



**N76 Callan Road Realignment, Co. Kilkenny
Archaeological Consultancy Services**

15E0568, Parkmore 1

Stage (iv) Final Archaeological Excavation Report

for

Kilkenny County Council

**Director
Graham Hull**

**Author
Graham Hull
TVAS Ireland Ltd**

J15/17

November 2016

ITM 648045 651425

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(A054)

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**An Roinn Iompair
Turasóireachta agus Spóirt**
Department of Transport, Tourism and Sport

November 2016

Summary

Scheme name: N76 Callan Road Realignment, Co. Kilkenny

Site name: Parkmore 1, Co. Kilkenny

Licence number: 15E0568

Townland: Parkmore

Parish: Castleinch or Inchyolaghan

Barony: Shillelogher

County: Kilkenny

ITM: 648045 651425

OS 6" Sheet No: Co. Kilkenny Sheet 23

Chainage: 3970

Client: Kilkenny County Council

Naturally occurring geology: The topsoil is a mid orangish brown clayey silt with a depth of 0.15 m. It overlies a mid orange clayey silt ploughsoil that is 0.15 m thick. The natural geology is yellow silty clay with stone inclusions.

TVAS Ireland Job No: J15/17

Licensed Director: Graham Hull

Report author: Graham Hull

Site activity: Excavation

Site area: 105 m²

Date of fieldwork: 31st March 2016

Date of report: November 2016

Summary of results: Excavation revealed three pits. A charred barley grain from one of the pits produced a radiocarbon date indicating activity in the Late Bronze Age

Monuments identified: Late Bronze Age pits

Location and reference of archive: The primary records (written, drawn and photographic) are currently held at TVAS Ireland Ltd, Ahish, Ballinruan, Crusheen, Co. Clare and will be registered and deposited with the National Monuments Service facility in Swords, Co. Dublin.

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Report edited/checked by: Kate Taylor✓November 2016

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**M11 Gorey to Enniscorthy Scheme
15E0568, Parkmore 1, Co. Kilkenny
Stage (iv) Final Archaeological Excavation Report**

Graham Hull

Abstract

Parkmore 1, 15E0568, was located on the proposed N76 Callan Road Realignment, Co. Kilkenny (ITM 648045 651425). The site was revealed during test trenching in 2015 and was excavated under the direction of Graham Hull of TVAS (Ireland) Ltd in December 2015. The site encompassed an area of 105 m² and was situated in a ploughed field. The excavation revealed three pits. Charred barley from one of the pits returned a radiocarbon date in the 10th – 9th centuries BC, placing the activity in the Late Bronze Age. Charred plant remains retrieved from soil samples taken from the pits evidenced cooking or food preparation in a local landscape of mixed semi-natural woodland. A possible rubbing or grinding stone was recovered from one of the pits. The archaeological deposits were fully excavated within the excavation area. The excavated area was backfilled and reinstated.

Introduction

This report documents the final results of the archaeological excavation of three pits of likely Late Bronze Age date at Parkmore 1 (15E0568), on the route of the N76 Callan Road Realignment, Co. Kilkenny (ITM 648045 651425) (Fig. 1). The excavation described here forms part of the N76 Callan Road Realignment Archaeological Consultancy Services Contract.

The National Monuments Act 1930 (as amended) provides the legislative framework within which archaeological excavation can take place and the following government publications set out many of the procedures relating to planning/development and archaeology:

Framework and Principles for the Protection of the Archaeological Heritage (DAHGI 1999a)

Policy and Guidelines on Archaeological Excavation (DAHGI 1999b)

Code of Practice between the National Roads Authority and the Minister for Arts, Heritage, Gaeltacht and the Islands (NRA/MAHGI 2000)

The archaeological work was carried under archaeological licence.

Project background

The N76 is a National Secondary route linking Kilkenny to Clonmel via the town of Callan, which was bypassed in the 1990s. Kilkenny County Council proposes to realign part of this road between the urban area of Kilkenny City and the townland of Brownstown, Co. Kilkenny (Figs 1-2).

In relation to traffic calming measures, Kilkenny County Council wishes to develop proposals for providing traffic calming along the northern section of the route in order to reduce vehicle speed and improve the facilities for vulnerable road users. This can be achieved by reducing the road width, providing footpath/cycle facilities on the eastern side of the N76 and installing route lighting where required. Improvements along the southern portion of the route will entail a circa 3.5 km realignment and replacing the existing Tinnypark crossroads (junction between N76 and local road L2630) in Derdimus with a staggered crossroads. This section of the route has a poor collision history due to its substandard alignment and poor forward visibility as well as a high volume of traffic.

An attenuation pond is to be constructed within a greenfield location to the south of the Breagh River in Goslingstown and an underpass is to be built crossing the N76 between Brownstown and Rathaleek townlands.

Under the Planning and Development Regulations, a Part 8 procedure was required for the development. The Part 8 Planning was adopted by Kilkenny County Council Resolution in April 2007.

The archaeological component of this project was funded by Kilkenny County Council.

Location, topography and geology

Archaeological site 15E0568, Parkmore 1 was located at ITM 648045 651425 in Parkmore townland, parish of Castleinch or Inchyolaghan, barony of Shillelogher, Co. Kilkenny (Figs 1 and 2).

The section of the scheme for which traffic calming measures are proposed commences in the urban area of Kilkenny City, 300 m south-west of the Callan Road roundabout on the Kilkenny Ring Road. It continues in a south-westerly fashion for 1.2 km to the junction with the local road LS6695. The proposed realignment section commences at the latter junction with the local road and extends for a little over three kilometres to the south-west, terminating in the townland of Brownstown.

The proposed scheme will traverse the townlands of Wetland, Margaret's Fields, Archersleas, Shellumsrath, Derdimus, Goslingstown, Parkmore, Raheenapisha, Rathaleek and Brownstown (ITM 647772 651112 to 649185 653984) (Figs 1-2).

The area of the archaeological services contract lies within the Lands Made Available (LMA) of the proposed scheme as contained within the area to be acquired by Kilkenny County Council. The total area subject to Compulsory Purchase Order (CPO) for the N76 Callan Road realignment project is approximately 11.75 hectares of which the Lands Made Available for the present archaeological works is approximately 6.38 hectares.

The land on which the proposed realignment will be constructed is currently used for agricultural purposes. Pasture is the dominant land use; however, occasional tillage fields are found in Parkmore, Goslingstown and Archersleas townlands.

Upper Carboniferous Limestone dominates the bedrock geology of the scheme location area and the subsoil forming a layer over this solid geology consists of Diamictons derived from Lower Carboniferous Limestone (Kilkenny Co. Co. 2014). Specifically in this area the bedrock comprises shaly fossiliferous and oolitic limestone of the Durrow Formation (www.gsi.ie). The scheme location area contains very fertile soils and has been named the 'golden vein' of the county. Grey Brown Podzolic soils derived from calcareous glacial drift deposits dominate the area with a great depth of coverage. They provide some of the best soils in Ireland, which are excellent for grassland and also for the production of a wide range of vegetable crops (Kilkenny Co. Co. 2014).

The area of works lies between approximately 68 m and 83 m above Ordnance Datum (OD) and at Parkmore 1 the archaeological deposits lay at approximately 83 m OD. The land use at Parkmore 1 was ploughed tillage and the observed natural geology was glacial till (yellow silty clay with stone inclusions).

Archaeological and historical background

A search of documentary and cartographic sources was made. Information was gathered from, amongst other sources, the Sites and Monuments Record (SMR), Record of Monuments and Places (RMP) files, The National Monument Service website www.archaeology.ie, the *Excavations* database

and publications (www.excavations.ie and Bennett 1987-2012) and from the Architectural, Archaeological and Cultural Heritage Report for the scheme (Kelly 2015).

The Irish name for Parkmore is *An Pháirc Mhór* translated by O'Kelly (1985) as 'the big field' or 'the big park'.

Cartographic sources

The 1st edition OS map of 1839 (Fig. 3) shows the Kilkenny to Callan Road orientated from south-west to north-east. There is a minor road leading from this and orientated from north to south. There is a cluster of houses and a School House adjacent to the junction of the Callan Road and the minor road. The location of the archaeological site is within a large field.

The 2nd edition OS map of 1900 (Fig. 4) shows only some minor changes from the earlier map with the removal of some field boundaries. There are fewer houses shown in the settlement cluster at the junction of the Callan Road and the minor road.

The 3rd edition OS map of 1924 (with overlying 1996 SMR) (Fig. 5) shows very little change from the earlier maps

Record of Monuments and Places / Sites and Monuments Record

There are nineteen archaeological sites listed in the Sites and Monuments Record in the immediate vicinity of the road scheme (www.archaeology.ie; Fig. 5; Table 1).

