



**N2 MONAGHAN TOWN BYPASS
SITE 2: TULLYHIRM 2: CHAINAGE 0675
NGR: 268500/334500**

STRATIGRAPHIC REPORT

**ON BEHALF OF
MONAGHAN COUNTY COUNCIL AND THE
NATIONAL ROADS AUTHORITY**

LICENCE NUMBER: 04E1159

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29 AUGUST 2009

IRISH ARCHAEOLOGICAL CONSULTANCY LTD



ABSTRACT

Irish Archaeological Consultancy Ltd. (IAC Ltd.), funded by Monaghan County Council and the National Roads Authority, completed a 480m² excavation in the townland of Tullyhirm c. 1km to the east of Monaghan town in advance of the construction of the 2.65km N2 Monaghan Bypass (main chainage 0000–2280). The excavations were undertaken to ensure all subsoil archaeological remains were preserved by record in advance of groundwork.

The previously unknown site had been discovered at route chainage 0675 during a test trenching programme undertaken by IAC Ltd. in March–April 2004 (Licence 04E1161). Resolution excavation was completed in September 2004 (Licence 04E1159) with a maximum staff level of 5, directed by Fintan Walsh.

The site comprised a spread of charcoal-rich silt and heat-shattered stone sealing a pit, and two large field clearance pits filled with charcoal flecked silty peat. The spread measured 5m x 2m x 0.25m deep.

This burnt mound was dated to the early Bronze Age (2140–1740 BC).

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1 INTRODUCTION

1.1 Site location

Tullyhirm is located in Tullyhirm townland, c. 0.5km south of the N12 Armagh Road, c. 1km east of Monaghan town (Monaghan OS sheet 028a). The site is:

Site 2, Tullyhirm 2, Excavation Licence: 04E1159, Route Chainage: (Ch) 0675, NGR: 268500/334500.

1.2 The scope of the project

Monaghan County Council propose to realign the N2 in a gentle arc situated approximately 1.25km from the historic town of Monaghan. The proposed road will run from the N2 just to the south of the Blackwater Bridge and rejoin the present N2 in Corlat townland. Main central chainage (Ch) runs in two sequences: from the (northern) start of the scheme to the N2/N12 roundabout (Ch000 – 250) (or Ch000 – 325 to include the roundabout of c. 75m in diameter), the main (southern) section from the N2/N12 junction to Corlat townland (Ch0000 – 2280).

The difference between these sections will be indicated by the use of three figure chainage references for the northern section and four figure references for the southern section.

As currently understood, the N2 Monaghan Town bypass will therefore be of 2.65km centre line chainage. The design plans include:

- a major roundabout forming the N2/N12 junction at Ch0000.
- a bridge over, or a box around, the disused Ulster Canal between Ch0040 and 0080.
- two new access roads placed to either side, and running parallel to the proposed route between Ch1100 and 1420.
- a bridge over the Old Armagh Road between Ch1400 and 1450.
- a roundabout junction with the existing N2 to the south at Ch2280.

The route corridor width varies between 25m and 100m (not including side road realignments) and is on average c. 50m wide.

Specific;

Site 2, Tullyhirm 2 lies between Ch0675.

The excavation covered an area approximately 24m x 20m which therefore totalled approximately 480m² (Figure 2).

1.3 Circumstances and dates of fieldwork

The excavation was undertaken to offset the adverse impact of road construction on known and potential subsoil archaeological remains in order to preserve these sites by record.

The order and date of the excavation is as follows:

- Topsoil stripping commenced on 24 August 2004, and was completed on the 25 August. This was followed by hand recording and resolution of site, which commenced on the 1 September.
- Tullyhirm commenced on 1 September with a team of 1 field director, 1 supervisor and 3 site assistants.
- Excavation and recording of all features were completed by 2 September 2004.

It was agreed in advance that adequate funds to cover excavation, post-excavation, conservation and dating analysis would be made available by Monaghan County Council. In the instances where artefacts were uncovered on site they were dealt with in accordance with the guidelines as issued by the NMI and where warranted in consultation with the relevant specialists. All artefacts, ecofacts and paper archive are currently stored in IAC offices, Lismore, Co Waterford and will ultimately be deposited with the National Museum of Ireland.

Radiocarbon dating of the site was carried out by means of C14 dating of charcoal samples in consultation with the National Museum of Ireland. All calibrated C14 dates in this report are quoted to 2 Sigma.

All excavation and post excavation works were carried out in consultation and agreement with the Project Archaeologist, the National Monuments Section of the DOEHLG and the National Museum of Ireland.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Prehistoric

Evidence for known prehistoric activity is sparse, with very few sites or finds being noted in this area. An attempt needs to be made to understand whether this apparent low level of activity is, in fact correct. The presence of the Megalithic tomb (MO009:051) should give an indication of a settled Neolithic presence in the area. Also the possible barrow (MO009:62) on the banks of the relict channel now occupied by the Ulster canal could show activity. The only stray finds recorded locally are three late Bronze Age axes found 'in the vicinity of Monaghan' (MG, 2000). Recently a group of important prehistoric sites were identified at Monanny, immediately north of Carrickmacross Co. Monaghan. This included an early Neolithic settlement including three rectangular houses with associated pits, hearths and a number of Bronze Age burnt mounds and pits (Walsh 2006). The sites were positioned at the edge of a meander of the Longfield River. The burnt mounds were dated to 1320–890 BC (Monanny 2), and 1900–1100 BC (Monanny 1). In addition to this a pit at Monanny 1 returned a date of 1000–790 BC while late Bronze Age pottery was recovered from another (Walsh 2008 and Walsh forthcoming). A burnt mound in the adjoining townland on the opposite side of the river was dated to the early Bronze Age (Walsh 2006).

Two burnt mounds (Annahagh 1 and Annahagh 2) were also identified during the Monaghan Town Bypass scheme, positioned 0.5km to the southeast (Figure 2).

Early medieval

The major feature of this period is the ringfort. It is also possible that various 'earthworks' date from this period. The majority of local ringforts appear in loose clusters and may represent the re-construction of sites by the same landowning 'family/class' in a certain areas. Perhaps the 'empty' areas between these loose clusters were woodland at this time. The proposed route passes through one of these 'blank' areas so this woodland/non-agricultural landuse theory should be tested.

Later Medieval

In the 15th century occupation at Monaghan Town was centred around the McMahon Crannóg (MO009:037) at Mullaghmonaghan, near to which a Franciscan Friary (MO009:039) was founded in 1462. In 1576 Queen Elizabeth I granted the Barony of Farney to the Earl of Essex, with the result that monastic property was confiscated and the Franciscan Friary subsequently demolished.

Late medieval/Post-medieval

The county of Monaghan was formed in 1585 from the five ancient baronies of Truagh, Dartrey, Monaghan, Cremorne and Farney. However, the local area was not at peace and the battle of Clontibret in 1595 between Hugh O'Neill and his Ulster allies against the English Crown forces resulted in the loss of a company of men on the English side.

In order to secure the area, garrisons were subsequently stationed at Monaghan and Newry, both important outposts for English expeditions into Ulster. By 1600 Sir Edward Blayney was occupying a newly constructed star shaped fort at Monaghan and in 1605 he began to build a castle at the site of the demolished Franciscan Friary. It appears this castle was never completed.

At the beginning of the 17th century a contemporary account described Monaghan Town as being of 'divers scattered cabins or cottages' (MG, 2000) and these were mainly associated with the fort. The town expanded during the 17th century, based

on a street pattern radiating from the original market place known as 'The Diamond'. During the 18th and 19th centuries the town continued to prosper with grander buildings replacing earlier structures.

