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N22 Tralee Bypass/Tralee to Bealagrellagh, Co. Kerry. Archaeological Services Contract, Stage (iii) – Excavation.

Final Excavation Report for Camp 4 in the townland of Camp, Co. Kerry.

Ministerial Directions Number: A56

Excavation Registration Number: E4313

Townland Name: Camp, Co. Kerry

Site Type: *Fulacht fiadh*

National Grid Reference: 085493/112536

O.D. Height: 11 m

Archaeological Consultant: Rubicon Heritage Services Ltd

Director: Liam McKinstry

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EXECUTIVE SUMMARY

This report presents the final results of an archaeological excavation undertaken at Camp 4, Co. Kerry, on behalf of Kerry County Council. The works were undertaken as part of Stage (iii) of the Archaeological Services Contract prior to the commencement of construction of the N22 Tralee Bypass/Tralee to Bealagrellagh, Co. Kerry, which extends from Lissatanvally townland to Flemby townland in Co. Kerry. The Minister of the Environment, Heritage and Local Government, following consultation with the National Museum of Ireland, issued Directions to Kerry County Council for archaeological works relating to the road development (Ministerial Directions No. A56). The registration number, E4313, was allocated by the National Monument Service for archaeological excavations at Camp 4 under the direction of Liam McKinsty of Rubicon Heritage Services Ltd (formerly Headland Archaeology (Ireland) Ltd).

Following a route constraints study, and a route appraisal and selection report, an Environmental Impact Study was carried out on the preferred route, including a chapter on archaeology and cultural heritage (Atkins 2008). A number of archaeological and architectural heritage constraints were identified along the route of the road and a number of recommendations were set out for the treatment of the sites and potential sites identified. Included in these recommendations were geophysical survey, test-excavations of the entire route, survey of the townland boundaries, underwater surveys and survey of architectural/built heritage sites, which were completed as part of Stage (i) archaeological work on the scheme (Bartlett *et al.* 2010a; Harrison 2010; Kieran and Hayden 2010; Long 2010 a-e).

Archaeological test trenching along the entire route (including Wetland Test Excavation) was carried out by Rubicon Heritage Services Ltd on behalf of Kerry County Council between 9 August 2010 and 3 September 2010 under Excavation Registration Number E4149. Additional testing was undertaken in wetland areas between 22 September and 1 October 2010 under the same licence number. Due to the number and size of powerline exclusion zones test trenching was undertaken in exclusion zones between 29 September and 15 October 2010. The test excavations at Camp 4 identified an irregular shaped deposit – measuring 5 m by 2 m by 0.36 m – that contained burnt mound material; two sub-circular deposits, which also contained burnt mound material and a circular pit (Bartlett *et al.* 2010a).

Stage (ii) stripping, cleaning and mapping of all areas of archaeological potential identified during test trenching was carried out by Rubicon Heritage Services Ltd on behalf of Kerry County Council between 30 August and 13 October 2010 (Bartlett *et al.* 2010b). Stage (ii) works at Camp 4 revealed a further three spreads

Full archaeological excavation was undertaken at the site between 14 and 18 February 2011; a preliminary report on the results of the excavation was submitted in August 2011 (Clark 2011).

A total area of 540 m² was exposed at Camp 4, revealing one phase of activity. The archaeological features identified were related to *fulacht fiadh* activity (Figure 4).

Features

A possible pot-boiler was situated towards the northern end of the site. It measured 2.10 m, by 1 m and 0.70 m in depth and was sub-circular in plan. It contained four fills which consisted of mid to dark clays which contained heat-affected stone inclusions.

Adjoining the eastern side was a spread of black silty sand. This contained inclusions of heat-affected stone and charcoal and measured 3.60 m by 2.20 m by 0.30 m deep. Overlying this was mid-brown silty clay, which measured 7.6 m by 4.2 m and 0.18 m deep.

Approximately 0.70 m to the north-west was a third spread. This consisted of black silty sand with charcoal and heat-affected stone inclusions; it measured 1.20 m in diameter and 0.10 m in depth.

A circular post-hole– which measured 0.18 m in diameter and 0.33 m in depth – was also identified. Its fill consisted of loosely compacted, greyish-brown silty sand with small-sized pebble inclusions.

Approximately 6.25 m to the south-south-east of the post-hole was an oval pit/trough with two fills; it measured 1.85 m by 1.30 m by 0.35 m deep. Two post-holes truncated the northern side of this feature, measuring 0.45 m by 0.40 m and 0.20 m in depth and 0.50 m in diameter and 0.27 m in depth.

A spread of mid- to dark brown clayey silt was recorded approximately 1.65 m to the east of the above waste pit. This measured 3.34 m long, 1.84 m wide and 0.06 m deep and contained inclusions of heat-affected stone. It was truncated on its western side by sub-circular posthole. This measured 0.42 m by 0.40 m by 0.32 m deep and was filled by loose to moderately compacted, mid-greyish brown clayey silt which contained occasional flecks of charcoal.

Approximately 4 m to the southwest was a circular pit, measuring 0.50 m in diameter and 0.26 m in depth (Plate 3). Its fill comprised loosely compacted, mid-brown silty clay.

Artefacts and samples

No artefacts were recovered from the site.

A total of six soil samples were retained from the excavation. The soil samples were processed for environmental data. Charcoal fragments were the only charred plant remains recovered from the site. Fragments were present in rare to occasional instances and contained both oak and non-oak species.

Dating

One radiocarbon date was obtained from the basal fill of the pot-boiler and returned a date from the Late Neolithic/Copper Age– 2471-2235 cal. BC (2 σ) (SUERC 37269) (Appendix 7).

1 INTRODUCTION

This report presents the Final results of archaeological excavations carried out at Camp 4 in advance of the proposed N22 Tralee Bypass/ Tralee to Bealagrellagh road scheme in county Kerry.

The proposed scheme has two main components, the N22 Tralee Bypass and the N22 Tralee to Bealagrellagh Road (Figure 1). The N22 Tralee Bypass extends from the N69 National Secondary Route approximately 4km north of Tralee town to the N70 National Secondary Route approximately 500 metres south of the town. It passes east of the town via the N21 National Primary Route and the proposed intersection with the N22 Tralee to Bealagrellagh Route (N22 Access Route). The N22 Tralee to Bealagrellagh road will provide a separate access route to Tralee from the N22 Killarney Road.

Kerry National Road Design Office (NRDO) initially prepared a Route Constraints Report for this scheme in January 2000 (Kerry NRDO 2000). Following the completion of this report, six route options were identified. An environmental assessment of the Route Options was undertaken by RPS-MCOS on behalf of Kerry NRDO and this formed part of the Route Selection Report in August 2002 (Kerry NRDO 2002).

The preferred route, determined in the Route Appraisal and Selection Report was a combination of two of the originally proposed route options. In 2007 Kerry NRDO developed a number of route options as alternatives to Section A of the Bypass, these linked to the improved section of the N69 at Leath Cross. In 2007, Atkins prepared An Environmental Constraints Report for the Proposed Scheme Extension to N69 to Leath on behalf of Kerry NRDO.

The Constraint Studies included archaeology and heritage and all identified issues and data in relation to this was used in the identification of route options in the Route Selection Report. Following route selection an Environmental Impact Statement (EIS) was carried out on the entire length of the proposed road (Atkins 2008). The scheme was approved by An Bord Pleanála (Ref. PL08 .HA0016) in September 2009.

The project is funded by the Department of Transport under the National Development Plan 2007-2013 and the Transport 21 programme. The total archaeological cost is administered by the National Roads Authority through Kerry County Council.

Rubicon Heritage Ltd. was formerly known as Headland Archaeology (Ireland) Ltd. The company underwent a rebranding in December 2011. Reports written by the company prior to this date are referenced to Headland Archaeology (Ireland) Ltd in the bibliography, though for consistency the company is referred to as Rubicon Heritage Ltd. throughout this report.

Archaeological test excavations (including wetland test excavation and targeted test excavation), a townland boundary survey, targeted geophysical survey, an underwater survey and an architectural/built heritage survey were undertaken along the entire route of the scheme Rubicon Heritage Services Ltd under Stage (i) of the Archaeological Services Contract (Bartlett *et al.* 2010a; Harrison 2010; Kieran and Hayden 2010; Long 2010 a-e). A total of 41 areas of archaeological potential were identified.

