. It was removed to strengthen and repair it and to facilitate the insertion of bolts to hold uprights for a steel handrail. The course was replaced and topped with concrete capping. The steel rail was attached to these uprights.

A greater understanding of Macroom Bridge

The footbridge project has yielded new insights into the evolution of Macroom Bridge as a structure. The Civil Survey (1654–56) of County Cork states that there was a timber bridge at Macroom at that time. This record indicates that the current stone bridge must post-date the mid 17th century, at the very least. Charles Smith's survey of County Cork in 1750, specifically mentions a stone bridge at Macroom. The stone bridge seen by Smith must therefore have been constructed sometime between the mid 1650s and 1750. The southern side of the present bridge is the earliest phase architecturally, measuring 5 m (16.4 ft) wide

and comprising eight semicircular arches that span the river. This width conforms well to the recorded average of 16 feet for masonry arch bridges of 17th-century date in Ireland and suggests that the first phase of Macroom Bridge may well date to the second half of the 17th century. The bridge arches of this early phase are formed by roughly cut, long, irregular voussoirs, separated by pointed cutwaters. (A voussoir is a wedge-shaped stone used to construct an arch.) It is likely, however, that the late 17th-century bridge originally comprised nine semicircular arches crossing the river, with two less tightly spaced flood relief arches (also semicircular) on the western bank. The voussoirs on the blocked semicircular flood relief arches differ slightly from those on the southern face of the bridge; however, this difference may be attributable to a different mason and/or a slight timing difference in the phase of construction. At some point (possibly following the route's designation as a mail coach road and a corresponding 1805 act of parliament that sought improvements in standards and widths for such roads) the bridge was widened to the north by 3.2 m, to 8.2 m (26.9 ft) wide. The stone work on

the newly extended northern side is also of random rubble and the arches are the same general form, width and height as the south side, although with notably smaller, very regular voussoirs. Archaeological monitoring noted that the cutwaters on the northern side of the bridge were constructed flush against the bridge masonry. This indicated that the northern cutwaters were a later phase of construction, although they were clearly in existence prior to the first-edition Ordnance Survey six-inch map of 1841–2, which appears to show nine arches over the river with others (possibly two) set apart on the western bank.

Samuel Lewis's *Topographical Dictionary of Ireland* (published 1837) describes Macroom Bridge as being an old bridge with nine arches (presumably discounting the two flood relief arches on the western bank). An illustration of the bridge made in 1843 depicts at least 10 semicircular arches (the western end of the bridge being masked from view). A Cork Examiner report, dated November 1853, records a substantial flood event that caused significant damage not only to Macroom Bridge, but also

several others in County Cork. At the time, Macroom Bridge is described as having 11 arches, 'two of which were completely destroyed and the others are supposed to have received such an amount of injury and will involve the renewal of the whole structure'. The flood damaged arches, the second and third arches from the west (arches 9 and 10, see illustration on p. 29), were replaced by the two broad segmental arches.

The physical impact on the bridge

In the course of constructing the new footbridge every effort was made to intervene as little as possible with the existing fabric of the bridge and to retain as much of the character as was possible. All works were archaeologically monitored. Essential conservation and maintenance works, in the form of vegetation removal, re-pointing and re-capping, were undertaken to help conserve the existing bridge. The existing cutwaters were partly removed and rebuilt. The removal and rebuilding of the soldier courses on both parapets and the insertion of concrete capping and of handrails did impact the fabric of the bridge, but these impacts were mitigated by the fact that the fabric of the parapet was strengthened as a result. No material of archaeological significance was impacted by the modifications to each embankment. Finally, there was no impact on the riverbed under the bridge and the existing cobbling was preserved.

The visual impact on the bridge

Clearly, the addition of the footbridge to Macroom Bridge has changed the look of the bridge as a whole. The footbridge design was intentionally modern, so as to add a contemporary expression to the historic structure. While this might seem counter intuitive, this approach is considered best practice as it helps ensure there is no future confusion regarding the phasing of the bridge construction. While the existing cutwaters had to be largely rebuilt, these were clad with the original stone and in keeping with the original style and form. The new abutments at either end of the bridge were constructed in matching sandstone rubble. Though modern in form and fabric, the footbridge complements rather than compromises the existing bridge. The nature of the footbridge's panelled steel riverside parapet lends itself to a degree of transparency when viewed from the north, thus lessening the visual intrusion.

Whereas physical impacts are more easily measured, visual impacts are more a matter of personal perspective and taste. While, aesthetically, the new footbridge may find favour with some and less so with others, it will undoubtedly benefit the people of Macroom and it represents a new chapter in the ever evolving history of the bridge.