Table 1: Record of Monuments within 2km of road scheme

Townland	Ref. No	Site Type	Date
Castleblunden	KK019-031	Enclosure	Possible medieval
Castleblunden	KK010-032	17 th c house and enclosure	17 th c and possible medieval
Drakeland Middle	KK019-033	Enclosure	Possible medieval
Castleinch or Inchyolaghan	KK019-038	Horizontal water mill	Possible medieval
Goslingstown	KK019-039	Castle - Tower House	Medieval
Clonmoran	KK019-084	Dwelling	Possible post-medieval
Castleblunden	KK019-107	Cremated remains	Prehistoric
Castleinch or Inchyolaghan	KK019-108	Fulacht fia	Prehistoric
Reviewfields	KK019-138	Enclosure	Possible medieval
Castleinch or Inchyolaghan	KK023-002	Castle	Medieval
Castleinch or Inchyolaghan	KK023-003	Church, graveyard, wall monument, effigial tomb	Medieval and post-medieval
Parkmore	KK023-004	Enclosure	Possible medieval
Raheenapisha	KK023-005	Enclosure	Possible medieval
Rathaleek	KK023-006	Enclosure	Possible medieval
Raheenapisha	KK023-007	Moated site	Possible medieval
Knocklegan	KK023-008	Standing stone	Prehistoric
Kilmog or Racecourse	KK023-009	Church, holy well, holy tree/bush, graveyard, ballaun stone	Medieval and post-medieval
Kilmog or Racecourse	KK023-010	Ringfort	Medieval
Inchyolaghan (Shillelogher By.)	KK023-035	Enclosure	Possible medieval

While none of the recorded monuments listed above were impacted directly by the proposed scheme, two are located within close proximity to the proposed scheme, namely enclosures in Parkmore (KK023-004----) and Raheenapisha townlands (KK023-005---). The zone of archaeological potential surrounding these monuments was impacted.

The Parkmore enclosure (KK023-004----) is depicted on both First and Second Edition Ordnance Survey maps as a circular enclosure measuring approximately 40-50 m in diameter. During a field survey carried out in April 2007 a low bank was noted demarcating the site of this enclosure. As this monument is located approximately 185 m from the proposed road realignment scheme, the area between chainages 2940 and 3140 was highlighted as an area of archaeological potential (Kelly 2015, 12-13).

The Raheenapisha enclosure (KK023-005---) is not depicted on either the First or Second Edition of the Ordnance Survey maps. However, it has been identified from an aerial photograph (DoEHLG, Aerial Photograph CUCAP: AV: 77, 1968) as a single cropmark. A field survey carried out in April 2007 recorded no visible remains of the enclosure site; however, a low plateau was noted at this location with good panoramic views. Additionally, a kink in the existing N76 road and a low plateau with good panoramic views was noted approximately 200 m from the monument site between chainages 3460 and 3720. These features were concluded to be indicative of potential settlement activity and the location was therefore highlighted as an area of archaeological potential. There will be a direct impact on the zone of archaeological potential surrounding enclosure KK023-005---- between chainages 3140 and 3460 and 3460 and 3620 (Kelly 2015, 12).

The Excavations database

The results of archaeological investigations in Ireland are published in summary form in *Excavations* (Bennett 1987-2012) and online at www.excavations.ie. A search of the database was made for the townlands of Wetland, Margaret's Fields, Archersleas, Shellumsrath, Derdimus, Goslingstown, Parkmore, Raheenapisha, Rathaleek and Brownstown.

The search returned two entries within a 1 km radius from the proposed road realignment scheme. The first of the entries refers to the archaeological field work carried out in the townland of Wetlands in 2004 (Rogers 2004; 04E0652). Moore Ltd conducted archaeological test trenching in advance of residential development. Two features of archaeological potential were noted within the site. Both appeared on the ground as gentle dips within an arable field and both appeared on the First Edition OS map as depressions. The investigation concluded that both features were former gravel pits, one of which was used as a rubbish tip in the mid-20th century.

The second entry refers to archaeological monitoring of a Bord Gáis Éireann gas pipeline from Baunlusk to Ballyconra townlands, Co. Kilkenny, carried out by Margaret Gowen and Co. Ltd. between July and September 1999 under licence number 99E0388. In the process, one site was discovered in Parkmore townland, Parkmore 1, a *fulacht fia* consisting of a burnt mound over 12 m long and 6 m wide, possibly orientated east-west, running into the south and west baulks. The site is in the northern corner of the field. Five individual isolated pit or post-hole features were also revealed, which represent either outlying features of further archaeological sites or isolated activity. The site was backfilled, fenced off and avoided by development (ITM 648002 651728, 77.41 m OD) (Stevens 1999). According to the grid reference, this site lies in the field approximately 200 m to the north-west of the road realignment scheme.

Archaeological work undertaken as part of the current scheme

A geophysical survey was undertaken at two locations (Areas 1 and 2) within the scheme which had been identified as being of particular archaeological potential due to their proximity to known monuments and the banks of a river (Leigh 2007).

In summary, the survey adjacent to the Breaghagh River (Area 1) identified isolated responses of archaeological strength and several possible ditched boundary divisions or field drains. No clear archaeological pattern was evident but plough damaged archaeological remains were thought to be represented.

The area adjacent to enclosure KK023-005 (Area 2), covered several fields and was therefore subdivided (Fig. 6). Survey within areas 2A and 2B revealed a short ditch-type response, possibly representing a field drain or boundary, and a curvilinear response of potential interest. The curvilinear response was thought to represent a significant boundary division. The survey responses in Areas 2C and 2D clearly identified the remains of the enclosure site (KK023:005), consisting of an inner D-shaped ditched enclosure, with responses suggestive of habitation features. There is a second, outer ditch which shadows the inner enclosure, and forms an annex to the north, meeting a further ditched feature to the north-east. The responses suggest habitation activity, with areas of burning and the remains of burnt features such as hearths and possible kilns or furnaces. Weak responses in the west were thought to represent the ephemeral remains of an associated ditched feature, possibly another annex of the site, although this is speculative. South-east of the enclosure site, in Areas 2E and 2F, parallel linear trends were considered indicative of ploughing activity and ridge and furrow cultivation may be represented here. In Area 2F a curvilinear response and an area of increased magnetic response were considered to be of interest, perhaps representing a ditched archaeological feature or a spread of burnt material. Archaeological interpretation was unclear as the results were confused by magnetic disturbance from the existing N76 road.

The geophysical survey covered a wider area than is now included in the road realignment project. The main features associated with enclosure KK023-005 will be avoided by the development, however outlying features lay within the test trenching area and the potential features adjacent to the river were also targeted by the test trenches.

Archaeological test trenching was carried out in October-November 2015 under licence 15E0464 (Hull 2015a). The test trenches were excavated by 8 tonne and 13 tonne tracked excavators and a JCB-type machine and trenches were typically 1.8 m wide. On completion of fieldwork the total area investigated was 8,063.05 m², a 12.6% sample of the 63,773 m² LMA.

In addition to Parkmore 1, four other sites were found during the testing:

Goslingstown 1, consisted of a single undated pit. This feature was resolved in Stage (i) testing 15E0464 (Hull 2015a).

Raheenapisha 1, 15E0567 (Hull 2016a) consisted of a medieval kiln and a pit. A medieval field boundary ditch that pre-dated the kiln was also excavated.

Raheenapisha 2, 15E0569 (Hull 2016b) consisted of three Bronze Age roundhouses, a curvilinear ditch, pits and stake-holes.

Raheenapisha 3, 15E0578 (Hull 2016c) consisted of a single undated pit.

Earlier test excavations

Parkmore 1, 15E0568 was identified during centre-line and offset testing of the road route (Hull 2015a).

Two oval pits were found during test trenching and an area measuring 7.8 m by 8.0 m was opened around them. One of the pits measured 1.00 m by 0.70 m and a hand-dug slot revealed that the pit was 0.30 m deep with steeply concave sides. The second pit measured 0.98 m by 0.70 m and was 0.25 m deep with a steeply concave profile. The pits were seen to be filled with mid grey silty clay with occasional charcoal and possibly some small pieces of burnt bone.

When topsoil was fully stripped from the site during Stage (ii) cleaning a third small pit was found.

Excavation aims and methodology

The aims of the excavation were to:

- 1) Preserve by record all archaeological deposits and features within the excavation area
- 2) Produce a high quality report of the findings

The fieldwork took place on 31st March 2016 and was directed by Graham Hull, supervised by Kate Taylor and aided by one assistant.

The excavation area was square, and measured approximately 10 m by 10 m (105 m²). Topsoil was removed by an 8 tonne tracked mechanical excavator fitted with 6-foot (1.8 m) toothless grading bucket and operated under direct and continuous archaeological supervision. The spoil was visually scanned for artefacts.

The archaeological features were excavated by hand.

A full written, drawn and photographic record was made according to the TVAS Ireland Field Recording Manual (First Edition 2003). The site was tied into the National Grid using a Global Positioning System (GPS) unit.