Stage (ii) works on the scheme involved the mechanical stripping of topsoil, hand cleaning of exposed surfaces and mapping of features identified at each site of archaeological potential. This was carried out by Rubicon Heritage Services Ltd between 30 August and 13 October 2010 (Bartlett *et al.* 2010b). Following Stage (ii) investigations a total of 38 archaeological sites discovered during the course of works by Rubicon Heritage Services Ltd were recommended for Stage (iii) excavations in advance of

construction works. An additional site in the townland of Camp was identified during works by the NRA project archaeologist during additional testing in wetland areas, bringing the total number of sites to 39.

Archaeological excavations were then undertaken by Rubicon Heritage Services Ltd at 35 of these sites between Monday the 24th January and Friday the 1st April 2011 under Stage (iii) of the Archaeological Services Contract.

Post-excavation assessment reports were completed by August 2011 and a program of specialist analysis and dating was then undertaken. This report presents the final excavation results including the result of all specialist analysis and radiocarbon dating.

2 SITE BACKGROUND AND LOCATION

2.1 Site location

Camp 4 was situated in the townland of Ballyseedy, barony of Trughanacmy and was located 0.75 km south of Tralee town at National Grid Reference: 085493/112536 (Figure 1). The site itself was situated in on a broadly level field of low grass pasture south of the River Lee at 11 m AOD. The site is called Camp 4 as it was originally thought that the site was in the townland of Camp but was later concluded that it fell into the townland of Ballyseedy.

A summary of the soils and geology of the area was included in the Geology and Hydrogeology chapter of the EIS (Atkins 2008). There is little detailed regional information of the superficial geology of the area, but the Route Appraisal and Selection Report indicates that the majority of the site is directly underlain by Boulder Clay. However, the section of the preferred route which crosses the floodplain of the River Lee (i.e. west of Curraghleha) is described to be underlain by Alluvium.

The majority of rock formations encountered in and around Tralee are Lower Carboniferous (Dinantian) and Middle Carboniferous (Namurian) in age. The main formations underlying the greatest distances of the preferred route, from north to south, include the following: Numarian (undifferentiated) (NUM), comprised of black shales and sandstone; Cracoean Reef facies (CLcr) (eastern transgression of the Cloonagh Limestone (CL) Formation) comprised of unbedded pale grey limestone; Waulsortian Formation (WA), comprised of massive limestones; and Ballysteen Formation (BA), comprised of dark grey limestone and black mudstone.

2.2 General background

The archaeological context of the entire scheme has been outlined in the EIS (Lane 2008) and in previous reports (e.g. Bartlett *et al* 2010a and b).

There were four previously recorded monuments within 500 m of Camp 4.

RMP number	Site type	Townland
KE038-098	Field boundary	BALLYSEEDY,CAMP
KE038-101	Cairn - unclassified	CAMP
KE038-102	Standing stone	CAMP
KE038-160	Enclosure	CAMP
KE038-161	Barrow - unclassified	CAMP

The archaeology of the area prior to the current road scheme would indicate that there was prehistoric activity in the general vicinity of Camp 4. The cairn, barrow and standing stone are monuments most typical of Bronze Age monuments often associated with burial. The enclosure at Camp may be prehistoric but there is also a possibility it is early medieval.

2.3 Recent excavations

Previous archaeological work undertaken in the townland of Camp revealed a series of stake-holes and pits and two spreads of charcoal-rich material (03E1922). Three sherds of prehistoric pottery,

possibly from a Late Bronze Age funerary urn, were recovered from one of the excavated pits (O'Callaghan 2004).

Archaeological investigations undertaken as part of Stage (iii) of the Archaeological Services Contract in advance of the N22 Tralee Bypass identified a number of sites in the vicinity of Camp 4, including Caherleheen 1 (Hourihan, 2012a), which contained Late Neolithic burnt mound remains 423 m to the south-west. Camp 5 (Hourihan, 2012b) which was 378 m to the north-east and Camp 2 (Hourihan, 2012c) which was 410 m to the north-west contained Early to Late Bronze Age burnt mounds. A cluster of three burnt mounds was identified 450 m to north-west at Camp 1 which dated between the Early Bronze Age and the Early Iron Age (Figure 2).

These new discoveries indicate that there was activity in the area spanning from at least the Late Neolithic to the Late Bronze Age. This corresponds to the RMP sites in the area and it seems that the area was intensively used during the Bronze Age.

3 OBJECTIVES AND METHODOLOGY

3.1 Objectives

The objective of the work was the preservation-by-record through appropriate rescue excavation of any significant archaeological features or deposits, which have been identified within the land take of the proposed development, in advance of the road construction programme, so as to mitigate the impact of the road development on this archaeological material.

3.2 Methodology

Full archaeological excavation was undertaken at Camp 4 between 14 and 18 February 2011. The crew for the excavation consisted of 1 director, 1 supervisor and 4 site assistants.

Topsoil stripping of the site was conducted using a 360° tracked machine fitted with a 1.8 -2 m wide ditching (toothless) bucket under constant archaeological supervision. A total area of 540 m² was exposed. The resulting surface was cleaned and all potential features investigated by hand. Archaeological contexts were recorded by photograph and on pro forma record sheets. Plans and sections were drawn at scales of 1:10 and 1:20. Registers are provided in the appendices (Appendices 1-4). Ordnance Datum levels and feature locations were recorded using Penmap and a total station theodolite.

Environmental samples were taken from any deposits suitable for analysis or dating as per Rubicon Heritage Services Ltd environmental guidelines and following consultation with environmental archaeologist and archaeobotanist Dr. Scott Timpany.

As part of Stage (iv) post-excavation services environmental samples were analysed by the appropriate specialists and reports produced on the findings; these reports have been incorporated into this final report (see appendices).

4 THE RESULTS

A total area of 540 m² was exposed at Camp 4, revealing one phase of activity. The archaeological features identified seem to have been related to burnt mound activity (Figure 4).

The topsoil at the site (001) was up to 0.60 m in depth and comprised a mid- to light brown silty clay. Natural geological strata (002) was characterised by light orangey brown clayey sand with pockets of limestone bedrock.

4.1 Phase I

Phase I consisted of a series of burnt spreads and cut features potentially associated with fulacht fiadh activities. Unfortunately photography of the mounds was hampered by severe flooding at the site.

A possible pot boiler (003) was situated towards the northern end of the site. It measured 2.10 m in length, 1 m in width and 0.70 m in depth and was sub-circular in plan, with sharp to gradual breaks of slope, concave sides and a concave base (Figure 4 & 5; Plate 4). The basal fill within this feature consisted of loosely compacted, brownish black silty sandy clay (007), which contained charcoal and heat-affected stone inclusions. The hazel charcoal returned a Late Neolithic to Copper Age date range of between 2471-2235 cal. BC (SUERC-37269; 3890±35 BP). The tertiary fill comprised dark grey silty sand with heat-affected stone inclusions (006); this had a loose compaction. This was situated beneath brownish black, loosely compacted silty sandy clay (005). The upper fill was light grey silty sand (004). Adjoining the eastern side of possible pot boiler (003) was a spread of loosely compacted, black silty sand (015). This contained inclusions of heat-affected stone and charcoal and measured 3.60 m long by 2.20 m wide by 0.30 m deep. Overlying this was mid-brown, loosely compacted silty clay (011), which measured 7.6 m by 4.2 m and 0.18 m deep.

Approximately 0.70 m to the north-west of possible pot boiler (003) was a third spread (014). This consisted of loosely compacted, black silty sand with oak charcoal and heat-affected stone inclusions; it measured 1.20 m in diameter and 0.10 m in depth.

A circular post-hole (024) – which measured 0.18 m in diameter and 0.33 m in depth – was located approximately 2 m to the south of possible pot boiler (003). It had a sharp break of slope at the top of the cut and near vertical sides that broke gradually onto a concave base. Its fill consisted of loosely compacted, greyish brown silty sand with small-sized pebble inclusions (025).

Approximately 6.25 m to the south-south-east of post-hole (024) was a pit/trough (008) (Figure 6). This was oval in plan, with a sharp break of slope at the top, gradual at the bottom, steeply sloping concave sides and a concave base; it measured 1.85 m by 1.30 m by 0.35 m deep (Plates 1 and 2). The basal fill consisted of loosely compacted, black silty clay with occasional oak and non-oak charcoal and heat-affected stone (009). This was situated beneath mid-brown, firmly compacted silty clay (010), which contained occasional inclusions of charcoal and stone. Though somewhat irregular in shape this feature had the capacity to have functioned as a trough (Figure 6).

