Final Report Excavations at Clonard, Balbriggan

MCGLADE 05/09/2019 LICENCE 15E586 FINGAL CO.CO. 15A/0242

VOLUME 2

archaeology plan
HERITAGE SOLUTIONS

SITE NAME

Clogheder/Clonard or Folkstown Great, Balbriggan, Co. Dublin

CLIENT

Minister for Education and Skills, Minister's Office, Department of Education and Skills, Marlborough St., Dublin 1

LICENCE

15E586

PLANNING

Fingal Co. Co. Ref. 15A/0242

REPORT AUTHOR

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5th September 2019

ABBREVIATIONS USED

DHCG	Department of Culture, Heritage & the Gaeltacht
NMI	National Museum of Ireland
NMS	National Monuments Service
OS	Ordnance Survey
RMP	Record of Monuments and Places
NIAH	National Inventory of Architectural Heritage
LAP	Local Area Plan

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Appendix A

Clonard, Balbriggan (15E586) Prehistoric pottery

2018

Rose Cleary

Clonard, Balbriggan (15E586)

Prehistoric Pottery Rose Cleary

The assemblage comprises nine small sherds (30g) of pottery recovered from a Neolithic pit (F3 and F4) interpreted as a cremation pit, 57 sherds (437g) from a Bronze Age penannular ditched enclosure (F7, F12, F13 and F68) and two sherds (3.4g) from a spread of grey clay (F172). The assemblage includes fragments of a crucible from F12 and a possible mould fragment from F13, both fills in the penannular ditch.

Neolithic

A cremation pit (F2), *c*. 11.5m to the south-east of the penannular enclosure appeared to be a relatively isolated feature. The pottery assemblage from the main fill (F4) of the cremation pit was recovered from charcoal-enriched soil that included burnt clay and some stones. Two minute fragments were recovered from the upper fill (F3) of the cremation pit. A small amount (14g) of burnt bone was also recovered. A radiocarbon date from *Pomoideae* charcoal of 3715–2652 Cal. BC (UBA-33376) was returned from F4 placing the pit fill in the Early Neolithic. Nine small fragments (10g) of baked clay which were probably accidently fired possibly during a cremation process were found in the layer, F4. The baked clay has naturally occurring mica and quartz but has no obvious temper and the clay may have been on-site for pottery production. Two larger fragments (15E586:4:37) of fired, misshapen clay of similar fabric suggest the material was gathered for pottery production and accidently fired.

Thirty-two other fragments (29.5g) of pottery from F4 and two fragments (0.8g) from F3 are 7mm thick and fired reddish yellow (Munsell 5YR6/6) with slightly darker cores (Munsell 5YR5/6). Macroscopic examination of the sherds showed long needle-like pores and the shape of these suggest that bone temper was used. Bone tempered pottery appears porous where pottery has been buried over a long period of time and humic acid causes bone (hydroxyapatite) to dissolve. The pores are needle-like and there is no macroscopic trace of a residue of temper. The shape of the pores is due to the fracturing pattern of bone which breaks into splinters and when dissolved out from the clay leaves needle-shaped pores. The organic material (bone) acts as glue, strengthens pottery (Grim 1962) and creates a light, strong vessel. Bone tempered Carrowkeel Ware was recovered from Grave No. 27 at Carrowmore, Co. Sligo (Hulthèn 1981), is recorded in Early Neolithic carinated bowls and Beaker pottery from Lough Gur, Co.

Limerick (Cleary 1984; 2000) and from Neolithic carinated bowls at Lowpark, Co. Mayo (Cleary 2010). Bone tempered Neolithic pottery is also recorded on a number of Neolithic sites along the west coast of Europe (Hulthèn, 1981).

Two small sherds (3.4g) were found in a grey layer (F172). Both sherds were thin (5.9mm) and fired evenly to a light red (Munsell 2.5YR6/8). The sherds are *c.* 6mm thick and the fabric suggests a possible Neolithic date.

Penannular ditch

Fifty-four pottery sherds (417.2g) were recovered from F12, two sherds (29.4g) from F13, one sherd (4.3g) from F68 and one minute fragment from F7 – all fills within the southern section of a penannular ditched enclosure (F6/8/67). A late Bronze Age of 1498–1303 Cal. BC (UBA 33382) is confirmed by a radiocarbon date on birch charcoal from the basal fill (F13) of the ditched enclosure. An Iron Age radiocarbon date on blackthorn of 399–210 Cal. BC (UBA 33379) from an upper ditch fill (F34) is unrelated to the deposition of the pottery as to date, there is no Iron Age pottery in the Irish archaeological record. The pottery from F12 is likely to be from one vessel and is represented by three thick (16mm) base sherds, two sherds from the base/wall junction and forty-seven body sherds. The vessel was thick-walled (12mm) with a thick (16mm) flat base and may have splayed slightly towards the rim although it is not possible to reconstruct a full profile (Fig. 1). The two sherds from F13 and the one sherd from F68 are also 12mm thick and may be from the same vessel as that fragments from F12.

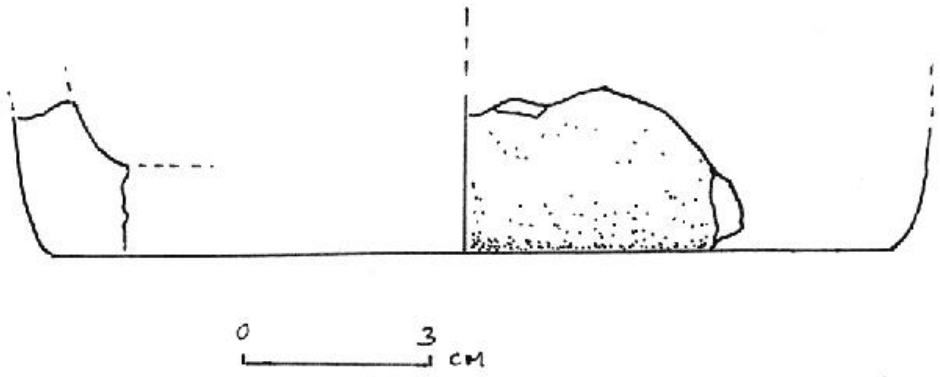

Fig. 1: Base sherd from pottery recovered from F12

Most of the vessel wall sherds have internal soot accretions although there is no soot on the basal sherds. There is no soot on the external surfaces which indicates that the pot was not used in cooking over a fire. The pottery has variable weathering and *c.* 40% show an abraded surface, including the three base sherds. The surface condition indicates a depositional history where some sherds were buried in the fill (F12) and some were on the surface and exposed to the elements and abraded when the ditch was deliberately backfilled. The composition of the backfill layer which was mainly boulder clay (the natural soil) suggests the infill layer was dug and thrown into the ditch and with this the pottery which may have been a deliberate act for some now-esoteric reason. As the pottery was recovered from the same area, broken sherds were probably thrown in during the infill process. The amount of pottery indicates that only part of a vessel was deposited in the infill layer.

The vessel was fired yellowish red (Munsell 5YR5/6) with a dark reddish grey core (Munsell 5YR4/2). The pottery is richly tempered with finely crushed stone generally ≥1≤3mm in length and macroscopically identified as granite. Large amounts of temper fragments made the vessel walls permeable and allowed some evaporation which in turn kept liquids cool (Shepard 1963, 126). The size and fabric of the vessel and the internal soot suggest a vessel used for storage rather than cooking. The clay has visible quartz and mica and is sandy textured. Minerals in the clay suggest a clay source within an area of volcanic bedrock and this may be in the north Dublin area towards the coastal regions where volcanic bedrock is recorded or in the south Dublin/north Wicklow areas where granite bedrock predominates.

The deposition of pottery fragments in the infills of ditched enclosures is common in the middle-late Bronze Age in Ireland (Cleary and Hawkes 2014). Fragments of Bronze Age pottery was recovered from ring-ditches sites at Shanaclogh, Duntryleague, Raheen and Adamstown, all in Co. Limerick (Gowen 1988). Pottery fragments were also found in the barrow ditch at Ballingoola, Co. Limerick (MacDermott 1949b, 142). The deliberate fragmentation of vessels may have been related to a now-obscure belief perhaps linked to destruction or death or returning the clay to the earth.

The crucible fragments are from the rim area with estimated diameter is 10cm. The fragments show the crucible thickened towards the base (Fig. 2). The sherds are fired reddish yellow (Munsell 7.5YR5/8) with a grey internal surface (Munsell 7.5YR5/1). Soot accretions are visible on the internal surface. Macroscopic examination did not detect any visible traces of metal residues on the inner surface. The fabric is richly-tempered with finely-crushed crushed granitic stone. This type of fabric with a high percentage of quartz is refractory whereby the material can resist high temperatures necessary in smelting copper ores.

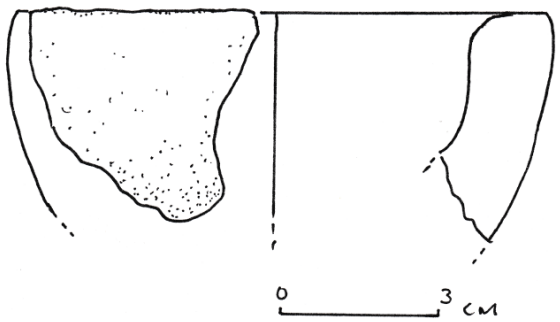

Fig. 2: Crucible from F12/F6

Crucibles of similar shape and fabric to that from Clonard have been recovered from Bronze Age sites including several on Knockadoon Hill, Lough Gur (Ó Ríordáin, S.P. 1954) and from Dún Aonghasa, Aran Islands (Cleary 2012). The crucibles from Dún Aonghasa have similar granitic temper to those from Clonard.

A small ceramic fragment from F13 has a 2.4mm wide and 0.8mm deep groove along the centre which may have been part of a mould for a pin shank or awl. The shallowness of the groove suggests the mould fragment was towards the tip or point of a pin shank. The fabric is sandy with quartz and is a suitable refractory material for contact with molten metal. The upper surface of the mould is smooth while the lower side is irregular.

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Catalogue

Neolithic

F3 (15E586:1–2) and F4 (15E586:37–137)

Undiagnostic body sherds (32 from F4; 2 from F3) and crumbs (40+) and nine baked clay fragments. Identification of pottery fragments as Neolithic based on porosity of fabric with needle-shaped pore structure and supported by C^{14} date of 3715–2652 Cal. BC.

F172

Two sherds of similar Neolithic fabric.

Bronze Age

Penannular ditch

The pottery was recovered from ditch fills within the southern section of a penannular ditched enclosure (F6/8/67). The fabric is Bronze Age and a late Bronze Age of 1498–1303 Cal. BC is confirmed by C^{14} dating.

Fifty-four pottery sherds (417.2g) recovered from F12 (15E586:12:3–11; 12–31; 36–37; 40–59), two sherds (29.4g) from F13 (15E586:13:2–3, one sherd (4.3g) from F68 (15E586:68:2), two sherds and one minute fragment from F172 (15E586:172:3–6) and one minute fragment from F7 (15E586:7:2).

F12 Pottery

The pottery from F12 is from one vessel which is flat-based and with a wall thickness of 12mm. The vessel was fired yellowish red (Munsell 5YR5/6) with a dark reddish grey core (Munsell 5YR4/2). The pottery is richly tempered with finely crushed stone generally ≥1≤3mm in length and macroscopically identified as granite. The clay is sandy textured with visible quartz in matrix.

F12 Crucible

Seven crucible fragments from F12 (15E586:12:3–11) are from the rim area with estimated diameter is 10cm. Curving walls suggest a cup-like profile. Richly-tempered fabric with finely-crushed crushed granitic stone and a high percentage of quartz.

F13 Mould fragment

A small ceramic fragment from F13 (15E586:13:1) with a 2.4mm wide and 0.8mm deep groove along the centre may have been part of a mould for a pin shank or awl. The shallowness of the groove suggests the mould fragment was towards the tip or point of a pin shank. The fabric is sandy with quartz and is a suitable refractory material for contact with molten metal. The upper surface of the mould is smooth while the lower side is irregular.

F13 Pottery

Two body sherds (15E:13:2–3) of pottery from F13 with a 12mm thickness are similar to the fragments from F12 and may belong to the same vessel. The sherds were fired yellowish red (Munsell 5YR5/6) with a dark reddish grey core (Munsell 5YR4/2). The pottery is richly tempered with finely crushed stone generally ≥1≤3mm in length and macroscopically identified as granite. The clay is sandy textured with visible quartz in matrix.

Assemblage database

Feature	Context	Number	Description of assemblage
Penannular enclosure	F12	15E586: 12:40-59	Bronze Age pottery (20 fragments)
		15E586:12:12	Bronze Age pottery (2 sherds)
		15E586:12:13	Bronze Age pottery (1 sherd)
		15E586:12:14	Bronze Age pottery (1 sherd)
		15E586:12:15	Bronze Age pottery (1 sherd)
		15E586:12:16	Bronze Age pottery (1 sherd)
		15E586:12:17	Bronze Age pottery (1 sherd)
		15E586:12:18	Bronze Age pottery (1 sherd)
		15E586:12:19	Bronze Age pottery (1 sherd)
		15E586:12:20	Bronze Age pottery (1 sherd)
		15E586:12:21	Bronze Age pottery (1 sherd
		15E586:12:22	Bronze Age pottery (1 sherd)
		15E586:12:23	Bronze Age pottery (1 sherd)
		15E586:12:24	Bronze Age pottery (1 sherd)
		15E586:12:25	Bronze Age pottery (1 sherd)
		15E586:12:26	Bronze Age pottery (1 sherd)
		15E586:12:27	Bronze Age pottery (1 sherd)
		15E586:12:28	Bronze Age pottery (1 sherd)
		15E586:12:29	Bronze Age pottery (1 sherd)
		15E586:12:30	Bronze Age pottery (1 sherd)
		15E586:12:31	Bronze Age pottery (1 sherd)
		15E586:12:3-11	7 crucible fragments; 1 pottery sherd
		15E586:12:32	Bronze Age pottery (1 sherd)
		15E586:12:33-34	Bronze Age pottery (2 sherds)
		15E586:12:35-36	Bronze Age pottery (2 sherds)
		15E586:12:37	Bronze Age pottery (1 sherd)
	F13	15E586:13:2-3	Bronze Age pottery (2 sherds)
	F13	15E586:13:1	Mould frag
	F7	15E586:7:2	Minute frag BA pottery
	F68	15E:586:68:2	Bronze Age pottery (1 sherd)
Pit	F172	15E586:172: 3-6	Bronze Age pottery (2 sherds + minute frag)
Cremation pit	F3	15E586:3:1-2	Neolithic pottery (two minute frags)
	F4	15E586:4:37	Two fragments baked clay (waster?)
	F4	15E586:4:38-137	Neolithic pottery (32 small fragments + crumbs)

archaeology plan
HERITAGE SOLUTIONS

Appendix B

The medieval pottery from Balbriggan, Co. Dublin (15E0586)

2016

Clare McCutcheon

The medieval pottery
from
Balbriggan, Co. Dublin (15E0586)

Clare McCutcheon MA MIAI

Introduction:

A total of 36 sherds of medieval pottery were presented for study. Following identification and some reassembly, this was reduced to 34 sherds. The pottery was retrieved mainly from two medieval ditches with one sherd from topsoil. The pottery is typical of the material in the area and the assemblage has an overall date of later 13th-14th century based on the quantity of Dublin-type fineware.

The sherds are mostly very small with little diagnostic information apart from two sherds of Dublin-type fineware (126:13, 14) with horizontal ridging decorating the jug. All of the Dublin-type fineware were subject to some post-depositional disturbance but this is very typical of this low fired fineware. A better indicator of disturbance on the site is the sherds of Leinster Cooking Ware as, although small, they retain a fairly crisp fracture.

Methodology:

The identification of the sherds has been entered on a database as per the requirements of the National Museum of Ireland. The material has been identified visually and the detailed information is presented in Table 1. This shows the number of sherds in each fabric type, the minimum number of vessels (MNV) present and the minimum vessels represented by the sherds (MVR). The form of the vessels represented is also shown with the known date range of the material. The pottery in each context is listed in Table 2.

Fabric	Sherds	MNV	MVR	Form	Date
Leinster Cooking Ware	5	-	1	Cooking jar	L12th-M14th
Dublin-type ware	5	-	1	Jug	13th
Dublin-type fineware	23	-	2	Jugs	L13th-E14th
Unidentified	1	-	1	?	Medieval
Total	**34**	**-**	**5**		

Table 1: Pottery identification, Balbriggan, Co. Dublin (15E0586)

Leinster Cooking Ware:

This micaceous, hand built ware 'is the single most widespread medieval pottery type in Leinster' (Ó Floinn 1988, 340). It has been found in varying quantities on both urban and rural sites from Dungarvan to Dublin and further north. The fabric contains large plates of mica, quartz grits and other inclusions such as decomposed feldspar (*ibid* 327) and the vessels are unglazed. While similar clay can be found in Kilkenny-type cooking ware and other locally-made unglazed wares of the period, the method of construction and firing leaves the Leinster Cooking Ware vessels with an easily recognisable sand-pitted base. The vessel represented is the standard medieval form of cooking jar with everted rim, ovoid body and sand-gritted base.

Dublin-type wares:

The designation of a fabric with the suffix *-type* is recommended pottery practice to indicate that a ware has been consistently found in a particular area while evidence for a production centre or kiln which has not yet been discovered (Blake & Davey 1983, 39-40). A fuller discussion of the names of the Dublin-type wares has been detailed elsewhere (McCutcheon 2000, 120-23; 2006) and only a general outline is included in this report. The relative dating of the Dublin-type wares has been developed as a result of consistent recovery in the stratigraphic levels of the Dublin excavations, and the absolute dating is developing by the association of imported wares, and the dating information from coins and dendrochronology.

Dublin-type ware is the standard Dublin glazed pottery of the 13th century, wheel-thrown and in a sandy slightly micaceous fabric while Dublin-type fineware is a cleaner fabric but lower fired and generally less decorated in spite of the exception noted above.

Context	Pottery
1	Dublin-type fineware x1
125	Leinster Cooking Ware x1
126	Leinster Cooking Ware x2; Dublin-type ware x1; Dublin-type fineware x12
130	Leinster Cooking Ware x2; Dublin-type fineware x4; Unidentified medieval x1
131	Dublin-type fineware x4
169	Dublin-type ware x4; Dublin-type fineware x1

Table 2: Pottery by context, Balbriggan (15E0586)

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Appendix C

15E586 Post-medieval glass and ceramic artefacts

2018

Antoine Giacometti

15E586 Post-medieval glass and ceramic artefacts
Antoine Giacometti

Clay pipe

The only clay pipe found on the site has a faded stamp on the front. Comparisons with a less-faded identical clay pipe found in Winetavern Street in Dublin (Norton 1997, 184) suggests the inscription reads 'DUBLIN UNITED TRADES ASSOCIATION' encircling a symbol of two hands shaking over 'TRADE MARK', and on this basis dates to between c. 1860 and 1880.

1:15 Clay pipe bowl fragment. Large bowl almost vertical to stem with faded stamp on front bearing a symbol of two hands shaking over' TRADE MARK'. Late 19th century.

Post-medieval pottery

The most interesting post-medieval artefact from the assemblage is the head of a dog (1:19), made from a Bristol-Staffordshire fabric. This is slip-painted and glazed in a style typical of late 17th and 18th century Staffordshire brown and yellow slipwares, suggesting it could be a similar date. Staffordshire became known for its dog figurines in the mid-19th century, making pairs of 'hearth dogs' in ceramic. This figurine does not resemble the 19th century 'hearth dogs', and may instead have been designed to be attached to a vessel or ornament, as suggested by a circular indentation in the base.

1:17 brown English stoneware vessel fragment, with thin walls, pale grey fine fabric and pale brown glaze. Possibly from a tankard. 18th or 19th century
1:18 brown English stoneware handle fragment, with fluting, pale grey fabric and two-tone brown glaze. Possibly from a tankard. 18th or 19th century
1:19 Dog head fragment. Bristol-Staffordshire fabric. Brown slip and glaze typical of Bristol-Staffordshire slipware. Circular indentation at base to allow fixing.
19:1 White English stoneware fine tableware with everted rim, possibly a coffee cup. Early 18th century.
23:4 Refined whiteware plain dinner plate fragment. 19th or 20th century.
23:5 Refined whiteware (pearlware) plain dinner plate fragment. 19th century.
23:6 Refined whiteware (pearlware) tableware vessel fragment. 19th century.
23:7 Black-glazed stoneware with pinky buff fabric and matt glaze with ribbing. General utility vessel, possibly English, 18th or 19th century probably.
122:1 White slipped earthenware fragment. Unusual form, very flat with clear glaze on underside. Possibly a floor tile rather than a vessel? Date likely to be post 1720s.

Glass

Two glass bottles were identified. One of these (23:3) is a dark green utility bottle of 18th century date or later. Its function is not possible to determine (eg. pharmaceutical, lamp-stand, beer, water, etc.), but the bright green colour, thick walls and narrow diameter suggest a specialized function (ie not a wine bottle). The second bottle (19:2) is almost certainly a carbonated water bottle. The embossed writing would have originally read '[B]EWLEY['S?]'. The shape of the sherd and the use of embossing suggests it was made in a mould, and probably dates from between *c.* 1820 to *c.* 1920. No information could be obtained on any possible factory or manufacturer's name that included the element 'Bewley', nor do the Bewley family of Dublin ever appear to have owned or operated a bottling plant in addition to their catering and tea and coffee importing business. An identical bottle embossed 'BEWL[...]' was excavated at the Timberyard by the author (06E710:156:46).

19:2 Clear utility ('mineral water') bottle fragment with embossed '…[F?]WLEY...', 19th or 20th century.
23:3 Dark green utility bottle fragment with air bubbles. Could be 18th century, probably not a wine bottle.

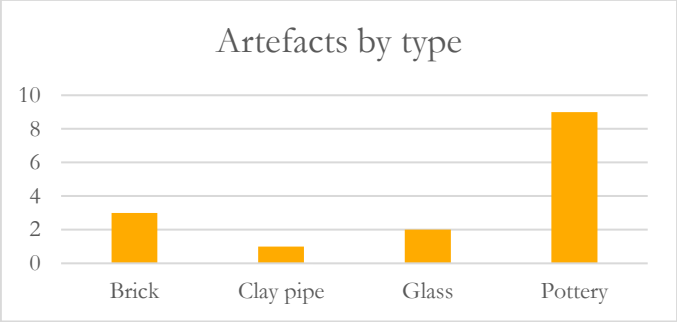
Brick

Brick 18:1 has impressed straw or hay impressions on one face. This is probably from the drying-out process prior to firing, when the wet brick was laid on a bed in the open air directly on straw or hay. These methods of brick-drying were used in the 17th and 18th centuries in Ireland and the imprints are a typical feature of bricks from this date (Pavia & Bolton 2000, 191), for example at Portumna Castle. It is also possible that the marks are from discarded straw used in the temper, as at Rathfarnham Castle (Wren 2015, 56). The brick is warped and heavily oxidised in parts, suggesting it was baked in an open-air clamp fire rather than in a kiln. Most Irish bricks were clamp-fired in the 17th century, and the practice continued until the early 20th century though was gradually replaced by kiln firing from the 17th century onwards (Pavia & Bolton 2000, 198). This is a locally-made brick (not an English import). Dating a single brick is not possible, as crude bricks were manufactured in Ireland from the 17th century to the 20th century, however the characteristics of this brick suggest a 17th or 18th century date. The eroded brick fragments of 131:8-9 are 18th century or later.

18:1	Badly-fired hand moulded brick 65mm thick with mottled buff-orange-pink-darkred-purple fabric and pebble inclusions. Imprints of straw/hay on one face.
131:8-9	2 heavily-eroded fragments of brick with fine consistent bright orange fabric, well-fired with low inclusions.