The 1907 OS map shows an area of dispersed farms set within laid out fields of fairly consistent sizes. The MG 2000 walkover survey described the landscape as having an 'old feel' to it as if it had remained much the same since the enclosures of the post-medieval period. Comparisons between the 1907 OS map and the present hedgerow layout show that a number of hedgerows that once crossed the route have been removed.

Previous archaeological excavations

There has been relatively little archaeological investigation in County Monaghan to date. Only 28 licensed investigations have been recorded in the county up to 1999, 27 of which took place after 1996.

Recently an archaeological excavation was conducted in the centre of Monaghan Town at the rear of an existing hotel. The excavation was carried out in 2002 by David O'Connor of C.R.D.S (Licence # 02E1447). Excavations revealed a range of phases of archaeological activity with the earliest activity possibly dating from the prehistoric period. A number of possible 16th Cent buildings were also uncovered. These were disturbed by later activity and sealed by dark garden soils (*D. O'Connor pers. comm.*).

3 THE EXCAVATION

3.1 Methodology

Tullyhirm 2 comprised a spread of burnt stone and charcoal-rich silt sealing and filling a large irregular pit. Around 10m southeast of this were two further large pits (field clearance pits) filled with charcoal-flecked silty peat. The site was located on level, well-drained land around 40m northwest of an area of moderate wetland (Figures 3 and 4).

The topsoil was removed by machine equipped with a toothless bucket under archaeological supervision and then the area was excavated by hand until archaeological deposits were reached. All archaeological material was fully recorded and then excavated by hand until natural geological layers were reached. All contexts are described in Appendix 1 and the matrix is detailed in Appendix 3.

3.2 Duration

The excavation took place between 1 September 2004 and 2 September 2004.

3.3 Results of Excavation

3.3.1 Phase 1: Natural Deposits

The natural subsoil consisted of a grey/yellow coarse sandy silt, mottled orange-brown in places. The main focus of Site 2 Tullyhirm 2 occupied a level area at c. 63m OD c. 40m north of an area of damp boggy ground. This part of site was sealed by silty topsoil and the underlying natural geology comprised well drained natural sandy clays.

3.3.2 Phase 2: Bronze Age Burnt Mound

The Phase 2 activity comprised a burnt mound defined by one trough and a burnt mound spread.

Trough C5 and Burnt Mound Spread C3

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C3	C5	5.00	2.00	0.25	Irregular in plan – sub-circular. Loose black-brown coarse sandy silt, with frequent charcoal and frequent heat-shattered stone.	Burnt mound, slumped into trough.
C4	C5	1.70	1.50	0.15	Loose mid-brown sandy silt, frequent stones.	Loose stones, dumped in C5.
C5	N/A	2.30	1.70	0.25	Sub-rectangular in plan, N-S orientation. Rounded corners, E and W sides steep, N and S sides vertical, irregular base.	Trough.
C6	C5	1.20	0.30	0.08	Firm grey silty clay, moderate charcoal flecking and ash.	Ashy debris.

Finds: None

Interpretation:

Burnt spread C3 comprised heat-shattered stones and charcoal within coarse sandy silt (Figures 4 and 5; Plate 1). This is likely to represent the remains of residual material from the working cycle of trough C5 (Figures 4 and 5; Plate 2), a sub-rectangular pit/trough which was sealed by the spread. Also filling the trough was a small ash-rich deposit (C6) likely to be debris from a nearby, presumed, fire. Deposit C3 appears to have slumped naturally into the trough from the south, after the abandonment of the site. The upper fill of the pit was C4 – a dump of large stones.

Charcoal (10.1g) was retrieved from burnt mound spread C3 during post-excavation soil flotation. This was subsequently identified to species. Fragments of alder charcoal (*Alnus glutinosa*) and oak (*Quercus* sp.) were identified (O'Carroll, Appendix 2.1). A fragment this was submitted for C14 dating and returned a result of 3579 \pm 64 BP (WK 18354). The 2 Sigma calibrated result for this was 2140–1740 BC (Appendix 2.2) dating this site broadly to the early Bronze Age.

3.3.3 Phase 3: Post-Medieval Field Clearance

Pit C10

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C8	C10	1.15	0.80	0.18	loose brown/grey silty sand, occ charcoal.	Natural silting.
C9	C10	1.45	0.80	0.16	Loose, grey-black silt, with charcoal.	Washed-in debris from fire.
C10	N/A	1.83	0.90	0.48	Irregular/sub-rectangular in plan, W side was steep, E, S, and N sides gradual, irregular flat at N, concave at S.	Tree bole/Burrow?

Finds: None

Interpretation:

Irregular pit C10 was filled with a layer of natural silting above a layer of charcoal-flecked silt. The shape of the 'cut' indicates that C10 is likely to be a natural feature, perhaps a tree-bole or dug-out burrow, filled with washed-in debris from nearby field clearance.

Field Clearance Pit C12

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C7	N/A	4.80	2.20	0.40	firm brown-black sandy silt, frequent charcoal.	Debris from field clearance.
C12	N/A	2.40	2.00	0.20	Sub-rectangular in plan, corners rounded, E and W sides gradual, N side steep, S side gentle, Irregular concave base.	Field clearance pit.

Finds: None

Interpretation:

This was a shallow linear pit, filled with charcoal rich silt (Figures 4 and 6; Plate 3). The irregular shape of the cut, both in plan and profile, suggests that it was probably dug as part of field clearance work – probably to remove a tree or bush. Fill C7 may represent the debris of fires disposing of the foliage.

Field Clearance Pit C14

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C14	N/A	1.80	1.70	0.52	Irregular in plan, steep sides, concave base.	Field clearance pit.
C15	C14	1.80	1.70	0.52	Firm dark brown sandy silty peat, and some charcoal.	Natural silting.

Finds: None

Interpretation:

Large irregular, sub-circular pit naturally silted (Figures 4 and 6). This is also likely to be associated with the same field clearance works described above.

These three episodes of field clearance are likely to be post-medieval or later, perhaps indicating an expansion in the size of the fields. They are also truncated by the machine-cut furrows described below.

3.3.4 Phase 4: Furrows and Topsoil

Agricultural furrows which traversed the entire site from east to west. Although no dates were retrieved from them, their shape and dimensions indicate that they were machine-cut and therefore modern. The topsoil (C1) was a mid-brown sandy silt which covered the entire site and was an average of 0.30m deep.

4 SYNTHESIS

N2 MONAGHAN TOWN BYPASS, County Monaghan

SITE 2: Tullyhirm 2: Chainage 0675

NGR: 268388/334712

4.1 Phase 1: Natural deposits

The main focus of Site 2 Tullyhirm 2 occupied a level area at c. 63m OD c. 40m north of an area of damp boggy ground. This part of site was sealed by silty topsoil and the underlying natural geology comprised well drained natural sandy clays.

4.2 Phase 2: Burnt Mound Activity, c. 2140BC–1740BC

Phase 2 consisted of a large pit or trough and associated 'burnt mound' deposit. Burnt mound (also commonly referred to as *fulacht fiadh*) sites are one of the most common field monuments found in the Irish landscape. The last published survey (Power *et al.* 1997), carried out over a decade ago, recorded over 7,000 burnt mound sites and in excess of 1,000 sites have been excavated in recent years through development led archaeological investigations. In spite of this no clear understanding of the precise function of these sites has been forthcoming.

Burnt mound sites are typically located in areas where there is a readily available water source, often in proximity to a river or stream or in places with a high water table. In the field burnt mounds may be identified as charcoal-rich mounds or spreads of heat shattered stones, however, in many cases the sites have been disturbed by later agricultural activity and are no longer visible on the field surface. Nevertheless even disturbed spreads of burnt mound material often preserves the underlying associated features, such as troughs, pits and gullies, intact.

