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**N25 Kinsalebeg Realignment
Final Report on archaeological investigations at Kinsalebeg
Realignment – Phase 2**

Reference number: A018/000

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Department of the Environment

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N25 Kinsalebeg Realignment

Final Report on archaeological and paleoenvironmental investigations in the townlands of Shancoole and Pilltown, Co. Waterford.

Dept of the Environment Registration Nos: E3566, E3567, E3568, E3569, E3570, E3571, E3572, E3573.

Director: Linda Hegarty

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Waterford County Council

Department of the Environment

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1. Summary

Eight sites were excavated as part of the N25 Kinsalebeg Realignment, Dungarvan, Co. Waterford. Three of these sites were of archaeological significance, Areas 1, 5 and 6. Area 1 contained the remains of a possible kiln pit. Area 5 consisted of four pits containing flint, hazelnut shell and a possible fragment of pottery. A curvilinear feature (containing prehistoric pottery) and a small pit were also discovered in Area 5. The remains of two heavily disturbed *fulachta fiadha* were identified and subsequently excavated in Area 6.

2. Introduction

This report has been prepared in compliance with the Directions issued to Waterford County Council by the Minister for the Environment, Heritage and Local Government under Section 14A (2) of the National Monuments Acts 1930-2004. The Ministerial Direction Number was A018/000. The eight areas of excavation were assigned the Registration numbers E3566, E3567, E3568, E3569, E3570, E3571, E3572 and E3573.

3. Site location and background (Figure 1)

The existing N25 road crosses the River Blackwater into Co. Cork, at Youghal Bridge. The existing road runs in an east-west direction from a junction (crossroads) with the N25 at Pilltown towards and approximately 900m east of Youghal Bridge. The proposed road realignment consists of 2.6km of single carriageway through the townland of Tiknock to Pilltown Cross, Co. Waterford. The topography of the route generally lies in the low, south-facing slope of Shanacoole Hill. Beyond Pilltown Cross at the eastern end of the route the contours rise sharply to Knocknageragh Hill. Three unnamed streams, orientated north-south, traverse the route between Ch. 1700–2400 in Pilltown Townland.

The works were sub-divided into eleven separate areas (Areas 1-11) following consultation with the Project Archaeologist, to allow two teams to resolve previously identified archaeological sites concurrently. The areas of archaeological resolution are outlined in Table 1.

Site Name	Townland	Testing Report ref.	Chainage	Area (m ²)	Description
Area 1 E3566	Shanacoole	p. 5 & 14	150-170; 190-120; 330-410	231 314 4 4	Poss. <i>fulacht fiadh</i> Poss. <i>fulacht fiadh</i> Irregular shaped pit Oval shaped pit
Area 2 E3567	Pilltown	p.7 & 14	1740-1770	359	<i>Fulacht Fiadh</i>
Area 3 E3568	Shanacoole	p.8 & 14	1570	4	Oval shaped pit
Area 5 E3569	Pilltown	p. 8 & 14	2380-2530	734	7 pits and an irregular shaped spread
Area 6 E3570	Shanacoole	p. 11& 15	720-810	1119	2 <i>fulachta fiadh</i> type spreads and 2 pits
Area 7 E3571	Shanacoole	p. 12 & 15	916-960	386	Marl deposit with angular stones and a peat lens sealed by a re-deposited clay
Area 8	Shanacoole	p. 12 & 15	485-510	465	Oval shaped pit

E3572					
Area 9	Shanacoole	p. 13 & 15	565	25	Irregular shaped pit
E3573			580	25	Circular pit
			605	25	Irregular shaped pit.

Table 1: List of areas archaeologically resolved.

The preliminary report on the testing phase describes the areas as follows:

Area 1 (E3566) was located within Shanacoole townland, on the north side of the N25 road, within one field, between Ch. 150-335. The boundary of Area 1 at the west was the local road, running perpendicular to the N25 road; on the east side the boundary was the entrance avenue into Rockview House, at Ch. 335. This avenue is recorded on the 1st edition OS Map (1841). The same source records two field boundaries running perpendicular to the N25 road, at c. Ch. 220 and Ch. 340 respectively. The boundary at Ch.220 was removed by 1907 (OS map) and no trace of it was found in the testing; the boundary at Ch. 340 was removed after 1927 (OS map).

Area 2 (E3567) was located within Pilltown townland, on the south side only of the N25 road, within one single field. This field was bordered on its west side by an unnamed overgrown stream at Ch. 1740. No investigations took place on the stream. The side road leading south toward Pilltown Castle bordered the field on its east side at Ch. 1930. At the time of investigation the field was under barley. Prior to test trenching the area beside the stream had been disturbed from engineering Test Pit No. 20 located at Ch. 1760.

Area 3 (E3568) was located within Shanacoole townland, on the south side of the N25 road, within one large field and separated by a field drain. At the time of investigation the field was under grass, with the ground sloping southward to the river edge. The low-lying nature of the field was suggestive of ideal conditions for *fulachta fiadh* sites. At Ch. 1520 an area measuring 4m by 6m in diameter was excavated. No features were noted and natural was reached at 0.30m depth.

Area 4 This area consisted of the remainder of the route and was tested by centreline trenching with offsets at regular intervals of 20m, where ground conditions and the width of CPO allowed. Only the centerline trench was excavated due to the narrowness of the CPO. A number of specific archaeological sites were discovered within Area 4, and these were numbered Areas 5-9 respectively.

Area 5 (E3569) was located in Pilltown townland, on the north side of the N25 road, between Ch. 2380-2515. The CPO area here was c.2-4m from the field boundary wall bordering the road. A concrete cattle pass (5m²) was sited at the entrance gate and this area was not trenched in order to maintain animal access. A centreline trench was excavated between 1-2m inside the boundary wall terminating 8m inside the field boundary at Pilltown Cross, c. Ch. 2380. The field was south-west facing with good views to the sea, overlooking the small stream that flows under the road as it continues southwest toward the Pilltown Castle quay area.

Three subsoil-cut pits were located on the lower south-west facing slope. Four pits and one spread were identified 100m further east. Although separated by c.100m it is possible that both pit clusters were associated, as the south-west facing slope of the hillside would have been attractive for prehistoric settlement. An examination of the topsoil from the test trench yielded a possible musket shot, fragments of flint flakes, cores and scrapers.

Area 6 (E3570) was located in Shanacoole townland, on the south side of the N25 road, between Ch. 720-810. Area 6 was confined to one field and consisted of two *fulachta fiadh* type spreads, each located at the western and eastern end of the field. Midway along the test trench the natural ground

level sloped upward, with the surface level measured at 10.76m OD. At the western end, between Ch. 720–728 the centreline trench was excavated *c.* 5m from the N25 roadside field boundary, and *c.* 6m from the local side road.

Area 7 (E3571) was located in Shanacoole townland, on the south side only of the N25 road, between Ch. 915-1000. Area 7 was confined to one field, and the CPO here narrowed from 5m to 3m. The ground surface level was 8.67m OD. An area of peat was discovered during testing, which was found to be a lens sealing a grey-whitish marl. Over this was a deposit of brown-grey re-deposited clay which was sealed by topsoil. There were no finds from Area 7.

Area 8 (E3572) was located in Shanacoole townland, on the north side of the N25 road, between Ch. 485-505. Area 8 was confined to one field only, which was under grass, grazed by horses. The ground surface level was 11.30m OD. One archaeological feature was identified, this was roughly oval in plan, measuring 1m by 1.35m in diameter and it extended into the south baulk.

Area 9 (E3573) was located in Shanacoole townland, on the north side of the N25 road, between Ch. 560-635. Area 9 was confined to one field only, a lawn area. The ground surface level varied from 12.21m OD (west) to 12.95m (east). Three isolated possible pits were identified within Area 9.

3.1 Background

An Bord Pleanála gave approval to Waterford County Council for the improvement of the existing N25 Kinsalebeg Road, between the townlands of Tiknock and Pilltown Cross, Co. Waterford. The Minister for Environment, Heritage & Local Government issued Registration Numbers E3566-73 to Waterford County Council in respect to the archaeological assessment works required on this scheme. All the assessment works were completed in May and June 2005 and copies of the report detailing the results of the test excavations were submitted. Construction commenced on this road project during September 2005. A request for further Directions from the Minister for Environment, Heritage and Local Government was submitted by Waterford County Council so that all archaeological remains identified during the testing phase could be resolved in advance of construction.

Test excavations were carried out along the length of the proposed realignment in advance of construction between May and June 2005. Three site-specific locations were targeted, and centreline testing with regular offset trenches was completed on all residual lands available for investigation. This work led to the identification of eight archaeological areas. It was not possible or practical to preserve any of these sites *in situ*. It was decided that archaeological excavations be carried out to preserve them by record. In addition it was proposed that archaeological monitoring be undertaken in those areas not available for testing. An architectural survey was also carried out on two dwellings that were to be demolished during construction. All townland boundaries that the proposed realignment crossed were recorded. Details of all areas to be resolved are shown in Table 1 & Table 2 below. All archaeological works complied with the Policy and Guidelines on Archaeological Excavation (Govt. of Ireland 1999). The Project Archaeologist and Assistant Project Archaeologist oversaw the conduct of the excavation, and the work took place according to the terms of the *Code of Practice* agreed between the NRA and the Minister for Arts, Heritage, Gaeltacht and the Islands. All archaeological works were carried out in accordance with Directions issued by the Minister for Environment, Heritage & Local Government to Waterford County Council in accordance with Section 14 of the National Monuments Acts (1930-2004) and in accordance with the principles set out in the publication *Framework and Principles for the Protection of Archaeological Heritage* (Govt. of Ireland 1999).

4. Aims and methodology

The objective of the work was to preserve by record those archaeological features or deposits identified from testing that would be adversely affected by the realignment of the N25.

The investigation complied in full with the Ministerial Directions as issued for the Scheme, *Policy and Guidelines on Archaeological Excavation* (Govt of Ireland 1999) and the specification, terms and conditions of the contract between Waterford County Council and Headland Archaeology Ltd. The Project Archaeologist oversaw the conduct of the excavation; the work took place according to the terms of the Code of Practice agreed between the NRA and the Minister for Arts, Heritage, Gaeltacht and the Islands (2000).

The eight areas were topsoil stripped by a 360° tracked mechanical excavator with a flat bladed bucket under direct archaeological supervision. The area was hand cleaned to expose the extent of the features previously identified, and any other features contained within the designated areas.

5. Results

Area 1 – E3566

Trench A Ch. 150-170 (Figure 2, Plates 1, 2)

Following the removal of the topsoil an oval shaped feature was identified and subsequently recorded. This oval feature [003] consisted of oxidised sandy clay with occasional flecks of charcoal and occasional sub-angular stones. It measured 2.10m east- west by 0.54m north-south and 0.22m in depth. Surrounding this deposit on the northern and southern edges were stone lined channels which were U-shaped in profile. They contained moderately compact black-purple sandy silt with frequent charcoal flecks and moderate small and medium angular and sub-angular stones [004] (O'Brien 2005, F4). A single entity AMS two sigma date of cal AD 405-556 came from this fill. Some of these stones were partially set in an upright position which overlay flatter stones. These flatter stones were dry built walls with two courses of irregular medium and large angular and sub-angular stone [015]. The upper course was heat-shattered sandstone; the lower course was also sandstone but appeared less heat affected. These stones [015] created three walls; two measuring approximately 1.6m east-west and one 0.8m east-west. They were evenly spaced 0.45m apart north-south. The cut [012] was irregular in profile with gentle sloping sides and an almost flat base. A gentle U-shaped profile was evident on the south side. The western end was level and may have been destroyed by the road and stream. This feature may have been a type of kiln.

Situated approximately 1.5m northwest from [012] was a small circular deposit [005] of charcoal rich silt within a ring of burnt clay. It contained occasional medium and small angular stones and moderate pieces of charcoal. It measured 0.54m in diameter and 0.06m in depth.

Immediately north of the possible kiln was a natural depression [013] filled with firm mid grey-brown sandy silt with frequent small and medium rounded and sub-angular stones, and moderate large sub-angular stones. Moderate charcoal flecks were evenly dispersed throughout the fill. The maximum depth of this feature was approximately 0.25m.

Trench B – Ch. 190-210

Following the removal of topsoil in Trench B the deposit (resembling the remains of a *fulacht fiadh*) identified during the course of testing (O'Brien 2005, F5) was excavated and subsequently recorded as a natural gravel deposit.

Trench C – Ch. 340

Trench C was a small area (approximately 4m²) stripped of topsoil surrounding a possible pit identified during the course of testing (O'Brien 2005, F6). Two features were identified. A compact grey orange sandy silt deposit with moderate small angular stones [011] was recorded as a deposit probably associated with field clearance. A deposit of moderately compact dark grey/brown sandy silt with moderate charcoal flecks and moderate small angular stones [010] was identified north of [010]. Modern white china (not retained) was identified within this deposit. Both of these features appear to be the result of field clearance.

Trench D – Ch. 410

Trench D was a small area (approximately 2m²) stripped of topsoil to locate two small pits identified during the course of testing. Pit [007] was kidney-shaped in plan with gently sloping sides and a rounded base. It measured 0.65m north-south, 0.3m east-west and 0.14m in depth. Its fill was grey-black silty sand with lumps of heat reddened clay and burnt stone. Pit [009/008] was a small circular shaped pit. No finds were retrieved from either of these pits, and they appeared to be the result of modern field clearance.

Discussion

The feature in Trench A [012] may have represented the remains of a kiln. It measured 1.9m north-south, 3m east-west and 0.22m in depth.

A similar sized structure was identified at Crobally Lower, Tramore, Co. Waterford (Tierney, 2000). It measured 2.62m by 1.7m and 0.56m in depth and had a double concave base with a narrow ridge. The area between may have worked as a flue in the same way as the stone walling [015] may have functioned in the feature in Trench A. These walls were evenly spaced (0.45m apart) suggesting a structural design in the bid to make a kiln. At Castlevew, Little Island, Co. Cork a feature was uncovered consisting of 'linear stone-lined features with fills consisting of charcoal-enriched deposits and red, oxidized soil resulting from intense burning. They were between 2.2 m and 4.1 m long and had an average width and depth of 0.65m and 0.52m respectively' (McCarthy et al 1999).

At Kinsalebeg, cereal grains were not present within the fills of the possible kiln in Trench A. No industrial waste (slag, pottery, etc.) was identified at this site which makes interpretation difficult, yet the size and shape of the structure is similar to the kilns described above. A single entity AMS two sigma date of cal AD 405-556 received from the charcoal of this possible kiln places it in the Early Christian Period. It may be the remains of a larger structure which was heavily truncated during the construction of the roads or by intensive agricultural practices of recent times. Evidence gained from excavation suggests that a fire was burning between the northern two rows of upright stones which created intense heat or hot air flow in the southernmost channel, causing the soil to oxidise. A large dome structure may have been present at the western end of this flue with a raised platform to dry grain, pottery or perhaps to bake, which may suggest the remains of a parallel-flue kiln (Adkins 1982, 280).

The lack of finds may be a direct result of regular cleaning and the deposits being kept away from the kiln itself. A multiple corn drying kiln site at Poundbury near Dorchester, Dorset, England may have similar parallels with Shanacoole. At Kiln 2 at Poundbury, all identifiable items were within the basal fill of the drying chamber and all the samples from the narrow stoking area were relatively unproductive, suggesting that the fuel residue was cleaned out regularly (Monk 1994). The Poundbury Kiln was aligned east-west with its drying chamber at the west, while the possible kiln flue at Shanacoole was also aligned east-west suggesting that a drying chamber may have been

located to the west. This comparative analysis reinforces the hypothesis that the area has been disturbed and that any chamber has most likely been lost.

Situated in close proximity (1.6m northwest) to the possible kiln was a small feature [005]. This was very rich in charcoal and had oxidized clay surrounding the fill and at the base. This may have been a waste deposit from a use of the kiln. A sample of this was taken (Appendix 7) and unfortunately no industrial waste was identified again making interpretation difficult. Feature [013] may have been a natural depression filled to level the ground and improve the land. Alternatively it may be an example of a bowl furnace where the contents have been thoroughly cleared out.

Area 2 – E3567 – Ch. 1740-1770

During the testing of Area 2 a possible *fulacht fiadh* (feature 14) was identified. Following the stripping of topsoil a natural ridge of gravel was identified, this ridge measured 1.3m in maximum depth and contained layers of manganese and gravel.

Discussion

Area 2 was a natural gravel ridge.

Area 3 – E3568 – Ch. 1570

During the testing of this area an oval-shaped pit was discovered (O'Brien 2005, F15). Following topsoil stripping only this pit [003] was identified. It measured 0.85m east-west by 0.56m north-south. The fill was shallow (0.02m) and consisted of burnt stones and heavily charcoal-flecked clay. There were traces of *in situ* burning and no finds.

Discussion

This pit may be the remains of a larger pit which has been destroyed by modern agriculture, or it may have been an isolated deposit.

Area 5 – E3569 – Ch. 2380 - 2530 (Figure 3, Plates 3, 4, 5)

Pits and an irregular shaped spread were identified during testing of this area (O'Brien 2005, F20-25, 30-38). Following topsoil stripping these pits were identified and subsequently excavated. Due to the narrow nature of the site the area was stripped in two sections. Four pits were excavated towards the western area of the trench. Pit [004] was circular in plan measuring 0.7m in diameter and 0.15m in depth. The sides were steep with the exception of the northern edge where it sloped gradually. The base was predominately flat with a gentle southerly slope. This pit contained moderately compact mid brown-grey silty clay [003] with occasional flecks of charcoal and very rare flecks of what appeared to be burnt bone. However no burnt or unburnt bone was discovered during soil sample assessment (Appendix 7). In addition, flint and heat-shattered sandstone were found throughout the fill.

Situated immediately to the south was an irregular shaped pit. This pit [006] had a depression at the northeast and southwest. The break of slope on the top was sharp and was more gradual around the base. The base was flat in the centre and measured 0.9m north-south and 0.75m east-west and a maximum depth of 0.2m. This pit contained compact mid brown-grey silty clay [005] with small charcoal flecks, moderate amounts of flints and heat-shattered sandstone.

A third pit [008] was oval in plan was situated approximately 1.3m further west. The sides of this pit are steep with a gradual break of slope at the base. It measured 0.84m north-south and 0.6m east-west and 0.16m in depth. This pit contained moderately compact mid brown-grey silty clay [007] with moderate small charcoal flecks. Moderate amounts of flints (a mixed assemblage of debitage, primary workings, waste and naturally shattered) and heat-shattered sandstone were evident throughout. Pit [010] was very irregular in plan. It measured 0.8m north-south and 0.6m east-west and 0.2m at its maximum depth on the southern side. This pit contained two fills [009 and 017]; fill [009] was moderately compact mid brown-grey silty clay with moderate small charcoal flecks, flints (a mixed assemblage of debitage, primary workings, waste and naturally shattered) and heat-shattered sandstone. A single entity AMS two sigma date of cal BC 1952-1745 came from this fill. A primary fill [017] underlying [009] in the southern corner consisted of loose light orange brown silty clay with very occasional flecks of charcoal and frequent angular and sub-angular stones. A sample from each of these pits was taken producing charcoal, carbonized hazelnut shell, flint and one fragment of pottery in pit 008.

The second section approximately 100m on the eastern side of this trench revealed an irregular linear feature comprising of two main cuts [014 and 019]. Cut [014] was roughly linear in plan and measured 3.3m northwest-southeast and 0.85m northeast-southwest. Its maximum depth was 0.5m. The sides were generally steep and were a little more gradual on the northeast and southeast side. A ridge of natural subsoil measuring 0.25m separated the two cuts [014 and 019]. The primary fill [013] consisted of mid brown silty clay with very occasional flecks of charcoal and rare small sub-angular stones. A soil sample was taken of this fill and subsequently analysed; charcoal suitable for AMS dating and flint was identified (Appendix 8). A single entity AMS two sigma date of cal BC 2883-2621 came from this fill. The depth of this deposit was 0.25m. Overlaying this was dark brown-black silty clay [012] with occasional charcoal flecks and occasional to moderate sub-angular and rounded small stones. It measured approximately 1.3m east-west, 0.8m north-south and 0.2m in depth. Abutting this fill was a shallow deposit of orange brown silty clay [011], which was not too dissimilar to the underlying natural subsoil. It measured approximately 1.9m east-west, 0.6m north-south and 0.2m in depth. This deposit merged in to cut [014] at the eastern edge.

The western half of this linear feature consisted of two cuts [019 and 020]. Cut [019] was semi-circular in plan and incorporated cut [020]. The sides were sloped with a depression towards the east. The western section contained a cut [020], around which the sides of [019] were more gently sloped. Cut [019] measured 0.84m north-south, 2.2m east-west and its maximum depth was 0.5m. It was U-shaped in profile. Cut [020] was oval in plan with steep sides and a rounded base. It measures 0.33m north-south and 0.4m east-west. It was 0.2m deep. The two cuts [019 and 020] were filled with mid orange brown silty sandy clay [018] with occasional charcoal flecks and occasional sub-angular stones. This appeared similar to the natural subsoil. A couple of sherds of prehistoric pottery, a fragment of metal and a mixed assemblage of flint (debitage, primary workings, waste and naturally shattered) were found in this fill. The subsequent dating of the pottery to the Early Neolithic indicates that this fill had been disturbed.

Re-deposited natural [021] was evident in the section of the baulk on the north side by the compulsory purchase order (CPO) line. It was light brown with very occasional small flecks of charcoal. Its maximum depth was 0.5m.

A possible post-hole [016] was identified and subsequently recorded south of the linear feature [014 and 019]. This pit was oval in plan and measured 0.28m north-south and 0.33m east-west on the surface, narrowing to 0.12m in diameter towards the base. A post pipe was situated in the centre reaching a maximum depth of 0.25m. Its fill [015] was moderately compact brown-black silty clay with 40% sub-angular and angular heat affected stones. A sample of this fill was kept for analysis

(Appendix 6). It contained moderate flecks of charcoal. A small worked flint flake and a stone with a smooth side were found within this fill.