Two post-holes truncated the northern side of this pit/trough (008) (Plate 5). Post-hole (016) measured 0.45 m in length, 0.40 m in width and 0.20 m in depth and was sub-circular in plan. Its break of slope at the top of the cut was sharp, while the bottom was imperceptible; its sides were near vertical and its base concave in profile. It was filled by loosely compacted, mid-brown silty clay (017). The second post-hole (018) was circular in plan, with a sharp break of slope at the top and steeply sloping sides

that broke gradually onto a concave base. It measured 0.50 m in diameter and 0.27 m in depth and was filled by mid- to light brown, loosely compacted silty clay (019).

Pit (012) was circular in plan, measuring 0.50 m in diameter and 0.26 m in depth. It was located approximately 1.50 m to the south-south-west of pit (008) and had a sharp break of slope at the top, gradual at the bottom, with near vertical sides and a slightly concave base (Plate 3). Its fill comprised loosely compacted, mid-brown silty clay (013).

A spread of loosely compacted, mid- to dark brown clayey silt (022) was recorded approximately 1.65 m to the east of pit (008). This measured 3.34 m long, 1.84 m wide and 0.06 m deep and contained inclusions of heat-affected stone. It was truncated on its western side by sub-circular post-hole (020). This had sharp to imperceptible breaks of slope, near vertical sides and a concave base and measured 0.42 m by 0.40 m by 0.32 m deep. It was filled by loose to moderately compacted, mid-greyish brown clayey silt (021), which contained occasional flecks of charcoal.

A total of six samples were retrieved during the investigations at Camp 4.

Analysis of the samples

The soil samples were processed for environmental data and in consultation with a specialist a total of six selected for detailed specialist analysis. Mostly oak and some non-oak charcoal fragments were the only charred plant remains recovered from the site. Fragments were present in rare to occasional instances and ranged in size from <0.5cm to 3cm (Appendix 6).

5 DISCUSSION

The results of the excavation at Camp 4 point to one phase of activity at the site and seem to be related to pyrolithic activity. One possible trough, one possible pot-boiler and numerous shallow spreads comprised of typical burnt mound material of heat-affected stone and charcoal were identified. Though there was no large mound of material the remains indicate that the technology employed on typical *fulachta fiadh* sites was also used here to some extent. The presence of heat-shattered stones within the shallow pit at Camp 4 may indicate that it acted as a pot-boiler; whereby heated stones were used to heat the contents of ceramic vessels rather than water. The deeper pit (008) had the capacity to have functioned as a trough though it was slightly irregular in shape.

5.1 *Phasing and Chronology*

The single phase of activity identified on the site dated to the Late Neolithic/Copper Age transition period. Hazel charcoal recovered from the basal fill of the pot-boiler was radiocarbon dated to 2471-2235 cal. BC (SUERC-37269; 3890±35 BP). It is likely that the other features identified on the site also fall into this date range.

Fulachta fiadh, which are the most prevalent examples of the use of pyrolithic technology, have been found to have a very broad date range with a small number of sites dating from the Late Neolithic and occasional examples producing dates from the Iron Age or later. However, burnt mounds that have been radiocarbon dated show a marked concentration of sites in the Middle Bronze Age, while there is a smaller but significant group indicating use in the Late Bronze Age (Brindley and Lanting 1990). More recent dating programs have generally corroborated the findings of Brindley and Lanting. Burnt mounds excavated in advance of the gas pipeline to the west, for example, had a high concentration of dates in the 2500-1700 BC period (Grogan et al. 2007, 96), but the majority of sites were within the 1700-1000 BC period (*ibid.*).

This site is at the beginning of the overall date range for these monument types as discussed above, indicating that pyrolithic technology was in use in the area at an early stage. *Fulacht fiadh* dated to this general period are becoming more common in the archaeological record. This trend may alter existing ideas on the chronology of *fulacht fiadh*, perhaps indicating that it was a well established practice by the beginning of the Bronze Age, with its roots in the Neolithic period as evidenced by the Late Neolithic/Copper Age date from Camp 4.

The burnt mound site at Caherleheen 1 (Hourihan 2012a) located 400 m south of Camp 4 also returned a similar date from the Late Neolithic period. Further to the north, closer to the River Lee, three more *fulacht fiadh* sites were identified; Camp 1, 2 and 5 (Hourihan 2012d, c and b). These three were dated to a later period of between the Middle Bronze Age to the Early Iron Age.

5.2 *Siting and morphology of burnt mound features*

Burnt mounds have been identified in almost every part of the country and are the most common prehistoric monument in Ireland (Waddell 2000, 174). Large infrastructural projects have consistently identified large numbers of these sites; for example *fulachta fiadh* and related site types such as burnt mounds and spreads formed the bulk of the recorded archaeology in advance of the gas pipeline to the west (Grogan et al. 2007, 81). On the N22 Tralee Bypass 10 of the 35 archaeological sites excavated were *fulachta fiadh* with a further four sites including pits and spreads of burnt mound material similar to Camp 4. As mentioned above one of these sites at Caherleheen 1 was 423 m to the south of Camp 4 and contained a similar range of pits and spreads. To the north of Camp 4 in the floodplain of

the River Lee, a series of more typical *fulacht fiadh* with troughs and substantial mounds were identified (Camp 1, 2 and 5; Figure 1)(*ibid*).

Classic *fulachta fiadh* appear in the landscape as low grassy mounds of crescent or U-shaped plan (Waddell 2000, 174), though excavation has shown that in many cases the mound can be ploughed out or indeed may never have been on such a scale as to remain identifiable above ground. Excavated *fulachta fia* usually consist of a mound or spread of burnt stones and firing debris and a trough or troughs. Frequently, associated features such as hearths, pits, stakeholes and postholes are also identified but there is a great deal of variation in the morphology of excavated site types. Camp 4 was not a classic example of a *fulacht fiadh* as there was no substantial mound but the presence of a possible trough, pot-boiler, post-holes and spreads of burnt material are all consistent with this monument type.

The possible trough contained no signs of having been lined with timber, wattle or leather as is commonly found on *fulacht fiadh* sites. The environmental analysis found only charcoal present in the fills and so there is no indication of what the exact function of this trough may have been. The traditional interpretation of these monuments is that they were cooking sites, a view supported both by the early texts, folk memory (Ó Drisceoil 1988; O'Neill 2004) and experimentation (O'Kelly 1954; Allen 1994). The texts frequently give a dual function of cooking and bathing for the sites. However, other theories about their use have also been put forward. These include: fulling, brewing, leather working, and use as sweathouses or as multifunctional sites. It is most likely that *fulachta fia* were multifunctional or that different sites were used for different purposes. Determining which each site was used for is difficult in large part because of the lack of definitive evidence and recovered finds.

There were four post-holes identified on the site but these were not associated with each other and there was no sign of a structure at the site. The two post-holes at the edge of the possible trough may have supported a light canopy or alternatively may have suspended something over, or in, the boiling water. The function of the two other isolated post-holes is not clear. A rope between the two may have served as a drying rack if the site was used for flax or hide processing but there is no evidence to support this theory from the excavation.

The siting of typical *fulacht fiadh* is noteworthy as they are almost invariably located close to a water source (e.g. O'Neill 2000). This was well demonstrated during the North Munster Project (Grogan 2005) where the *fulachta fiadh* identified were located along the margins of wetland, small lakes, turloughs, bog and marsh as well as the edges of river estuaries and on the banks of rivers and streams. Although the site at Camp 4 was not located directly next (it was approximately 435m south of the river lee) to any existing water source, there may have been one in the form of a spring or a stream when the site was in use. A modern pump-house within the field attests to the presence of underground water sources.

5.3 Conclusions

Despite the lack of a substantial mound, the excavation of Camp 4 revealed a number of features which are typical of *fulacht fiadh* sites. There was no clear evidence as to what processes were being carried out at the site. With additional sites identified at Camp and Caherleheen on one side and Manor East on the other, this site demonstrates that Bronze Age activities were taking place on both sides of the River Lee.

The activity identified at Camp 4 contributes to the growing body of evidence for this site type throughout the country, but when viewed with the other evidence from the scheme it is especially relevant to our knowledge of these site types in the south-west of the country.

6 ARCHIVE QUANTITIES

The site archive is comprised of the following materials:

Item	Quantity
Context Sheets	25
Plans	2
Sections	4
Photographs	45
Registers	5
Notebooks	0

The archive material is contained within one box.

Storage of the archive in a suitable format and location is required in order to provide for any future archaeological research. It is proposed that in addition to the paper archive a digital copy is prepared. The archive is currently stored in the offices of Rubicon Heritage Services Ltd., Unit 1, Wallingstown Business Park, Little Island, Co. Cork. It is proposed that following completion of post-excavation the archive will be deposited with the National Monuments Service, Department of the Environment, Heritage and Local Government, or the National Museum of Ireland, or such other repository as may be directed by the Client's Representative and the Project Archaeologist.