Excavation results (Figs 6-7, Plates 1-4)

The excavation has revealed evidence of three pits, one of which was dated to the Late Bronze Age. The features are likely to belong to the same phase of activity. All features and contexts are listed in Appendix 1.

The topsoil (50) was typically 0.15 m thick and was a mid orangish brown clayey silt. Beneath this was a mid orange clayey silt ploughsoil (52) that was 0.15 m thick. The natural geology (51) was yellow silty clay with stone (glacial till).

Phase 1 – Late Bronze Age

Pit 1 was oval in plan, measured 0.96 m by 0.78 m and was 0.29 m deep. The sides were near vertical and the base was flattish. The primary fill (54) was 0.22 m thick and was a fairly firm mixed mid brown to yellow clayey silt with infrequent charcoal and occasional stones. The secondary fill (53) was 0.22 m thick and was a fairly soft mid-greyish brown clayey silt with occasional charcoal fragments and some occasional flecks of burnt clay. The charcoal from the secondary fill has been identified as low quantities of oak, cherry, hazel and pomaceous fruitwood. A small quantity of charred barley grains is indicative of cooking or food preparation nearby. Finds from the upper fill are a small piece of limestone containing a fossil, that may have served as a rubbing or grinding tool (15E0568:53:2) and a small amount of burnt mammal bone, unidentifiable to species (15E0568:53:2). A radiocarbon determination (UBA-32411, 2723 BP±34) from a charred grain of barley from fill 53 gave a date of 929-808 cal. BC, in the late 10th or 9th centuries BC.

Pit 2 lay approximately 1.20 m north of pit 1. Pit 2 was oval in plan and measured 1.00 m by 0.67 m. The pit was 0.30 m deep with gradually inclined sides rounding to a concave base. Its fill (56) was loosely compacted mid greyish-brown clayey silt with some medium-sized stones and occasional charcoal inclusions. The charcoal has been identified as small quantities of oak, cherry, hazel and pomaceous fruitwood. Unidentifiable burnt mammal bone fragments were recovered from this deposit (15E0568:56:1).

Pit 3 lay approximately 2.75 m east of pit 1. Pit 3 was oval in plan, measured 0.29 m by 0.26 m and was 0.16 m deep with steep sides and a concave base. Its fill (55) was loosely compacted mid brown clayey silt with some charcoal and small stones. It is possible that this feature served as a post-hole.

Finds

Finds from the site are a single stone and some burnt bone fragments. A catalogue of finds is given in Appendix 2.

Stone by Sol Mallia-Guest

Introduction

A single modified pebble was examined.

Methodology

A macroscopic, techno-typological analysis was carried out following categories developed by Inizan et al. (1999) with further contextual background on Irish lithic technology provided by Woodman et al. (2006). The artefact was visually examined with the aid of an 8x hand lens, recorded and catalogued using Microsoft Excel 2011. The find presented for study was subject to analysis with no minimum size criterion applied. The basic variables recorded include: overall metric attributes (length, width and thickness); a macroscopic raw material id; overall artefact condition and fragmentation to determine the degree of post-depositional damage. Additional evidence of manufacture through abrasion, polish or impact present is recorded and discussed along with any evidence of wearing and use motion. Categorisation and overall description of the coarse stone tool follows basic parameters presented by Adams (2002).

Results

Find 15E0568:53:1 was recovered from the secondary fill of a large oval pit (pit 1). It is a rolled sub-circular dark grey, possibly mudstone or dark limestone fossil-bearing pebble. It shows a plano-convex profile and cross-section and measures 51.1 mm in length by 50.8 mm in width by 17.8 mm in thickness, weighing 72.06 g. On its flat underside, a concavity is present in which the spiral-shaped fossil negative imprint, likely that of a mollusc of the Ammonoidea subclass, is still visible. This concavity is however heavily weathered and oxidised.

On this flattish worn surface, weathered impact scars are visible around the perimeter. Bundles of fine short striations running lengthwise are present on one particular side of the concavity, but almost absent on the opposing end, which is battered instead. This striation pattern indicates a localised reciprocal movement on the distal end of the pebble, while the battering may have originated during light pounding.

On its convex surface, use evidence is absent and the striations visible are random and multidirectional following no particular pattern. A single worn large scar is present on one end where also a band of brownish red discolouration is visible. Interestingly, the location of this scar corresponds, on the flatter underside, with the use-related striations described above and could well have served as a prehension feature during an activity that required some degree of pressure (e.g. grinding/rubbing?)

It is unclear if the battering observed around the perimeter was also intended to facilitate gripping of the pebble as it was used as a processing tool or if it resulted after an attempt to intentionally remove the encased fossil at some point and rework or use the concavity itself (e.g. as a small mortar, container?)

Discussion

The modified fossil-bearing pebble recovered at Parkmore 1, Co. Kilkenny (15E0568) was most likely collected locally. It derives from a secondary, possibly fluvial deposit of eroded local bedrock, which consists of dark and pale grey limestone as well as calcareous and argilleaceous shale-like lithologies (GSI 2016). The pebble appears to have been used in some kind of processing activity involving localised pressure and reciprocal movement such as that involved in grinding. In addition to this clear pattern of use, both the presence of a fossil imprint and its shape – which resembles that of a cup-mark – should be taken into consideration within the context of Bronze Age ritual practices and, hence, explored in terms of symbolically laden deposits. Unfortunately, the importance of fossils in the Irish Bronze Age archaeological record is a poorly understood aspect. However, the deposition of small, portable cup-marked stones is a common practice in Bronze Age funerary contexts and may refer to both a functional dimension of these items as well as their role in commemorative performance, while carving and modifying them (see O'Connor 2009).

Animal bone by Natasia Duhau

Introduction

Two small samples of bone (15E0568:53:2 and 15E0568:56:1) were submitted for analysis. The material was retrieved, along with some charcoal, from the fills of two oval pits. One pit was dated to the Late Bronze Age and the bone is considered non-intrusive and contemporary with this time period.

Quantification

The samples in total were made up of 29 bone fragments equal to, or under, ten millimetres in size and collectively weighing 2.6 grammes.

Results

This bone assemblage is highly fragmented and calcined, a result of being subjected to high heat from burning. Preservation being poor, none of the fragments could be identified to species or element (Table 2). All bone is mammalian in origin.

Table 2: Animal bone results

Sample	Find	Cut	Deposit	Frag. #	Wt (g)	Size (mm)	Burnt Y/N	Identifiable Y/N
1	15E0568:53:2	1	53	16	1.8	≤ 10	Y	N
2	15E0568:56:1	2	56	13	0.8	≤ 10	Y	N

Recommendation

Because the material is fragmentary, small in quantity, and unable to be identified to species or element, it is not recommended for retention.

Samples

Three samples were taken during the excavation – one from each of the pits. The samples were floated and wet sieved through a 300 micron mesh and through a 2 mm mesh in order to recover charred plant material, bone and small artefacts. Charred plant remains and burnt bone were recovered. A catalogue of samples is given as Appendix 3.

Archaeobotanical analysis by Susan Lyons

Scope of plant macrofossil assessment

Two samples representing the fills of pit 1 and pit 2 were selected for the identification and analyses of plant macrofossils and archaeological wood charcoal. The pits were seen to be filled with mid grey silty clay with occasional charcoal and possibly some small pieces of burnt bone. These samples were submitted to Susan Lyons for analysis to determine the archaeological significance of the assemblage and to select suitable carbonised remains for the purpose of radiocarbon dating. Charred barley grains were selected for radiocarbon dating from pit 1 (deposit 53).

Archaeobotanical analysis is an important component of archaeological excavation and post-excavation works. These remains provide valuable information about explicit activities carried out at a site, including the function and nature of certain features, arable agriculture practices, site economy, diet, food processing and how local natural resources were exploited (Murphy and Whitehouse 2007). Cereal grains, nutshells, seeds and fruit-stones represent the most commonly preserved non-wood plant macro-remains. Delicate chaff from arable crops is also frequently recovered. Other plant components can sometimes be preserved, including cereal bran, leaves, bud-scales and thorns. Vegetative tissues (parenchyma) from roots and tubers, which can be used in a range of activities, may also be recovered.

Woodland resources, including wood and charcoal, were of enormous importance in the past. Communities during both the prehistoric and historic periods were dependant on woodland resources for everyday living, including construction materials for buildings, manufacture of most implements, firewood and fuel (Stuijts 2007; O'Donnell 2011; OCarroll 2012). Analysis of wood and charcoal remains can provide functional evidence for various activities at a site, as well as insights into cultural, ecological and economic variables. Certain wood species may have been selected for particular uses, such as structural posts, firewood, pyre material fuel and wattle.

Charred remains also provide suitable material for the purpose of obtaining radiocarbon dates (C14 dating). In this case, short-living plant species, such as cereal grain, nutshell and young roundwoods are selected for dating.

A charred barley grain recovered from pit 1 returned a Late Bronze Age date.