Southern side of bridge following cleaning and re-pointing, with site of Macroom Castle in the background. (Photo: Ken Hanley)



5 cm

One of the woven basketry fish-traps from Clowanstown, Co. Meath, prior to conservation. (Photo: John Sunderland)

Suspended in time

Archaeological conservators rarely get a chance to preserve Mesolithic basketry, but the remains of woven fish-traps from Clowanstown, Co. Meath, furnished ample opportunity to do so.

By Kasia Bernaciak and Karena Morton of the National Museum of Ireland

The excavations carried out in 2006 in advance of the M3 motorway construction brought to light the remains of a number of Mesolithic fish-traps at Clowanstown, Co. Meath. On a site at the edge of a raised bog, the remains of four large, relatively intact conical baskets and a number of smaller fragments were identified (see *Seanda*, Issue 2 [2007], pp. 49–51). The conservation of the fish-traps was undertaken by a number of conservators in Arch Con Labs—this conservation lab being part of the Margaret Gowen & Co. Ltd archaeological consultancy. Brigid Gallagher and Hege Hollund initially carried out the on-site lifting and micro-excavation of the baskets back in the laboratories and undertook the initial treatment trials, while Karena Morton and Kasia Bernaciak conducted further trials, devised the treatment methodologies and carried out the conservation work.

The fish-traps were found in a flattened and compressed state embedded in the peat. This influenced how they were excavated, lifted and recorded. Most importantly, it also had implications for the approach to the conservation and presentation of the objects. Generally, organic materials benefit from acidic and anaerobic (oxygen-free) bog conditions—the absence of oxygen prevents micro-organisms like fungi or most types of bacteria from decomposing the objects in their entirety. On top of that *Sphagnum* moss, of which



Conservator Hege Hollund micro-excavating one of the fish-traps. (Photo: Studio Lab)

the peat is composed, has been found to have amazing preservative properties for organic materials. The Clowanstown fish-traps, like most freshly excavated wooden artefacts recovered from waterlogged sites, appeared to be in an excellent state of preservation at first sight. First impressions, however, can often be misleading. Whilst the microbiological elements of decay are absent when the object is buried in the bog, chemical hydrolysis (decomposition of a chemical compound by reaction with water) still continues. The cellulose—one of the components of the wood cells—slowly decomposes, leaving the cells constructed mainly of lignin (a complex chemical compound most commonly derived from wood) and held together by water and organic debris. The wood that the fish-traps were made from kept its shape quite well, but its internal structure had been weakened substantially during the c. 7,000 years the baskets spent buried in the bog.

As it was apparent that the fish-traps would never be self-supporting or restored to their pre-flattened state, it became clear that the best approach was to leave the baskets supported on the pedestal of peat as found on site and to conserve them in this form. Our treatment objective was therefore to impart strength and cohesion to both the wooden elements and peat alike. Because wood shrinks and distorts when left to dry naturally, the treatment would also have to achieve the dimensional stabilisation of both the wooden shoots of which the baskets consist and their peat pedestals.



PEG 1500 being applied to one of the fish-traps. (Photo: John Sunderland)

To achieve these goals the standard and well-researched treatment for consolidation of waterlogged wood—impregnation with polyethylene glycol (PEG) followed by freeze-drying—was used. PEG acts as a bulking agent that is used to replace the water which keeps the shape of a waterlogged wooden object. In the case of the fish-traps, PEG 1500 (the number describes the average molecular weight) was used, which is a wax-like material, easily soluble in water. The fish-traps sitting on their peat pedestals were contained in custom-made tanks and then immersed in the solution of impregnant for a period of around 10 months. The critical moment for a waterlogged wooden artefact is the drying process. The water which helped the baskets retain their shape, owing to its high surface tension, would have acted like a suction pump for the cell walls if left to evaporate without controls. To prevent this from happening the physical phenomenon of sublimation—turning water from its solid state to a gaseous state (evaporating ice instead of liquid water), which occurs only under vacuum—was employed in the form of freeze-drying. The drying

of the smaller fragments was undertaken in Arch Con Labs. The four larger fish-traps were too big for the freeze-drier facilities there, however, and were instead accommodated in the National Museum of Ireland's Waterlogged Organic Materials treatment facility.

The condition of the baskets after the treatment was very good—the shrinkage of wood was minimal and did not cause any distortions or damage. There was a need for secondary consolidation of the peat, which became slightly crumbly on the sides. This was done through the application of acrylic resin (Paraloid B-72) dissolved in a mixture of acetone and alcohol to improve the penetration of the resin. As a result of the consolidation the peat darkened considerably, returning from the light brown post-drying colour to the deep brown shade resembling the natural look of the bog. This improved the objects' appearance, making the basketry, which is lighter in colour than the peat, become more prominent and visually distinct.

