EACHTRA
Archaeological Projects

Final Archaeological Excavation Report

Ballinillaun 1

Co. Galway

Burnt Mound

Date:	**April 2010**
Client:	**Galway County Council and National Roads Authority**
Project:	**N18 Oranmore - Gort**
E No:	**E3888**
Excavation Director:	**Tori McMorran**
Written by:	**Tori McMorran & Finn Delaney**

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EACHTRA
Archaeological Projects

CORK
The Forge, Innishannon, Co. Cork
tel: 021 4701616 | web: www.eachtra.ie | email: info@eachtra.ie

GALWAY
Unit 10, Kilkerrin Park, Liosbain Industrial Estate, Galway
tel: 091 763673 | web: www.eachtra.ie | email: galway@eachtra.ie

The Forge, Innishannon, Co Cork

Printed in Ireland

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iii Summary

This site consisted of a poorly preserved, Middle Bronze Age, burnt mound. A series of three interconnecting pits were filled with charcoal-rich fills. Two more pits and a possible post-hole were located just to the north of the central pits and were partly overlaid by a layer of small to medium sized angular limestone. Although all the fills of the pits contained large proportions of charcoal there was no indication of burning *in situ* in the form of underlying fire reddened clay or lumps of scorched clay.

Townland	Ballinillaun 1
Parish	Stradbally
Barony	Dunkellin
County	Galway
Ministerial Order Number	A045
E Number	E3883
Ordnance Survey Map Sheet	GA095
National Grid Reference	144570/222643
Elevation	10m
Site Type	Burnt mound

Table 1: Site Location Details

iv Acknowledgements

The excavation director was Tori McMorran and the site supervisor was Tomasz Borkowski. The field crew included Simon Bolton and Stanislaw Lackowski. The senior archaeologist was Finn Delaney and the post-excavation manager was Jacinta Kiely. Choryna Kiely, Fillip Debniak and Fiona Greene were involved with the administration of the project. Illustrations are by Ben Blakeman and Maurizio Toscano. Joseph O'Brien was the resident engineer for consultant engineers Hyder Tobins. The project was commissioned by Galway County Council and was funded by the National Roads Authority. The project Archaeologist was Jerry O'Sullivan.

1 Introduction

This report constitutes the final excavation report for a group of pits and a small layer of burnt mound material in the townland of Ballinillaun, Co. Galway (Fig 1). The site was excavated as part of the archaeological excavation programme in advance of construction for N18 Gort to Oranmore Road scheme. The site was found within the Compulsory Purchase Order for the scheme during Phase 1 archaeological testing. The site consisted of a burnt mound with associated troughs and pits.

2 Background to the scheme

The N18 Oranmore to Gort (Glenbrack to Rathmorrissey) national road scheme was approved by An Bórd Pleanála on 7th June 2007. The development will consist of approximately 27.2 km of dual carriageway, and all associated works. The area of archaeological investigations lies within the footprint of the proposed scheme as defined by the Compulsory Purchase Order (CPO) published by Galway County Council on 1st August 2006. Eachtra Archaeological Projects was commissioned by Galway County Council and the National Roads Authority to undertake Phase 1 archaeological testing and Phase 2 excavation of sites directly impacted by the proposed development.

3 Topography, geology and hydrology

The underlying geology in the surrounding area is Carboniferous limestone of the Burren and Tubber formations bordered by Namurian shales and sandstones to the west, in County Clare, and Devonian old red sandstone to the east, in the Slieve Aughty uplands. Glacial till overlies the bedrock to varying depths (0–5 m) and the soils derived from the till are generally deep, well drained brown earths. The topsoils are characteristically deep and dry and, enriched by the limestone parent material, support moderately good grass pastures. There are boulder fields and expanses of bedrock exposure typical of karst limestone country.

Turloughs and swallow-holes are features of areas with an underlying limestone bedrock, which enables the ground water and water table to produce sometimes perplexing drainage systems. A large turlough is shown on the Ordnance Survey first edition map in the south western portion of Coldwood townland and encompasses parts of the townlands of Moyveela and Ballinillaun (Fig 3). Two small lakes are also shown, namely Pollnakirka and Pollawarla respectively (Ordnance Survey, 1841). The turlough and lakes were fed by the Lavally river from the north-east. A river exits towards the sea at Clarinbridge from the south-west side of the turlough and is marked as the Clarinbridge river. The river was later dredged and canalised and the turlough was divided into large regular fields.

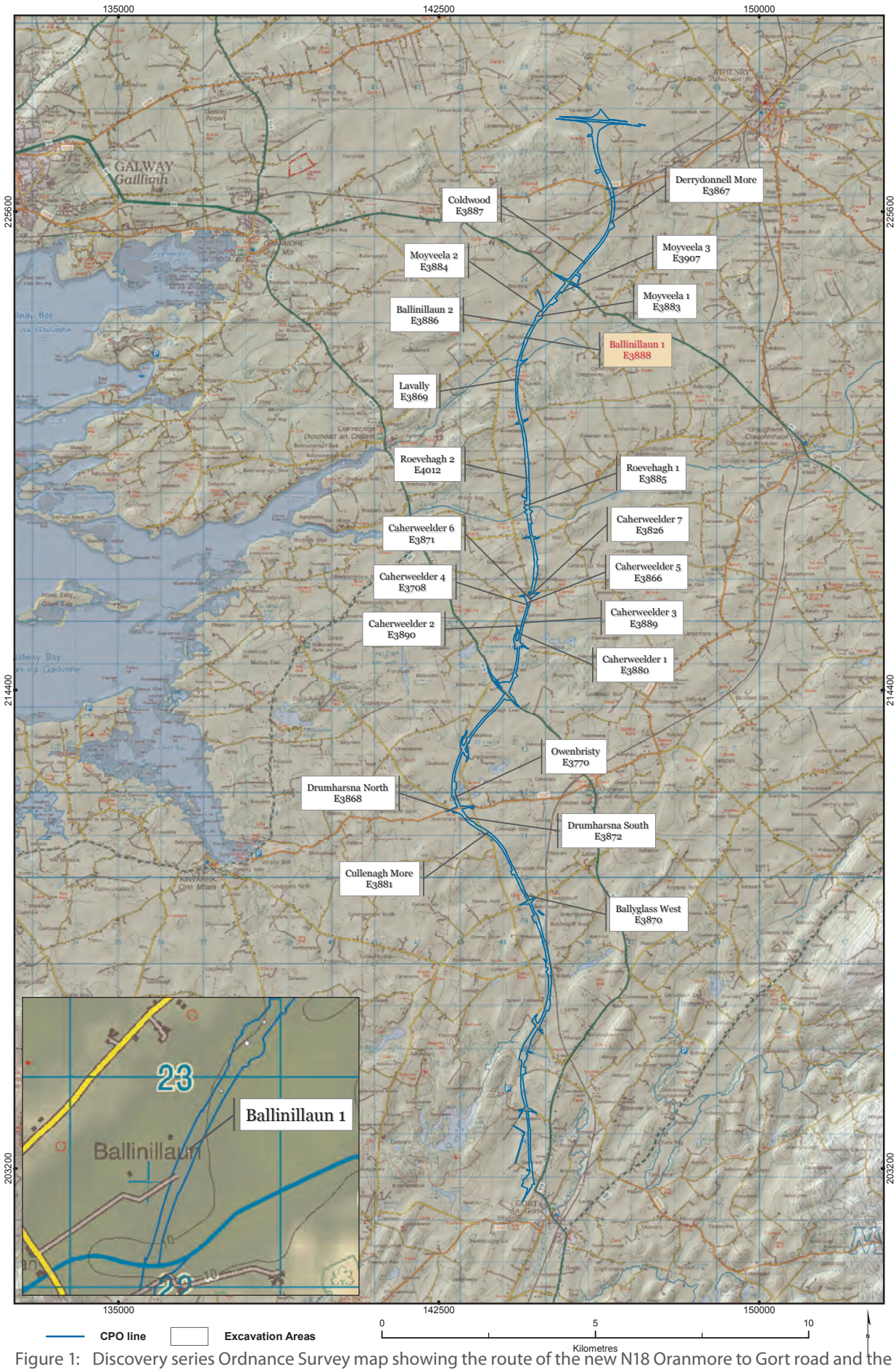

Figure 1: Discovery series Ordnance Survey map showing the route of the new N18 Oranmore to Gort road and the location of all the excavation sites. The excavation site at Ballinillaun 1 is highlighted.