Methodology

Sample processing

Bulk soil samples were processed by TVAS (Ireland) Ltd, according to recognised standards and guidelines (IAI 2006; Pearsall 2000). A system of floatation was used, where each sample is soaked in water and agitated by hand to loosen any charred remains from the soil particles which allows for this material to be separated and float to the surface. This floating material (flot) is poured off and trapped in a sieve (mesh size 250 µm) and, once dried, scanned for plant remains using a binocular microscope. The larger residual material left behind (retent) is washed through a 1 mm, 2 mm and 5 mm mesh or sieve and air-dried. Once dry, each retent is sorted by eye and any material of archaeological significance removed.

Plant macrofossil analysis

All flot samples were viewed under a low powered binocular microscope (magnification x0.8 to x5). Where preservation allowed, the charred plant macro-remains were identified to species level and quantified. Plant species are made using reference to the author's seed collection and standard seed atlases and references; *Flora of the British Isles* (Clapham et al. 1957), *Zadenatlas der Nederlandsche*

Flora (Beijerinck 1976), *New Flora of the British Isles 2nd Edition* (Stace 1997) and *Digital Seed Atlas of the Netherlands* (Cappers et al. 2006).

Charcoal analysis

Due to the potential for a very high number of charcoal fragments from the samples, a representative sub-sample was randomly chosen from larger samples for identification and assessment. For the purpose of this project, a sub-sample of 50 fragments was chosen from large samples, which is in line with the standard sub-sampling strategy for archaeological charcoal by the National Roads Authority *Palaeo-Environmental Guidelines* (McClatchie et al. 2014) and current practising archaeological specialists (Keepax 1988; OCarroll 2012).

Wood charcoal identifications were undertaken in accordance with Section 25 of the National Monuments Act, 1930, as amended by Section 20 of the National Monuments Amendment Act 1994, to alter an archaeological object. The wood species identifications were conducted under a binocular microscope using incident light and viewed at magnifications of 100x, 200x and 400x where applicable. Wood species identifications are made using wood reference slides and wood keys devised by Brazier and Franklin (1961), Schweingruber (1978), Hather (2000) and the International Association of Wood Anatomists (IAWA) wood identification manuals and (www.lib.ncsu.edu/insidewood) by Wheeler, Bass and Gasson (1989).

Results

The results are presented in Table 3.

Wood charcoal results

Four wood species totalling 62 charcoal identifications were recorded from the samples (Fig. 8). Oak (*Quercus* spp.) dominated the assemblage, accounting for 45% of the charcoal identified, followed by hazel (*Corylus avellana*), which made up 27% of the assemblage. Lower frequencies of pomaceous fruitwood (*Maloideae* spp.) (18%) and cherry (*Prunus* spp.) (10%) were also identified. (Fig. 9). The pomaceous fruitwood group, which is made up of apple (*Malus* sp.), hawthorn (*Crataegus* sp.), pear (*Pyrus* sp.) and whitebeam/rowan/mountain ash (*Sorbus* sp.) is difficult to separate microscopically in the absence of bark, buds and leaves. It is worth noting that microscopic features in fossil wood can be altered, become absent or disintegrate as a result of carbonization or other taphonomic processes. While all four wood taxa were recorded from pit 1 and pit 2, oak dominated in pit 1, with hazel the dominant species in pit 2.

Plant macrofossil remains

Six cereal grains identified as barley (*Hordeum* spp.) were recovered from pit 1. The grains were badly abraded and eroded, suggesting that they were re-worked from another source. A Late Bronze Age radiocarbon date of 929 – 808 cal. BC (2 sigma) was obtained from a barley grain recovered from this feature.

Table 3: Charcoal and plan macrofossil identifications from Parkmore 1

Sample No.	Cut	Deposit	Sample description	Flot weight approx. (g)	Wood species	Common name	Frequency	Weight (g)	Carbonised plant macrofossils
1	1	53	Fill of pit	4.2	<i>Quercus</i> spp.	Oak	24	2.2	*Charred barley grain 6f
					<i>Corylus avellana</i>	Hazel	7	0.9	
					<i>Maloideae</i> spp.	Pomaceous fruitwood	5	0.2	
					<i>Prunus</i> spp.	Cherry	4	0.2	
2	2	56	Fill of pit	2.7	<i>Corylus avellana</i>	Hazel	10	0.8	
					<i>Maloideae</i> spp.	Pomaceous fruitwood	6	0.6	
					<i>Quercus</i> spp.	Oak	4	0.3	
					<i>Prunus</i> spp.	Cherry	2	0.2	

Discussion

The charcoal assemblage from two pits (1 and 2) at Parkmore 1 contained a mix of wood taxa, which included oak, hazel, pomaceous woods and cherry. In addition, six barley grains were recovered from pit 1, which dated this feature to the Late Bronze Age (929 – 808 cal. BC (2 sigma)). Through archaeobotanical analysis, it is emerging that barley, both the naked and hulled varieties, were a common cereal crop cultivated during the Bronze Age period in Ireland (Monk 1986; Johnston 2007). Since no *in situ* burning was recorded from either feature, it is likely that the charcoal represents firing debris from another source. The charcoal displayed no evidence of internal decay or insect damage, suggesting the wood burnt was fresh or gathered and seasoned immediately. The presence of burnt bone from each pit and charred cereal grains from pit 1 suggests they functioned as a dumping ground for domestic activity, in the form of food preparation and crop drying. It is difficult to ascertain however if the charcoal was associated with the burning of the bone or another unrelated activity. Palaeo-environmental reconstruction using the wood species cannot be achieved on the basis of just two samples. Despite this, all four wood species and barley grains were also recorded from Raheenapisha 2 (15E0569) (Lyons 2016), another Late Bronze Age dated site excavated from this scheme, suggesting that a mixed semi-natural woodland existed in the locale.

Conclusions and recommendations

Radiocarbon dating of pit 1 revealed Late Bronze Age activity at the site, similar to nearby Raheenapisha 2 (15E0569). The charcoal recorded from pits 1 and 2 at Parkmore 1 contained a mix of oak, hazel, cherry and pomaceous woods in relatively low frequencies. Charred barley grains identified from pit 1 indicates that there may have been some level of crop drying or preparation undertaken at the site. It is likely this material was redeposited and represents debris from one or more firing sources, possibly related to cooking or food preparation.

A representative number of charcoal fragments and all plant macrofossils have been identified and removed from pit 1 (sample 1) and pit 2 (sample 2). It is therefore recommended that both flot samples be discarded.

Radiocarbon dating

One radiocarbon determination was obtained from Queens University Belfast (Table 4) and calibrated using IntCal13 (Reimer et al. 2013). The determination is from a charred barley grain from Pit 1 and is Late Bronze Age. The use of a short lived grain for dating means the ‘old wood effect’ is unlikely to have influenced the result.

Table 4: Radiocarbon determination

Lab code	Cut	Deposit	Sample no.	Sample material	Radiometric age	Calendrical calibrations
UBA-32411	1	53	1	Charred barley grain	2723 BP±34	2 sigma (95.4%) Cal BC 929-808 (1.000) 1 sigma (68.3%) Cal BC 898-833 (1.000)

Discussion

The excavation of 15E0568, Parkmore 1, Co. Kilkenny has revealed evidence of three pits (or two pits and a post-hole). The features are likely to date to the 10th to 9th centuries BC and it appears that cooking or food preparation, as evidenced by the charred barley grains and burnt bone, was taking place nearby in the Late Bronze Age. It is possible that the fossil-bearing modified stone found in one

of the pits was a tool that was also used in food preparation and it may also have had ritual significance as it is somewhat reminiscent of a cup-marked stone.

It is possible that the domestic activity recorded at Parkmore 1 was contemporary with the settlement excavated 420 m to the north-east at Raheenapisha 2 (Hull 2016c). The three roundhouses and associated ditch there were variously dated to the 15th to 9th centuries BC, suggesting ongoing occupation of the area throughout the Middle and Late Bronze Age. Certainly the archaeobotanical analysis from both Parkmore 1 and Raheenapisha 2 suggest a mixed semi-natural woodland existed in this part of Co. Kilkenny in the Late Bronze Age with human habitation in relatively small-scale settlements.

This settlement pattern is in keeping with the limited evidence available for later prehistory in the south-east of Ireland (Eogan 2011; Eogan et al. 2015). Settlement sites include those with houses, mostly circular and 6-12 m in diameter such as at Raheenapisha 2, as well as numerous less well-defined sites with clusters of pits, post-holes and stake-holes, such as that at Parkmore.