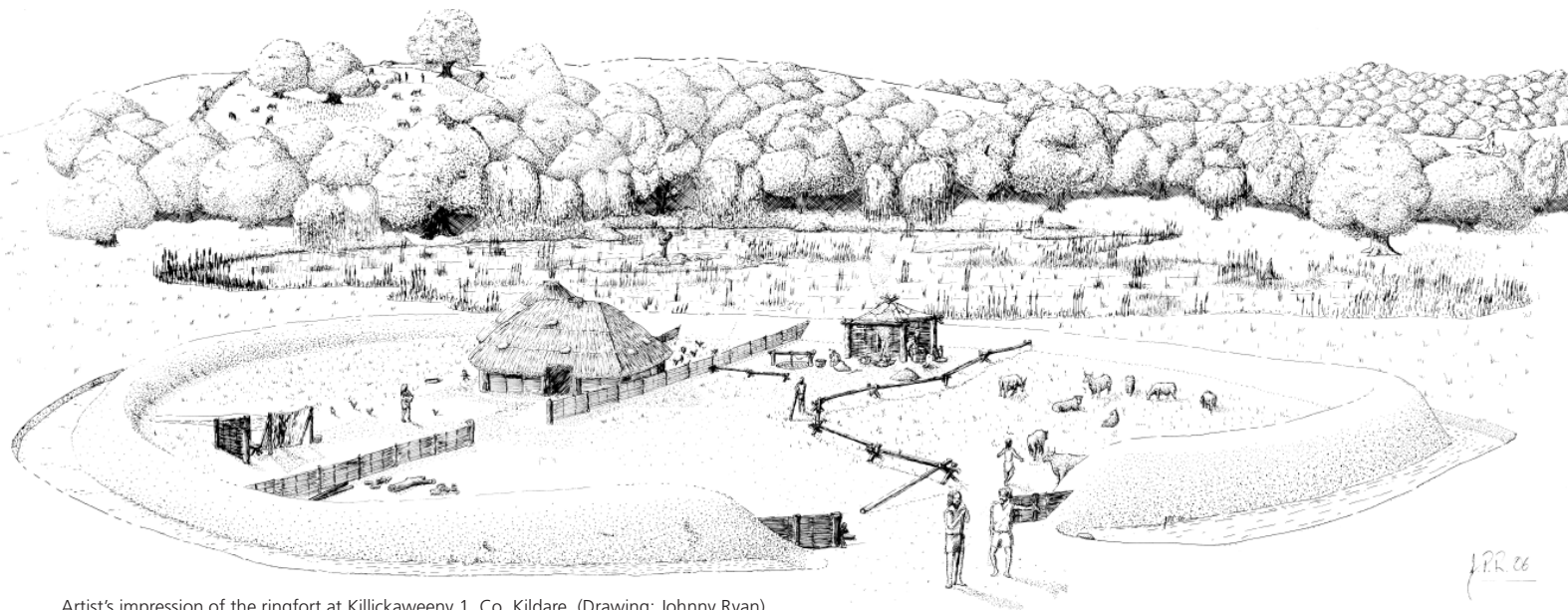


Secondary consolidation of the peat being performed on a trial fragment after freeze-drying. (Photo: John Sunderland)

The conservation of the Clowanstown fish-traps was a challenging project in terms of treatment and logistics.

The conservation of the Clowanstown fish-traps was a challenging project in terms of treatment and logistics. The potential differential shrinkage ratio of the peat pedestals and wood component embedded within them was a cause of concern for the integrity of the objects. The trials, however, proved that peat, even though it will readily take up and retain moisture, keeps its shape very well after the freeze-drying process and that the shrinkage of both the basketry and peat was minimal. The treatment logistics, which were devised in a way that used the same custom-made, close-fitting, lightweight containers for every phase of the process, proved to be a very useful and successful approach. A number of the fish baskets are currently on exhibition in the National Museum of Ireland (see *Seanda*, Issue 4 [2009], pp. 40–1), while a single smaller example is exhibited in the Ulster Museum, Belfast.

The authors presented a paper on the subject of the conservation treatment of the Clowanstown fish-traps at the 12th International Council of Museums Committee for Conservation Conference on Wet Organic Archaeological Materials held in Istanbul, Turkey, last May.



Artist's impression of the ringfort at Killickaweeny 1, Co. Kildare. (Drawing: Johnny Ryan)

Ringforts revisited

Ringforts are one of Ireland's most common monument types, with an estimated 46,000 scattered around the country. They are commonly believed to have functioned as settlements with defensive aspects or as enclosures where cattle could have been housed safely; some may even have had specialist functions such as smithies. This early medieval (AD 400–1100) monument is one that many fieldworkers are familiar with and constitutes an important part of the landscape of the period. Although ringforts have been the object of interest for a long period of time, the last 20 years of

New research is reassessing the enclosed farmsteads known as ringforts that typify early medieval settlement in Ireland.