Discussion

The four pits [004, 006, 008 and 010] identified in the western half of the trench were situated in an area measuring 3m by 2m. All the pits were very similar in shape and size. The fill of the pits was also fairly similar containing a large number of flints totalling 301 pieces and 109 fragments. This assemblage represents a pebble-base industry producing small flakes with many worked into a variety of endscrapers (Moore 2006). The flint was predominately grey-buff in colour with selected grey-black flint of a finer quality. There were ten platformed cores, and five single platformed cores within the assemblage; the size of these cores and the range of flake/blade removals would suggest that there may have been a premium on good quality flint raw material (*ibid.*). There are many small endscrapers and thumbnail type scrapers within the secondary worked portion of the assemblage. This would suggest that the assemblage was domestic in function, possibly a short-term primary preparation site, possibly for hides (*ibid.*). These pits may have been located on the edge of a larger settlement site which may survive in whole or in part outside the boundary of the CPO of the current scheme. It is suggested that lithics may have been placed in shallow pits as a final act in the usage of the site, as seen at Ballyharry on Islandmagee, Co. Antrim:

“The range of material recovered cannot be specifically assigned to a narrow chronological period base on the range of diagnostic tools such as the endscrapers. This is primarily due to the nature and size of the raw material which provides few clues to the date of the assemblage. However, based on the type and range of knapping techniques and the quality of the secondary worked material, it is suggested that a broad date range of Mid-Late Neolithic – Early Bronze Age is most likely” (Moore 2006: 8).

The fills of pits [004, 006 & 010] contained fragments of hazelnut shell; pit [008] contained a minute fragment of pottery. The hazelnut shell from fill [009] produced a single entity AMS two sigma date of cal BC 1952-1745 placing it in the Early Bronze Age. This date narrows the broad date range gained from the flint.

The curvilinear feature [014 and 019] at the eastern side of the trench may have been the remains of a small enclosure, truncated by the construction of the existing N25 road. In this area it was difficult to determine the difference between the natural subsoil and the fills of the features; in certain areas they appeared very similar. A single entity AMS two sigma date of cal BC 2883-2621 came from the fill of this linear, placing it in the Late Neolithic. A large volume of the topsoil was sieved on site, retrieving occasional flints. All of these features were located on a gentle south-west facing slope which would have been a favoured settlement area in prehistoric times. Therefore these features may have been part of a larger complex and may survive in the remainder of the field.

The prehistoric pottery from the N25 Kinsalebeg Realignment Pilltown, Co. Waterford (Area 5 E3569) by Eoin Grogan and Helen Roche

Summary

This site produced a single sherd (plus six fragments) from an early Neolithic Carinated Bowl (total weigh 10g). This is an important discovery as it is the first record of activity of this date from the west Waterford – east Cork area.

The pottery (context 018, sample 012, bag 3)

The fill [018] of two intercutting pits [019/020] produced a single simple angle shouldersherd (plus six fragments) from an early Neolithic Carinated Bowl of brown-buff fabric with a dark brown core; the outer surface is worn and the inner smooth. There is a medium content of sandstone and dolerite inclusions ($\leq 2 \times 1\text{mm}$, up to $4 \times 2\text{mm}$). This material is securely dated to the period c. 4000 to 3700 BC but has not previously been discovered in this area.

Neolithic Carinated Bowl Pottery by Danielle Lyons

Fired clay was a new medium in Neolithic communities across Europe and is perceived to have developed in response to the innovations of cereal food cooking and storage, and to the sedentary way of life that had taken root at the start of this period.

The Carinated Bowl is the earliest pottery style found in Ireland and has close parallels with pottery found in eastern and northern England, Scotland and Wales. These vessels are round-bottomed with distinctive shoulders, concave necks and simple pointed or slightly rounded rims.

Almost all are open bowls with a mouth diameter as great as or greater than the shoulder diameter with wall thickness of no more than 5-6mm. Decoration is usually absent in these early artefacts apart from some finger-tip indentations in the wet clay before firing. Perforations have also been noted, presumably for the attachment of cords for suspension. Firing of these vessels took place in bonfires and simple pit-kilns, at relatively low temperatures (often to less than c.850-1000°C), using a technology that remained in use for several millennia.

Neolithic Carinated Bowl pottery has been found on many Irish sites. These include the settlement sites of Lambay Island, Co. Dublin, Ballinaspig More, Co. Cork, Monanny, Co. Monaghan, Granny, Co. Waterford, Ballynagilly, Co. Tyrone and Pepperhill, Co. Cork. All of these sites have produced radiocarbon dates dating to early-mid fourth millennium BC, thus establishing a secure timeframe within which to place the use of this pottery.

Carinated ware has also been recovered from funerary contexts such as the megalithic chambered tomb at Achnacreebeag in western Scotland, suggesting the use of this pottery style in contexts associated with a belief in the afterlife.

As the introduction of this pottery type is so closely linked with the development of agriculture and the emergence of many new ideals concerning material culture, technology and social frameworks, the process and origin of which provides ground for much debate, the same is applicable for this pottery style. Space here does not allow for a lengthy discussion, but a short overview is necessary to establish an understanding concerning the background for the introduction of this pottery type here. Alison Sheridan argues that the pottery assemblage from the megalithic tomb at Achnacreebeag, which includes a plain carinated bowl, provides evidence of an intrusive Neolithic presence in western Scotland, responsible for the introduction of these new ideals. This conclusion is based on comparisons between this material and similar pottery vessels from Brittany coupled with characteristics of the Achnacreebeag tomb which find close parallels in Brittany also. On this basis Sheridan concludes that: 'For most of Britain and all of Ireland, the evidence against Julian Thomas' model of a gradual transition, (from the Mesolithic – Neolithic) with indigenous forager communities being the main agent of change, appears overwhelming - at least to this author'. (Sheridan, 2004, 11).

In effect, Sheridan believes the transition from the Mesolithic to the Neolithic was the direct result of the immigration of (a) particular group/groups of people. As exemplified from the above, Thomas on the other hand strongly disagrees. She argues, with reference to the Mesolithic –Neolithic transformation in Britain and Ireland, that 'these cultural forms were not simply transferred from one

region to another, but emerged out of a phase of cultural negotiation between communities of different kinds...’ (Thomas, 1999, 113).

Thus the process through which the Neolithic Carinated Bowl found its way here shall for the time being at least, remain a debateable topic. Nonetheless, the fact that it has been extensively recovered from contemporaneous contexts in England, Scotland and Wales highlights the existence of established social relations during this period, a necessary factor for the application of either theory.

After the first half of the fourth millennium BC, regional styles such as Lyles Hill ware, Limerick ware, grooved ware and Carrowkeel ware begin to appear and replace the preceding tradition of undecorated carinated bowls.

The Lithic Assemblage from Area 5 (E3569) Kinsalebeg, Co. Waterford by Dermot G. Moore.

Abstract

The excavation of a small pit group and related features at Kinsalebeg produced a quantity of flint material numbering 301 pieces and 109 fragments. The assemblage represents a pebble-based industry for the production of small flakes many of which were further worked into a range of endscrapers. The flint was of good quality and there was an element of selection based on colour particularly that of grey-black flint. In addition, the predominantly unweathered nature of the assemblage indicates it or at least a portion of it was formally deposited within the pits shortly after its period of use. Based on the range of material recovered, a date between the mid-late Neolithic – Early Bronze Age is most likely.

Introduction

A total of 301 pieces of flint and 109 flint fragments (Table 1) were recovered from the excavation of a small group of pits and associated features at the site of Kinsalebeg, County Waterford. Overall, the flint assemblage was of fresh condition with many pieces being of a grey – grey-buff colour with the exception of pieces of a grey-black flint which will be discussed in more detail below.

Primary Material	
Cores	33
Flakes	88
Blades	10
Chunks/spalls	51
Debitage	100
Fragments	109
Secondary Material	
Simple modified pieces	3
Scrapers	16
Total	410

Table 1: Lithic material from Kinsalebeg

The Lithic Assemblage

Table 2 lists the lithic material recovered by context, in this case a series of pits, a linear feature and a general topsoil deposit. Much of the lithic material was recovered from four pits (Pits 4, 6, 8 and 10) which were found in close proximity.

Pit 4

Primary material

The fill of pit 4 produced a sizable quantity of flint consisting of manufacturing debris and two implements of predominantly fresh condition (fresh grey or fresh stained/patinated)¹. Within the manufacturing debris, a total of nine cores were identified consisting of a single platform pebble core (1.1) which measured 38mm x 16mm x 11mm which was well flaked. The flakes/blades were removed from one direction only.

In addition to the single platformed core, four very small dual-platformed pebble cores were identified which ranged in length from 20 – 28mm and breadth 14 – 19mm. One dual platformed pebble core (1.23) was a small and heavily worked example, while another was a portion of small grey-black dual platformed core (1.26). The significance of the grey-black flint will be discussed below. Of the remaining dual platformed cores, one consisted of a small flat example which was quite irregular but which indicated the full working of flint pebbles.

	Pit 4	Pit 6	Pit 8	Pit 10	Pit 14	PH 16	Feat 19	Topsoil
Primary Material								
Cores	9	9	2	8			1	4
Flakes	20	14	22	16	1	3	1	11
Blades	3	2	3	1				1
Chunks/spalls	5	7	22	6	1	1	3	6
Debitage	12	21	27	39			1	
Fragments	11	34	18	39	6	1		
Secondary Material								
Simple modified pieces	1	1	1					
Scrapers	1	4	7	3				1
Total	62	92	102	112	8	5	6	23

Table 2: Lithic Material by excavated context

The four indeterminate² pebble cores had a similar range in size to the dual-platformed cores, consisted of portions of small cores. One example was a small core portion with two small flake removals removed at right angles while another example appears to have been a trial/test piece.

A total of 20 flakes (seven of which were broken) were recovered and most (16) were of fresh condition. The unbroken flakes ranged in length from 11 – 47mm and 12 – 43mm in breadth which corresponds well with the recovered cores. Of the 14 identified striking platforms, eight were pointed indicating punch percussion while six were decortical indicating flaking of the original pebble surface. In addition, five of the flakes were of grey-black flint of which three were broken.

Only one of three small flint blades recovered from this pit was intact and it measured 22mm x 10mm x 2mm. All three blades had pointed platforms and the two broken blades were of grey-black flint.

In addition to the flakes, blades and cores, 12 pieces of fine and generally fresh flintdebitage and 11 flint fragments were recovered from this pit. Of the platforms identified on thedebitage, six were pointed indicative of fine finishing work. Five small irregular flint chunks/spalls were also retrieved.

¹ Fresh condition – primarily sharp edges and defined surface features such as percussion ripple marks

² Indeterminate cores – cannot be assigned to any specific core type such as single platformed and may represent only a portion of the original core.

Secondary worked material

Only two pieces of secondary worked material were recovered from pit 4. The first was an irregular flint decortical flake with a pointed platform (1:22) with an apparent attempt at secondary working on a portion of its dorsal distal end. This was a possible test piece which measured 33mm x 23mm x 7mm.

The second secondary worked piece was a small fine endscraper (or thumbnail scraper) made on a fresh decortical flake (1:61) with a decortical platform which measured 25mm x 20mm x 5mm. It exhibited fine secondary working around a portion of its dorsal distal end.

Pit 6

Primary material

Pit 6 produced more flint material than pit 4 especially in the quantity of flint debitage and fragments. In total, nine cores were recovered. Two were single-platformed cores. The first (6:2), which measured 34mm x 27mm x 19mm, was very well flaked all around its perimeter with flakes/blades removed from one direction only. The second single platformed core (6:5) was a small example which measured 26mm x 18mm x 10mm. It was well worked around a portion of its perimeter with impact damage from bipolar manufacture on opposing end from platform which. There is also slight evidence that this core may originally have begun life as a dual platformed core.

The three dual-platformed cores consisted of a flaked split pebble core with a large flake removed indicating evidence of bipolar reduction. A second dual-platformed pebble core example (6:4) had flakes/blades removed from opposing ends and measured 30mm x 26mm x 15mm. The cortex on this piece was well weathered resulting in fracturing of the platform area of the flake/blades. The third and final example consisted of a portion of pebble flint core with extant flake scars indicating removal from one direction but there is good evidence that the piece was originally a much larger dual platformed core.

Four indeterminate cores were identified. These consisted of a portion of a core manufactured on a weathered older piece (possibly an older core); a core portion consisting of a large flake which was removed from a pebble core with a flake subsequently removed from its ventral face; a slightly burnt small pebble core (dual platform) with evidence of bipolar manufacture as shown by two opposing flake scars; and portion of pebble flint core (manufactured on a flake from a much larger core) with a flake removed from one direction.

A total of 14 predominantly fresh or fresh patinated flakes and two blades were recovered from this pit. Five of the flakes were broken. Of the unbroken examples, of which two were of grey-black flint, length ranged from 17 – 35mm and 11 – 26mm in breadth. Of the five platforms identified, three were pointed and two were decortical. Only one of the blades was intact and it measured 23mm x 10mm x 6mm.

21 pieces of flint debitage were recovered from the fill of this pit of which seven were of grey-black flint. Many of the debitage pieces were of fresh but patinated condition and only four pointed platforms were identified with the rest being indeterminate.

In addition to the debitage, 34 fragments, eight of which were of grey-black flint were also recovered. A total of seven irregular flint chunks/spalls were also retrieved

Secondary worked material

A total of five secondary worked pieces were recovered from pit 6 and these comprised a simple modified flake and four scrapers. The simple modified flake (6:49) was an irregular flake of fresh grey-black pebble flint with fine secondary working along its right lateral dorsal edge and also on a portion of its ventral edge. This piece measured 24mm x 25mm x 6mm.

The four scrapers which were recovered from this pit were all fresh with decortical platforms with the exception of one. The first example was a small endscraper (6:11), which measured 25mm x 23mm x 10mm, made on a pebble flint flake using bipolar reduction. The secondary working was quite steep and was located on the dorsal distal end. The second piece was a fine endscraper (6:12), which measured 30mm x 21mm x 12mm, made on an irregular decortical pebble flint flake. The secondary working which cut through good but slightly weathered cortex consisted of slightly invasive flaking occurred on the dorsal distal end. The third example was also a fine thumbnail scraper (6:13), which measured 22mm x 20mm x 10mm, made on a small grey-black pebble flint flake. The secondary working consists of quite steep and semi-invasive flaking around the dorsal distal end (c.50% of circumference). A pointed platform was also identified. The final example was a crude scraper made on a decortical pebble flint flake. The secondary working (which was quite steep) was located on the dorsal distal end and consisted of slight flaking of a small area of the distal end utilizing the fractured edge of the remaining cortex.

Pit 8

Primary material

The fill (7) of this pit produced the second largest quantity of lithic material from a single cut feature on the site. Only two cores consisting of a dual-platformed example and an indeterminate core were recovered. The dual platformed core (5:42) of fresh grey-black pebble flint exhibited two good flake/blade scars struck from opposing ends. This core measured 31mm x 17mm x 14mm. The indeterminate example which measured 36mm x 24mm x 19mm was a heavily patinated core which appears to be more of a trial piece which exhibited two flake scars.

A total of 22 flakes were recovered of which 14 were broken. Overall, the unbroken flakes ranged in length from 14 – 37mm and 14 – 25 in breadth. Of note was a grey-black flint flake/blade piece struck from a larger weathered core or from a large weathered pebble; a finishing flake of fine grey-black flint; and another broken example of grey-black flint. Of the identified platforms, seven were pointed and 10 were decortical platforms.

Only three blades, one of which was broken were recovered. One unbroken blade which was an irregular example was a core rejuvenation blade with several residual flake/blade scars and retained cortex. It measured 48mm x 14mm x 16mm.

A total of 27 pieces of debitage were recovered of which seven were of grey-black flint. These and the rest of the debitage were all of generally fresh condition and seven of the debitage pieces had pointed platforms. Of the 18 fragments of generally fresh condition that were recovered, five were of grey black flint.

In addition to these, a total of 22 chunks/spalls were recovered with 18 being burnt.

Secondary worked material

The fill of pit 8 produced a total of eight secondary worked pieces, the largest quantity of any of the cut features. These comprised one simple modified flake and seven scrapers. The simple modified flake (5:77) was a rather unusual piece, which measured 29mm x 22mm x 7mm, and which had no specific secondary working. Instead the identified secondary working consisted of flaking of both the dorsal and ventral faces to remove the platform and create an edge. This piece may have functioned as a gouge.

A total of seven endscrapers were recovered from this feature and ranged in length from 24 – 36mm and 17 – 29 in breadth and 8 – 14 in thickness. The first was a small weathered endscraper (5:70) made on a decortical split pebble flint flake with dorsal flake scarring possibly to remove the platform. There was a small area of fine but steep secondary working on the dorsal proximal end.

The second was a small hump-backed endscraper (5:71) made on a split pebble flake with steep (almost vertical) secondary working on its dorsal distal end. There was also evidence of flaking on the left lateral dorsal edge. The third example was a small endscraper (5:72) made on a crude decortical pebble flint flake with steep secondary working on its dorsal distal end.

The fourth piece was a well made endscraper (5:73) made on a heavily patinated pebble flint flake with fine secondary working on the dorsal proximal end. There was also slight invasive secondary working along a portion of the right lateral dorsal edge. Evidence of bipolar flaking was shown by impact damage on the opposing distal end.

The fifth example was a weathered and partially burnt endscraper (5:74) which may have originally been an attempt to manufacture a disc scraper. The ventral face displayed flake scarring and the secondary working of the dorsal face occurred on two-thirds of the dorsal edge and was relatively steep. A pointed platform was also identified.

The sixth example consisted of a fine small endscraper (5:75) made on a decortical pebble flint flake with good secondary working on the dorsal distal end. This piece also displayed evidence of bipolar manufacturing on the opposing proximal end. The final piece was a small crude endscraper (thumbnail scraper) (5:76) made on a decortical pebble flint flake with fine secondary working on its dorsal distal end. A pointed platform was also identified.

Pit 10

This pit produced the largest quantity of lithic material from the site although much of the flint pieces were made up of debitage and fragments.

Primary material

A total of eight cores were recovered of which five were dual-platformed and three were indeterminate.

Of the five dual-platformed pebble cores, one was a good example (4:21) which measured 31mm x 20mm x 16mm which exhibited two good flake scars. A second good example (4:23) also exhibited several good flake scars and measured 27mm x 13mm x 11mm.

The remaining three dual-platformed cores consisted of an irregular pebble core with good cortex remaining; a well worked dual-platformed core portion; and a dual-platformed core on a pebble flake with two irregular flake removals.

Of the three indeterminate cores, one was of note and consisted of a portion of small grey-black flint flake core, which measured 17mm x 15mm x 9mm. This core was manufactured on a broken flake.

A total of 16 flakes were recovered of which eleven were broken. Two of the broken flakes were of grey-black flint. The unbroken flakes ranged in length from 12 – 31mm and 7 – 18mm in breadth.

One small flake which measured 18mm x 14mm x 4mm struck from a well-worked core was the only example to display a planar platform albeit quite small. Of the remaining identified platforms, four

were pointed and six were decortical. The single blade was a fine but broken example of a decortical blade of pebble flint with a pointed platform which measured 22mm x 11mm x 3mm.

A total of six chunks/spalls were also recovered one of which was of grey-black flint.

A large quantity of flint debitage consisting of 39 pieces was recovered. 16 pieces were of grey-black flint. Generally all the debitage was of a fresh condition with 17 pointed platforms being identified. A further 39 flint fragments with seven being of grey-black flint were also retrieved. Almost all the fragments were of a fresh condition.

Secondary worked material

Three end scrapers were recovered from this pit. The first was an endscraper (4:26) which measured 39mm x 33mm x 11mm made on a decortical pebble flint flake with a small area of secondary working (which was slightly invasive) on a portion of the dorsal distal end. The piece was subsequently burnt. The second piece (4:27) was a small fine endscraper (thumbnail scraper) which measured 24mm x 16mm x 6mm made on a decortical pebble flint flake with a large irregular area of secondary working on its dorsal distal end. This secondary working was quite steep and is suggestive of working of an original fracture (possibly of a larger scraper). The final scraper (4:28) was a small fine endscraper (thumbnail scraper) which measured 23mm x 25mm x 8mm, made on a decortical pebble flint flake with small area of secondary working on its dorsal distal end.

Pit 14

The lithic material recovered from this pit comprised a small broken weathered flint flake and six flint fragments (one of which was of grey-black flint) and one small irregular flint chunk.

Pit 16

This pit produced three flint flakes, one chunk/spall and a single flint fragment. The flakes consisted of a very fine (but broken) grey-black flint flake with very fine dorsal flake scars which measured 17mm x 15mm x 2mm and two partially burnt and broken decortical pebble flint flakes.

Linear Feature 19

The linear feature (19) produced a small quantity of flint material. This consisted of a single indeterminate core portion (13:3) of a heavily patinated core which displayed evidence of edge preparation. This piece measured 15mm x 17mm x 18mm.

The other notable piece was a single irregular patinated split flint pebble flake which measured 28mm x 23mm x 12mm displayed evidence of bipolar reduction and a decortical platform. The remaining material consisted of a single regular piece of debitage and three natural flint chunks.

Topsoil Finds

The topsoil (context 1) material from the site produced a small quantity of lithic material. A total of four cores were recovered which consisted of two single platformed cores and two dual-platformed examples. The first single platformed core (2:1) was a relatively large example with two large flake/blade removals and core edge preparation made on an irregular pebble which measured 44 mm x 30mm x 30mm. The second single platformed pebble core (3:6) was represented by a core portion with two good flake removals indicating full working of the core. This core measured 35mm x 18mm x 10mm.

The first dual-platformed core (2:5) was a heavily worked blade core (bipolar) which measured 31mm x 14mm x 7mm. The second example was a weathered flint possibly dual platformed core (3:7) manufactured on a flake with two dorsal blade scars and a series of flakes removed from ventral face. This core measured 36mm x 23mm x 10mm.

A total of 11 flakes, four of which were broken were recovered. The unbroken flakes ranged in length from 11 – 33mm and 10 – 38mm in breadth. One planar platform was identified belonging to a small grey-black flint flake. A single small bipolar blade with a decortical platform which measured 31mm x 10mm x 4mm was the only blade recovered.

The topsoil also produced six flint chunks of which four were heavily patinated and natural. Of the remaining two, one was of grey-black flint.

Secondary worked material

One small fine (thumbnail) endscraper (2:10) made on a fresh decortical flake which measured 25mm x 25mm x 8mm was the only piece with secondary working recovered from the topsoil. It displayed fine secondary working which was occasionally steep around a portion of its dorsal distal end.

Discussion of the Assemblage

The material which was retrieved from a small series of pits, related features and overlying topsoil deposit at Kinsalebeg indicates a domestic flint assemblage consisting of a small range of simple modified flakes and scrapers in association with primary manufacturing debris in the form of cores, flakes, blades, debitage and chunks/spalls.