Discussion

15 post-medieval glass or ceramic artefacts were recovered from Balbriggan. Over half of these comprised pottery (9 sherds), with the remainder made up of 3 brick fragments, 2 glass fragments and a clay pipe.



All of the artefacts date to the 18th or 19th centuries, possibly extending into the early 20th century in the case of the carbonated water bottle (19:2) and one of the refined whiteware dinner plates (23:4).

The artefacts come from six contexts. 33% come from C23 and 26% come from C1. C18, C19, C122 and C131 contained one or two objects. Over half of the artefacts come from Area 2, a quarter from Area 5, and a quarter from general topsoil over the entire site.

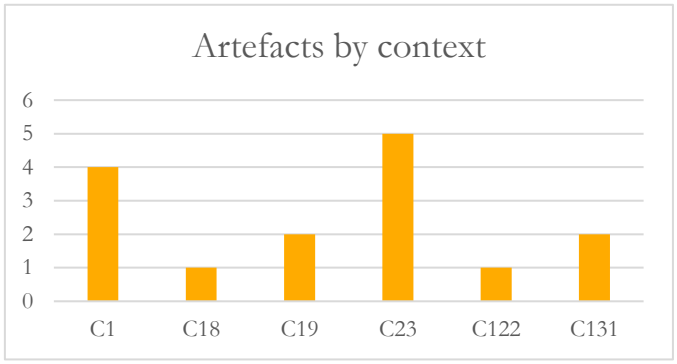
Two fragments of red brick (131:8-9) dating from the 18th, 19th or 20th centuries came from the basal fill of a ditch (F125) in area 5. McGlade (2016, 51-52) has interpreted this ditch as being of medieval date. Noting the anomalous post-medieval inclusions in the ditch, McGlade (ibid) suggests that the bricks could have sunk down to the base of the ditch from an upper later fill. He has also noted (2016, 87) that a concerted effort to drain the northern part of the site, particularly apparent in Area 5, occurred in the 19th century, in some cases recutting medieval ditches.

All of the remaining contexts where post-medieval ceramic and glass artefacts were recovered were interpreted as post-medieval by the director.

Contexts with post-medieval pottery		
F1	Topsoil	All
F18	Fill of large post-medieval drainage ditch F11	A2
F19	Fill of large post-medieval drainage ditch F11	A2
F23	Fill of large post-medieval drainage ditch F22	A2
F122	Fill of post-medieval pit F121	A5
F131	Fill of medieval ditch F125	A5

McGlade (2016, 25) notes that ditch F11 only contained post-medieval pottery in the upper fill, and the ditch itself may originally date from the medieval period. McGlade also notes that this ditch was cut by ditch F22 (ibid). This is correlated by the pottery, where the single sherd of fine early 18th century stoneware (19:1) from the top of the possible medieval ditch predates the 19th century assemblage (23:5-7) from the later ditch.

However, the glass artefacts show the opposite pattern, with the glass (19:2) in the earlier ditch dating from the late 19th or 20th century and the glass (23:3) from the later ditch dating from the 18th or 19th century. In this case, the carbonated water bottle 23:3 should probably be interpreted as intrusive.



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Appendix D

Lithic Report. Balbriggan, Co. Dublin 15E586

2016

Sean Sharpe

Lithic Report

Site: Balbriggan, Co. Dublin

Company: Archaeology Plan

Excavation Number: 15E586

By

Seán Sharpe BA MPhil

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1 – Introduction

The lithic assemblage from Balbriggan, Co. Dublin (15E586) is comprised of 64 pieces. A total of 61 of these pieces are flint with one chert flake, one quartz crystal piece and one natural sandstone pebble. The assemblage has a high quantity of debitage and thermal spall, with some examples of different core types.

2 – Methodology

All lithic finds were examined visually, bagged in grip-seal polyethylene bags and were numbered accordingly. These finds were also individually entered into a Microsoft Excel spreadsheet and were recorded in the following manner. Firstly, measurement of the maximum length, width and thickness of each piece were recorded. Where pieces that are <10mm in size and occur in a large quantity in a single per finds bag, these were catalogued as one find number. These smaller pieces may be generally comprised of chips or thermal spalls. Secondly, the attributes of each piece was recorded by examining type, sub-type, condition and survival, quantity, platform-type, raw material type, context information and description. The majority of all pieces were classified after Woodman (*et al.* 2006) and Wickham-Jones' (1990) criteria of lithic classification. However, some pieces were classified after Ballin (2000) and Inizan (*et al.* 1999) where applicable.

3 – Raw Material

The lithic assemblage is mostly comprised of reasonably good quality flint. There are five natural flint pebbles in the assemblage and these confirm the worked flint was likely produced from small and medium-sized pebbles. The flint pebbles may have been sourced along the east coastline where flint can be readily found (Sternke 2013). That said, it is also possible that the pebbles may also have been procured as glacial remanié deposits that can occur less frequently inland (Finch *et al.* 1983).

The condition of the Balbriggan lithic assemblage is outlined in Table 1. A total of 28 flint pieces in the assemblage are burnt. These are mostly chips and are less than 10mm in size, often known as thermal spall. These were recovered from the fill

of a small pit (C2) that also contained some burnt bone. There is no real significance to the flint appearing in the deposit, as the flint may have been thrown into a fire accidentally or discarded into the fire if the raw material was poor in quality. A high quantity of burnt flint chips can be expected in the form of this thermal spall. This occurs from the fracturing and shattering of flint when it is exposed to extreme heat. The presence of burnt pieces within a lithic assemblage can often indicate a domestic aspect, where flint knapping might have taken place around or near a hearth (Purcell 2002).

Burnt	Patinated	Reasonably Fresh	Abraded	Rolled
28	9	22	3	2

Table 1: Lithic assemblage condition, Balbriggan, Co. Dublin.

The quality of the flint was sufficient for producing useable cores and flakes. Furthermore, the dominance of flint in the assemblage also highlights the availability and possible preference to flint alongside chert, sandstone and quartz crystal for lithic reduction at Balbriggan.

4 – Technology

There are some examples in the assemblage that indicates characteristic technology. This provides a relative date for the assemblage. There are a total of six core fragments and two dual-platform cores in the assemblage that exhibit such characteristic technology. Three of these core fragments (15E586:10:2, 15E586:1:6 and 15E586:7:4) are probable core trimming fragments and were likely produced while trying to rejuvenate the core. A further two dual-platform cores (15E586:1:5 and 15E586:75:1) suggest that a controlled reduction took place on site. These cores are likely controlled bipolar-on-anvil cores and would have allowed for the

management and production of regular flakes and/or blades. This type of technology is diagnostic to the Early–Middle Neolithic period (Woodman *et al*. 2006).

There are three examples of bipolar flakes in the assemblage (15E586:30:144, 15E586:126:34 and 15E586:170:1), including one probable bipolar split pebble (15E586:1:1). This type of technology is noted to date the Late Neolithic/Beaker Period, or possibly Early Bronze Age (Sternke 2013).

There is one side-scraper (15E586:1:2) in the lithic assemblage (Figure 1), produced on a secondary flint flake and is patinated in condition. This example resembles a notch scraper, however the notch in this example was likely created accidentally during flake production. The example exhibits semi-abrupt retouch along one lateral edge and some marginal retouch on its left side, and may have been used for scraping of hide or wood. No definite technology is evident for this example. That said, it is probable that the example was produced from a bipolar flake.

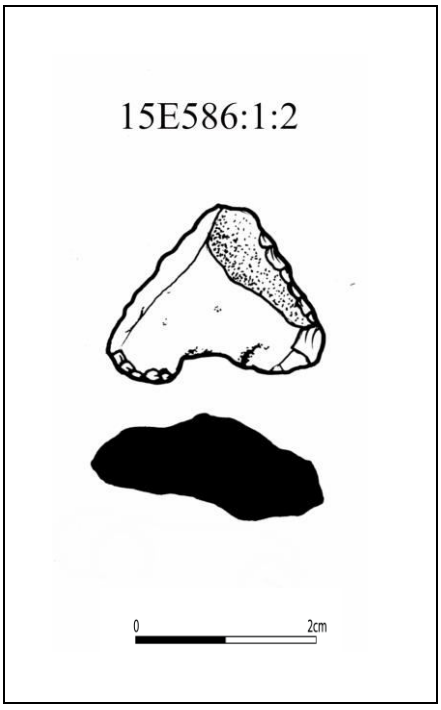

Figure 1: Side-scraper example, Balbriggan lithic assemblage.

5 – Discussion

The Balbriggan lithic assemblage suggests a domestic use at the site. The presence of an earlier technology characteristic to the first of the Neolithic period alongside a later bipolar technology proposes that there was two short phases of lithic reduction.

With the exception of one side-scraper (15E586:1:2), there are few pieces in the assemblage that were intentionally produced for a specific purpose, such as scraping or woodworking. It is possible that the primary stage of lithic reduction occurred on site and then selected cores and flakes may have been transported elsewhere after knapping. This is also suggested by the presence of dual-platform cores alongside no flakes or blades associated with that technology.

It is probable that a more extensive phase of lithic reduction took place sometime after the Late Neolithic/Early Bronze Age period. This is suggested by a higher quantity of bipolar-type flakes and irregular debitage. That said, it is likely that the later phase of activity was also a short episode.

The dual-platform cores and core trimming fragment examples suggest a Neolithic date based on their diagnostic technology. However, it is worth noting the contexts of the cores and core fragments derive from the fills of a Bronze Age enclosure ditch, suggesting the possibility that the cores may have been produced by an experienced knapper at that time. This may also suggest that there was a focus on specific tool production at the site, or the possibility that raw material was scarce at that time and therefore was utilised carefully. However, if the possibility that the lithics are of similar Bronze Age date, it is evident that these were produced by two different types of knapping episodes at the site around that time.

6 – Comparative Material

The Balbriggan lithic assemblage represents similar characteristics to the Late Neolithic/Beaker Period bipolar technology seen at Lismullin 1, Co. Meath (Sternke 2013) and at Kilgobbin, Co. Dublin (Sharpe 2015). The earlier technology represented by the dual-platform core examples is similar to that at Ballitore, Co. Kildare (Sharpe 2016), at the Neolithic site at Tullahedy, Co. Tipperary (Sternke

2011) and the Early Neolithic site at Corbally, Co. Kildare (Purcell 2002). This site further adds to *comparanda* of material for understanding the prehistoric landscape in Co. Dublin.

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Find Number 15E586:	Quantity	Context	Context Description	Material	Type	Classification	Platform	Survival	Max Length (mm)	Max Width (mm)	Max Thickness (mm)	Condition	Comments
2	1	75		Flint	Irregular Flake /p	No Classification	n/a	Fragmented	34	17	12	Patinated	Indeterminate. Possible spall from reduction.
2	1	10		Flint	Irregular Flake /s	Core Fragment	n/a	Fragmented	11	11	5	Reasonably Fresh	Possible core trimming flake.
1	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
3	1	4		Flint	Irregular Flake /s	No Classification	n/a	Fragmented	16	12	5	Burnt	Indeterminate burnt flake. Probable spall.
3	1	1		Flint	Broad Blade /t	Core Fragment	Plain	Complete	44	11	9	Patinated	Elongated broad blade. Produced from dual-platform core.
144	4	30		Flint	Regular Flake /t	Bipolar Flake	n/a	Complete	46	31	8	Reasonably Fresh	Large bipolar flake.
144	4	30		Flint	Irregular Flake /s	No Classification	n/a	Complete	26	28	10	Reasonably Fresh	Probable bipolar flake.
144	4	30		Flint	Irregular Flake /s	No Classification	n/a	Fragmented	20	17	7	Reasonably Fresh	Probable bipolar flake.
144	4	30		Chert	Irregular Flake /t	No Classification	n/a	Fragmented	9	18	6	Patinated	Probable chert fragment.
2	1	1		Flint	Irregular Flake /s	Possible Side Scraper	n/a	Complete	26	34	10	Patinated	Possible side scraper. Evident retouch along lateral edge.
4	1	13		Flint	Irregular Flake /p	No Classification	Cortical	Complete	24	17	10	Reasonably Fresh	Possible opening flake of small flint pebble.
6	1	1		Flint	Core /t	Core Fragment	Plain	Fragmented	25	21	12	Reasonably Fresh	Probable core trimming flake.
4	1	7		Flint	Core /t	Core Fragment	Plain	Fragmented	24	29	19	Reasonably Fresh	Large core fragment. Probable core trimming flake.
1	1	36		Flint	Irregular Flake /s	No Classification	n/a	Fragmented	13	11	5	Patinated	Possible core fragment.
1	1	99		Flint	Broad Blade /t	Broad Blade	n/a	Complete	22	11	4	Reasonably Fresh	Complete broad blade.
1	1	10		Flint	Irregular Flake /t	No Classification	n/a	Complete	16	22	6	Abraded	Possible scraper fragment. No definite retouch.
1	1	8		Flint	Pebble	Natural Pebble	n/a	Complete	51	42	32	Patinated	Natural flint pebble.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.

138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
138	1	4		Flint	Chip	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
34	1	126		Flint	Regular Flake /t	Bipolar Flake	n/a	Complete	23	19	8	Reasonably Fresh	Bipolar Flake.
1	1	75		Flint	Core /t	Dual-Platform Core	n/a	Complete	38	23	18	Reasonably Fresh	Complete dual-platform core.
1	6	21		Flint	Irregular Flake /t	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
1	6	21		Flint	Irregular Flake /t	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
1	6	21		Flint	Irregular Flake /t	Irregular Flake /t	n/a	Fragmented	21	13	8	Burnt	Burnt irregular flake.
1	6	21		Flint	Irregular Flake /t	Irregular Flake /t	n/a	Fragmented	18	11	11	Reasonably Fresh	Indeterminate irregular flake.
1	6	21		Flint	Irregular Flake /t	Thermal Spall	n/a	Fragmented	<10			Burnt	Thermal spall.
1	6	21		Quartz Crystal	Irregular Flake /t	Thermal Spall	n/a	Fragmented	13	13	4	Burnt	Possible burnt quartz crystal flake?
1	1	170		Flint	Regular Flake /t	Bipolar Flake	n/a	Complete	23	16	5	Reasonably Fresh	Bipolar Flake.
1	1	4		Flint	Irregular Flake /t	No Classification	n/a	Complete	34	27	10	Reasonably Fresh	Probable large bipolar flake.
1	1	39		Flint	Irregular Flake /t	Core Fragment	n/a	Fragmented	78	61	51	Reasonably Fresh	Probable large bipolar core fragment.
1	1	135		Flint	Irregular Flake /t	No Classification	n/a	Fragmented	13	14	9	Abraded	Indeterminate irregular flake.
6	1	131		Flint	Core /t	Core Fragment	n/a	Complete	52	27	7	Reasonably Fresh	Large irregular core fragment. Probable bipolar core.
1	1	1		Flint	Pebble	Split Pebble	n/a	Complete	45	33	11	Patinated	Bipolar split pebble.
1	1	68		Flint	Pebble	Natural Pebble	n/a	Complete	28	15	13	Reasonably Fresh	Natural flint pebble.
1	1	9		Flint	Irregular Flake /t	No Classification	n/a	Fragmented	25	32	8	Reasonably Fresh	Large irregular flake.
1	3	171		Flint	Core /t	Bipolar Core	n/a	Complete	25	28	14	Abraded	Bipolar core.
1	3	171		Flint	Broad Blade /p	Broad Blade	Cortical	Complete	38	19	8	Reasonably Fresh	Elongated broad blade.
1	3	171		Flint	Irregular Flake /t	No Classification	n/a	Fragmented	24	23	7	Reasonably Fresh	Indeterminate irregular flake.
1	1	151		Flint	Chip	No Classification	n/a	Fragmented	<10			Reasonably Fresh	Indeterminate chip. Probable spall.
5	1	1		Flint	Core /t	Dual-Platform Core	Plain	Complete	25	17	10	Patinated	Re-used platform core. Possibly bipolar?
1	5	1		Flint	Pebble	Natural Pebble	n/a	Complete	75	41	22	Reasonably Fresh	Natural flint pebble.
1	5	1		Flint	Pebble	Natural Pebble	n/a	Complete	42	43	32	Rolled	Natural flint pebble.
1	5	1		Flint	Pebble	Natural Pebble	n/a	Complete	32	20	15	Reasonably Fresh	Natural flint pebble.
1	5	1		Flint	Irregular Flake /t	No Classification	n/a	Complete	19	14	7	Patinated	Indeterminate irregular flake.
1	5	1		Sanstone	Pebble	Natural Pebble	n/a	Complete	23	17	17	Rolled	Natural pebble.

archaeology plan
HERITAGE SOLUTIONS

Appendix E

15E586, Balbriggan. Coarse stone tool report

2016

Niamh Kelly

15E586, Balbriggan

Coarse Stone Tool Report

Niamh Kelly

July 2016

Introduction

This report details coarse stone tools excavated at a prehistoric site in Balbriggan North County Dublin in January 2016. The material was found in association with the fill of a ditch which formed the outer portion of a circular banked enclosure and was in part associated with a small deposit of human remains. The site is as yet undated, but features and associated artefacts suggest its occupation was broadly contemporary with the Bronze Age. This report will provide detail of the number and range of tools recovered during excavation while also offering some insights and interpretations for this material.

Methodology

A total of five possible coarse stone artefacts were recovered from archaeological contexts during excavation at Balbriggan. These have all been macroscopically analysed and, from this number, two utilised tools were identified. All five objects have been individually recorded with all relevant data including name, number, context, dimensions, weight, damage type and damage location noted. The Wentworth (1922) sediment grain size scale has been used to classify pebbles and cobbles within this report; further a pebble/ cobble fragment is defined, in this instance, as representing less than 50% of the original object. As there currently exists no standardised classification system for coarse stone tools from Britain and Ireland, this report has endeavoured to use those classifications and tool descriptions which appear most commonly in archaeological reports (see Table 1.). This allows for comparisons between this material and other materials from similar periods.

Tool Categories

Tool Type	Number
Grinding Stone	1
Pecked Cobble	1
Total	2

Table 1. Range and number of coarse stone tools present at the site

Grinding Stone 15E586:12:1

There is one example of a grinding stone from this site which makes use of a limestone water rolled cobble. The cobble is sub-rounded in appearance, roughly triangular in shape and has an ovoid cross-section. It has dimensions of 78x72x72mm (LxWxD) with a weight of 481g. The tool is defined by its abraded surfaces at one end where grinding in multiple directions has created two facetted surfaces; this has giving the tool a bevelled appearance where these two ground surfaces meet. This bevel has a total length of 63mm with localised grinding occurring to either side of it. The facetted surfaces created through grinding have a width ranging from 23mm to 13mm on one side and a width ranging from 31mm to 9mm on the other. One of the faces of the cobble also shows evidence of discrete pecking in two locations. The more distinctive of the two locations is an oval shaped spread of pecking covering a surface area of 23x20mm (LxW) while adjacent to this is a smaller less obvious spread of pecking covers a roughly circular area of 17x16mm.

Overall this tool is comparable to tools found in both Britain and Ireland during early prehistory. While these tools are difficult to date as their typology spans multiple periods they have been found on sites ranging from the Neolithic to the Iron Age (e.g. Liversage 1968; Moore and Wilson 1999; Owen and Lowe 1999). As Clarke has noted, examples of similar tools from Scotland often show faceting created through grinding to one or both ends of these tools, which forms either a bevelled edge (as demonstrated with the Balbriggan example) or a thin band of unworked stone where the two ground surfaces have not quite met (Clarke 2006, 45). These Scottish examples often show pecking to one or both faces, again, similar to the damage present on this tool.

Pecked Cobble 15E586:7:1

One possibly pecked cobble was recovered from this site which makes use of a water rolled cobble of medium grained sandstone. It is sub-rounded in appearance and ovoid in shape with an ovoid cross section. Its dimensions are 87x86x46mm (LxWxD) and it has a weight of 453g. It is defined by possible pecking along its two sides. This pecking is diffuse and spans an area of 75x26mm (LxW) on one side and 73x22mm on the other. This pecking is characterised by pitting into the surface of these areas, however this pitting is shallow in nature and is not concentrated in a way that is typical of similar utilised cobbles of this morphology and geology. Therefore, while this damage could be indicative of its use, it is very likely that it has occurred naturally. Similar natural damage has been observed on cobbles collected during beaching surveys from across Ireland.

Unutilised Material

Unutilised Material Form	Number
Water rolled pebble	2
Pebble Fragment	1
Total	3

Table 2. A breakdown of material form for unutilised stone

Water rolled pebbles 15E586:152:1-2

Two water rolled pebbles of quartz were recovered from this site. One was sub-rounded in appearance with an ovoid cross section and overall ovoid shape. It measured 53x41x16mm (LxWxD) with a weight of 58g. The second pebble was rounded in appearance also with ovoid cross section and was ovoid in shape. Its measurements were slightly smaller with dimensions of 34x26x20mm and a weight of 28g. Both pebbles are white in colour and neither shows evidence of use.

Pebble fragment 15E586:7:5

One pebble fragment was recovered from site. It was sub-rounded in appearance and fractured across its width making it difficult to ascertain its original length and form, but it likely represents a quarter to a third of the original pebble. This pebble was likely originally ovoid or triangular over all in shape giving the pebble an elongated form. The fragment itself is triangular in shape and has an ovoid cross section. It had dimensions of 38x46x14mm and a weight of 25g. Its surface is naturally burnished precluding geological identification, but it is possibly made of a very fine grained granite. There is no evidence of damage across the break making it unclear if this break was natural or unnatural. The original surface of the pebble shows no signs of damage or use.

Discussion

The coarse stone material represented on site is very minimal, with only one definite example and one possible example of tool use. The minimal size of the assemblage precludes the patterning of geologies, morphologies, tools types and activities. However some minor observations can be made of the material itself.

The grinding stone from site closely mirrors similar examples from Britain and Ireland and, as previously discussed, this tool types broad chronology fits in with the presumed Bronze Age date at Balbriggan. Without associated evidence of activity it is difficult to say specifically what this tool was used for, but it is possible that it could have performed a variety of tasks including the grinding/ crushing of seeds and grain, or the preparation of mineral inclusions for ceramic production (Clarke 2006, 45). It should be noted that no corresponding stone surface, portable or otherwise, was found with this tool with which it could have been used in conjunction. While that may seem unusual, it is actually fairly typical of this type of artefact (Ibid. 46).

The two quartz pebbles show no evidence of use; however they are of a similar size and morphology and are both white in colour. Their comparable characteristics, and the fact they were found together suggests a specific selection process for this material. Further these two pebbles were found in association with human remains which adds an interesting dynamic to their procurement and presence on site. When looking for specific comparisons for the inclusion water rolled quartz pebbles with burials from the Irish Bronze Age, Waddell's 1990 burial catalogue reveals no fewer than 10 similar examples (Waddell 1990). This indicates that these are not coincidental inclusions but rather a dedicated rite associated with, at least some, burials during this period. Further to this, the inclusion of quartz with burials and human remains is a recognised phenomenon from early

prehistory right through to the later medieval period in Ireland (e.g. Cooney 2000 177; Laing 2006, 227). Cooney has argued that the inclusion of quartz as a structural material (such as at Newgrange) or as a commemorative deposit (the direct inclusion of quartz with a burial) is linked to the symbolism of quartz itself, which is seen as something powerful and immortal (Cooney 2000 176-178). This tradition seems not only to be held in Ireland; similar examples of quartz used as a structural or depositional element in association with human remains can also be found from across Britain (e.g. Darvill 2002; Arthur and Murray 2014). Therefore this example from Balbriggan sits within a much wider prehistoric and Bronze Age narrative.