7 DISSEMINATION

The preliminary results of the excavations on the scheme have been outlined in the NRA Seanda magazine (Long 2011).

The final results of this excavation will be included in a monograph publication dedicated to the results of the excavations on the N22 scheme. This publication is to be completed as part of the Stage (iii) and (iv) archaeological services contract.

Articles relating to the scheme are also planned for inclusion in journal publications.

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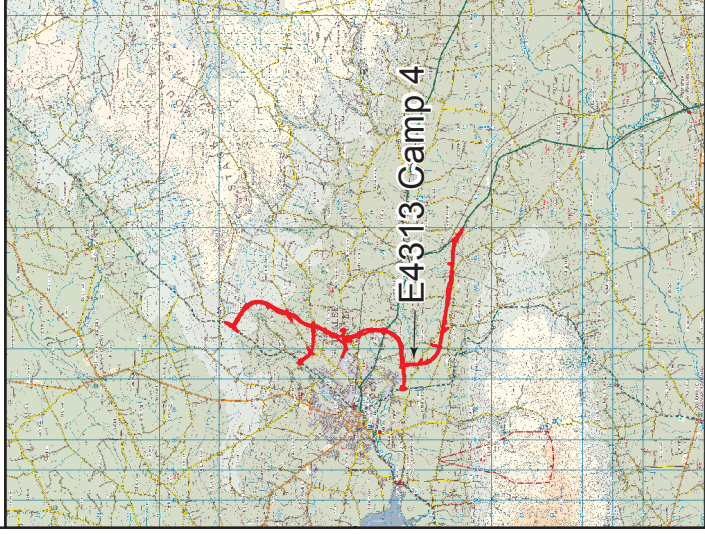
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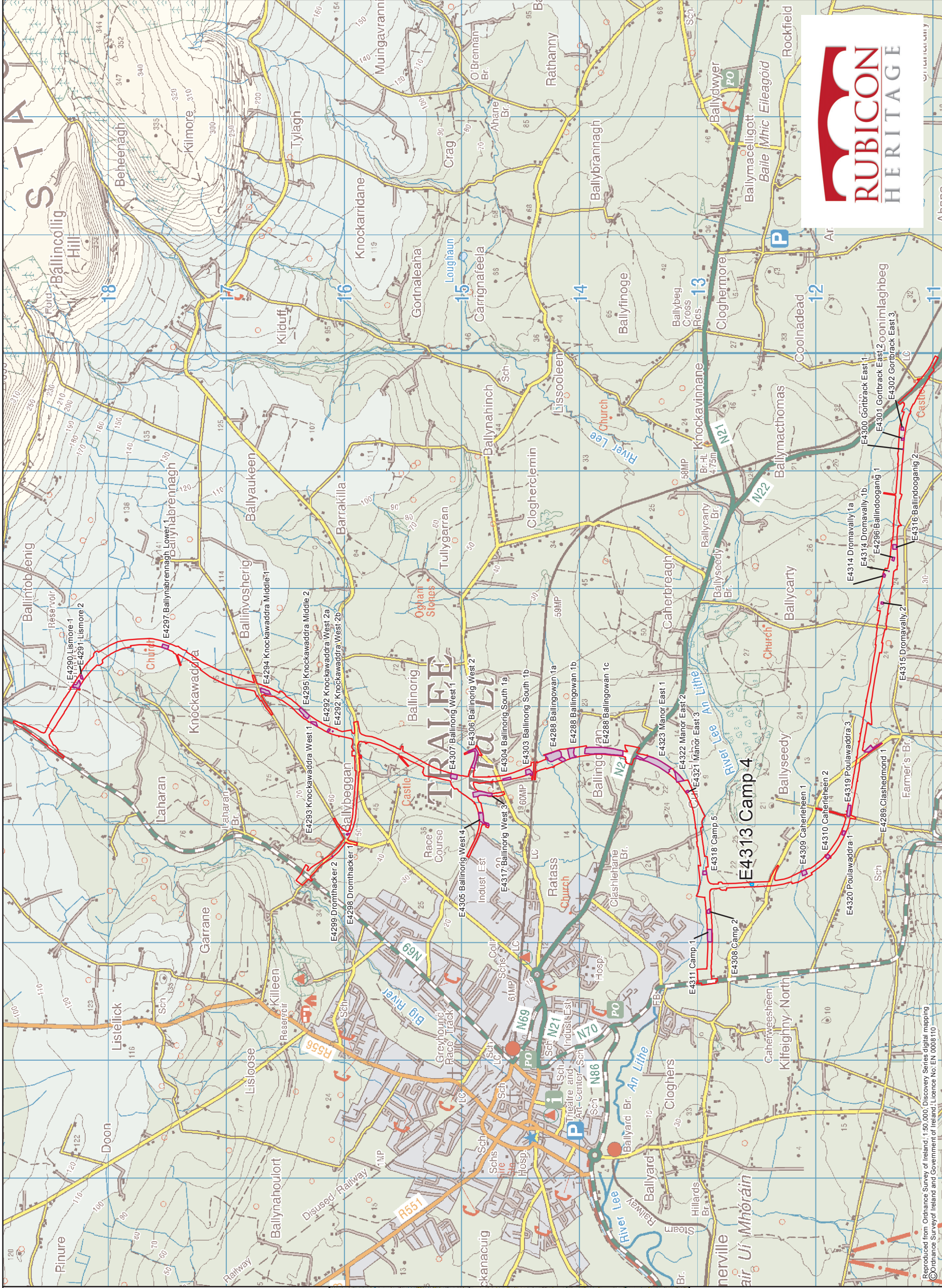
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KEY

CPO —

Excavated Sites



Reproduced from Ordnance Survey of Ireland, 1:50,000; Discovery Series digital mapping



Kerry NRDO
National Road Design Office
Ofis Deartha um Bhoithre Naisiunta Chiarraí

Project Name: N22 Tralee Bypass/ Tralee to Bealagreglagh

Scale: 1:33,000@A3

Project Code: TBED10

0
1,250 m

N22 Tralee Bypass/ Tralee to Bealagrellagh:
Archaeological Works- Contract 1.
Figure 1 - Location of scheme

