IAC Irish Archaeological Consultancy

ARCHAEOLOGICAL EXCAVATION REPORT
N59 MOYCULLEN BYPASS, CO. GALWAY
KILLARAINY 3
SITE TYPE: BURNT MOUND

MINISTERIAL DIRECTIONS NO. A067
REGISTRATION NO.: E4577

ON BEHALF OF
GALWAY COUNTY COUNCIL

ITM: 521017, 733320

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Ceart agus cóir

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ABSTRACT

The following report describes the results of an archaeological excavation at Killarainy 3 (Registration No.: E4577 and under Ministerial Directions A067), which was located along the route of the N59 Moycullen Bypass, Co. Galway. The site at Killarainy 3 was discovered during advance archaeological testing undertaken in 2014 by IAC Ltd ((Ryan 2014; Registration No.: E4512).

Stage (iii) excavation work at Killarainy 3 was undertaken from the 8 October to 6 November 2014.

Killarainy 3 was a large burnt mound situated at the interface between a pasture field and wetland. Although quite large, no significant trough or features were identified. One circular pit was excavated to the west of the mound. The site was dated to the Late Bronze Age period. Although defined on the north, west and east the mound ran outside the lands acquired for the new road and beyond the fence line. It is possible that a trough or pits is located in this area.

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1. INTRODUCTION

1.1 GENERAL

This report presents the results of the Stage (iii) Excavation and (iv) Post-Excavation Services at Killarainy 3 carried out in the townland of Killarainy, Co. Galway (Figures 1–2). This work was undertaken as part of an archaeological mitigation program completed under the Archaeological Consultancy Services Contract for the N59 Moycullen Bypass, Co. Galway. Archaeological fieldwork was directed by Shane Delaney of Irish Archaeological Consultancy Ltd (IAC) under Registration Number E4577 (Ministerial Directions A067) as issued by the Department of Arts, Heritage and the Gaeltacht (DoAHG) in consultation with the National Museum of Ireland (NMI). The work was undertaken on behalf of Galway County Council and it took place between 8 October and 6 November 2014.

The purpose of the Stage (iii) Excavation Services was to preserve by record through appropriate rescue excavation any significant archaeological features or deposits discovered by earlier investigations, so as to mitigate impacts on the archaeological remains discovered within the footprint of the project.

1.2 THE DEVELOPMENT

The development context of the excavations described here is the construction of the N59 Moycullen Bypass, in County Galway (Figure 1). It will extend north and east of the village, from the townland of Drimcong, *c.* 1.5 km northwest of Maigh Cuilinn (Moycullen), to the townland of Claídeach (Clydagh) *c.* 2 km to southeast, over a distance of 4.3 km, on 37.9 ha of land acquired by Galway County Council. The project will involve construction of a new single-carriageway road, as well as all ancillary works, roundabouts, footpaths and cycleways, bridge structures and realignments of some local roads where they are intersected by the bypass, as approved by An Bord Pleanála on 15 November 2012.

1.3 TOPOGRAPHY & SITE DESCRIPTION

The proposed scheme is located in the townlands of Druim Cong (Drimcong), Cill Ráine (Killarainy), Liagán (Leagaun), Maigh Cuilinn (Moycullen), Baile Uí Chuirc Thiar (Ballyquirke West), Baile Uí Chuirc Thoir (Ballyquirke East), Coill Bhruachláin (Kylebroghlan), Ogúil (Uggool) and Claídeach (Clydagh) in the parish and barony of Moycullen.

The scheme is located to the east and northeast of both the N59 and the village of Moycullen. The hilly terrain to the southwest is characterised by peaty acid soils on granite bedrock. The lake basin to the northeast has clay and alluvial soils on limestone bedrock. Several watercourses drain the higher ground and the primary of these, the Loughkip River south of Moycullen, is crossed by the scheme. To the north and east Moycullen is fringed by a series of smaller lakes in the Lough Corrib basin, including Ballyquirke Lake. The lands acquired for the project extend over 37.9 ha of improved pasture fields, woodland, peat bog and the partly built up outskirts of the village.

Killarainy 3 lies at *c*. 11 m Ordnance Datum (OD) and is located in the parish of Moycullen (Figure 2). The site is located in pasture at National Grid Ref.: 521017, 733320 (ITM). It was cleared of scrub and rock by the present landowner's family in the recent past (pers comm. Mr Pat Feeney) and the hollow where the burnt mound was located was partly infilled with rubble material.

1.4 PREVIOUS ARCHAEOLOGICAL INVESTIGATION

A programme of Stage (i) testing for this scheme was undertaken in the townlands of Drimcong, Killarainy, Leagaun, Moycullen, Ballyquirke West, Ballyquirke East, Kylebroghlan, Uggool and Clydagh, Co. Galway in June and July 2014 (Ryan 2014; Registration No. E4512). A total of 26,682 square metres of archaeological test trenches were excavated across the scheme. Six sites of archaeological significance, Killarainy 1—5 and Ballyquirke East 1, were identified as part of this testing.

The excavation results for Killarainy 3 are presented here and the remaining sites Killarainy 1 (E4575), Killarainy 2 (E4576), Killarainy 4 (E4578), Killarainy 5 (E4579) and Ballyquirke East 1 (E4580) are discussed in separate reports.

A review of the Excavations Bulletin (1970–2015) revealed that several programs of previous archaeological testing have been undertaken in Moycullen in addition to the Stage (i) testing for this scheme (Ryan 2014). However none of these had identified any features of archaeological significance (Elliot 2000, Crumlish 2001 and Casey 2005).

2 METHODOLOGY

2.1 STAGE (III) EXCAVATION METHODOLOGY

Stage (iii) excavation services on this present road project included:

- excavation of all sites in accordance with the specification in the contract and agreed method statements
- all necessary on–site illustration, photography, survey and recording to meet requirements as detailed in the specification and method statements
- initial processing, flotation, sieving of all soil samples taken from the excavation and appropriate bagging of all extracted environmental samples
- initial artefact/find stabilisation and conservation
- preparation of Stage (iii) – Preliminary Excavation Report(s).

The Stage (iii) method statement for Killarainy 3 as agreed with the client called for the following work to be undertaken at the site.

The excavation area measured c. 845 sq m and topsoil was stripped at Killarainy 3 by mechanical excavator fitted with a toothless bucket under strict archaeological supervision.

All archaeological features revealed were cleaned by hand and excavated and recorded using customised field record sheets or 'context sheets', as well as supporting records in the form of registers or lists of drawings, photographs, and the excavation director's field diary. All archaeological features found were drawn to scale, photographed and Ordnance Datum levels taken. Comprehensive drawings were produced at appropriate scales.

Appropriate sampling, as per the Stage (iii) Environmental Remains Strategy, was undertaken and the samples processed as per the strategy.

The excavation area and the locations of any features recorded within them were recorded by our qualified surveyors using GPS survey equipment and have been tied into the National Grid for the report illustrations.

2.2 STAGE (IV) POST-EXCAVATION METHODS

All post-excavation works were carried out in accordance with the relevant approvals and in consultation and agreement with the National Roads Authority (NRA) Project Archaeologist, the National Monuments Section of the DoAHG and the NMI. Where necessary licences to alter and export archaeological objects were sought from the NMI.

Dating of the samples from the site was carried out by means of AMS (Accelerator Mass Spectrometry) Radiocarbon Dating of identified and recommended wood samples. The calibrated radiocarbon date in this report is quoted to two-sigma (95% probability) level of confidence.

Final Report Date Ranges

The following date ranges for Irish prehistory and medieval periods are used for this final report (after Carlin et al. 2008).

Mesolithic: 7000–4000 BC
Neolithic: 4000–2500 BC
Early Bronze Age: 2500–1700 BC
Middle Bronze Age: 1700–1200 BC
Late Bronze Age: 1200–800 BC
Iron Age: 800 BC–AD 500
Early medieval period: AD 500–1100
Medieval period: AD 1100–1600
Post-medieval period: AD 1600–1800

3 EXCAVATION RESULTS

3.1 NATURAL GEOLOGY

Contexts

CONTEXT	FILL OF	L (m)	W (m)	D (m)	BASIC DESCRIPTION	INTERPRETATION
C2	N/A	Site	Site	N/A	Mid-orange sandy silty clay	Subsoil
C7	N/A	Site	Site	0.10	Mid-brown compacted peat deposit	Peat

Finds: None

Interpretation

The natural subsoil at the site consisted of a mid-orange to grey sandy clay. There were natural limestone bedrock outcrops surrounding the site. The site was located on an eastern slope which terminated in a peat wetland with birch scrubwood.

The underlying geology was sealed by peat (C7). This peat would have formed naturally in the hollow at the base of the slope. The site was prone to flooding and became waterlogged during the excavation. The peat was moderately organic with fragments of woody detritus. The burnt mound developed on top of this peat.