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HERITAGE SOLUTIONS

Appendix F

Metal finds. Clonard or Folkstown Great, Balbriggan 15E586

2018

Steven McGlade

Metal objects. Clonard or Folkstown Great, Balbriggan, 15E586
Steven McGlade 05/04/18

Six iron object were identified during the excavations at Clonard or Folkstown Great, Balbriggan. Four of the objects came from post-medieval context and two from medieval contexts. A collection of possible beads were also retrieved and will be discussed at the end.

15E586:1:16

Curved iron band measuring 70mm x 11.5mm x 7.5mm. Corroded and fragmentary. Resembles a portion of horseshoe but appears too fine.

15E586:23:1

Corroded iron bolt measuring 115mm x 16-26mm x 16-28mm. Squared iron bar 59mm in length with bulbous ends, one measuring 30mm x 28mm x 26mm and the other 30 x 22 x 21mm, likely to be the ends of the bolt. Post-medieval.

15E586:23:1

15E586:23:2

Corroded iron nail measuring 33mm x 5mm x 4.5mm. Square-shafted with flat sub-rounded head 8mm in diameter. Tip does not survive. Post-medieval.

15E586:126:20

Flat scrap of iron measuring 16mm x 10mm x 1mm with slag adhesion on one side. Within medieval ditch, which had metalworking waste inclusions.

15E586:173:1

Curving plate of iron measuring 87mm x 36mm x 5.15mm. Some corrosion. Probable farm machinery fragment, post-medieval.

15E586:169:6

Iron tongs measuring 146mm x 42mm x 12mm. Broken at the connection between the two arms. The arms measure 12mm in diameter and curve towards one another for 20mm at the tips. Gap of up to 17mm between arms of tongs, which are simple with no hinge. Heavy corrosion along the length of the object. Medieval.

15E586:169:6

15E586:4:159

A collection of small green-coloured objects initially believed to be copper-alloy were retrieved from the fill of the cremation pit F2 and were thought to be fragmented metal beads. When an Early Neolithic date was returned for the beads this was brought into question. An XRF test on the material indicated they were over 90% lead. Subsequent analysis of the sieves used in the soil processing indicated they were old, with flaking green paint… This would seem to be the source of the artefacts, which have now been cancelled. We have also bought some new sieves!

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HERITAGE SOLUTIONS

Appendix G

Report on the faunal remains from Clonard or Folkstown Great, Balbriggan, Licence No. 15E586

2017

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Report

On

Faunal Material

From

Clonard or Folkstown Great,

Balbriggan

Licence No. 15E586

8 June 2017

1 Introduction

This report details the faunal remains from a programme of archaeological monitoring and excavation on a site in Clonard or Folkstown Great townland in December 2015. The work was carried out by Steven McGlade under Licence No. 15E586, on behalf of SAF Construction, and revealed a multi-period sequence of activity ranging from the Bronze Age through to the post-medieval period.

2 Methodology

Contexts were divided on the basis of the stratigraphic sequences provided by the excavator (McGlade 2016) and personal communications (Steven McGlade, pers. comm.).

Mammalian faunal remains were identified using comparative collections and by reference to Hillson (1992) and Schmid (1972). Ribs and vertebrae apart from the axis and atlas can be difficult to identify to species, however these were quantified as number of fragments in categories of large mammal (LM), medium mammal (MM) and small mammal (SM). Sheep and goat bones were separated where possible using Boessneck (1969), Kratochvil (1969) and Payne (1969; 1985). Sexing was carried out using the shape of canine of pigs (von den Driesch 1976), presence of developed canines in horses, and the distal breadth (Bd) of the metacarpal of cattle (McCormick 1992). Fusion data was based on Silver (1963) and Reitz and Wing (1999, 76). For cattle and pigs, toothwear was recorded per Grant (1982) and Higham (1967) after Silver (1963). Toothwear in sheep was examined using the method described by Payne (1973; 1987). Equids were aged as described by Levine (1982), dogs were aged using the data shown in Schmid (1972). Measurements were carried out to an accuracy of 0.1mm per von den Driesch (1976), Boessneck (1969), Payne and Bull (1988, Fig. 1), Payne (1973, 296), and Davis (1992, Fig. 2). Estimated withers heights were calculated using Fock (1966) and Matolcsi (1970) for cattle, Vitt for equids, Teichert for original (ur) and early (früh) or unimproved sheep, and Teichert for pig, all cited by von den Driesch and Boessneck (1974). The withers height for dogs was calculated from Koudelka cited by von den Driesch and Boessneck (1974) and from Clark (1995).

Evidence for chopping, cutting and sawing were recorded, as was gnawing by canids and rodents. Burnt material was classified as singed for bone with only partial blackening, burnt for blackened bones or calcinated for those bones that were predominantly white/blue-grey in colour. For non-countable fragments these aspects were only recorded where obvious on a cursory inspection. Where pathologies, developmental defects and non-metric traits were identified on bones these were examined and recorded in further detail.

Throughout the text the common names for species have been used. A translation of common to Latin names is shown in Table 1, based on Schmid (1972) and other sources.

Common Name	Latin Name
Cattle	*Bos sp.*
Horse	*Equus sp.*
Sheep/Goat	*Ovis/Capra*

Table 1: Translation of Latin to Common Names

3 Results

This small assemblage contained 148 fragments of bone and tooth from a range of features and periods. Cattle, sheep/goat and horse were positively identified (Table 2).

3.1 Bronze Age barrow ditch F134

The fills of this barrow ditch contained 28 fragments of bone. Cattle was the only species identified, with a phalanx or toe bone from Phase 4, a metacarpal or foot bone from Phase 6 and an astragalus or ankle bone from Phase 7. It is notable that all of these came from what may be intentional backfill of the barrow and from upper fills of the barrow. All are non-meat- bearing bones that are disposed of early in the butchery process. However, all are also robust bones that tend to have good survival rates in unfavourable conditions so that it is possible that other bones were also originally present. The phalanx was fused and came from an individual aged over 12-15 months at the time of its death. Only one element, a fragment of small or medium mammal long bone came from an earlier phase, in this case F149, Phase 2.

Part of this barrow feature F134 was previously excavated by Gill McLoughlin (McLoughlin 2016), where the ditch was known as C11. In that case, C13, a middle fill of C11 contained 27 fragments of bone, including cattle and horse (Beglane 2016). C13 underlay a deposit radiocarbon dated to 969-807 cal. BC (UBA31819), suggesting that it was earlier. A direct radiocarbon date on the horse bone was not successful (Gill McLoughlin, pers. comm.).

3.2 Bronze Age enclosure ditch F6

Fills of ditch F6 included 19 fragments of bone and tooth. Cattle molar teeth were found in Phase 1, Context F13 and in Phase 2, Context F12. Upper fills F10 and F7 also contained fragmentary tooth material from cattle and sheep/goat respectively. These upper fills were dated to the prehistoric period (McGlade 2016), suggesting that the teeth themselves are of prehistoric origin. Teeth tend to survive better than bone so that it is likely that these are the only remains of more extensive deposits.

3.3 Medieval deposits

A total of 99 fragments came from fills of medieval ditches F1011 and F125. F1012 yielded the shaft of a horse femur while F130, an intentional backfill of medieval ditch F6, yielded fragments of the atlas or first vertebra of what was probably a horse. It is interesting that despite these features being over 100m apart, only horse was identifiable in both.

3.4 Post medieval ditch F11

A single unfused cattle scapula from F18, the upper fill of ditch F11 came from a calf aged under 7-10 months at the time of its death.

3.5 Topsoil

The topsoil yielded one bone, a horse distal tibia from an individual aged over 24 months at the time of its death. This fused bone had a Dd of 37.9mm and a Bd of 64.1mm. With the presence of horse in fills of the medieval ditch F125, also in Area 5, it is tempting to suggest that this may well represent the same individual.

4 Discussion and recommendations

Given the small size of the assemblage and the diverse features and times from which the faunal remains have come, it is difficult to interpret the results. Barrow ditch F134 yielded cattle foot bones, an identification that is supported by the results from the associated ditch sections C11 where both cattle and horse were identified from Bronze Age deposits (Beglane 2016; McLoughlin 2016). The position of the cattle foot bones in the stratigraphic sequences of the barrow fills, with two water-rolled quartz pebbles and a number of water rolled boulders also found in F152 (McGlade 2016), suggest that it is possible that the bones are of ritual significance. However, it is probably more likely that they are incidental waste inclusions from backfilling. The Bronze Age enclosure ditch F6 also yielded cattle and sheep/goat teeth. Again, their position in upper fills suggests that they may be incidental inclusions during the prehistoric period.

It was notable that only horse was identifiable in the fills of medieval ditches F1011 and F125. The development of suitable harnesses meant that this species became increasingly commonly used for agriculture during the later medieval period, often replacing oxen for ploughing (McCormick 2005, 33).

This assemblage, though small, does provide an insight into activities on a single site over the course of several millennia. It is a well-stratified assemblage and it is recommended that it be retained for future analysis. This material has good potential for use in future genetic, morphometric and isotopic studies, all of which are becoming more economically viable and have the ability to shed immense further light on past societies.

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Phase	Context	F type	Area	Feature	Preservation	Colour	Context size	Cattle	Horse	Sheep /Goat	LM rib	LM vert	Fragmentary remains
BA Barrow Ph 2	149	Lower fill of barrow	2	134	Fair	Light	1						SM/MM long bone shaft frag
BA Barrow Ph 4	152	Intentional backfill of barrow	2	134	Very poor	Light	24						
BA Barrow Ph 4	152?	Intentional backfill of barrow?	2	134	Fair	Light	1	1 x second phalanx					
BA Barrow Ph 6	136	Upper fill of barrow	2	134	Poor	Dark	1	1 x metacarpal shaft					
BA/IA Barrow Ph 7	135	Upper fill barrow	2	134	Very poor	Light	1	1 x astragalus in frags					
BA enc Ph 1	13	Fill BA enc ditch	3	6	Poor	Light	1	1 x mand molar in frags					
BA/EIA enc Ph 2	12	Fill BA enc ditch	3	6	Poor	Light	1	1 x max molar in frags					
BA/EIA enc Ph 2	10	Fill BA enc ditch	3	6	Poor	Light	3	3 x frags					
BA/IA enc Ph 3	7	Fill BA enc ditch	3	6	Poor	Light	14			14 frags molar			
Med	1012	Fill of ditch	4	1011	Poor	Light	1		1 x femur shaft				
Med 13/14thC	126	Upper fill Med ditch	5	125	Poor	Light	1						LM long bone shaft frag
Med 13/14thC	130	Mid fill med ditch	5	125 box sect 1	Poor	Dark	97		1 x atlas of prob horse 4 frags		18	14	
PM	18	Upper fill PM ditch		11	Fair	Mottled	1	1 x scapula, juvenile					
Topsoil	1	-	5		Good	Dark	1		1 x tibia				

Table 2: Summary of results

archaeology plan
HERITAGE SOLUTIONS

Appendix H

The cremated human remains from the site of Clonard/Folkstown Great (15E0586)

2018

Denise Keating

THE CREMATED HUMAN REMAINS

From the site of Clonard/Folkstown Great (15E0586)

An analysis of ten samples of burnt human bone from a Bronze Age complex in Balbriggan, Co. Dublin.

Dr. D. Keating, Osteoarchaeologist (MIAI)

Contents

Materials

A total of ten samples of burnt bone were analysed from the site of Clonard/Folkstown Great (15E0586). These derived from a single cremation pit, a Bronze Age ring barrow, and a large Bronze Age penannular enclosure and its associated features. While the majority of the samples relating to the barrow were excavated under a separate licence (15E0558) (McLoughlin 2016), the analysis of those remains was also undertaken by the author and are detailed in the osteological report relating to that excavation.

Methods

The remains were analysed macroscopically after McKinley (2004) with each sample being analysed in three sieve fractions (2mm, 5mm and 10mm). Details of colour, weight, fragment size and species identification were recorded and can be seen detailed in the accompanying appendix.

The details of the bones' archaeological context was first analysed in order to determine the type of deposit (pyre/pyre debris/burial/burial-related deposit/cenotaph) under investigation (McKinley 2004: 10) and to determine if any indication of disturbance was found. The total weight of a sample of cremated bone, together with a measure of its maximum fragment size, can give an assessment of the degree of bone fragmentation (McKinley 2004: 9). Therefore, the total weight and the individual fraction-weights are presented for each sample. Weights are accurate to ±0.01g and are recorded to one decimal place as per McKinley (2004).

Every fragment of bone was examined for evidence of identifiable features. Where possible, skeletal elements are then usually identified to anatomical structure. A fragment is only considered identifiable where it can be placed to element (e.g. humerus, femur). However, in the case of the samples detailed in this report, no elements were identified.

Finally, all fragments were examined for evidence of the presence of pathological processes active in the bone and evidence for faunal and other inclusions was sought.

Results

Type of deposit

The material retrieved from the site of Clonard/Folkstown Great can be divided into two types of deposit. Most of the materials can be defined as "cremation-related deposits" (McKinley 2004: 10) as, while they contained human bone, they do not appear to represent what could be described as a defined burial. Conversely, the material retrieved from F2 (fills 3 and 4) represents an – at least partial – "un-urned burial" (*ibid.*).

Deposits F135, F136, F147 and F152, being ditch fills of the ring barrow, contained small quantities of burnt bone which derived from the basal to the uppermost fills. These bone fragments were of a dispersed nature, having been distributed throughout their respective contexts. A similar type of dispersal was noted in the southern portion of the barrow excavated by McLoughlin (15E0558).

The bone fragments from the fills of the penannular ditch (F7, F12 and F72), as well as that of a posthole dug into the base of it (F78), were similarly widely dispersed.

Level of disturbance

The condition of cremated bone may be affected by the type of deposit from which it derived (e.g. urn cremation burials, cist cremation burials), by taphonomic processes and by excavation and post-excavation processing (McKinley 1993). Therefore, the level of disturbance is assessed in each case.

The issue of disturbance, with regard to the 'cremation-related' samples from the ring barrow (F135, F136, F147 and F152), is somewhat problematic due to the type of deposit that they represent. These do not represent discrete deposits and may themselves be indicative of instances of disturbance. Conversely, these small and ill-defined assemblages may be symbolic deposits of partial remains, defined not by the quantity of bone deposited but by the act of their deposition.

A similar situation exists for the fragments which derived from the penannular ditch and its associated posthole. Collectively, these total just 1.06g. It was not possible to determine whether these were of human or faunal origin and, with such a small collection of fragments in question, it is impossible to say if their presence was incidental or purposeful.

The un-urned cremation deposit (fills F3 and F4) had sustained some disturbance, with the eastern side of the deposit having been truncated by a cultivation furrow (McGlade 2016).

The total weight of the bone from this deposit was 29.19g and at least part of the reason for such a low yield can be attributed to this truncation. The typical weight of burnt adult human remains can range between 1000g and 3600g (McKinley 1993). While variation can occur based on sex, size, weight and pyre technology, such a small collection of bone is not likely to fit within the realms of normal variation. It is more likely therefore that just a representative proportion of the body was placed in this cluster.

Total weight of bone and degree of fragmentation

Tabulated below (Table 1) are the total weights of bone from the deposits which yielded human remains, together with the dimensions of the largest fragment from each deposit.

Context	Total weight (g)	Largest fragment (mm)	Feature
7	0.46	6mm	Penannular enclosure ditch
72	0.01	2.5mm	
12	0.59	9mm	
78	<0.01	2mm	
147	0.33	4mm	Ring barrow
136	1.01	10mm	
152	0.17	7mm	
135	0.24	7.5mm	
4	29.19	19mm	Cremation pit
3	0.04	2mm	

Table 1: Total weight and largest fragment size of burnt bone.

Identified material and demographic data

It was not possible to identify any of the fragments to anatomical location owing to the small size of each fragment, the majority being of 2mm or less. Neither, therefore, were there any indicators of sex among the remains.

The minimum number of individuals was calculated as 1 after analysis of the 15E0558 portion of this site was completed. There was nothing in the remains from this, the 15E0586 portion, that would suggest this should be increased.

Pathology

There was no evidence of pathology identified from the remains. Although evidence of pathology has been identified in cremation burials (e.g. McKinley 1994) the nature of burnt

bone, being essentially fragmented and incomplete in nature, makes the identification of such problematic.

Efficiency of cremation (Colour)

The differing colours observed in burnt bone are a reflection of the degree of oxidation of its organic component (Holden *et al.* 1995). The bone fragments in this assemblage were white in colour, reflecting full oxidisation where temperatures of >600^{o}C were likely to have been achieved (McKinley 2002). However, black and grey colouration are likely to reflect lower achieved temperatures and these were noted in one fragment from the upper ditch fill of the ring barrow (F135). This was not an unusual finding and several other fragments in the 15E0558 portion of the site displayed patchily expressed colouration throughout the extent of the ring barrow.

The loss of the organic component of bone through exposure to heat and associated dehydration leads to characteristic fissuring and warping of the bone surface (McKinley 2002). This can be analysed to further elucidate the funerial process. However, it was not possible to assess fissure patterning in this instance, owing to the small size of the fragments.

Presence and type of pyre goods and pyre debris

While all inorganic components were removed in advance of osteological examination, the samples were examined for any evidence of pyre goods of the osseous type. No animal remains were definitively identified as part of these samples.

The inclusion of grave goods was represented by the appearance of prehistoric pottery, flint and copper alloy tubular beads with the un-urned cremation deposit (F2) (McGlade 2016).

Conclusion

The human remains from the 15E0586 portion site of Clonard/Folkstown Great were represented by cremation-related deposits from a ring ditch and by one un-urned burial from a pit southeast of an enclosing penannular ditch. Remains from this ditch were likely of human origin but, owing to their small size, this could not be confirmed definitively.

The MNI (minimum number of individuals) at Clonard/Folkstown Great 15E0586 (Mc Glade 2016) and 15E0558 (McLoughlin) was 1 with no duplication of anatomical elements apparent. However, the discrete un-urned burial (C24) of 15E0558 and that of F2, detailed above, may suggest the interment of two different individuals.

The bone from the un-urned cremation deposit of F2 weighed just 29.19g in total. This deposit was truncated and there is no way therefore of determining what bone weight it may have yielded prior to disturbance. However, at just 119g, the remains contained in C24 (15E0558) clearly did not encompass the entire burnt remains of the adult that they represented, the typical weight of adult cremated remains being 1000g to 3600g (McKinley 2002). Therefore, it would appear that whether these deposits contained one or multiple individuals, it was not the quantity of material collected that was of importance, but the deposition of that material. This is by no means unusual, as McKinley (2002: 408) has noted that often 50% or less of the bone remaining after cremation was retrieved and placed within the funerary context.

While it must be noted that taphonomic circumstances over time may have affected the amount of bone that was preserved, it would appear that the amount of bone that was present in a burial was variable. This is exemplified by the various and differing rituals that are apparent throughout Ireland with regard to Bronze Age cremation deposits. While some sites appear to reflect the deliberate process of selection of bone from the pyre (e.g. Bronze Age Kilree 1), others show a preference for high volumes of pyre material (e.g. Templenoe) (O' Donnell 2016: 169). O' Donnell (*ibid.*) has even suggested that there may have been a practice of picking through pyre material to remove bone (rather than the often-assumed opposite) in order to bury pyre material. Therefore, the apparent paucity of burnt bone in some cremation deposits should be viewed not as anomalous, but intentional and meaningful.

When considering the bone from 15E0586 and 15E0558 together, it can be said that the majority of fragments retrieved were white in colour, indicating successful oxidisation (Shipman *et al.* 1984). While this may suggest that all fragments were completely oxidised across both the differing areas of the pyre as well as the various areas of the body, it is more

common to see a range of colours throughout a cremation burial, reflecting the varying conditions of heat, body position and tissue coverage (McKinley 2002: 405). For instance, the stage at which a region may cremate is dependent on both its soft tissue coverage as well as its position within the pyre, with the centre-most location being hottest and the peripheries relatively cool (*ibid.*). Therefore, the presence of predominantly white fragments in these deposits may suggest that they were preferentially selected for their light colour.

Cremation requires considerable effort on the part of the practitioners involved. Time, temperature and oxygen are the necessary criteria for burning a corpse and the relationship and balance between these is a delicate one. Before the skeleton can begin to burn, the soft tissue – which is not naturally a good conductor of heat – must be burnt away (McKinley 2002). For this to occur, sufficient oxygen is required so that oxidation can take place. However, while this is readily achievable in the modern context within the confines of the cremator chamber, this is immeasurably more difficult in an outdoor setting where the vagaries of precipitation and wind-strength and direction must be managed.

The selection and retrieval of wood is also important not only for its calorific value (amount of available heat), burn quality and availability but for other factors such as its scent or its perceived symbolic resonance. Significant effort is also required in the sourcing of the amount of material needed to complete a cremation. Holck (1986), for example, has estimated that at least 146kg of pinewood would be needed for a pyre.

Similarly, both feeding and tending the pyre as well as the retrieval of the cooled bones prior to their eventual burial are all processes that occur well in advance of their final deposition at the monument which is excavated. While it has been said that "cremated material is the product of a series of ritual formation processes within a mortuary rite, the nuances of which are still little understood" (McKinley 2004: 9), it is clear that its presentation and eventual deposition at a defined monument such as at Clonard/Folkstown Great, is a reflection of its important role in Bronze Age society.

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Appendix

					2mm FRACTION		5mm FRACTION		10mm FRACTION			
Feature	Spit (cm)	Dehydration	Species	Total I.D. (g)	Weight 2mm	Colour 2mm	Weight 5mm	Colour 5mm	Weight 10mm	Colour 10mm	Residue Weight	Max frag (mm)
F7	NA	NA	NA	NA	0.46	White	NA	NA	NA	NA	NA	6
F72	NA	NA	NA	NA	0.01	White	NA	NA	NA	NA	NA	2.5
F12	NA	NA	NA	NA	NA	NA	0.59	White	NA	NA	NA	9
F78	NA	NA	NA	NA	<0.01	White fleck	NA	NA	NA	NA	NA	2
F147	NA	NA	NA	NA	0.23	White	0.1	White	NA	NA	NA	4
F136	NA	NA	NA	NA	0.34	White	0.67	White	NA	NA	NA	10
F152	NA	NA	NA	NA	0.17	White	NA	NA	NA	NA	NA	7
F135	NA	NA	NA	NA	0.24	White, some grey endosteally	NA	NA	NA	NA	NA	7.5
F4	NA	NA	NA	NA	24.55	White	3.24	White	NA	NA	1.36	19
F3	NA	NA	NA	NA	0.04	White	NA	NA	NA	NA	NA	2

archaeology plan
HERITAGE SOLUTIONS

Appendix I

Assessment of archaeometallurgical residues from Balbriggan, Fingal

2016

Tim Young

GeoArch

Report 2016/22

Assessment of archaeometallurgical residues from Balbriggan. Fingal (15E585)

Dr Tim Young
29th July 2016

Assessment of archaeometallurgical residues from Balbriggan. Fingal (15E585)

Dr T.P. Young

Abstract

The material from the site formed a small collection of residues ironworking (blacksmithing) in a coal-fuelled hearth. All the material derived from various contexts within a single ditch. Just two smithing hearth cakes (SHCs) were present, both with weights a little over 400g, typical of SHCs from blacksmithing of the medieval period.

The amount of waste was small, suggesting that the smithy was either short-lived, or more likely that it was at some distance from the excavated locality.

The use of coal as fuel is interesting, but its significance on this site depends on the age of the contexts. Coal appears to have been used on the east coast of Ireland from around the 13th century, from which period onwards it was imported to areas under Anglo-Norman influence. Away from the coast, there seems to have been little use of local coal until the 17th century even close to the coalfields, but outside the coalfields charcoal remained the principal fuel into the 19th century (and the advent of mass transport by canal and railway).