A number of Late Bronze Age sites have been revealed in the area around Kilkenny in recent years as part of large infrastructure projects. The closest to the current scheme is the Gas to Great Island project, a large pipeline, the northern end of which started less than 2 km to the south-east of the N76 sites (Hull 2015b). Of particular note is Site 4-1,2,3,4 in Cotterellsrath, just 4 km south-east of Parkmore, where a possible post-built structure was dated to the 9th to 8th centuries BC (Mulcahy 2015). Other Late Bronze Age sites on the scheme, located further to the south and typically earlier in date than those on the N76, included pits and post-holes as well as several burnt stone spreads and *fulachtaí fía*. Slightly further afield, excavations in relation to the M9/N10 motorway scheme also revealed occasional contemporary sites, demonstrating the potential for this landscape to contain previously unknown sub-surface sites of all periods.

The Late Bronze Age to Iron Age period in Ireland is relatively poorly understood and therefore the subject of recent and current research projects (Eogan et al. 2015). For example *Seeing beyond the site* (Becker et al. 2016) is an interdisciplinary, multi-partner and multi-sector international research project that examines environmental change, the archaeological record, land use and economy in later prehistoric Ireland, using an integrated archaeological and palaeoenvironmental approach. The principal study area is South-East Ireland and the evidence garnered at the Parkmore 1 site will feed into this research project and in a small way enhance our understanding of the Later Bronze Age in this region.

Archaeological potential off the road CPO

The excavated features were located towards the western edge of the road take. No further archaeological features were recorded nearby in either the testing or excavation processes. The archaeological potential immediately off the road CPO is therefore considered low.

Recommendations and further work

Fieldwork

This site has been fully excavated within the confines of the CPO and no further fieldwork is required.

Record of Monuments and Places / Sites and Monuments Record

It is recommended that the site is entered into the SMR for County Kilkenny.

Post-excavation

The finds where advised by the relevant specialist, will be conserved (where necessary), numbered, labelled, properly packed and will be deposited with the National Museum of Ireland in accordance with *Advice Notes for Excavators* (NMI 2010).

As per the recommendations of the plant macrofossil analyst, the charred plant remains, specifically charcoal, will be discarded as the report included here is the recommended industry standard for recording archaeological charcoal.

As per the recommendations of the faunal specialist, the animal bone assemblage will be discarded as the report included here provides a complete record of the bone.

An accessible archive of primary records (Appendix 4) will be prepared for long term storage and will be kept at the offices of TVAS (Ireland) Ltd until it is deposited with the State archive repository (Barrett 2012).

Publication and dissemination plan

A summary of the findings of the excavation has been submitted to *Excavations 2015*.

It is intended to publish the results of this excavation in a suitable local journal.

Graham Hull
TVAS (Ireland) Ltd
November 2016

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www.archaeology.ie

www.excavations.ie

Appendix 1: Catalogue of features and deposits

Cut	Deposit	Type	Length (m)	Width (m)	Depth (m)	Finds	Samples	Phase
1	54, 53	Pit	0.96	0.78	0.29	Stone, bone	1	LBA
2	56	Pit	1.00	0.67	0.30	Bone	2	LBA
3	55	Pit	0.29	0.26	0.16	-	3	LBA
-	50	Topsoil	-	-	0.15	-	-	-
-	51	Natural	-	-	-	-	-	-
-	52	Ploughsoil	-	-	0.15	-	-	-

Appendix 2: Catalogue of finds

Find No	Cut	Deposit	Sample No	Category	Description	No pieces	Weight (g)
15E0568:53:1	1	53	-	Stone	Possible mano	1	73
15E0568:53:2	1	53	1	Organic - bone	Burnt bone fragments	16	2
15E0568:56:1	2	56	2	Organic - bone	Burnt bone fragments	13	1

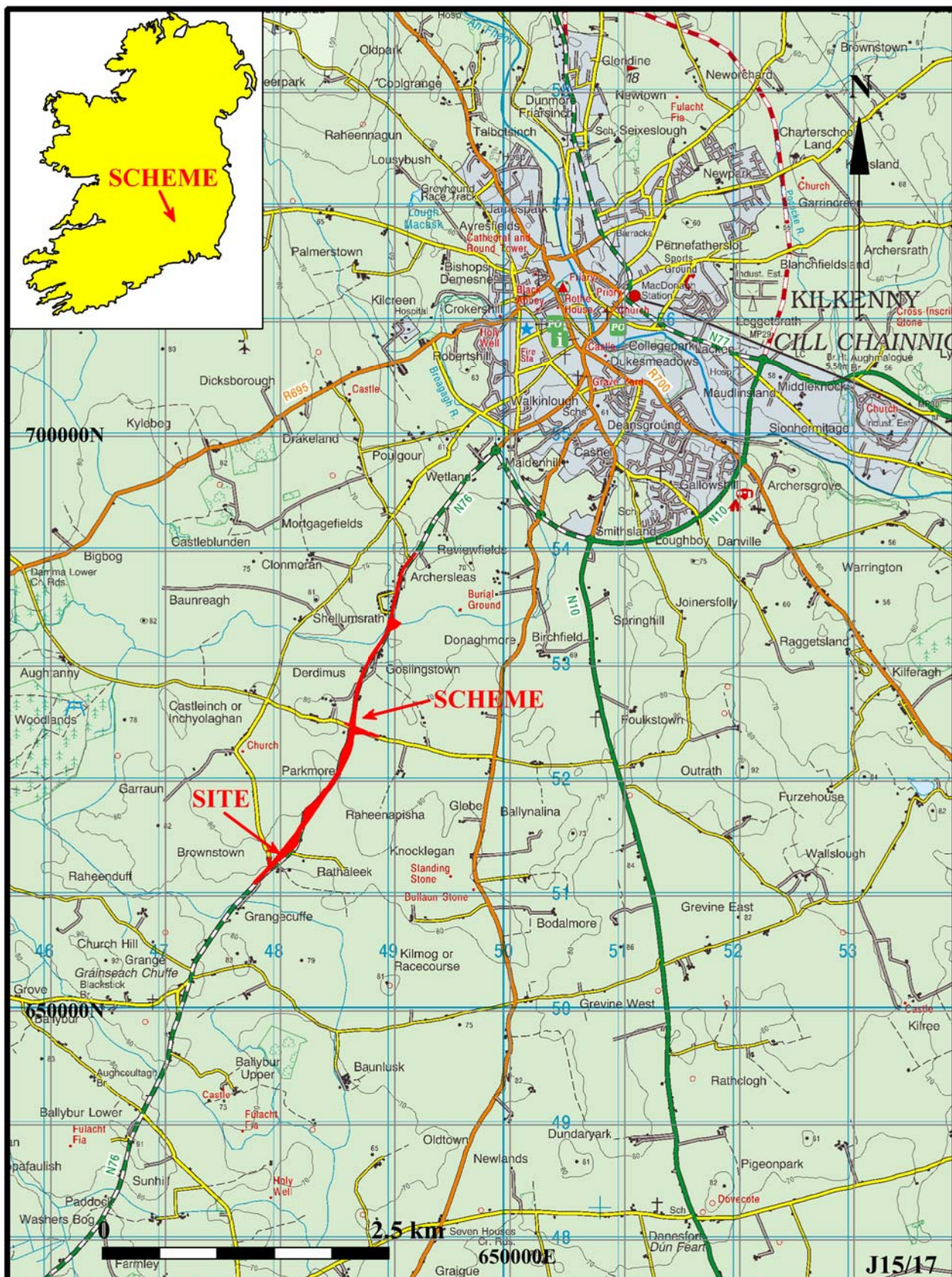
Appendix 3: Catalogue of samples

Sample No	Cut	Deposit	Volume sieved (L)	Volume floated (L)	Finds	Charred plant remains
1	1	53	20	20	Burnt bone	Yes
2	2	56	20	20	Burnt bone	Yes
3	3	55	5	5	-	No

Appendix 4: Archive contents

Category	Item	Quantity	Condition
Paper records	Context index sheets	2	Good
	Context sheets	10	Good
	Plan keys	1	Good
	Sample index sheets	1	Good
	Level sheets	1	Good
Plans	1:50 pre-ex plans (A2)	1	Good
	1:20 post-ex plans (A2)	1	Good
Sections	Section sheets (A2)	1	Good
	1:10 section drawings (on those sheets)	3	Good
Photographs	Digital photographs	16	Digitally stored & backed-up

The archive is currently stored at the TVAS (Ireland) Ltd office, Ahish, Ballinruan, Crusheen, Co. Clare.