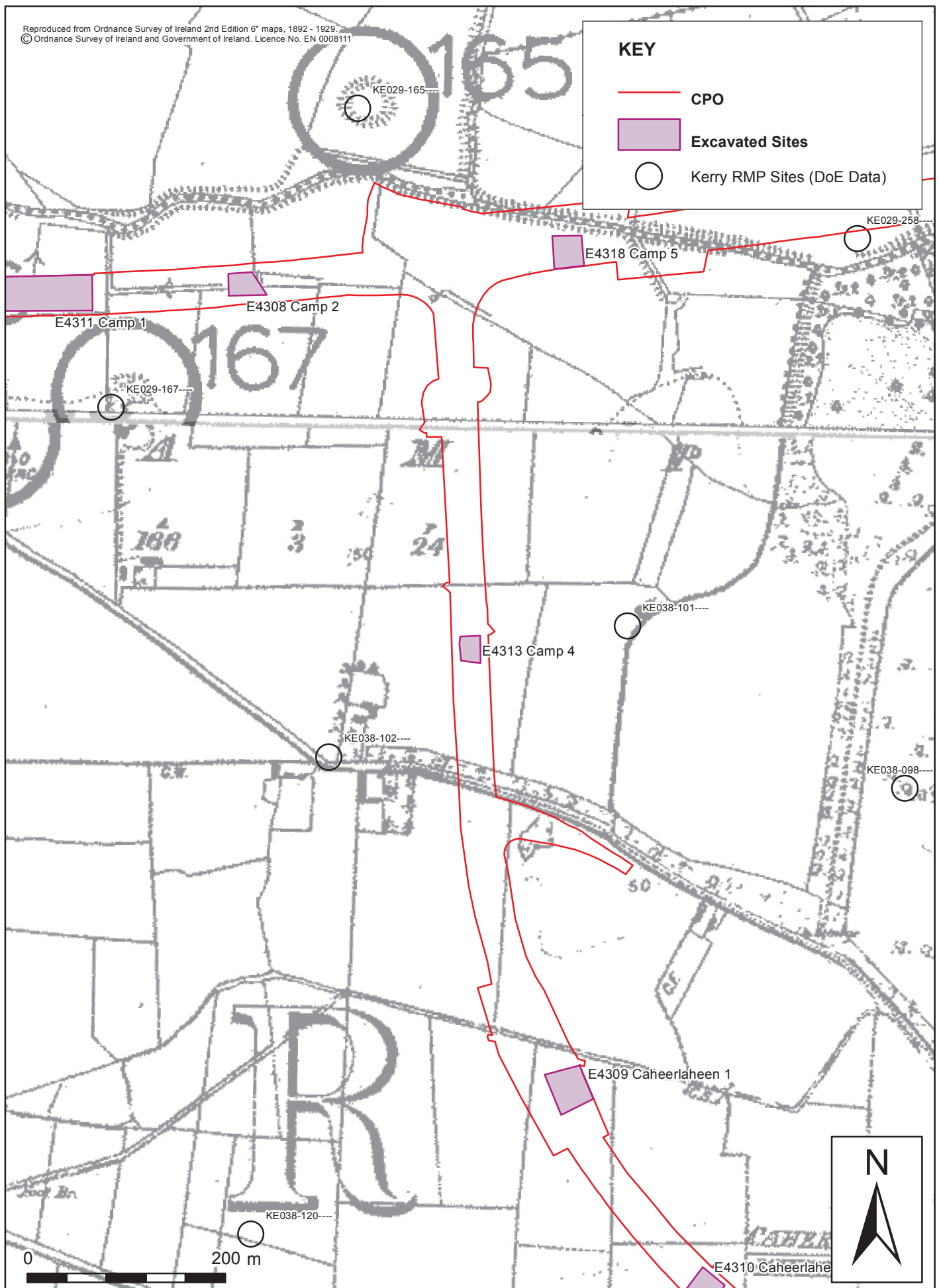
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2nd edit by: JMM Jan 2012	Signed off: PL Jan 2012
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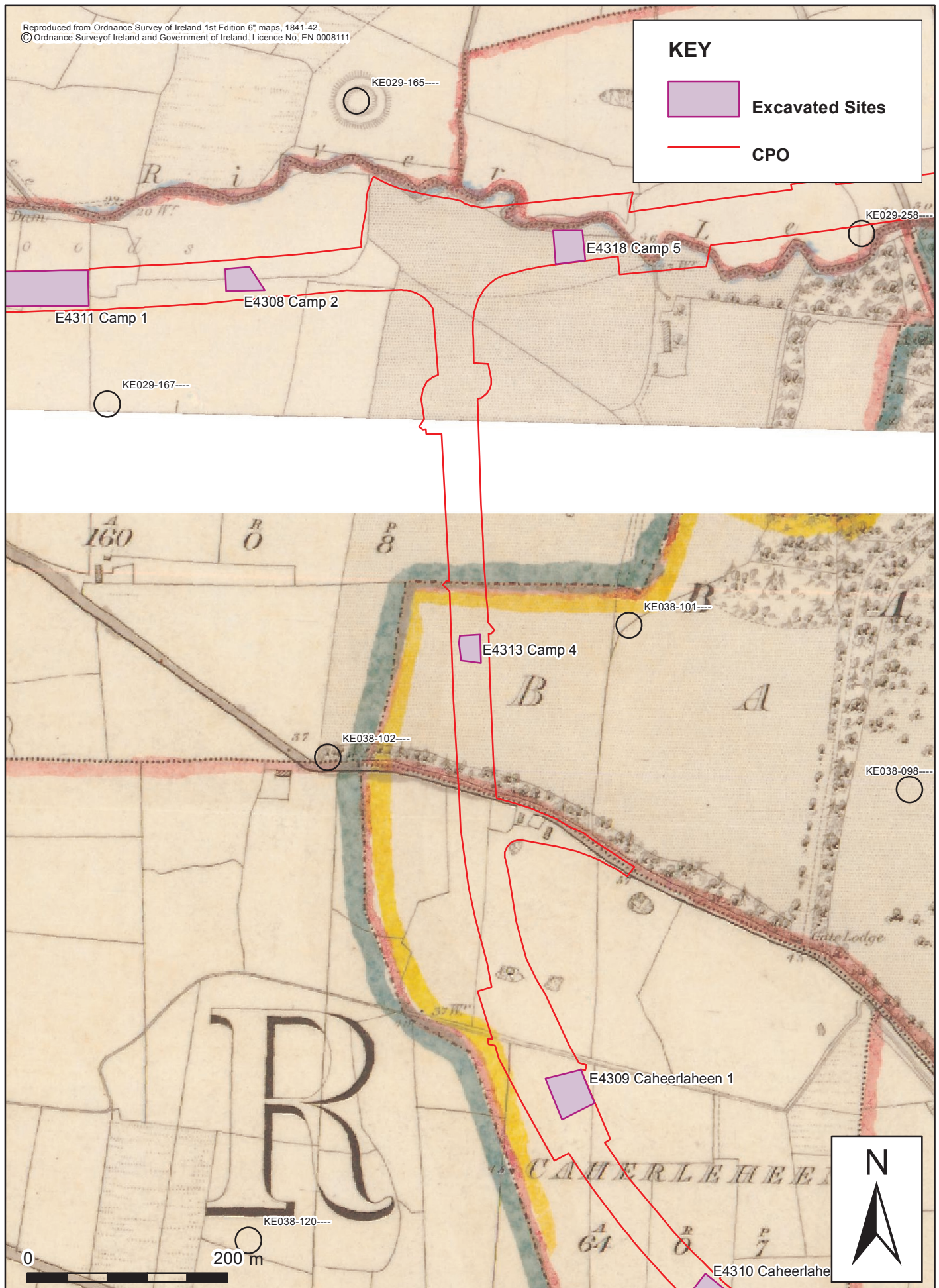
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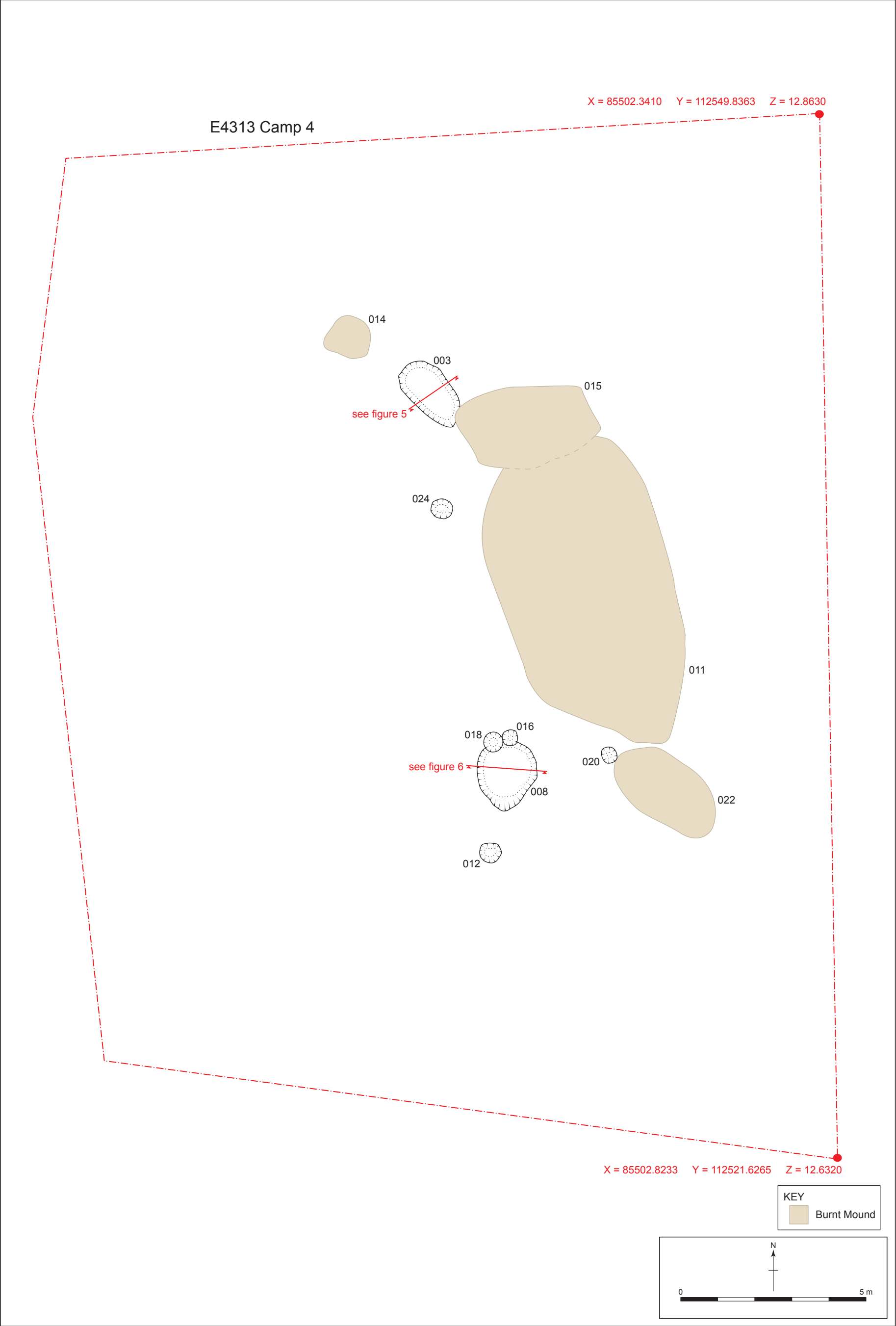
N22 Tralee Bypass/ Tralee to Bealagrellagh: Archaeological Works- Contract 1.
 Camp 4.