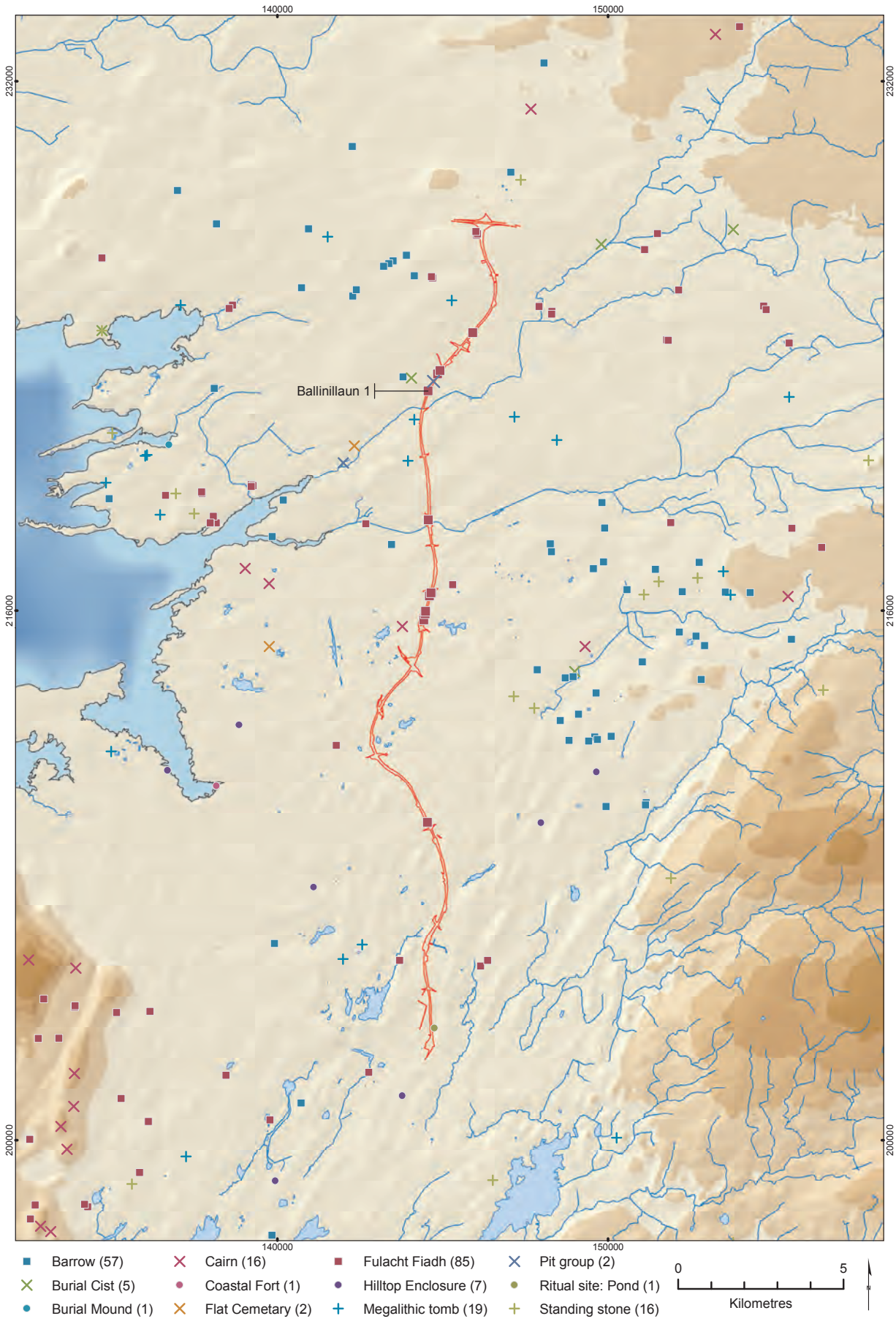

Figure 2: A distribution map showing the location of prehistoric sites in the area surrounding the site at Ballinillaun 1. It is based on the RMP/SMR map GA095 data-set which has been overlaid on a digital elevation model.

4 Archaeological and historical background

The townland name Ballinillaun is derived from a number of Irish words. The first part derives from *Baile* meaning town, townland or homestead while the second part may come from *an oílean* meaning an island. Therefore the townland name may be a direct reference to the landscape with Ballinillaun being a high point within a flat landscape. Alternatively the last part of the name may derive from a personal or family name such as *Uí Fhloinn* or *Ó Laighin* and therefore may record that this region was the home place of a particular family.

There seems to have been an expansion of settlement from hillslopes and uplands into lower lying areas during the Bronze Age. There also seems to have been a trend way from communal funerary monuments to individual burial monuments with associated grave goods. This would explain the relatively high concentration of barrows in lowland east Galway.

Barrows are burial monuments of the Bronze Age and Iron Age, which usually consist of a circular central area, which may be flat or slightly dished (a ring-ditch), or domed (a ring-barrow), and which is enclosed by a ditch and occasionally by an external bank. Bronze Age burials that have been excavated, either in recent times or during the last century, include some found in cists, pits lined with stone flags, and some in simple pits, some of which were accompanied by pottery or other grave goods. These can be placed in tumuli, cairns or barrows, but can also be set within 'natural' monuments, such as sand ridges, or can appear in so-called flat cemeteries, with no above ground marker at all.

These trends are also reflected in the environs of the present road scheme where stray finds of Bronze Age objects have been found in Toberbrackan and Lavally and a Bronze Age cist and 'food vessel urn' was found in Moyveela (O'Sullivan 2006).

There are no known house sites or settlements of the period in the area, but there are numerous examples of burnt mounds or *fulacht fiadh*. These mounds of burnt and shattered stone were the by-products of a favoured technique of immersing heated stones in pits filled with water, to boil it. Recorded examples occur on or near the proposed road scheme in Rathmorrissey, Toberroe and Caherweelder and the present programme of excavation in advance of construction on the N18 Oranmore to Gort road scheme has added further to the numbers of burnt mound sites in the area.

A Bronze Age cist burial and a barrow are also recorded in the townland of Moyveela. The distribution map also shows that the burnt mounds at Moyveela and Coldwood fit into a concentration of this monument type to the south and south-west of Atherny.

The adjacent burnt mounds in Moyveela are located in the south eastern corner of the townland. Unusually the outline of the townland boundary changes slightly between the first edition Ordnance Survey six inch map and later editions (Fig 3, 4 and 5). The location of the burnt mounds is shown on the first edition map as being located on rougher ground at the western extremity of the large turlough in Coldwood townland to the east. The small lake known as Pollawarla is shown as being located within the turlough margins just to the north-east of the burnt mounds in Ballinillaun.