By *Tanja Alzheimer*, MA student, University of Helsinki, Finland



Post-excavation aerial view of Killickaweeny 1, showing structures (S1–S4) and metal-working areas (MA1 and MA2). (Photo: Archaeological Consultancy Services Ltd)



Post-excavation aerial view of ringfort and souterrain at Newtownbalregan 6, Co. Louth. The souterrain construction cut is visible on the left. (Photo: Studio Lab)

excavation work have greatly increased our knowledge of this dynamic site type. Prior to the work carried out during the Celtic Tiger era, ringfort excavations primarily involved excavating trenches through the centre of the interior and through the ditches and internal banks that enclosed them. Because of this few ringforts had their interiors completely excavated and frequently little information was gathered from the exterior. Pre-development excavations that took place in the period 1985–2007, particularly on national road schemes, were more extensive and enabled ringforts to be better understood. At least 24 ‘traditional’ ringforts had their interiors almost completely excavated (over 90%) during this period and the information gained from these investigations forms the subject of a master’s thesis recently completed by the author.

Traditional views on ringforts, such as that they are always circular, are being scrutinised by many researchers and issues regarding the use of such monuments during

Anglo-Norman times have also been brought into question. In the wake of this, questions have been raised as to what constitutes a ringfort, as many non-circular early medieval enclosures have now been excavated. There is also the question of how to interpret large multi-period enclosures used during the early medieval period.

Settlement

Approximately half of the ringforts that were almost completely excavated between 1985 and 2007 have shown clear evidence of settlement. On many sites the main habitation evidence consisted of structures often placed centrally, surrounded by domestic features such as waste pits that contained food waste, potsherds and ash from domestic hearths. The house interiors frequently contained hearths, sometimes with evidence of stake-holes around them that may have supported roasting spits; post-holes are thought to have held roof-supporting posts. Some of these structures also have evidence of having been divided internally—possibly signifying bedding,

working or communal areas. Artefacts recovered from these sites include items of personal adornment such as combs, glass beads or ring-pins, and food refuse such as cereal grains and discarded animal bone from the main domesticates (cow, sheep/goat and pig) of the period. Besides functioning as settlements many ringforts also show evidence of other activities, often related to craftwork such as small-scale metal-working, textile production and the manufacture of bone/antler objects, presumably to serve domestic needs.

A good example of this type of site was Killickaweeny 1, Co. Kildare, excavated in 2002 by Fintan Walsh of Irish Archaeological Consultancy Ltd, in advance of the construction of the M4 Kinnegad–Enfield–Kilcock motorway. The interior contained several structures and two metal-working areas. In the group of 24 ringforts Killickaweeny produced comparatively extensive interior activity and widespread settlement evidence. Here the main domestic structure measured 5 m by 6 m and was

made up of a cluster of post-holes with an internal hearth and associated stake-holes probably supporting roasting spits. Several other structures were also present, some of which are thought to have been used for metal-working, owing to their proximity to the metal-working features. The metal-working that took place on site was aimed at serving the inhabitants and their needs. The finds included both elaborate items, such as iron dress pins, antler comb fragments and glass beads, and more common domestic objects such as iron knife blades and nails. It is, however, important to note that not all settlement sites produce as high a quantity of settlement evidence as Killickaweeny.

Empty spaces

Another large group were ringforts with seemingly empty interiors. These sites have traditionally been interpreted as enclosures where cattle have been housed for security, as cattle raids were widespread during the early medieval period. The main reason for the absence of features in many instances may be intense agricultural activities, which can destroy the surrounding bank and truncate the archaeology within the interior. Several of the sites were damaged in this way. This creates interpretation



Copper-alloy penannular brooch (ring 41 mm in diameter) found in the enclosure ditch at Newtownbalregan 6. (Photo: Studio Lab)



Aerial view of the double-ditched ringfort at Lisanisk 1, Co. Monaghan, overlooking a crannog in Lisanisk Lough, with Carrickmacross in the background. (Photo: Studio Lab)

problems for the archaeologist and often it is necessary to look at other evidence apart from archaeological features in order to determine a function. An example of this situation is the possible settlement or livestock enclosure at Newtownbalregan 6, Co. Louth, excavated in 2003 by David Bayley of Irish Archaeological Consultancy Ltd as part of pre-construction archaeological works on the M1 motorway. Newtownbalregan 6 consisted of a 46 m-diameter penannular enclosure set on a well-drained slope with good views of the surrounding landscape. The interior of the site had been heavily disturbed by agricultural works, destroying the majority of the archaeological features cut into the subsoil. Some scattered pits and post-holes were present in the southern part, possibly

Approximately half of the ringforts that were almost completely excavated between 1985 and 2007 have shown clear evidence of settlement.

forming the corners of two structures defined by three and five post-holes. Rich finds such as a copper-alloy penannular brooch, two copper-alloy stick-pins, glass beads, sherds of Souterrain Ware and slag discovered in the enclosing ditch fills, along with animal bones, indicated prolonged human activity on the site. A souterrain immediately south-west of the ringfort exterior also points to a possible settlement function for the site.