Blocks of indurated sediment from the ditch contained much fine coal. They may have been cemented either by the reprecipitation of iron leached from the coal, or perhaps more likely from associated iron artefacts. It is also possible that the iron was derived from iron-rich metallurgical residues, but the indurated bocks appeared to only contain a small quantity of hammerscale.

Contents

Methods

The material described here derives from excavations at Clogheder/Clonard or Folkstowne Great, Balbriggan (licence 15E585) conducted by Archaeology Plan. This project was commissioned by Steve McGlade.

All materials were examined visually with a low-powered binocular microscope where required. As an evaluation, the materials were not subjected to any high-magnification optical inspection, nor to any form of instrumental analysis. The identifications of materials in this report are therefore necessarily limited and must be regarded as provisional.

Results

Description of residues

A total of approximately 1.8kg of materials were examined (weight after washing). Of this approximately 0.75kg was indurated sediment, the remainder was mostly archaeometallurgical materials.

The residues were indicative of ironworking (blacksmithing) using coal as fuel.

Ironworking slags

The assemblage included two examples of smithing hearth cakes (SHCs), of rather similar form and weight (401g and 443g). Both were dense, but were, however, covered in rusty accretion, meaning that surface details could not be observed.

There was one other substantial fragment of slag, a rounded, dense nub rich in coal, but also covered with rusty accretion. There was also a single small fragment of just 1g.

Hearth ceramic

The assemblage include seven fragments of vitrified lining with a total weight of 25g. One of the fragments showed coal embedded in the glassy surface. None of the pieces showed any evidence for morphology, so it was not possible to determine whether the material was from the vitrified front face of large tuyères (as it normal in Irish medieval material), or whether it was the vitrified face of the hearth itself (as might potentially occur in a hearth of Anglo-Norman type).

Other materials

The collection included two isolated pieces of coal, as well as indurated blocks of sediment rich in coal, two fragments of iron and two small concretions.

There were two fragments of iron (total 32g), besides the iron that was embedded within the samples of indurated coal-bearing sediment. The isolated pieces were small fragments, apparently small pieces of bar, but would require X-radiography to confirm their morphology.

The indurated sediment was rich in fine coal fragments, was poorly laminated and also contained a few particles of hammerscale. It contained several small iron fragments, mostly apparently of sheet form.

Coal was also present in a small (14g) concretion, along with slag, charcoal and gravel.

Two small fragments of coal (12g) were present as hand-picked items.

A second concretion was a tubular concretion of hydrated iron oxides (‘limonite’). Such concretions may grow, under appropriate groundwater and chemical conditions, around small burrows or, more likely, decaying vegetation.

Interpretation

The materials at the core of the collection are indicative of being the residues from blacksmithing (i.e.

the end use of iron), rather than from any part of the process of iron-production.

Coal was a significant component of the assemblage and was observed within one of the slag and one of the lining specimens, as well as occurring in isolation within the deposits.

The history of the use of coal in smithing is poorly understood at present. It I likely that coal was first employed in smithing within the areas of strongest maritime connections to Great Britain. Coal was widely moved along the coast of N Wales during the major period of castle construction in the late 13th century from the coalfields of NE Wales, and the same sources appear as major documented exporters to Ireland by the 16th century (Nef 2013, 364-5). It would appear probable that the earliest coal-fuelled smithing in Ireland would have been within the areas of Anglo-Norman influence, but the date of introduction to different areas is not known.

There are few documentary references to the medieval coal trade, for instance coal is listed amongst taxable items at Fethard in 1292 (Cosgrove 1987, 238; although this is unclear whether the coal was being imported, or exported during a very early phase of exploitation of the Kilkenny Coalfield) and in 1322-3 a ship carrying **coal** was detained in Dublin (O'Neill, 1987).

Coal has been noted from archaeometallurgical assemblages from Carrickmines Castle, Co. Dublin (Young 2006; Young & Kearns 2010; Young 2011) and Greencastle, Co. Down (Young 2010), but in neither case was the date of introduction of coal certainly within the medieval period. Slightly later, probably in the 17th century, comes evidence from Gorteens, Co. Kilkenny (Dabal & Young 2011) and possibly in the 18th century from Cuffsborough, Co. Laois (Young 2009), both of which lie close to the Kilkenny Coalfield. This latter evidence correlates with documentary evidence for expanded activity in the Kilkenny Coalfield from the 17th century. Similarly, it is known that the sources at Coalisland, Co. Tyrone, were being exploited by the mid-17th century (Bardon, 1991, p. 203). Balbriggan would have been ideally located for supply of coal both from external sources and by coastal trade from the Irish sources.

In most other areas where suitable assemblages have been recovered, there is evidence for the survival of charcoal-fuelled blacksmithing into the 19th, if not 20th, centuries.

Further work

The slags from the site are interesting from the point of view of the use of coal as fuel. Future clarification of the age of the residues may affect their significance.

As residues isolated from an actual context of production (being in a ditch fill), and as a small assemblage, it is unlikely that further additional analysis would generate additional archaeologically-useful information. Consequently, no further analysis is advised at this stage.

As the slags do provide potential documentation of the early use of coal, they ae worthy of retention with the site archive.

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Table 1: summary catalogue of macroscopic materials. All weights in g.

context	feature	find	sample note	sample wt.	item wt.	item no.	notes
126	f125	21,22	area 5 bs 2	7	6	2	slagged and vitrified oxidised lining; one fragment has brick-red glass, the other dark with coal fragments embedded
126	f125	23	area 5 bs 4	401	401	1	small dense SHC heavily accreted, 75x105x75mm, flat-topped bowl 50mm deep, overlain by tall mass at one end. No details visible
126	f125	24 to 26	area 5 bs 2	457	443	1	dense SHC, 80x100x45mm, very dense, slightly biconvex, some deep impressions in top, but otherwise surface obscured by rust; small detached chip also present
					14	1	rusty charcoal bearing concretion with slag debris and gravel, some possible coal
126	f125	27 to 33	area 5 bs 2	114	18	2	broken tubular concretion formed of merged pisolith-like iron oxide structures - probably a form of bog iron ore that has grown around a burrow or plant/root
					10	1	triangular iron fragment
					2	1	burnt? stone
					1	1	fragment of vitrified oxidised lining
					1	1	fragment of iron slag
					79	1	rounded nub of slag, very dense, but also very rich in coal
129	f125		area 5	77	77	8	fragments of 'smithing floor' concretion including several iron fragments; rich in coal
129	f125	30	area 5	738	674	2	blocks of 'smithing floor', very rich in coal, some probable hammerscale
130	f125	8 and 9		12	12	2	coal
130	f125	10 to 11	area 5 bs 1	7	7	2	tiny fragments of slagged and vitrified oxidised hearth lining
130	f125	12 to 15	area 5 bs 1	46	11	2	slagged and vitrified oxidised hearth lining; ceramic with angular gravel inclusions
					22	1	iron fragment

context	feature	find	sample note	sample wt.	item wt.	item no.	notes
					13	1	small worn fragment of iron slag
131	f125	4	basal, bs 1	58	58	1	oxidised lining with adhering thick layer of maroon-surfaced slag, probably sub-blowhole mass; carries lots of unburnt coal fragments and a few piece of ?chert

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archaeology plan
HERITAGE SOLUTIONS

Appendix J

Charcoal report, Clonard or Folkstown Great, Co. Dublin, 15E586

2018

Ellen O Carroll

CHARCOAL REPORT

Clonard or Folkstown Great, Co. Dublin
Licence no. 15E586

Client: Archaeology Plan
32 Fitzwilliam Place, Dublin 2

FINAL REPORT

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1. Background and Introduction

A programme of archaeological monitoring of groundworks was carried out on a site in Clonard or Folkstown Great townland, Balbriggan in December 2015 under Licence No. 15E586. A number of features were identified and consequently excavated on the site which included a Mesolithic pit, a Neolithic cremation pit, a barrow (Bronze & Iron Age), a pennanular enclosure (Bronze Age), charcoal spreads and pits (Bronze & Iron Age), a burnt mound (Middle Bronze Age) and stakeholes (Iron Age). An assessment was carried out on 41 processed soil samples and there was only sufficient charcoal quantities in 11 of the charcoal samples to carry out further analysis as well as one wood sample. A number of the 41 samples were analysed for dating purposes and were not taken to full analysis due to the low charcoal count.

This report details the analysis of the eleven charcoal samples and one wood fragment retrieved during flotation techniques. The charcoal samples were extracted from a Mesolithic pit, a Neolithic cremation pit, enclosure fills, burnt mound fill, stakehole fills and charcoal spreads and pits dated to both the Bronze and Iron Age. A total of 255 charcoal fragments providing a combined charcoal weight of 14.42g were analysed and a wide variety of native taxa was identified.

The analysis presented in this report concentrates on species identification, species selection and the composition of the local woodland during the Mesolithic/Neolithic/Bronze Age and Iron Age period in the immediate environ of Clonard or Folkstown Great, Co. Dublin. A wetland area was uncovered during the excavations and a monolith measuring 63cm in depth was extracted from this wetland area. The results of this pollen report are discussed below in light of the charcoal results (OCarroll, 2018).

2. Methods

The process for identifying wood, whether it is charred, dried or waterlogged is carried out by comparing the anatomical structure of wood samples with known comparative material or keys (Schweingruber 1990). A wood reference collection from the Botanical Gardens in Glasnevin, Dublin was also used.

Charcoal

The identification of charcoal material involves breaking the charcoal piece along its three sections (transverse, tangential and radial) so clean sections of the wood pieces can be obtained. Each piece of charcoal was examined and orientated first under low magnification (10x-40x). They were then broken to reveal their transverse, tangential

and longitudinal surfaces. Pieces were mounted in plasticine, and examined under a binocular microscope with dark ground light and magnifications generally of 200x and 400x. By close examination of the microanatomical features of the samples, the charcoal species are determined. Identification was undertaken according to the anatomical characteristics described by Schweingruber (1990) to the highest taxonomic level possible (usually that of genus), with nomenclature according to Stace (1991). Individual taxa were quantified (mature and twig separated), and the results tabulated.

Quantifying charcoal samples can be difficult as many wood species can be affected by heat in different ways and hence become fragmented into an arbitrary number of fragments. Overall fragment count was low from the samples. Where large charcoal fragment counts were present a representative sample of 50 charcoal fragments (Keepax, 1988) were randomly chosen for identification and analysis. In the case of smaller samples all charcoal fragments within were identified. The charcoal fragments of each species were also identified, counted, weighted (grams) and bagged according to species.

The general age group of each taxa per sample is recorded as well as the diameters of the charcoal fragments. The ring curvature was also noted where applicable from each charcoal fragment. Weakly curved annual rings suggest the use of trunks or larger branches, while strongly curved annual rings indicate the burning of smaller branches or twigs.

3. Results & Analysis

A total of eight taxa types were identified from the charcoal sampled from the excavations. Oak (*Quercus* sp) was the dominant taxa followed by blackthorn (*Prunus spinosa*), elm (*Ulmus* sp) and hazel (*Corylus avellana*) with fewer fragments of Pomoideae (apple/pear/hawthorn and mountain ash), ash (*Fraxinus excelsior*), alder (*Alnus glutinosa*) and holly (*Ilex aquifolium*) (Figure 1 & Table 2). The wood sample was identified as ash. All of these wood types were also identified from pollen analysis completed from the small hollow/channel and dated to between c. 3600 – 2500BC (OCarroll 2018). Bark was present in large quantities in the possible Iron Age charcoal pit (**C51)**.

When the data is plotted by feature type we see certain species dominating within specific feature types. Elm was the only taxa identified from the Mesolithic pit (**C30)** while oak was nearly exclusively identified from the Neolithic cremation pit (**C4)**. Bark dominated at one of the Iron Age dated charcoal pits (**C51**). A wider variety of

taxa were present in the Late Bronze Age charcoal spread (**C1014)** and stakehole fills (**C1024 & C1026)** while blackthorn was the only taxa present in the Burnt Spread (**C79)** and blackthorn and holly in the enclosure fills (**C34** & **C75)**. The wood fragment from the wetland area was identified as ash (Table 1). Two charcoal fragments were identified prior to dating from the barrow (**C147** & **C136)** and hazel was the species identified. Unfortunately there was insufficient charcoal fragment counts from the Barrow to complete any further analysis.

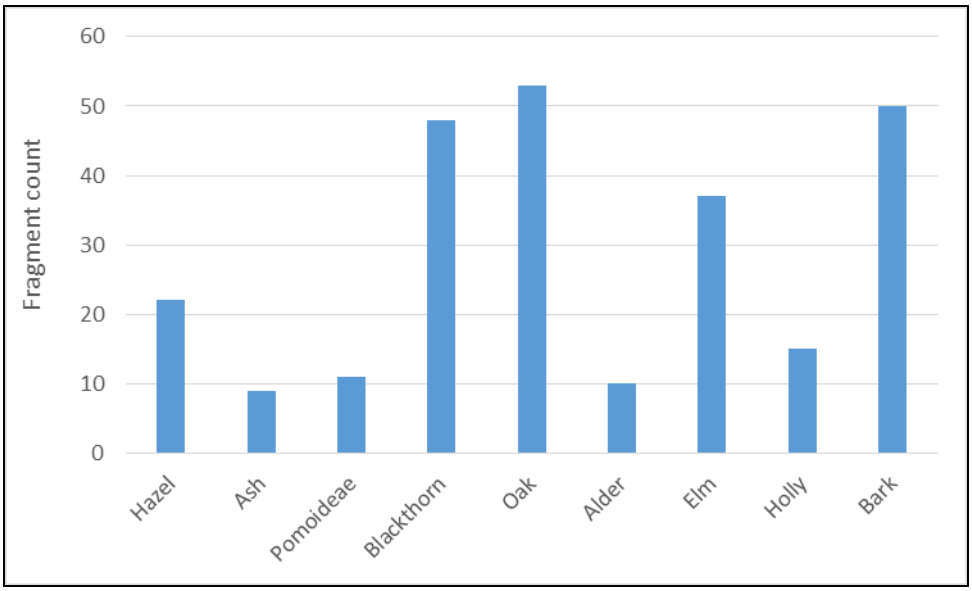

Figure 1 All taxa identified from excavations.

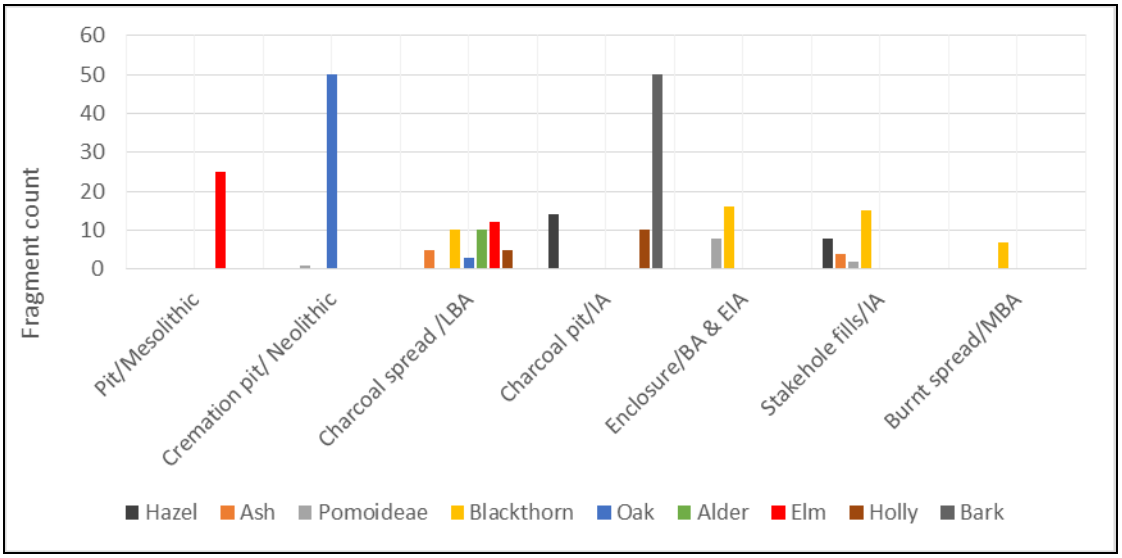

Figure 2 Taxa identified by feature type and period

Table 1 Analysis of charcoal fragments

Sample number	Context number	Context type	Date	Time period	Wood species	No. of fragments	Charcoal weight (grams)	Size of fragments (mm)	No. of growth rings	Comment
2	4	Cremation pit	3781 - 3652 cal BC	E. Neo	*Quercus* sp (oak)	50	3.2	2 - 8mm	2 - 10 rings	Small fragments and distorted
					Pomoideae	1	0.01g	4mm	8 rings	Dating
4	1014	Charcoal spread	1258-1036 cal BC	LBA	*Ulmus sp (*elm)	12	0.01	3- 8mm	2 - 4 rings	
					*Fraxinus excelsior (*ash)	5	0.2	2 - 4 mm	2 - 3 rings	
					Quercus sp (oak)	3	0.02	1 - 4mm	2 - 10 rings	
					*Alnus glutinosa (*alder*)*	10	0.8	2 - 10 mm	2 - 8 rings	
					Ilex aquifolium (holly)	5	0.3	4 - 6mm	2- 8 rings	
					Prunus spinosa (Blackthorn*)*	10	0.5	3 - 6mm	3 - 6rings	
5	30	Pit, cut by enclosure	4367-4252 cal BC	L. Meso- E. Neo	*Ulmus sp* (elm)	25	0.6	2 - 5mm	3 - 10 rings	
6	34	Enclosure ditch Area 3	399-210 cal BC	IA	*Prunus spinosa* (Blackthorn*)*	16	0.4	1 - 4 mm	2 - 7 rings	Small fragments
9	1024	Stakehole/ base of trough	1258-1036 cal BC * from F1014	LBA	Pomoideae	2	0.01	5mm	5 - 8 rings	
					Prunus spinosa (Blackthorn)	5	0.1	2 - 5mm	2 - 3 rings	
					Corylus avellana (hazel)	8	0.5	3- 8 mm	3 - 10 rings	
					Fraxinus excelsior (ash)	2	0.1	5mm	2 rings	
10	1026	Stakehole / base of trough	1258-1036 cal BC * from F1014	LBA	*Prunus spinosa* (Blackthorn)	10	3.5	2 - 5mm	2 - 8 rings	Small fragments
					Fraxinus excelsior (ash)	2	1.2	2 - 4mm	3 rings	
11	37	Charcoal pit	389-205 cal. BC	IA	*Corylus avellana* (hazel)	4	0.1	3- 7mm	2 - 6 rings	
					Ilex aquifolium (holly)	10	1.1	3 - 6mm	2 - 5 rings	
13	51	Charcoal pit	Not dated	Prob IA	*Corylus avellana* (hazel)	10	0.2	3- 6mm	2 - 8 rings	
					Bark	50	1.1			

Sample number	Context number	Context type	Date	Time period	Wood species	No. of fragments	Charcoal weight (grams)	Size of fragments (mm)	No. of growth rings	Comment
18	75	Pennanular Enclosure ditch, Area 3 (bottom fill)	1498-1303 cal. BC *from F13	Prob. MBA, same as F13	Pomoideae	8	0.2	1 - 4 mm	2 - 7 rings	Small fragments
21	79	Burnt spread	1658-1498 cal. BC	MBA	*Prunus spinosa* (Blackthorn*)*	7	0.15	1 - 3 mm	1 - 4 rings	Small fragments
29	102	Fill of linear pool	3636-3377 cal. BC	M. Neo	*Fraxinus excelsior* (ash)	1			25 rings	Irregular split wood
23	36	gully of avenue	5667-5537 cal BC * to be re-dated this month	Meso	*Fraxinus excelsior* (ash)	1	0.02	5mm	2 rings	For dating purposes only
22	13	Enclosure ditch	1498-1303 cal. BC	MBA	Betula *sp (birch)*	4				For dating purposes only, clay stuck to unidentifiable charcoal
	128	Fill of linear pool	2572-2470 cal. BC	L Neo	Peat column					For dating purposes only
37	147	Barrow	2193-1941 cal. BC	EBA	*Corylus avellana* (hazel)	1	0.01			For dating purposes only
31	136	Barrow	804-489 cal. BC	LBA-EIA	*Corylus avellana* (hazel)	1	0.1			For dating purposes only

4. Discussion of the charcoal assemblage

Wood selection, use and function

It is generally considered that one of the principle reasons for charcoal analysis is the hypothesis that wood used as firewood will be collected from as close to a site as possible and as such can help to reflect the local wooded environment in the area. It is also likely that abandoned structural timbers or wood brought to the site for uses in construction works or other activities are also reused as firewood. Specific wood types are also selected for certain functions such as cremation rituals, metalworking activities, firewood for ovens and therefore wood selection as well as functional use of certain features can be determined through charcoal analysis (OCarroll 2010). Thus charcoal identifications represent the various modes of collection and selection of woods used as fuel at the site and go some way (but is not exhaustive) in interpreting the local woodland dynamics of an area over time.

Despite the low number of identifiable charcoal fragments recovered from the samples some interpretation on woodland resource usage can be determined from some of the analysed samples. A total of two hundred and fifty five charcoal fragments providing a combined charcoal weight of 14.42g were analysed from several feature types dating from the Mesolithic, Neolithic, Bronze Age and Iron Age periods (Figure 1, 2 and Table 1).

Charcoal related to the cremation pit would have been deliberately selected for the cremation ritual rite. Other charcoals present may have been deliberately selected for certain functions but the functionality of the collected charcoals remains ambiguous from the enclosure features, stakeholes and burnt spreads and therefore determining woodland selection is more difficult for these features. Charcoal pits (albeit dated to the Medieval periods) are generally dominated by one taxa (Kenny 2010) which is not the case here at Clonard/Folkstown Great. These earlier prehistoric charcoal pits may have functioned in a different manner to later Medieval Charcoal pits. To date the author has not identified charcoal from charcoal pits dated to prehistory and therefore no comparative material is currently available.

Pit, Mesolithic

The function of the pit dated to the Mesolithic period is unknown. Elm was exclusively identified from the pit which may indicate that this pit was used for one single episodic event. English elm *(Ulmus procera)* and wych elm *(Ulmus glabra)*

cannot be separated by their wood structure. Elm declined (although would not have completely died out) with the advent of farming and/or Dutch elm disease around 3700BC (Hall 2011). Very small percentages of elm were recorded from the pollen monolith dated to between 3700 and 2500BC. Elm may have been more common in the Mesolithic and Earlier Neolithic period

Cremation pit, Neolithic

Oak was nearly exclusively identified from the cremation pit with one fragment of pomoideae also identified (Figure 2 and Table 1). The oak identified suggests that there was a supply of oak in the surrounding environment during the Neolithic period in the area.

Oak charcoal was particularly important to activities which required heat, as it burned hotter and cleaner than wood and was considered superior to wood. Oak woods were valued for their natural resource of timber for many requirements including raw material, metalworking activities and cremation rites. The heavier and denser the wood, the higher is its calorific value. Oak can burn for a considerable period of time and reach extremely high temperatures. It is one of the only native taxa that can reach temperatures of between 650 and 850º, which is the temperature required to cremate human bone efficiently (O'Donnell 2009). Consequently oak is generally the taxa most commonly associated with the cremation rite of human bodies (*ibid* 2009). Oak charcoal was commonly identified from the charcoal samples associated with cremated bone and excavated at Knowth, Co. Meath (O'Donnell 2017 & Eogan 1984).

Similar to the elm there were very few oak pollen grains recorded from the pollen monolith (OCarroll 2018). Pollen evidence from Ireland shows that at the beginning of the Neolithic oak woodlands would have been commonplace with small clearings made for farming (O'Connell & Molloy 2001). As the Neolithic period progresses pollen studies show that there is large scale forest clearance (*landnam*) and intensive Neolithic farming, particularly along the western seaboards (Hall 2011). The pollen evidence from this project and associated with the small water hollow or channel depicts much open land use and anthropogenic activity in the vicinity of the channel/hollow area from 3600 – 2500BC (OCarroll 2018). Arboreal or tree pollen is generally low between 5 and 30% of the total pollen percentages.