Figure 2 - Location of site with RMP sites.



N22 Tralee Bypass/ Tralee to Bealagrellagh: Archaeological Works- Contract 1.
Camp 4.

Figure 3 - Location of site on 1st Edition OS mapping.



N22 Tralee Bypass/Tralee to Bealagrellagh: Archaeological Works - Contract 2:
Camp 4.
Figure 4 - Site layout.

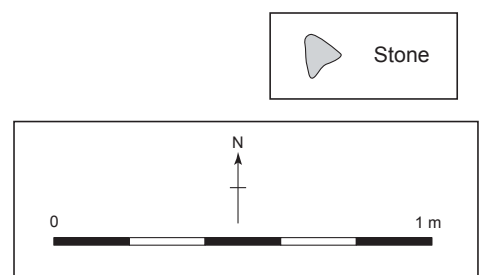
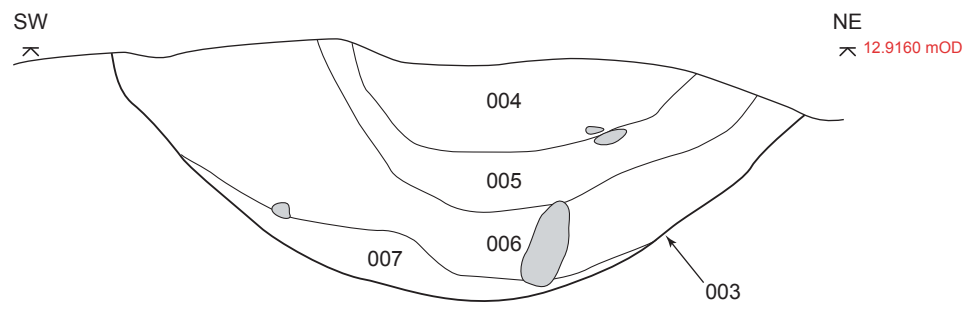


Figure 5 - Southeast-facing section through pit (003) .

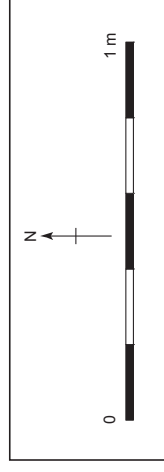
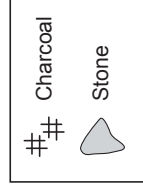
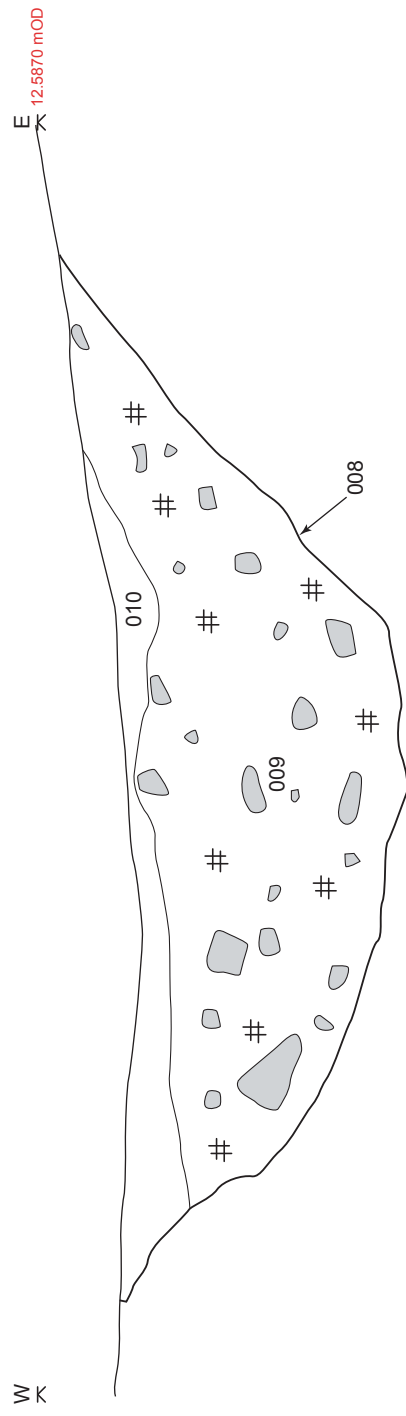


Figure 6 - South facing section of pit/trough (008).



Plate 1 - Mid-excavation view of waste pit (008), facing north.



Plate 2 - Post-excavation view of waste pit (008), facing north.



Plate 3 - Mid-excavation view of pit (012), facing east.



Plate 4 - Post-excavation view of cooking pit (003), facing west.



Plate 5 - Post-excavation view of post-holes (016) and (018), facing north.

Appendix 1 – Context Register for Camp 4

Context no.	Type	Fill of:	Filled by:	Length (m)	Width (m)	Depth (m)	Description	Interpretation
001	Deposit	-	-	-	-	0.60	Mid- to light brown silty clay.	Topsoil
002	Deposit	-	-	-	-	-	Firmly compacted, light orangey clayey sand with pockets of limestone bedrock.	Natural
003	Cut	-	(004)-(007)	2.10	1.0	0.70	Sub-circular feature with sharp to gradual breaks of slope, concave sides and a concave base.	Cut of a possible pot boiler
004	Deposit	(003)	-	1.0	0.60	0.35	Light grey silty sand.	Upper fill of (003)
005	Deposit	(003)	-	1.0	0.76	0.16	Loosely compacted, brownish black silty sandy clay.	Secondary fill of (003)
006	Deposit	(003)	-	1.50	1.0	0.20	Loosely compacted, dark grey silty sand with heat-affected stone inclusions.	Tertiary fill of (003)
007	Deposit	(003)	-	1.0	0.90	0.70	Loosely compacted, brownish black silty sandy clay with heat-affected stone inclusions.	Basal fill of (003)
008	Cut	-	(009) (010)	1.85	1.30	0.35	Oval feature with a sharp break of slope at the top, gradual at the bottom, steeply sloping concave sides and a concave base. Truncated by post-holes (016) and (018).	Cut of a waste pit
009	Deposit	(008)	-	1.85	1.39	0.29	Loosely compacted, black silty clay with very frequent charcoal and heat-affected stone inclusions.	Basal fill of (008)
010	Deposit	(009)	-	1.35	1.10	0.06	Firmly compacted, mid-brown silty clay with very occasional charcoal and stone inclusions.	Upper fill of (008)
011	Deposit	-	-	1.5	0.83	0.22	Irregularly-shaped spread of loosely compacted, mid-brown silty clay.	Spread
012	Cut		(013)	0.50	0.50	0.26	Circular feature with a sharp break of slope at the top and gradual at the bottom, near vertical sides and a slightly concave base.	Cut of a pit
013	Deposit	(012)	-	0.50	0.50	0.26	Loosely compacted, mid-brown silty clay.	Fill of (012)