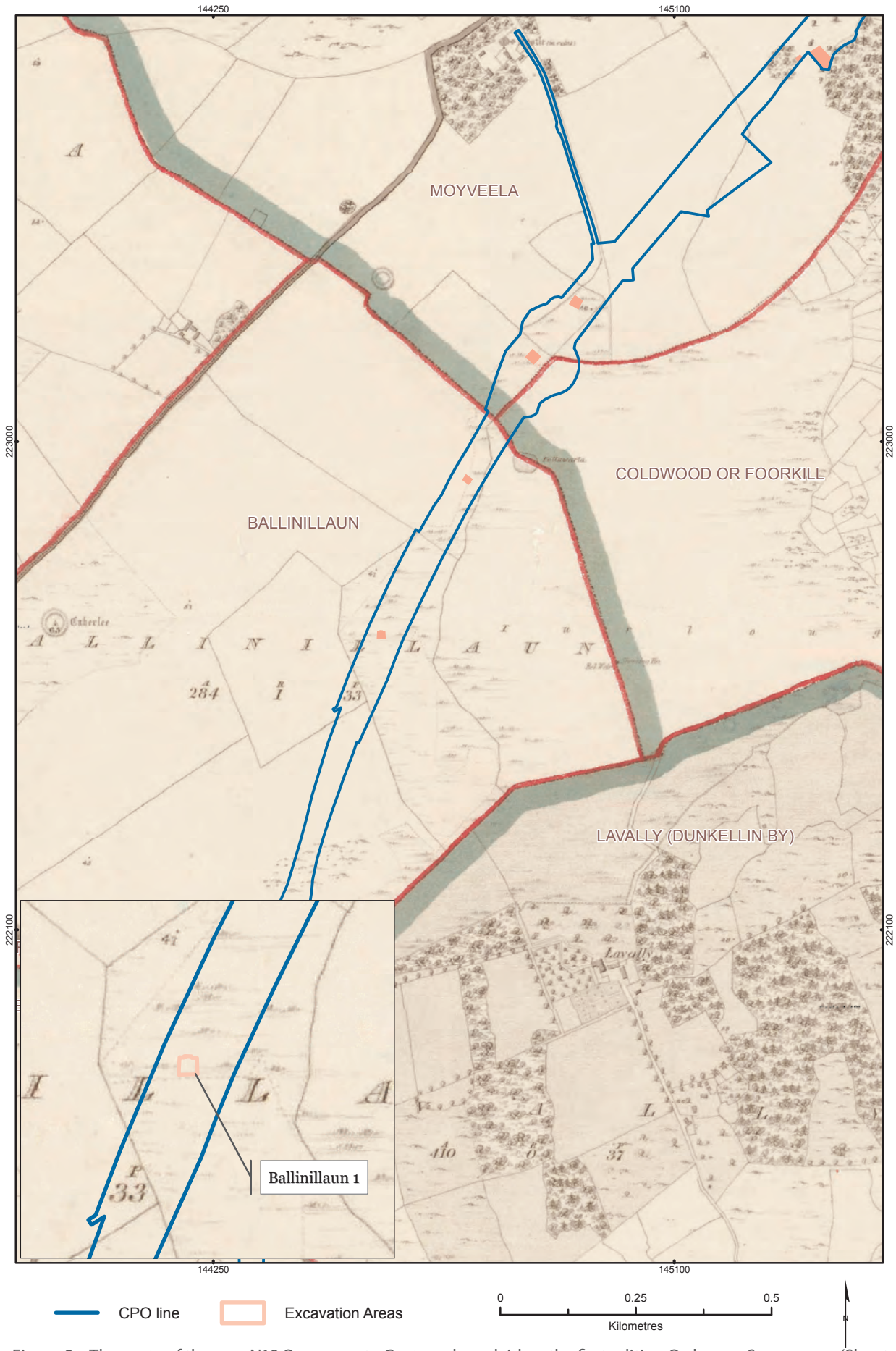

Figure 3: The route of the new N18 Oranmore to Gort road overlaid on the first edition Ordnance Survey map (Sheet GA095). The excavation site at Ballinillaun 1 is also highlighted.

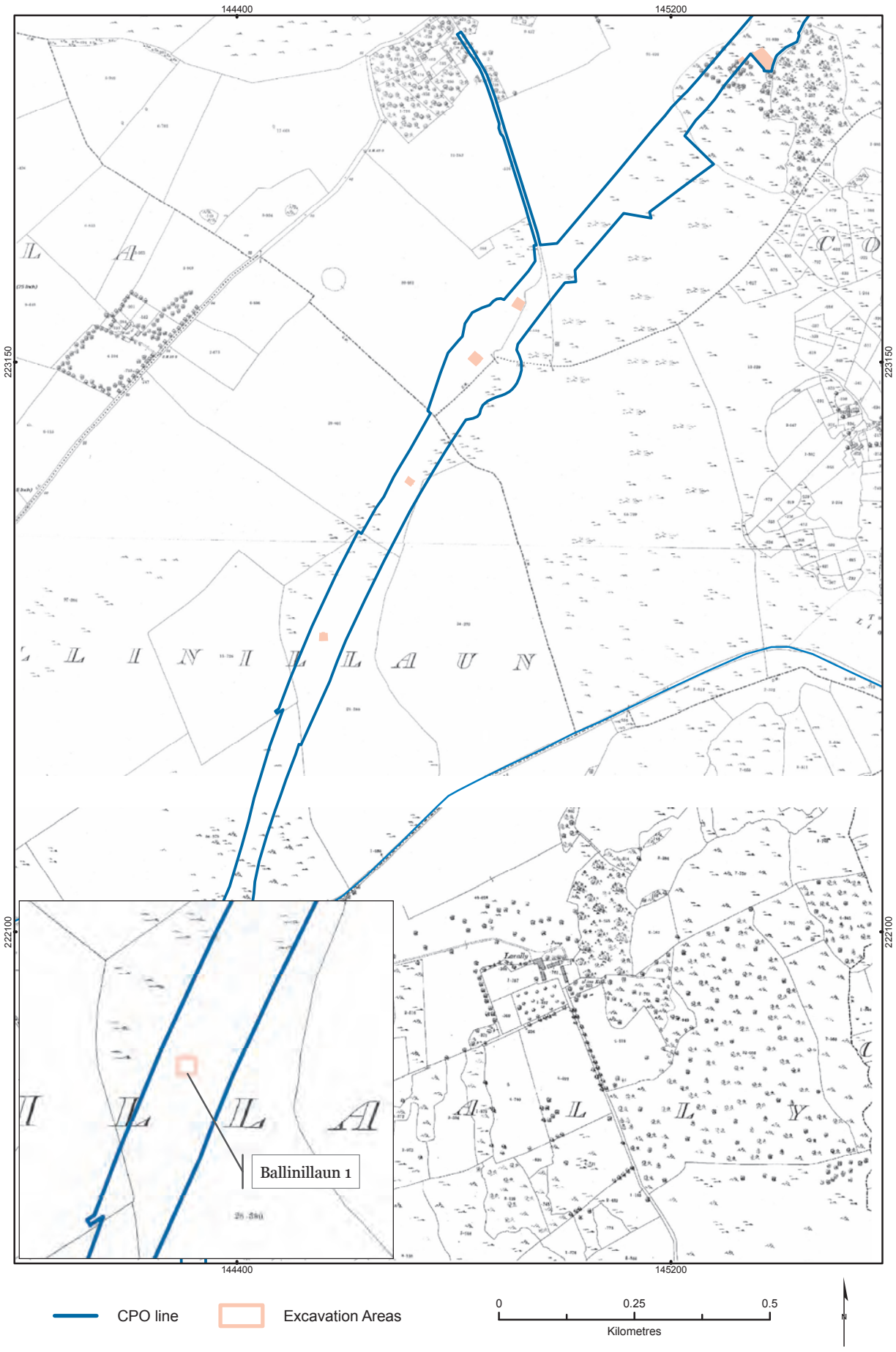

Figure 4: The route of the new N18 Oranmore to Gort road overlaid on the 25 inch Ordnance Survey map (Sheet GA095). The excavation site at Ballinillaun 1 is also highlighted.

5 Site description

The excavated site was located in the northern portion of Ballinillaun townland (NGR 144570/222643) (Fig 1). It is located very close to the point where the three townlands of Moyveela, Coldwood and Ballinillaun converge. Unusually, the townland boundaries have shifted slightly between the first and second edition Ordnance Survey maps of the area (Figs 3, 4 and 5). The site at Ballinillaun 1 was accessed along a small lane leading from a third class road joining the present N18 and N6. The landscape here is gently undulating and consists of large fields enclosed by stone walls of dry-stone construction. The land is rough stony terrain with frequent outcrops of limestone bedrock. The pasture is fairly good and primarily used for grazing cattle.

The site is located on slightly raised ground along the western edge of a large turlough. There are good wide views from the site to the east and south across the open expanse of rough pasture which corresponds with the turlough when the water has receded. The fields are bounded by single-leaf dry-stone walls lined with small trees and scrub.

6 Methodology

An area measuring roughly 20 m x 10 m (200 sq m) was stripped of topsoil under archaeological supervision by a 20-tonne excavator, using a toothless bucket, to reveal the full extents of the pit group and any associated features. The site was then subjected to an intensive hand clean. An area approximately 20 m x 10 m was hand cleaned during which a number of features of an archaeological nature were uncovered. These features were located in a cluster close to the northern limit of the excavation area. The area was extended a further 2 m to the north to ensure all features were fully excavated (Fig 5) (Plates 1 and 2). All the features were excavated by hand and recorded using the single-context recording system with plans and sections being produced at a scale of 1:20 or 1:10 as appropriate. A complete photographic record was maintained throughout the excavation.