Specialist function

To date very few ringforts have been excavated that appear to have been used for specific non-habitation purposes. One of two such sites recognised so far from excavations undertaken in 1985–2007 was a double-ditched ringfort at Lisanisk 2, Co. Monaghan, excavated in 2003 by Tim Coughlan of Irish Archaeological Consultancy Ltd on the N2 Carrickmacross Bypass. At this site nearly one tonne of metal-working waste was recovered. Two metal-working areas, containing bowl furnaces, waste dumps and a bloom-cooling area, were set within the innermost enclosure ditch. Several *tuyères* (ceramic nozzles through which air was blown into a furnace from a bellows) were recovered from these areas.


Two small structures were identified within the interior of the ringfort. One of these was at the centre of the enclosure and measured 4.89 m by 4.55 m. It consisted of six post-holes but there were no interior features. The other structure (6.46 m by 4.77 m), towards the north-east of the enclosure, consisted of six post-holes and had a small area of *in situ* burning. A possible third structure between the two enclosing ditches was defined by six post-holes. None of the structures were substantial enough to be dwellings or contained occupational deposits. Furthermore, few of the artefacts recovered from Lisanisk were associated with extensive domestic activity.

Conclusion

The material produced from the sites excavated during the period 1985–2007 largely conforms to previous theories of ringfort functions. A problem for interpretation is commonly caused by widespread agricultural damage truncating interior features and affecting the overall preservation of the sites. The wealth of information from the interior of almost completely excavated sites provides a more detailed image of how ringforts functioned than has previously been understood.



Archaeologists excavating the double ditches at Lisanisk 1. (Photo: Niall Roycroft)



A detailed pre-conservation view of the handle terminal of the copper-alloy ladle recovered during topsoil stripping at Ballynapark, Co. Wicklow. (Photos: Claudia Koehler, National Museum of Ireland)

Who ran away with the

spoon?



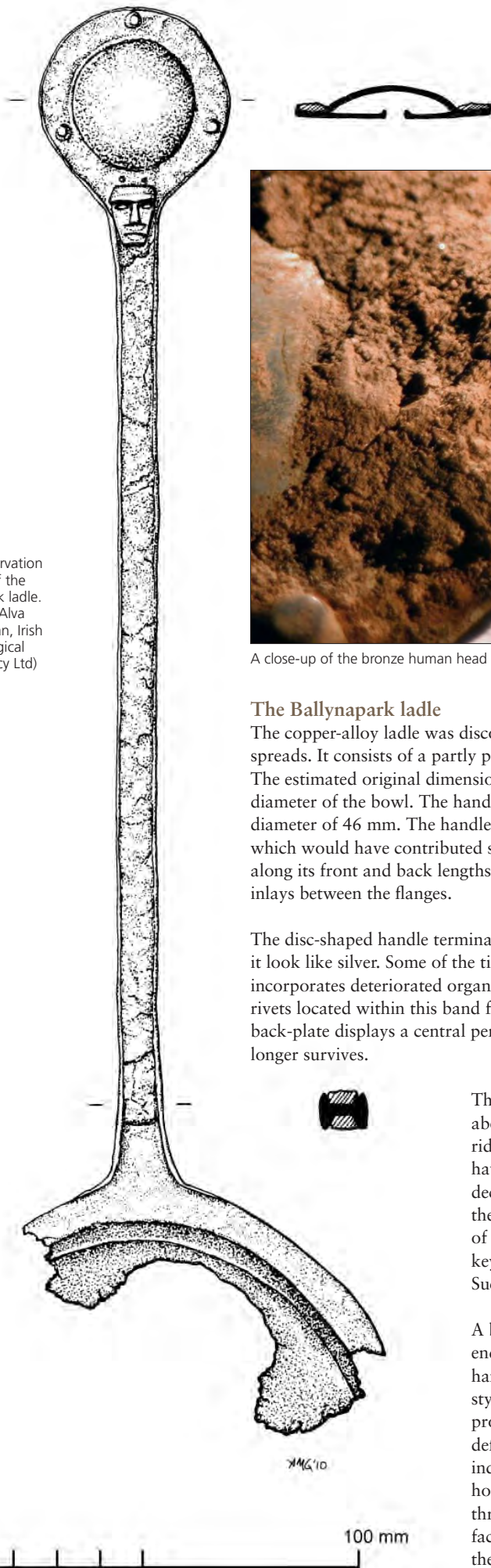
The chance discovery of high-status early medieval tableware in County Wicklow has dished up an intriguing archaeological mystery.