Context no.	Type	Fill of:	Filled by:	Length (m)	Width (m)	Depth (m)	Description	Interpretation
014	Deposit	-	-	1.20	1.20	0.10	Loosely compacted, black silty sand with inclusions of charcoal and heat-affected stone.	Spread
015	Deposit	-	-	3.60	2.20	0.30	Loosely compacted, black silty sandy with inclusions of heat-affected stone and charcoal.	Spread
016	Cut	-	(017)	0.45	0.40	0.20	Sub-circular feature with a sharp break of slope at the top, imperceptible at the bottom, near vertical sides and a concave base. Truncated pit (008).	Cut of a post-hole
017	Deposit	(016)	-	0.45	0.40	0.20	Loosely compacted, mid-brown silty clay.	Fill of (016)
018	Cut	-	(019)	0.50	0.50	0.27	Circular feature with a sharp break of slope at the top and steeply sloping sides that broke gradual onto a concave base. Truncated pit (008).	Cut of a possible post-hole
019	Deposit	(018)	-	0.50	0.50	0.27	Loosely compacted, mid- to light brown silty clay.	Fill of (018)
020	Cut	-	(021)	0.42	0.40	0.32	Sub-circular feature with a sharp break of slope at the top, imperceptible at the bottom, near vertical sides and a concave base. Truncated spread (022).	Cut of a post-hole
021	Deposit	(020)	-	0.42	0.40	0.32	Loose to moderately compacted mid-greyish brown clayey silt with occasional flecks of charcoal.	Fill of (021)
022	Deposit	(002)	-	3.34	1.84	0.06	Loosely compacted mid- to dark brown clayey silt with inclusions of heat-affected stone. Truncated by post-hole (020).	Spread
023	Void	Void	Void	Void	Void	Void	Void	Void
024	Cut	-	(025)	0.18	0.18	0.33	Circular feature with a sharp break of slope at the top, gradual at the bottom, near vertical sides and a concave base.	Cut of a post-hole
025	Deposit	(024)	-	0.18	0.18	0.33	Loosely compacted, greyish brown silty sandy with inclusions of small-sized pebbles.	Fill of a (024)

Appendix 2 – Sample Registers for Camp 4

Soil Samples

Sample No.	Context No.	Description
001	(007)	Loosely compacted, brownish black silty sandy clay with heat-affected stone inclusions.
002	(014)	Loosely compacted, black silty sand with inclusions of charcoal and heat-affected stone
003	(015)	Loosely compacted, black silty sandy with inclusions of heat-affected stone and charcoal
004	(019)	Loosely compacted, mid- to light brown silty clay
005	(009)	Loosely compacted, black silty clay with very frequent charcoal and heat-affected stone inclusions
006	(021)	Loose to moderately compacted mid-greyish brown clayey silt with occasional flecks of charcoal

Appendix 3 – Drawing Register for Camp 4

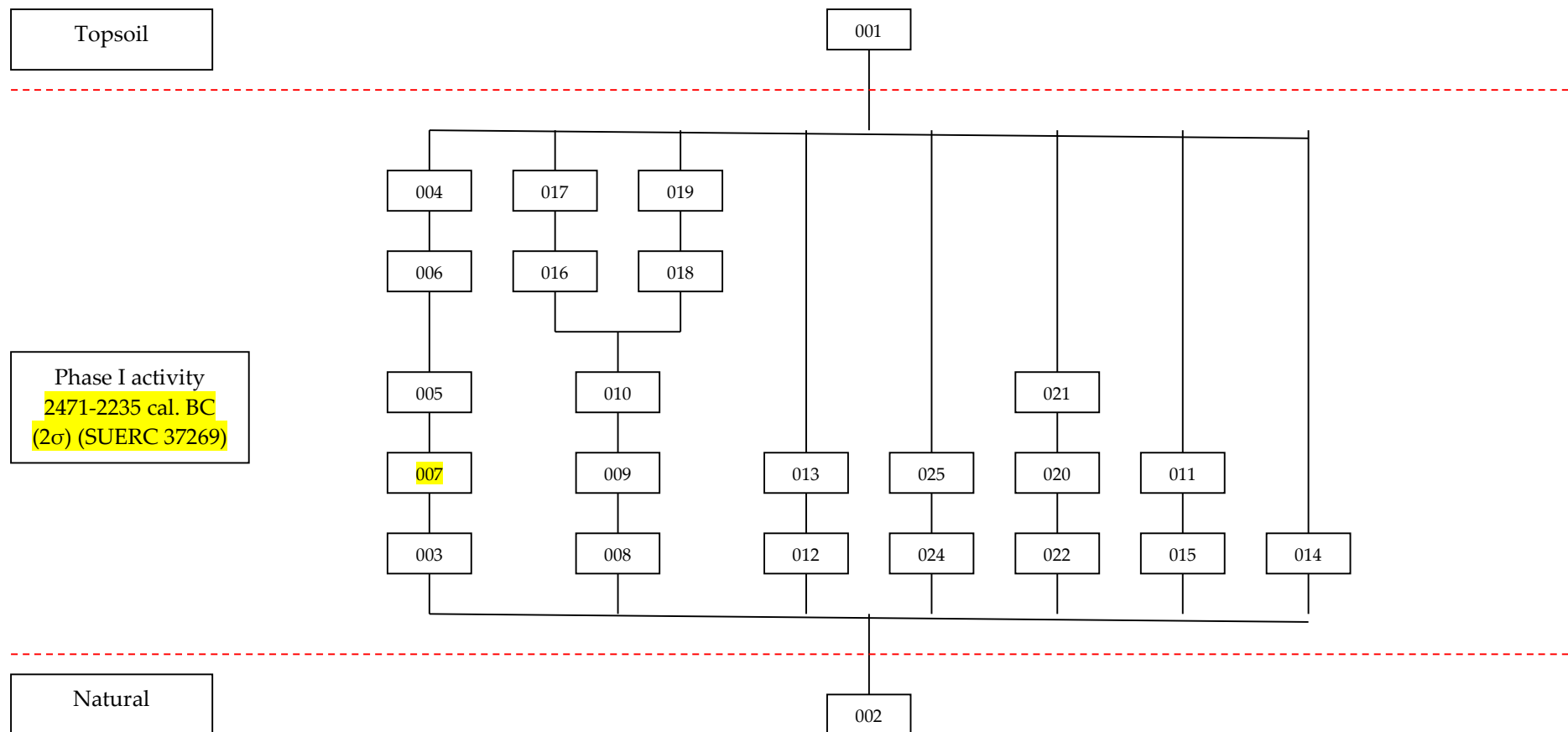
Drawing No.	Sheet No.	Scale	Type	Description
1	1	01:20	Section	South-facing section of possible pot boiler (003)
2	1	01:10	Section	South facing section of waste pit (008)
3	1	01:50	Plan	Pre-excavation plan of Camp 4
4	1	01:20	Section	Mid-excavation of spread (014)
5	1	01:10	Section	South-facing section of post-hole (020)
6	1	01:50	Plan	Post-excavation plan of Camp 4

Appendix 4 – Photo Register for Camp 4

Photo no.	Direction facing	Description
E4313:030	E	Pre-excavation view of northern cluster of features
E4313:031	W	Pre-excavation view of northern cluster of features
E4313:032	N	Pre-excavation view of northern cluster of features
E4313:033	SE	Working shot
E4313:034	E	Pre-excavation view of southern cluster of features
E4313:035	NW	Pre-excavation view of southern cluster of features
E4313:036	S	Pre-excavation view of southern cluster of features
E4313:037	NW	Pre-excavation view of southern cluster of features
E4313:038	NW	Mid-excavation view of cooking pit (003)
E4313:039	N	Mid-excavation view of charcoal pit (008)
E4313:040	N	Mid-excavation view of charcoal pit (008)
E4313:046	W	Post-excavation view of cooking pit (003)
E4313:056	E	Mid-excavation view of (012) using 26cm trowel as scale
E4313:057	E	Mid-excavation view of (012) using 26cm trowel as scale
E4313:058	E	Mid-excavation view of (012) using 26cm trowel as scale
E4313:059	N	Mid-excavation view of (015)
E4313:060	VERT	Post-excavation view of (012)
E4313:061	VERT	Post-excavation view of (012)
E4313:062		Working shot
E4313:063		Working shot
E4313:064		Working shot
E4313:065	N	Mid-excavation view of (015)
E4313:066	N	Mid-excavation view of (015)
E4313:067	N	Mid-excavation view of (008)
E4313:068	S	Mid-excavation view of (008)
E4313:069	N	Mid-excavation view of post-holes (016) and (018) in (008)
E4313:070	N	Mid-excavation view of post-holes (016) and (018) in (008)
E4313:071	E	Post-excavation view of sondage through natural depression
E4313:072	N	Mid-excavation view of (023)
E4313:081	N	Post-excavation view of post-holes (016) and (018)
E4313:082	N	Post-excavation view of post-holes (016) and (018)
E4313:083	N	Post-excavation view of post-holes (016) and (018)
E4313:084	W	Spread (022) and post-hole (020)
E4313:085	W	Spread (022) and post-hole (020)
E4313:086	VERT	Pre-excavation view of post-hole (020)
E4313:088	W	Post-excavation view of (015) with (003) in background
E4313:089	NE	Mid-excavation view of (020)
E4313:090	NE	Mid-excavation view of (020)
E4313:091	S	Mid-excavation view of spread (022)
E4313:092	NE	Mid-excavation view of post-hole (024)
E4313:096	NE	Post-excavation view of post-hole (024)
E4313:097	NE	Post-excavation view of post-hole (020)
E4313:098	N	Overall shot of excavated site
E4313:099	W	Overall shot of excavated site
E4313:100	-	Overall shot of excavated site

E4313:101	-	Overall shot of excavated site
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Appendix 5 – Site Matrix for Camp 4



Appendix 6 – The charred plant remains from Site E4313, Camp 4, Tralee, Co. Kerry.