The flint assemblage is notable in three respects. Firstly, the quality and condition of the raw material is very good with the apparent selection of good quality beach pebble flint. The source of this beach pebble raw material is likely to be locations such as the Waterford and Wexford coasts. There is also the additional deliberate selection of certain types/colours of flint material - notably grey-black flint - which is of a finer quality - more glass-like - than the other recovered flint. Analysis of a series of sites dating to the Neolithic - Bronze Age from the N11 by the author has found no flint of this colour which would indicate that this material was a rare occurrence. It is interesting to note that the grey-black flint is very similar to that of southern England (particularly the flint mined at Grimes Graves) and also to glassy black obsidian. The selection of flint of a specific colour was noted at the Grooved Ware site of Scroggy Road in Limavady, County Derry (Dunne forthcoming). Here a fine pink-red flint was selected for the manufacture of a specific tool - in this case a small flint knife - with very fine debitage being recovered from one pit feature.

Secondly, the range of material which forms the assemblage indicates that the industry consisted of the utilization of small beach pebbles for the production of a predominantly flake-based industry. Dual platformed cores predominated within the assemblage numbering 15 in total with only five single platformed cores. The remainder were of indeterminate specimens. One notable aspect of many of the cores was the full working of each and the utilisation of portions and flakes to produce flakes and occasionally blades. There was also evidence of core trial/test pieces. The size of the cores and the range of flake/blade removals suggest that there may have been a premium on good quality flint raw material.

The range of flake and blade length corresponds well with the size of the cores as it has to be remembered that the cores have all been heavily worked and that they are much smaller than their original size. There was also an element of pre-treatment by heating evident on some of the pieces although this is notoriously difficult to prove categorically when material can be burnt accidentally.

The main knapping technique appears to be one of splitting the original pebbles and then using bipolar reduction to remove flakes and blades. In many cases, indirect percussion appears to have been the preferred method for creating the flakes and blades as shown by the pointed platforms although many of the secondary worked material especially the scrapers had decortical platforms formed by knapping flakes direct from the original pebbles. There was no evidence of faceted platforms, common in many Neolithic flint assemblages.

There is a dominance of scrapers (small endscrapers and thumbnail type scrapers) within the secondary worked portion of the assemblage. This indicates that the assemblage was domestic in function, suggesting that the site was possibly a short-term primary preparation site possibly for hides.

Thirdly, the location of the contexts of this lithic material, primarily from four pits within an area of six square metres indicate the utilization of primary knapping and tool making area either in situ or as refuse material deposited within the pits. Based on the quality and condition of the material, it is most likely that the material was specifically deposited in the pits almost immediately after the knapping activity in the vicinity had ceased. The lack of weathering indicates that there was no long-term exposure of a chipping floor to the elements. This suggests formal deposition of the assemblage (or a portion of it) after use. Such formal deposition of knapping debris and secondary worked pieces occurs on a range of Neolithic and Bronze Age sites such as Ballyharry on Islandmagee in county Antrim (Moore 1999; 2001), the large Neolithic – Early Bronze Age enclosure site at Kilshane, north county Dublin (Moore in press) and the Grooved Ware site at Scroggy Road in Limavady, county Derry (Dunne forthcoming).

The range of material recovered cannot be specifically assigned to a narrow chronological period based on the range of diagnostic tools such as the endscrapers. This is primarily due to the nature and size of the raw material which provides few clues to the date of the assemblage. However, based on the type and range of knapping techniques and the quality of the secondary worked material, it is suggested that a broad date range of mid-late Neolithic – Early Bronze Age is most likely.

Small size assemblages particularly those from the south-west and south-east of Ireland, in the absence of diagnostic implements such as projectiles are difficult to date as has been noted by Woodman at Lough Gur (Woodman and Scannell 1993). This was further shown by both Woodman (Woodman 1994) and the author (Moore 1999) whereby, in the absence of such diagnostic tools, the variability (especially quality, size and type) of the resource made assigning undiagnostic implements such as scrapers, particularly the ubiquitous and variable endscraper, very difficult. However, the analysis of any pottery remains and radiocarbon dates may refine the chronology at Kinsalebeg.

Conclusion

The flint material recovered from Kinsalebeg represents a relatively substantial and high quality domestic assemblage probably related to some form of hide preparation which was associated with a small series of closely-set pits and related features. The range of manufacturing debris and secondary worked material concentrated within the fills indicate that four pits were the focus of the activity or the focus of deposition of at least a portion of the assemblage. This would suggest that the area and/or the assemblage itself had some special significance. Such formal deposition has been noted at a number of British sites such as at Coneybury Hill in Wiltshire (Edmonds 1995) where Edmonds links the deposition of material in a large pit to connecting the inhabitants of the site to the landscape. This can also be seen at Ballyharry on Islandmagee (Moore 1999; 2003) where lithics and ceramic debris was placed in shallow pits as a final act in the usage of the site. This significance is also shown

by the initial selection of good quality flint raw material and the selection of grey-black flint for the production of implements, of which two were found.

Area 6 – E3570 – Ch. 720 - 810 (Figure 4, Plates 6, 7)

During the testing of this area two *fulachta fiadh* were identified in the northeast and northwest corners of the field. The *fulacht fiadh* situated in the west corner was a shallow spread [030] of heat-shattered sandstone in a matrix of grey-white silty clay (O'Brien 2005, F40). It measured 8m by 9m and its maximum depth was 0.12m.

The second *fulacht fiadh* was situated in the eastern area of the trench and was heavily disturbed by modern interference, causing it to have been dispersed over an area measuring 8m east-west and 7.5m north-south (O'Brien, 2005, F41). One undisturbed pit was identified and subsequently recorded. This pit [003] was oval in plan and measured 1.54m northwest-southeast and 0.97m northeast-southwest. Its maximum depth was 0.15m. It contained four fills; the primary fill [006] was a very thin lens forming the base of the feature and consisted of compact pink oxidized clay. Overlying this was a very charcoal enriched lens [029], 0.08m in depth. The upper fill [004] contained loose mid brown silty clay with approximately 70% heat-shattered stone. Abutting this was loose black silty clay [005] with 45% heat shattered stone and frequent charcoal flecks. A single entity AMS two sigma date of cal BC 1606-1414 came from this fill. These two fills [004 and 005] were mottled in places. This feature [003] may have been a hearth.

A linear feature [007] situated 0.3m southeast of pit [003] was orientated northwest/southeast. This feature ran under the compulsory purchase order line (CPO) and extended beyond it. It measured 5m in length with its average width 1.2m. The northwest end widened and was almost circular in plan with steep sloping sides to a rounded base. As the feature extended to the southeast, it became more linear shaped; the sides more gently sloped. The base was broad and irregular. Three fills were recorded in this feature. The primary fill [027] was medium brown silty clay with 60% heat-shattered stone. Overlaying this in the northwest of the feature was compact light brown re-deposited natural [028] with occasional stones. Four pockets of silty clay with 60% heat-shattered stone overlay fills [027 and 028]. The inconsistency of the fill suggests that it was re-deposited from nearby and may have just naturally filled depressions in the feature, especially as the feature was steeply sloped towards the southeast. The remainder of the site constituted a number of natural depressions filled with the remains of a *fulacht fiadh*, severely truncated by a modern drainage pipe orientated north-south through the site. Two narrow field drains orientated east-west were also identified.

Discussion

Site 6 revealed the remains of two burnt spreads. It is generally accepted that such burnt spreads required a substantial amount of water, and they were invariably located near springs, streams or in marshy areas (e.g. O' Neill, 2000). The spreads at Shancoole were no exception as a stream orientated north-south was flowing along the eastern field boundary.

Prior to the removal of the spread of heat-shattered stone and silty clay on the second burnt spread, it was anticipated that at least one trough cut into natural subsoil would have been identified. It has been established that the function of burnt spread troughs was to boil water (Waddell 1998, 177) but how this water was subsequently utilised is difficult to ascertain. Burnt mound material is a direct result of trough use and the subsequent dumping of waste.

However no trough or any type of cut feature was identified beneath the spread or within the confines of the excavation except for context 003. It is possible that there was a trough on the

periphery of the mound, outside the limit of excavation and that the waste material was heavily disturbed- alternatively the mound could represent an example where no trough was ever present. As mentioned, only one pit [003] remained undisturbed and this showed evidence of *in situ* burning. A single entity AMS two sigma date of cal BC 1606-1414 came from this feature placing it in the Early to Middle Bronze Age. This feature was shallow (0.15m) and may have been the remains of a hearth. Hearths can be difficult to identify on burnt spread sites due to the waterlogged nature of the site and the later use of the land. In this case, the hearth was positioned on the top of a well drained easterly slope. No coherent trough was identified due to heavy modern land draining.

No artefacts were retrieved during the course of excavation of this burnt spread.

Area 7 – E3571 – Ch. 915 - 960

During testing a basal deposit of grey-white marl was sealed by a lens of peat. A deposit of brown-grey re-deposited clay was overlying this peat. The same sequence was again identified when the area was topsoil stripped. A one-metre monolith was taken through the sediments in this area. This monolith was analysed by Dr S. Timpany and is discussed in Appendix 7. The stratigraphic sequence contained within the monolith was recorded before sub-sampling for pollen and radiocarbon dating was undertaken. The sample was a complex sequence of peat and silt, representing periods of stable ground surface (peat) and submergence under possible freshwater (silt).

Contamination occurred at some point in the lower layer as there is a difference in the radiocarbon dates received. The plant material yielded dates of 5840-5660 Cal. BC; the peat dates 11930-11720 Cal. BC. The pollen data suggests that this disturbance lies between these two dates. The middle peat layer dates to 2460-2220 Cal. BC.

The pollen sequence throughout this period shows an open environment of marshland which was effected by periods of flooding and/or submergence.

Discussion

This bog was naturally occurring and did not appear to be of archaeological significance, Area 6 is located directly west of here. The paleoenvironmental analysis of this material is the subject of Appendix 7.

Area 8 – E3572 – Ch. 485 - 510

During testing one archaeological feature was identified (O'Brien 2005, F60). This feature consisted of a roughly oval shaped pit [003], measuring a minimum of 1m by 1.35m in diameter. Its fill consisted of burnt clay and charcoal in a matrix of mid-brown sandy clay, with occasional small and medium-sized angular stones. A number of these stones appeared to be heat-fractured *in situ*. Following topsoil stripping this feature was identified and subsequently recorded. Upon excavation the feature was seen to be very shallow (0.04m). It contained occasional flecks of charcoal. It was very similar to the isolated pits identified in Area 1 and Area 9. No finds were retrieved from Area 8.

Discussion

The feature recorded in Area 8 was poorly preserved, most likely as a result of field clearance or modern contamination.

Area 9 – E3573 – Ch. 565, 580 and 605

During testing three isolated possible pits were identified (O'Brien 2005, F70, F72, F75). Two of the pits had *in situ* traces of burning; there were no finds from any of the features. Following topsoil stripping, three pits were identified and subsequently recorded. Pit deposit [003] was very irregular in plan. Its fill was loose red-brown silty clay with occasional flecks of charcoal. It measured 1.7m east-west by 1.9m north-south and was 0.13m deep. A second deposit [004] of red-brown silty clay with a little oxidized clay *in situ* was recorded. Again this was irregular in plan; some of the deposit undercut the natural subsoil. It was 0.1m in depth. The third deposit was irregular in plan and consisted of loose to moderately compact red-brown silty clay with areas of moderately compact oxidized clay and very occasional flecks of charcoal. This measured 1.2m east-west and 0.5m north-south.

Discussion

The three deposits recorded during the course of excavation all appear to be associated with field clearance. The rare flecks of charcoal found are too minute to either identify or date.

<i>Lab No.</i>	<i>Context/Reference</i>	<i>Delta 13C rel PDB</i>	<i>Radiocarbon Age BP</i>	<i>Calibrated age ranges 1σ cal AD</i>	<i>2σ cal AD</i>
UB-7065	004	-27.0	1586±36	428-465	405-556

<i>Lab No.</i>	<i>Context/Reference</i>	<i>Delta 13C rel PDB</i>	<i>Radiocarbon Age BP</i>	<i>Calibrated age ranges 1σ cal BC</i>	<i>2σ cal BC</i>
UB-7066	009	-25.0	3525±39	1911-1775	1952-1745
UB-7067	013	-26.0	4160±41	2872-2678	2883-2621
UB-7068	005	-28.0	3215±39	1514-1441	1606-1414

6. OVERALL DISCUSSION

Following the excavation of eight sites as part of the N25 Kinsalebeg Realignment, Co. Waterford, three sites were identified as being of archaeological significance; Areas 1, 5 and 6. The remains of a possible kiln of unknown use and a possible waste pit were recorded on Area 1. Abundant charcoal was dated to the Early Christian Period.

Area 5 consisted of four pits containing flint (a mixed assemblage ofdebitage, primary workings, waste and naturally shattered), hazelnut shell dating to the Early Bronze Age and a possible fragment of pottery. A curvilinear feature (dating Late Neolithic) containing pottery, and a small pit was also discovered at Area 5. The truncated remains of two *fulachta fiadh* dating to the Early – Middle Bronze Age, were excavated and recorded on Area 6. The sites are difficult to interpret as the areas of excavation were quite small especially Area 5 where the road-take was very narrow. The three archaeological sites were evenly spaced along the route, as the route measured approximately 2km in length the sites were still relatively close to one another and may be on the periphery of a larger archaeological complex on this southwest facing slope, favoured by prehistoric settlers.

Some of the features in areas 1, 2, 3, 7, 8 and 9 showed evidence of burning *in situ*; this appeared to be the result of modern interference and field clearance. Modern china was recovered from pit [010] – Area 1 Trench C.

The environmental makeup of the locality has been reconstructed through the analysis of the pollen core (See Appendix 7). For much of the early prehistory of the area (into at least the Mesolithic Period) an open marshland environment was present, and was subjected to periodical flooding and/or submergence. This marsh areas was most likely fringed by carr- woodland (willow, birch and oak) and indicators suggest it was a location where wild animals, such as wild pig and deer, grazed. Sometime after the Mesolithic and prior to the Late Neolithic the landscape had changed significantly, with pine, oak and hazel woodland having firmly established itself. This woodland must have been dense as it formed a closed canopy, and the makeup is suggestive of a drier location. This landscape became wetter following this, and further developed after the Late Neolithic and into the Bronze Age with oak, alder and hazel woodland dominating with sedge/reed swamp nearby.

It is clear that the archaeological remains represent a number of different phases of occupation. This is exemplified by Area 5 where fragments of an Early Neolithic Carinated Bowl were discovered in a feature close to a C14 dated Bronze Age burnt mound. The pottery is of extreme importance as it dates to c. 4000- 3700 BC and is the first record of activity of this date from West Waterford/ East Cork. This pottery type is closely linked with the emergence of agriculture in Ireland. It is believed to have developed to facilitate cereal food cooking and storage- the vessels are round-bottomed with distinctive shoulders, concave necks and simple pointed or slightly rounded rims. They are usually undecorated.

The flint assemblage recovered from the excavation, principally from pits in Area 5, is a further indicator of the longevity of the site. The majority of flints were from high quality beach pebble flint, available on the Waterford coast. Typologically the tools could be dated to the period of the mid-Neolithic to Early Bronze Age, and were most probably used for the preparation of hides. There is an indication that the assemblage from the pits could represent formal deposition.

The longevity of occupation in the locality is borne out by the Bronze Age fulachta fiadh (Area 6) and the potential Early Christian kiln (Area 1). This combined with the earlier features, particularly evident in Area 5, indicates human activity from at least the Early Neolithic to the Early Christian periods. Given the restricted nature of the excavation this is a significant date span. It is likely that Neolithic and Bronze Age habitation sites are located in close proximity to the excavated features, which may represent peripheral working areas. The discovery of Early Neolithic occupation in the east Cork/West Waterford locale is perhaps the most significant discovery made as a result of the excavation.

7. REFERENCES AND FURTHER READING

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Appendix 1: Context register

Area 1

Context No.	Feature No. in Testing report	Type	Description	Interpretation
001	-	Topsoil	Mid brown sandy silt	Topsoil
002	-	Subsoil	Grey yellow brown boulder clay	Subsoil
003			Oxidised clay, orange red sandy clay	
004	F4		Charcoal rich sandy silt	
005			Charcoal rich silt	
006		Fill	Grey black silty sand	
007		Cut	Cut of kidney shaped pit	
008		Fill	Modern pit fill	Modern pit
009		Fill	Modern pit	Modern pit
010		Spread	Spread of modern charcoal silt	Modern spread
011		Deposit	Small patch of oxidized clay	Oxidized clay
012		Cut	Cut of Kiln	Cut
013		Cut	Cut of natural depression	Natural depression
014		Fill	Fill of [013] grey brown silt	Fill of natural depression
015		Lining/Fill	Stone lining within [012]	Stone Lining

Area 5

Context No.	Feature No. in Testing report	Type	Description	Interpretation
001		Topsoil	Mid brown sandy silt	Topsoil
002		Subsoil	Orange brown sandy clay	Subsoil
003		Fill	Mid brown/grey silty clay fill of circular pit	Fill of pit
004	F20	Cut	Cut of circular pit, fill [003]	Pit
005		Fill	Mid brown/grey silty clay fill of irregular pit	Fill of pit
006	F21	Cut	Cut of irregular pit, fill [005]	Pit
007		Fill	Mid brown/grey silty clay fill of oval pit	Fill of pit
008	F24	Cut	Cut of oval pit, fill [007]	Pit
009		Fill	Mid brown/grey silty clay fill of irregular pit	Fill of pit
010		Cut	Cut of irregular pit, fill [009]	Pit
011		Deposit	Deposit of orange brown silty clay fill of [014]	Deposit
012		Fill	Dark brown/black silty clay fill of	Fill

			[014]	
013		Fill	Mid brown silty clay fill of [014]	Fill
Context No.	Feature No. in Testing report	Type	Description	Interpretation
014	F30	Cut	Cut of feature, fills [011, 012 & 013]	Cut
015	F38	Fill	Brown/black silty clay fill of small pit	Fill
016	F37	Cut	Cut of small pit, fill[015]	Cut of Pit
017		Fill	Light orange brown silty clay	Fill
018		Fill	Mid orange brown silty sandy clay	Fill
019		Cut	Cut of curvilinear pit/feature, fill [018]	Cut
020		Cut	Cut of post-hole in south west area of [019]	Cut
021		Deposit	Re-deposited natural subsoil	Deposit

Area 6

Context No.	Feature No. in Testing report	Type	Description	Interpretation
001		Topsoil	Mid brown sandy silt	Topsoil
002		Subsoil	Orange brown sandy clay	Subsoil
003		Cut	Cut of sub-circular/oblong feature	Cut
004		Fill	Brown stony silty clay, fill of [003]	Fill of pit
005		Fill	Loose black stony silty clay, secondary fill of [003]	Fill of pit
006		Fill	Pink oxidized clay at base of pit [003]	Base of pit
007		Cut	Oblong feature	Cut
008		Fill	Black stony silty clay upper fill of [007]	Fill
009		Cut	Oval pit	Cut
010		Fill	Grey/brown sandy clay, fill [009]	Fill
011		Cut	Rounded cut, in section of baulk (CPO)	Cut
012		Fill	Black stony silty clay fill of [011]	Fill
013		Cut	Oblong shaped feature	Cut
014		Fill	Compact grey/black silty clay, fill of [013]	Fill
015		Cut	Irregular cut, disturbed feature	Cut

016		Fill	Brown silty clay fill of [015]	Fill
017		-	Void	-
018		-	Void	-
019		Cut	Oval feature	Cut
Context No.	Feature No. in Testing report	Type	Description	Interpretation
020		Fill	Fill of oval feature [019]	Fill
021		-	Void	-
022		-	Void	-
023		Cut	Oval feature	Cut
024		Fill	Loose black stony coarse sandy clay, tertiary fill of [023]	Fill
025		Fill	Loose brown stony silty clay, secondary fill of [023]	Fill
026		Fill	Grey marl deposit at base of [023]	Fill
027		Fill	Medium brown stony fill of [007]	Fill
028		Deposit	Re-deposited natural subsoil	Deposit
029		Deposit	Charcoal lens between [006] & [004]	Deposit

Appendix 2: Finds Register

Area 4

Reference No.	Context No.	Find No.	Material	Type	Identification	Description	Habitat/location
A018/004	001	001	Flint		Flakes and cracked pebbles	1 small bag (4 pieces)	Office
A018/004	001	002	Sandstone		Broken piece	1 piece of smooth sandstone	Office
A018/004	001	003	Sandstone ?		Sandstone?	1 round stone	Office
A018/004	001	004	Flint		Flint	1 Flint	Office

Area 5

Reference No.	Context No.	Find No.	Material	Type	Identification	Description	Habitat/location
A018/005	003	001	Flint		Flakes and cracked pebbles	1 small bag (62 pieces)	Office
A018/005	001	002	Flint		Cracked pebbles	1 small bag of flint from western half of site. (10 pieces)	Office
A018/005	001	003	Flint		Cracked pebbles	1 small bag of flint from eastern	Office

						half of site. (13 pieces)	
A018/005	009	004	Flint		Flakes and cracked pebbles	1 small bag. (112 pieces)	Office
Reference No.	Context No.	Find No.	Material	Type	Identification	Description	Habitat/location
A018/005	007	005	Flint		Flakes and cracked pebbles	1 small bag. (102 pieces)	Office
A018/005	005	006	Flint		Flakes and cracked pebbles	1 small bag. (92 pieces)	Office
A018/005	009	007	Hazel		Hazelnut shell	Small fragments of hazel nut shell	Office
A018/005	001	008	Iron		Horse shoe	1/3 of a horse shoe	Office
A018/005	001	009	Clay		Clay pipe stem	c. 1.5cm of clay pipe stem	Office
A018/005	001	010	Pottery		Late 18 th - 19 th /20 th century tin glaze white ware	Pottery (2 sherds)	Office
A018/005	001	011	Glass		Green glass	Fragment of glass	Office
A018/005	018	012	Pottery		Possible prehistoric pottery	Very small fragments of pottery	Office
A018/005	018	013	Flint		Cracked pebbles	Flint (6 pieces)	Office
A018/005	018	014	Metal		Metal	Piece of Metal	Office
A018/005	015	015	Stone		Stone	Stone – smooth on one side	Office
A018/005	015	016	Flint		Flakes	Flint (5 pieces)	Office
A018/005	013	017	Flint		Flakes	Flint (8 pieces)	Office
A018/005	001	018	Lead		Musket Shot	Round Musket shot	Office
A018/005	001	019	Flint		Cracked Pebbles	Flint (28 pieces)	Office

Area 6

Reference No.	Context No.	Find No.	Material	Type	Identification	Description	Habitat/location
A018/006	001	001	Pottery		17 th – 19 th /20 th century brown earthen ware	Brown ware pottery	Office