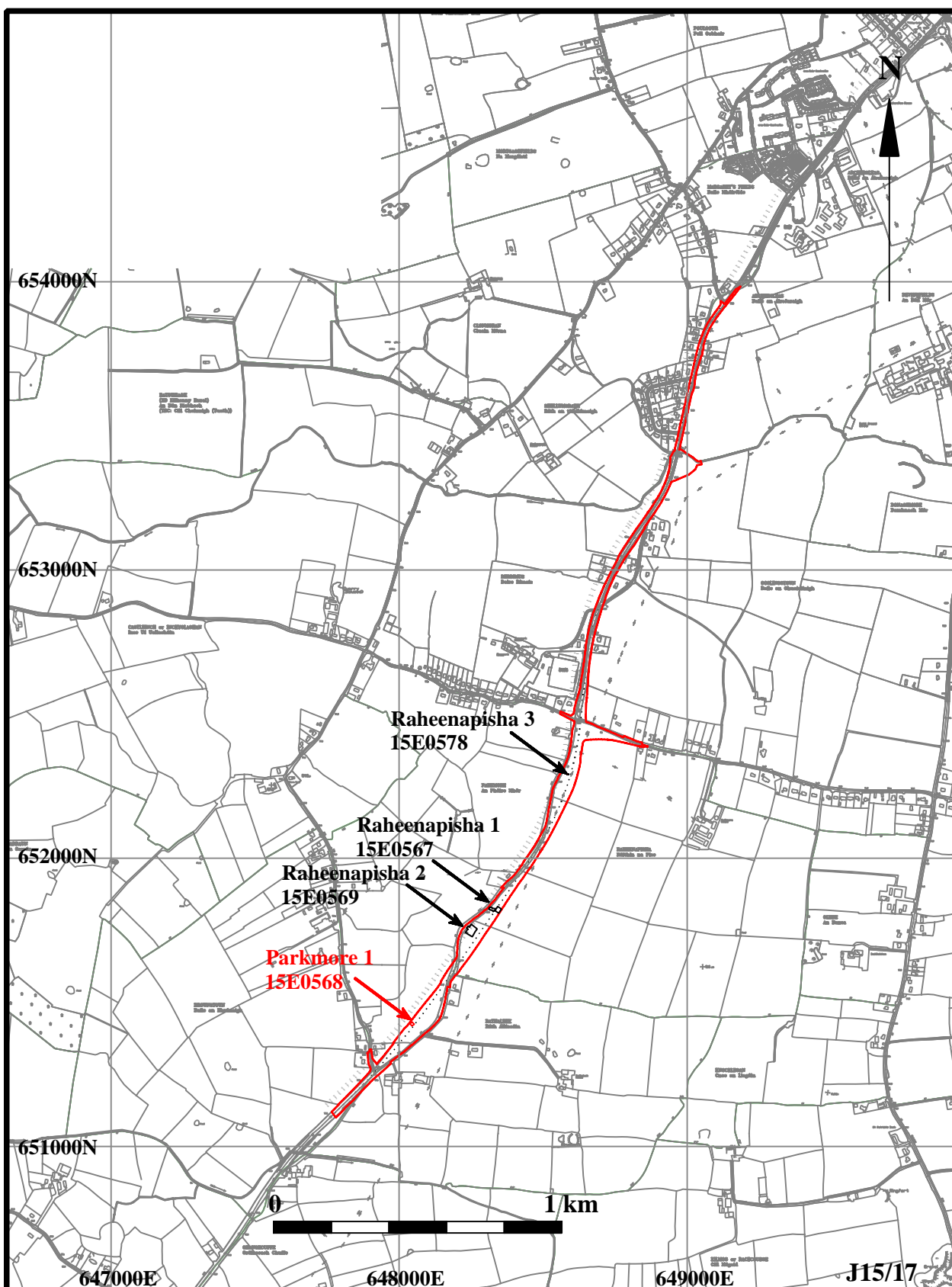


**N76 Callan Road Realignment, Co. Kilkenny
15E0568, Parkmore 1**

Figure 1: Scheme and site location

Based on Ordnance Survey Discovery Series 1:50,000
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**N76 Callan Road Realignment, Co. Kilkenny
15E0568, Parkmore 1**

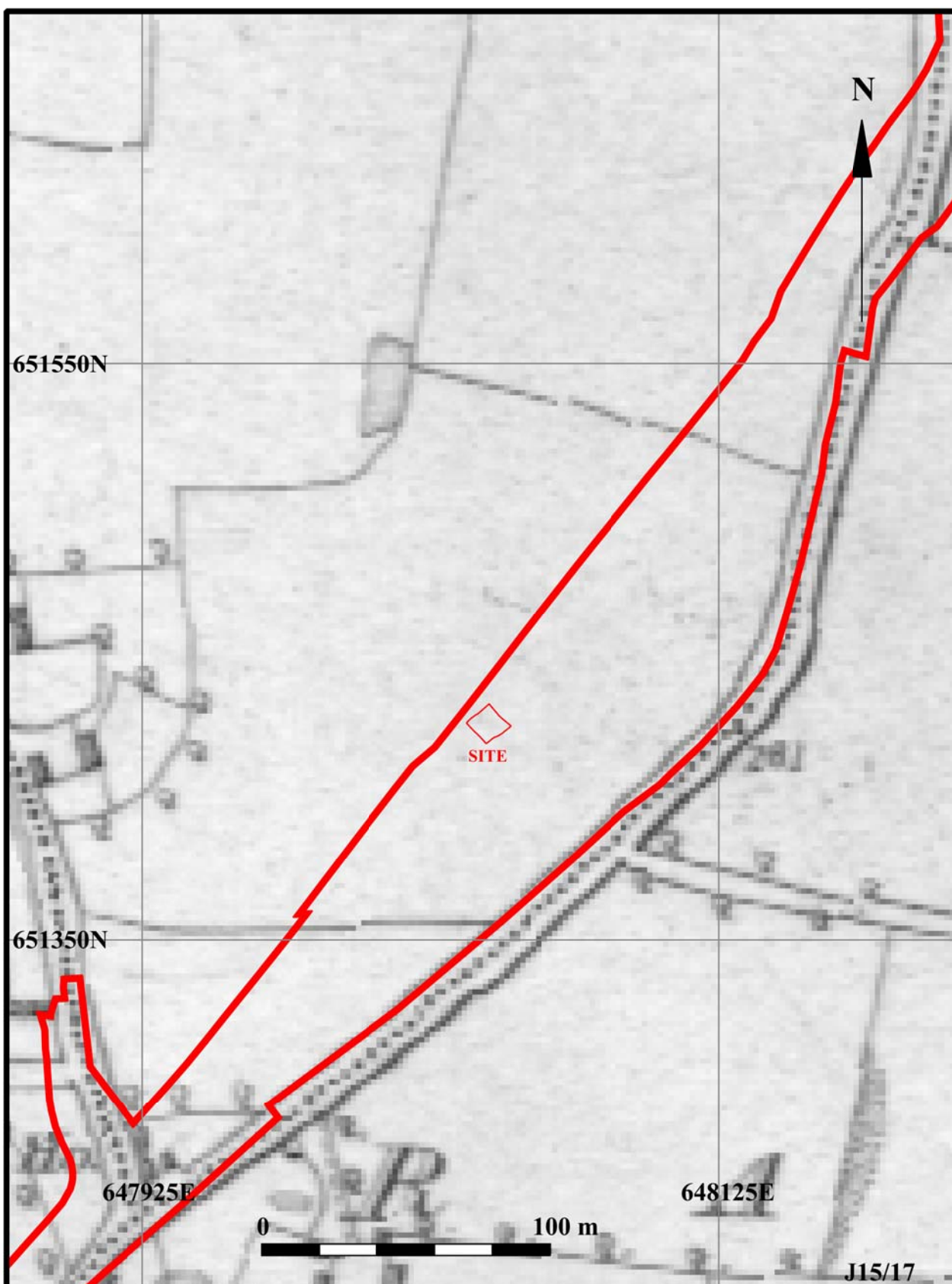
Figure 2: Scheme layout and site location

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Ordnance Survey digital mapping provided by client.