Ó Néill (2003–2004, 82) has aptly identified these sites as the apparatus and by-product of pyrolithic technology. This technology involved the heating or boiling of water by placing fire-heated stones into troughs of water. Small shallow round-bottomed pits, generally referred to as pot boiler pits or roasting pits, are often associated with burnt mound sites. The purpose of these pits remains unclear. Occasionally large pits are also identified and may have acted as wells or cisterns. Linear gullies may extend across the site, often linked to troughs and pits, and demonstrate a concern with onsite water management. Post and stakeholes are often found on burnt mound sites and these may represent the remains of small structures or wind breakers.

Burnt mound sites are principally Bronze Age monuments and reach their pinnacle of use in the middle/late Bronze Age (Brindley *et al.* 1989–90; Corlett 1997). Earlier sites, such as Enniscoffey Co. Westmeath (Grogan *et al.* 2007, 96), have been dated to the Neolithic and later sites, such as Peter Street, Co. Waterford (Walsh 1990, 47), have been dated to the medieval period. Thus although burnt mound sites generally form a components of the Bronze Age landscape, the use of pyrolithic technology has a long history in Ireland.

Although there is a general consensus that burnt mound sites are the result of pyrolithic technology for the heating or boiling of water, the precise function of these sites has, to date, not been agreed upon. Several theories have been proposed but

no single theory has received unanimous support. The most enduring theory is that burnt mound sites were used as cooking sites. O'Kelly (1954) and Lawless (1990) have demonstrated how joints of meat could be efficiently cooked in trough of boiling water. The use of burnt mound sites for bathing or as saunas has been suggested as an alternative function (Lucas 1965, Barfield and Hodder 1987, O' Drisceoil 1988). This proposal is largely influenced by references in the early Irish literature to sites of a similar character and is very difficult to prove, or disprove. Others, such as Jeffrey (1991), argue that they may have been centres of textile production for the fulling or dyeing of cloth. More recent demonstrations by Quinn and Moore (2007) have shown that troughs could have been used for brewing, however, this theory has been criticised by leading Irish environmentalists due to the absence of cereal remains from most burnt mound sites (McClatchie *et al.* 2007).

On such sites stones were heated in a nearby fire, and then placed in a water-filled trough in order to heat the water to boil food. At Tullyhirm the stones in deposit C3 have certainly been in a fire, and their distribution pattern indicates that they were removed from trough C5 and flung to the south. The burnt mound deposit measured 5.00m x 2.00m x 0.25m deep. The trough (C5) measured 1.70m x 1.50m x 0.15m deep. Although no obvious *in situ* burning was found, the ashy layer (C6) at the base of trough C5 could represent the remains of a nearby fire. Some troughs were lined with wood or stone, but there was no evidence of such a lining in trough C5 furthermore, during excavation it was observed that the pit did not fill with groundwater, suggesting that any water was brought from elsewhere – perhaps the wetland to the southeast of the site. A date obtained from charcoal retrieved from the burnt spread signifies a early Bronze Age date for this site (2140–1740 BC).

4.3 Phase 3: Field Clearance, Probably Post-Medieval

Three episodes of field clearance represented by field clearance pits C10, C12 and C14 are likely to be post-medieval or later, perhaps indicating an expansion in the size of the fields. They are also truncated by the machine-cut furrows described below.

4.4 Phase 4: Modern Furrows and Topsoil

Agricultural furrows which traversed the entire site from east to west. Although no dates were retrieved from them, their shape, dimensions and alignment indicate that they were machine-cut and therefore modern. Topsoil sealed the entire site.

5 SIGNIFICANCE OF THE DATA

5.1 Summary

The date of this site is 2140–1740 BC. Burnt mound sites are generally attributed to the Bronze Age and over the last 10 years they have been the most frequent site type uncovered during archaeological mitigation programmes in advance of development. In this respect the site at Tullyhirm 2 would only be significant only at a local level.

<i>Period</i>	Early Bronze Age and Post-Medieval
<i>Rarity</i>	Not uncommon
<i>Documentation</i>	None
<i>Group value</i>	Low
<i>Survival/Condition</i>	Truncated by ploughing and modern agricultural practices. Fully excavated: preserved by record
<i>Fragility/Vulnerability</i>	Subject to development by N2 Monaghan Bypass
<i>Diversity</i>	Low in terms of site type, medium in terms of individual components of site.
<i>Potential</i>	Will add to local archaeological records.

5.2 Realisation of New Research Aims (NRA)

NRA 1: Establish accurate date for the sites by C14 dating. How do the dates compare which each other and to similar sites excavated in the county and nationally.

The date of this site (2 Sigma 2140–1740 BC) is later in date than the nearby burnt mound at Annahagh 2 which returned 2 Sigma calibrated dates of 2340–2030 BC and 2290–2020 BC and is earlier than the burnt mound at Annahagh 1 which was dated to 1690–1490 BC. These dates compare well with other dated examples from throughout the country.

NRA 2: What evidence is there to compare the type of burnt mounds at Tullyhirm 2, Annahagh 1 and 2 to other nearby sites in terms of specific architecture and function?

The Tullyhirm burnt mound was similar to the adjacent burnt mound at Annahagh 2 and Annahagh 1, in terms of form and archaeological deposits/features, i.e. sub-soil cut troughs/pits with associated, flattened, burnt mound deposit.

6 ACKNOWLEDGEMENTS

The project was funded by Monaghan County Council/National Roads Authority. The archaeological work was managed by:

Niall Roycroft, Project Archaeologist, Meath National Roads Design Office, Navan

Seamus Grogan, Resident Engineer, Monaghan County Council

Roísín Nic An Iarla, Monaghan County Council

Paddy Johnson, Senior Engineer, Monaghan County Council

Martin Reid, Department of Environment, Heritage and Local Government

Rob Lynch and Dermot Nelis, IAC Ltd

IAC Ltd – who staff, supervisors Patricia Ryan and Tom Janes, CAD technicians Ken Russell and Anita Corcoran,

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APPENDIX 1 CATALOGUE OF PRIMARY DATA

Appendix 1.1 Context Register

Context	Fill of	L(m)	W(m)	D(m)	Basic Description	Interpretation
C1	N/A	N/A	N/A	N/A	Mid-brown sandy silt.	Topsoil.
C2	N/A	N/A	N/A	N/A	grey/yellow coarse sandy silt, mottled orange-brown in places.	Natural subsoil.
C3	C5	5.00	2.00	0.25	Irregular in plan – sub-circular. Loose black-brown coarse sandy silt, with frequent charcoal and frequent heat-shattered stone.	Burnt mound, slumped into trough.
C4	C5	1.70	1.50	0.15	Loose mid-brown sandy silt, frequent stones.	Loose stones, dumped in C5.
C5	N/A	2.30	1.70	0.25	Sub-rectangular in plan, N–S orientation. Rounded corners, E and W sides steep, N and S sides vertical, irregular base.	Trough.
C6	C5	1.20	0.30	0.08	Firm grey silty clay, moderate charcoal flecking and ash.	Ashy debris.
C7	N/A	4.80	2.20	0.40	firm brown-black sandy silt, frequent charcoal.	Debris from field clearance.
C8	C10	1.15	0.80	0.18	loose brown/grey silty sand, occ charcoal.	Natural silting.
C9	C10	1.45	0.80	0.16	Loose, grey-black silt, with charcoal.	Washed-in debris from fire.
C10	N/A	1.83	0.90	0.48	Irregular/sub-rectangular in plan, W side was steep, E, S, and N sides gradual, irregular flat at N, concave at S.	Tree bole/Burrow?
C11					Not used.	
C12	N/A	2.40	2.00	0.20	Sub-rectangular in plan, corners rounded, E and W sides gradual, N side steep, S side gentle, Irregular concave base.	Field clearance pit.
C13					Not used.	
C14	N/A	1.80	1.70	0.52	Irregular in plan, steep sides, concave base.	Field clearance pit.
C15	C14	1.80	1.70	0.52	Firm dark brown sandy silty peat, and some charcoal.	Natural silting.