Appendix 3: Sample Register

Area 1

Sample No.	Context No.	Amount in litres	Description	Type/ Initial results
1	004	10 litres	Moderately compact black/purple charcoal rich sandy silt with frequent charcoal flecks and fragments of small to medium angular and sub-angular stones	Sandy silt
2	005	10 litres	Compact charcoal rich silt with burnt clay occasional medium and small angular stones and occasional pieces of charcoal	Silt

Area 5

Sample No.	Context No.	Amount in litres	Description	Type/ Initial results
1	007	10 litres	Orange brown silty clay	Silty clay
2	005	10 litres	Orange brown silty clay	Silty clay
3	009	10 litres	Dark brown silty clay	Silty clay
4	003	10 litres	Orange brown silty clay	Silty clay
5	013	10 litres	Lower layer of pit [014]	Silty clay
6	015	10 litres	Fill of small pit south of [014]	Silty clay

Area 6

Sample No.	Context No.	Amount in litres	Description	Type/ Initial results
1	004	10 litres	Mid brown silty clay with 70% angular stones	Silty clay
2	029	10 litres	Charcoal enriched silty clay	Silty clay
3	005	10 litres	Loose black silty clay with 70% angular stones and frequent charcoal flecks	Silty clay
4	006	10 litres	Pink oxidized clay	Oxidized clay
5	016	10 litres	Brown silty clay with small and medium angular stones and occasional charcoal flecks	Silty clay
6	020	10 litres	Brown grey silty clay with occasional medium and small angular and sub-angular stones	Silty clay
7	024	10 litres	Loose silty clay with 70% angular and sub-angular stones and moderate charcoal flecks	Coarse sandy clay
8	025	10 litres	Loose mid brown sandy clay with 70% sub-angular stones	Sandy clay
9	008	10 litres	Silty clay with 70% heat-shattered stone and moderate charcoal flecks	Silty clay
10	027	10 litres	Medium brown silty clay with a high percentage of angular and sub-angular stone	Silty clay

Appendix 4: Photograph Register

Photograph No.	Direction Facing	Description
1		Void
2	N	Area 1A - Pre-excavation of possible kiln [012]
3	N	Area 1A - Pre-excavation of deposit [005]
4	N	Area 1D – Pre-excavation of [007/008/009]
5	N	Area 1D – Post-excavation of [007/008/009]
6	W	Area 1C – Pre-excavation of [010]
7	W	Area 1C – Pre-excavation of [011]
8	E	Area 1A – Section through possible kiln [012]
9	E	Area 1A – Section through possible kiln [012]
10	E	Area 1A – Section through possible kiln [012]
11	E	Area 1A – Section through possible kiln [012]
12	E	Area 1A – Section through possible kiln [012]
13	E	Area 1A – Section through deposit [005]
14	SW	Area 1A – Overview
15	WSW	Area 1A – Overview
16	E	Area 1A - Kiln
17	W	Area 1A – Kiln
18	NW	Area 1A - Kiln
19	E	Area 1A – Kiln
20	E	Area 1A – Kiln
21	E	Area 1A – Kiln
22	E	Area 1A – Kiln
23	N	Area 1A – Kiln
24	N	Area 1A – Kiln
25	W	Area 1A – Kiln
26	S	Area 1A – Kiln
27	E	Area 1A - Kiln
28	E	Area 1A – Kiln
29	E	Area 5 – Topsoil stripping
30	S	Area 5 – Pit [004] sectioned
31	S	Area 5 – Pits [004 & 006] sectioned
32	W	Area 5 – Pit [004] sectioned
33	W	Area 5 – Pits [004 & 006] sectioned
34	E	Area 7
35	E	Area 7
36	E	Area 7
37	W	Area 7
38	W	Area 2
39	SW	Area 2 – section
40	W	Area 2
41	W	Area 2
42	E	Area 6 – Pit [003]
43	E	Area 6
44	W	Area 6
45	S	Area 6 – Pipe, modern interference

Photograph No.	Direction Facing	Description
46	NW	Area 6
47	S	Area 6
48	S	Area 6
49	NW	Area 6
50	W	Area 6
51	N	Area 6
52	N	Area 6
53	S	Area 6
54	E	Area 5 – Pre-excavation of pit [016]
55	E	Area 5 – Pre-excavation of pit [016]
56	W	Area 5 – Eastern half
57	E	Area 5 – Eastern half
58	E	Area 5 – Post-excavation of pit [016]
59	W	Area 5 – Section through pits [008 & 010]
60	S	Area 5 – Section through pits [008 & 010]
61	E	Area 5 – Eastern half
62	E	Area 5 – Eastern half
63	E	Area 5 – Eastern half
64	E	Area 5 – Eastern half
65	S	Area 5 – Pits [004, 006, 008 and 010] Post- excavation
66	SW	Area 5 – Pits [004, 006, 008 and 010] Post- excavation
67	W	Area 5 – Pits [004 and 006] Post- excavation
68	E	Area 5 – Pits [008 and 010] Post- excavation
69	E	Area 5 – Pits [004, 006, 008 and 010] Post- excavation
70	E	Area 5 – Pits [004, 006, 008 and 010] Post- excavation
71	E	Area 5 – Pits [004, 006, 008 and 010] Post- excavation
72	E	Area 5 – Pits [004, 006, 008 and 010] Post- excavation
73	E	Area 5 – Pits [004, 006, 008 and 010] Post- excavation
74	E	Area 5 – Eastern half
75	E	Area 5 – Eastern half
76	W	Area 5 – Eastern half
77	W	Area 5 – Eastern half
78	E	Area 5 – Eastern half
79	W	Area 5 – Eastern half
80	E	Area 5 – Eastern half
81	-	Void
82	-	Void
83	W	Area 6 – Small spread of heat-shattered stone
84	W	Area 6 – Small spread of heat-shattered stone
85	W	Area 6 – Small spread of heat-shattered stone
86	NW	Area 6 – Small spread of heat-shattered stone
87	W	Area 8 – Pit [003]
88	NW	Area 6 – Fulacht fiadh
89	NW	Area 6 – Fulacht fiadh
90	W	Area 6 – Fulacht fiadh
91	W	Area 6 – Fulacht fiadh
92	E	Area 6 – Fulacht fiadh
Photograph	Direction	Description

No.	Facing	
93	-	Void
94	ENE	Area 6 – Feature [003]
95	ENE	Area 6 – Feature [003]
96	NW	Area 6 – Fulacht fiadh
97	NW	Area 6 – Fulacht fiadh
98	ENE	Area 6 – Feature [003]
99	SE	Area 6 – Fulacht fiadh
100	W	Area 6 – Fulacht fiadh
101	W	Area 6 – Fulacht fiadh
102	W	Area 6 – Fulacht fiadh
103	E	Area 5 – Eastern half
104	E	Area 5 – Eastern half
105	E	Area 5 – Eastern half
106	W	Area 5 – Sieving
107	-	Void
108	-	Void
109	E	Area 5 – Eastern half
110	E	Area 5 – Eastern half
111	E	Area 5 – Eastern half
112	-	Void
113	-	Void
114	W	Area 5 – Sieving
115	W	Area 5 – Sieving
116	-	Void
117	S	Area 5 – Eastern half
118	-	Void
119	W	Area 5 – Western half
120	W	Area 5 – Pre-excavation pits [004 and 006]
121	S	Area 5 – Pre-excavation pits [004 and 006]
122	E	Area 5 – Pre-excavation pits [008 and 010]
123	E	Area 5 – Pre-excavation pits [004, 006, 008 and 010]

Appendix 5: Archive Quantities

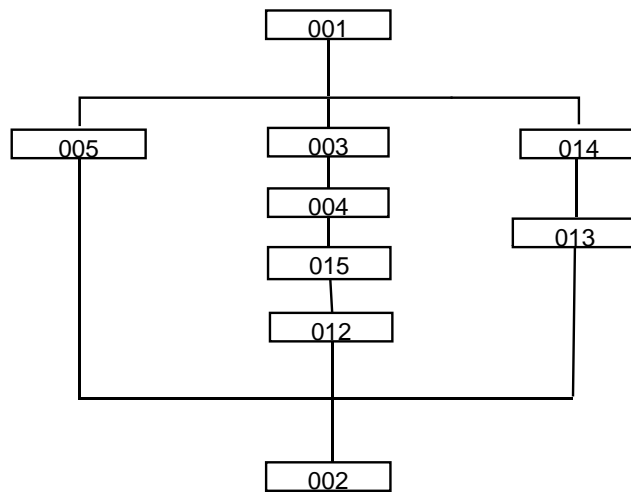
Item	Quantity
Context Sheets	61
Plans	11
Sections	16
Photographs	113
Registers	10

The archive material is contained within one box.

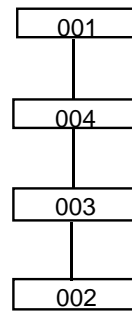
Storage of the archive in a suitable format and location is required in order to provide for any future archaeological research. It is proposed that in addition to the paper archive a digital copy is prepared. The archive is currently stored in the offices of Headland Archaeology, Unit 1 Wallingstown Business Park, Little Island, Cork. It is proposed that following completion of post-excavation the archive is deposited with Waterford City Council Archives.

Appendix 6: Site Matrix

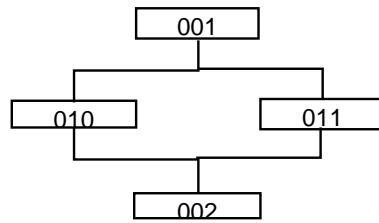
Area 1
Trench A



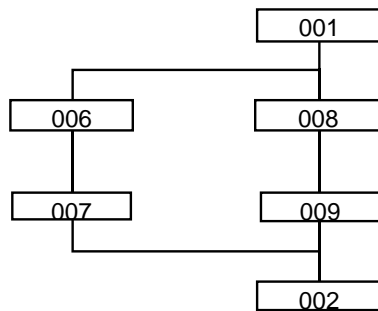
Area 3



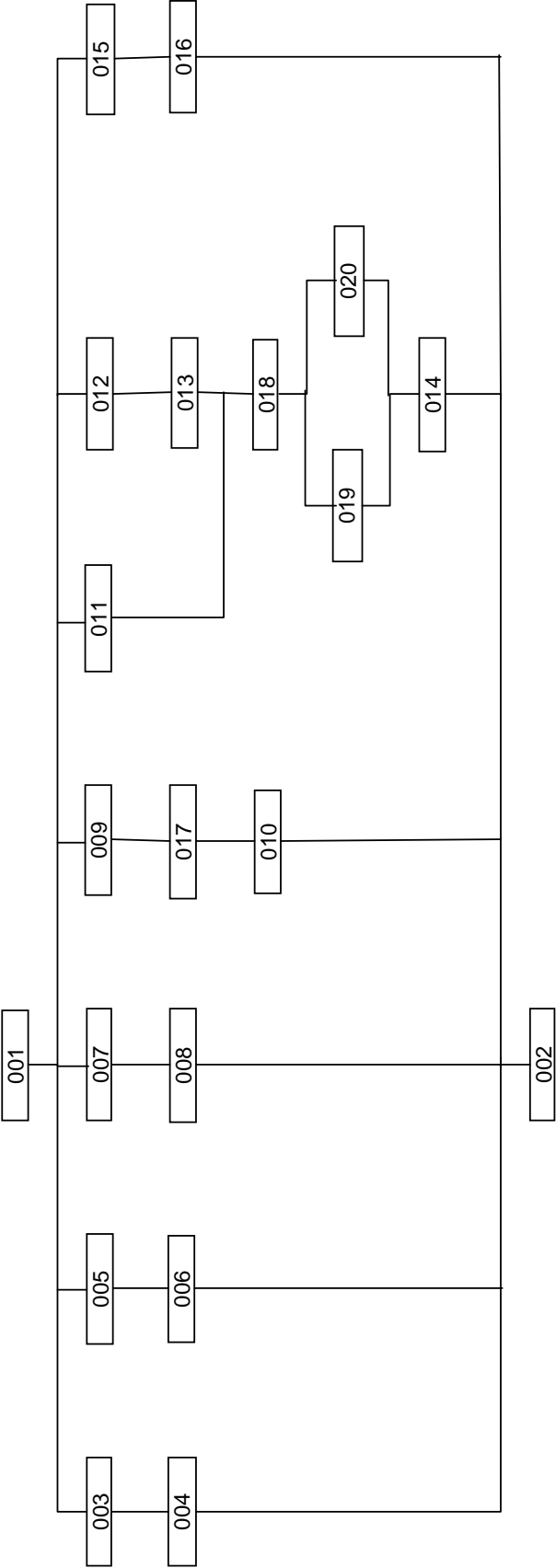
Area 1
Trench C



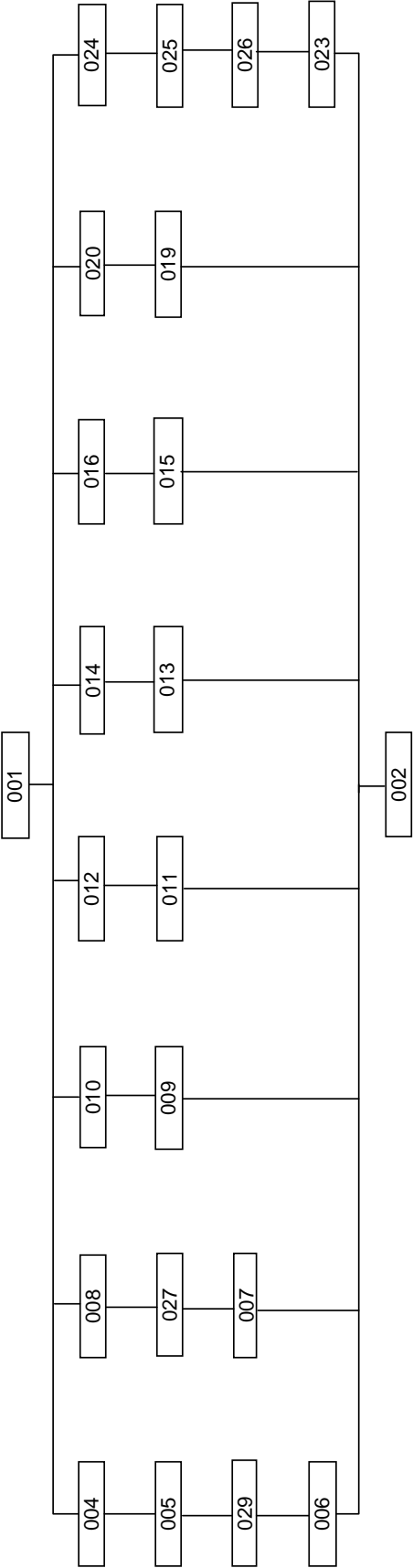
Area 1
Trench D



Area 5



Area 6



**Appendix 7: The prehistoric pottery from the N25 Kinsalebeg Realignment
Pilltown, Co. Waterford (A022/053)
Eoin Grogan and Helen Roche**

Summary

This site produced a single sherd (plus six fragments) from an early Neolithic Carinated Bowl (total weigh 10g). This is an important discovery as it is the first record of activity of this date from the west Waterford – east Cork area.

The pottery (context 018, sample 012, bag 3)

The fill [018] of two intercutting pits [019/020] produced a single simple angle shouldersherd (plus six fragments) from an early Neolithic Carinated Bowl of brown-buff fabric with a dark brown core; the outer surface is worn and the inner smooth. There is a medium content of sandstone and dolerite inclusions ($\leq 2 \times 1\text{mm}$, up to $4 \times 2\text{mm}$). This material is securely dated to the period c. 4000 to 3700 BC but has not previously been discovered in this area.

Appendix 8: Report on the Lithic Assemblage from Kinsalebeg, Co. Waterford. (Dermot G. Moore)

Abstract

The excavation of a small pit group and related features at Kinsalebeg produced a quantity of flint material numbering 301 pieces and 109 fragments. The assemblage represents a pebble-based industry for the production of small flakes many of which were further worked into a range of endscrapers. The flint was of good quality and there was an element of selection based on colour particularly that of grey-black flint. In addition, the predominantly unweathered nature of the assemblage indicates it or at least a portion of it was formally deposited within the pits shortly after its period of use. Based on the range of material recovered, a date between the mid-late Neolithic – Early Bronze Age is most likely.

Introduction

A total of 301 pieces of flint and 109 flint fragments (Table 1) were recovered from the excavation of a small group of pits and associated features at the site of Kinsalebeg, County Waterford. Overall, the flint assemblage was of fresh condition with many pieces being of a grey – grey-buff colour with the exception of pieces of a grey-black flint which will be discussed in more detail below.

Primary Material	
Cores	33
Flakes	88
Blades	10
Chunks/spalls	51
Debitage	100
Fragments	109
Secondary Material	
Simple modified pieces	3
Scrapers	16
Total	410

Table 1: Lithic material from Kinsalebeg

The Lithic Assemblage

Table 2 lists the lithic material recovered by context, in this case a series of pits, a linear feature and a general topsoil deposit. Much of the lithic material was recovered from four pits (Pits 4, 6, 8 and 10) which were found in close proximity.

Pit 4

Primary material

The fill of pit 4 produced a sizable quantity of flint consisting of manufacturing debris and two implements of predominantly fresh condition (fresh grey or fresh stained/patinated)¹. Within the manufacturing debris, a total of nine cores were identified consisting of a single platform pebble core (1.1) which measured 38mm x 16mm x 11mm which was well flaked. The flakes/blades were removed from one direction only.

In addition to the single platformed core, four very small dual-platformed pebble cores were identified which ranged in length from 20 – 28mm and breadth 14 – 19mm. One dual platformed pebble core (1.23) was a small and heavily worked example, while another was a portion of small grey-black dual platformed core (1.26). The significance of the grey-black flint will be discussed

¹ Fresh condition – primarily sharp edges and defined surface features such as percussion ripple marks

below. Of the remaining dual platformed cores, one consisted of a small flat example which was quite irregular but which indicated the full working of flint pebbles.

	Pit 4	Pit 6	Pit 8	Pit 10	Pit 14	PH 16	Feat 19	Topsoil
Primary Material								
Cores	9	9	2	8			1	4
Flakes	20	14	22	16	1	3	1	11
Blades	3	2	3	1				1
Chunks/spalls	5	7	22	6	1	1	3	6
Debitage	12	21	27	39			1	
Fragments	11	34	18	39	6	1		
Secondary Material								
Simple modified pieces	1	1	1					
Scrapers	1	4	7	3				1
Total	62	92	102	112	8	5	6	23

Table 2: Lithic Material by excavated context

The four indeterminate² pebble cores had a similar range in size to the dual-platformed cores, consisted of portions of small cores. One example was a small core portion with two small flake removals removed at right angles while another example appears to have been a trial/test piece.

A total of 20 flakes (seven of which were broken) were recovered and most (16) were of fresh condition. The unbroken flakes ranged in length from 11 – 47mm and 12 – 43mm in breadth which corresponds well with the recovered cores. Of the 14 identified striking platforms, eight were pointed indicating punch percussion while six were decortical indicating flaking of the original pebble surface. In addition, five of the flakes were of grey-black flint of which three were broken.

Only one of three small flint blades recovered from this pit was intact and it measured 22mm x 10mm x 2mm. All three blades had pointed platforms and the two broken blades were of grey-black flint.

In addition to the flakes, blades and cores, 12 pieces of fine and generally fresh flintdebitage and 11 flint fragments were recovered from this pit. Of the platforms identified on thedebitage, six were pointed indicative of fine finishing work. Five small irregular flint chunks/spalls were also retrieved.

Secondary worked material

Only two pieces of secondary worked material were recovered from pit 4. The first was an irregular flint decortical flake with a pointed platform (1:22) with an apparent attempt at secondary working on a portion of its dorsal distal end. This was a possible test piece which measured 33mm x 23mm x 7mm.

The second secondary worked piece was a small fine endscraper (thumbnail³) made on a fresh decortical flake (1:61) with a decortical platform which measured 25mm x 20mm x 5mm. It exhibited fine secondary working around a portion of its dorsal distal end.

² Indeterminate cores – cannot be assigned to any specific core type such as single platformed and may represent only a portion of the original core.

³ Thumbnail scraper – as the name implies, these are generally very small endscrapers which are more commonly found on Early Bronze Age sites but with a small pebble industry it is natural that smaller-sized tools would be produced.

Pit 6

Primary material

Pit 6 produced more flint material than pit 4 especially in the quantity of flint debitage and fragments. In total, nine cores were recovered. Two were single-platformed cores. The first (6:2), which measured 34mm x 27mm x 19mm, was very well flaked all around its perimeter with flakes/blades removed from one direction only. The second single platformed core (6:5) was a small example which measured 26mm x 18mm x 10mm. It was well worked around a portion of its perimeter with impact damage from bipolar manufacture on opposing end from platform which. There is also slight evidence that this core may originally have begun life as a dual platformed core.

The three dual-platformed cores consisted of a flaked split pebble core with a large flake removed indicating evidence of bipolar reduction. A second dual-platformed pebble core example (6:4) had flakes/blades removed from opposing ends and measured 30mm x 26mm x 15mm. The cortex on this piece was well weathered resulting in fracturing of the platform area of the flake/blades. The third and final example consisted of a portion of pebble flint core with extant flake scars indicating removal from one direction but there is good evidence that the piece was originally a much larger dual platformed core.

Four indeterminate cores were identified. These consisted of a portion of a core manufactured on a weathered older piece (possibly an older core); a core portion consisting of a large flake which was removed from a pebble core with a flake subsequently removed from its ventral face; a slightly burnt small pebble core (dual platform) with evidence of bipolar manufacture as shown by two opposing flake scars; and portion of pebble flint core (manufactured on a flake from a much larger core) with a flake removed from one direction.

A total of 14 predominantly fresh or fresh patinated flakes and two blades were recovered from this pit. Five of the flakes were broken. Of the unbroken examples, of which two were of grey-black flint, length ranged from 17 – 35mm and 11 – 26mm in breadth. Of the five platforms identified, three were pointed and two were decortical. Only one of the blades was intact and it measured 23mm x 10mm x 6mm.

21 pieces of flint debitage were recovered from the fill of this pit of which seven were of grey-black flint. Many of the debitage pieces were of fresh but patinated condition and only four pointed platforms were identified with the rest being indeterminate.

In addition to the debitage, 34 fragments, eight of which were of grey-black flint were also recovered. A total of seven irregular flint chunks/spalls were also retrieved

Secondary worked material

A total of five secondary worked pieces were recovered from pit 6 and these comprised a simple modified flake and four scrapers. The simple modified flake (6:49) was an irregular flake of fresh grey-black pebble flint with fine secondary working along its right lateral dorsal edge and also on a portion of its ventral edge. This piece measured 24mm x 25mm x 6mm.