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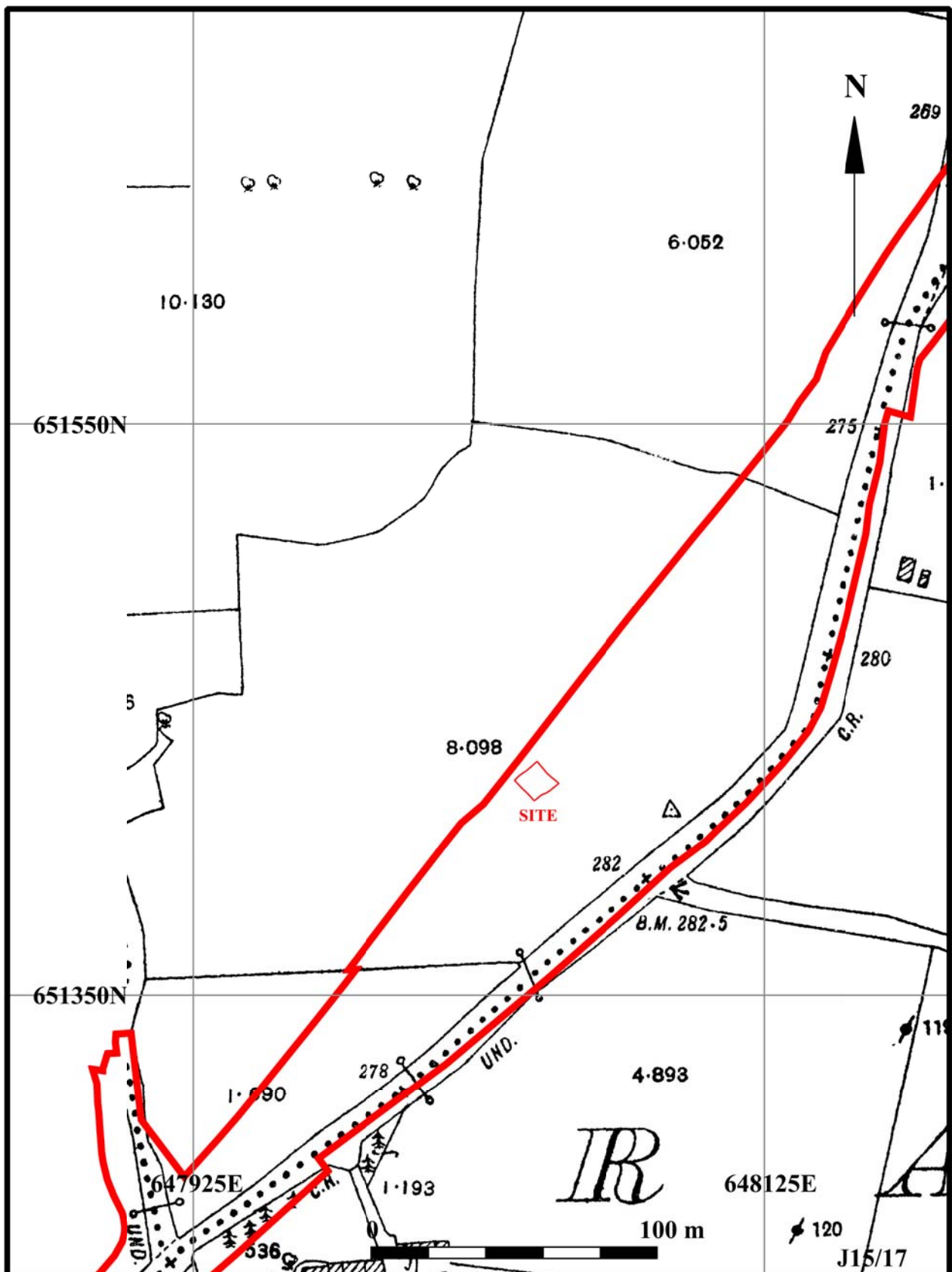


**N76 Callan Road Realignment, Co. Kilkenny
15E0568, Parkmore 1, Co. Kilkenny**

Figure 3: Site on Ordnance Survey map 1839

1:2000 @ A4
Ordnance Survey 6" to 1 mile. Surveyed 1839. Sheet KK023
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N76 Callan Road Realignment, Co. Kilkenny
15E0568, Parkmore 1

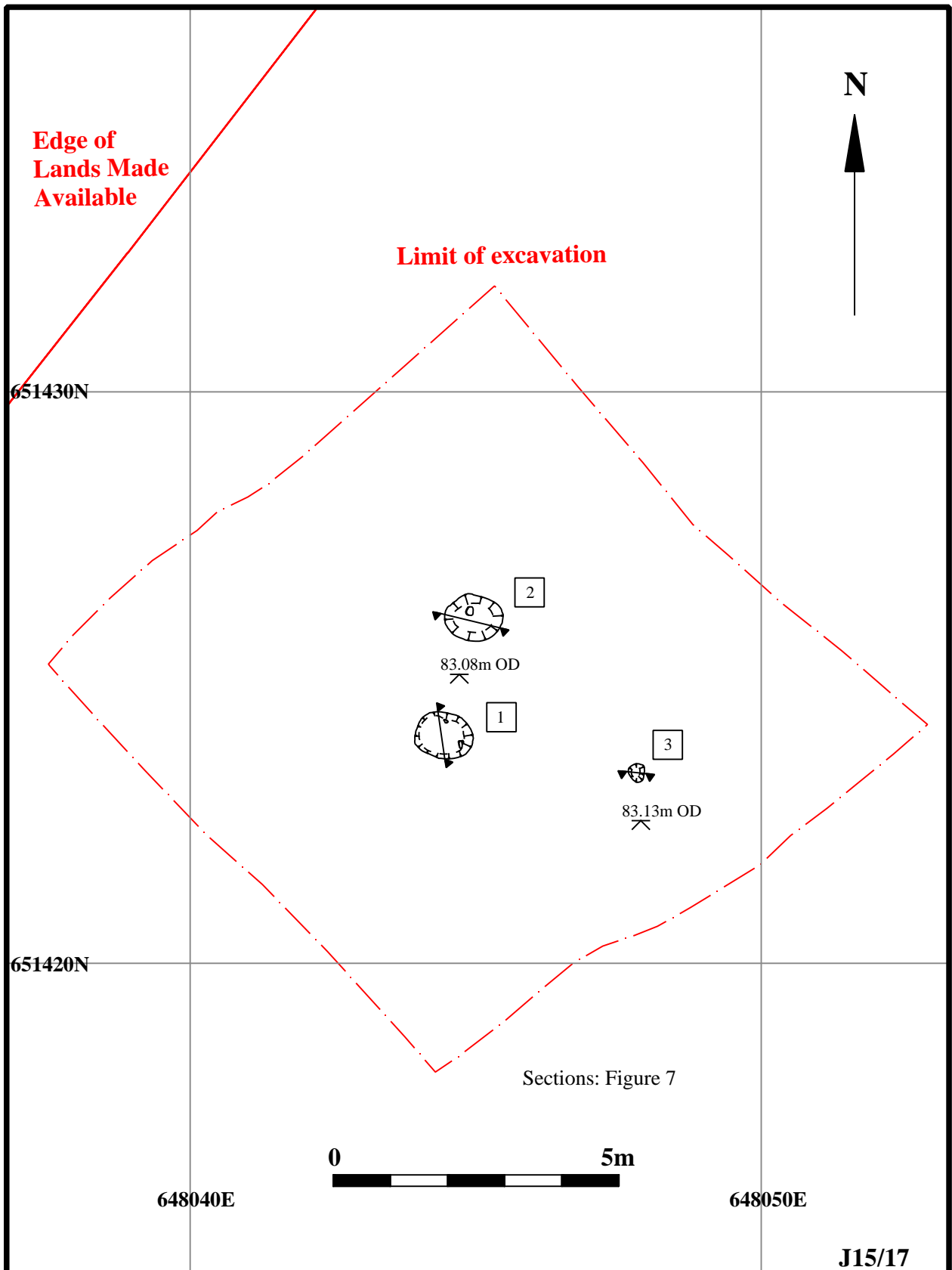
Figure 4: Site on Ordnance Survey map 1900

1:2000 @ A4

Ordnance Survey 25" to 1 mile. Surveyed 1900. Sheet KK023 -14
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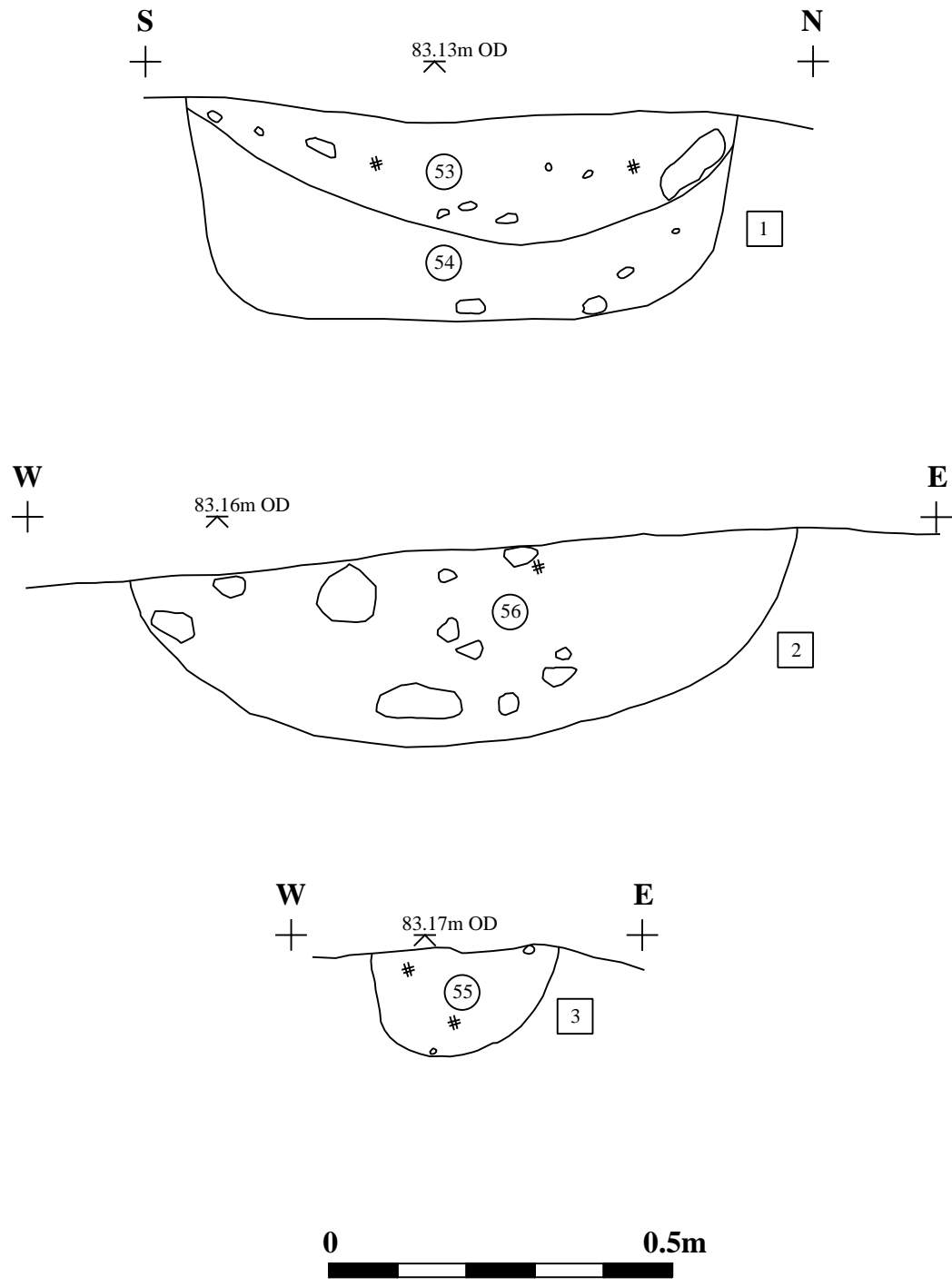