Appendix 1.2 Finds Register


No finds were recorded from this site.

Appendix 1.3 Catalogue of Ecofacts

A total of four soil samples were taken. Both were processed by means of floatation and sieving through a 250µm mesh. The resulting retrieved samples of this process are listed below.

Context number	Sample number	Feature	Sample weight (g)
C3	1	Burnt mound material.	10.3
C7	2	Burnt spread.	74.7
C9	3	Fill of pit C10.	338
C14	4	Tree bowl.	12.7

Appendix 1.4 Archive Checklist

Project: N2 Monaghan Town Bypass	Irish Archaeological Consultancy Ltd	
Site Name: Tullyhirm 2		
Licence Number: 04E1159		
Site director: Fintan Walsh		
Date: 05 November 2004		
Field Records	Items (quantity)	Comments
Site drawings (plans)	2	
Site sections, profiles, elevations	5	
Other plans, sketches, etc.	0	
Timber drawings	0	
Stone structural drawings	0	
Site diary/note books	1	
Site registers (folders)	1	
Survey/levels data (origin information)	63	
Context sheets	15	
Wood Sheets	0	
Skeleton Sheets	0	
Worked stone sheets	0	
Digital photographs	10	
Photographs (print)	0	
Photographs (slide)	0	
Finds and Environ. Archive		
Flint/chert	0	
Stone artefacts	0	
Pottery (specify periods/typology)	0	
Ceramic Building Material (specify types eg daub, tile)	0	
Metal artefacts (specify types - bronze, iron)	0	
Glass	0	
Other find types or special finds (specify)	0	
Human bone (specify type eg cremated, skeleton, disarticulated)	0	
Animal bone	0	
Metallurgical waste	0	
Enviro bulk soil (specify no. of samples)	5	
Enviro monolith (specify number of samples and number of tins per sample)	0	
Security copy of archive	1	On IAC mainframe

APPENDIX 2 SPECIALIST REPORTS

Appendix 2.1 Charcoal Report – Ellen O'Carroll

Appendix 2.2 Radiocarbon Dating Results – Waikato Labs

Appendix 2.1 Charcoal Report – Ellen O’Carroll

Introduction

Four charcoal samples were submitted for analysis. The charcoal was excavated from a series of features associated with three burnt mounds or *fulachta fiadh* excavated at Annahagh 1 and 2 and Tullyhirm 2, Co. Monaghan. There was no surface evidence to indicate the presence of the sites prior to commencement of the development works along the N2 Monaghan Town By-Pass. Annahagh 1 comprised a burnt mound, defined by 2 spreads of charcoal-rich silt and heat-shattered stone sealing two pits (troughs), all of which were truncated by recent agricultural activity. These spreads measured 9m x 7.5m x 0.15m deep, and 9.25m x 3.25m x 0.17m deep. A broken parallel sided flint blade was recovered from this site. The charcoal sample (Sample 2) analysed from this site was retrieved from the backfilled material of the trough (C11) and comprised a sub-rectangular deposit of medium loose brown sandy silt.

Annahagh 2 comprised a ‘burnt mound’ defined by a large spread of charcoal-rich silt and heat-shattered stone sealing 2 pits (troughs), all of which was truncated by recent agricultural activity. The mound measured 17.5m x 10m x 0.4m deep. One piece of flint debitage was recovered from one of the troughs. Two charcoal samples were sent for analysis from this site. One was retrieved from the burnt mound material (C4) while the other one was retrieved from the actual trough (C16).

The third site analysed within the framework of this study was Tullyhirm 2 which comprised a spread of charcoal-rich silt and heat-shattered stone sealing a pit, and two large field clearance pits filled with charcoal flecked silty peat. The spread measured 5m x 2m x 0.25m deep. The sample was received from charcoal which had slumped into the possible trough material (C3).

The charcoal was sent for species identification prior to 14C dating and also to give an indication of the range of tree species, which grew in the vicinity. Charcoal and wood analyses may also provide information on the utilization of certain species for various functions. Wood used for fuel at pre-historic sites would generally have been sourced at locations close to the site. Therefore species identifications may, but do not necessarily, reflect the composition of the local woodlands.

Methods

The process for identifying wood, whether it is charred, dried or waterlogged is carried out by comparing the anatomical structure of wood samples with known comparative material or keys (Schweingruber 1990). The identification of charcoal material involves breaking the charcoal piece so as a clean section of the wood can be obtained. This charcoal is then identified to species under an Olympus SZ3060 zoom stereomicroscope. By close examination of the microanatomical features of the samples the species were determined. The diagnostic features used for the identification of charcoal are micro-structural characteristics such as the vessels and their arrangement, the size and arrangement of rays, vessel pit arrangement and also the type of perforation plates.

Quantification/Results

Table 1: Results from charcoal identifications

Site no.	Context No and type	Sample No	Identification	Weight and comment
Annahagh 1, 04E1161	C11, Charcoal from upper fill of trough	2	Alder (<i>Alnus glutinosa</i>)	48g. Many insect holes apparent.
Annahagh 2, 04E1160	C4, Charcoal from burnt mound material	1	Alder (<i>Alnus glutinosa</i>)	35.2g.
Annahagh 2, 04E1160	C16, Charcoal from trough	3	Hazel (<i>Corylus avellana</i>) and oak (<i>Quercus</i> sp.)	Hazel (22g) and Oak (0.1g). Oak has been bagged separately and should not be sent for dating.
Tullyhirm 2, 04E1159	C3, Charcoal from burnt mound material	1	Alder (<i>Alnus glutinosa</i>) and <i>Quercus</i> sp. (oak)	Alder (10g) and Oak (0.1g). Oak has been bagged separately and should not be sent for dating.

Provenance

Five charcoal samples from three separate sites were analysed from the series of sites excavated along the N2 Monaghan town by-pass. Two of the samples were retrieved from the fill of the burnt mound material at Annahagh 2 (C4) and Tullyhirm 2 (C3). These two samples mainly comprised of alder (*Alnus glutinosa*) with a small amount of oak (*Quercus* sp.) present in the sample from Tullyhirm 2. Alder was exclusively identified from the sample from the upper fill of the trough at Annahagh 1. The charcoal from this sample was riddled with insect holes which suggests that the timbers were lying on the ground for some time prior to their use. The remaining sample, which was excavated from the trough at Annahagh 2 comprised hazel and a small amount of oak. This charcoal may be representative of the burnt remains of the hazel (*Corylus avellana*) posts or oak (*Quercus* sp.) plank lining which surrounded the trough at its time of use.

Alder (*Alnus glutinosa*) is a widespread native tree and occurs in wet habitats along streams and riverbanks. Alder also grows frequently on fen peat. It is an easily worked and split timber and does not tear when worked. Alder is commonly identified from wood remains associated with wet/boggy areas.