Burnt mound, Middle Bronze Age

Blackthorn was the only taxa present from the burnt mound fills, albeit in small amounts. The sloe bush, as blackthorn is often referred to, is a thorny shrub found in woods and scrubs on all soil types. In a woodland situation, it is more likely to occur in clearings and at the woodland edges. Blackthorn is a durable wood and is as strong as oak (Nelson and Walsh 1993). Rosaceae was identified quite frequently within the upper levels of the pollen monolith (2800BC). The rosaceae family includes hundreds of species including blackthorn (*Prunus Spinosa*). Therefore it is likely the Rosaceae identified from the pollen monolith derives from the blackthorn tree. It may have been common in the area during the Bronze Age.

Charcoal spread, Late Bronze Age

Kindle or firewood collected and burnt at **C1014** were from a variety of tree types including smaller scrub like trees such as blackthorn, hazel and holly. Oak, elm and ash are tall woodland canopy trees were also burnt although they were less frequent. Alder is normally associated with a wetland area. Therefore the wood types identified and used at this burnt spread represent a mosaic of habitat and tree types.

Charcoal pits, Iron Age

Hazel and holly were identified from the Iron Age dated charcoal pits **C37** & **C51**. Numerous quantities of bark was also present within **C51**. It is impossible to identify bark to species as all bark has the same microstructure. Charcoal pits analysed from the later periods are generally dominated by one taxa type (usually oak) therefore these charcoal pits may differ in type and form to the later dated Charcoal pits excavated on many of the road schemes over the last decade (Kenny 2010). The high quantities of bark from pit **C51** may be symptomatic of a use associated with bark as a raw material such as tanning or the manufacture of bentwood boxes normally associated with birch bark.

Enclosure, Bronze Age and Iron Age

Only small fragment counts of blackthorn and pomoideae were present in the enclosure fills (Figure 2 and Table 1). The taxa identified are more reminiscent of a scrub and open landscape. Functionality of the identified charcoal remains unknown.

Stakehole fills, Iron Age

It is likely that the charcoal identified from the stakehole fills relates to material that fell into the hole as opposed to being associated with the actual post. Again only small fragment counts of hazel, ash, pomoideae and blackthorn were present in the identified assemblage, indicative of a more open and scrub like area where the wood was collected from.

Barrow, Bronze Age and Iron Age

A portion of this Barrow was excavated by Courtney Deery in 2015 and ash and hazel charcoal were identified from the assemblage (OCarroll 2016). Although there were only two fragments identified from the Barrow fills during this phase of the project it should be noted that the results are concurrent with previous identification at the same site. The dearth of charcoal from the Barrow features suggests that there was little domestic activity occurring at the site and the Barrow may have been ceremonial in nature.

5. Summary and conclusions on the charcoal assemblage

Eleven samples containing moderate to small amounts of charcoal were identified from various features excavated at Clonard or Folkstown Great and dated to the all periods in prehistory. An ash wood fragment was identified from the fill of the wetland hollow.

A wide range of native taxa was identified; comprising oak, hazel, ash, pomoideae, blackthorn, alder, elm and holly. These tree types were all identified from the pollen studies also associated with the project, albeit in small quantities. Oak charcoal was nearly exclusively present in the cremation pit indicating a specific selection policy in relation to the oak wood for cremation rituals. This concurs with similar analysis from cremation pits during the Neolithic and Bronze Age periods in Ireland. Elm was exclusively identified from the Mesolithic pit of unknown function. This may indicate a single episodic burning event at this pit.

Hazel, holly and bark were present in the charcoal pits. The function of these pits in unknown. However the higher quantities of bark from the pit C51 may indicate that bark was being processed for some function such as tanning.

The charcoal identified from the remaining charcoal samples (enclosure, stakehole fills and spreads) could have originated from mixed woodlands of oak, ash, elm and hazel or scrub-type woodland (pomoideae, blackthorn, holly) at the edge of a forest.

Oak, ash and elm trees are tall canopy trees normally growing in woodland situations. Hazel, blackthorn, holly and pomoideae are generally associated with scrub type woodlands, understory trees or small trees located at the margin of woodlands. Alder is a wetland loving tree.

Overall the charcoal results from the later periods indicate the selection of fuelwood from a mixed woodland landscape with much scrub. The landscape may have been fairly open and well inhabited. This ties in well with the pollen analysis completed from the wetland hollow where it was concluded that the Late Neolithic peoples lived in a relatively open landscape where farming and agriculture were practiced.

6. Recommendations for retention

It is recommended that the samples be retained by the National Museum of Ireland. Future research and dating of the samples may aid in their interpretation. The charcoal samples could be used for further research and quantitative analysis to help aid and standardize sampling and quantifying methodologies for charcoal. Charcoal fragments, once dried, are stable and do not usually require additional conservation. This material keeps well in grip-seal clear plastic sample bags and requires relatively little storage space.

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archaeology plan
HERITAGE SOLUTIONS

Appendix K

15E0586 Balbriggan, Clonard or Folkstown Great, Pollen report

2018

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15E0586 Balbriggan

Clonard or Folkstown Great

Pollen report on behalf of Archaeology Plan

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Final

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Summary

A section (monolith) measuring 63cm in depth comprising some of the oldest deposits on site was examined for pollen and other microfossils in order to determine environmental dynamics between *c*. 3600BC and 2500BC. The section was extracted from a water channel/hollow which was located in Area 4 and close to burnt mound deposits (Late Bronze Age).

The earliest vegetation assemblage consisted of a poor wetland environment dominated by Cyperaceae (sedges) and small quantities of scrubland and wetland trees. Sedge quantities increase for approximately 300 years suggesting increasingly minerotrophic conditions. Once established, this sedge community persisted without major vegetation change until around 3200BC, when the abundance of Cyperaceae (sedges) and to a lesser extent shrub pollen decrease. They are replaced by grasses, Cenepoduim (goosefoot), Plantago (plantain) and Lemna (duckweed family) and some wetland type arboreal taxa such as alder and willow. The grasses, Plantago and Cenepodium can be regarded as 'anthropogenic indicators' and are generally all associated with pastoral habitats rather than closed canopy woodland. Lemna indicate still or slow-flowing water bodies. The upper portion of the monolith at c. 2700BC sees a return to a sedge-based wetter environment and an increase in some trees such as alder.

Consequently the land in the Later Neolithic Period appears to be open in character and remains relatively open and devoid of much trees for the timespan of the monolith. The cremation pit excavated as part of this project as well as previous excavations of Neolithic houses, passage tombs at Bremore and flint scatter studies from nearby to Clonard suggests a vibrant and well established Neolithic community inhabiting the area. The Bronze Ages peoples who lived, worked and farmed the landscape as attested to through the excavations at Clonard must have arrived into a somewhat managed and farmed landscape created by their predecessors. This pollen work is the first to be completed from this area of Dublin and therefore makes a valuable contribution to the environmental history of north County Dublin.

1. Introduction

Pollen and Non–Pollen Palynomorphs (NPPs) were analysed from a monolith extracted from a water channel or hollow to gain an understanding of local vegetation dynamics in the area of Clonard/Folkstown Great, Balbriggan, North County Dublin from approximately 3600BC – to 2500BC.

In semi-natural sites, where the main pollen input is assumed to have arrived via aerial transport, pollen can inform on land use near the site and give some insight into the vegetation of the wider environment around a site (Faegri *et a*l 1989). Pollen analysis helps to define the environment at the time of deposition in a different way to plant macrofossil, insect or wood analysis. Pollen analysis can also reveal the impact that both humans and climate had on that vegetation in the past. The study of Non Pollen Palynomorphs indicators can complement palynological reconstructions of past communities and environments. Microscopic charcoal was also counted which indicates anthropogenic activity and burning close the bog.

2. Sites and sampling descriptions

2. 1. Archaeological sites

A programme of archaeological monitoring of groundworks was carried out in Clonard or Folkstown Great townland, Balbriggan in December 2015 under Licence No. 15E586. A number of features were identified and consequently excavated on the site which included a Mesolithic pit, a Neolithic cremation pit, a barrow (Bronze & Iron Age), a pennanular enclosure (Bronze Age), charcoal spreads and pits (Bronze & Iron Age), a burnt mound (Middle Bronze Age) and stakeholes (Iron Age). The archaeological sites either pre-date (C36, C30, C4) or post-date (C1014, C34, C1024, C1026, C51, C75, C79, C37, C13, C147, C136) the sediment deposited and analysed from the channel/hollow (McGlade 2016). Therefore the environment described from the monolith layers give us an insight into local conditions after the Cremation pit was deposited and before the pits, ditches and burnt mound material were in use.

Table 1; Dates and types of sites excavated at Balbriggan

Sample number	Context number	Context type	Date	Time period
2	4	Cremation pit	3781 – 3652 cal BC	Early Neolithic
4	1014	Charcoal spread	1258 – 1036 cal BC	Late Bronze Age
5	30	Pit, cut by enclosure	4367-4252 cal BC	Late Meso- E. Neo
6	34	Penannular Enclosure ditch	399-210 cal BC	Iron Age
9	1024	Stakehole/ lining of fulacht fiadh trough	1258-1036 cal BC * from F1014	Late Bronze Age
10	1026	Stakehole / lining of fulacht fiadh trough	1258-1036 cal BC * from F1014	Late Bronze Age
11	37	Charcoal pit	389-205 cal. BC	Iron Age
13	51	Charcoal pit	Not dated	Probably Iron Age
18	75	Pennanular Enclosure ditch (bottom fill)	1498-1303 cal. BC *from F13	Prob. Middle Bronze Age, same as F13
21	79	Burnt spread	1658-1498 cal. BC	Middle Bronze Age
29	102	Fill of linear pool	3636-3377 cal. BC	Middle Neolithic
23	36	gully of avenue	5667-5537 cal BC * to be re-dated this month	Mesolithic
22	13	Penannular enclosure ditch	1498-1303 cal. BC	Middle Bronze Age
	128	Fill of linear pool	2572-2470 cal. BC	Late Neolithic
37	147	Barrow	2193-1941 cal. BC	Early Bronze Age
31	136	Barrow	804-489 cal. BC	Late Bronze Age-Early Iron Age

2. 2 Sampling Description

The monolith or section was extracted from a linear channel/ hollow or depression (F101) with a wavin pipe. The linear hollow was orientated east-west and stretched over an area of 19m. It was 6.5m in width and up to 0.63m in depth. The hollow had well defined sides to the north and south, though there was some suggestion that the southern edge had seen some slumping at some point. The feature petered out to the west and east and may represent a pool, channel or pond within this

wetland landscape (McGlade 2016). There were three fills (F102, F128 & F177) identified within the hollow. The basal fill (F102) was a compact dark brown deposit of organic material, with chunks of wood, hazelnuts, grasses and roots all present. An alder fragment from this lower deposit at 62 cm dates the inundation of the channel to the Early Neolithic period or 3636 – 3498 cal BC. This fill was fully water-logged hence the organic preservation. The natural boulder clay beneath the hollow had been stained bright turquoise blue by the decomposing organics. Overlying F102 was a secondary fill (F128), a brownish grey clay with less organic content. Further to the southeast it could be seen that an additional upper layer (F177) of organic material overlay this. This material was very similar in content and appearance to the lower fill (F102). The upper 5 cm was dated to 2772 – 2509 cal BC.

Contiguous subsamples spanning 12 cm in the monolith were prepared for analysis (see methods section 3). Dating intervals between the top and bottom layers suggest a sediment accumulation rate of 17 yr cm. Therefore there is approximately 204 years between each sample analysed.

Unfortunately the majority of the archaeological sites excavated are dated after the upper levels of the water channel/hollow were laid down (Table 1). The cremation pit (**C 4**) dates to just before the lower levels of the channel/hollow began to accumulate (3781 – 3652 cal BC).

3. Methods

3.1 Pollen was extracted from one ml of each subsample, using standard techniques. Standard treatments were given that involved use of KOH, HCl and HF, and acetolysis (cf. Moore et al. 1991). At the end of the preparation procedure, the pellets were sieved through a 5-lm mesh sieve in an ultrasonic water bath to remove unwanted fine particles. A Lycopodium spore tablet, batch number 177745 containing on average 18584 spores, was added to facilitate concentration calculations of the sample material (Stockmarr 1971). Samples were mounted in silicone oil and scanned at x400 and x1000 magnification. Identification of pollen

and spores was undertaken by comparison with modern reference material, using Moore *et al* (1991) as a guide. Plant taxonomic nomenclature follows Stace (1997). The recorded fungal remains and non-pollen palynomorphs were found in pollen samples that had been treated according to the pollen preparation method and described by van Geel (2001). Records were made during the analysis of microfossils (pollen and other palynomorphs) in microscope slides.

3.2 The samples had low pollen concentrations which made it impossible to count more than *c.* 100 pollen grains per sample within the allocated time period. High pollen counts are preferred because they tend to represent the portion of rarer pollen types better and hence lead to more accurate and robust landscape models. However, sediments that have not been permanently waterlogged generally do not preserve pollen as well as permanently waterlogged sediments do. In most cases at least 100 pollen grains were counted from extracted samples using standard techniques (Fagri *et al* 1989). However, pollen preservation was particularly poor in the lower levels and many slides per level had to be counted to produce quantifiable results. The results were then used to reconstruct local vegetation and woodland successions (Figure 1).

3.3 Pollen analysis can potentially identify the impact of both human activity and climate on past vegetation. Percentages in Figure 1 are based on total dryland pollen (trees, shrubs, dryland herbs and grasses) and exclude all wetland taxa, which are in raw counts. Charcoal particles and NPPs were counted and are also expressed as raw counts in graphs.

3.4 Non–Pollen Palynomorphs (NPPs) can complement pollen analysis, for example, some spores can help to determine drier periods in the past, algae-rich stagnant pools and the presence of animal dung (Van Geel 2006). Microscopic charcoal was also counted on the same slides as the pollen grains and NPPs, which can indicate anthropogenic activity and burning close to the sampling site. The addition of Lycopodium tablet(s) containing a known quantity of spores makes it possible to estimate microfossil concentration in the sample material (Stockmarr 1971).

3.4 Pollen and spores were identified using standard keys (Beug 2004; Moore and Webb 1991). Pollen nomenclature follows Beug (2004). The suffix 'type' is added to pollen

that represents more than one possible taxon e.g. *Ranunculus acris* type. In some cases pollen could not be identified to species or even to genus level. When this was the case taxa were listed under their family names. Where preservation allowed, cereal pollen was further identified to type, otherwise these pollen were listed under 'Cerealia'. Results were computed and displayed using the TILIA and the TGview computer programmes (Grimm, 1991; 2004).

4. Results

Six samples were identified from the monolith at 1cm, 12cm, 24cm, 36cm, 48cm and 60cm. Pollen preservation was particularly poor in the lower organic levels. Acid peats are far better for pollen preservation as opposed to the alkaline fen and organic peats which would have been akin to the lower levels of the water channel where trees, leaves, hazelnuts and organics were present (Godwin 1934). Non Pollen Palynomorphs (NPP) which include fungal spores were also counted. A pollen diagram has been plotted using Tilia and Tilia Graph (Figure 1). Percentages are based on total land dryland pollen (trees, shrubs, dryland herbs and grasses) and exclude all wetland taxa which are in raw counts. Charcoal particles and NPP were counted and are also expressed as raw counts in Tilia graph (Figures 1).

The pollen diagram has been divided into pollen assemblage zones (PAZs) based on major changes in the pollen curve. Three zones have been identified based on changes most likely associated with anthropogenic activity as well as water flow and built up of certain plant remains in the water channel/hollow (Table 1).

The results suggest a moderate accumulation of sediments through the Monolith. The average accumulation is 17 yr $cm^{-1.}$

Trees present in the landscape include hazel, alder, elm, holly, birch, pine, oak, ash, willow, yew, and rosaceae type. However tree cover was never very high and fluctuated. Hazel was consistently at c. 5 % while alder was more common in the upper levels around 2750BC. Willow occurred more frequently (20%) around 3200BC and interesting elm was not present during heightened periods of grass and Cenepodium levels consistent with a minor elm decline.

Overall arboreal or tree counts were only 10% of the recovered pollen in the lower levels. Moving up through the fill this portion rises to 40 percent around 3100BC in the sample at 38cm. This may be associated with a hiatus in human activity in the Middle Neolithic and some growth of secondary woodlands Trees and shrubs reduce again to approximately 5% at 24cm or c. 2800BC (Late Neolithic) and rises at the top of the column to 30 % at c. 2600BC. The pollen diagram, Figure 1, indicates that this trend is due to an overall increase in grassland indicating pollen, particularly grass (Poaceae) and members of the goosefoot family (Cenepodium), as well as some of the arable herbs and ferns in the upper levels A few cereal pollen grains were also identified in the upper 10 cm of the monolith indicative of arable farming in the nearby vicinity (Table 1 and Figure 1).

On a very local level pollen analysis records sedges (Cyperaceae) as being common within the upper and lower levels of the channel fill alongside organic rich deposits. Lemna (duckweed family) and water lily are common in the middle layers indicating less free flowing water during these periods (Webb 1996).

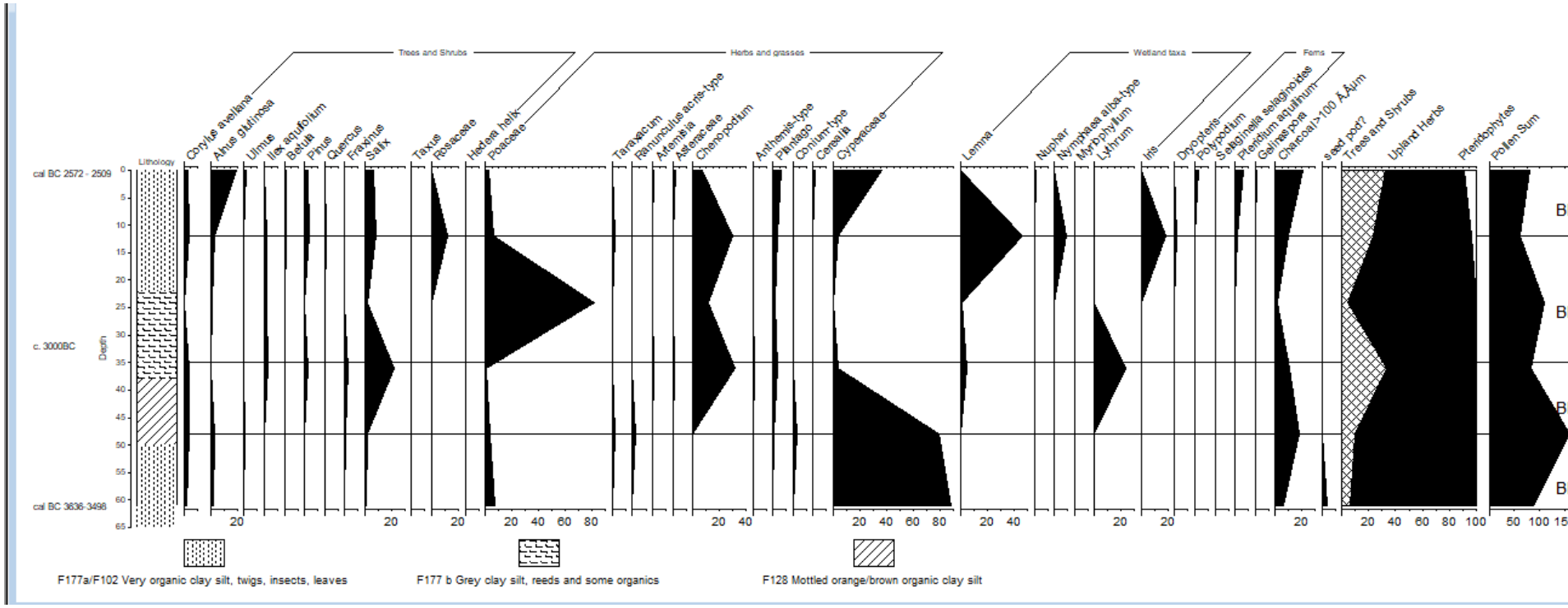

Figure 1, Tree, herb and wetland pollen percentages from monolith

Table 2: Summary results

Zone	Time period	Depth	Summary	Description
BL-1	c. 3600 – 3350 BC	63 – 48 cm	Open landscape with scrub trees and much sedges. Some light clearance	Very Great arboreal pollen recorded (10%). Trees present include *Corylus*, *Alnus*, *Ulmus* and *Salix*. This level dominated by *Cyperaceca* (sedges). Poaceae (grass) are 10%. The presence of microscopic charcoal after which increases throughout the zone.
BL-2	*c*. 3350 - 3120	48 – 35cm	Reduction in Cyperaceae/Sedges Increase in *Salix* – willow More Anthropogenic indicators	Trees and shrubs (arboreal pollen) reach up to 40% of pollen record. This % is steady throughout the zone with higher alder and willow pollen reminiscent of an alder carr situation. Some plantago and spike in Cenepodium (35%). Cyperaceae reduces to less than 10%. Macroscopic charcoal present.
BL-3	*c*. 3120 – 2720 BC	35 – 12cm	Substantial increase in grass pollen and decrease in trees	Grass pollen steady increase throughout the zone at 80% and then reduces. *Alnus* and *Salix* pollen decrease. *Fraxinus* present. *Corylus* rises and grasses remain constant. Spike *in Lemna* or duckweed. Water channel must have become quite stagnant and not free flowing. Very Great Cyperaceae and rise in micro-charcoal at the end of the period.
BL – 4	*c*. 2720 – 2500 BC	12 – 0 cm	Increase in trees and shrubs. Increase in Sedges. Lower level of anthropogenic activity.	Arboreal taxa at 30%. Increase in *Alnus*, *Ulmus* and *Pinus*. The presence of ferns, some NPP (Gelinaspora), Some Cereal, Asteraceae, Plantago, Taraxacum and Cenepodium. Increase in Cyperaceae. Micro charcoal at its highest.

5. Discussion

The trends shown in the pollen diagram are highlighting the local environmental dynamics (water channel) as well as the sub-local. Small hollows have been identified as important potential sources of local pollen, derived primarily from trees within an area of 50- 100m in a woodland-dominated landscape (Sugita 1994).

The local environment of the channel is dominated by Cyperaceae (reeds), which is suggestive of wet soil conditions at the site both in the early and later phases of the monolith. The Lemna (duckweed family) and Iris identified in significant quantities in the central portion of the Monolith suggests non-free flowing and standing water in and around the water channel (Webb 1996).

The extra local environmental conditions indicates little woodland landscape during the periods under discussion (*c.* 3600 – *c.* 2500BC). The woodland that is present comprises mainly of scrubland and wetland trees such as alder, willow and some hazel. Hazelnut shells were also present in the lower fill of the water channel. Their presence does show tangible evidence for hazel trees in the local landscape as well the possibility that the nuts were eaten and discarded in the channel and later preserved.

Small amounts of elm, holly, oak, birch, pine, ash and rosaceae type are also present towards the centre and top of the monolith. Most of these wood types were present in the charcoal analysis. Of note is the absence of elm in the samples associated with the heightened indicators of anthropogenic activity (Figure 1). Elm is thought to have declined due to either human influences and population increases or disease during the Neolithic periods (Hall 2011). Elm charcoal was identified from the Mesolithic pit which may indicate earlier land clearance of primary woodland trees.