The soil samples taken during the excavation were sieved and the resultant flots were examined by Mary Dillon for plant remains and charcoal analysis. One charcoal sample was sent for radiocarbon dating to Queen University in Belfast. The lithic assemblage was examined by Dr Farina Sternke.

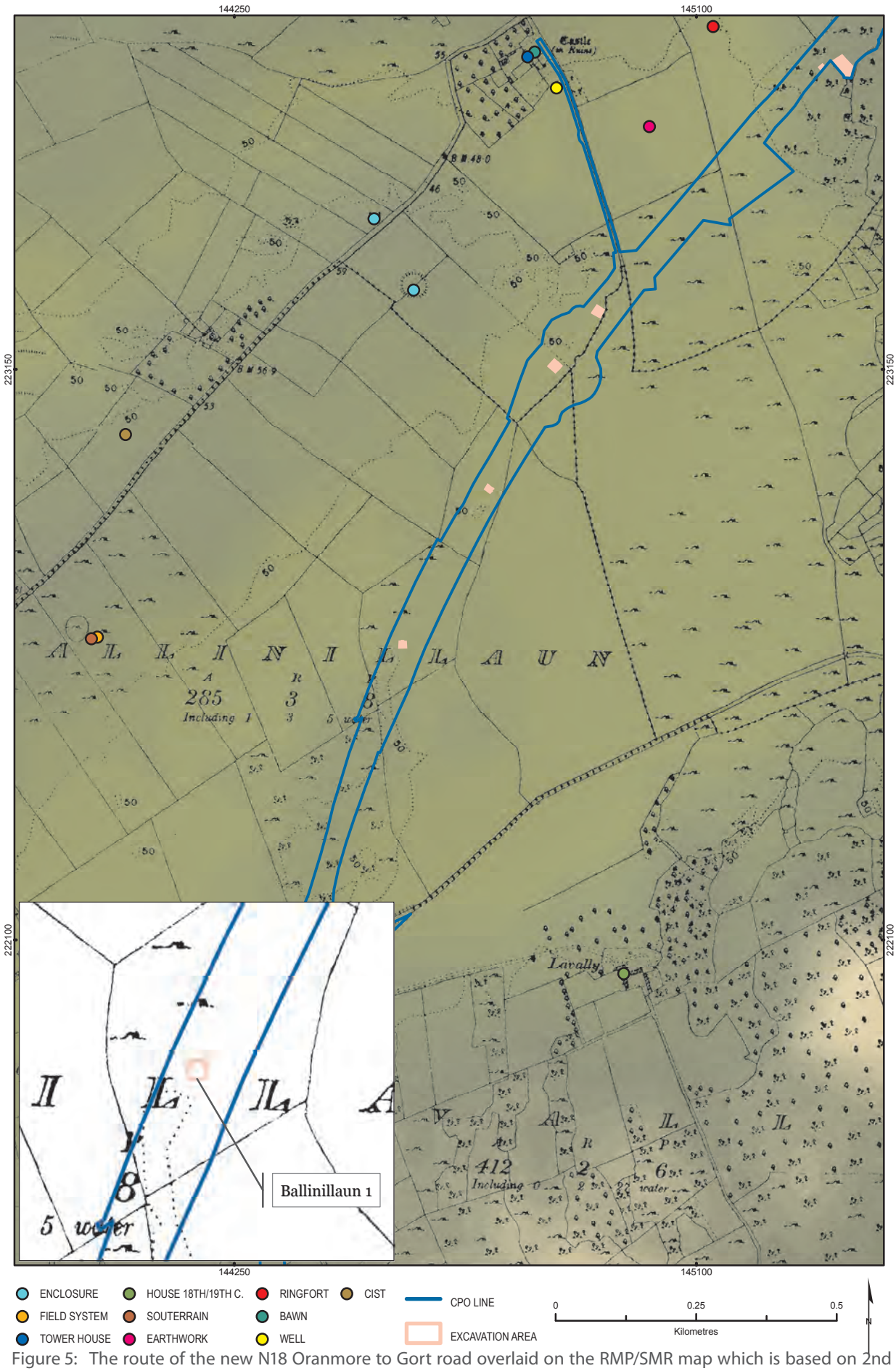

Figure 5: The route of the new N18 Oranmore to Gort road overlaid on the RMP/SMR map which is based on 2nd edition Ordnance Survey map (Sheet GA095). The excavation site at Ballinillaun 1 is also highlighted.

7 Results of excavation

A series of three inter-cutting pits with charcoal rich fills was identified. This group was partly overlain by a layer of heat-shattered stone. Two pits and a possible post-hole were excavated to the north of the central pits. The topsoil was shallow and composed of mid brown sandy clay. The underlying subsoil was composed of orange brown clay.

Pit	Shape	Dimensions (m)
C.7	Oval	3.35 x 1.8 x 0.35
C.9	Oval	2.75 x 1.65 x 0.75
C.11	Oval	2.4 x 1.23 x 0.34

Table 2: Dimensions of probable troughs at Ballinillaun 1

7.1 Three inter-cutting pits

The earliest pit (C.9) was a large oval pit with moderately steep sides and an uneven base. It measured 2.75 m in length, 1.65 m in width and was 0.55 – 0.75 m deep. The fill (C.8) was black stony silt with charcoal inclusions.

A shallow, roughly oval pit (C.7) cut the earliest pit in this sequence (C.9). It measured 3.35 m in length, 1.80 m in width and was 0.35 m deep. The fill was dark brown/black stony silt (C.4) with occasional small charcoal fragments and some animal bone.

The latest pit (C.11) in the sequence was roughly oval in shape and was 2.40 m long, 1.23 m wide and 0.34 m deep. This pit contained two fills. The uppermost fill (C.16) was compact brown clayey sand containing some stone. This appeared to have been used solely to level the area and may have been re-deposited natural subsoil. It may have been a much later addition to the activity represented by the pits. The lower fill (C.10) was brown/black sandy silt with a moderate quantity of small and medium sized angular stones and a high frequency of charcoal, and also contained some animal bone fragments.

The three pits may have been functionally related, containing interconnected stone or timber troughs.

7.2 Two pits, a possible post-hole and a stone deposit

A stone deposit (C.13) measuring 4.5 m in length 3.4 m in width and 0.3 m in depth was located to the north of the central inter-cutting pits. It was composed of small to medium sized angular and sub-angular stone mixed with mid-brownish grey silt and occasional flecks of charcoal. The deposit overlay a small pit and both overlaid and filled a possible post-hole. The post-hole (C.15) was 0.41 m – 0.34 m in diameter and was 0.21 m deep. It had steep sides and a concave base. The pit (C.14) was square in plan and measured 1.60 in length and was 0.32 m deep. It had gently sloping irregular sides and a concave base. The pit was filled with dark brown/black stony clayey silt (C.12) with frequent charcoal

Plate 1: Looking south-east across the excavation area.

Plate 2: Looking south across the excavation area.