A small amount of oak (*Quercus* sp.) charcoal was identified from C16 (Annahagh 2) and C3 (Tullyhirm 2). These small amounts of oak charcoal may be the remains of oak planks associated with the trough of the *fulachta fiadh*. Throughout all periods of prehistory and history oak has been used for structural timbers. The oak identified suggests that there was a supply of oak in the surrounding environment. Oak also has unique properties of great durability and strength. Sessile oak (*Quercus petraea*) and pedunculate oak (*Quercus robur*) are both native and common to Ireland. The wood of these species cannot be differentiated based on its microstructure. *Pedunculate* oak is found on heavy clays and loams particularly where the soil is of alkaline pH. Sessile oak is found on acid soils often in pure stands and although it thrives on well-drained soils it is also tolerant of flooding (Beckett 1979, 40-41). Both species of oak grow to be very large trees (30–40m) and can live to an age of about 400 years. The oak could have been selected from mixed woodlands nearby.

Hazel (*Corylus avellana*) was identified from the trough material (C16) at Annahagh 2. Hazel was very common up to the end of the 17th century and would have been used for the manufacture of many wooden structures such as wattle walls, posts, trackways and baskets. McCracken (1971, 19) points out that “it was once

widespread to a degree that is hard to imagine today". With the introduction of brick, steel and slate the crafts associated with hazel became obsolete, and today the woods that supplied hazel have diminished rapidly. Hazel is normally only about 3–5m in height and is often found as an understory tree in deciduous woods dominated by oak. It also occurs as pure copses on shallow soils over limestone as in The Burren in Co. Clare and survives for 30 to 50 years. Its main advantage is seen in the production of long flexible straight rods through the process known as coppicing.

Conservation

The five samples presented for analysis are all suitable for conventional 14C dating. The desired amount of charcoal for a conventional 14C date is 5 grammes. The best material to send for dating is shorter-lived species such as alder and hazel therefore the oak has been extracted from the samples and should not be sent for 14C dating purposes.

Comparative Material

In recent years a considerable amount of structural as well as non-structural wood has been recovered from archaeological deposits in Ireland. Wood was a vital and widely used raw material from prehistoric to medieval times although its importance is rarely reflected in the analysis of archaeological assemblages mainly due to its perishable nature. It is important to note that people in prehistoric, early medieval and medieval communities were mainly dependant on woodland resources for the construction of buildings and for the manufacture of most implements. The woods in a surrounding catchment area were exploited and often managed to provide an essential raw material for the community. The economic importance of wood cannot be overestimated.

A study of the range of species on an archaeological site offers an indication of the composition of a local woodland in its period of use. When some trees are felled the stool left in the ground will produce several new stems, which will grow rapidly. This type of management is known as coppicing. In many woodland areas a number of species of wood are suitable for the production of crops of long narrow stems used for fences, brushwood, hurdle trackways and wattle walls.

From the preliminary studies mentioned above it is clear that oak was the most common species used for wall-posts and planks, hazel was preferred for wattle structures and species such as ash, willow, alder, birch and holly were utilised for a variety of other structural requirements. The work carried out on species selection suggests that availability around a given catchment area was probably the main factor which influenced choice of timber.

The wood assemblages from Annahagh 1, Annahagh 2 and Tullyhirm, although as yet undated, are probably associated with the later prehistoric period (Bronze Age) and represent the remains of *fulachta fiadh* or cooking places. The author has carried out hundreds of charcoal identifications from excavated *fulachta fiadh* or burnt mound sites. The range of species identified from the above samples is reflective of similar assemblages analysed throughout Ireland. This author has observed the use of large amounts of alder at numerous other *fulachta fiadh* sites throughout Ireland. Most *fulachta fiadh* are constructed in areas with easy access to ground water and as alder grows in wetland conditions it would have been easily collected from nearby to the site. The peoples who used these *fulachta fiadh* would have been collecting kindling, which was close by to the site.

The material identified from the trough at Annahagh 2 was oak and hazel. Oak was also identified from Tullyhirm 2. The oak may represent the burnt remains of oak

planks while the hazel may have been supporting posts. Comparative material from Tipperary include the identification of oak timbers from the lining of a *fulacht* trough (Killoran 240 and Killoran 27) at the Lisheen mine archaeological project (Gowan 306, 2005) and *fulacht* timbers identified from Monanny 2, Co. Monaghan were also identified as oak (IAC excavations). Oak timbers were also identified from excavations at a *fulacht* in Fermoy (03E1369), Co. Cork (ACS excavations).

Hazel was particularly prevalent in the material analysed from the trough at Annahagh 2 (C16) which may suggest hazel wattle or posts in the trough. The use of hazel wood within troughs/boiling pits associated with *fulacht fiadh* has been observed at other Bronze Age sites throughout Ireland. These include (Derryville bog, Co. Tipperary (97E0158), Hughestown trough, Co. Roscommon (99E0401), Derrinnumera, Co. Mayo (03E1209) and Monanny 2, Co. Monaghan (IAC excavations).

Discussion

Three species were identified from the features investigated. The species identified above are indicative of a mixed terrain. Hazel was particularly prevalent in the trough material analysed which may suggest hazel wattle or posts in the trough. A large proportion of the material associated with the *fulacht* was identified as alder, which is indicative of the wetland terrain, these sites are constructed within. The peoples who used these *fulachta fiadh* would have been collecting kindling, which was close by to the site. The insect holes noted on the sample from Annahagh 1 also suggests that this material was kindling rather than structural as wood and branches left around on the ground for a period of time would be open to insect infestation.

Oak may have been deliberately selected for the construction of the timbers lining within the trough at Annahagh 2. Parallels for this site can be seen at the Lisheen mine archaeological project (Gowan 306, 2005) and Monanny 1, Co. Monaghan (IAC excavations) where oak timbers were identified from the lining of a series of troughs. The oak identified from the assemblage indicates a supply of such material in the area.

The hazel and oak would have grown in drier conditions preferring free-draining soils and nutrient rich clays, although oak can grow on wetter areas during dry periods. The oak points to the presence of woodlands and indicates that open conditions did not prevail throughout area. Alder is suggestive of a more wetland terrain. The dryland species probably grew on the slopes surrounding the sites while the alder may have grown close by to the waterlogged area associated with the *fulacht* spreads.

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Appendix 2.2 Radiocarbon Dating Results – Waikato

The University of Waikato Radiocarbon Dating Laboratory



Private Bag 3105
Hamilton,
New Zealand.
Fax +64 7 838 4192
Ph +64 7 838 4278
email c14@waikato.ac.nz
Head: Dr Alan Hogg

Report on Radiocarbon Age Determination for Wk- 18354

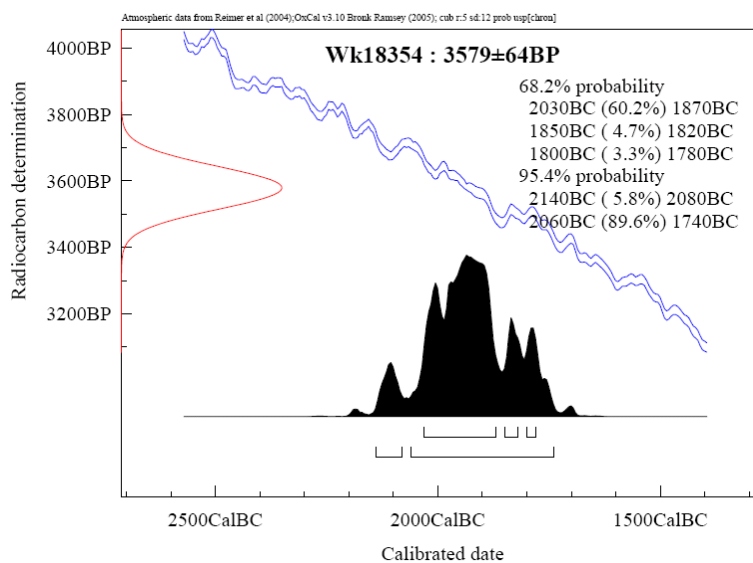
Submitter Li Johnston
Submitter's Code 04E1159 Tullyhirm C3 2
Site & Location Tullyhirm, County Managhan, Ireland
Sample Material Alnus glutinosa and Quercus
Physical Pretreatment Possible contaminants were removed. Washed in ultrasonic bath.
Chemical Pretreatment Sample washed in hot 10% HCl, rinsed and treated with hot 0.5% NaOH. The NaOH insoluble fraction was treated with hot 10% HCl, filtered, rinsed and dried.