What is particularly prevalent is the huge increase in grasses around 24cm (c. 2850 BC). This is paralleled with an increase in daisies, goosefoot, plantago and ferns. These are among the group of agricultural weeds, members of the daisy family

(Asteraceae & Taraxacum), as well as the goosefoot family (Chenopodiaceae) and specific indicators of increased anthropogenic activities. Invariably woodland composition and landscape types changed apace with anthropogenic activities as well as being influenced by certain environmental factors such as climate and soil types.

Arboreal pollen only ever reaches one third of the pollen percentages along the monolith and is never very dominant along the remaining levels. Hence the tree and shrub element at this site was not particularly large, probably indicating an open landscape surrounding Balbriggan during the Late Neolithic and Early Bronze Age periods. Rising percentages of grass pollen through this context showed a progressive opening of the landscape and further loss of tree cover. Cereals were recorded towards the top of the context along with agricultural weeds and charcoal. Fern spores and Gelinaspora NPP indicative of drier conditions are evident in the upper part of the monolith.

Overall the pollen spectra from the monolith point to an increasingly open landscape around the site where both arable and pastoral agriculture were most likely practised. This is determined from the cereal grains recorded in the upper levels of the monolith as well as a rather open landscape with few woodland trees recorded in the pollen spectrum. While there are now pollen records for c. 475 sites in Ireland (Mitchell et al 2013) there are relatively few pollen diagrams available for north County Dublin. Of those listed only 4 are from Dublin and these sites are at Balybetagh 1, 2, Newlands Cross and Bog of the Frogs near Howth. Therefore the results from Balbriggan add valuable information to our growing understanding of the environmental indicators for this area in general and the Neolithic period specifically.

Just after the cremation pit (F4) was deposited at Clonard/Folkstown Great we can determine a landscape which is devoid of large trees and which includes small copses of scrubland trees such as hazel, alder and willow and much Cyperaceae or Sedges. Therefore the Cremation pit uncovered is possibly part of a much wider and more dominant Neolithic Culture which shaped and altered the landscape around Balbriggan during the latter part of the 4th Millennia BC. Evidence for

Neolithic activity in the surrounding area of Balbriggan can be seen at Bremore passage tombs, 4km north east of Clonard/Folkstown Great. These passage tombs date to the Later Neolithic period where cremation was the predominant burial rite which primarily date from 3300 to 2900 BC. This periods of activity coincides with the periods of heightened anthropogenic activity noted in the pollen monolith culminating in the spike in grass pollen around 2900BC. In general, the Taraxacum and the Chenopodiaceae curve is thought to be an anthropogenic indicator reflecting habitats such as pastures, fallow land and open disturbed ground (Behre 1981). A Neolithic axe head and a series of plank-built Neolithic houses were also uncovered at Flemington and Hamlet Lane, Balbriggan respectively (http://www.fingal.ie/planning-and-buildings/heritage-in-fingal/heritage-and-communities/fingal-heritage-by-area/balbriggan/). The early Neolithic house from Flemingtown, Balbriggan dated to 3642-3387BC. Similarly large amounts of flint and evidence of flint production was found during a field study of landuse in Bremore, North County Dublin suggesting large populations and trade (Collins 1997).

6. Conclusions

The results present a picture of the local environment associated with the water channel/hollow as well as the surrounding landscape. Pollen analysis shows an assemblage consistent with a wetland minerotrophic environment in the earlier levels of the channel followed by slow flowing/stagnant water in the middle levels and a return to a sedge based minerotrophic environment in the latter periods of the monolith.

Arboreal (tree) pollen fraction was generally small throughout the monolith. Consequently there appears to be much open land use in the vicinity of the channel/hollow area.

Taxa associated with anthropogenic activities increases in the upper levels of the monolith or after 3000BC as well as charcoal quantities. Cereal pollen were also present in the upper later levels. There was a dramatic expansion in grassland after 3000BC which ties in with the heightened Late Neolithic evidence from the

surrounding area of Balbriggan. The Bronze Age peoples who inhabited the area and constructed the barrow, penannular enclosure and *fulachta fiadh* excavated at Clonard/Folkstown Great most likely lived in a relatively open landscape where farming and agriculture must have been commonplace.

7. Acknowledgements

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Appendix A

Section pollen

Depth	1	12	24	36	48	63
Lyvopodium (marker spores)	37	23	7	4	16	18
Corylus	2	6	3	0	2	2
Alnus	2	4	0	1	2	15
Ulmus	0	1	0	0	0	1
Ilex	0	0	2	2	1	0
Betula	0	0	0	0	1	1
Pinus	0	0	2	0	2	2
Quercus	0	0	0	0	1	0
Fraxinus	0	1	2	0	0	0
Salix	1	3	18	2	5	5
Taxus	0	0	0	0	0	0
Rosaceae	0	0	0	0	7	0
Hedera Helix	0	0	0	0	0	0
Poaceae	6	5	1	89	4	2
Taracaxacum	0	3	0	0	1	0
Ranuculus acris type	0	3	0	0	0	0
Artemesia	0	0	1	0	0	1
Asteraceae	0	1	1	0	0	2
Rumex acetosa type	0	0	0	0	0	0
Chenopodiaceae	0	0	26	13	18	6
Anthemis type	0	0	1	0	0	0
Apiaceae	0	0	0	0	0	0
Plantago	0	1	3	2	2	5
Conium	0	5	0	0	0	0
Cerealia	0	0	0	0	0	1
Hypercium	0	0	0	0	0	1
Brassicaceae	0	0	0	0	0	0
Pteredium	0	0	0	0	1	5
Cyperaceae	77	127	3	0	2	29

Depth	1	12	24	36	48	63
Lemna	0	0	4	1	63	0
Nuphar	0	0	0	0	0	1
Nyphae alba	0	0	0	0	12	0
Myrophyllum	0	0	0	0	1	0
Lythrum	0	0	19	0	0	0
Filicales	0	0	0	0	0	0
Dryopteris	0	0	0	0	1	0
Iris?	0	0	0	0	11	0
Polypodium	0	0	0	0	0	2
Selaginella selaginoides	0	1	0	0	0	0
Sphagnum	0	0	0	0	0	1
Bryophyte spore	1	0	0	0	0	0
Gelenispora	0	0	0	0	0	1
Charcoal	6	18	11	2	10	21
seed pod?	4	0	0	0	0	0

archaeology plan
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Appendix L

Radiocarbon dates

2016

Stephen Hoper, 14 Chrono Centre, Queen's University, Belfast

Appendix L Radiocarbon dates

14Chrono Centre, Queen's University, Belfast

UBANo	Sample ID	Material Type	14C Age	±	F14C	±
UBA-33376	15E586:4 SS#2	Pomoideae	4938	34	0.5408	0.0023
UBA-33377	15E586:1014 SS#4	Elm	2941	33	0.6934	0.0028
UBA-33378	15E586:30 SS#5	Elm	5471	34	0.5061	0.0022
UBA-33379	15E586:34 SS#6	Blackthorn	2269	31	0.7539	0.0029
UBA-33380	15E586:36 SS#7	Ash	6689	37	0.4349	0.0020
UBA-33381	15E586:37 SS#11	Hazel	2239	30	0.7568	0.0028
UBA-33382	15E586:13 SS#16	Birch	3141	34	0.6763	0.0028
UBA-33383	15E586:79 SS#21	Prunus	3291	35	0.6638	0.0029
UBA-33384	15E586:128 SS#28A	Alder	3997	26	0.6080	0.0020
UBA-33385	15E586:102 SS#28B	Alder	4737	37	0.5545	0.0025
UBA-33386	15E586:147 SS#32	Hazel	3670	39	0.6332	0.0031
UBA-33387	15E586:136 SS#33	Hazel	2530	51	0.7299	0.0046
UBA-33388	15E586:130 S#42	Failed	Failed	Failed	Failed	Failed
UBA-36829	15E586:36 SS#23	Ash	6622	37	0.4385	0.0020

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Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification: UBA-33376
Date of Measurement: 2016-12-12
Site: Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID: 15E586:4 SS#2
Material Dated: charcoal
Pretreatment: AAA
Submitted by: Steven McGlade

Conventional ^{14}C Age:	4938±34 BP
Fraction corrected	using AMS δ^{13}C

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-33377
Date of Measurement:	2016-12-12
Site:	Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID:	15E586:1014 SS#4
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	Steven McGlade

Conventional ^{14}C Age:	2941±33 BP
Fraction corrected	using AMS $\delta^{13}C$

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-33378
Date of Measurement:	2016-12-12
Site:	Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID:	15E586:30 SS#5
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	Steven McGlade

Conventional ^{14}C Age:	5471±34 BP
Fraction corrected	using AMS $\delta^{13}C$

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Radiocarbon Date Certificate

Laboratory Identification: UBA-33379
Date of Measurement: 2016-12-15
Site: Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID: 15E586:34 SS#6
Material Dated: charcoal
Pretreatment: AAA
Submitted by: Steven McGlade

Conventional ^{14}C Age:	2269±31 BP
Fraction corrected	using AMS δ^{13}C

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Radiocarbon Date Certificate

Laboratory Identification: UBA-33380
Date of Measurement: 2016-12-12
Site: Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID: 15E586:36 SS#7
Material Dated: charcoal
Pretreatment: AAA
Submitted by: Steven McGlade

Conventional ^{14}C Age:	6689±37 BP
Fraction corrected	using AMS $\delta^{13}C$

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Radiocarbon Date Certificate

Laboratory Identification: UBA-33381
Date of Measurement: 2016-12-15
Site: Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID: 15E586:37 SS#11
Material Dated: charcoal
Pretreatment: AAA
Submitted by: Steven McGlade

Conventional ^{14}C Age:	2239±30 BP
Fraction corrected	using AMS δ^{13}C

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-33382
Date of Measurement:	2016-12-12
Site:	Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID:	15E586:13 SS#16
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	Steven McGlade

Conventional ^{14}C Age:	3141±34 BP
Fraction corrected	using AMS $\delta^{13}C$

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Radiocarbon Date Certificate

Laboratory Identification: UBA-33383
Date of Measurement: 2016-12-12
Site: Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID: 15E586:79 SS#21
Material Dated: charcoal
Pretreatment: AAA
Submitted by: Steven McGlade

Conventional ^{14}C Age:	3291±35 BP
Fraction corrected	using AMS $\delta^{13}C$

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Radiocarbon Date Certificate

Laboratory Identification: UBA-33384
Date of Measurement: 2016-12-19
Site: Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID: 15E586:128 SS#28A
Material Dated: old wet wood
Pretreatment: ABOX
Submitted by: Steven McGlade

Conventional ^{14}C Age:	3997±26 BP
Fraction corrected	using AMS $\delta^{13}C$

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-33385
Date of Measurement:	2016-12-19
Site:	Clonard or Folkstown Great Balbriggan
Sample ID:	15E586:102 SS#28B
Material Dated:	old wet wood
Pretreatment:	ABOX
Submitted by:	Steven McGlade

Conventional ^{14}C Age:	4737±37 BP
Fraction corrected	using AMS δ^{13}C

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-33386
Date of Measurement:	2016-12-12
Site:	Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID:	15E586:147 SS#32
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	Steven McGlade

Conventional ^{14}C Age:	3670±39 BP
Fraction corrected	using AMS $\delta^{13}C$

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-33387
Date of Measurement:	2016-12-19
Site:	Clonard or Folkstown Great, Balbriggan, Co. Dubl
Sample ID:	15E586:136 SS#33
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	Steven McGlade

Conventional ^{14}C Age:	2530±51 BP
Fraction corrected	using AMS $\delta^{13}C$

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Radiocarbon Date Certificate

Laboratory Identification:	UBA-36829
Date of Measurement:	2018-03-09
Site:	Clonard or Folkstown Great
Sample ID:	15E586:36
Material Dated:	charcoal
Pretreatment:	AAA
Submitted by:	Steven McGlade

Conventional ^{14}C Age:	6622±37 BP
	using AMS
Fraction corrected $\delta^{13}C$	

Information about radiocarbon calibration

RADIOCARBON CALIBRATION PROGRAM*
CALIB REV7.0.0

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

15E586:4 S
UBA-33376
Radiocarbon Age BP 4938 +/- 34
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution

68.3 (1 sigma) cal BC	3761- 3741	0.213
	3730- 3725	0.040
	3715- 3659	0.747
95.4 (2 sigma) cal BC	3781- 3652	1.000

15E586:101
UBA-33377
Radiocarbon Age BP 2941 +/- 33
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution

68.3 (1 sigma) cal BC	1214- 1109	0.964
	1097- 1091	0.036
95.4 (2 sigma) cal BC	1258- 1245	0.017
	1233- 1036	0.983

15E586:30
UBA-33378
Radiocarbon Age BP 5471 +/- 34
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution

68.3 (1 sigma) cal BC	4352- 4324	0.690
	4287- 4269	0.310
95.4 (2 sigma) cal BC	4367- 4252	1.000

15E586:34
UBA-33379
Radiocarbon Age BP 2269 +/- 31
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution

68.3 (1 sigma) cal BC	394- 357	0.626
	282- 256	0.289
	244- 236	0.085
95.4 (2 sigma) cal BC	399- 350	0.496
	305- 210	0.504

15E586:36
UBA-33380
Radiocarbon Age BP 6689 +/- 37
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution
68.3 (1 sigma) cal BC 5640- 5610 0.560
5592- 5564 0.440

95.4 (2 sigma) cal BC 5667- 5537 1.000

15E586:37
UBA-33381
Radiocarbon Age BP 2239 +/- 30
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution
68.3 (1 sigma) cal BC 377- 353 0.250
294- 230 0.707
219- 213 0.044

95.4 (2 sigma) cal BC 389- 344 0.258
323- 205 0.742

15E586:13
UBA-33382
Radiocarbon Age BP 3141 +/- 34
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution
68.3 (1 sigma) cal BC 1488- 1485 0.029
1451- 1391 0.850
1336- 1323 0.121

95.4 (2 sigma) cal BC 1498- 1374 0.820
1349- 1303 0.180

15E586:79
UBA-33383
Radiocarbon Age BP 3291 +/- 35
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under

68.3 (1 sigma) cal BC 1613- 1530 1.000

95.4 (2 sigma) cal BC 1658- 1498 1.000

15E586:128
UBA-33384
Radiocarbon Age BP 3997 +/- 26
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution
68.3 (1 sigma) cal BC 2565- 2525 0.661
2496- 2476 0.339

95.4 (2 sigma) cal BC 2572- 2509 0.656
2506- 2470 0.344

15E586:102
UBA-33385
Radiocarbon Age BP 4737 +/- 37
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution

68.3 (1 sigma) cal BC	3631- 3561	0.616
	3536- 3515	0.194
	3422- 3417	0.034
	3412- 3404	0.047
	3399- 3384	0.109
95.4 (2 sigma) cal BC	3636- 3498	0.730
	3450- 3444	0.010
	3439- 3377	0.260

15E586:147
UBA-33386
Radiocarbon Age BP 3670 +/- 39
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution

68.3 (1 sigma) cal BC	2133- 2080	0.465
	2061- 2013	0.387
	1998- 1979	0.148
95.4 (2 sigma) cal BC	2193- 2177	0.024
	2144- 1941	0.976

15E586:136
UBA-33387
Radiocarbon Age BP 2530 +/- 51
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution

68.3 (1 sigma) cal BC	793- 744	0.321
	686- 665	0.137
	644- 551	0.542
95.4 (2 sigma) cal BC	804- 507	0.989
	503- 489	0.011

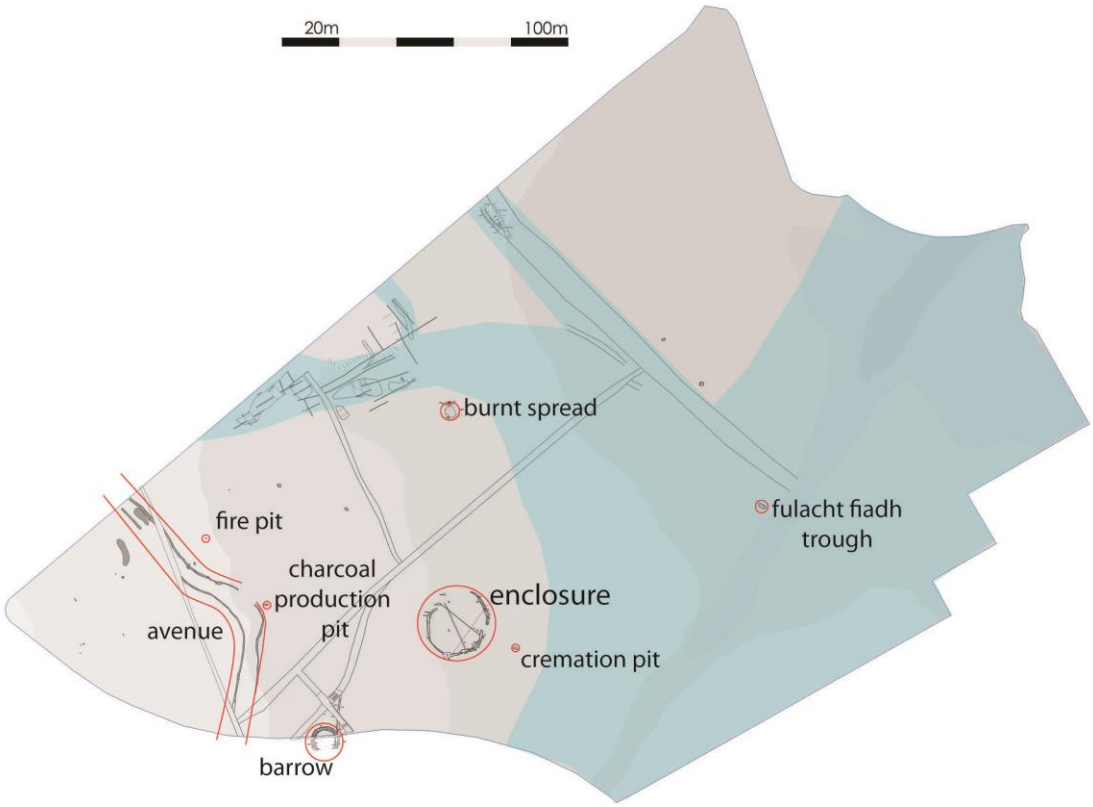
15E586:36
UBA-36829
Radiocarbon Age BP 6622 +/- 37
Calibration data set: intcal13.14c # Reimer et al. 2013
% area enclosed cal AD age ranges relative area under probability distribution

68.3 (1 sigma) cal BC	5615- 5584	0.437
	5571- 5529	0.563
95.4 (2 sigma) cal BC	5622- 5492	1.000

archaeology plan
HERITAGE SOLUTIONS

Appendix M

Context register



APPENDIX M Context Register

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F1	Topsoil	-	-	-	-	-	Topsoil		animal bone, flint scraper and cores, Dublin-type fineware, quartz, clay pipe, iron, post-medieval pottery			All
F2	Cut of pit	n/a	F3, F4, F5	1.40m	0.90m	0.20m	Cut of cremation pit	Oval pit with gently sloping sides and flat base.	n/a	F5	Natural	3
F3	Fill of pit	F2	n/a	0.60m	0.40m	0.17m	Uppermost fill of cremation pit	Mottled yellow-brown clayish silt with frequent inclusions of charcoal and moderate flecks of small stone.	SS#3, burnt bone, Neolithic pottery, flint	F1	F4	3
F4	Fill of pit	F2	n/a	0.60m	0.50m	0.20m	Cremation deposit	Blackish-red silty clay with occasional flecks of burnt bone and small angular to subrounded stones.	SS#2, burnt bone, Neolithic pottery, burnt flint, quartz	F3	F5	3
F5	Fill of pit	F2	n/a	0.70m	0.40m	0.13m	Lower-most fill of cremation pit	Light yellowish clay of moderate compaction.	n/a	F4	F2	3

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F6	Ditch	n/a	F7, F12, F13, F34	16.6m	1.0m	0.50m	Part of Bronze Age enclosure	Curvilinear ditch with U-shaped profile. Forms the southern part of the enclosure. Distinct terminus to east with entrance gap between it and Ditch F8. Likely to be the same as Ditch F67	n/a	Natural	F13	3
F7	Fill of ditch	F6	n/a	15m	1.0m	0.17m	Upper fill of Bronze Age enclosure ditch	Mottled brown-grey silty clay with inclusions of small stones.	Bronze Age pottery, burnt bone, cow tooth, rubbing stones, charcoal, flint core, SS#20	F12	F34	3
F8	Ditch	n/a	F9, F10, F69, F74, F75	14m	0.65m	0.94m	Part of Bronze Age enclosure	Curvilinear ditch with V-shaped profile. Forms the northeast part of the enclosure. Distinct terminus to south with entrance gap between it and Ditch F6. Peters out to north, probably due to truncation	n/a	F70, F77	F30	3
F9	Fill of ditch	F8	n/a	13.5m	0.4m	0.19m	Upper fill of Bronze Age enclosure ditch	Mottled orangey-grey silty clay with blackish iron panning inclusions near the top. Compact with frequent sub-angular stones	Struck flint, SS#19	F1	F69	3
F10	Fill of ditch	F8	n/a	10.75m	0.85m	0.23m	Fill of Bronze Age enclosure ditch	Mid-grey stoney clay with greyish brown mpottling in parts. Compact with frequent sub-angular stones	Flint core fragment, animal bone	F69	F74	3

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F11	Ditch	n/a	F15, F16, F17, F18, F19, F20, F21, F155	35m min.	1.8-2.5m	0.5-0.7m	Cut of post-medieval ditch	Linear field ditch running northeast-southwest. Profile of ditch varies along its course. The southwestern end of the ditch has a step present along the southeast side, with the side vertical above this. The ditch is concave beyond the step. The step is not present at the northeastern end, where the southeast edge is still relatively vertical and the opposing edge is more gradual	n/a	F157	F15, F21	2
F12	Fill of ditch	F6	n/a	15m	0.78m	0.16m	Fill of Bronze Age enclosure ditch	Mottled brownish grey silty clay. Compact with small stones and rounded cobble inclusions.	Bronze Age pottery, crucible, rubbing stone, animal tooth (cow?), burnt bone, SS#1, SS#15	F13	F7	3
F13	Fill of ditch	F6	n/a	16.6m	0.7-0.88m	0.06-0.19m	Fill of Bronze Age enclosure ditch	Mid-grey silty clay. Compact with inclusions of sub-rounded cobbles	Prehistoric pottery, clay mould, flint, animal bone, SS#16, SS#22	F6	F12	3

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F14	Cancelled											2
F15	Fill of Ditch	F11	n/a	unknown	0.4m	0.2m	Fill of post-medieval ditch	Basal fill of post-medieval ditch F11. Sticky grey marl. Present in one box section through ditch	n/a	F11	F16	2
F16	Fill of Ditch	F11	n/a	unknown	1.25m	0.25m	Fill of post-medieval ditch	Fill of post-medieval ditch F11. Redeposited natural mottled clay. Backfilling of ditch	n/a	F15, F21	F20	2
F17	Fill of Ditch	F11	n/a	unknown	0.65m	0.42m	Fill of post-medieval ditch	Fill of post-medieval ditch F11. Grey marl along northwest sdie fof ditch. Same as fill F20	Bead/fossil	F155	F16	2
F18	Fill of Ditch	F11	n/a	35m min.	1.45m	0.27m	Fill of post-medieval ditch	Fill of post-medieval ditch F11. Mottled orangey brown silty clay with pockets of dark blackish gritty redeposited natural. Contained a fragment of red brick. Backfilling of ditch	Brick, animal bone	F155	F19	2
F19	Fill of Ditch	F11	n/a	35m min.	1.6m	0.25m	Fill of post-medieval ditch	Upper fill of post-medieval ditch F11. Greyish brown silty clay. Contained glass and sherd of post-medieval pottery	Glass, post-medieval pottery	F18	F1	2
F20	Fill of Ditch	F11	n/a	unknown	0.65m	0.42m	Fill of post-medieval ditch	Fill of post-medieval ditch F11. Grey marl along northwest sdie fof ditch. Same as fill F17	n/a	F155	F16	2
F21	Fill of Ditch	F11	n/a	unknown	0.3m	0.1m	Fill of post-medieval ditch	Lower fill along southeast side of post-medieval ditch F11. Gritty mottled silty clay. Only present in one box section through ditch	Burnt flint	F11	F16	2