Abby Mynett and Laura Scott

Headland Archaeology Ltd

Abstract

Samples were assessed from Camp 4, a Late Neolithic to Early Bronze Age site containing a burnt mound and its associated features. The site was situated in the townland of Camp, parish of Ratass, barony of Trughanacmy, located 0.75 km south of Tralee town. The assessment revealed the presence of charcoal fragments and was comparable with other contemporary burnt mound sites excavated on the road scheme.

Introduction

Six environmental samples were retained from the excavation at Camp 4, Tralee, Co. Kerry, a site consisting of possible burnt mound activity, a pot boiler, post-holes and pit features (Clark, 2011). All samples were processed in order to retrieve any palaeoenvironmental material that could be used as radiocarbon dating material as well as site interpretation.

Methodology

Samples of between 2 and 10L were taken on site from archaeologically significant features and deposits. Samples were chosen for processing by the Site Director in order to answer research questions set during excavation. Samples were processed in laboratory conditions using a standard flotation method (cf. Kenward *et al.*, 1980). The floating debris (flot) was collected in a 250 µm sieve and, once dry, scanned using a binocular microscope. Any material remaining in the flotation tank (retent) was wet-sieved through a 1mm mesh and air-dried. This was then sorted by eye and any material of archaeological significance removed. All samples were assessed using a low power binocular microscope with x10 and x40 magnifications. All identifications of weed seeds (used throughout to include fruits, seeds etc) and cereals were confirmed using modern reference material and seed atlases including Cappers *et al* (2006).

Results

The results of the radiocarbon dating are provided in Table 1. The assessment results of the samples are provided in Tables 2 (composition of retents) and 3 (composition of flots). All material was preserved through charring.

Radiocarbon dating

A single radiocarbon date has been attained for site E4313, from hazel (*Corylus avellana*) charcoal taken from Sample 001 of the basal fill (007) of possible pot boiler (003). The charcoal returned a Late Neolithic to Copper Age date range of between 2471-2235 cal. BC (SUERC-37269; 3890±35 BP).

Wood charcoal

Charcoal fragments were the only charred plant remains recovered from the site. Fragments were present in rare to occasional instances and ranged in size from <0.5cm to 3cm. Sample 005, taken from the basal fill (009) of waste pit (008), contained both oak and non-oak species. Sample (002) from burnt spread (014) contained mostly oak charcoal (see Table 2). Flot samples (001, 002 and 005) contained oak and non-oak species and the charcoal from Sample 003 was identified by eye to be mostly oak (see Table 3).

Non-oak charcoal – summarised from a report by Dr Ellen O'Carroll

The non-oak charcoal was dominated by *Corylus acellana* (hazel) which was retrieved from both burnt spread (014) and the fill (007) of a trough. In addition a single fragment of both Pomoideae and *Alnus glutinosa* (alder) was recovered from samples taken from the burnt spread and 2 fragments of Pomoideae were recovered from the fill of the trough (O'Carroll 2013).

Discussion

This site is one of a number of Late Neolithic/ Early Bronze Age sites with burnt mounds and their associated features, encountered along the road scheme (e.g. Hession, 2011a; Hession 2011b). Charcoal was the only palaeoenvironmental material recovered from the site. Oak and non-oak charcoal was present in rare and occasional quantities in all the samples taken from various features which included; pit deposits (007 and 009) taken from the basal fill of a feature interpreted as a pot boiler (003), and the fill of waste pit (008), the fill of post-hole (021) and deposit 014. Oak charcoal was the only taxon observed within spread (015). No charcoal was encountered within the fill (021) of post-hole (020).

The presence of both oak and non-oak charcoal tentatively suggests that a variety of taxa were selected for use as fuel wood. However, this can only be speculated without identifying the non-oak charcoal. Like the samples recovered from Ballindooganig 1 (Hession, 2011a), the small quantity of wood charcoal present at this site is somewhat surprising given the function and use of burnt mounds. However, the paucity of charcoal may suggest that the charcoal has been gradually eroded out through natural (erosion) and anthropogenic activity (e.g. ploughing) over time or that the mound was only in use for a short period.

Conclusions

- The site dates to the Late Neolithic/Early Bronze Age period.
- Charcoal was the only palaeoenvironmental material recovered from the samples.
- Charcoal fragments were observed to be oak and non-oak species, which suggests they were utilising a range of fuel types for burning.

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Table 1: E4313: Retent Sample Results

E-Number	Lab code	Sample ID	Material	$\sigma^{13}C$	Radiocarbon age BP	Calibrated Age Ranges (1 σ)	Relative probability	Calibrated Age Ranges (2 σ)	Relative probability
E4313	SUERC-37269	Context 7, Sample 1	Charcoal- <i>Corylus avellana</i>	-25.2‰	3890±35	2461-2341 cal BC	68.2%	2471-2285 cal BC 2248-2235 cal BC	93.8% 1.6%

Table 2: E4313: Retent Sample Results

Context Number	Sample Number	Feature	Sample Vol (l)		Charcoal quantity	Charcoal max size (cm)	Material available for AMS	Comments
Spread deposits								
014	2	spread deposit			++	3	Charcoal	Oak and non-oak charcoal
015	3	spread deposit			++	1.5	Charcoal	Mostly oak charcoal
Pit deposits								
007	1	basal fill of pot boiler (003)			++	1.5	Charcoal	Oak and non-oak charcoal
009	5	Fill of waste pit (008)			++	1.5	Charcoal	Oak and non-oak charcoal
Post-hole deposits								
019	4	fill of post-hole (018)					-	Flot is archaeologically sterile
021	6	fill of post-hole (020)			+	0.5	-	
Key: + = rare, ++ = occasional, +++ = common and ++++ = abundant NB charcoal over 1cm is suitable for identification and AMS dating								

Table 3: E4313: Flotation Sample Results

Context Number	Sample Number	Feature	Total flot Vol (ml)	Charcoal Quantity	Charcoal Max size (cm)	Material available for AMS	Comments
Spread deposits							
014	2	spread deposit	4	+	<0.5	-	Oak charcoal
015	3	spread deposit	2	+	<0.5	-	
Pit deposits							
007	1	basal fill of pot boiler (003)	2			-	Archaeologically sterile
009	5	Fill of waste pit (008)	10	++	1	Charcoal +	Oak and non-oak charcoal
Post-hole deposits							
019	4	fill of post-hole (018)	2			-	Archaeologically sterile
021	6	fill of post-hole (020)	2	+	<0.5	-	
Key: + = rare, ++ = occasional, +++ = common and ++++ = abundant NB charcoal over 1cm is suitable for identification and AMS dating							

Appendix 7 – Radiocarbon dates and certificates

E-Number	Lab code	Sample ID	Material	$\delta^{13}\text{C}$	Radiocarbon age BP	Calibrated Age Ranges (1 σ)	Relative probability	Calibrated Age Ranges (2 σ)	Relative probability
E4313	SUERC-37269	Context 7, Sample 1	Charcoal- <i>Corylus avellana</i>	-25.2‰	3890±35	2461-2341 cal BC	68.2%	2471-2285 cal BC 2248-2235 cal BC	93.8% 1.6%



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RADIOCARBON DATING CERTIFICATE

05 December 2011

Laboratory Code SUERC-37269 (GU25666)

Submitter Trish Long Hourihan
Headland Archaeology (Ireland) Ltd
Unit 1, Wallingstown Business Park
Little Island
County Cork

Site Reference Camp 4 (E4313)
Context Reference 7
Sample Reference 1

Material Charcoal : *Corylus avellana* (0.6g)

$\delta^{13}\text{C}$ relative to VPDB -25.2 ‰

Radiocarbon Age BP 3890 \pm 35

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :-

Date :-

Checked and signed off by :-

Date :-



Calibration Plot