3.2 BURNT MOUND

Contexts

CONTEXT	FILL OF	L (m)	W (m)	D (m)	BASIC DESCRIPTION	INTERPRETATION
C15		1.62	1.55	0.30	Sub-circular pit, steep side, flat base	Pit
C16	15	1.62	1.55	0.30	Sandy silt with few charcoal inclusions	Fill of pit
C3		20	17	0.70	Irregular spread, very compact, heat-shattered sandstone in a charcoal and sand matrix	Burnt mound material

Finds: None.

Interpretation

C3 was a large burnt mound that sealed the peat layer C7 (Figures 4&5, Plates 1–8). The burnt mound material was approximately 20 m by 17 m and 0.70 m deep but extended outside the lands acquired for the new road to the south. The burnt mound material was well compacted in the upper deposits and looser towards the base. It was comprised of grey to black heat-shattered sandstone which was grittier and sandier towards the base. There were frequent charcoal inclusions throughout.

The charcoal identified from the burnt mound represented the fuel burnt on site and was collected from the surrounding area. This reflected the varied nature of the landscape and could be identified to a variety of broadleaf, wetland and scrub woodlands (O Carroll, Appendix 2.1). Ash and hazel followed by birch, oak, *pomoideae*, yew, alder and elm were identified from the assemblage.

Alder charcoal from the burnt mound C3 returned an AMS date of 2831±30 BP (UBA 29111). The two-sigma calibrated result for this was 1084–906 BC (Appendix 2.2), indicating a date in the Late Bronze Age for the charcoal material.

No elaborate troughs or features were identified during the excavation but a shallow pit (C15), which measured c. 1.62 m by 1.55 m, was identified cut into the peat beneath the mound, and possibly through the mound material C3, in the southwest quadrant. It was filled with a sandy silt with some heat-affected stone and occasional wood fragments. A sample of hazel charcoal from its fill (C16) returned an AMS date of 2648±27 BP (UBA 29112). The two-sigma calibrated result for this was 890–792 BC (Appendix 2.2), indicating a date in the Late Bronze Age for the use of this pit.

3.3 PEAT

Contexts

CONTEXT	FILL OF	L (m)	W (m)	D (m)	BASIC DESCRIPTION	INTERPRETATION
5		>3	>3	0.34	Well compacted peat that sealed the burnt mound. Interface peat.	Natural peat

Finds: None

Interpretation

A peat accumulation (C5) was noted sealing some of the burnt mound material C3 and presumably had sealed all of it originally. This thin deposit represented a period of peat development after the burnt mound went out of use. The rest of the mound and this peat layer were disturbed through the dumping of the modern field clearance stones during the land improvements described below.

A sample of the peat returned an AMS date of 701±26 BP (UBA 29314). The two-sigma calibrated result for this was AD 1264–1386 (Appendix 2.2), indicating the peat was undisturbed and growing in the medieval period.

3.4 MODERN DISTURBANCE AND LAND IMPROVEMENT

Contexts

CONTEXT	FILL OF	L (m)	W (m)	D (m)	BASIC DESCRIPTION	INTERPRETATION
4		4	4	0.40	Dumped material including large stones, boulders and wood within a mixed peat and re-deposited subsoil matrix	Modern backfill
8		0.75	1.60	0.60	Vertical sides, flat base and filled with stone. Modern drain.	Cut of modern drain
9	8	0.75	1.60	0.60	Loose stone fill within a clayey silt matrix	Fill of modern drain
10		>5	1	0.50	Field boundary at the south side of the site. Cut through modern dump	Modern field boundary ditch

CONTEXT	FILL OF	L (m)	W (m)	D (m)	BASIC DESCRIPTION	INTERPRETATION
					material and burnt mound. Filled with loose peat, stone and banked with re-deposited material along its southern edge.	
11		3.50	3.50	0.15	Burnt mound material disturbed during land reclamation	Re-deposited mound material
12		3	3	0.15	Burnt mound material disturbed during land reclamation	Re-deposited mound material
13		5.50	1.60	0.25	Burnt mound material disturbed during land reclamation	Re-deposited mound material
14		1.80	1.30		Burnt mound material disturbed during land reclamation	Re-deposited mound material

Finds: None

Interpretation

The site was located in the corner of a field used for pasture. The historic mapping for the area indicates the entire area had been covered in woodland until the 20th century and the field the burnt mound was in had been divided into three plots.

The current landowner's family were responsible for general land improvements in the field which included the removal of woodland, stone walls and levelling of a central hill in the field (pers comm Mr Pat Feeney). Much of this material was dumped into a number of hollows that were prone to flooding in wet weather throughout the field. There was considerable evidence for the disturbance and dumping of material on top of the burnt mound which corroborates the landowner's account of the land improvements.

This material included dumps of stone and the re-distribution of the upper deposits of burnt mound material and the insertion of drains into this newly made-up ground mostly on the western and southern side of the site (see sections on figure 5).

3.5 TOPSOIL

Contexts

CONTEXT	FILL OF	L (m)	W (m)	D (m)	BASIC DESCRIPTION	INTERPRETATION
C1	N/A	N/A	N/A	0.40	Dark brown peat	Topsoil.

Finds: None

Interpretation

The topsoil at Killarainy 3 was a dark brown peaty sod. This in turn sealed a mixed topsoil of re-deposited clay, boulders, field stone and peat which in turn sealed the burnt mound.

Throughout the Killarainy area there was evidence for land improvements and agricultural use. The area was depicted on the first edition Ordnance Survey maps as woodland which was later removed and the land improved for tillage and more recently pasture. The landowner recalled that hollows including the one at Killarainy 3, prone to flooding, had been filled with bedrock and stone walls cleared from the centre of the field in the recent past (pers comm. Mr Pat Feeney).

4 SYNTHESIS

The synthesis presents the combined results of all of the archaeological analyses carried out at Killarainy 3. This includes the analyses of the physical and archaeological landscape, the compilation of information gathered during research into the site type, date, and function, and the results of the excavation and specialist analyses of samples taken during the course of on-site works.

4.1 LANDSCAPE SETTING

Killarainy 3 lies at c. 11 m Ordnance Datum (OD) and is located in the parish of Moycullen. The site is located c. 700 m northwest of Moycullen village and c. 120 m northeast of the existing N59 road.

4.2 THE BRONZE AGE LANDSCAPE

The most common Bronze Age site (c. 2500–800 BC) within the archaeological record is the burnt mound or *fulacht fiadh*. Over 4,500 *fulachtaí fia* have been recorded in the country making them the most common prehistoric monument in Ireland. Although burnt mounds of shattered stone occur as a result of various activities that have been practised from the Mesolithic to the present day, those noted in close proximity to a trough are generally interpreted as Bronze Age cooking/industrial sites. *Fulachtaí fia* generally consist of a low mound of burnt stone, commonly in a horseshoe shape, and are found in low-lying marshy areas or close to streams or rivers. Often these sites have been ploughed out and survive as a spread of heat-shattered stones in charcoal-rich soil with no surface expression, in close proximity to a trough. The frequency of loughs, rivers and small watercourses in the surrounding area made this area highly attractive for settlement and transitory activity during this period at Killarainy.

Radiocarbon dates from the present site indicate that Killarainy 3 was a burnt mound of the Late Bronze Age. A second burnt spread was identified at Killarainy 4 during advance archaeological testing for the present road project (Ryan 2014) and was also excavated.

4.3 SUMMARY OF THE EXCAVATION RESULTS

Killarainy 3 was a large Late Bronze Age burnt mound with at least one phase of activity associated with a simple earth-cut pit. The upper deposit of the burnt mound had been truncated and disturbed during 20th century land improvement. These sites when dated are mainly Bronze Age in date. The location of Killarainy 3 is typical for this site type as it was located on the edge of wetland close to the water source required for it to function. The burnt mound material is typical with shattered heat–affected stone mixed with charcoal making up the mound (this represents successive material removed from a trough or troughs and mounded to the side). A substantial trough, troughs and other features may be located undisturbed outside the fenceline. The lack of artefacts and ecofacts is also a typical feature of these site types.

4.4 SUMMARY OF THE SPECIALIST ANALYSES

Analysis of environmental samples was undertaken as part of the post-excavation works. The detailed reports on the results of all analysis are in Appendix 2.