The four scrapers which were recovered from this pit were all fresh with decortical platforms with the exception of one. The first example was a small endscraper (6:11), which measured 25mm x 23mm x 10mm, made on a pebble flint flake using bipolar reduction. The secondary working was quite steep and was located on the dorsal distal end. The second piece was a fine endscraper (6:12), which measured 30mm x 21mm x 12mm, made on an irregular decortical pebble flint flake. The secondary working which cut through good but slightly weathered cortex consisted of slightly invasive flaking occurred on the dorsal distal end. The third example was also a fine thumbnail scraper (6:13), which

measured 22mm x 20mm x 10mm, made on a small grey-black pebble flint flake. The secondary working consists of quite steep and semi-invasive flaking around the dorsal distal end (c.50% of circumference). A pointed platform was also identified. The final example was a crude scraper made on a decortical pebble flint flake. The secondary working (which was quite steep) was located on the dorsal distal end and consisted of slight flaking of a small area of the distal end utilizing the fractured edge of the remaining cortex.

Pit 8

Primary material

The fill (7) of this pit produced the second largest quantity of lithic material from a single cut feature on the site. Only two cores consisting of a dual-platformed example and an indeterminate core were recovered. The dual platformed core (5:42) of fresh grey-black pebble flint exhibited two good flake/blade scars struck from opposing ends. This core measured 31mm x 17mm x 14mm. The indeterminate example which measured 36mm x 24mm x 19mm was a heavily patinated core which appears to be more of a trial piece which exhibited two flake scars.

A total of 22 flakes were recovered of which 14 were broken. Overall, the unbroken flakes ranged in length from 14 – 37mm and 14 – 25 in breadth. Of note was a grey-black flint flake/blade piece struck from a larger weathered core or from a large weathered pebble; a finishing flake of fine grey-black flint; and another broken example of grey-black flint. Of the identified platforms, seven were pointed and 10 were decortical platforms.

Only three blades, one of which was broken were recovered. One unbroken blade which was an irregular example was a core rejuvenation blade with several residual flake/blade scars and retained cortex. It measured 48mm x 14mm x 16mm.

A total of 27 pieces of debitage were recovered of which seven were of grey-black flint. These and the rest of the debitage were all of generally fresh condition and seven of the debitage pieces had pointed platforms. Of the 18 fragments of generally fresh condition that were recovered, five were of grey black flint.

In addition to these, a total of 22 chunks/spalls were recovered with 18 being burnt.

Secondary worked material

The fill of pit 8 produced a total of eight secondary worked pieces, the largest quantity of any of the cut features. These comprised one simple modified flake and seven scrapers. The simple modified flake (5:77) was a rather unusual piece, which measured 29mm x 22mm x 7mm, and which had no specific secondary working. Instead the identified secondary working consisted of flaking of both the dorsal and ventral faces to remove the platform and create an edge. This piece may have functioned as a gouge.

A total of seven endscrapers were recovered from this feature and ranged in length from 24 – 36mm and 17 – 29 in breadth and 8 – 14 in thickness. The first was a small weathered endscraper (5:70) made on a decortical split pebble flint flake with dorsal flake scarring possibly to remove the platform. There was a small area of fine but steep secondary working on the dorsal proximal end.

The second was a small hump-backed endscraper (5:71) made on a split pebble flake with steep (almost vertical) secondary working on its dorsal distal end. There was also evidence of flaking on the left lateral dorsal edge. The third example was a small endscraper (5:72) made on a crude decortical pebble flint flake with steep secondary working on its dorsal distal end.

The fourth piece was a well made endscraper (5:73) made on a heavily patinated pebble flint flake with fine secondary working on the dorsal proximal end. There was also slight invasive secondary working along a portion of the right lateral dorsal edge. Evidence of bipolar flaking was shown by impact damage on the opposing distal end.

The fifth example was a weathered and partially burnt endscraper (5:74) which may have originally been an attempt to manufacture a disc scraper. The ventral face displayed flake scarring and the secondary working of the dorsal face occurred on two-thirds of the dorsal edge and was relatively steep. A pointed platform was also identified.

The sixth example consisted of a fine small endscraper (5:75) made on a decortical pebble flint flake with good secondary working on the dorsal distal end. This piece also displayed evidence of bipolar manufacturing on the opposing proximal end. The final piece was a small crude endscraper (thumbnail scraper) (5:76) made on a decortical pebble flint flake with fine secondary working on its dorsal distal end. A pointed platform was also identified.

Pit 10

This pit produced the largest quantity of lithic material from the site although much of the flint pieces were made up of debitage and fragments.

Primary material

A total of eight cores were recovered of which five were dual-platformed and three were indeterminate.

Of the five dual-platformed pebble cores, one was a good example (4:21) which measured 31mm x 20mm x 16mm which exhibited two good flake scars. A second good example (4:23) also exhibited several good flake scars and measured 27mm x 13mm x 11mm.

The remaining three dual-platformed cores consisted of an irregular pebble core with good cortex remaining; a well worked dual-platformed core portion; and a dual-platformed core on a pebble flake with two irregular flake removals.

Of the three indeterminate cores, one was of note and consisted of a portion of small grey-black flint flake core, which measured 17mm x 15mm x 9mm. This core was manufactured on a broken flake.

A total of 16 flakes were recovered of which eleven were broken. Two of the broken flakes were of grey-black flint. The unbroken flakes ranged in length from 12 – 31mm and 7 – 18mm in breadth.

One small flake which measured 18mm x 14mm x 4mm struck from a well-worked core was the only example to display a planar platform albeit quite small. Of the remaining identified platforms, four were pointed and six were decortical. The single blade was a fine but broken example of a decortical blade of pebble flint with a pointed platform which measured 22mm x 11mm x 3mm.

A total of six chunks/spalls were also recovered one of which was of grey-black flint.

A large quantity of flint debitage consisting of 39 pieces was recovered. 16 pieces were of grey-black flint. Generally all the debitage was of a fresh condition with 17 pointed platforms being identified. A further 39 flint fragments with seven being of grey-black flint were also retrieved. Almost all the fragments were of a fresh condition.

Secondary worked material

Three end scrapers were recovered from this pit. The first was an endscraper (4:26) which measured 39mm x 33mm x 11mm made on a decortical pebble flint flake with a small area of secondary working (which was slightly invasive) on a portion of the dorsal distal end. The piece was subsequently burnt. The second piece (4:27) was a small fine endscraper (thumbnail scraper) which measured 24mm x 16mm x 6mm made on a decortical pebble flint flake with a large irregular area of secondary working on its dorsal distal end. This secondary working was quite steep and is suggestive of working of an original fracture (possibly of a larger scraper). The final scraper (4:28) was a small fine endscraper (thumbnail scraper) which measured 23mm x 25mm x 8mm, made on a decortical pebble flint flake with small area of secondary working on its dorsal distal end.

Pit 14

The lithic material recovered from this pit comprised a small broken weathered flint flake and six flint fragments (one of which was of grey-black flint) and one small irregular flint chunk.

Pit 16

This pit produced three flint flakes, one chunk/spall and a single flint fragment. The flakes consisted of a very fine (but broken) grey-black flint flake with very fine dorsal flake scars which measured 17mm x 15mm x 2mm and two partially burnt and broken decortical pebble flint flakes.

Linear Feature 19

The linear feature (19) produced a small quantity of flint material. This consisted of a single indeterminate core portion (13:3) of a heavily patinated core which displayed evidence of edge preparation. This piece measured 15mm x 17mm x 18mm.

The other notable piece was a single irregular patinated split flint pebble flake which measured 28mm x 23mm x 12mm displayed evidence of bipolar reduction and a decortical platform. The remaining material consisted of a single regular piece of debitage and three natural flint chunks.

Topsoil Finds

The topsoil (context 1) material from the site produced a small quantity of lithic material. A total of four cores were recovered which consisted of two single platformed cores and two dual-platformed examples. The first single platformed core (2:1) was a relatively large example with two large flake/blade removals and core edge preparation made on an irregular pebble which measured 44 mm x 30mm x 30mm. The second single platformed pebble core (3:6) was represented by a core portion with two good flake removals indicating full working of the core. This core measured 35mm x 18mm x 10mm.

The first dual-platformed core (2:5) was a heavily worked blade core (bipolar) which measured 31mm x 14mm x 7mm. The second example was a weathered flint possibly dual platformed core (3:7) manufactured on a flake with two dorsal blade scars and a series of flakes removed from ventral face. This core measured 36mm x 23mm x 10mm.

A total of 11 flakes, four of which were broken were recovered. The unbroken flakes ranged in length from 11 – 33mm and 10 – 38mm in breadth. One planar platform was identified belonging to a small grey-black flint flake. A single small bipolar blade with a decortical platform which measured 31mm x 10mm x 4mm was the only blade recovered.

The topsoil also produced six flint chunks of which four were heavily patinated and natural. Of the remaining two, one was of grey-black flint.

Secondary worked material

One small fine (thumbnail) endscraper (2:10) made on a fresh decortical flake which measured 25mm x 25mm x 8mm was the only piece with secondary working recovered from the topsoil. It displayed fine secondary working which was occasionally steep around a portion of its dorsal distal end.

Discussion of the Assemblage

The material which was retrieved from a small series of pits, related features and overlying topsoil deposit at Kinsalebeg indicates a domestic flint assemblage consisting of a small range of simple modified flakes and scrapers in association with primary manufacturing debris in the form of cores, flakes, blades, debitage and chunks/spalls.

The flint assemblage is notable in three respects. Firstly, the quality and condition of the raw material is very good with the apparent selection of good quality beach pebble flint. The source of this beach pebble raw material is likely to be locations such as the Waterford and Wexford coasts. There is also the additional deliberate selection of certain types/colours of flint material - notably grey-black flint - which is of a finer quality - more glass-like - than the other recovered flint. Analysis of a series of sites dating to the Neolithic - Bronze Age from the N11 by the author has found no flint of this colour which would indicate that this material was a rare occurrence. It is interesting to note that the grey-black flint is very similar to that of southern England (particularly the flint mined at Grimes Graves) and also to glassy black obsidian. The selection of flint of a specific colour was noted at the Grooved Ware site of Scroggy Road in Limavady, County Derry (Dunne forthcoming). Here a fine pink-red flint was selected for the manufacture of a specific tool - in this case a small flint knife - with very fine debitage being recovered from one pit feature.

Secondly, the range of material which forms the assemblage indicates that the industry consisted of the utilization of small beach pebbles for the production of a predominantly flake-based industry. Dual platformed cores predominated within the assemblage numbering 15 in total with only five single platformed cores. The remainder were of indeterminate specimens. One notable aspect of many of the cores was the full working of each and the utilisation of portions and flakes to produce flakes and occasionally blades. There was also evidence of core trial/test pieces. The size of the cores and the range of flake/blade removals suggest that there may have been a premium on good quality flint raw material.

The range of flake and blade length corresponds well with the size of the cores as it has to be remembered that the cores have all been heavily worked and that they are much smaller than their original size. There was also an element of pre-treatment by heating evident on some of the pieces although this is notoriously difficult to prove categorically when material can be burnt accidentally. The main knapping technique appears to be one of splitting the original pebbles and then using bipolar reduction to remove flakes and blades. In many cases, indirect percussion appears to have been the preferred method for creating the flakes and blades as shown by the pointed platforms although many of the secondary worked material especially the scrapers had decortical platforms formed by knapping flakes direct from the original pebbles. There was no evidence of faceted platforms, common in many Neolithic flint assemblages.

There is a dominance of scrapers (small endscrapers and thumbnail type scrapers) within the secondary worked portion of the assemblage. This indicates that the assemblage was domestic in function, suggesting that the site was possibly a short-term primary preparation site possibly for hides.

Thirdly, the location of the contexts of this lithic material, primarily from four pits within an area of six square metres indicate the utilization of primary knapping and tool making area either in situ or as refuse material deposited within the pits. Based on the quality and condition of the material, it is most likely that the material was specifically deposited in the pits almost immediately after the knapping activity in the vicinity had ceased. The lack of weathering indicates that there was no long-term exposure of a chipping floor to the elements. This suggests formal deposition of the assemblage (or a portion of it) after use. Such formal deposition of knapping debris and secondary worked pieces occurs on a range of Neolithic and Bronze Age sites such as Ballyharry on Islandmagee in county Antrim (Moore 1999; 2001), the large Neolithic – Early Bronze Age enclosure site at Kilshane, north county Dublin (Moore in press) and the Grooved Ware site at Scroggy Road in Limavady, county Derry (Dunne forthcoming).

The range of material recovered cannot be specifically assigned to a narrow chronological period based on the range of diagnostic tools such as the endscrapers. This is primarily due to the nature and size of the raw material which provides few clues to the date of the assemblage. However, based on the type and range of knapping techniques and the quality of the secondary worked material, it is suggested that a broad date range of mid-late Neolithic – Early Bronze Age is most likely.

Small size assemblages particularly those from the south-west and south-east of Ireland, in the absence of diagnostic implements such as projectiles are difficult to date as has been noted by Woodman at Lough Gur (Woodman and Scannell 1993). This was further shown by both Woodman (Woodman 1994) and the author (Moore 1999) whereby, in the absence of such diagnostic tools, the variability (especially quality, size and type) of the resource made assigning undiagnostic implements such as scrapers, particularly the ubiquitous and variable endscraper, very difficult. However, the analysis of any pottery remains and radiocarbon dates may refine the chronology at Kinsalebeg.

Conclusion

The flint material recovered from Kinsalebeg represents a relatively substantial and high quality domestic assemblage probably related to some form of hide preparation which was associated with a small series of closely-set pits and related features. The range of manufacturing debris and secondary worked material concentrated within the fills indicate that four pits were the focus of the activity or the focus of deposition of at least a portion of the assemblage. This would suggest that the area and/or the assemblage itself had some special significance. Such formal deposition has been noted at a number of British sites such as at Coneybury Hill in Wiltshire (Edmonds 1995) where Edmonds links the deposition of material in a large pit to connecting the inhabitants of the site to the landscape. This can also be seen at Ballyharry on Islandmagee (Moore 1999; 2003) where lithics and ceramic debris was placed in shallow pits as a final act in the usage of the site. This significance is also shown by the initial selection of good quality flint raw material and the selection of grey-black flint for the production of implements, of which two were found.

Complete references are listed in section 7 of the full excavation report above, page 12.

Appendix 9: Area 7, Kinsalebeg palaeoenvironmental assessment

Dr S. Timpany
Headland Archaeology Ltd (19/01/07)

Introduction

A one-metre monolith was taken through sediments from Area 7, Shanacoolle townland, to the south of the N25 road between Chainage Ch. 915 – 1000 for palaeoenvironmental assessment. This assessment is part of a wider investigation by Headland Archaeology into the excavation of previously identified archaeological features likely to be disturbed by the construction of a new single carriageway as part of the N25 realignment project.

Assessment Methods

The monolith was submitted to Dr S. Timpany for assessment, following its extraction in the field by members of Headland Archaeology. The following methods section therefore relates to the subsequent laboratory work undertaken.

Stratigraphy

The stratigraphic sequence contained within the monolith was recorded before sub-sampling for pollen and radiocarbon dating took place. The location for each sub-sample was also recorded (see Figure 1).

Radiocarbon dating and Plant Macrofossils

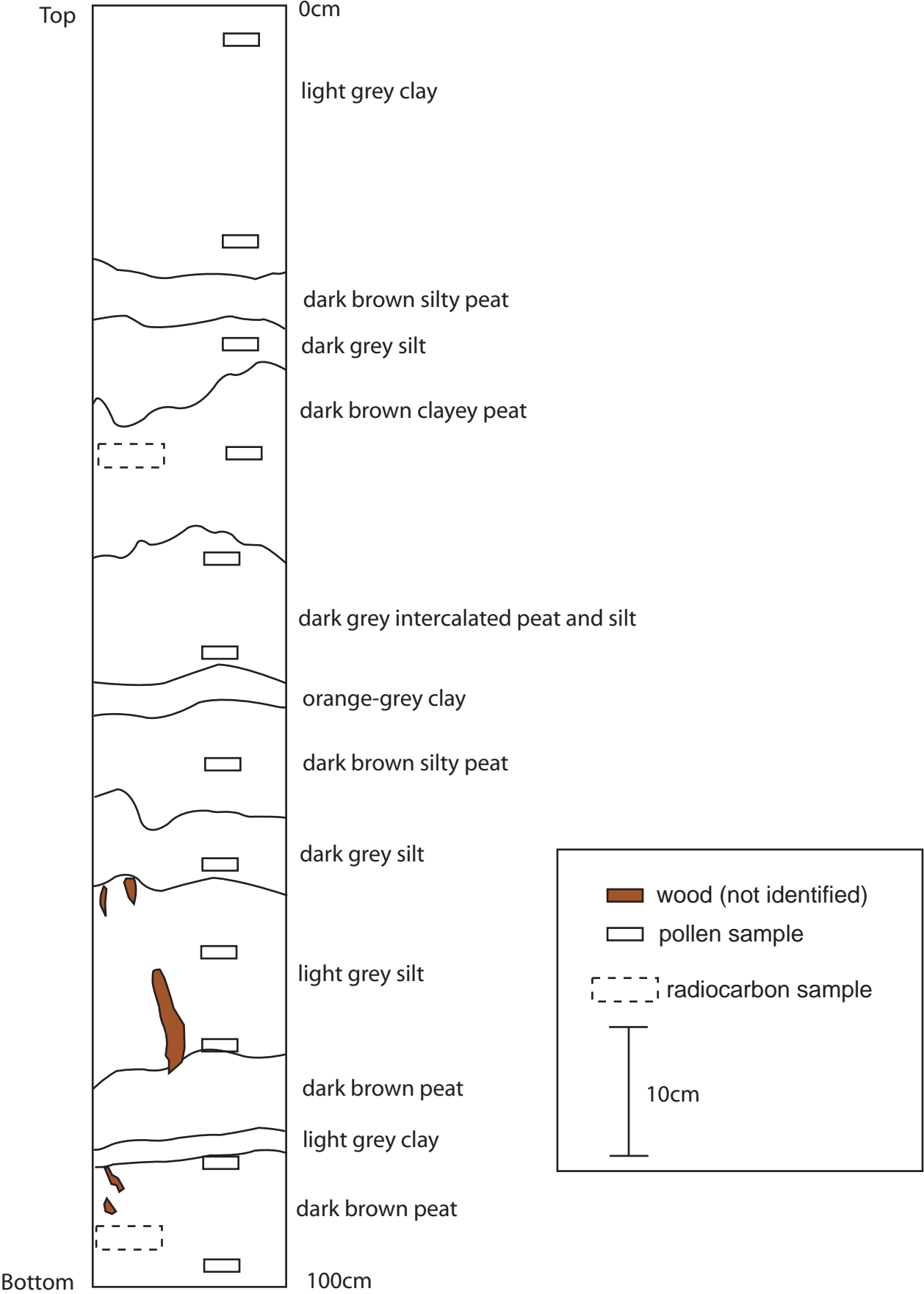
Sediment samples of c. 50ml were sub-sampled from the Monolith (locations are shown in Figure 1) and then sieved thorough meshes of 1mm and 500µm in order to remove plant macrofossils for dating. Plant macrofossils were scanned using a stereomicroscope, with the most abundant taxa used for dating, all plant macrofossils were recorded and the results are shown in Table 3. Two samples were sent for Accelerated Mass Spectrometry (AMS) radiocarbon dating at Scottish Universities Environmental Research Centre (SUERC). The sample from the base of the monolith provided a date older than the predicted range and thus a (third) peat sample was dated to validate this first result. The results of the radiocarbon dating are given in Table 1.

Pollen

Pollen analysis was undertaken on 12 samples of 1cm³ from the monolith. Samples were taken at intervals of approximately 8cm. Pollen samples were prepared using standard preparation methods (cf. Barber, 1976). A counting method of recording 100 pollen grains excluding spores and obligate aquatics was employed for the assessment of the pollen. Plant taxonomic nomenclature follows the order of Stace (1997) and takes into account the suggestions of Bennett *et al* (1994). Non-pollen palynomorphs (e.g. fungal spores and testate amoeba) were identified using illustrations and descriptions in van Geel (1978, 1986), van Geel *et al* (2003). All rare types are shown as a cross, where one cross denotes one grain. Micro-charcoal with identifiable structure was counted where present and is shown on the diagram as actual number found.

Figure 1 – Monolith from Area 7 and sample locations

Figure 1 - KDW-05 monolith, showing sediments and sample locations



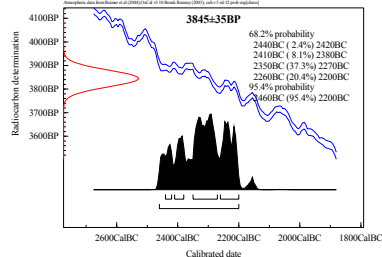
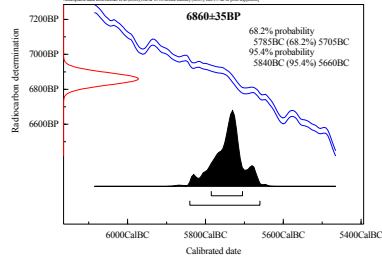
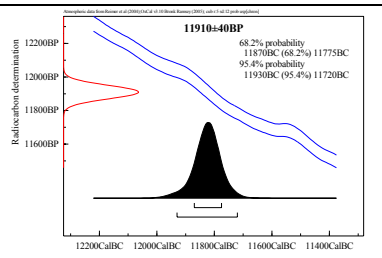
The pollen diagram was constructed using the TILIA and TG view, version 2.0.2 packages (Grimm 2004). The zones are based on the stratigraphic units of the site to aid in interpretation of the vegetational sequences in relation to stratigraphic changes. The pollen diagram is given in Figure 2.

Results

Radiocarbon dating

The radiocarbon dating results are presented in Table 1. Radiocarbon dates have been calibrated using OxCal version 3.10 (Bronk Ramsay, 2005) to 95.4% probability, along with all other dates quoted in the text.

Table 1 - Radiocarbon dating results from Kinsalebeg.

Sample depth (cm)	Dating material	Date BP	Date Calibrated	Radiocarbon determination
35-36	Monocotyledon plant tissue and Carex sp. nutlet fragments. Code: GU-14485	3845±35	2460-2220 Cal. BC	
96-98	Monocotyledon plant tissue, Persicaria minor nutlets and Eleocharis quinqueflora nutlets. Code: GU-14484	6860±35	5840-5660 Cal. BC	
96-98	Humic acid (peat). Code: GU-14607	11910±40	11930-11720 Cal. BC	

Stratigraphy

The stratigraphic sequence within Monolith 1 is shown in Figure 1 and presented in Table 2.