$\delta^{14}\text{C}$	-361.6 ± 5.1	‰
$\delta^{13}\text{C}$	-26.6 ± 0.2	‰
D^{14}C	-359.5 ± 5.1	‰
% Modern	64.0 ± 0.5	%
Result	3579 ± 64 BP	

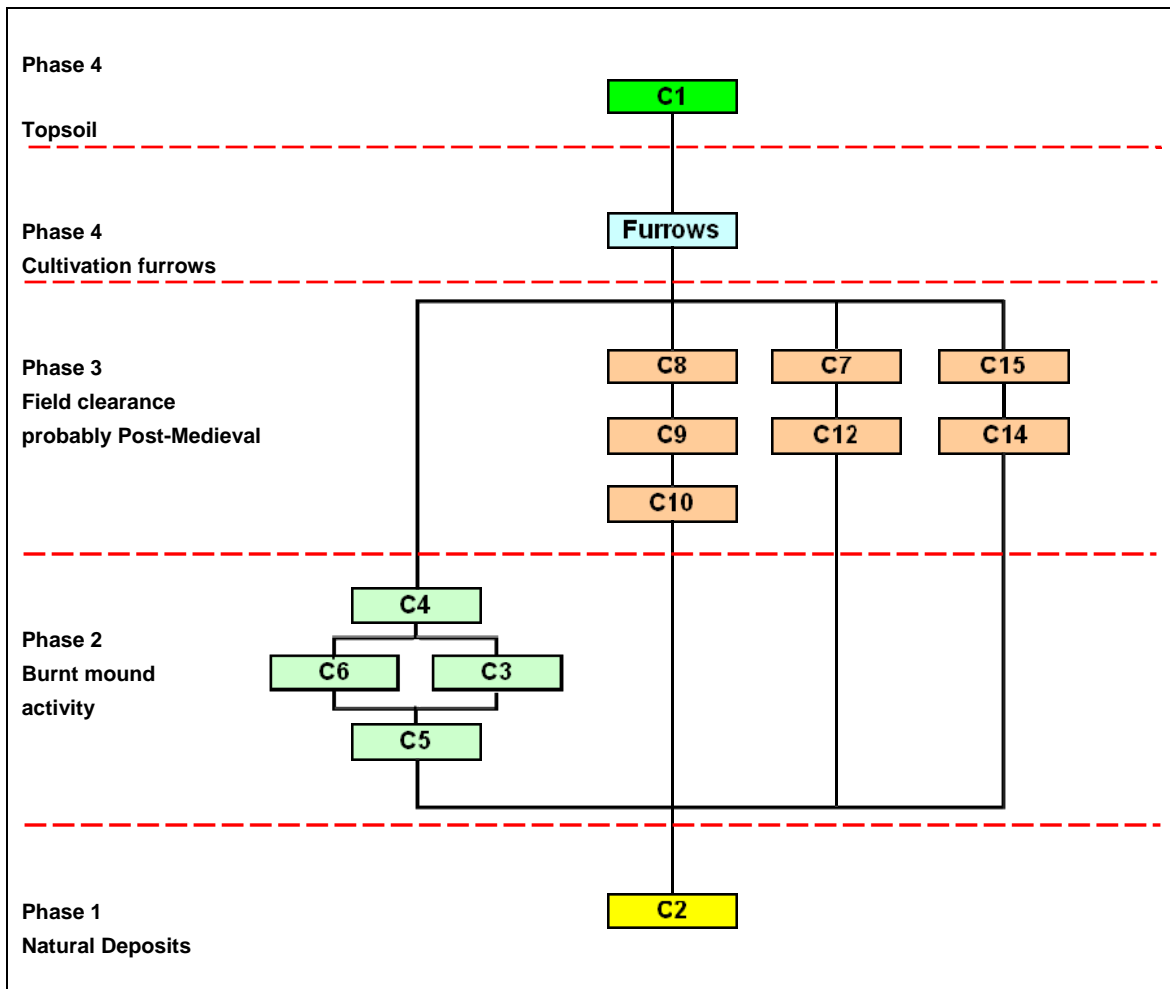
Comments

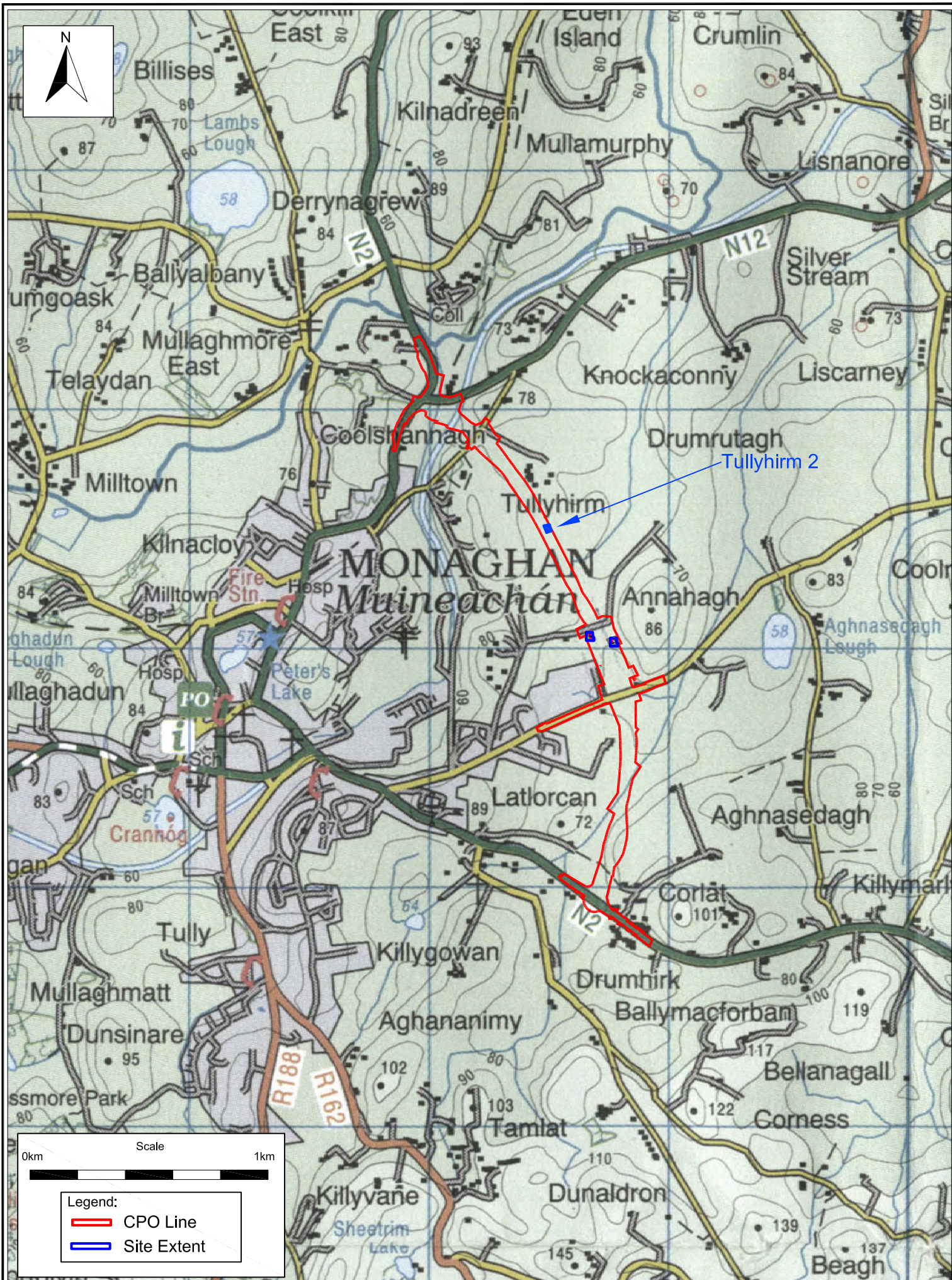
Alan Hogg
2/5/06

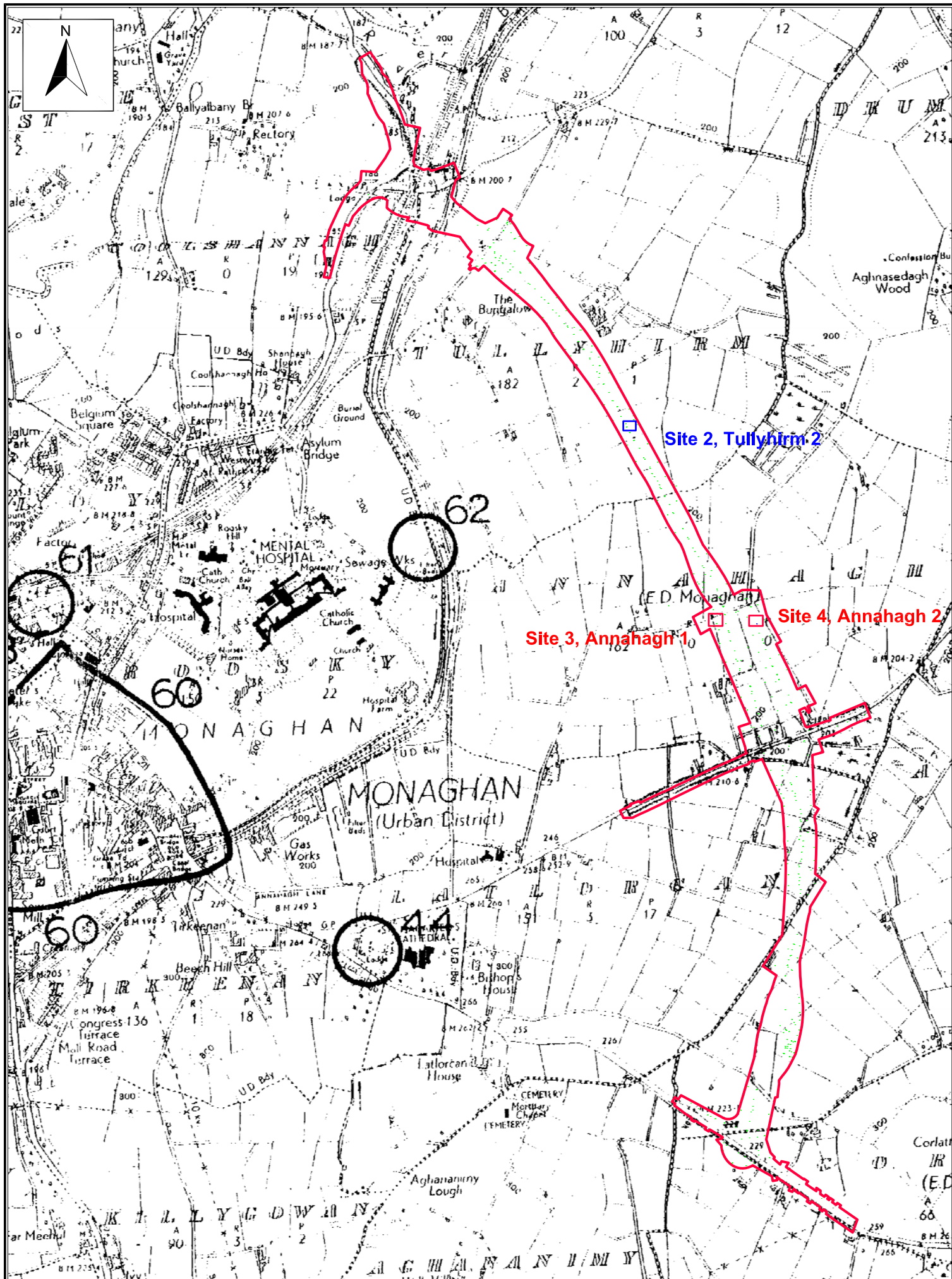
- Result is *Conventional Age* or % Modern as per Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier of 1.
- The isotopic fractionation, $\delta^{13}\text{C}$, is expressed as ‰ wrt PDB.
- Results are reported as % Modern when the conventional age is younger than 200 yr BP.