Charcoal Analysis – Ellen O'Carroll

Seven taxa were identified from 201 charcoal fragments recovered from the burnt mound and pit excavated at Killarainy 3. The wood was derived from a variety of broadleaf, wetland and scrub woodlands reflecting the varied terrain surrounding the site. The range of taxa identified from the features analysed includes large trees such as oak, elm, yew and ash, medium sized trees (birch) and smaller scrub or hedgerow trees (hazel and *pomoideae*). Birch is normally associated with wetland areas. The results suggest that there was a mosaic of woodland types possibly comprising of oak-ash-elm-hazel woodlands with an understorey of *pomoideae*, hazel and hazel. Yew was present but was possibly rare. The higher fragment counts of ash may point to some land clearance in the area prior to the Late Bronze Age possibly due to the influx of more inhabitants into the area.

Radiocarbon Dating – QUB Laboratory

Alder charcoal (0.2 g) from the burnt mound returned an AMS date of 2831±30 BP (UBA 29111). The two-sigma calibrated result for this was 1084–906 BC (Appendix 2.2), indicating a Late Bronze Age date for the burnt mound material.

Hazel charcoal (0.3 g) from C16, the fill of the pit, returned an AMS date of 2648±27 BP (UBA 29112). The two-sigma calibrated result for this was 890–792 BC (Appendix 2.2), indicating a Late Bronze Age date for the pit.

A sample of the peat which sealed the burnt mound (40 g) returned and AMS date of 701±26 BP (UBA 29314). The two-sigma calibrated result for this was AD 1264–1386 (Appendix 2.2), indicating that the peat was forming during the medieval period.

5 DISCUSSION AND CONCLUSIONS

5.1 DISCUSSION

There are over 7,000 *fulacht fiadh* sites recorded throughout the country and in well over 1,000 sites (Hawkes 2011) 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 on site 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 component of the Bronze Age landscape, the use of pyrolithic technology has a long history in Ireland.

Several theories have been proposed but no single theory has received unanimous support. The most enduring theory is that burnt mounds 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 a group of Irish

Palaeoenvironmental specialists due to the absence of cereal remains from most burnt mound sites (McClatchie et al. 2007).

5.2 CONCLUSIONS

Killarainy 3 was a large burnt mound associated with a simple earth-cut pit. The upper deposit of the burnt mound had been truncated and disturbed during 20th century land improvements. These sites when dated are mainly Bronze Age in date and the activity at Killarainy 3 has been dated to the Late Bronze Age period. The location of Killarainy 3 is typical for this site type as it is located on the edge of wetland close to the water source required for it to function. The burnt mound material is typical with shattered heat-affected stone mixed with charcoal making up the mound (this represents material from successive (re)uses of the site removed from a trough or troughs and mounded to the side). Although a pit was identified at the site no other features typically associated this site type were identified. A substantial trough, troughs and other features may be located undisturbed outside the fence line. The lack of artefacts and ecofacts is also a typical feature of these site types.

Although burnt mounds are not rare this site is still an important addition to the Late Bronze Age archaeology of the local area and adds to our knowledge of Late Bronze Age activity in the wider regional landscape.

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CARTOGRAPHIC SOURCES

Ordnance Survey maps of County Galway 1838–9, 1912–16

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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	FINDS
1		All	All	0.10	A mid brown silty clay	Topsoil	N/A
2		All	All		A mid orange sandy, silty clay	Subsoil-till	N/A
3		20	17	0.70	Irregular spread, very compact, heat-shattered sandstone in a charcoal and sand matrix	Burnt mound material	N/A
4		4	4	0.40	Dumped material including large stones, boulders and wood within a mixed peat and re-deposited subsoil matrix	Modern backfill	N/A
5		>3	>3	0.34	Well compacted peat that sealed the burnt mound. Interface peat.	Natural peat	N/A
6					Void	Void	N/A
7		Site	Site	0.10 but varied	Mid brown compacted peat. Peat sealed by mound	Natural peat	N/A
8		0.75	1.60	0.60	Vertical sides, flat base and filled with stone. Modern drain.	Cut of modern drain	N/A
9	8	0.75	1.60	0.60	Loose stone fill within a clayey silt matrix	Fill of modern drain	N/A
10		>5	1	0.50	Field boundary at the south side of the site. Cut through modern dump material and burnt mound. Filled with loose peat, stone and banked with re-deposited material along its southern edge.	Modern field boundary	N/A
11		3.50	3.50	0.15	Burnt mound material disturbed during land reclamation	Re-deposited mound material	N/A

CONTEXT	FILL OF	L(M)	W(M)	D(M)	BASIC DESCRIPTION	INTERPRETATION	FINDS
12		3	3	0.15	Burnt mound material disturbed during land reclamation	Re-deposited mound material	N/A
13		5.50	1.60	0.25	Burnt mound material disturbed during land reclamation	Re-deposited mound material	N/A
14		1.80	1.30		Burnt mound material disturbed during land reclamation	Re-deposited mound material	N/A
15		1.62	1.55	0.30	Sub-circular pit, steep sided and flat based.	Pit	N/A
16	15	1.62	1.55	0.30	Sandy silt with few charcoal inclusions and stones	Fill of pit	N/A

APPENDIX 1.2 CATALOGUE OF ARTEFACTS

No artefacts were recovered from the site.

APPENDIX 1.3 CATALOGUE OF SAMPLES

Seven environmental samples were taken from features and processed by flotation and sieving through a 250µm mesh. Very small quantities of charcoal were retrieved from three samples, listed below.

SAMPLE	CONTEXT	FEATURE	CHARCOAL FLOT WEIGHT	SEEDS	BURNT BONE
1	3	Quadrant A, upper mound material	30 g		N/A
2	3	Quadrant A, lower mound material	116 g		N/A
3	5	Quadrant C, Peat layer sealing C3	38 g		N/A
4	7	Quadrant C, peat below C3			N/A
5	3	Quadrant C, lower burnt mound material			N/A
7	3	Quadrant D, lower burnt mound material	32g		N/A
8	16	Pit/trough	793g		N/A

APPENDIX 1.4 ARCHIVE REGISTER

Project Name: N59 Moycullen Bypass, Co. Galway
Site Name: Killarainey 3
Registration Number: E4577
Site Director: Shane Delaney
Date: December 2014

IAC Irish Archaeological Consultancy

FIELD RECORDS	ITEMS (QUANTITY)	COMMENTS
Site drawings (plans)	1	Digitised
Site sections, profiles, elevations	5	Digitised
Other plans, sketches, etc.	0	
Timber drawings	0	
Stone structural drawings	0	
Site diary/note books	0	
Site registers (folders)	1	
Survey/levels data (origin information)	Digital	Site survey
Context sheets	16	Digitised
Wood Sheets	0	
Skeleton Sheets	0	
Worked stone sheets	0	
Digital photographs	49	
Photographs (print)	0	
Photographs (slide)	0	
Security copy of archive	IAC Ltd	Digital archive

APPENDIX 2 SPECIALIST REPORTS

Appendix 2.1 Charcoal and Wood Report – Ellen O'Carroll

Appendix 2.2 Radiocarbon Dating – QUB Laboratory

APPENDIX 2.1 CHARCOAL AND WOOD REPORT – ELLEN O'CARROLL

Background and Introduction

Archaeological excavations were carried out at Killarainy 3, Moycullen by pass, Co. Galway in 2014. Killarainy 3 was a large burnt mound situated at the interface between a pasture field and wetland. Although quite large, no significant trough or features were identified. One circular pit was excavated to the west of the mound. Although defined on the north, west and east the mound ran outside the lands acquired for the new road and beyond the fence line. It is possible that a trough or pits is located in this area (Delaney 2015).

An Environmental Remains Assessment report was completed by the Project Environmental Specialist for the scheme and five samples were recommended for charcoal analysis (O Carroll 2015). Subsequently charcoal for analysis was recovered from five contexts. Two samples of charcoal were sent for C14 dating providing evidence for human activity in the landscape during the Late Bronze Age. A sample from peat overlying the burnt mound site was dated to the medieval period.

Wood and its by-product, charcoal, was a vital and widely used 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, for the manufacture of most implements and for fuel for wood-burning and metalworking activities. The woods in a surrounding catchment area were exploited and often managed to provide an essential raw material for the community. A study of the range of species on an archaeological site offers an indication of the composition of local woodland in its period of use and any selection practices for particular species at any given time and place.

The analysis presented here concentrates on species identification, species selection and the composition of the local woodland during the late Bronze Age in the townland of Killarainy, Co. Galway.

Methodology

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). A wood reference collection from the Botanical Gardens in Glasnevin, Dublin was also used.

Charcoal

The soil samples were processed using the flotation technique. The flots were sieved through a 250 micron or a 1 mm sieve, while the retent was put through a 2 mm or 4 mm sieve. All of the charcoal remains from the soil samples were then bagged and labelled.

The identification of charcoal material involves breaking the charcoal piece along its three sections (transverse, tangential and radial) so clean sections of the wood pieces can be obtained. This charcoal is then identified to species under a universal compound microscope reflected and transmitted light sources at magnifications x 10–400. By close examination of the micro anatomical features of the samples, the charcoal species are determined.