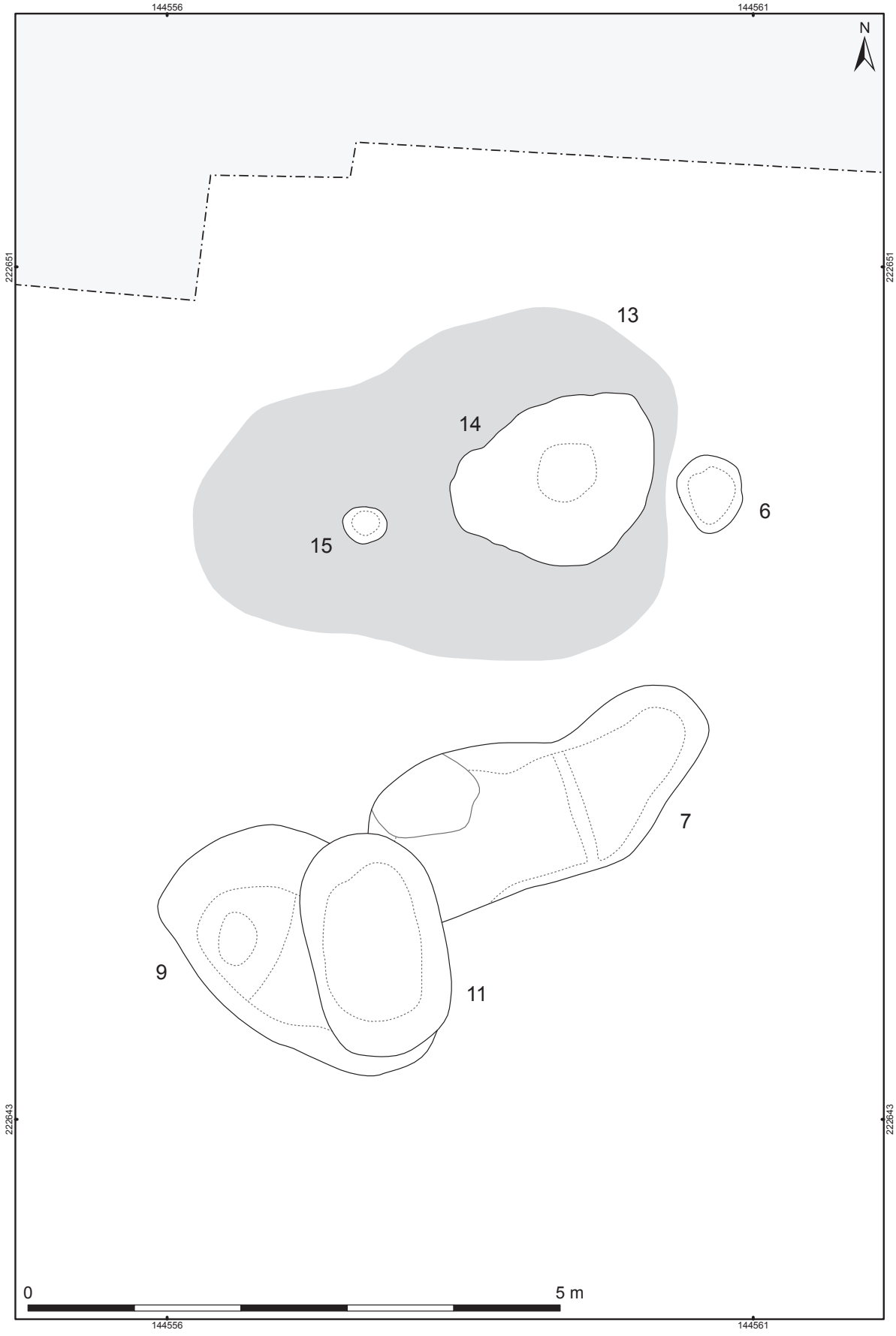

Figure 6: Post-excavation plan of the site.

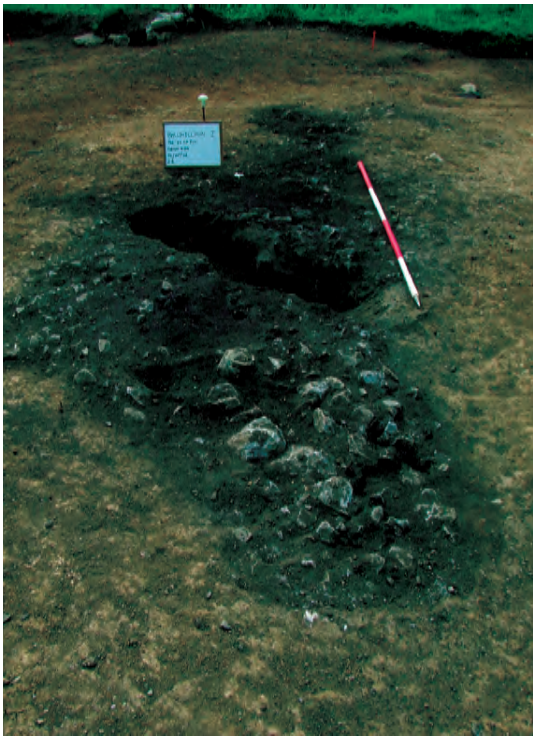

Plate 3: Looking south-west across the inter-cutting central pits prior to excavation.

Plate 4: Looking south west across the central inter-cutting pits (C.7, C.9 and C.11).

flecks. The surface deposit and fill of the possible post-hole and the fill of the square pit were rich in charcoal although with no evidence for *in situ* burning.

Another pit (C.6) was located to the east of the stone deposit (C.13). It was sub-circular in plan and measured 0.72 m – 0.66 m in diameter and was 0.17 m deep. It contained a dark black fill (C.5) with occasional small stones, pebbles and a large quantity of charcoal. The fill of the pit was rich in charcoal although there was no evidence for *in situ* burning. It was probably associated wit hthe pit and post-hole located just to the east.

Plate 5: Looking west at the large northern pit (C.14) during excavation. Note the overlying stone layer (C.13).

8 Charred plant remains

The sieved flots from the Ballinillaun 1 samples were examined by Mary Dillon. No charred seeds were found.

9 Charcoal

A total of 131 fragments were analysed from seven samples (Appendix 4). The identification was carried out by Mary Dillon. There are no distinct differences between the charcoal assemblages from the different deposits, indicating that the charcoal probably originated from the same source. The samples were rich in charcoal and a wide range of trees were represented in the assemblage. Nearly all the samples consisted of several wood types. The variety of species identified suggesting that there was a wide range of trees growing in the area. The most common were hazel and Pomoideae. In all, eight wood types were identified.

10 Finds

One chert. platform flake, from Ballinillaun 1, Co. Galway was presented for analysis to Dr Farina Sternke (Appendix 5). The find was recovered from the spoil heap (C3). The chert flake dates to the Neolithic period.

11 Radiocarbon dates

Radiocarbon analysis was carried out by the 14 Chrono Centre in Queen's University Belfast. Dates were calibrated using Calib Rev5.0.2 (©1986–2005 M. Stuiver & P. J. Reimer) and in conjunction with Stuiver & Reimer 1993 and Reimer et al. 2004.

Lab. Code	Con-text	Sample	Material	Years BP	δ 13 C	1 sigma calibrated date	2 sigma calibrated date	Period
UB–11505	8 – early trough fill	12	Charcoal: Hazel, 7 frag, 0.05g	2945 ±23	-25	BC 1249 — 1244 1212 — 1122	BC 1260 — 1228 1220 — 1108 1105 — 1055	Middle Bronze Age