Table 2 - Sedimentary sequence of Monolith, Kinsalebeg

Unit	Stratigraphy description	Dates	Depth (cm)
X	Light grey clay.		0-20
IX	Dark brown silty peat.		20-24.5
VIII	Dark grey silt.		24.5-30
VII	Dark brown clayey peat.	Middle - 3845±35 BP (GU-14485; 2460-2220 Cal. BC)	30-43
VI	Dark grey peaty silt		43-53
V	Orange-grey clay.		53-55
IV	Dark brown silty peat.		55-62
III	Dark grey silt.		62-68
II	Light grey silt.		68-82.5
I	Dark brown/black peat layer (includes grey clay band between 88 to 89.5cm).	Bottom – 6860±35 BP (GU-14484; 5840-5660 Cal. BC) 11910±40 BP (GU-14607; 11930- 11720 Cal. BC)	82.5-100

The stratigraphic sequence recorded within the monolith is a complex sequence of primarily, peats and silts representing periods of stable ground surface (peats) and submergence under possible freshwater (silts). The basal layers of the monolith (Unit I) represent a period of stable peat development with a possible phase of inundation represented by a band of grey clay between 88-89.5cm. Radiocarbon dates from the base of this Unit suggest there is some contaminating factor to the material presented for dating, with the date from extracted plant material being 6860±35 BP (GU-14484; 5840-5660 Cal. BC) and that from the peat being 11910±40 BP (GU-14607; 11930-11720 Cal. BC). The pollen data suggests that the actual date is somewhere in the middle of these two dates (see below) due to the presence of oak in the pollen records, which is generally considered to have colonised southern Ireland at around 9000 BP (Birks, 1989). Overlying this peat layer are two silt layers (Units II and III), which are likely to represent another period of submergence. The subsequent sequence (Units IV to IX) shows phases where peat layers (Units IV, VII, IX) have accumulated giving relatively stable ground surfaces and deposited silt layers (Units V, VI, VIII) representing further periods of submergence or fluvially (e.g. riverine) deposited material. A date of 3845±35 BP (GU-14485; 2460-2220 Cal. BC) has been obtained from Unit VII. The top layer of light grey clay (Unit X) indicates the submergence of the site once more, again likely to represent a period of submergence.

Plant macrofossils

The plant macrofossil results, from the dating samples taken from Monolith 1 are given in Tables 3.

Table 3 – Plant macrofossils recorded in radiocarbon dating samples

Taxon	Sample depths (cm)	
	34-36	96-98
<i>Betula</i> indet seeds	-	1
<i>Carex</i> sp. nutlets	9	1
<i>Persicaria minor</i> fruits	-	4
<i>Eleocharis quinqueflora</i> fruits	-	1
Fungal sclerotia	1	1
Monocotyledon plant tissue	+++	++++
Wood fragments	+++	+++
Key: + = rare, ++ = occasional, +++ = common and ++++ = abundant		

Sample 96-98cm from the basal peat within the monolith (Unit I) shows the local presence of a community of wet marshy vegetation, including *Persicaria minor* (small water-pepper), *Carex* sp. (sedges) and *Eleocharis quinqueflora* (common spike-rush). One *Betula* (birch) seed was also recovered in this sample suggesting a local presence, the wings did not survive and therefore the seed cannot be identified to species level, however, it is likely this represents *Betula pubescens* (downy birch), which inhabits damp, fen environments. The sample also contained common amounts of wood fragments and abundant monocotyledon plant tissue, which may represent grasses such as reeds. Sample 34-36cm from a clayey-peat layer (Unit VII) is dominated by *Carex* sp. nutlets, which again is suggestive of damp conditions locally. Monocotyledon plant tissue and wood fragments are both present in common amounts.

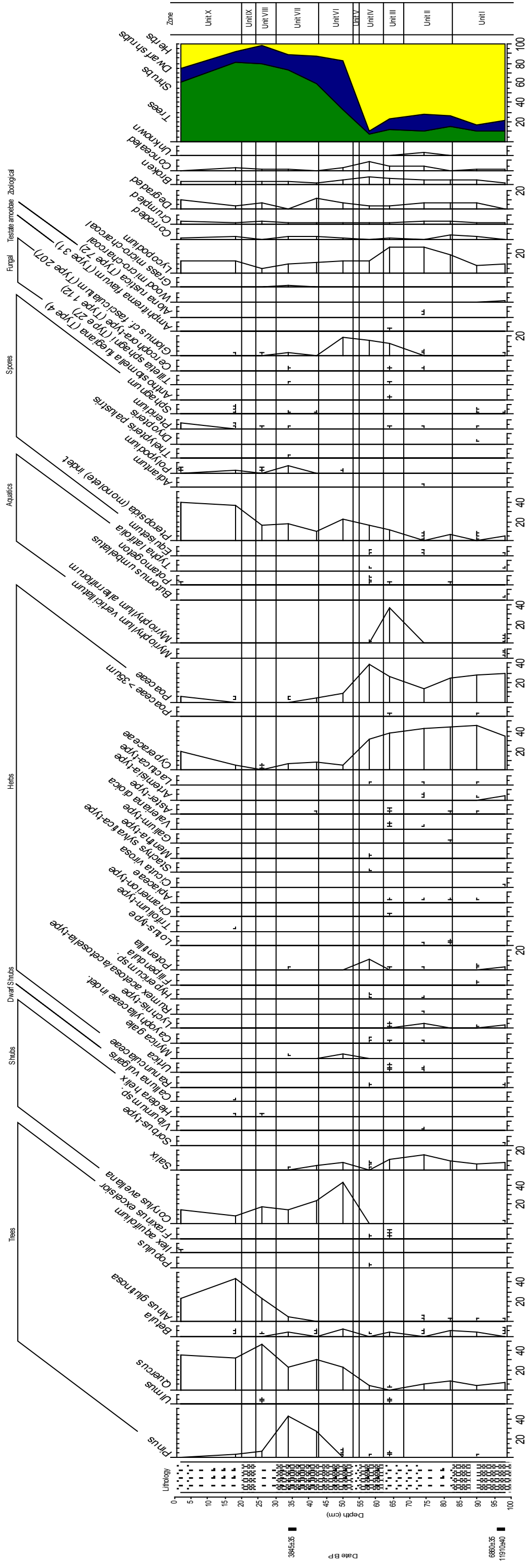
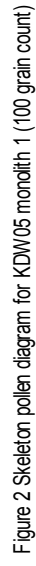
Pollen

Results of pollen analysis for Monolith 1 are shown in the pollen diagram given in Figure 2. Pollen analysis results are discussed below in terms of preservation and the general palaeoenvironmental sequence.

Preservation

The preservation of the pollen grains was examined, in particular the degree of degradation and concentration of grains in each sample layer taken from the monoliths. The results of this part of the analysis are presented toward the end of the diagram in those components of the Y-axis entitled: *Lycopodium*, corroded, crumpled, degraded, broken and concealed (see Figure 2).

The preservation of the pollen grains is generally good throughout the sequence with low concentrations of degraded, broken, corroded and crumpled grains. Peaks in the number of poorly preserved grains are seen to occur within the clay and silt layers, representing deposition within a submerged environment. Here potential for degradation is higher due to suspension in the water and reworking through erosion providing a longer period for attack on grain by bacterial/fungal action (Dark and Allen, 2005). Exposure to air during periods following marine transgressions, when there is again a terrestrial surface will also lead to increased risk of bacterial/fungal attack (Tipping, 2000). The concentration of pollen grains is also good with all units generally being polleniferous. There is a decrease in the concentration of grains through Units II and III both silt layers, which is shown by an increase in the *Lycopodium* curve (see Figure 2).



Vegetational sequence

Unit I peat

The pollen assemblage within this unit is dominated by Cyperaceae (sedges) and Poaceae (grasses) pollen grains, with values of 35-35% TLP (Total Land Pollen) and 25-30% TLP respectively. Arboreal species present include *Salix* (willow), *Quercus* (oak) and *Betula* (birch).

Units II and III silts

Cyperaceae and Poaceae pollen grains again dominate the pollen assemblage within these units at 35-45% TLP and 15-25% TLP, respectively. *Salix* pollen values increase within this zone peaking at about 18% TLP, while there is a slight decrease in the pollen values of *Quercus* and *Betula*. A suite of herbaceous pollen is present including *Lychnis*-type (catchflies) and *Urtica* (nettles).

Unit IV silty peat

Poaceae and Cyperaceae pollen grains are the most abundant within this unit accounting for 35% TLP and 40% TLP, respectively. There is a large peak in *Myriophyllum alterniflorum* (alternate water-milfoil) within this unit. *Quercus* pollen values begin to increase during this unit, other arboreal species present include *Salix* and *Betula*.

Unit V clay

Cyperaceae and Poaceae pollen continue to dominate the assemblage at 20% TLP and 30% TLP respectively. There are increases in the pollen values of arboreal species, such as *Corylus avellana* (hazel) and *Quercus*.

Units VI and VII peaty silt to silty peat

Arboreal pollen values are seen to increase through these units, in particular *Corylus avellana*, which peaks at 40% TLP and *Pinus* (pine), which peaks at 45% TLP. There are also increases in the pollen values of *Quercus* and *Alnus glutinosa* (alder). Poaceae pollen values decline through these Units, becoming a rare taxa, Cyperaceae pollen values are around 10% TLP.

Unit VIII silt

Alnus glutinosa and *Quercus* values continue to increase within this unit to 25% TLP and 40% TLP, respectively. There is a decline in *Pinus* pollen values together with those of *Betula*. Cyperaceae pollen values also continue to fall.

Unit IX peat

Arboreal pollen grains continue to dominate within this unit, in particular *Alnus glutinosa* at 35% TLP. Other arboreal species present include *Pinus*, *Quercus* and *Corylus avellana*. Cyperaceae pollen values show a slight increase.

Unit X clay

Pollen of *Quercus*, *Alnus glutinosa* and *Corylus avellana* dominate this zone. *Pinus* pollen values continue to decrease through this unit and are absent by the top of the unit. Cyperaceae pollen values increase to 20% TLP by the top of the zone.

Discussion

11910±40 BP (GU-14607; 11930-11720 Cal. BC)/6860±35 BP (GU-14484; 5840-5660 Cal. BC) to unknown; sedge and grass dominated tall-herb fen (Units I to IV)

The pollen sequence shows an open environment throughout this period, with tall-herb fen the dominant vegetational community. This is indicated by the dominance of herbaceous taxa, such as Poaceae (likely to represent reeds), Cyperaceae, *Lychnis*-type, *Potentilla* sp. (cinquefoils) and *Lotus*-type (birds-foot trefoils) (Clapham *et al*, 1962; Rodwell, 1995). The plant macrofossil data from the base of the monolith (96-98cm) also provides local evidence for the presence of tall-herb fen vegetation with *Carex* sp., *Persicaria minor* and *Eleocharis quinqueflora*. Therefore throughout this period the area would have been a marshland landscape, which the stratigraphic evidence shows was effected by periods of flooding and/or submergence. One such period of submergence is indicated in Unit III, by high numbers of *Myriophyllum alterniflorum* pollen, a plant, which can be found in lakes (Clapham *et al*, 1962).

The pollen evidence shows that there was some carr-woodland, probably fringing the marsh. The woodland would have been largely open and consisted primarily of *Salix* sp. with some *Betula* and *Quercus* present. The local presence of *Betula* is also shown in the plant macrofossil sample. Buzer (1980) note the existence of this *Salix*-*Betula* woodland community in her pollen study near to the site at Lough Ine, Co. Cork. Although undated, through AMS dating, her evidence through comparison with other studies suggests an early Holocene date for this period, somewhere between the two dates from this study at approximately 8000 BP.

Within Unit II there is the start of a continuous curve for fungal spores of *Glomus cf. fasciculatum* (Type 207), which has been observed in lake deposits and is considered to be an indicator of erosion of soil, such as the erosion of soil into the lake (van Geel *et al*, 2003). Therefore indicating that there was active erosion of sediments into the area during the periods when the site is submerged within this period and into the following period. The presence of fungal spores of *Cercophora*-type (Type 112) ascospores, indicative of animal dung (van Geel, 2003) within Units II and III is also of interest and suggests that this location was attractive to animals for grazing, such animals may include wild pig and deer.

Unknown to c. 3845±35 BP (GU-14485; 2460-2220 Cal. BC); pine-oak-hazel woodland (Units V to VII)

This period sees a sharp change in vegetation with the establishment of woodland in the landscape with pollen evidence showing the development of *Pinus-Quercus-Corylus* woodland. The decline in the number of herbaceous pollen types (e.g. Poaceae) suggests this woodland formed a closed canopy. This is also signalled by the decline of *Salix* pollen throughout this period, *Salix* being non-tolerant of shaded conditions. The expansion of *Corylus avellana* in southern Ireland is thought to have occurred at around 9500 BP (Birks, 1989) with *Pinus* spreading through Ireland at around 8000 BP (Birks, 1989). The pollen diagram continues to closely follow that of Buzer (1980) at Lough Ine, indicating that the trends seen are real. At Lough Ine this *Pinus-Quercus-Corylus* woodland is thought to date to between approximately 7000 to 5000 BP.

Despite a decline in herbaceous pollen through this period, plant macrofossil evidence indicates that *Carex* was growing locally, with Sample 34-36cm dominated by *Carex* sp. nutlets. It is likely that sedges and ferns (Pteropsida) were the main constituents of the field layer during this period, from the pollen and plant macrofossil evidence.

c. 3845±35 BP (GU-14485; 2460-2220 Cal. BC) to unknown; oak-alder-hazel woodland (Units VIII to X)

There is a change in woodland type from *Pinus-Quercus-Corylus* woodland to *Quercus-Alnus-Corylus* woodland within this period where pollen evidence shows the decline in *Pinus* and increase in *Alnus glutinosa* pollen. This change is likely to have been caused by the increased wetness of the site providing difficult growing conditions for *Pinus* but ideal for the expansion of *Alnus*. This rise in *Alnus* pollen is also seen within Buzer's (1980) diagrams at Lough Ine and Ballyally Lough, following the decline in *Pinus*, suggesting this a true trend for this part of southwest Ireland.

Buzer suggests this rise in *Alnus* occurs at approximately 4000 BP. The radiocarbon from 36-34cm of 3845±35 BP (GU-14485; 2460-2220 Cal. BC) is close to the decline in *Pinus* seen in the pollen diagram and indicates that Buzer's suggestion of c.4000 BP for this decline in southwest Ireland is correct. It also indicates a later rise in *Alnus* for the southwest compared to central Ireland.

The change to wetter conditions within this period is shown in the stratigraphic record within the monolith with the deposition of a clay layer (Unit VIII) showing the site has become submerged. The site remains submerged during this period with the exception of a brief period of peat development (Unit IX) indicating a terrestrial surface.

The pollen evidence shows there is an increase in herbaceous pollen during this period, largely within Unit X. Cyperaceae and Poaceae pollen values both increase suggesting the development of sedge and reed swamp in the landscape as a response to the changing hydrological conditions at the site. Therefore during this period the landscape was largely woodland with sedge/reed swamp present, probably seaward of the woodland.

Statement of archaeological and palaeoenvironmental potential

The skeleton pollen counts from the monolith show that there is generally good preservation of grain, particularly through the peaty layers, although there is some evidence of reworking within the silt and clay layers. There is the potential to provide an environmental history for this part of the early Holocene. The plant macrofossil evidence examined from the dating samples also shows good preservation of fruits and seeds and therefore has good potential for reconstructing the local environment.

Comparison of the diagram to those from Lough Ine and Ballyally Lough suggest this sequence represents the later part of the Holocene from approximately 8000 to 4000 BP. Therefore covering the later Mesolithic through to the early Bronze Age. Buzer (1980) produced tentative evidence for Mesolithic impact on the landscape in this part of Ireland and therefore this monolith does have the potential to investigate further for such impacts, especially with coastal areas known to be important locations for people during prehistory (e.g. Woodman *et al*, 1999).

Preliminary archaeological investigations within Areas 1, 6, 8 and 9, at Shanacoole have produced evidence of probable Bronze Age activity including pits containing high concentrations of charcoal fragments and *fulacht fiadh* (Hegarty, 2005; Lyons, 2005). The Bronze Age period does appear to be contained within the top (35cm) of the monolith collected from Area 7 and therefore there is the potential to examine this period more closely to investigate for anthropogenic activity in the landscape.

The microscopic charcoal on the pollen slides has been observed to contain fragments with surviving structure to be able to identify them as grasses or wood, which has been burnt. Therefore there is good potential to reconstruct the fire history of the area and differentiate whether burning represents grasses (e.g. reedswamp) and/or trees (woodland).

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Appendix 10: Kinsalebeg Environmental Assessment- Susan Lyons**Soil Sample Assessment****ASSESSMENT OF SAMPLES**

SITE CODE	KDW05	SITE NAME	Kinsalebeg, Dungarvan, Co. Waterford
AUTHOR/S	Susan Lyons		

Sampling Strategy

Bulk samples of 10 litres were taken from pit features and deposits excavated in Areas 1, 5 and 6 in order to remove small finds and to assess the archaeological significance of the site.

Methodology

The samples were subjected to a system of flotation in a Siraf style flotation tank. The floating debris (flot) was collected in a 250 μ m sieve and, once dry, scanned using a binocular microscope. Any remaining material in the flotation tank (retent) was wet-sieved through a 1mm mesh and air-dried. This was then sorted by eye and any remaining material of archaeological significance removed.

Number of Samples	1
	0

RESULTS

Results are summarised in Tables 1 and 2.

Wood charcoal – The majority of the samples contained wood charcoal, which was in a good state of preservation. High concentrations were recovered from Area 1 [Contexts 004], Area 5, [Contexts 003, 005, 007, 009, 013, 015] and Area 6, [Context 005].

Carbonised hazelnut shell – A low to high concentration of carbonised hazelnut shell was recorded from Area 5 [Contexts 003, 005 and 009].

Flint – A low to high concentration of flint debris was recovered from Area 5 [Contexts 003, 005, 007, 009, 013, 015]. While the material has been struck, no obvious re-working was identified.

Pottery – Minute fragments of possible prehistoric pottery were recovered from Area 5 [Context 007].

DISCUSSION**Area 1**

Samples from two separate deposits [C004, C005] were assessed from Area 1. A high concentration of wood charcoal was recovered from each deposit indicating that these features

experienced episodes of burning. With the absence of any other tangible archaeological material, it is difficult to ascertain the exact function of these features.

Area 5

Six pit features were sampled and assessed from Area 5. A relatively high concentration of charcoal was identified from each of the features. Charcoal is a common occurrence on archaeological sites reflecting a) the use of hearths in and around the site and b) the cleaning out and dumping of this burnt debris into nearby open features.

Carbonised hazelnut shell was recorded from C003 [fill of pit C004], C005 [fill of pit C006] and Context 009 [fill of pit C010]. This material is frequently recorded on prehistoric sites (Moffett *et al*, 1989; Greig, 1991) and its presence is usually interpreted as a) the waste debris of gathered foodstuffs or b) a fuel source.

Flint was recovered from all six features, with higher concentrations recorded from C003, C005 and C009. It is possible that some of this material represents the discarded waste from flint knapping. A detailed study of the assemblage would however, decipher whether this material was culturally or naturally formed.

The archaeological material recovered from the soil samples associated with Area 5 represents small scale occupational activity in the form of localised fires/hearths and possibly some flint knapping activity.

Area 6

Two soil samples from Area 6 were taken from a pit feature [C003] associated with the *fulacht fiadh* recorded at the site. The soil samples assessed were largely made up of charcoal fragments which, is typical residual material from such features, and void of other botanical indicators of settlement or domestic activity. It has been widely accepted that plant remains, other than charcoal, from *fulacht fiadh* features and associated burnt mound activity are extremely rare (O'Neill, 2000). The scorched base of the pit is evidence for *in-situ* burning, but whether these deposits are related to direct burning activity within the pit or the surrounding burnt mound material is difficult to say based on this evidence alone.

RECOMMENDATIONS

1. Charcoal deemed suitable for radiocarbon dating are marked with an asterisk (*) in the tables. It is recommended that where sufficient quantities of carbonised hazelnut shell is present in a sample, that this material be put forward for radiocarbon dating.
2. A more detailed analysis of the flint would determine whether this material is evidence for flint knapping.
3. The fragments of pottery recovered from Area 5 [Context 007] should be added to the pottery assemblage hand collected from the excavation.
4. A record of the methodology and results of this assessment should be included in any final report.