The purpose of the charcoal identifications was two–fold. In some cases the identifications were carried out prior to C14 dating in order to select specific species for dating. In other cases the charcoal was analysed to determine fuel selection policies and selection of wood types for structural use. Each species was identified, bagged together and then weighed. Insect channels were noted on the charcoal fragments identified, as this may indicate the use of dead or rotting wood used for fuel or other such functions. The distinction can sometimes be made between trunks, branches and twigs if the charcoal samples are large enough. This was noted where possible. When charcoal samples showed indications of fast or slow growth this was also recorded. The samples identified for environmental reconstruction and wood usage were counted per fragment and then weighed. The smaller sample amounts with less than 50 fragments were all identified while 50 fragments were identified from the larger samples. Some charcoal fragments were very degraded, iron stained and therefore difficult to identify due to a distorted microstructure. This is quite common on charcoal analysed from *fulacht fiadh* sites.

A number of wood taxa cannot be identified to species or sub-species level anatomically. Sessile oak *(Quercus petraea)* and pedunculate oak *(Quercus robur)* are both native and common in Ireland and the wood of these species cannot be differentiated on the basis of their anatomic characteristics and so are listed in this report as *Quercus* spp. Pomoideae includes apple, pear, hawthorn and mountain ash. It is impossible to distinguish these wood species anatomically and for this reason, they are listed as pomoideae in this report. Hairy birch (*Betula pubescens Ehrh*) and silver birch (*Betula pendula Roth*) cannot be distinguished microscopically and are listed here as *Betula* spp. There are also two species of elm — English elm *(Ulmus procera)* and wych elm *(Ulmus glabra)* — which cannot be differentiated between microscopically therefore elm is referred to as *Ulmus* spp below.

Results & Analysis

Eight taxa were identified from 202 charcoal fragments recovered from a burnt mound and pit feature excavated at Killarainy 3, Co. Galway. Ash (*Fraxinus excelsior*) was the dominant taxa (93 fragments), followed by hazel (*Corylus avellana*; 83 fragments), birch (*Betula* spp; 7 fragments), Pomoideae (6 fragments), oak (*Quercus* spp; 6 fragments), yew (*Taxus baccata*; 3 fragments), alder (*Alnus glutinosa*; 1 fragment) and elm (*Ulmus* spp; 1 fragment). There was little difference in wood types identified from each quadrant. However Quadrant D had less taxa types identified from the assemblage although taxa range was similar to the other two quadrants. The weight and fragment count identified are represented below in Figure 1 and Table 1.

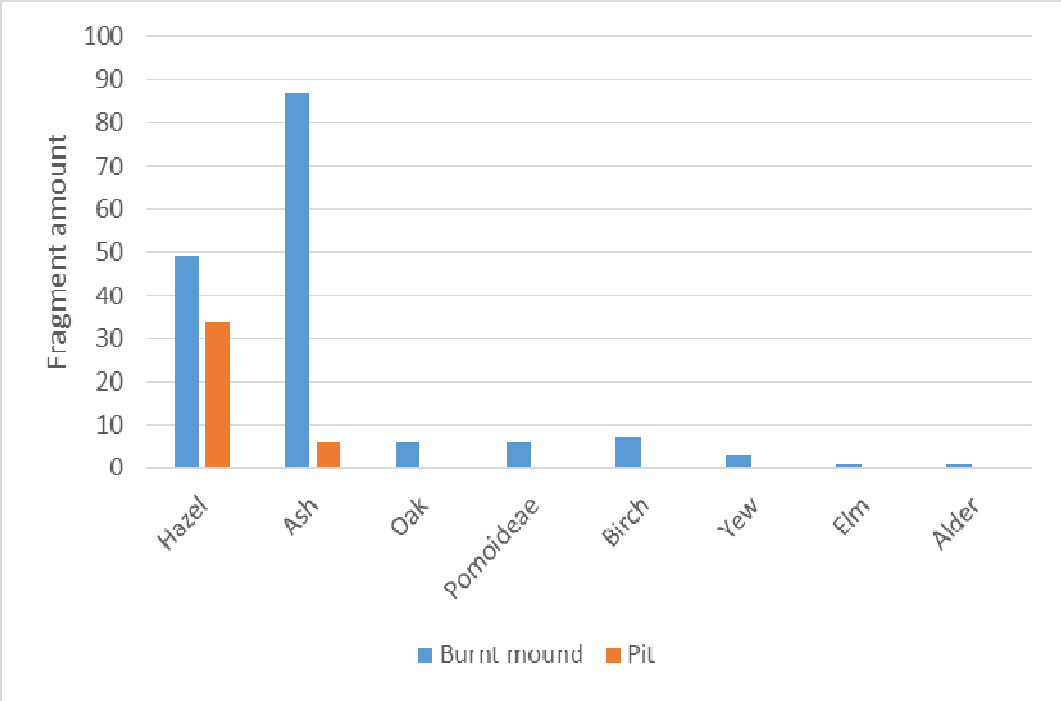

Figure 1 All taxa identified from Killarainy 3

Discussion of the charcoal assemblage

Aims of the study

- To determine the types of wood selected for use either as fuel or as structural wood.
- To determine use and function of particular features and their associated charcoal through the identification of taxa types
- To re-construct the environment that the charcoal and wood was selected from.

Wood types identified from charcoal and wood assemblages

BOTANICAL NAME	SPECIES
Fraxinus excelsior	Ash
Betula spp	Birch
Ulmus spp	Elm
Corylus avellana	Hazel
Quercus spp	Oak
Pomoideae	Apple type/Pear/Hawthorn/Mountain ash
Taxus Baccata	Yew
Alnus glutinosa	Alder

Table 2 Taxa types identified from the charcoal assemblage

As the dominant taxon in the assemblage, ash charcoal was identified in all contexts sampled from Killarainy 3. The higher quantities of ash identified suggests the gathering of wood in previously cleared woods where ash may have grown as

secondary regenerated woodland. Ash is a native species to Ireland preferring lime-rich, freely draining soils. It is not a very durable timber in waterlogged conditions but has a strong elastic nature and is easily worked. Ash appears to have colonised the open land after the first farmers removed much of the native woodland. It is frequently used as structural timber in the Later Bronze Age period (Moloney et al 1994).

Similarly hazel was identified from all contexts analysed. Hazel is a native species and was very common up to the end of the 17th century. 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 m – 5 m in height and is often found as an understory tree in broadleaf woods dominated by oak. It also occurs as pure copses on shallow soils over limestone as seen today 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. Hazel also makes good fuel.

Oak charcoal was present in low fragment counts from two samples analysed (C3; Quad D and C). Oak may have been in short supply or prized for structural functions as opposed to firewood during the Late Bronze Age periods in Killarainy. Oak woods were valued for their natural resource of timber for many requirements including raw material for metal working activities. Oak is a dense wood and is very suitable for charcoal production and metal working activities. It can burn for a considerable period of time and can reach extremely high temperatures necessary for the production of metal objects and smelting activities. It also makes good firewood when dried and will grow in wetter areas when other variable conditions are present. Oak has excellent properties of great durability and strength and was frequently used throughout the medieval period for the production of large timbers, for charcoal production and for activities associated with metal working activities.

Pomoideae charcoal was present in sample no. 1, Quad A. *Pomoideae* includes apple, pear, hawthorn and mountain ash. It is impossible to distinguish these wood species anatomically but as wild pear is not native and crab apple is a rare native species in Ireland it is likely that the species identified from Killarainy is either hawthorn or mountain ash (rowan; Nelson & Walsh 194-200, 1993). Hawthorn (*Crataegus monogyna*) is a native species, and is found in many hedgerows throughout Ireland. Mountain ash (*Sorbus aucuparia*) is also a common tree in Ireland growing particularly well in rocky and hilly mountainous places.

Birch was present in the burnt mound charcoal, Quad A and Quad C. Hairy birch (*Betula pubescens Ehrh*) and silver birch (*Betula pendula Roth*) cannot be distinguished microscopically. Silver birch requires light and dry soil while hairy birch grows on wet-marginal areas. Birch more often occurs on wet marginal areas and is one of the first trees to establish itself on raised bogs. The wood from birch trees is strong but it rots quickly when exposed to outdoor conditions.

Elm was identified in only one of the contexts analysed (sample no. 1. Quad A). English elm (*Ulmus procera*) and wych elm (*Ulmus glabra*) cannot be separated by their wood structure. As suggested by Mitchell (1986) elm declined (although would not have completely died out) with the advent of farming and possibly Dutch Elm Disease around 3700 BC. It generally prefers damp woods particularly on limestone.