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F22	Ditch	n/a	F23	175m	1.8m	0.6m	Cut of field drainage ditch	Cut of large post-medieval drainage ditch running northeast-southwest across field 17. Sharp break of slope at top and base, sides at c. 70-degree angles, flat base. A ceramic drainage pipe ran along the base.Cuts post-medieval ditch F11. Same drainage system as Ditch F108	n/a	F19	F23	2
F23	Fill of Ditch	F22	n/a	175m	1.8m	0.6m	Fill of field drainage ditch	Fill of large post-medieval drainage ditch. Mottled brown silty clay. Contained iron objects, glass and post-medieval ceramics	Post-medieval pottery, glass, iron	F22	F1	2
F24	Ditch	n/a	F25					Same as Ditch F158	n/a			2
F25	Fill of Ditch	F24	n/a						n/a			2
F26	Ditch	n/a	F27					Same as Ditch F156	n/a			2
F27	Fill of Ditch	F26	n/a						n/a			2
F28	Posthole	n/a	F13	0.22m	0.22m	0.10m	Cut of posthole	Roughly circular posthole cut into the base of Ditch F6 towards the S side of the ditch	n/a	Natural	F13	3
F29	Pit	n/a	F30	0.98m	0.56m	0.2m	Cut of pit predating Bronze Age enclosure	Sub-oval pit with a gradual break of slope at the top and base and flat base. Sides more gradual to west, vertical to east.	n/a	Natural	F30	3
F30	Fill of pit	F29	n/a	0.98m	0.56m	0.2m	Fill of pit	Mottled mid-greyish orange sandy clay. Occasional sub-angular pebbles and rounded cobbles.	Flint flake, charcoal. SS#5	F29	F6	3

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F31	Field drain	n/a	n/a	9m min	0.25-45m	0.11m	Post-medieval field drain	Linear stone-filled post-medieval field drain orientated roughly NE-SW.	n/a	F33	F32	3
F32	Field drain	n/a	n/a	20m min	0.30m	0.15m	Post-medieval field drain	Linear field drain aligned roughly NW-SE. Contains red corrugated ceramic pipe covered in gravel.	n/a	F31	F1	3
F33	Field drain	n/a	n/a	20m min	0.26-0.32m	0.16m	Post-medieval field drain	Linear field drain aligned roughly NNW-ESE. U-shaped cut filled with a pale orange silty clay	n/a	F7	F31	3
F34	Fill of ditch	F6	n/a	0.43m	0.36m	0.01m	Fill of Bronze Age enclosure ditch	Discrete charcoal lens overlying upper fill of Ditch F6 2.1m from eastern terminus. Soft dark blackish grey charcoal. Truncated by drain F32	SS#6	F7	F32	3
F35	Curvilinear gully	n/a	F36	90m min	0.45-0.7m	0.15-0.45m	One of a pair of curvi-linear gullies, possibly demarkating a routeway	Curvi-linear gully running roughly parallel to Ditch F38, the distance between the ditches ranging from 4.2 - 7.2m. Steep U-shape in profile with vertical to slightly concave sides and flat base.	n/a	Natural	F36	1
F36	Fill of curvilinear gully	F35	n/a	90m min	0.45-0.7m	0.15-0.45m	Fill of curvi-linear gully	Layers of well sorted silt, sand and gravel, mid-grey to mid-orangey grey in colour. Loose compaction for much of its length becoming firmer with a higher clay content to the south	Flint, SS#7, SS#23	F35	F48	1

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F37	Fill of pit	F96	n/a	1.2m	0.72m	0.015m	Charcoal-rich fill of pit	Dark blackish brown charcoal-rich clay fill, medium compaction	Charcoal, SS#11	F96	F1	1
F38	Curvilinear gully	n/a	F39, F47	90m min	0.45-0.9m	0.1-0.45m	One of a pair of curvi-linear gullies, possibly demarkating a routeway	Curvi-linear gully running roughly parallel and to the east of Ditch F35, the distance between the ditches ranging from 4.2 - 7.2m. Steep U-shape in profile with vertical to slightly concave sides and flat base. Gap in gully at point where the distance between the two gullies was at its greatest, possibly an entrance feature	n/a	Natural	F47	1
F39	Fill of curvilinear gully	F38	n/a	90m min	0.45-0.9m	0.1-0.45m	One of a pair of curvi-linear gullies, possibly demarkating a routeway	Main fill of curvilinear gully F38 to the south. Mid- to light grey clay of firm compaction	Flint, SS#25	F47	F48	1
F40	Fill of pit	F97	n/a	0.21m	0.19m	0.05-0.08m	Charcoal-rich fill of pit	Light greyish brown charcoal-rich clay fill, moderate compaction	Charcoal, SS#12	F97	F1	1
F41	Posthole	n/a	F42	0.33m	0.26m	0.09m	Sub-circular posthole	Cut of sub-circular posthole. Sharp break of slope at the top. Concave base. Possibly associated with postholes F43 and F45	n/a	Natural	F42	1
F42	Fill of posthole	F41	n/a	0.33m	0.26m	0.09m	Fill of sub-circular posthole	Moderately compacted grey clay with occasional charcoal flecking	n/a	F41	F1	1

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F43	Posthole	n/a	F44	0.28m	0.25m	0.07m	Sub-circular posthole	Cut of circular posthole, gradual break of slope, concave base, possible packing stone on east side	n/a	Natural	F44	1
F44	Fill of posthole	F43	n/a	0.28m	0.25m	0.07m	Fill of sub-circular posthole	Moderately compacted grey clay with occasional charcoal flecking	n/a	F43	F1	1
F45	Posthole	n/a	F46	0.44m	0.41m	0.09m	Sub-circular posthole	Cut of circular posthole, sharp breaks of slope, concave base	n/a	Natural	F46	1
F46	Fill of posthole	F45	n/a	0.44m	0.41m	0.09m	Fill of sub-circular posthole	Moderately compact light brownish grey clay with occassional small pebbles	n/a	F45	F1	1
F47	Fill of curvilinear gully	F38	n/a	32m min	0.14-0.7m	0.33-0.45m	Fill of curvi-linear gully	Fill of curvilinear gully F38 to the north. Layers of orangey-grey sand, silt and clay, soft compaction with pebble inclusions. Present along west side of gully towards the south	n/a	F38	F39	1
F48	Field boundary ditch	n/a	n/a	100m min	2.6m	1.2m	Field boundary ditch	NNW-SSE running existing field boundary ditch between Fields 16 and 17.	n/a	F36, F39	F1	1
F49	Cancelled											
F50	Pit	n/a	F51	0.46m	0.46m	0.03m	Firepit	Shallow circular pit with a flat base and gradually sloping sides. Some reddening of the clay on the base suggesting in situ burning	n/a	Natural	F51	1
F51	Fill of pit	F50	n/a	0.46m	0.46m	0.03m	Fill of firepit	Soft charcoal and ash deposit. No stones, burnt bone or other inclusions.	SS#13	F50	F1	1

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F52	Pit	n/a	F53	0.34m	0.28m	0.07m	Sub-circular pit	Small iosolated sub-circular pit to the north of Area 1 East. Gradual break of slope to east, sharp break of slope to west, concave base	n/a	Natural	F53	1
F53	Fill of pit	F52	n/a	0.34m	0.28m	0.07m	Fill of sub-circular pit	Grey clay with orange mottling, moderate compaction with rare pebble inclusions.	n/a	F52	F1	1
F54	Pit	n/a	F55	1.24m	0.57m	0.27m	Oval pit with uneven base	Oval pit to the east of curvilinear gully F35 orientated north-south. Uneven base with a sharp break of slope in places and gentle break of slope at other points.	n/a	Natural	F55	1
F55	Fill of pit	F54	n/a	1.24m	0.57m	0.27m	Fill of oval pit	Moderately compacted grey clay with occasional inclusions of burnt stone. Orange mottling in parts	n/a	F54	F1	1
F56	Pit	n/a	F57	0.32m	0.32m	0.07m	Cut of pit to side of post-medieval ditch F11	Small circular pit with a sharp break of slope at top, concave sides and concave base	n/a	Natural	F57	2
F57	Fill of pit	F56	n/a	0.32m	0.32m	0.07m	Fill of pit	Brownish grey silty clay with occasional stones	n/a	F56	F1	2
F58	Pit	n/a	F59	1.45m	0.77m	0.53m	Cut of isolated pit/ posthole	Isolated pit to the east of Area 1 NE orientated NW-SE. Deepest to SE. Steep-sided to SE, NE and SW with sharp breaks of slope at top and base and a flat base. To the NW the side is gently sloping with gentle breaks of slope, possibly to aid the erection of a post	n/a	Natural	F59	1

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F59	Fill of pit	F58	n/a	1.45m	0.77m	0.53m	Fill of isolated pit/ posthole	Grey silty clay	n/a	F58	F1	1
F60	Pit	n/a	F61, F62, F63,	3.4m	2.2m	0.26m	Cut of isolated pit	Irregular isolated pit with organic fills. Gradual sloping sides and an undulating base.	n/a	Natural	F65	2
F61	Fill of pit	F60	n/a	3.2m	2m	0.2m	Fill of isolated pit	Upper fill of isolated pit. Moderately compact grey silty clay with rare stones and organic root material	n/a	F62	F1	2
F62	Fill of pit	F60	n/a	1.45m	1.8m	0.1m	Fill of isolated pit	Loosely compacted brown organic clay containing plant and vegetation material	n/a	F63, F64	F61	2
F63	Fill of pit	F60	n/a	0.9m	1.2m	0.06m	Fill of isolated pit	Compact mid-grey silty clay. Appeared similar to F61, though separated from it by organic fill F62	n/a	F65	F62	2
F64	Fill of pit	F60	n/a	0.65m	1m	0.16m	Fill of isolated pit	Mid-brown silty clay with some organic content, mottled with dark brown denser patches of organic matter. Appeared to be a mix of F61 and F62 material	n/a	F65	F62	2
F65	Fill of pit	F60	n/a	1.3m	1m	0.1m	Fill of isolated pit	Basal fill of pit. Gritty light yellowish grey clay with occasional tiny pebbles, with flecks of organic material throughout	n/a	F60	F63, F64	2
F66	Cancelled											

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F67	Ditch	n/a	F68, F72, F73	19.4m	0.3-1.04m	0.05-0.3m	Part of Bronze Age enclosure	Curvilinear ditch forming west side of Bronze Age enclosure. Originally would have joined with ditch C6 to the southwest, this association lost due to placement of the sump. Peters out to the north, preseumably truncated at this point, but may originally have joined with F8 to the north also. U-shaped in profile, steeply sloping sides and a flat base. Sharp break of slope at the top and concave at the base. To the southwest the surviving portion of the ditch resembled a narrow gully	n/a	Natural	F72	3
F68	Fill of ditch	F67	n/a	10m min.	0.5-0.92m	0.12-0.24m	Fill of Bronze Age enclosure ditch	Upper fill of Bronze Age enclosure ditch to the west. Light grey marly clay of moderate compaction with occasional stone inclusions	Bronze Age pottery	F73	F1	3
F69	Fill of ditch	F8	n/a	14.1m	0.96m	0.38m	Fill of Bronze Age enclosure ditch	Fill of Bronze Age enclosure ditch to the east. Orangey grey mottled clayey silt of hard compaction. Occasional small pebble inclusions. At some points it appeared as a slump from the interior of the enclosure, possibly slumping from an internal bank	n/a	F10	F9	3

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F70	Posthole	n/a	F71	0.7m	0.6m	0.25m	Cut of posthole	Sub-circular posthole cut into the base of Bronze Age enclosure ditch F8. The posthole has vertical sides to the east and west with sharp breaks of slope. The northern and southern sides are concave and the base was also concave	n/a	F8	F71	3
F71	Fill of posthole	F70	n/a	0.7m	0.6m	0.25m	Fill of posthole	Fill of posthole cut into the base of Bronze Age enclosure ditch F8. Grey silty clay	n/a	F70	F75	3
F72	Fill of ditch	F67	n/a	19.4m	0.33-0.65m	0.07-0.11m	Fill of Bronze Age enclosure ditch	Basal fill of Bronze Age enclosure ditch to the east. Dark grey stony clay	SS#17, burnt bone?	F67	F73	3
F73	Fill of ditch	F67	n/a	10m min.	0.11-0.33m	0.15-0.24m	Fill of Bronze Age enclosure ditch	Fill of Bronze Age enclosure ditch to the west. Mottled brownish grey clay. At some points it appeared as a slump from the interior of the enclosure, possibly slumping from an internal bank	n/a	F72	F68	3
F74	Fill of ditch	F8	n/a	14.1m	0.32-0.42m	0.06-0.11m	Fill of Bronze Age enclosure ditch	Fill of Bronze Age enclosure ditch to the east. Secondary fill of the channel at the base of trhe ditch. Grey clay with occasional orange mottling and frequent medium sized stone inclusions	n/a	F75	F10	3

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F75	Fill of ditch	F8	n/a	14.1m	0.25-0.28m	0.06-0.08m	Fill of Bronze Age enclosure ditch	Fill of Bronze Age enclosure ditch to the east. Primary fill of the channel at the base of trhe ditch. Grey clay with occasional decayed stone inclusions and hard compaction	SS#18, flint core	F8	F74	3
F76	Cancelled											
F77	Posthole	n/a	F78	0.13m	0.13m	0.09m	Cut of posthole	Circular posthole cut into the base of Bronze Age enclosure ditch F8. Sides were near vertical and base was flat. Sharp breaks of slope at the top and base	n/a	F8	F78	3
F78	Fill of posthole	F77	n/a	0.13m	0.13m	0.09m	Fill of posthole	Fill of posthole cut into the base of Bronze Age enclosure ditch F8. Greyish brown mottled clay with rare charcoal flecking	SS#14, burnt bone	F77	F75	3
F79	Deposit	n/a	n/a	4.5m	3.5m	0.12m	Burnt spread	Spread of dark clay with moderate inclusions of charcoal and fiore-cracked stones. Poorly surviving	SS#21	Natural	F1	5
F80	Posthole	n/a	F81	0.27m	0.19m	0.11m	Cut of posthole	Oval posthole cut into the base of Bronze Age enclosure ditch F6. Concave sides and base, orientated east-west	n/a	F6	F81	3
F81	Fill of posthole	F80	n/a	0.27m	0.19m	0.11m	Fill of posthole	Fill of posthole cut into the base of Bronze Age enclosure ditch F6. Dark grey loose sand with rare small stones	n/a	F80	F13	3

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F82	Posthole	n/a	F83	0.26m	0.23m	0.11m	Cut of posthole	Oval posthole cut into the base of Bronze Age enclosure ditch F6 to east of posthole F80 and against northern side of the ditch. Concave sides and base, orientated east-west	n/a	F6	F83	3
F83	Fill of posthole	F82	n/a	0.26m	0.23m	0.11m	Fill of posthole	Fill of posthole cut into the base of Bronze Age enclosure ditch F6. Dark grey loose sand with rare small stones	n/a	F82	F13	3
F84	Pit	n/a	F85, F86	0.64m	0.46m	0.26m	Cut of pit	Oval pit to the south of burnt spread F79. Steep sided with sharp breaks of slope. Concave base	n/a	Natural	F86	5
F85	Fill of pit	F84	n/a	0.64m	0.46m	0.1m	Fill of pit	Upper fill of pit. Mottled yellowy grey clay with frequent sandstone inclusions. Firm compaction	n/a	F86	F1	5
F86	Fill of pit	F84	n/a	0.64m	0.36m	0.16m	Fill of pit	Basal fill of pit. Mid-grey clay with occasional decayed stone and small pebble inclusions. Firm compaction	n/a	F84	F85	5
F87	Pit	n/a	F88	0.6m	0.5m	0.05m	Cut of pit	Shallow sub-rectangular pit, truncated. Flat base, gradually sloping sides with a concave break of slope at the base	n/a	Natural	F88	1
F88	Fill of pit	F87	n/a	0.6m	0.5m	0.05m	Fill of pit	Fill of pit in Area 1 West. Dark brown silty clay of moderate compaction	n/a	F87	F1	1

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F89	Posthole	n/a	F90	0.3m	0.25m	0.06m	Cut of posthole	Poorly surviving remains of oval posthole with a gradual break of slope at the top, gently sloping sides and a concave break of slope at the base.	n/a	Natural	F90	1
F90	Fill of posthole	F89	n/a	0.3m	0.25m	0.06m	Fill of posthole	Fill of truncated posthole in Area 1 West. Dark brown sitly clay of moderate compaction. Similar to F88 fill of pit to the southeast	n/a	F89	F1	1
F91	Posthole	n/a	F92, F93	0.8m	0.8m	0.3m	Cut of posthole	Posthole with a distinct step in the base and deeper section to the northwest. The base was somewhat uneven. The sides were near vertical to the north and west and stepped to the south and east. Possible that packing stones may originally have been placed on step to support post, however no stones were noted in the fill	n/a	Natural	F93	1
F92	Fill of posthole	F91	n/a	0.8m	0.8m	0.17m	Fill of posthole	Upper fill of posthole. Grey marly clay of medium compaction	SS#24	F93	F1	1
F93	Fill of posthole	F91	n/a	0.8m	0.8m	0.3m	Fill of posthole	Basal fill of posthole. Grey and orange mottled clay of firm compaction with occasional decayed stone and limestone pebble inclusions	n/a	F91	F92	1