Table 3: Ballinillaun 1 Radiocarbon dates

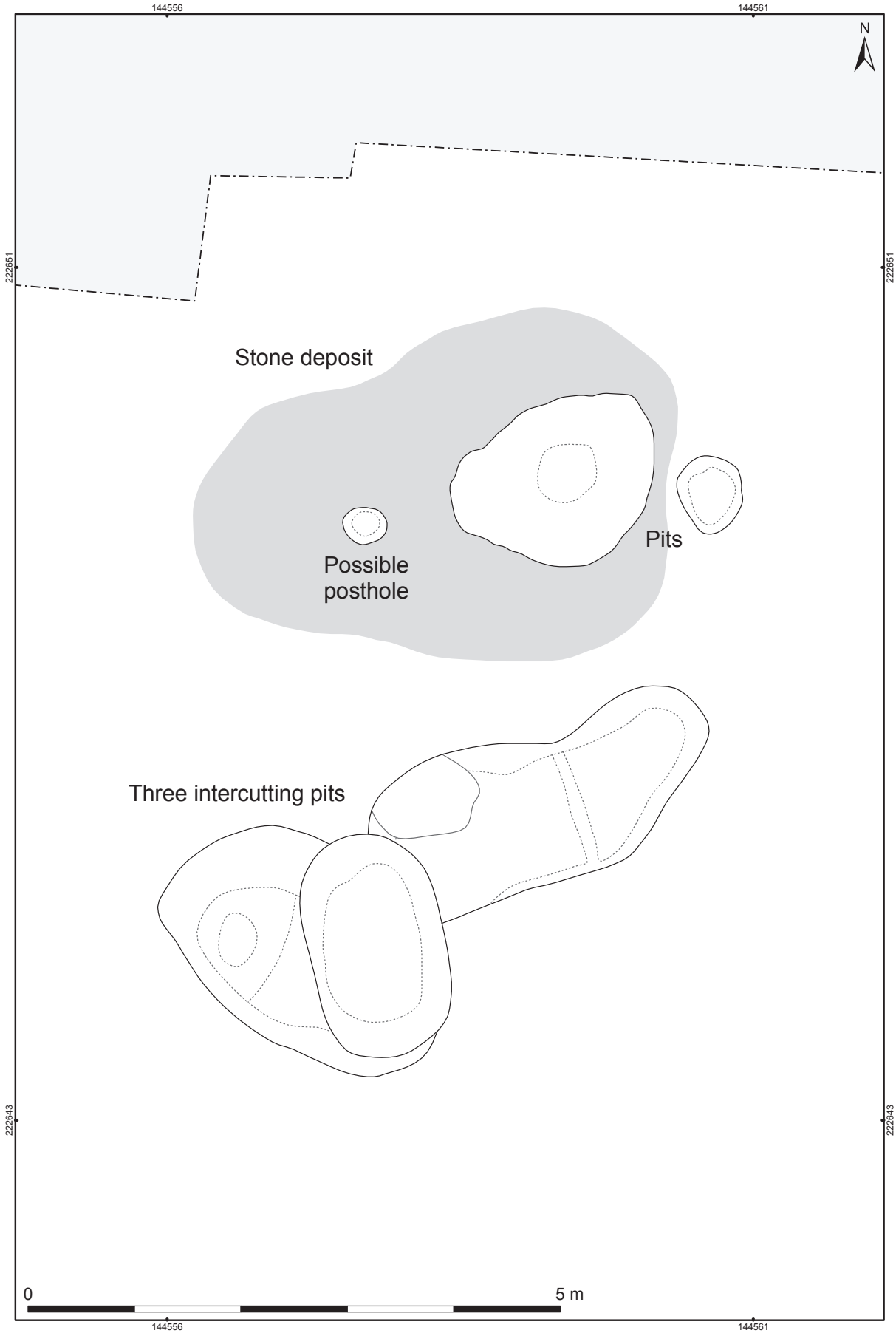

Figure 7: Interpretive post-excavation plan of the site.

12 Discussion

The site excavated at Ballinillaun 1 was one of a pair of poorly preserved burnt mounds identified in Ballinillaun townland during the Phase 1 testing. Three smaller pit groups (chainage 6520, 6200 and 5650) were excavated and recorded during Phase 1 in this townland while Ballinillaun 1 and 2 were excavated during the Phase 2 excavations. Some of the pits contained heat shattered stone as well as charcoal-rich deposits.

Site	National Grid References
Ballinillaun Pit Group 1	144384;222083
Ballinillaun Pit Group 2	144472;222390
Ballinillaun Pit Group 3	144693;222884

Table 4: Ballinillaun Townland Pit Group references

It is likely that the pits are associated with the functions undertaken at burnt mound sites and the proximity to the two burnt mound sites in Moyveela townland and their similar location on the western edge of a large turlough would seem to support this theory. The pits may be associated with unrecorded burnt mound sites located outside the extent of the road scheme or they could be the surviving remnants of truncated burnt mounds.

Burnt mounds are the most common Bronze Age sites found in Ireland. Estimates suggest that at least 4,500 examples are known (Power et al. 1997) and this number is continually growing as sites continue to be identified by archaeological field work. The characteristic site-type is found in low-lying and damp ground. It consists of a mound of charcoal-rich black sediment that is packed with heat-shattered stones. The mound forms a horse-shoe shape around a pit or trough that was filled with water. In many cases, just like at Coldwood, all that survives to the present day are black charcoal-rich deposits with fragments of shattered stones visible in ploughed fields.

These sites are associated with the process of roasting stones to heat water. Debate continues about their use (Ó'Neill, 2003–4), as hot water is required for many processes including cooking, brewing, washing, and dyeing (Roycroft 2006).

Traditionally, these sites have been interpreted as ancient cooking places, where large stones were heated in fires and then added to the water-filled trough, the extreme heat of the stones eventually heating the water in the trough until it reached boiling point. Experimental cooking at reconstructed sites such as Ballyvourney (O'Kelly 1954) has demonstrated that meat wrapped in straw and placed into a boiling trough can be cooked quite effectively. The perceived lack of any animal bones from these excavated sites has been used against this theory. More recently, however, there is a growing corpus of sites which have produced animal bone (Tourunen 2008) and all of the sites excavated during the N18 Oranmore to Gort project have produced animal bone, albeit in very small quantities.

The traditional perception of burnt mound sites is that they are isolated features on the landscape situated on marginal ground away from settlement. Recent studies however

are prompting a re-evaluation of this perception. The recent publication on the archaeology of Clare Island has also established the close relationship between burnt mounds and settlement areas (Gosling 2007). Surveys on Clare Island highlighted the spatial association of the identified burnt mounds with enclosures, houses and huts and boundary walls.

Until recently, comparatively few burnt mound sites had been excavated in County Galway. The excavations data-set listed only 18 excavations of burnt mounds/fulachta fiadh in the county prior to 2006 (Bennett 1970 – 2003). The published archaeological inventories for the county record only six examples from the west of the county and 17 in the north. Large scale archaeological works such as those associated with the N6 Galway to Ballinasloe road scheme suggest that the numbers recorded are under representative: 13 burnt mound sites being identified on this scheme alone. However, work associated with the gas pipeline to the west revealed only 1 new burnt mound site in County Galway (Grogan et al 2007). The inventory for the south of the county is not yet published but a look at the distribution map based on the RMP data would suggest that the numbers are significantly higher in the southern portion of the county. Archaeological investigations on the N18 from Oranmore to Gort and from Gort to Crusheen bear out this impression of under representation. A total of 12 burnt mounds including Ballinillaun 1 were excavated on the Gort to Oranmore section while 27 burnt mound sites were excavated on the N18 Gort to Crusheen section by Irish Archaeological Consultancy Ltd.

Site Name	E No.	Radiocarbon date (2 sigma) cal BC	Period
Ballinillaun 1	E3888	1260– 1228 1220–1108 1105–1055	MBA
Ballinillaun 2	E3886	1912–1876 1842–1821 1797–1781	EBA
Ballyglass west	E3870	1411–1290 1280–1270	MBA
		1687–1602 1591–1532	EBA
		1740–1703 1699–1618	EBA
		1125 – 978	MBA
Caherweelder 1	E3880	974–957 941–831	LBA
		1038–1034 1028–901	LBA
Caherweelder 2	E3890	1192–1174 1164–1143 1132–1005	MBA
		1294–1124	MBA
Caherweelder 3	E3889	1668–1501	EBA
		1448–1370 1351–1316	MBA
Caherweelder 5	E3866	1125–976 952–947	MBA
		1944–1865 1849–1773	EBA

Site Name	E No.	Radiocarbon date (2 sigma) cal BC	Period
Caherweelder 6	E3871	2195–2174 2145–2119 2096–2040	EBA
Coldwood	E3887		Unknown
Moyveela 1	E3883	731–691 660–652 544–406	LBA
Moyveela 2	E3884	1010–909	LBA
		894–873 846–798	LBA
Roevehagh 1	E3885	976–952 948–832	LBA

Table 5: Table of radiocarbon dates from the burnt mound sites on the N18 Gort to Oranmore

The small burnt mound at Ballinillaun 1 is located on slightly raised ground on the western edge of a large turlough. The preference for locating burnt mound sites on wetland margins has been consistently noted by other commentators (Gowen et al. 2005 and Grogan et al.2007). The burnt mound sites at Caherweelder (to the south) which were excavated as part of the N18 programme of excavations, also had a similar location on slightly raised ground on the edge of a turlough.

Clustering of burnt mound sites is also a feature of this type site . This clustering of burnt mound sites, along with the large size of some examples, has led Waddell (2000) to believe that 'they were an integrated part of a wider settlement pattern. The burnt mounds at Moyveela 1 and Moyveela 2 along with some smaller areas of burnt mound material noted during the Phase 1 testing and the sites at Ballinillaun 1 and 2 reveal a small cluster of Bronze Age sites along the western edge of a turlough. A similar cluster of burnt mound sites was also revealed in Caherweelder townland to the south. The Bronze Age site clusters have been statistically evaluated as part of the current project and two strong clusters in this area of the scheme have been identified.