Three fragments of yew were identified in Sample 1. Yew has a restricted distribution in Ireland and is not a dominant woodland tree today (Mitchell, 1990). It is a slow-growing conifer, and can reach a height of 20 m. It is known for its strength. Recent pollen work in the midlands and western area of Ireland show that yew was present but rare in both areas until the ninth century AD, after which it may have become close to extinction as a result of being sought out for its flexible and durable timber (Overland and O'Connell, 2011).

One fragment of alder was identified from the burnt mound, Quadrant C and was also used for dating. Alder is a widespread native tree and prefers wet habitats along stream and river banks. It is an easily worked and split timber and therefore quite commonly manufactured into planks. Alder is frequently identified from *fulacht fiadh* sites, possibly as these sites are located close to wetland areas where alder would have flourished.

The range of taxa identified from the features analysed includes large trees such as oak, elm, yew and ash, medium sized trees (birch) and smaller scrub or hedgerow trees (hazel and *pomoideae*). Birch is normally associated with wetland areas. The results suggest that there was a mosaic of woodland types possibly comprising of oak-ash-elm-hazel woodlands with understorey of *pomoideae*, hazel and hazel. Yew was present but was possibly rare. The higher fragment counts of ash may point to some land clearance in the area prior to the Late Bronze Age possibly due to the influx of more inhabitants into the area. In pollen diagrams ash pollen curves often appear only in the wake of woodland disturbance (O'Connell & Molloy, 1987).

Comparative Material

The analysis completed from the Late Bronze Age burnt mound at Killarainy 3 adds to the growing amount of information obtained from the analysis of wood and charcoal from burnt mounds excavated in Ireland and in particular in Co. Galway. The author has carried out a large number of charcoal identifications from excavated *fulachtaí fia* or burnt mound sites and a range of species are generally identified from these cooking places. It is clear though that certain taxa dominate in specific areas or regions presumably depending on what trees were available to the inhabitants at the time of wood collection. Thus charcoal identifications from burnt mound sites are good indicators of local vegetation during particular time periods in our past.

Charcoal analysis from *fulacht fiadh* sites along the M7/M8 Portlaoise to Cullahill produced mainly oak, hazel and ash charcoal in that order (O Carroll 2008).

Charcoal analysed from excavated fulachta fiadh sites along the N11 Wicklow By-pass (A022-46, 41, 43 and 45) produced a similar array of charcoal taxa although alder was more dominant than ash, oak or hazel at these sites. Oak, ash, hazel, alder, willow,

holly, birch, *pomoideae* are among the main taxa present within the fulachta fiadh assemblages. In Charlesland, Co. Wicklow, charcoal and wood were analysed from four fulachta fiadh dating from the Early to the Late Bronze Age. Troughs, hearths, mounds, and a burnt spread were analysed from these sites. The charcoal assemblage was dominated by ash, alder, willow and hazel. The wood from two of the *fulachtaí fia* sites was mainly alder along with some hazel. Work carried out along the gas pipeline to the west show that the main woods used for firewood at 44 analysed fulacht fiadh were alder, ash, oak and hazel (O'Donnell, 2007, 32). While analysis of charcoal from the burnt mounds and fulachta fiadh along the N6 roadworks in the midlands of Ireland shows that hazel, oak and ash were the dominant taxa used as firewood (O Carroll 2010).

Analysis from Bronze aged dated burnt mound sites at Cooltymurrghy E2448, Co Galway comprised mainly of ash wood followed by oak and hazel (Dillon 2009). These results, also from Galway, concur with the analysis from Killarainy 3 where ash is present in high quantities.

Summary and conclusions on the charcoal assemblage

Eight taxa were identified from 202 charcoal fragments recovered from a Late Bronze Age dated burnt mound and pit excavated at Killarainy 3. Ash and hazel followed by birch, oak, pomoideae, yew, alder and elm were identified from the assemblage.

The charcoal is most likely associated with fuel used at the burnt mound site in Killarainy. The wood/charcoal could not have all been derived from the same source, a variety of broadleaf, wetland and scrub woodlands. However the results indicate that fuel was selected from a more open scrub type landscape as shown through the dominance of hazel and ash woods.

Recommendations for retention

It is recommended that the samples be discarded and should not be retained by the National Museum of Ireland. They have been fully analysed and dated.

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CONTEXT NO	SAMPLE NO	CONTEXT TYPE	DATE	WOOD SPECIES	NO. OF FRAGMENTS	CHARCOAL WEIGHT (G)	SIZE OF FRAGMENTS (MM)	NO OF GROWTH RINGS
3	2, Quad A	Burnt mound	1084-906 BC	*Corylus avellana* (hazel)	18	2.8	3-8 mm	2-8 rings
				Fraxinus excelsior (ash)	28	2.5	3-10 mm	1-6 rings
				Quercus sp (oak)	2	0.03	5-6 mm	3 rings
3	7, Quad D	Burnt mound		*Corylus avellana* (hazel)	10	1	2-5 mm	2-5 rings
				Fraxinus excelsior (ash)	25	1.4	2-6 mm	1-4 rings
				Quercus sp (oak)	2	0.05	2-6 mm	3-4 rings
3	1, Quad A	Burnt mound		*Corylus avellana* (hazel)	10	2.5	3-8 mm	2- 6 rings
				Fraxinus excelsior (ash)	25	0.9	3-7 mm	2-5 rings
				Betula (birch)	2	0.02	5-8 mm	3 rings
				Pomoideae	5	0.03	3-6 mm	3-5 rings
				Taxus bacatta (yew)	3	0.02	5-6 mm	3-5 rings
				Ulmus sp (elm)	1	0.01	6 mm	3 rings
3	5, Quad C	Burnt mound		*Corylus avellana* (hazel)	11	1.2	3-10 mm	2-8 rings
				Fraxinus excelsior (ash)	9	0.1	3-10 mm	2-6 rings
				Betula (birch)	5	0.04	2-8 mm	3-7 rings
				Quercus sp (oak)	4	0.5	3-7 mm	3-5 rings
				Pomoideae	1	0.05	5 mm	5 rings
16	18	Pit fill	890–792 BC	*Corylus avellana* (hazel)	34	3.7	3- 8 mm	2- 8 rings
				Fraxinus excelsior (ash)	6	2.5	4- 10 mm	3-7 rings

Table 1 Wood taxa present in the charcoal assemblage

APPENDIX 2.2 RADIOCARBON DATING – QUB LABORATORY

The "Measured radiocarbon age" is quoted in conventional years BP (before AD 1950). The error is expressed at the one–sigma level of confidence.

The "Calibrated date range" is equivalent to the probable calendrical age of the sample material and is expressed at the one Sigma (68.3% probability) and two–Sigma (95.4% probability) level of confidence.

Calibration dataset: intcal13.14c

Calibration programme: CALIB REV7.0.0 (Copyright 1986–2013 M Stuiver and PJ Reimer)

Context	Sample	Material	Species ID	Lab	Lab Code	Date Type	Calibrated Date Ranges	Measured Radiocarbon Age (BP)
C3	5	Charcoal	Alder 0.2 g	QUB	UBA 29111	AMS (std)	BC 1016–930 (1σ) BC 1084–906 (2σ)	2831±30
C16	8	Charcoal	Hazel 0.3 g	QUB	UBA29112	AMS (std)	BC 821–800 (1σ) BC 890–792 (2σ)	2648±27
C5	3	Peat Humic fraction	40 g	QUB	UBA 29314	AMS (std)	AD 1273–1294 (1σ) AD 1264–1383 (2σ)	701±26

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Queens University
Belfast
42 Fitzwilliam Street
Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification:	UBA-29111
Date of Measurement:	2015-05-25
Site:	E4577 Killarainy 3
Sample ID:	C3 S5
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	IAC

Conventional ^{14}C Age:	2831±30 BP
Fraction corrected	using AMS $\delta^{13}C$

Information about radiocarbon calibration

RADIOCARBON CALIBRATION PROGRAM*
CALIB REV7.0.0
Copyright 1986-2013 M Stuiver and PJ Reimer
*To be used in conjunction with:
Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
Annotated results (text) - -
Export file - c14res.csv

C3 S5
UBA-29111
Radiocarbon Age BP 2831 +/- 30
Calibration data set: intcal13.14c

% area enclosed	cal AD age ranges	# Reimer et al. 2013 relative area under probability distribution
68.3 (1 sigma)	cal BC 1016- 967	0.610
	965- 930	0.390
95.4 (2 sigma)	cal BC 1084- 1064	0.022
	1058- 906	0.978

References for calibration datasets:
Reimer PJ, Bard E, Bayliss A, Beck JW, Blackwell PG, Bronk Ramsey C, Buck CE Cheng H, Edwards RL, Friedrich M, Grootes PM, Guilderson TP, Haflidason H, Hajdas I, HattÃ© C, Heaton TJ, Hogg AG, Hughen KA, Kaiser KF, Kromer B, Manning SW, Niu M, Reimer RW, Richards DA, Scott EM, Southon JR, Turney CSM, van der Plicht J.
IntCal13 and MARINE13 radiocarbon age calibration curves 0-50000 years calBP
Radiocarbon 55(4). DOI: 10.2458/azu_js_rc.55.16947

Comments:
* This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated range impinges on end of calibration data set
0* represents a "negative" age BP
1955* or 1960* denote influence of nuclear testing C-14

NOTE: Cal ages and ranges are rounded to the nearest year which may be too precise in many instances. Users are advised to round results to the nearest 10 yr for samples with standard deviation in the radiocarbon age greater than 50 yr.