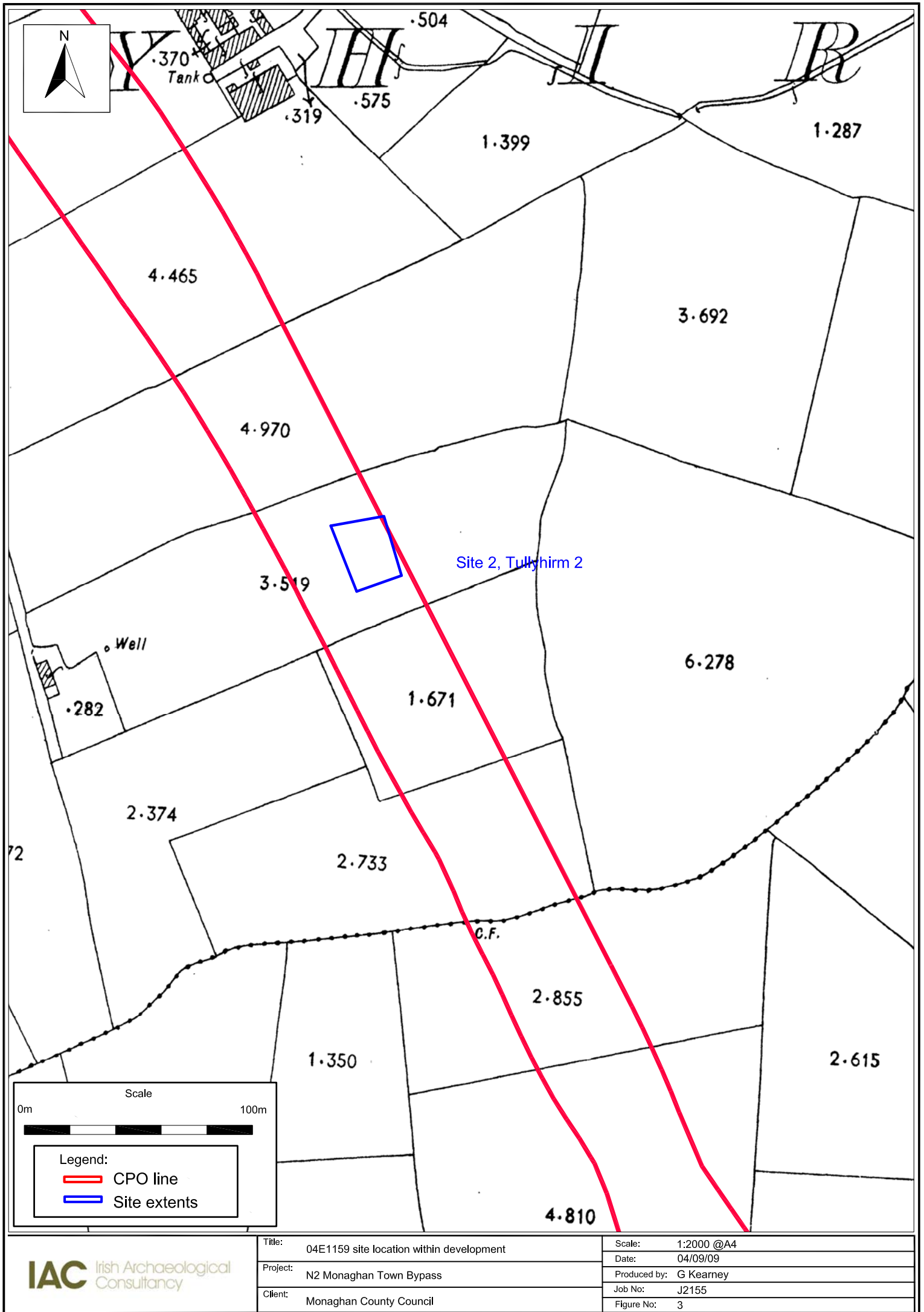


APPENDIX 3 SITE MATRIX



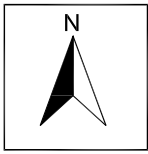






Legend:

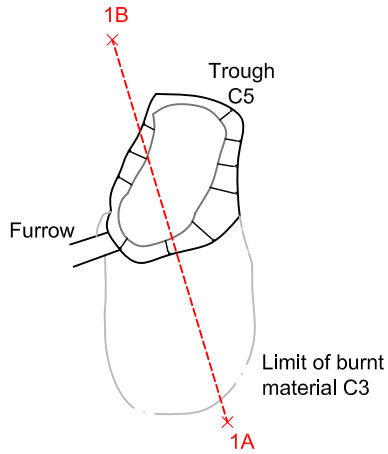
- CPO line
- Site extents



Limit of excavation

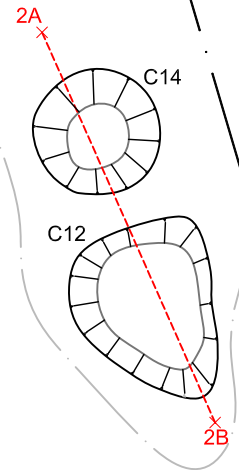
268495.0E
334520.0N

62.047



Limit of burnt material C7

62.907



62.057

268495.0E
334500.0N

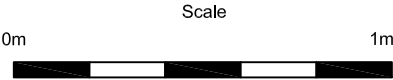
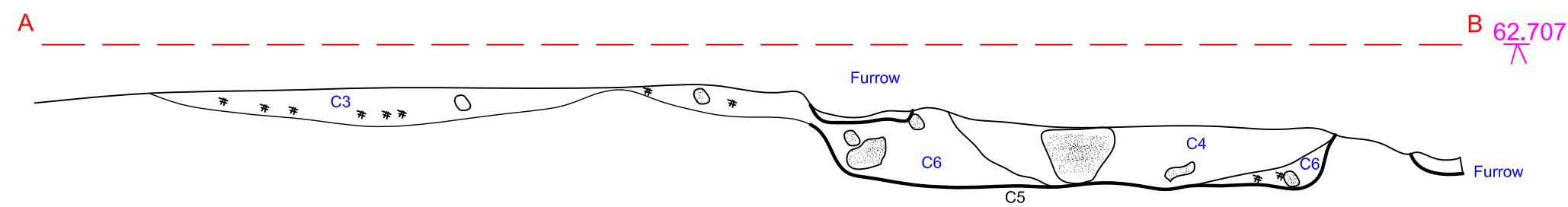
268505.0E
334500.0N

Scale
0m 5m

Legend

- Break of slope
- - - Sections
- - - Limit of Excavation
- C## Cut numbers
- Stone
- ### Levels

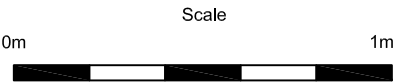
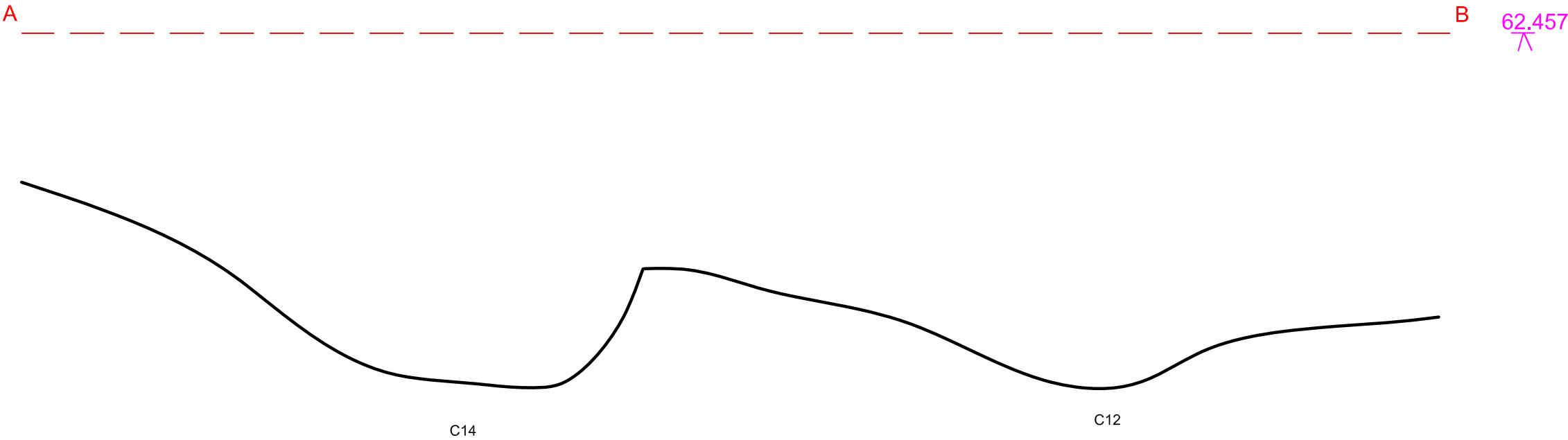
Section 1
Northeast facing section of C5





Legend	
C##	Cut numbers
C##	Fill Numbers
	Stone
#	Charcoal
###.##	Reduced Levels

	Title: 04E1159 section 1	Scale: 1:20 @A3
	Project: N2 Monaghan Town Bypass	Date: 04/09/09
	Client: Monaghan County Council	Produced by: G Kearney
		Job No: J2155
		Figure No: 5

Section 2
West facing profile of C14 + C12



Legend	
C##	Cut numbers
C##	Fill Numbers
	Stone
#	Charcoal
###.##	Reduced Levels
	

IAC Irish Archaeological
Consultancy

Title: 04E1159 section 2

Project: N2 Monaghan Town Bypass

Client: Meath County Council

Scale: 1:20 @A3

Date: 04/09/09

Produced by: G Kearney

Job No: J2155

Figure No: 6

PLATES



Plate 1: Site 2, Tullyhirm 2, pre-excitation of burnt spread C3, looking north.



Plate 2: Site 2, Tullyhirm 2, post-excitation of possible trough C5, looking west



Plate 3: Pre-excavation of spread C7, looking south