By Noel Dunne, NRA Archaeologist with the Eastern Team

The Ballynapark ladle terminal during conservation at the National Museum of Ireland in 2009.

The field opposite Jack White's public house on the N11, 10 km north of Arklow, Co. Wicklow, is low-lying and flat, with a deep organic soil resting on white marl. Prior to reclamation, this land in the townland of Ballynapark would have been bogland. Investigations here in 2006 for the N11 Rathnew to Arklow road scheme, supervised by Excavation Director Goorik Dehaene for Irish Archaeological Consultancy Ltd, revealed a number of ploughed-out *fulachtaí fia* dating from the Middle Neolithic–Early Bronze Age. The remains comprised spreads of burnt stone

overlying pits, troughs, post-holes and a stone platform. Topsoil stripping in advance of hand excavation produced a surprise find in the form of an early medieval copper-alloy ladle, recovered from the interface of the organic soil and the underlying marl. The handle was well preserved, but only a portion of the ladle's bowl and rim survived. No modern fractures were apparent, hence the object was either in a damaged condition when deposited, or else the thinner bowl and rim have suffered differential deterioration over time.



Post-conservation drawing of the Ballynapark ladle. (Drawing: Alva Mac Gowan, Irish Archaeological Consultancy Ltd)



A close-up of the bronze human head on the front of the ladle, at the end of the handle before the disc terminal.

The Ballynapark ladle

The copper-alloy ladle was discovered close to, but not in association with, one of the *fulacht fia* spreads. It consists of a partly preserved rounded bowl and a handle with a disc-shaped terminal. The estimated original dimensions are 385 mm for overall length and 114 mm for the outer diameter of the bowl. The handle is 10 mm wide by 6/8 mm thick and the disc terminal has a diameter of 46 mm. The handle is flanged along both sides, creating an H-shaped cross-section, which would have contributed significantly to its strength. What was thought to be soil embedded along its front and back lengths, on conservation, turned out to be extremely deteriorated wood inlays between the flanges.

The disc-shaped handle terminal has a central domed boss in tinned bronze that would have made it look like silver. Some of the tinning is in a very good condition. A band around the circumference incorporates deteriorated organic matter, likely to be further wood inlay. Three tinned bronze rivets located within this band functioned to hold a convex back-plate in position. This rounded back-plate displays a central perforation, which would have facilitated a hanging ring that no longer survives.

The surviving portion of the bowl indicates that it was of sheet metal, about 1 mm thick, and had a squat hemispherical form. A rounded ridge around the circumference, immediately below the rim, would have added strength to the bowl. There is no evidence of any bowl decoration. The handle flanges taper to the flat surrounding rim. On the underside of the rim, at the junction with the handle, the surface of the metal is lightly scored, probably representing an overrun of keying for the glue that would have held the wooden inlays secure. Such glue is likely to have been beeswax.

A bronze human head is positioned on the front of the ladle, at the end of the handle before the disc terminal. This head faces down the handle and is wedge shaped with prominent features in a wood-cut style. Bulging oval eyes are set under a heavy overhanging brow. A prominent ridge forms a wedge-shaped nose, while deep grooves define the upper lip and mouth. A line above the brow probably indicates some form of headgear. The head has a flat top, with two holes immediately above perforating the handle and extending through the back-plate of the terminal. These holes would have facilitated rivets that anchored some form of mount or crown above the head. At the opposite end of the handle, at the junction with the bowl, the original presence of a second head that would have faced





Front of the ladle post-conservation.



Back of the ladle post-conservation.

The long-handled ladle is undoubtedly a revered high-status secular and ecclesiastical object of the early medieval period.

up the handle is indicated by a ghost shadow and some lead solder. There is no corresponding pair of holes perforating the handle at this location. It does not appear that the wood inlays held any decorative metal wire inserts, as is evident on some shrines. However, it is tempting to envisage, indeed it is likely, that the wood inlays were brightly painted, possibly with some form of interlace design linking both human heads.

Parallels

Probably the best known parallel for the Ballynapark ladle is the eighth-century Derrynaflan wine-strainer, which has very similar dimensions. This object is essentially an embellished bronze ladle, which has been further modified through the insertion of a pierced plate into the bowl for use as a wine-strainer. Hence, it may be regarded as a secular object that has been adapted for liturgical use. Both ladles belong to a long-handled variant, some 26 examples of which are known from early historic contexts in Ireland, Britain and Scandinavia. The occurrence of at least 11 specimens in Ireland suggests that the type may have developed here.