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42 Fitzwilliam Street
Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification:	UBA-29112
Date of Measurement:	2015-05-25
Site:	E4577 Killarainy 3
Sample ID:	C16 S8
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	IAC

Conventional ^{14}C Age:	2648±27 BP
Fraction corrected	using AMS $\delta^{13}C$

Information about radiocarbon calibration

RADIOCARBON CALIBRATION PROGRAM*
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Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
Annotated results (text) - -
Export file - c14res.csv

C16 S8
UBA-29112
Radiocarbon Age BP 2648 +/- 27
Calibration data set: intcal13.14c

% area enclosed	cal AD age ranges	# Reimer et al. 2013 relative area under probability distribution
68.3 (1 sigma)	cal BC 821- 800	1.000
95.4 (2 sigma)	cal BC 890- 880	0.020
	843- 792	0.980

References for calibration datasets:
Reimer PJ, Bard E, Bayliss A, Beck JW, Blackwell PG, Bronk Ramsey C, Buck CE Cheng H, Edwards RL, Friedrich M, Grootes PM, Guilderson TP, Haflidason H, Hajdas I, HattÃ© C, Heaton TJ, Hogg AG, Hughen KA, Kaiser KF, Kromer B, Manning SW, Niu M, Reimer RW, Richards DA, Scott EM, Southon JR, Turney CSM, van der Plicht J.
IntCal13 and MARINE13 radiocarbon age calibration curves 0-50000 years calBP
Radiocarbon 55(4). DOI: 10.2458/azu_js_rc.55.16947

Comments:
* This standard deviation (error) includes a lab error multiplier.
** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated range impinges on end of calibration data set
0* represents a "negative" age BP
1955* or 1960* denote influence of nuclear testing C-14

NOTE: Cal ages and ranges are rounded to the nearest year which may be too precise in many instances. Users are advised to round results to the nearest 10 yr for samples with standard deviation in the radiocarbon age greater than 50 yr.

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Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification:	UBA-29314
Date of Measurement:	2015-06-26
Site:	E4577 Killarainy 3
Sample ID:	C5 S3
Material Dated:	peat (humic fraction)
Pretreatment:	Humic Extraction
Submitted by:	IAC

Conventional ^{14}C Age:	383±27 BP
Fraction corrected	using AMS δ^{13}C

Information about radiocarbon calibration

RADIOCARBON CALIBRATION PROGRAM*
CALIB REV7.0.0
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*To be used in conjunction with:
Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
Annotated results (text) - -
Export file - c14res.csv

C5 S3
UBA-29314
Radiocarbon Age BP 383 +/- 27
Calibration data set: intcal13.14c

% area enclosed	cal AD age ranges	# Reimer et al. 2013 relative area under probability distribution
68.3 (1 sigma)	cal AD 1450- 1498	0.737
	1506- 1511	0.061
	1601- 1616	0.201
95.4 (2 sigma)	cal AD 1444- 1523	0.703
	1559- 1562	0.004
	1571- 1630	0.293

References for calibration datasets:
Reimer PJ, Bard E, Bayliss A, Beck JW, Blackwell PG, Bronk Ramsey C, Buck CE Cheng H, Edwards RL, Friedrich M, Grootes PM, Guilderson TP, Haflidason H, Hajdas I, HattÃ© C, Heaton TJ, Hogg AG, Hughen KA, Kaiser KF, Kromer B, Manning SW, Niu M, Reimer RW, Richards DA, Scott EM, Southon JR, Turney CSM, van der Plicht J.
IntCal13 and MARINE13 radiocarbon age calibration curves 0-50000 years calBP
Radiocarbon 55(4). DOI: 10.2458/azu_js_rc.55.16947

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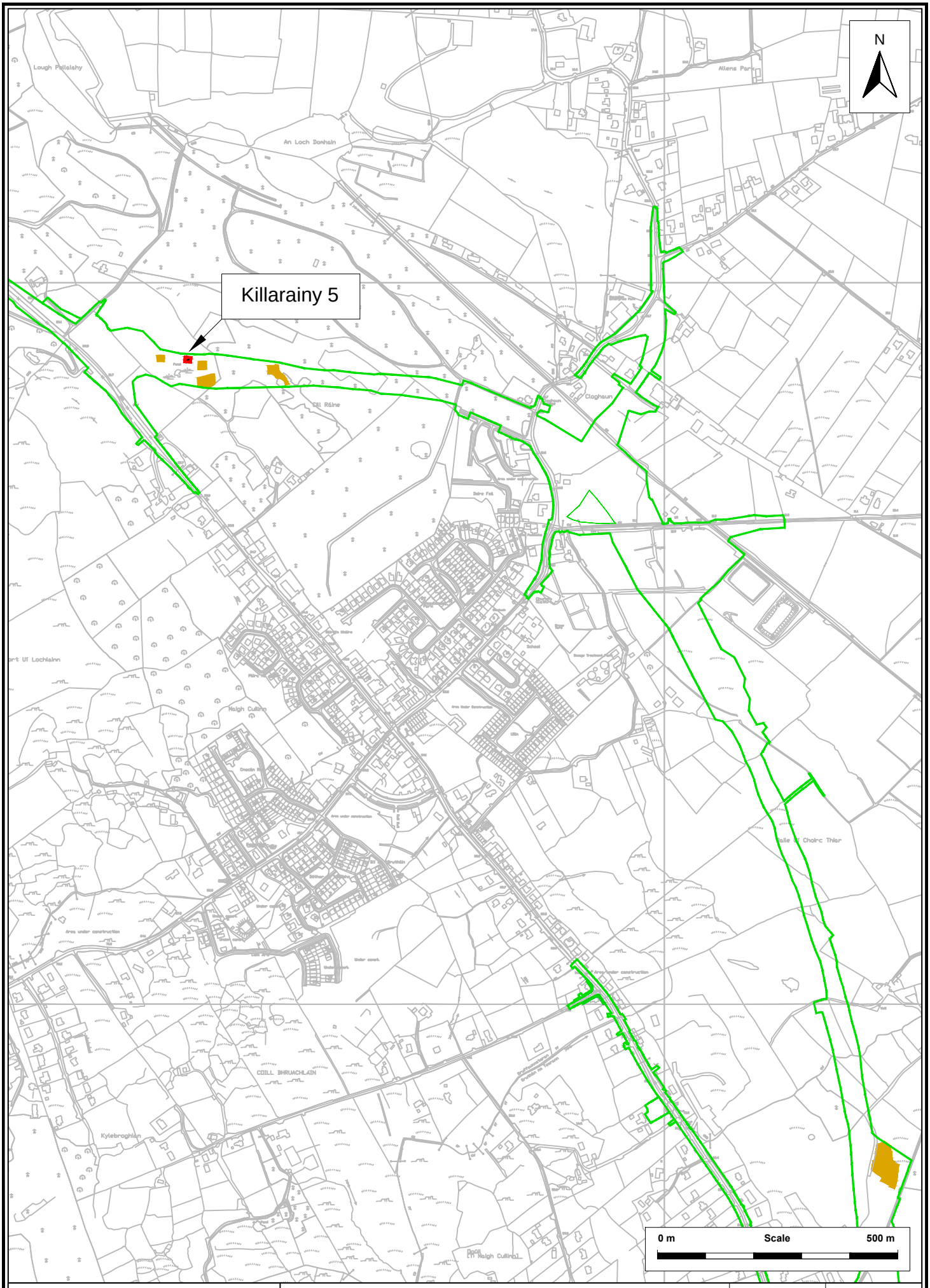
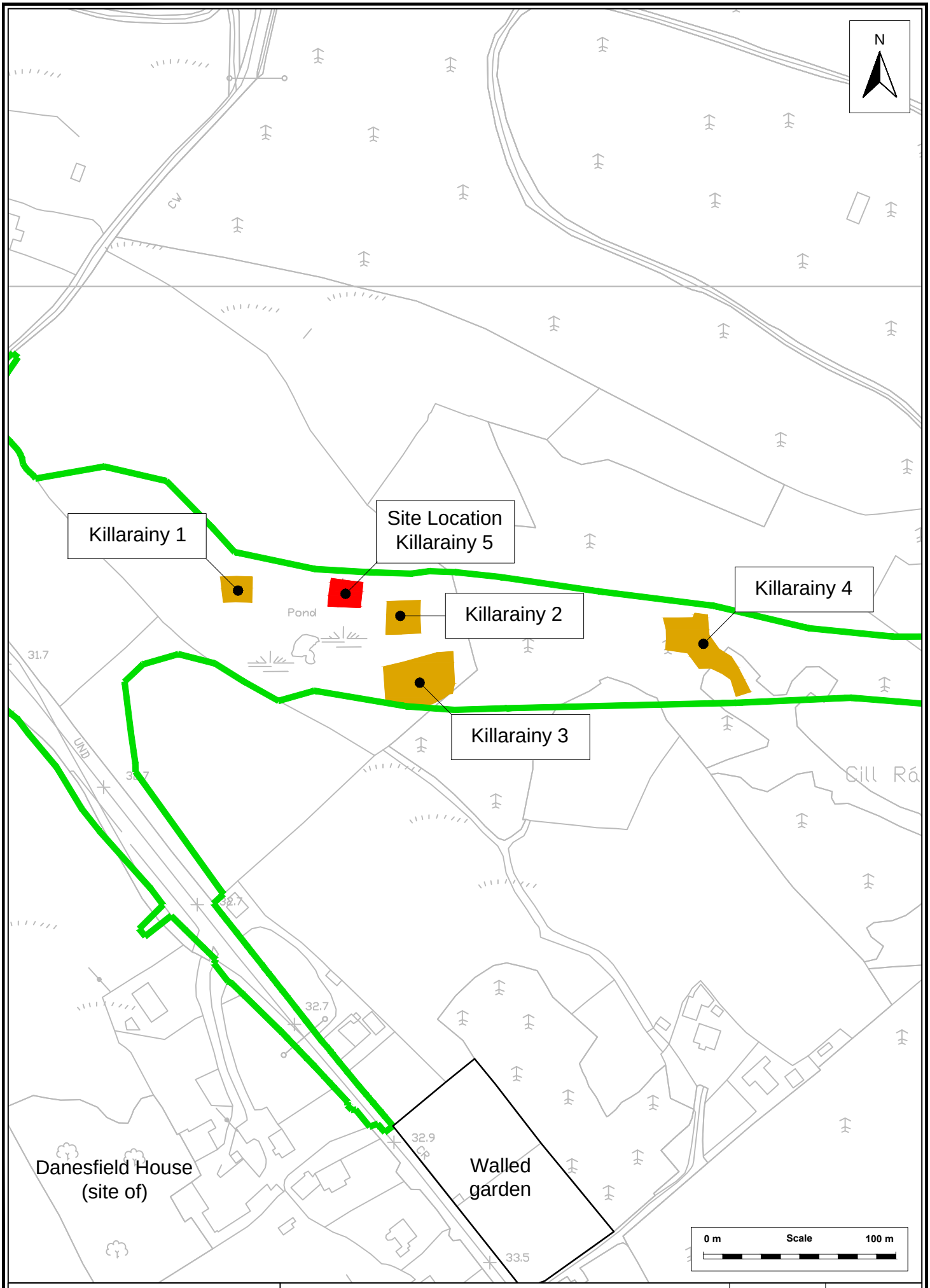
** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)
where ^2 = quantity squared.
[ ] = calibrated range impinges on end of calibration data set
0* represents a "negative" age BP
1955* or 1960* denote influence of nuclear testing C-14