	Cluster No. 8	Cluster No. 10
Number of sites	11	10
Area covered by cluster	8.53 sq km	2.22 sq km

Table 6: Summary of cluster analysis

The charcoal analysis of the samples from Ballinillaun 1 reveals that the composition of the charcoal from across all of the analysed samples probably derives from the same locality. While oak and hazel appears to have been the most commonly found species, elm, elder, ash, and trees from the Pomoideae and Prunus families were also used.

The radiocarbon date was obtained from hazel and suggests a Middle Bronze Age date for the site. In all 20 radiocarbon dates were obtained from the burnt mound sites, on the route of the N18 Gort to Oranmore, ranging from the Early Bronze Age (cal BC 1740–1703 at Ballyglass West) to the Later Bronze Age (cal BC 731–691, 660–652, 544–406 at Moyvella 1).

The lithic find from the archaeological excavation at Ballinillaun 1 is a Neolithic chert flake. A small number of lithics were recovered from five of the other burnt mound sites. The presence of earlier lithic remains on Bronze Age burnt mounds may indicate these turlough banks were sites of continuous occupation throughout prehistory, being fuel and water sources as well as areas of ecological diversity containing food sources such as wildfowl and fish.

Site Name	E No.	Material	Type	Period	Sub-Period	Comment
Ballyglass West	E3870:11:1	Chert	Blade	Mesolithic	Early	Single blade
Caherweelder 6	E3871:5:1	Chert	Retouched Artefact	Mesolithic	Late	blade point, not butt-trimmed
Coldwood	E3887:4:1	Chert	Flake	Neolithic	Beaker	
Coldwood	E3887:5:1	Chert	Flake	Neolithic	Beaker	
Coldwood	E3887:5:3	Flint	Retouched Artefact	Neolithic	Beaker	Barbed and tanged arrowhead
Ballinalliun 1	E3888:3:1	Chert	Flake	Neolithic		Single flake
Caherweelder 5	E3866:23:1	Chert	Retouched Artefact	Neolithic		convex end scraper

Table 7: Lithic finds from some of the burnt mound sites on the N18 Gort to Oranmore

Recent excavations in the south-east of Ireland revealed a similar pattern of very small assemblages found in associated burnt mounds, e.g. the N25 Waterford By-Pass (Woodman 2006), a pattern that is replicated elsewhere in Ireland.

The site at Ballinillaun 1 fits into the distribution pattern of Bronze Age activity as reflected by the recorded archaeological sites in the area to the south west of Athenry and it provides another element in the growing corpus of Bronze Age sites in Co. Galway.

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Appendix 1 Context register

Appendix 2 Groups and subgroups

Natural Deposits – Group 1

Context Numbers – C.1 and C.2

Description
The topsoil (C.1) was shallow and composed of mid brown sandy clay. The subsoil (C.2) was composed of orange brown clay.

Interpretation
These deposits represented the topsoil and underlying subsoil across the area of excavation.

Series of three pits – Group 2

Earliest pit – Subgroup 2001

Context Numbers – C.9 and C.8

Description
This was a large oval pit with moderately steep sides and an uneven base. It measured 2.75 m in length, 1.65 m in width and was 0.55 - 0.75 m deep. The fill (C.8) was black stony silt with charcoal inclusions.

Interpretation
This was a large pit filled with dark silt and charcoal which represents the earliest activity in a sequence of activity represented by three inter-cutting pits.

Shallow pit – Subgroup 2002

Context numbers – C.7 and C.4

Description
This was a shallow pit (C.7) roughly oval in shape which measured 3.35 m in length, 1.80 m in width and was 0.35 m deep. The fill was dark brown/black stony silt (C.4) with occasional small charcoal fragments and some animal bone.

Interpretation
The pit cut the earliest pit in this sequence and the fill contained some animal bone however there is no indication what kind of activity the pit represents.

Latest Pit – Subgroup 2003

Context Numbers – C.11, C.10 and C16

Description

This pit (C.11) was roughly oval in shape and was 2.40 m long, 1.23 m wide and 0.34 m deep. This pit contained two fills. The uppermost fill (C.16) was compact brown clay containing some stone. The lower fill (C.10) was brown/black sandy silt with a moderate quantity of small and medium sized angular stones and a high frequency of charcoal and also contained some animal bone fragments.

Interpretation

The upper fill appeared to have been used solely to level the area and may have been a redeposited natural subsoil. The fill may have been a much later addition to the activity represented by the pits. The pit was cut into the underlying pit fill. The fill had frequent charcoal inclusions and some animal bone however there is no indication what kind of activity the pit represents.

A pit, post-hole and associated deposit - Group 3

Context Numbers – C.14, C.12, C.15 and C.13

Description

This was a deposit (C.13) measuring 4.5 m in length 3.4 m in width and 0.3 m in depth. It was composed of small to medium sized angular and sub-angular stone mixed with mid-brownish grey silt and occasional flecks of charcoal. The deposit overlay a small pit and both overlaid and filled a possible posthole. The posthole (C.15) was 0.41 m – 0.34 m in diameter and was 0.21 m deep. It had steep sides and a concave base. The pit (C.14) was square in plan and measured 1.60 in length and was 0.32 m deep. It had gently sloping irregular sides and a concave base. The pit was filled with a dark brown/black stony clayey silt (C.12) with frequent charcoal flecks. A possible hone stone was also recovered from the fill.

Interpretation

The surface deposit and fill of the possible posthole and the fill of the square pit were rich in charcoal however there was no evidence for *in situ* burning. The possible hone stone from the fill of the square pit is indicative of activity however it is not clear what kind of activity was represented by the posthole and pit.

Small pit – Group 4

Context Numbers – C.6 and C.5

Description

The pit (C.6) was located to the east of the deposit which covered a pit and possible post-hole. It was sub-circular in plan and measured 0.72 m – 0.66 m in diameter and was 0.17 m deep. It contained a dark black fill (C.5) with occasional small stones, pebbles and a large quantity of charcoal.

Interpretation

The fill of the pit was rich in charcoal however there was no evidence for in situ burning and it is not clear what kind of activity was represented by the pit. It is probably associated with the pit and posthole located just to the east.

Appendix 3 Charcoal analysis

By Mary Dillon

Introduction

This report gives the results of the analysis of charcoal from samples taken during excavation at Ballinillaun 1 (E3888) in Co. Galway. The excavation found pits with burnt mound material. The samples came from these pits and possible post holes. The samples from this site contained charcoal and land ***molluscs***. Charcoal was frequent in most samples.

Methodology

Bulk soil samples were collected on site and were processed by the client. All charcoal fragments that measured 2 mm or greater in the transverse section were identified. Each fragment was prepared for microscopic examination by fracturing it by hand and thereby exposing a clean surface along transverse, radial and tangential planes. All three planes were examined at a range of magnifications. For reference literature the Schweingruber (1990) was consulted. The number and weight of fragments were recorded for each wood type.

Results

In all, 131 fragments of charcoal were analysed from seven samples. All seven samples had charcoal that was suitable for AMS dating. Hazel was present in all of the samples and this is recommended, and marked as suitable, for submitting for dating as it has a lifespan of just 80 years.

In Figs. 1 and 2 percentage frequencies of the various wood types, based on fragment count and dry weight respectively, are shown. The most common wood types based on fragment count were hazel (43%), and pomoideae (28%; see Fig. 1, Table 1). Ash (9%), alder (5%), Prunus (5%), elm (5%), birch (2%) and vitrified charcoal (2%) were also present.

When the results of percentage weight are taken into account the results change slightly (Fig. 2, Table 2.).

Discussion

The samples came from pits and possible post holes filled with burnt mound material. S.12 from C.8 and S.5 from C.13 had just a few fragments of charcoal present. Otherwise there are no distinct differences between the charcoal assemblages from the different features, indicating that the charcoal probably originated from the same source. Nearly all the samples consisted of several wood types. The wide variety of woods identified suggesting that there was a broad range of trees growing in the area. Vitrified wood accounted

for 2% of the overall assemblage. Wood can become vitrified when it is burnt at very high temperatures. It turns glass like and is impossible to identify.