Illustrations from religious contexts of the ninth and 10th centuries suggest a fashion of using ladles at this time in Ireland. In the *Book of Kells* at the beginning of St Luke's Gospel a figure is depicted pouring wine into a chalice, but with a short-handled ladle. Short-handled ladles are also depicted being used to pour water over Pilate's hands on scenes from the High Cross of Durrow, Co. Offaly, and St Muiredach's Cross at Monasterboice, Co. Louth. However, baptismal scenes on two 10th-century cross-heads from Durham in England depict the use of objects which are closer in shape to the Derrynaflan ladle. Archaeologist Peter Harbison has noted that these scenes could conceivably raise the possibility of the Derrynaflan ladle having been used for baptismal ceremonies and thereby, with the Derrynaflan chalice, having formed a set of sacramental rather than Eucharistic vessels.

Christianity was introduced into Ireland mainly from Roman Britain during the fifth century. As a result new object types associated

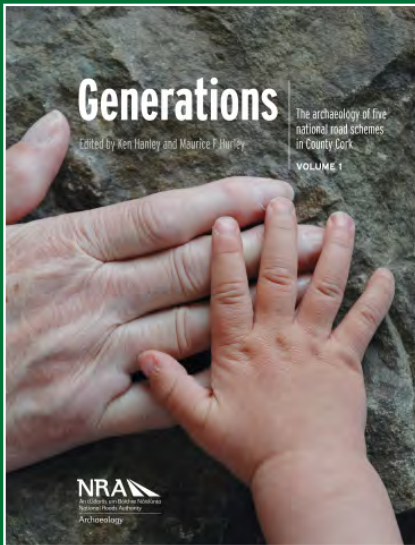
with the Church emerged, such as chalices, patens and containers for the enshrinement of books and relics. It is probable that local native imitations or adaptations were made; chalices and patens being the descendants of Late Roman domestic tableware. Ladles feature strongly within Late Roman silver hoards in Britain. The fourth-century Mildenhall treasure from Suffolk consisted of silver tableware that included five round-bowled ladles or spoons and eight long-handled spoons. The round ladles have handles in the form of dolphins. There is a comparable ladle with a dolphin handle from the Traprain Law treasure from East Lothian, Scotland, which was buried between AD 410 and 425; while there are two sets, each of 10 ladles, from the Hoxne hoard in Suffolk, though not with animal-like handles.

The long-handled ladle is undoubtedly a revered high-status secular and ecclesiastical object of the early medieval period and this is further borne out by its featuring in Viking contexts from Ireland to Scandinavia. A Viking cemetery on Rathlin Island, Co. Antrim, yielded a male skeleton with a silver brooch, another with a sword and a third with a copper ladle, an iron cauldron and copper rings. A more intriguing finding is a Viking female burial possibly from Threemilewater townland, only 6 km north-east of the find spot of the Ballynapark ladle, that was accompanied by Scandinavian gilt-bronze tortoise brooches and a silver chain. Other accounts list this Viking burial between Threemilewater and Arklow, which places it even closer to Ballynapark. Threemilewater is also the location of an Early Christian establishment associated with St Baoithín.

Conclusion

So why did this copper-alloy ladle end up in boggy ground opposite Jack White's pub? Judging from its decoration and associations, it was almost certainly formerly associated with a high-status secular site or ecclesiastical establishment. Was it discarded because it was damaged? Was it lost in a bog? Was it hidden in the bog, with the intention of subsequent retrieval? Was it a votive offering? Had it any association with the nearby Viking female burial at Threemilewater, or the ecclesiastical establishment of St Baoithín? We may not have the answers at present, but at least we can continue to question.

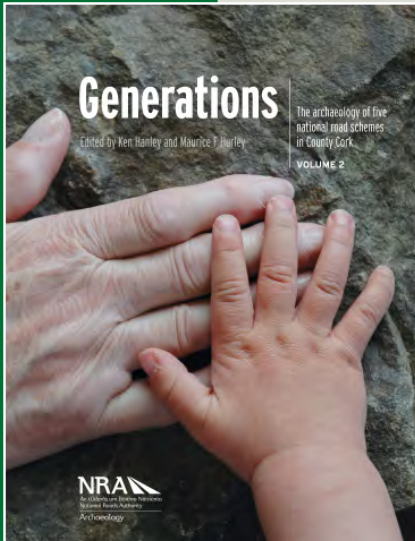
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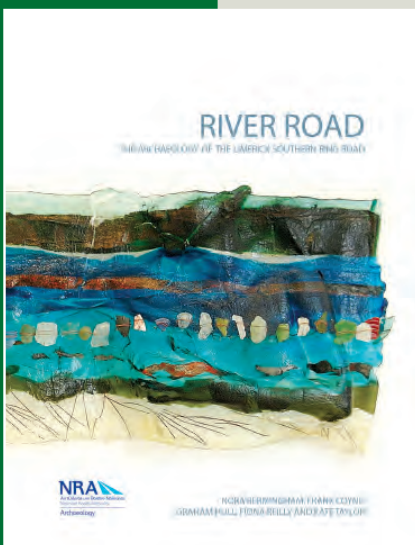
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GLOSSARY

Anglo-Norman

The Anglo-Normans were the descendants 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.