NOTE: Cal ages and ranges are rounded to the nearest year which may be too precise in many instances. Users are advised to round results to the nearest 10 yr for samples with standard deviation in the radiocarbon age greater than 50 yr.

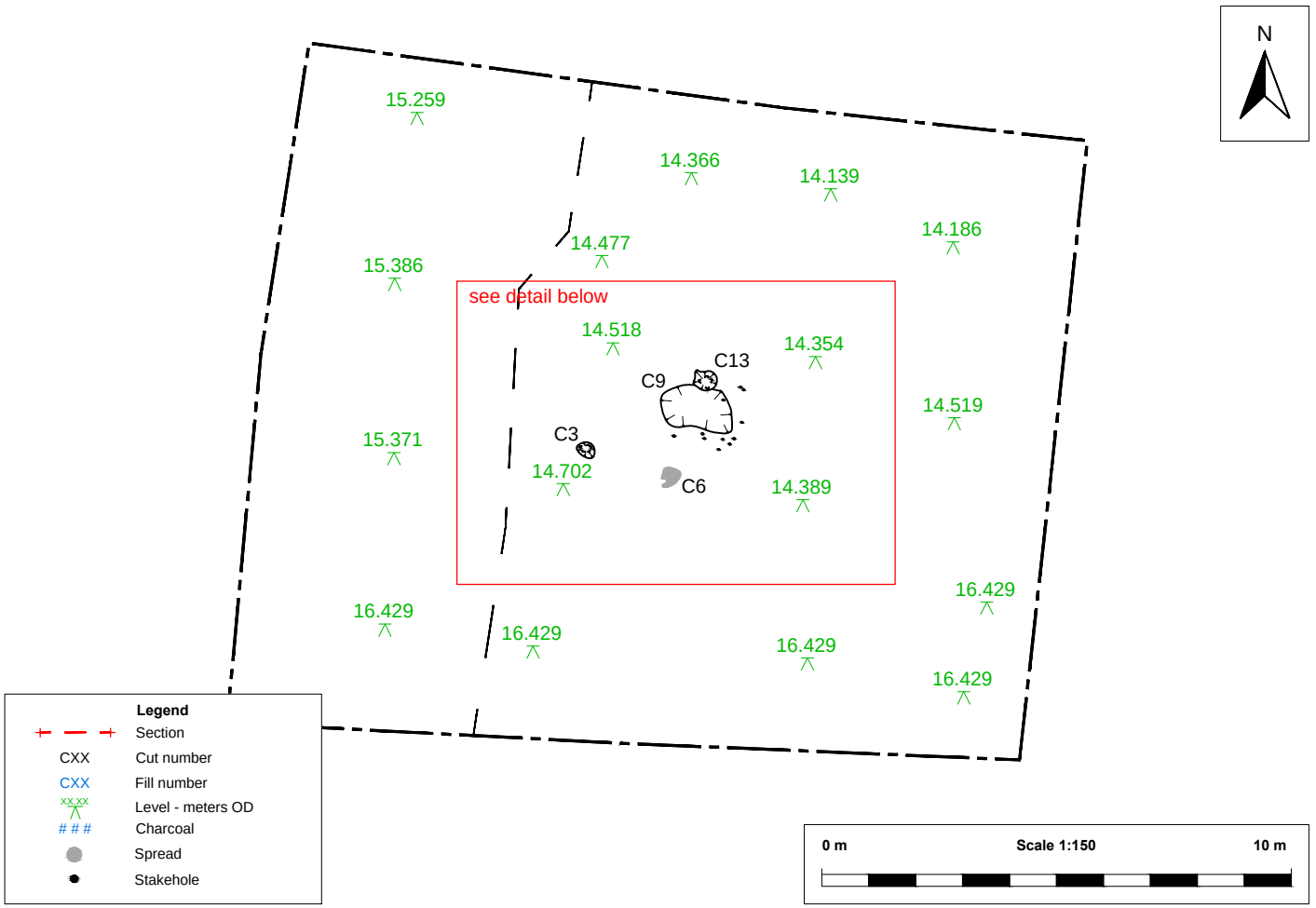
IAC Irish Archaeological Consultancy	**Title** Killarainy 5 - Site Location		**Scale** 1:200000	**Drawn by** HK	
	Project N59 Moycullen Bypass		**Date** 030415	**Checked by** SD	
	Client Galway County Council		**Job no.** J2842	**Fig.** 1	**Rev.** 3