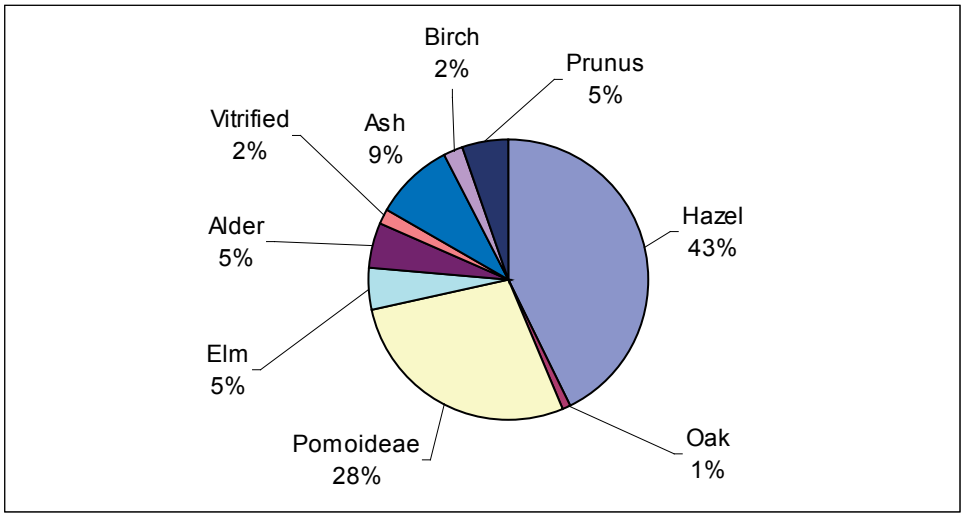

Fig. 1. Percentage fragment frequency

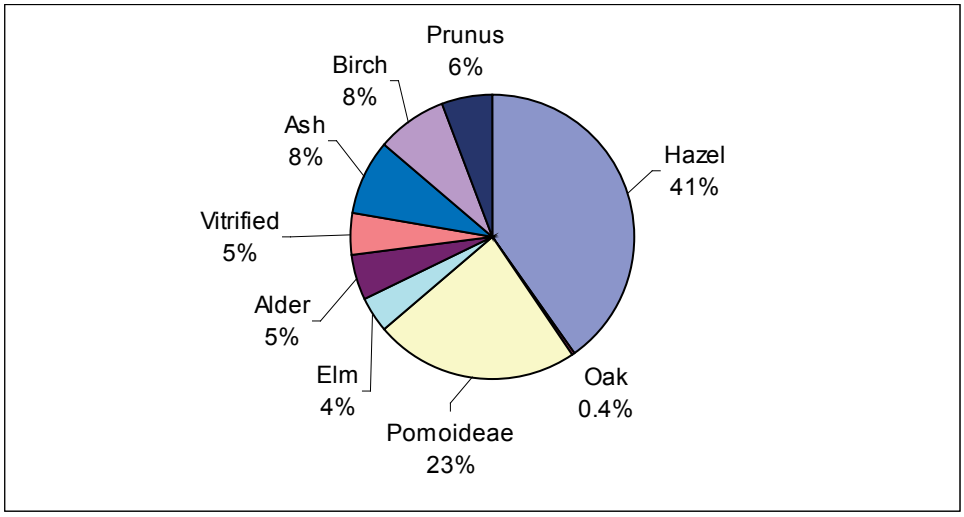

Fig. 2. Percentage weight

Hazel (Corylus avellana) was the most commonly used wood. It accounts for 43% of all charcoal fragments identified. It was present in all the samples. Hazel was widely exploited in both prehistory and historical times for its nutritious nuts and supple rods which were widely used for building. Its coppice-like growth form makes it relatively easy to cut and there are normally substantial quantities of dead wood available near ground level. Pollen analytical studies indicate that hazel was of great importance in Ireland for most of the Holocene. It is one of the more frequent native trees growing in south Co. Galway today. Hazel is commonly found on burnt mound sites (O'Donnell 2007). This is probably because it was readily available. It was also the most common wood type

identified in the samples from the nearby burnt mound sites Caherweelder 1, 2, 5, and 6, Roevehagh, Moyveela 1 and Moyveela 2 (Dillon 2009 a, b, d, e, f, g and h).

Pomoideae charcoal type was the second most common wood type present. It includes Sorbus (rowan/whitebeam), Crataegus (hawthorn) and Malus (crabapple). Woodlands and woodland-related environments are the normal habitats for the various woody plants that may be represented in this charcoal type. An important habitat, especially for hawthorn (Crataegus), is on the edge of woodlands (cf. Wilmanns and Brun-Hool 1982). While rowan, whitebeam and crabapple are scarce in the local environment of the site today, hawthorn is a popular hedge tree.

Conclusion

The samples from Ballinillaun 1 were rich in charcoal. A wide range of trees were represented in the assemblage. The most common were hazel and pomoideae. In all, eight wood types were identified.

Sample	Context	Hazel	Oak	Pomoideae	Elm	Alder	Vitrified	Ash	Birch	Prunus
1	5	10		9	1	5		4	1	
3	4	15		6				3	2	4
5	13	2						1		
6	12	14		6	1	2	2	3		2
7	10	6		3				1		
8	8	7		13	4					1
12	8	2	1							

Table 1. Charcoal fragments sorted by sample and wood type

Sample	Context	Hazel	Oak	Pomoideae	Elm	Alder	Vitrified	Ash	Birch	Prunus
1	5	0.4		0.9	0.2	0.4		0.3	0.1	
3	4	1.8		0.5				0.1	0.6	0.3
5	13	0.1						0.05		
6	12	0.7		0.2	0.03	0.05	0.4	0.2		0.1
7	10	0.2		0.1				0.05		
8	8	0.2		0.3	0.1					0.1
12	8	0.05	0.03							

Table 2. Charcoal weight sorted by sample and wood type

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Appendix 4 Stone artefacts

By Farina Sternke

Introduction

One lithic find from the archaeological excavation of a prehistoric site at Ballinlaun 1, Co. Galway was presented for analysis (Table 1). The find is associated with several pits which appear to have contained burnt mound material.

Find Number	Context	Material	Type	Condition	Cortex	Length (mm)	Width (mm)	Thickness (mm)	Complete	Retouch	Period	Sub-Period	Reliability
E3888:3:1	3	Chert	Flake	Lustred	No	32	32	11	Yes	No	Neolithic		High

Table 1 Composition of the Lithic Assemblage from Ballinillaun 1(E3888)

Methodology

All lithic artefacts are examined visually and catalogued using Microsoft Excel. The following details are recorded for each artefact which measures at least 2 cm in length or width: context information, raw material type, artefact type, the presence of cortex, artefact condition, length, with and thickness measurements, fragmentation and the type of retouch (where applicable). The technological criteria recorded are based on the terminology and technology presented in Inizan et al. 1999. The general typological and morphological classifications are based on Woodman et al. 2006. Struck lithics smaller than 2 cm are classed as debitage and not analysed further, unless they are retouched or of specific significance, e.g. cores etc. The same is done with natural chunks.

Quantification

The lithic is a flaked piece of chert.

Provenance

The find was recovered from the spoil heap (C3).

Condition

The lithic survives in lustred and complete condition.

Technology/Morphology

The artefact is a single platform flake. It measures 33 mm long and 32 mm wide and 11 mm thick.

Dating

The flake is technologically diagnostic and dates to the Neolithic, most likely to the first half of that period.

Conservation

Lithics do not require specific conservation, but should be stored in a dry, stable environment. Preferably, each lithic should be bagged separately and contact with other lithics should be avoided, so as to prevent damage and breakage, in particular edge damage which could later be misinterpreted as retouch. Larger and heavier items are best kept in individual boxes to avoid crushing of smaller assemblage pieces.

Discussion

The size and composition of the flaked assemblage is typical for Irish burnt mounds. Recent excavations in the south-east of Ireland revealed a similar pattern of very small assemblages found in associated fulachta fiadh, e.g. the N25 Waterford By-Pass (Woodman 2006), a pattern that is replicated elsewhere in Ireland.

Conclusion

The lithic find from the archaeological excavation at Ballinlaun 1, Co. Galway is a possibly Early Neolithic chert flake.

This site makes a minor contribution to the evidence for prehistoric settlement and land use in Co. Galway.

Recommendations for Illustration

Blade (E3870:11:1)

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