Bloom

A spongy mass of metallic iron mixed with slag impurities, which is formed by smelting iron ore.

Bowl furnace

An early type of furnace consisting of a cylindrical clay shaft (1–2 m in height) constructed over a shallow pit.

Bronze Age

The era (c. 2400–600 BC) succeeding the Neolithic period, which saw the introduction of bronze for tools and weapons.

Cordoned urn

A type of Bronze Age pottery decorated with applied cordons or raised ribs.

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.

Fill

A term used to describe the individual layer(s) of material contained within archaeological features, such as post-holes, pits or ditches.

Flint

A hard, brittle siliceous rock with conchoidal fracturing properties that is highly suitable for the manufacture of edged tools.

Fulacht fia (plural *fulachtaí fia*)

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.

Geophysical survey

A scientific method of exploring below the ground surface by measuring differences, or 'anomalies', in the magnetic, electrical and other properties of the earth capable of being detected by survey instruments.

Inhumation

The practice of laying the bodies of the dead in a grave.

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

The final period of prehistory, beginning around 600 BC. In this period iron superseded bronze for the manufacture of tools and weapons.

Knapping

Breaking or chipping stone with sharp blows, as in shaping flint into tools.

Medieval

The period succeeding the Iron Age, which in Ireland is dated from the advent of Christianity in the fifth century AD up to the 16th century.

Mesolithic

The Mesolithic period or Middle Stone Age (c. 8000–4000 BC) was when Ireland was first settled by early hunters and foragers.

Neolithic

The Neolithic period or New Stone Age (c. 4000–2400 BC) preceded the introduction of metal-working and is characterised by the beginnings of farming.

Post-medieval

The period after the medieval period, often taken to be the era after the dissolution of the monasteries in the mid 16th century.

Radiocarbon dating

A scientific method of dating by measuring the decay of the radioactive isotope Carbon 14, which is present in all organic material. As the amount of Carbon 14 in the atmosphere has fluctuated throughout time radiocarbon dates have to be calibrated against tree-ring sequences that provide absolute calendar dates.

Record of Monuments and Places

An inventory of archaeological monuments in the State recorded on a county-by-county basis by the Archaeological Survey of Ireland.

Ringfort

An early medieval defended farmstead consisting of a circular enclosure defined by an earthen bank and an external ditch. High-status ringforts can have two or three banks.

Slag

A glassy, non-metal residue and waste material left behind after the smelting of a metal.

Souterrain

An early medieval underground structure consisting of one or more passages and chambers, with a concealed entrance at ground level. They functioned as temporary refuges and storage areas.

Souterrain Ware

A coarse pottery consisting of bucket-shaped pots generally dating from the eighth to 12th century AD.

Viking

A Scandinavian word (*Vikingur*) for seafaring raiders from Norway, Sweden and Denmark who ravaged the coasts of Europe from the seventh century AD onwards.

Acknowledgements

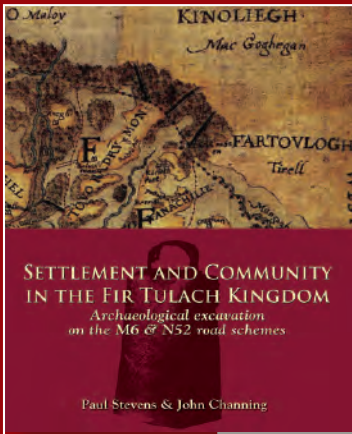
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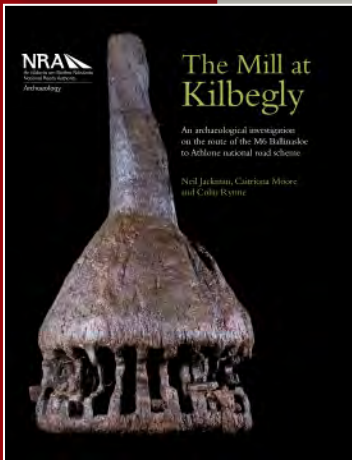
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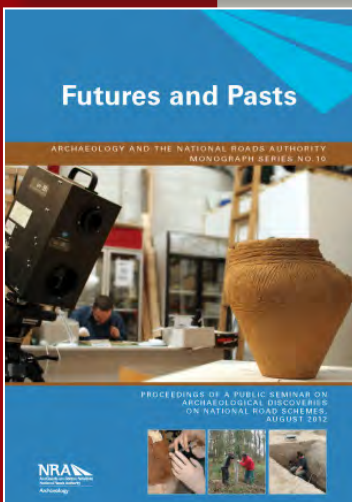
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