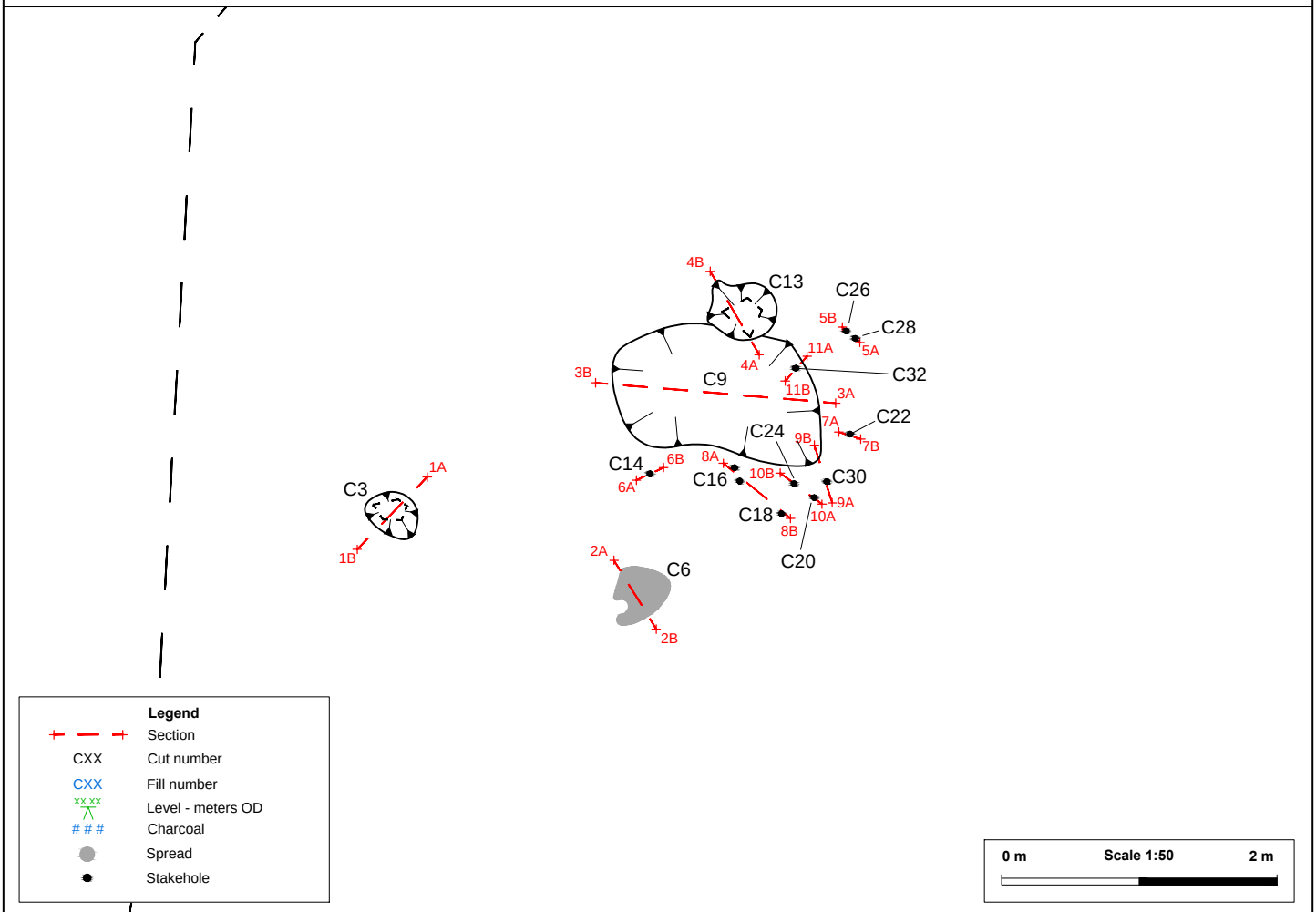


IAC Irish Archaeological Consultancy	**Title**	Killarainy 5 - Site Location and Scheme	**Scale**	1:10000	**Drawn by** HK
	Project	N59 Moycullen Bypass	**Date**	030415	**Checked by** SD
	Client	Galway County Council	**Job no.**	J2842	**Fig.** 2 **Rev.** 3

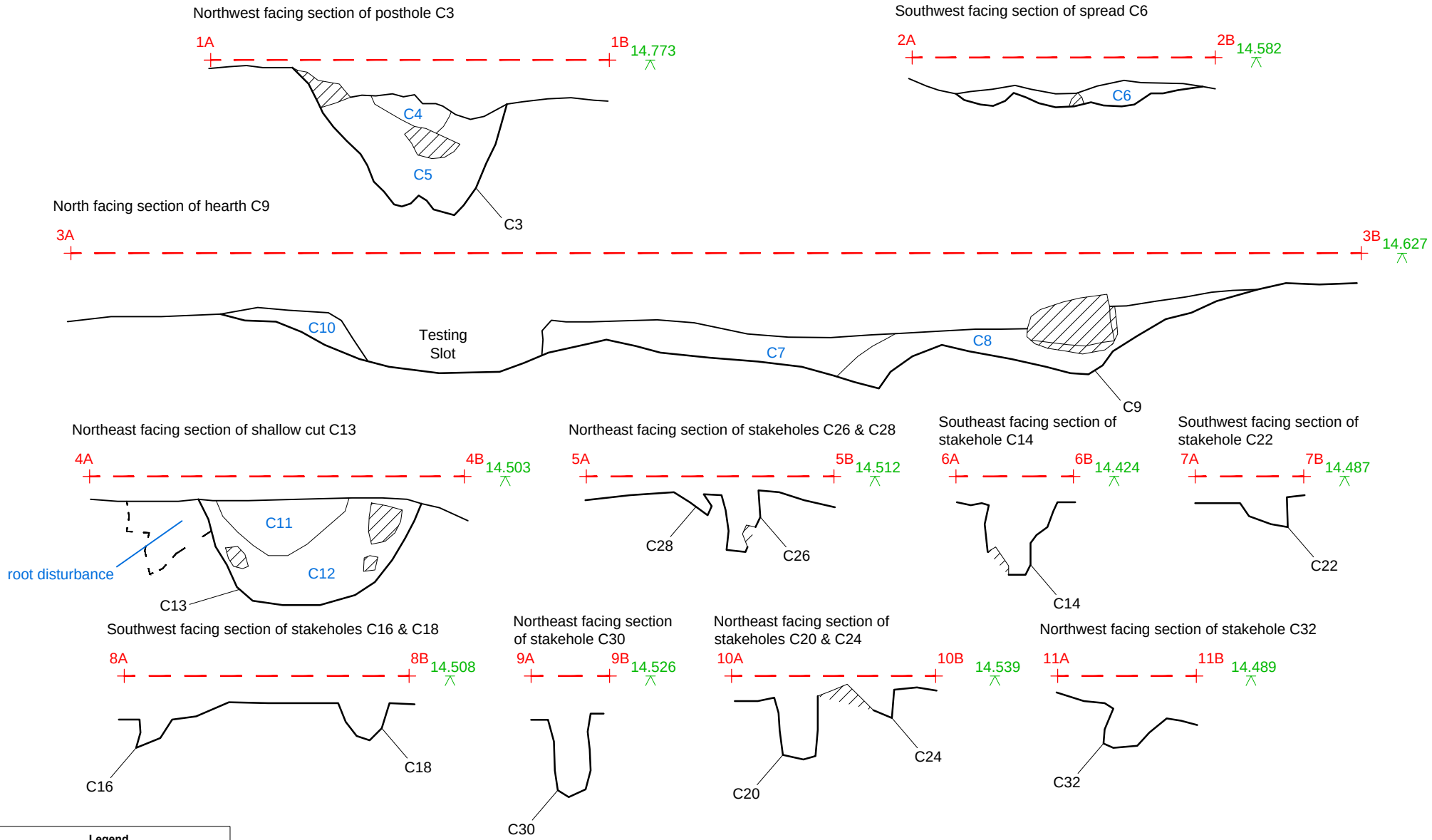


IAC Irish Archaeological Consultancy	**Title** Location of Sites Killarainy 1-5		**Scale** 1:2500	**Drawn by** HK	
	Project N59 Moycullen Bypass		**Date** 030415	**Checked by** SD	
	Client Galway County Council		**Job no.** J2842	**Fig.** 3	**Rev.** 3





IAC Irish Archaeological Consultancy	**Title** Killarainy 5 - Site Plan		**Scale** As shown	**Drawn by** HK	
	Project N59 Moycullen Bypass		**Date** 030415	**Checked by** SD	
	Client Galway County Council		**Job no.** J2842	**Fig.** 4	**Rev.** 3



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Title	Killarainy 5 - Sections	**Scale**	1:10	**Drawn by**	HK
Project	N59 Moycullen Bypass	**Date**	030415	**Checked by**	SD
Client	Galway County Council	**Job no.**	J2842	**Fig.** 5	**Rev.** 3

Plate 1: General view of site, facing south

Plate 2: Quadrant A, facing southwest

Plate 3: Quadrant B north-facing section

Plate 4: Quadrant C east-facing section showing modern dumped material sealing the burnt mound (C3)

Plate 5: Quadrant D west-facing section

Plate 6: Mid-excavation view of the pit/trough (C15)

Plate 7: Post-excavation view of the pit/trough (C15)

Plate 8: Natural flooding of site, facing south