Kinsalebeg, Dungarvan, Co. Waterford

Context number	Sample number	Retent vol (L)	Context/Sample description	Wood charcoal		Carbonised hazelnut shell	Flint	Pottery	Comments
				Qty	AMS				
Area 1									
004	001	0.2 L	Charcoal-rich sandy silt associated with oxidised clay [003]	+++	*				
005	002	0.2	Charcoal rich deposit NW of [003]	++++	*				
Area 5									
003	004	2 L	Orange brown silty clay, fill of pit [004]	+++		+	+++		
005	002	2 L	Orange brown silty clay, fill of pit [006]	+++	*	++	+++		
007	001	2 L	Orange brown silty clay, fill of oval pit	+++	*		++	+	
009	003	2 L	Dark brown silty clay, fill of oval pit	+++	*	+++	+++		
013	005	2 L	Lower layer of pit [014]	++	*		+		
015	006	3 L	Fill of small pit S of pit [014] by wall	++	*		+		
Area 6									
005	003	2 L	Black charcoal fill of cut [003]	++++	*				
029	002	2 L	Black stoney fill of cut [003]	+	*				

Table 1. Composition of retents

Context number	Sample number	Flot vol (ml)	Context/Sample description	Wood charcoal		Comments
				Qty	AMS	
004	001	<10 ml	Charcoal-rich sandy silt associated with oxidised clay [003]	+		
005	002	20 ml	Charcoal rich deposit NW of [003]	+++	*	
003	004	<10 ml	Orange brown silty clay, fill of pit [004]	+		
005	002	20 ml	Orange brown silty clay, fill of pit [006]	++		
007	001	10 ml	Orange brown silty clay, fill of oval pit	++	*	
009	003	<10 ml	Dark brown silty clay, fill of oval pit [010]	+		
013	005	10 ml	Lower layer of pit [014]	++		
015	006	<10 ml	Fill of small pit [016] by wall	+		
005	003	40 ml	Black charcoal fill of cut [003]	+++	*	
029	002	10 ml	Black stoney fill of cut [003]	+		

Table 2. Composition of flots

Appendix 11: Kinsalebeg C14 Certificates Chrono 14 Lab, Queen's University Belfast**Radiocarbon Date Certificate**

Laboratory Identification: UB-7065
 Date of Measurement: 2006-09-12
 Site: Kinsalebeg Co. Waterford
 Sample ID: Corylus avellana
 Material Dated: Charcoal
 Pretreatment: AAA
 Submitted by: Damian shiels

^{14}C Date: 1586 ± 3
 6
 $\delta^{13}\text{C}$: -27.0

Corylus av

UB-7065

Radiocarbon Age BP 1586 +/- 36

Calibration data set: intcal04.14c

% area enclosed cal AD age ranges

68.3 (1 sigma) cal AD 428- 465

482- 534

95.4 (2 sigma) cal AD 405- 556

Reimer et al. 2004

relative area under
probability distribution

0.400

0.600

1.000

Radiocarbon Date Certificate

Laboratory Identification: UB-7066
 Date of Measurement: 2006-09-12
 Site: Kinsalebeg Co. Waterford
 Sample ID: Corylus avellana
 Material Dated: Charcoal
 Pretreatment: AAA
 Submitted by: Damian shiels

^{14}C Date: 3525 ± 3
 9
 $\delta^{13}\text{C}$: -25.0

Corylus av

UB-7066

Radiocarbon Age BP 3525 +/- 39

Calibration data set: intcal04.14c

% area enclosed cal AD age ranges

68.3 (1 sigma) cal BC 1911- 1868

1847- 1775

95.4 (2 sigma) cal BC 1952- 1745

Reimer et al. 2004

relative area under
probability distribution

0.362

0.638

1.000

Radiocarbon Date Certificate

Laboratory Identification: UB-7067
 Date of Measurement: 2006-09-12
 Site: Kinsalebeg Co. Waterford
 Sample ID: carbonised hazel
 Material Dated: Carbonised hazelnut shell
 Pretreatment: AAA
 Submitted by: Damian shiels

^{14}C Date: 4160 ± 4
 1

$\delta^{13}\text{C}$: -26.0

carbonised

UB-7067

Radiocarbon Age BP 4160 +/- 41

Calibration data set: intcal04.14c

% area enclosed cal AD age ranges

Reimer et al. 2004

relative area under
 probability distribution

68.3 (1 sigma)	cal BC 2872- 2847	0.159
	2844- 2840	0.023
	2813- 2692	0.745
	2689- 2678	0.072
95.4 (2 sigma)	cal BC 2883- 2621	1.000

Radiocarbon Date Certificate

Laboratory Identification: UB-7068
 Date of Measurement: 2006-09-12
 Site: Kinsalebeg Co. Waterford
 Sample ID: Betula sp.
 Material Dated: Charcoal
 Pretreatment: AAA
 Submitted by: Damian shiels

^{14}C Date: 3215 ± 3
 9

$\delta^{13}\text{C}$: -28.0

Betula sp.

UB-7068

Radiocarbon Age BP 3215 +/- 39

Calibration data set: intcal04.14c

% area enclosed cal AD age ranges

Reimer et al. 2004

relative area under
 probability distribution

68.3 (1 sigma)	cal BC 1514- 1441	1.000
95.4 (2 sigma)	cal BC 1606- 1573	0.062
	1558- 1550	0.012
	1538- 1414	0.925

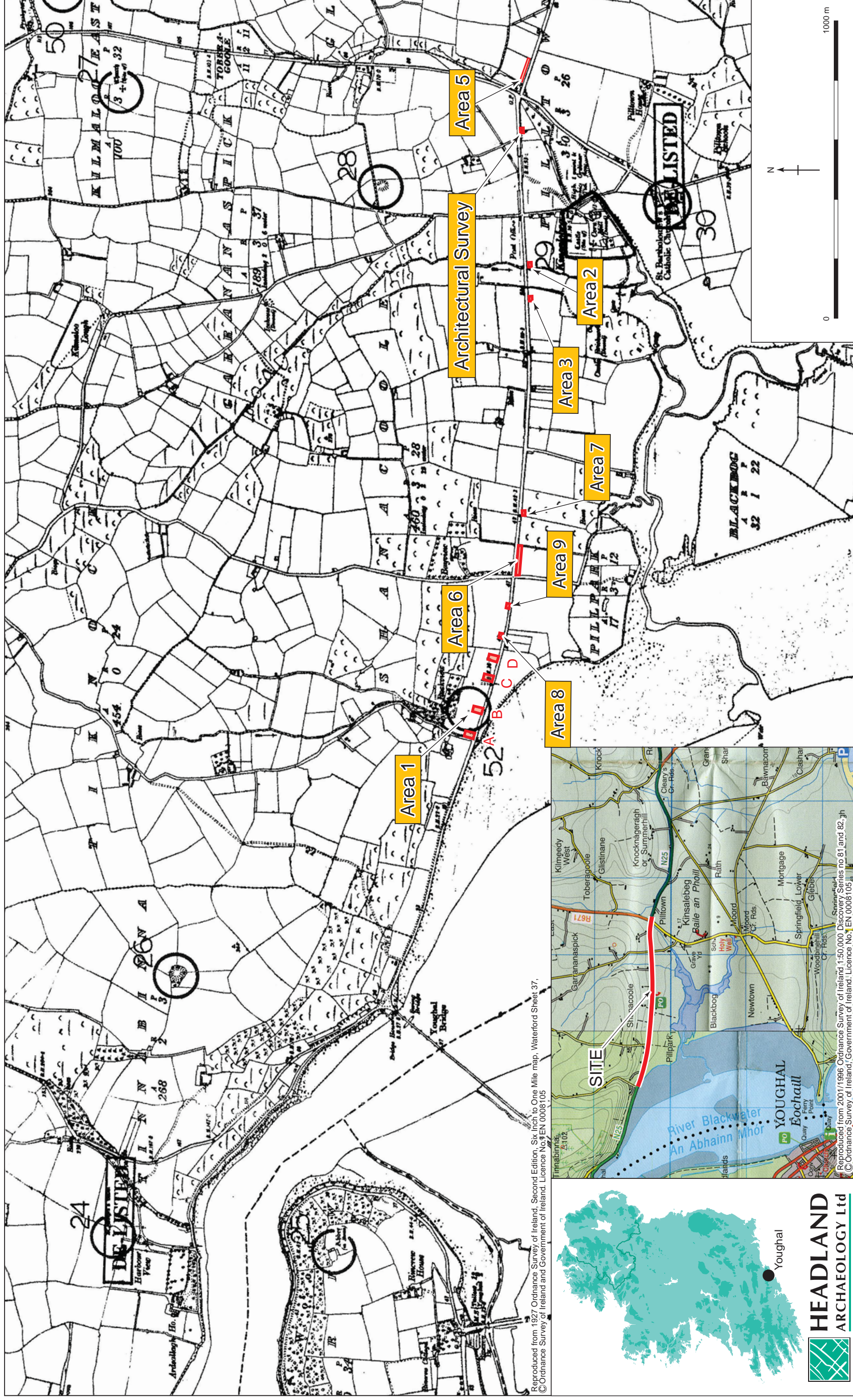


Figure 1 - Kinsalebeg, Dungarvan, Co. Waterford: Site location and RMP extract

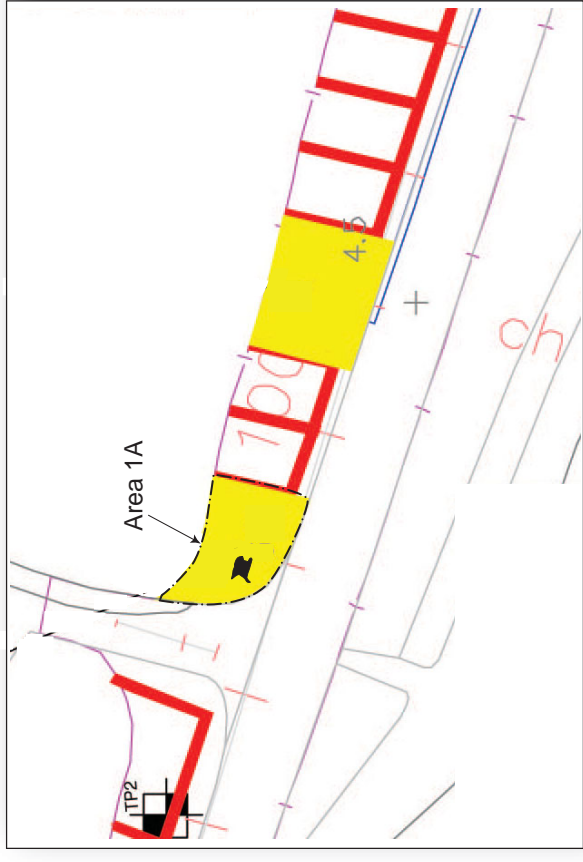
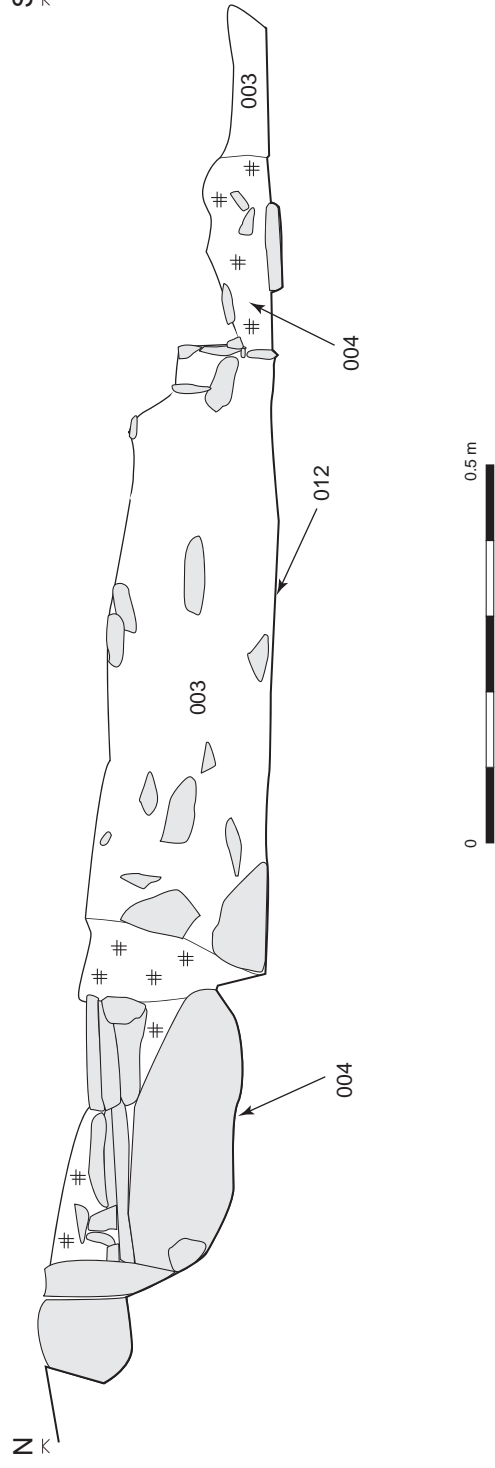
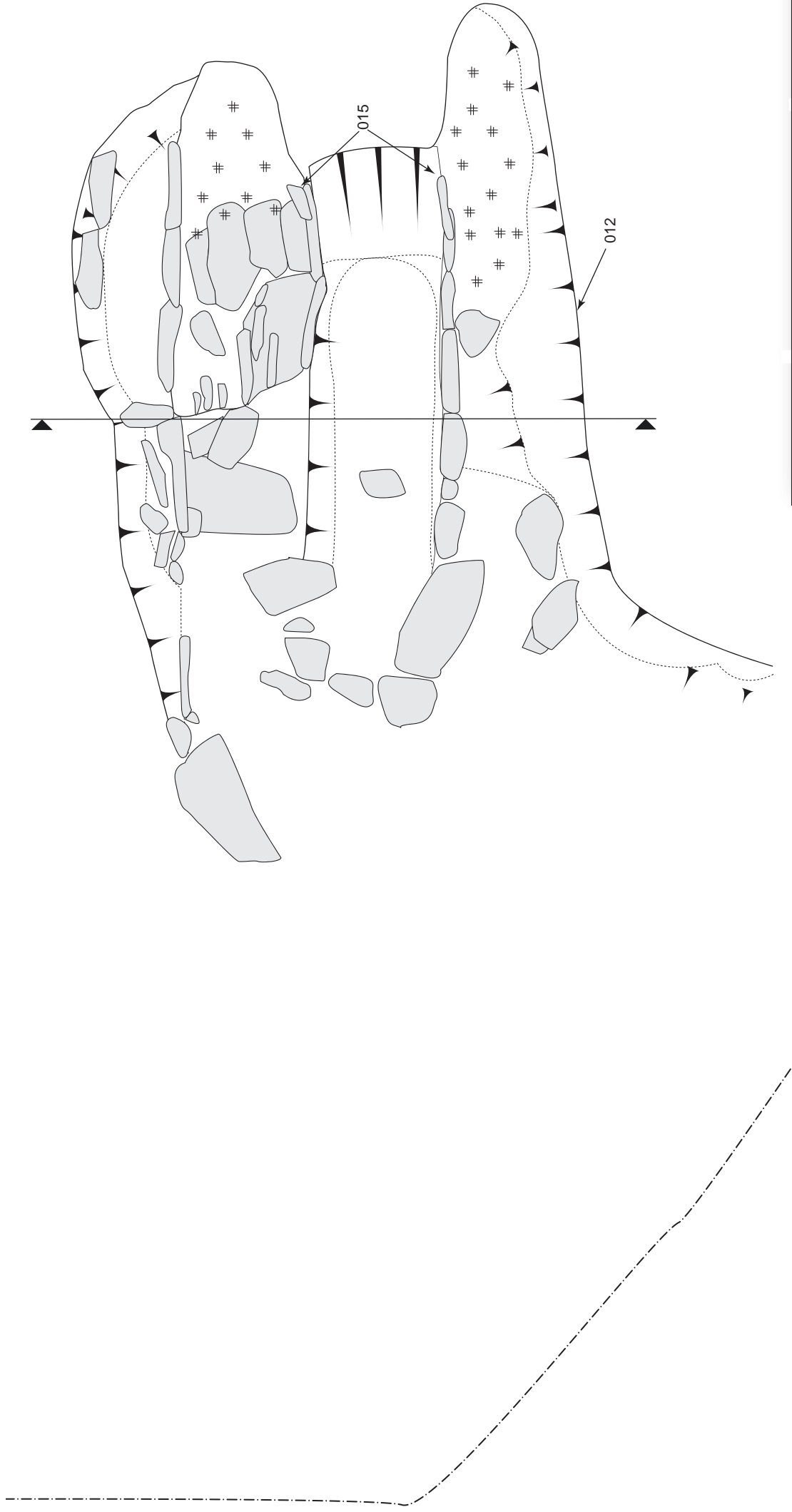
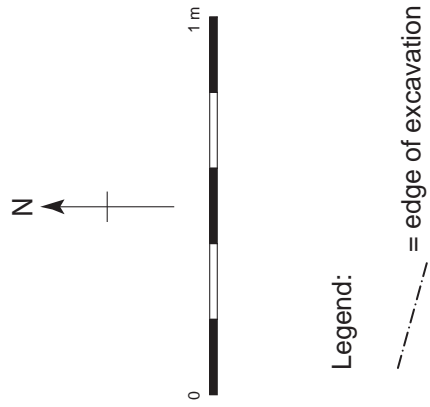
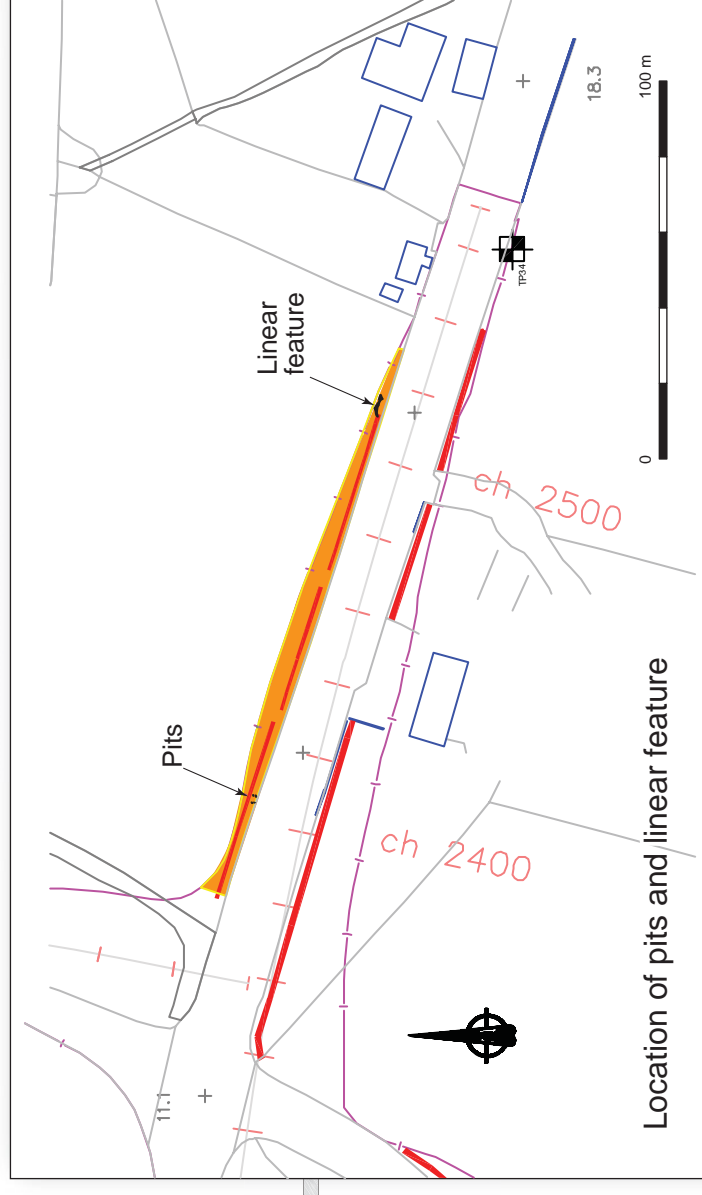
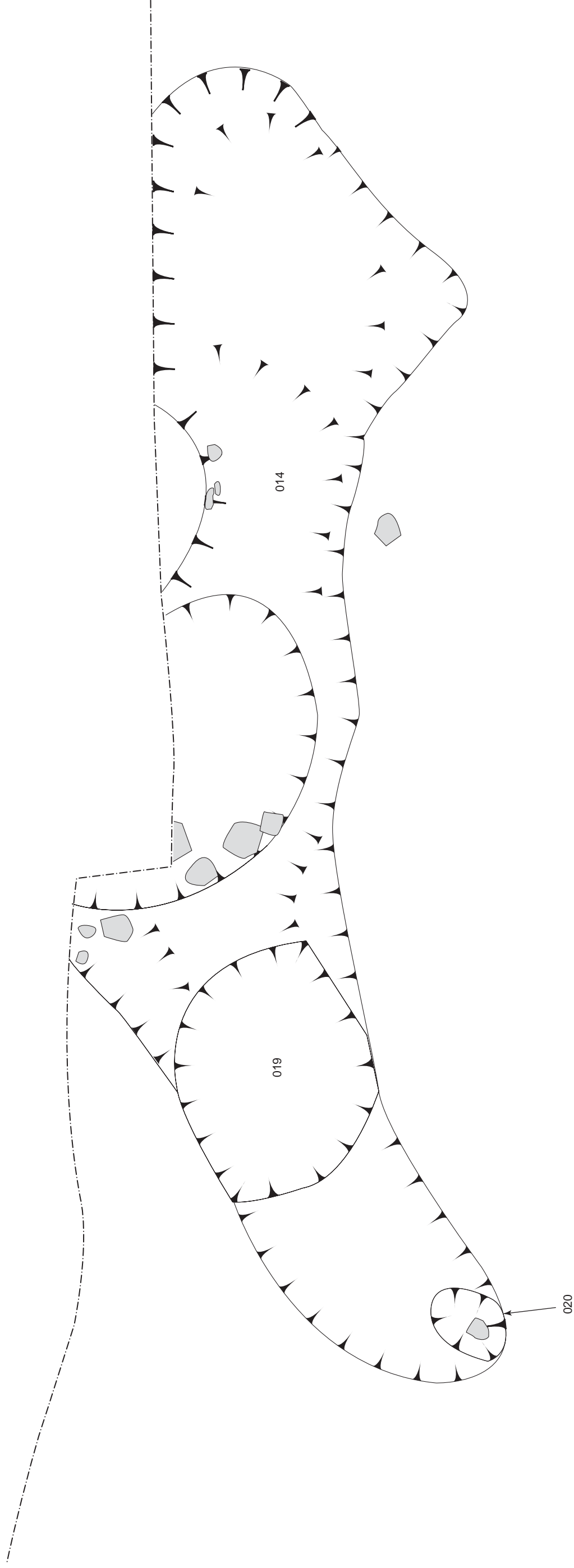


Figure 2 - Kinsalebeg: Area 1A - Mid-excavation and section of [012]



Wall

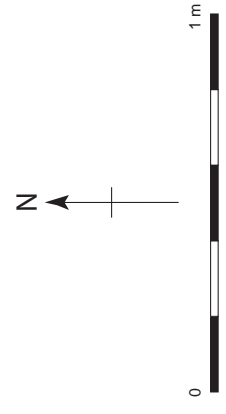
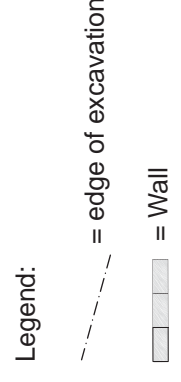
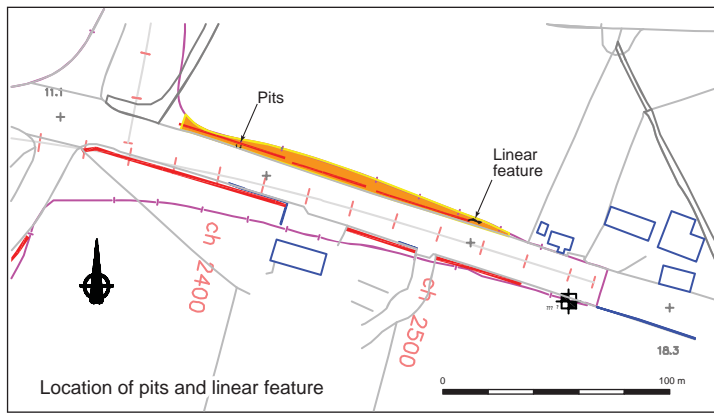


Figure 3 - Kinsalebeg: Area 5 - Post-excavation of linear feature



Legend:

--- = edge of excavation

▬ = Wall

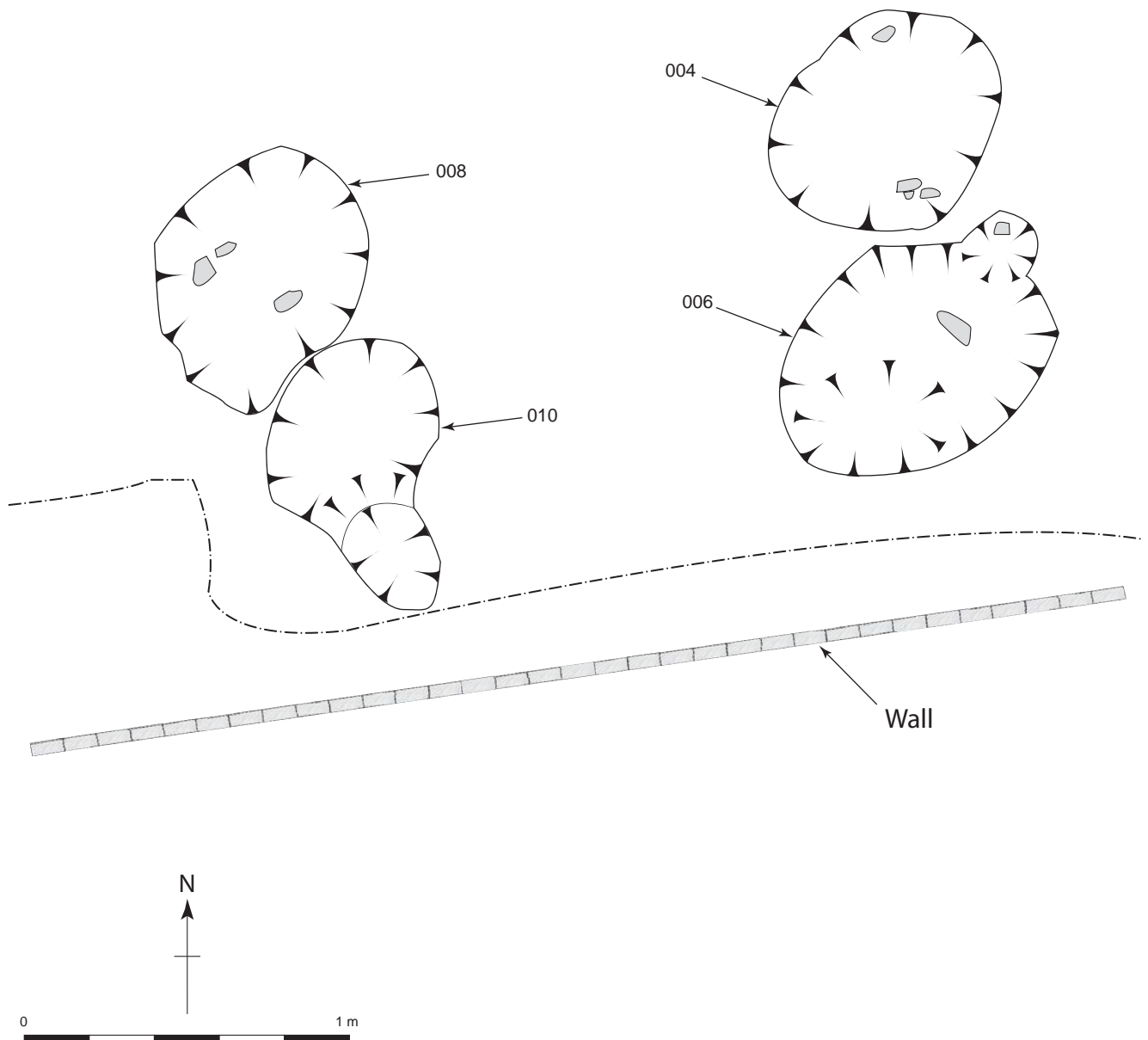


Figure 4 - Kinsalebeg: Area 5 - Post-excavation of pits

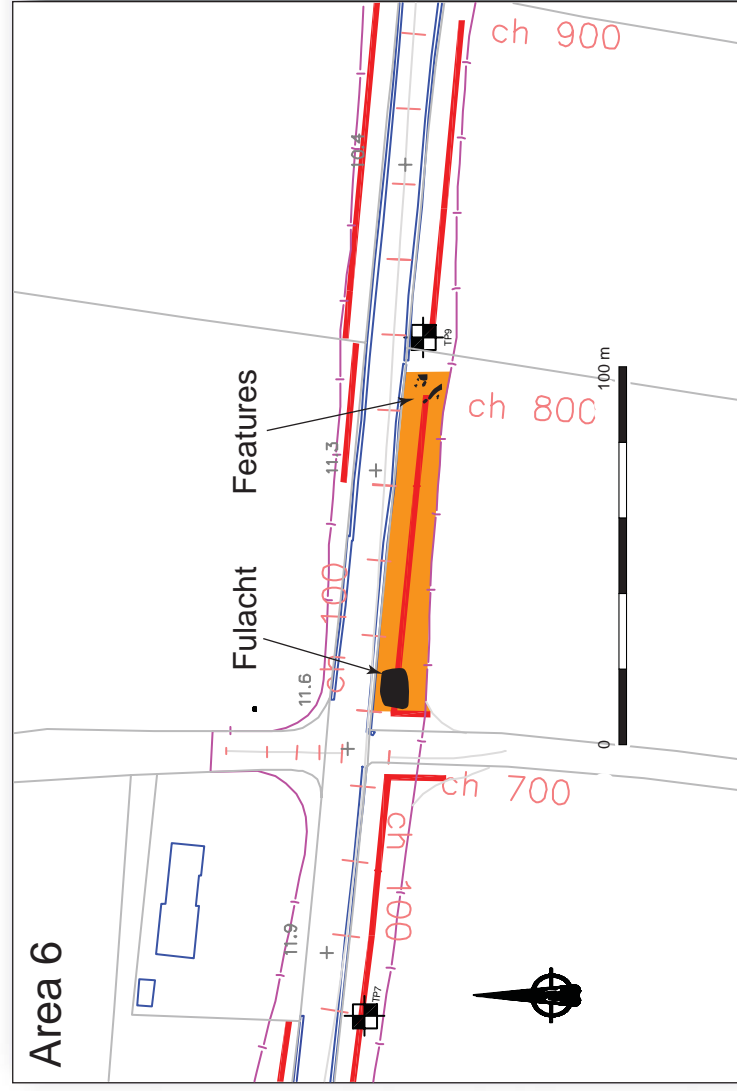
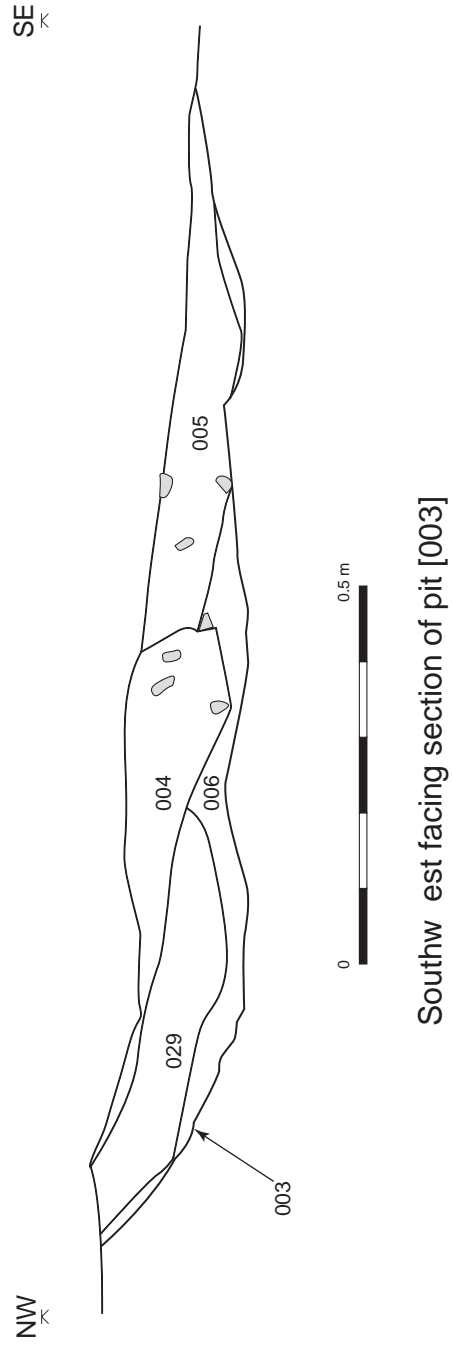
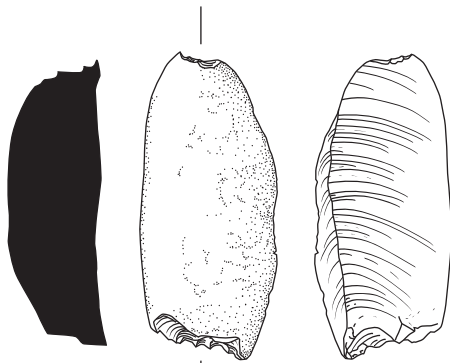
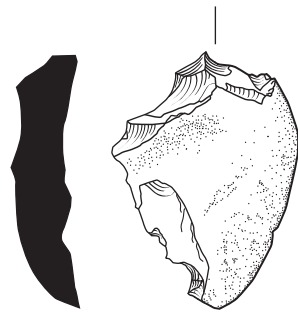


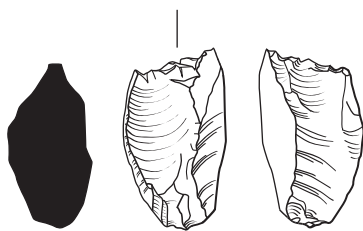
Figure 5- Kinsalebeg: Area 6 - Post-excavation plan of features and section of pit [003]



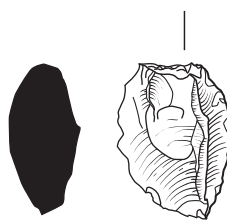
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[04], (03)
Find no: 1:1



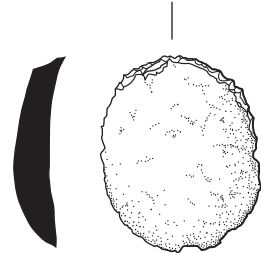
A018/005 modified flake
[04], (03)
Find no: 1:22



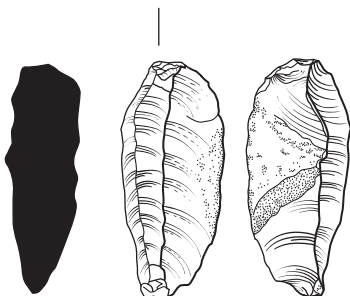
A018/005 core
[04], (03)
Find no: 1:23



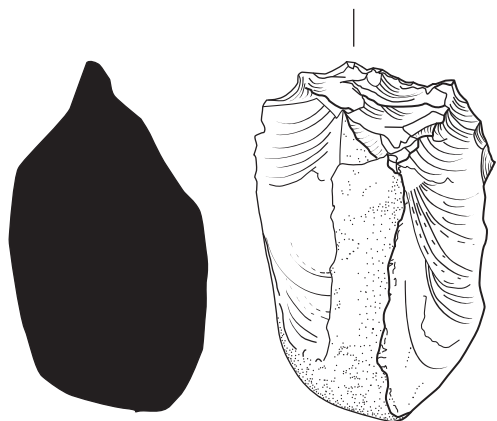
A018/005 core
[04], (03)
Find no: 1:26



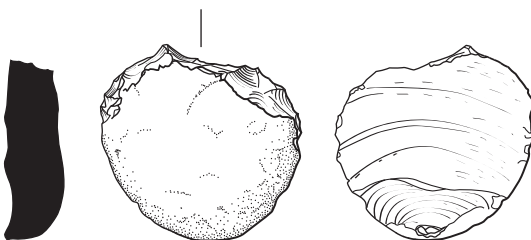
A018/005 scraper
[04], (03)
Find no: 1:61



A018/005 Core,
(01) Find no: 2:5



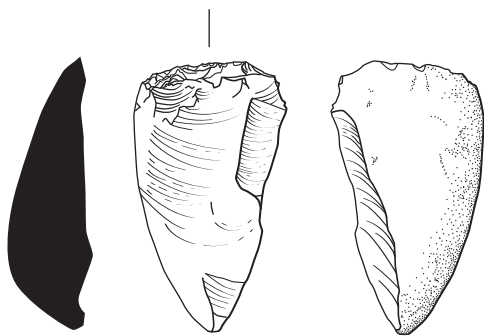
A018/005 Core
(01) Find no: 2:1



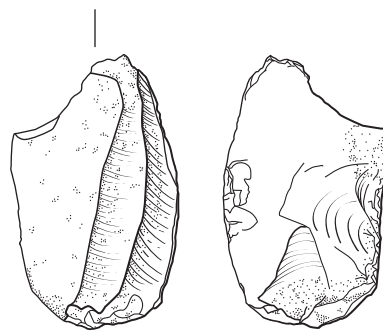
A018/005 Flint Scraper,
(01) Find no: 2:10



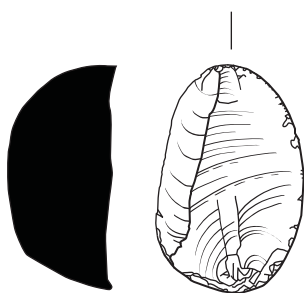
Figure 6- Kinsalebeg: Lithics 1:1 - 2:10, drawn by Sara Nylund



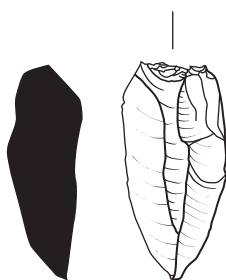
A018/005 Core,
(01) Find no: 3:6



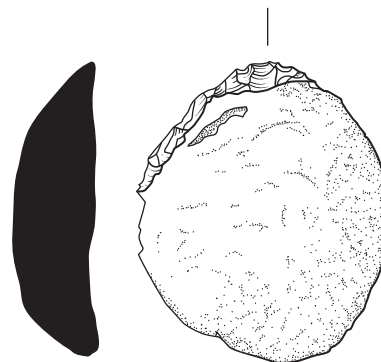
A018/005 Core,
(01) Find no: 3:7



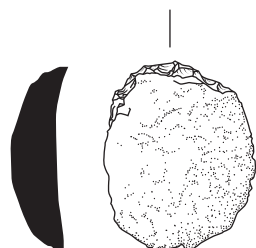
A018/005 Flint Core
[10], (09)
Find no: 4:21



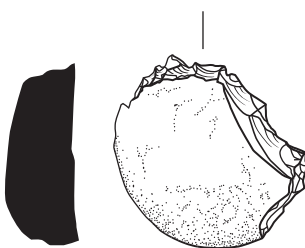
A018/005 Flint Core
[10], (09)
Find no: 4:23



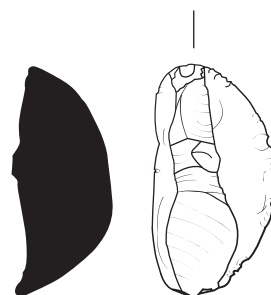
A018/005 Flint Scraper
[10], (09)
Find no: 4:26



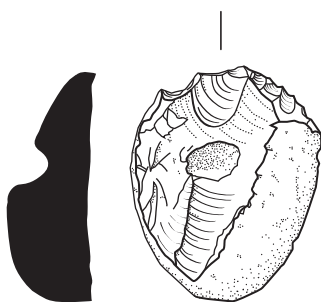
A018/005 Flint Scraper
[10], (09)
Find no: 4:27



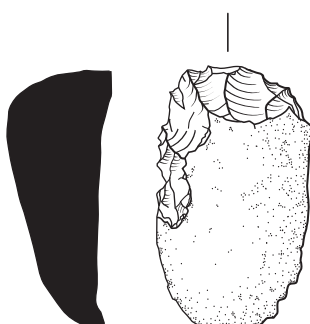
A018/005 Flint Scraper
[10], (09)
Find no: 4:28



A018/005 Core
[08], (07)
Find no: 5:42



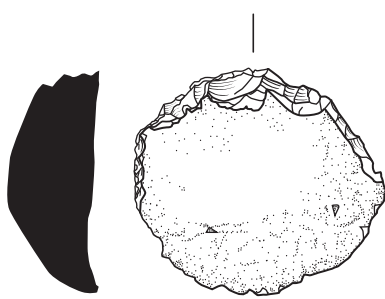
A018/005 Flint Scraper
[08], (07)
Findno: 5:70



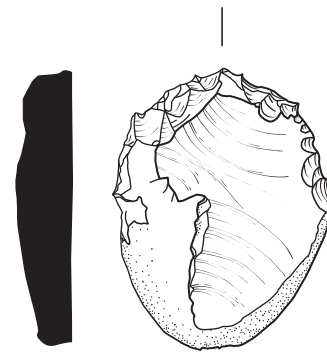
A018/005 Flint Scraper
[08], (07)
Findno: 5:71



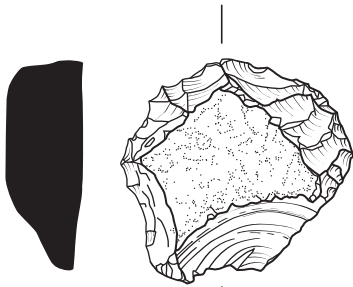
Figure 7- Kinsalebeg: Lithics 3:6 - 5:71, drawn by Sara Nylund



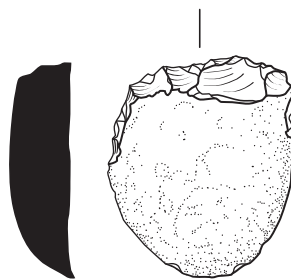
A018/005 Flint Scraper
[08], (07)
Findno: 5:72



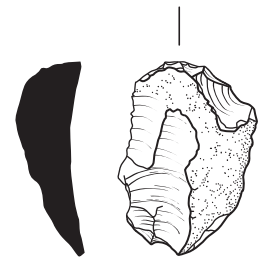
A018/005 Flint Scraper
[08], (07)
Findno: 5:73



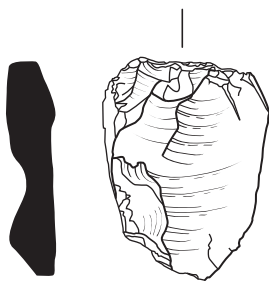
A018/005 Flint Scraper
[08], (07)
Findno: 5:74



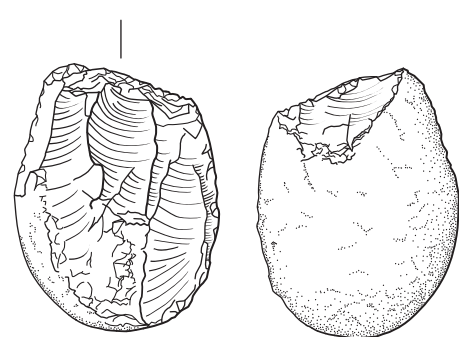
A018/005 Flint Scraper
[08], (07)
Findno: 5:75



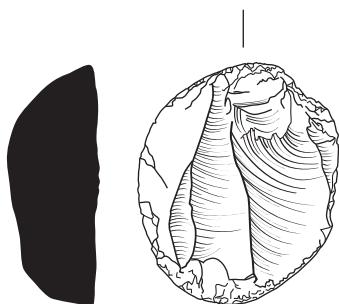
A018/005 Flint Scraper
[08], (07)
Findno: 5:76



A018/005 Flint Scraper
[08], (07)
Findno: 5:77



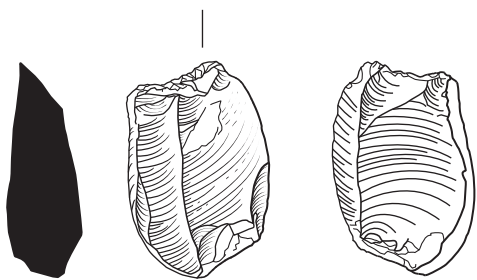
A018/005 Core,
[06], (05) Find no: 6:2



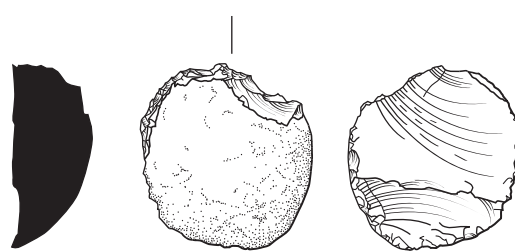
A018/005 Core,
[06], (05) Find no: 6:4



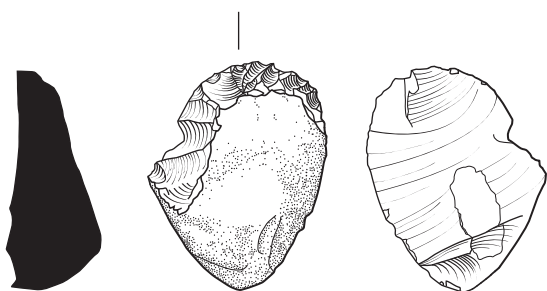
Figure 8- Kinsalebeg: Lithics 5:72 - 6:4,
drawn by Sara Nylund



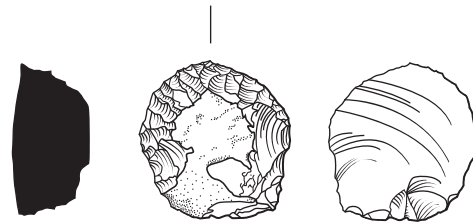
A018/005 Core,
[06], (05) Find no: 6:5



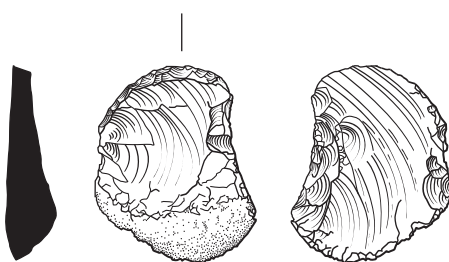
A018/005 Scraper
[06], (05)
Find no: 6:11



A018/005 Scraper
[06], (05)
Find no: 6:12



A018/005 Scraper
[06], (05)
Find no: 6:13



A018/005 Simple
modified flake [06], (05)
Find no: 6:49



Figure 9- Kinsalebeg: Lithics 6:5 - 6:49, drawn by Sara Nylund



Plate 1 - Area 1 - Section through kiln [012] facing east



Plate 2 - Area 2 - Section through deposit [005] facing east



Plate 3 - Area 5 - Section through pits [008 and 010] facing south



Plate 4 - Area 5 - Post-excavation of pits [004, 006, 008 and 010] facing east



Plate 5 - Area 5 - Feature [014, 019, and 016] facing east



Plate 6 - Area 6 - Post-excavation facing west



Plate 7 - Area 6 - Pit [003] facing east