**N76 Callan Road Realignment, Co. Kilkenny
15E0568 Parkmore 1**

Figure 6: Post-excavation site plan

Scale 1:100 @ A4
Ordnance Survey base mapping supplied by client
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J15/17

N76 Callan Road Realignment, Co. Kilkenny
15E0568 Parkmore 1

Figure 7: Sections

Scale 1:10 @ A4



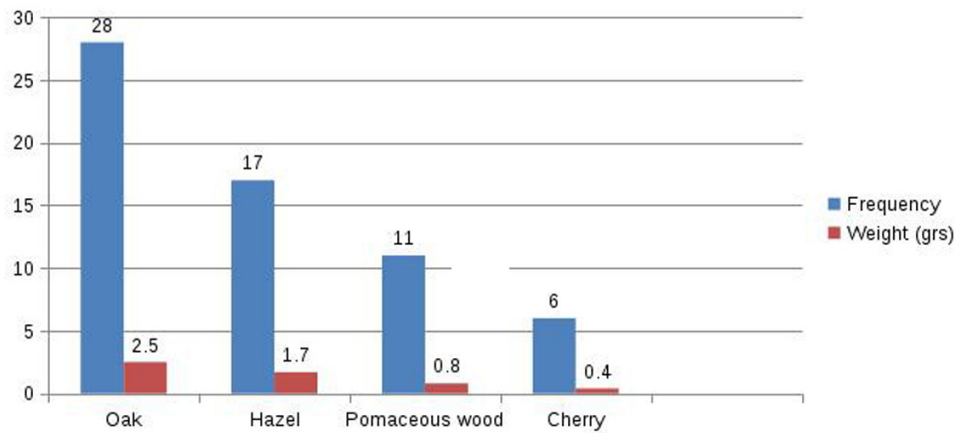


Figure 8: Total charcoal identifications

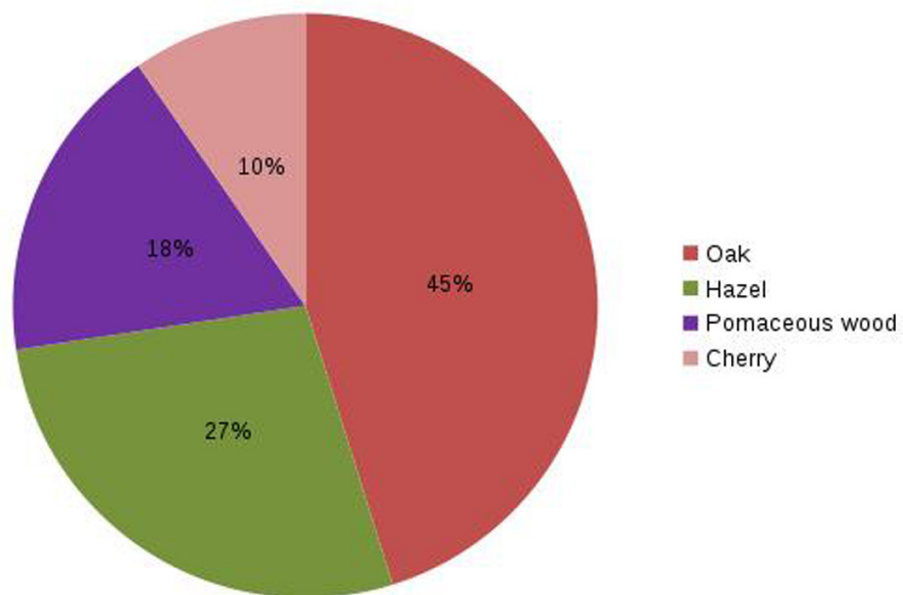


Figure 9: Percentage of plant macrofossil remains

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**N76 Callan Road Realignment, Co. Kilkenny
15E0568 Parkmore 1**

Figures 8 and 9

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Plate 1: Pit 1. Half-sectioned. Looking west. Scales 0.50 m and 0.20 m



Plate 2: Pit 2. Half-sectioned. Looking north. Scales 0.50 m and 0.20 m

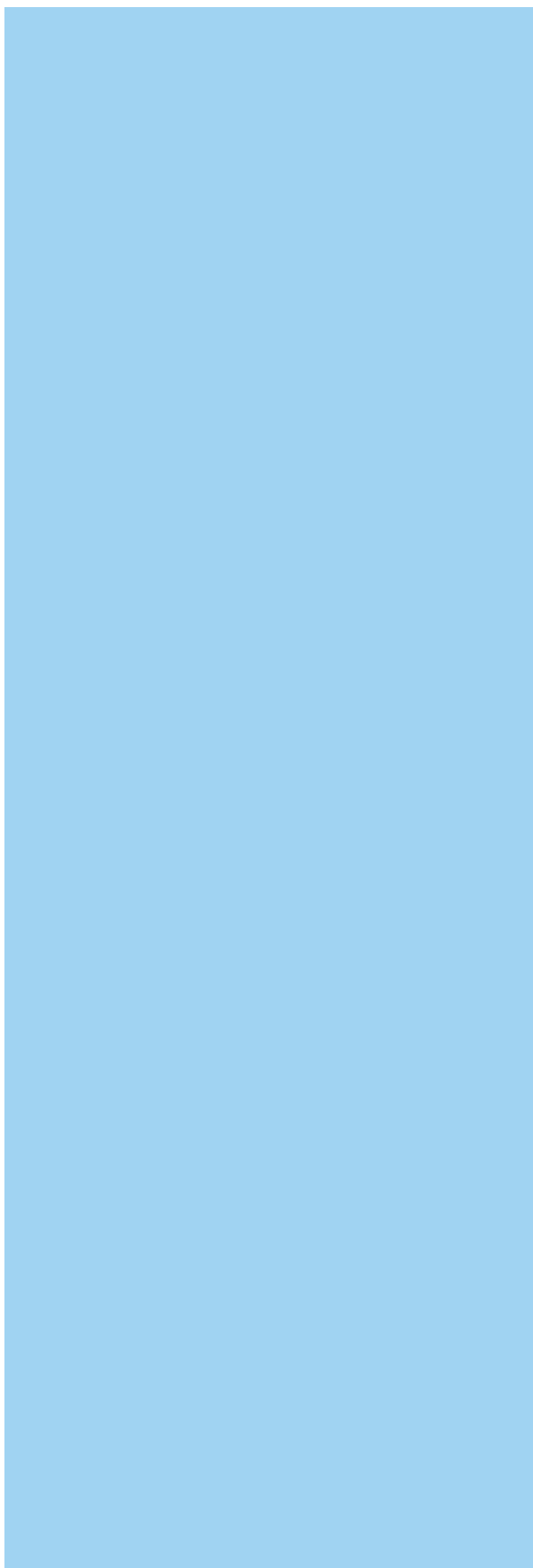


Plate 3: Pit 3. Half-sectioned. Looking north-west. Scale 0.20 m



**Plate 4: Pits 1 (foreground) and 2. Looking north-west.
Scales 1 m, 0.50 m and 0.20m**

15E0568



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