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F94	Posthole	n/a	F95	0.34m	0.29m	0.11m	Cut of posthole	Cut of small possible posthole to north of posthole F91. Gradual break of slope to the south with sharp breaks of slope elsewhere. U-shaped cut and uneven base	n/a	Natural	F95	1
F95	Fill of posthole	F94	n/a	0.34m	0.29m	0.11m	Fill of posthole	Fill of possible posthole F94. Light grey and orange mottled clay of medium compaction and occasional decayed stone and small pebble inclusiuons	n/a	F94	F1	1
F96	Pit	n/a	F37	1.2m	0.72m	0.015m	Cut of charcoal-filled pit	Base of oval flat-bottomed charcoal-filled pit. Heavily truncated with only the base surviving. No in-situ burning	n/a	Natural	F37	1
F97	Pit	n/a	F40	0.21m	0.19m	0.05-0.08m	Cut of charcoal-filled pit	Base of oval flat-bottomed charcoal-filled pit. Heavily truncated with only the base surviving. No in-situ burning	n/a	Natural	F40	1
F98	Ditch	n/a	F99	16.1m	0.62-1.75m	0.16m	Cut of ditch	Cut of shallow linear ditch truncated by field drain F117. Gradual break of slope on both edges and concave base	n/a	Natural	F99	5
F99	Fill of ditch	F98	n/a	16.1m	0.62-1.75m	0.16m	Fill of ditch	Organic dark brown clayey silt with occasional small sub-angular stones	Flint blade	F98	F105	5
F100	Spread	n/a	n/a	7m	6m	0.1-0.3m	Organic spread	Organic mid to dark brown soft spongey peat-like deposit. Contained fragments of wood	n/a	Natural	F104, F106, F110	5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F101	Linear	n/a	F102, F128	19m	6.5m	0.5m	Cut of possibly managed linear natural pool	Linear organic filled pool orientated NW-SE, possibly natural in origin. Located in the vicinity of burnt spread F79. Elongated oval in shape with relatively steep sides and flat base. The natural boulder clay below the pool was stained bluish green by the decomposing organics. Cut by later post-medieval drains	n/a	Natural	F102	5
F102	Fill of linear	F101	n/a	19m	6.5m	0.5m	Fill of linear pool	Fill of possibly natural linear pool. Compact deposit of organic material containing root and plant remains. The deposit was soft and moist, similar to peat, and was verk dark brown in colour.	SS#27, SS#28, SS#29	F101	F128	5
F103	Spread	n/a	n/a	11.6m	5.5m	0.1m	Organic spread	Organic mid to dark brown soft spongey peat-like deposit. Contained fragments of wood. Similar to F100 and F102	n/a	Natural	F1	5
F104	Field drain	n/a	n/a	8m min.	0.3m	0.3m	Modern field drain	Linear field drain running E-W to S of drain F110 and cutting F100 spread. U-shaped cut containing 4.5" corrugated ceramic pipe overlaid with angular gravel. Part of modern drainage system. Runs into ditch F108 to east	n/a	F100	F1	5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F105	Field drain	n/a	n/a	48m min.	0.25-0.3m	0.3m	Modern field drain	Linear field drain running E-W. U-shaped cut containing 4.5" corrugated ceramic pipe overlaid with angular gravel. Part of modern drainage system. Runs into ditch F108 to west. Cuts F98 and F119	n/a	F99, F119	F1	5
F106	Field drain	n/a	n/a	38m min.	0.35-0.4m	0.4m	Post-medieval field drain	Linear field drain running WNW-ESE to N of linear pool F101. Part of post-medieval drainage system. Filled with angular stone cobbles. Cut by ditch F108	n/a	Natural	F108	5
F107	Field drain	n/a	n/a	3m min.	0.4m	0.2m	Post-medieval field drain	Linear field drain running WNW-ESE. Filled with rounded stone cobbles. Part of post-medieval drainage system. Drains wet area associated with pool F101 and cuts upper fill F128	n/a	F128	F1	5
F108	Cut of ditch	n/a	F109	80m min.	2m	0.6m	Modern field drainage ditch	Linear field drainage ditch running N-S. U-shaped cut with steep sides and flat base. Part of modern drainage system. Drains F104, F105 and F110 run into ditch. Same as Ditch C22	n/a	F19, F106, F107, F111	F109	2 & 5
F109	Fill of ditch	F108	n/a	80m min.	2m	0.6m	Fill of modern field drainage ditch	Fill of field drainage ditch. Very soft mid brown silty clay overlying corrugated cermaic pipe.	n/a	F108	F1	2 & 5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F110	Field drain	n/a	n/a	7m min.	0.3m	unknown	Modern field drain	Linear field drain running E-W to N of drain F104. Filled with angular gravel. Part of modern drainage system. Runs into Ditch F108 to east and cuts spread F100	n/a	F100	F1	5
F111	Field drain	n/a	n/a	39m min.	0.4m	0.48m	Post-medieval field drain	Field drain running WNW-ESE and cutting organic-filled linear F101. Part of post-medieval drainage system. U-shaped cut with rounded 2.5" ceramic pipe at the base overlaid by sub-rounded cobbles. Cut by Ditch F108	n/a	F102	F108	5
F112	Field drain	n/a	n/a	7m min.	0.3m	unknown	Post-medieval field drain	Linear field drain running NNE-SSW and connecting drains F106 and F111. Part of post-medieval drainage system. Filled with sub-rounded cobbles	n/a	Natural	F1	5
F113	Field drain	n/a	n/a	17m min.	0.3m	unknown	Post-medieval field drain	Linear field drain running WNW-ESE to S of drain F101. Part of post-medieval drainage system. U-shaped cut containing 2.5" rounded ceramic pipe overlaid with rounded cobbles. Cuts spreads F123 and F124	n/a	F123, F124	F1	5
F114	Field drain	n/a	n/a	13m min.	0.45-0.5m	unknown	Post-medieval field drain	Linear field drain running WNW-ESE to N of drain F106. Part of post-medieval drainage system. Fill contains rounded stone cobbles and occasional brick fragments	n/a	Natural	F1	5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F115	Field drain	n/a	n/a	10m	0.25m	unknown	Modern field drain	Linear field drain running N-S and running into drain F105 to S. Part of modern drainage system. Filled with angular gravel	n/a	Natural	F1	5
F116	Field drain	n/a	n/a	9m min.	0.35m	unknown	Post-medieval field drain	Linear field drain running WNW-ESE to S of drain F113. Part of post-medieval drainage system. Filled with rounded stone cobbles and brick fragments.	n/a	Natural	F1	5
F117	Field drain	n/a	n/a	13m min.	0.35m	0.2m	Post-medieval field drain	Linear field drain running N-S to E of drain F118. Part of post0medieval drainage system. Filled with rounded stone cobbles and occasional brick fragments. Cuts Ditch F98	n/a	F99	F1	5
F118	Field drain	n/a	n/a	11m min.	0.35m	unknown	Post-medieval field drain	Linear field drain running N-S to W of ditch F98. Part of post-medieval drainage system. Filled with rounded stone cobbles	n/a	Natural	F1	5
F119	Field drain	n/a	n/a	6m	0.35m	unknown	Post-medieval field drain	Linear field drain running NE-SW to W of drain F118. Part of post-medieval drainage system. Filled with rounded stone cobbles	n/a	Natural	F105, F120	5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F120	Field drain	n/a	n/a	10.5m min	0.25m	0.3m	Modern field drain	Linear field drain running N-S and connecting with drain F105 to N. Part of modern field drainage system. U-shaped cut carrying 4.5" corrugated ceramic pipe overlaid by sngular gravel	n/a	F119	F1	5
F121	Pit	n/a	F122	1.57m	0.72m	0.31m	Irregularly-shaped post-medieval pit	Irregularly-shaped pit orientated N-S. Steep-sided to E, more gradual elsewhere, base uneven	n/a	Natural	F122	5
F122	Fill of pit	F121	n/a	1.57m	0.72m	0.31m	Fill of pit	Fill of post-medieval pit. Dark brown and grey mottled clay with moderate stone inclusions as well as occasional red brick fragments and 1 sherd of post-medieval pottery	Post-medieval pottery	F121	F1	5
F123	Spread	n/a	n/a	9.4m	3.5m	0.1m	Organic spread	Organic mid to dark brown soft spongey peat-like deposit. Contained fragments of wood. Similar to F100, F102 and F103	n/a	Natural	F113	5
F124	Spread	n/a	n/a	1.8m	1.4m	0.12m	Organic spread	Organic mid to dark brown soft spongey peat-like deposit. Contained fragments of wood. Similar to F100, F102, F103 and F123	n/a	Natural	F113	5
F125	Ditch	n/a	F126, F129, F	13m	1.5-1.77m	0.67-0.75m	Cut of medieval ditch	Cut of a NW-SE running medieval ditch. Possibly same as ditches F1005 and F1009 to S. U-shaped in profile with a flat base. Sharp break of slope at top and base, sides at 60-75-degree angle.	n/a	Natural	F131	5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F126	Fill of ditch	F125	n/a	13m	1.28-1.75m	0.18-0.25m	Fill of medieval ditch	Upper fill of medieval ditch. Beige clayey silt with inclusions of angular pebbles, snail shell, medieval pottery, flint, metal, oxidised clay and slag	Dublin-type ware, Dublin-type fineware, Leinster Cooking Ware, flint flake, vitrified furnace lining, slag, metal, animal bone	F129, F130	F174	5
F127	Cancelled											
F128	Fill of linear	F101	n/a	4m min.	1.55m	0.4m	Upper fill of linear pool	Upper fill of organic rich linear pool. Brownish grey sandy clay with less organic content than the lower fill F102.	SS#28	F102	F177	5
F129	Fill of ditch	F125	n/a	2.08m	0.35m	0.04-0.12m	Fill of medieval ditch	Discrete deposit of industrial waste on the western side of the medieval ditch below upper fill F126 and overlying fill F130. Very hard, brittle dark blackish brown metallic material with rust coloured patches. Inclusions of vitrified material and occasional small angular pebbles	SS#30	F130	F126	5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F130	Fill of ditch	F125	n/a	13m	0.95-1.74m	0.16-0.42m	Fill of medieval ditch	Middle fill of medieval ditch, intentional backfilling event. Redeposited natural mottled yellow and grey boulderclay with inclusions of decayed stone, snail shell, animal bone, medieval pottery and oxidised clay. Light greyish brown silt lenses apparent to the SE end of the ditch may suggest a re-cutting event within the ditch, though this was not clear	Furnace lining, Dublin-type fineware, Leinster Cooking Ware, oxidised clay, coal, animal bone, S#42	F131	F129	5
F131	Fill of ditch	F125	n/a	13m	0.63-1.41m	0.11-0.47m	Fill of medieval ditch	Basal fill of medieval ditch, initial silting up of ditch. Light greyish brown silt with occasional pebbles, stonier and grittier towards the base. Some larger stones 0.2 x 0.4 x 0.5m were also noted in this fill. Two brick fragments retrieved from the S end suggest the ditch was still in use during the post-medieval period	Dublin-type fineware, flint core, vitrified furnace lining, brick, animal bone, flint	F125	F130	5
F132	Gully	n/a	F133	1.3m	1m	0.15m	Cut of gully	NE-SW running drain or gully running into ditch F125. Truncated to east by modern field boundary F174. Gradual break of slope at top, concave at base, base generally flat sloping slightly to NE	n/a	?	F133	5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F133	Fill of gully	F132	n/a	1.3m	1m	0.15m	Fill of gully	Fill of linear gully. Blackish grey compact gravelly clay overlying a layer of small sub-angular stones at the base of the cut. Originally thought to be possible mettling, this does not seem to be the case, more the initial phase of the filling of the feature	n/a	F132	F174	5
F134	Ditch	n/a	F135, F136, F	10m min.	1.25-1.45m	0.87-1.2m	Cut of barrow	Northern segment of curving ditch of an annular ring barrow that continues beyond the limit of excavation to S. V-shaped in some places with a narrow base, more U-shaped in others with a broader base. Sides at c. 70-degrees. Sharp break of slope at top and base, base relatively flat and level. Internal sides slightly convex to E and W, less apparent to N.	n/a	Natural	F147	2
F135	Fill of ditch	F134	n/a	c. 5.2m	1.05m	0.26m	Fill of barrow	Upper fill of barrow. Pale orange compact silty clay with occasional pebbles. Silting up of barrow surviving to the W.	Burnt bone, bone, flint	F136	F1	2
F136	Fill of ditch	F134	n/a	10.2m	0.95m	0.18m	Fill of barrow	One of the upper fills of the barrow. Light greyish brown to beige clayey silt with occasional pebbles and charcoal flecking. Present throughout the barrow. Same as F139	bone, burnt bone, SS#31, SS#33	F157, F153	F136	2

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F137	Fill of ditch	F156	n/a	13.9m	0.62-1.4m	0.13-0.18m	Fill of shallow ditch	Fill of shallow ditch F156. Compact grey clay with brown mottling in part and occasional pebble inclusions. Same as F157	n/a	F138	F161, F158	2
F138	Fill of ditch	F134	n/a	c. 2m	0.5m	0.2m	Fill of barrow	Upper fill of barrow F134 to the east. Heavy marly light grey silty clay with some orange mottling. Very occasional charcoal flecking.	n/a	F139	F156	2
F139	Fill of ditch	F134	n/a	10m min.	0.8m	0.18m	Fill of barrow	Fill of barrow F134. Dark grey soft silty clay with rare charcoal flecks and very few pebbles.	n/a	F140	F138	2
F140	Fill of ditch	F134	n/a	unknown	0.45m	0.1m	Fill of barrow	Fill of barrow F134. Dark grey gritty silty clay with occasionalmottling of yellow sandand very occasional charcoal flecks	n/a	F141	F139	2
F141	Fill of ditch	F134	n/a	unknown	0.15m	0.18m	Fill of barrow	Fill of barrow F134. Plasticy light grey silty clay with no stone inclusions. Part of the silting up phase	n/a	F152	F140	2
F142	Fill of ditch	F134	n/a	10m min.	0.4m	0.14m	Fill of barrow	Fill of barrow F134. Variation of fill F152.	n/a	F151	F141	2
F143	Fill of ditch	F134	n/a	10m min.	0.4m	0.15m	Fill of barrow	Fill of barrow F134. Variation of fill F152.	n/a	F151	F141	2
F144	Fill of ditch	F134	n/a	10m min.	0.6m	0.18m	Fill of barrow	Fill of barrow F134. Variation of fill F152.	n/a	F151	F141	2
F145	Fill of ditch	F134	n/a	c. 2m	0.53m	0.2m	Fill of barrow	Fill of barrow F134. Same as F151.	n/a	F150, F148	F152	2
F146	Fill of ditch	F134	n/a	10m min.	0.55m	0.38m	Fill of barrow	Fill of barrow F134. Same as F150	n/a	F147	F151	2

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F147	Fill of ditch	F134	n/a	10.2m	0.55m	0.25m	Fill of barrow	Basal fill of barrow F134. Dark grey slightly gritty clayey silt with frequent angular and sub-angular stones. Loose compaction	Burnt bone, bone, flint, SS#32, SS#37	F134	F148, F149	2
F148	Fill of ditch	F134	n/a	10.2m	0.8m	0.1m	Fill of barrow	Lower fill of barrow F134. Mottled orange and dark grey clayey sand, compact with frequent small stones. Present along the internal side of the barrow. Slumping event along inner side of the barrow	n/a	F147	F151	2
F149	Fill of ditch	F134	n/a	c. 5m	0.4m	0.08m	Fill of barrow	Fill in lower part of barrow F134. Gritty orange sand with occasional burnt bone inclusions. Present in the northern portion of the barrow and associated with fill F150 (possible base of this slumping event)	animal bone	F147	F150	2
F150	Fill of ditch	F134	n/a	c. 8.5m	0.35m	0.25m	Fill of barrow	Fill in lower part of barrow F134. Mottled orange and dark grey sandy clay with some inclusions of snail shell. Present along external side of the barrow. Slumping event along outer side of the barrow	SS#40, SS#41	F147	F151	2

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F151	Fill of ditch	F134	n/a	c. 4m min.	0.3-0.53m	0.11-0.2m	Fill of barrow	Fill in lower lower part of barrow F134. Dense smooth grey clayey silt. Water-laid deposit, silting up of ditch after the slumping of the edges. Ditch was quite V-shaped following the slumping events with this fill forming in a relatively narrow channel	SS#34, fossil/bone, burnt bone?, flint	F150, F148	F152	2
F152	Fill of ditch	F134	n/a	10m min.	0.84-1.1m	0.2-0.35m	Fill of barrow	Fill of barrow F134. Mottled grey and orangey yellow silty clay associated with the deposition of large rounded boulders and stones in the barrow.	burnt bone?, animal bone, quartz pebbles, SS#35, SS#38, SS#39	F151	F141, F153 , F155, F175	2
F153	Fill of ditch	F134	n/a	c. 1m	0.31m	0.15m	Fill of barrow	Fill of barrow F134. Localised patch of orangey yellow clay in northern portion of barrow ditch	n/a	F152	F136	2
F154	Fill of ditch	F134	n/a	c. 1m	0.63m	0.06m	Fill of barrow	Fill of barrow F134. Orangey brown silty sand with occasional stones. Possibly part of one of the slumping events on the internal and external sides of the ditch	n/a	F147	F148	2
F155	Fill of ditch	F11	n/a	unknown	2.2m	0.25m	Fill of ditch	Fill of post-medieval ditch F11. Light greyish brown clay	n/a	F20	F18	2

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F156	Ditch	n/a	F137/F157	13.9m	1.4m	0.18m	Cut of shallow ditch	Shallow linear ditch running NNE-SSW and partially truncating upper fill of barrow F138. Shallow U-shaped profile with gently sloping sides and a rounded base	n/a	F138	F157	2
F157	Fill of ditch	F156	n/a	13.9m	0.62-1.4m	0.13-0.18m	Fill of ditch	Fill of shallow ditch F156. Compact grey clay with brown mottling in part and occasional pebble inclusions. Same as F137	SS#36	F156	F11, F158, F161	2
F158	Ditch	n/a	F159, F163, F	18m	1.65m	0.84m	Cut of field ditch	Cut of linear field ditch running NW-SE. Sharp break of slope at top, gently sloping concave sides and gradual break of slope at base, base flat	n/a	F19	F165	2
F159	Fill of ditch	F158	n/a	18m	0.65m	0.25m	Fill of field ditch	Upper fill of field ditch F158. Mid-brownish orange silty clay of firm compaction	n/a	F163	F1	2
F160	Field drain	n/a	n/a	18m	0.25m	0.25m	Post-medieval field drain	Linear field drain running NW-SE along NE side of ditch F158. U-shaped cut carrying a 4.5" corrugated ceramic pipe. Lower fill of cut is a sticky grey clay and upper fill is gravel	n/a	F164	F1	2
F161	Ditch	n/a	F162	3.56m	0.73m	0.18m	Cut of shallow ditch	Shallow and slightly irregular linear ditch cutting along eastern side of ditch F156. Concave sides, relatively flat base, gentle break of slope at the base. Late agricultural drainage feature	n/a	F157	F162	2

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F162	Fill of ditch	F161	n/a	3.56m	0.73m	0.18m	Fill of shallow ditch	Orange and brown mottled silty clay with moderate stone inclusions.	n/a	F161	F1	2
F163	Fill of ditch	F158	n/a	18m	0.95m	0.2m	Fill of field ditch	Fill of field ditch F158. Mid-grey to black sandy clay with frequent inclusions of angular pebbles, gritty texture and firm compaction. Redeposited natural.	n/a	F164	F159	2
F164	Fill of ditch	F158	n/a	18m	1.55m	0.6m	Fill of field ditch	Fill of field ditch F158. Soft mid-orangey brown silty clay with occasional shell inclusions. Cut along E side by ceramic drain F160.	n/a	F165	F163, F160	2
F165	Fill of ditch	F158	n/a	18m	1.05m	0.28m	Fill of field ditch	Basal fill of field ditch F158. Very soft mid-brownish grey clayey silt with inclusions of frequent large stones measuring 0.38 x 0.2 x 0.25m, presumably to aid drainage	n/a	F158	F164	2
F166	Fill of depression	F168	n/a	25m	2-4m	0.2m	Fill of depression	Upper fill of natural linear depression. Light grey marly clay of firm compaction with patches of dark brown peaty material towards the E end.	n/a	F167	F173	5
F167	Fill of depression	F168	n/a	25m	5m	0.6m	Fill of depression	Basal fill of natural linear depression. Firm dark greyish brown clay with organic patches in places.	n/a	F168	F166	5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F168	Natural depression	n/a	F166, F167	25m	5m	0.6m	Natural linear depression	Natural linear depression orientated E-W possibly associated with F101 to the E. Gently sloping sides and flat base and cut by several land drains. Continuation of wetland area in Area 5 with natural pools and hollows evident	n/a	Natural	F167	5
F169	Ditch	n/a	n/a				Medieval ditch	Medieval ditch running NE-SW identified in Field 12 during testing programme	Dublin-type ware, Dublin-type fineware, iron			4
F170	Pit	n/a	n/a	1m	0.66m min.	0.54m	Pit	Pit located beside townland boundary where compound is currently located identified during the testing programme	Furnace lining, flint, chert			2
F171	Fill of pit	F168	n/a	25m	2/4m	0.2m	Fill of depression	Upper fill of natural linear depression identified during testing programme. Light grey marly clay of firm compaction with patches of dark brown peaty material towards the E end. Same as F166	Flint core and blade	F167	F1	5
F172	Pit	n/a	n/a				Pit	Large light grey clay filled pit to W of gullies marking possible avenue	Neolithic pottery	Natural	F1	1W
F173	Layer	n/a	n/a	20m min.	5m min.	0.05m	Layer	Layer overlying natural depression F168 at northern end of site.	Iron	F166	F1	5

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F174	Field boundary ditch	n/a	n/a	158m min.	8m	0.7-1m	Field boundary ditch	NW-SE running field boundary ditch carrying a stream. Located between Fields 12 and 17 towards the eastern end of the development	n/a	F133, F126	F1	4, 5
F175	Fill of ditch	F134	n/a	unknown	0.35m	0.19m	Fill of barrow	Fill of barrow ditch F134. Greyish brown smooth plasticy clayey silt with occasional small stones. Probably same as F141	n/a	F152	F157	2
F176	Fill of ditch	F134	n/a	unknown	0.62m	0.1m	Fill of barrow	Fill of barrow ditch F134. Mid-brown clayey silt, possibly slightly organic, with occasional charcoal flecking. Part of silting up event. Probably same as F140	n/a	F175	F136	2
F177	Fill of natural hollow	F101	n/a	2m min.	4.04m	0.18m	Fill of natural hollow	Upper fill of natural hollow F101. Organic deposit similar to the lower layer F102	n/a	F128	F107, F111	5
F178	Ditch	n/a	F183	8.4m	0.8m	0.05m	Cut of shallow curvilinear ditch	Curvilinear shallow ditch running north-south at its northern end and curving to run northeast-southwest at its southern end, running towards hollow F101. Very shallow, only the base of the feature survives. Base somewhat uneven	n/a	Natural	F179	5
F179	Re-cut of ditch	n/a	F140, F141	unknown	0.46m	0.25m	Re-cut of ditch F134 to east. Possible posthole	Narrow U-shaped re-cut section through backfilled ring barrow F134 to west.	n/a	F152	F141	2

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F180	Re-cut of ditch	n/a	F175, F176	unknown	0.62m	0.29m	Re-cut of ditch F134 to west. Possible posthole	Narrow U-shaped re-cut section through backfilled ring barrow F134 to west.	n/a	F155	F175	2
F181	Fill of ditch	F182					Slump within barrow	Late slump along internal side of ditch to the west. Mottled greeny grey to orangey grey gritty sand.	n/a	F152	F180	2
F182	Re-cut of ditch	n/a	F151, F152, F181				Re-cut of ditch F134	Possible re-cut of ditch F134 apparent in all sections	n/a	F148, F150	F151	2
F183	Fill of ditch	F178	n/a	8.4m	0.8m	0.05m	Fill of curvilinear ditch	Fill of shallow curvilinear ditch F178. Dark grey clay with patches of peaty organic material.	n/a	F178	F105, F114, F106	5
F1000	Pit	n/a	F1001	3.04m	0.4-1.4m	0.12-0.46m	Cut of linear pit, possibly accessing watertable	Slightly irregular linear pit orientated north-south. Divided into three sections getting progressively wider and deeper to the north. Sharp break of slope at the top, concave sides	n/a	Natural	F1001	4
F1001	Fill of pit	F1000	n/a	3.04m	0.4-1.4m	0.12-0.46m	Fill of linear pit	Light grey marly clay with occasional pebble inclusions and rare charcoal flecks. A layer of redeposited natural was present along the west side of the pit 0.3m in depth and 0.3m in width relating to a slump along that side. Athin layer of dark grey sandy clay formed the base of the fill 0.1m in depth	n/a	F1000	F1	4

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F1002	Pit or treebole	n/a	F1003, F1004	1.6m	0.9m	0.35m	Cut of probable tree bole	Irregularly-shaped pit or tree bole. The top of the cut was well-defined with sharp edges, sloping sides and a concave base. Irregularity of cut suggests it may be natural stone socket or tree bole	n/a	Natural	F1004	4
F1003	Fill of pit	F1002	n/a	1.6m	0.9m	0.35m	Fill of tree bole	Basal and main fill of possible tree bole F1002. Light grey fine clay marl with occasional flecks of decayed stone	n/a	F1004	F1	4
F1004	Fill of pit	F1002	n/a	0.8m	0.4m	0.2m	Fill of tree bole	Upper fill of possible tree bole F1002 located in the northeast. Mottled orangey brown silty clay likely to be redeposited natural	n/a	F1002	F1003	4
F1005	Ditch re-cut	n/a	F1006	22m min.	1.5m	0.3m	Re-cut of ditch F9	Wide flat-bottomed re-cutting of Ditch F9. Linear ditch meandering slightly running northwest-southeast. Sharp break of slope at the top and base, relatively straight-sided	n/a	F1033	F1006	4
F1006	Fill of ditch	F1005	n/a	2m min.	1.5m	0.3m	Fill of ditch re-cut	Greyish brown clayey silt with moderate stone inclusions. Loose compaction	n/a	F1005	F1	4
F1007	Ditch re-cut	n/a	F1008, F1032	22m min.	0.7m	0.5m	Re-cut of ditch F9	U-shaped recutting of Ditch F9. Linear ditch meandering slightly running northwest-southeast. Wide concave base, steep sided with sharp break of slope at the top and concave break of slope at the base	n/a	F1031	F1008	4

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F1008	Fill of ditch	F1007	n/a	2m min.	0.15-0.35m	0.1m	Fill of ditch re-cut	Light brown silty clay. Appears to be a slump from the west side of the ditch	n/a	F1007	F1032	4
F1009	Ditch	n/a	F1010, F1030	22m min.	0.65m	0.75m	Cut of ditch. Possible precursor to field boundary ditch to east	Narrow U-shaped ditch, meandering slightly running northwest-southeast. Sharpmbreak of slope at top and base, steep sides and concave base. Narrower than later re-cuts.	n/a	Natural	F1010	4
F1010	Fill of ditch	F1009	n/a	2m min.	0.4m	0.1m	Fill of ditch	Primary fill of Ditch F1009. Light grey clay marl	n/a	F1009	F1030	4
F1011	Ditch	n/a	F1012	10m min.	2.3m	0.4m	Cut of ditch	Linear ditch running northwest-southeast possibly associated with Ditch re-cut F1005. Wide flat-bottomed ditch with steep sides and sharp breaks of slope at the top and base	n/a	Natural	F1012	4
F1012	Fill of ditch	F1011	n/a	10m min.	2.3m	0.4m	Fill of ditch	Fill of linear ditch F1011. Mid-greyish brown silty clay with occasional stone inclusions	Animal bone	F1011	F1	4
F1013	Pit	n/a	F1014, F1015	2.8m	1.35m	0.23m	Cut of charcoal-filled pit	Sub-rectangular pit or trough orientated east-west with a relatively flat base and steep sides. Sharp breaks of slope at the top and base. Truncated slightly in monitoring. Five stake-holes are cut into the base of the pit.	n/a	Natural	F1017, F1019, F1021, F1023, F1025	4

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F1014	Fill of pit	F1013	n/a	1.8-2.1m	0.9m	0.02-0.16m	Fill of charcoal-filled pit	Black silty clay with frequent inclusions of fire-cracked stones and charcoal flecking. Loose compaction	SS#4	F1015, F1018, F1022, F1024, F1026	F1016	4
F1015	Fill of pit	F1013	n/a	1.2m	0.35m	0.12m	Fill of charcoal-filled pit	Basal fill of charcoal-filled pit or trough F1013. Lighjt grey silty clay with mottled orange inclusions and moderate charcoal flecking. Moderate compaction	n/a	F1027	F1014	4
F1016	Fill of pit	F1013	n/a	0.8m	0.8m	0.1m	Fill of charcoal-filled pit	Upper fill of charcoal-filled pit F1013. Grey silty clay with some root disturbance. Loose compaction	n/a	F1014	F1	4
F1017	Stakehole	n/a	F1018	0.1m	0.1m	0.12m	Cut of stake-hole	Circular stake-hole cut into the base of charcoal-filled pit F1013 near its northern side.	n/a	F1013	F1018	4
F1018	Fill of stakehole	F1017	n/a	0.1m	0.1m	0.12m	Fill of stake-hole	Loosely compacted dark blackish grey silt with charcoal and fire-cracked stone inclusions	Possible pottery	F1017	F1014	4
F1019	Stakehole	n/a	F1020, F1027	0.1m	0.1m	0.13m	Cut of stake-hole	Circular stake-hole cut into the base of charcoal-filled pit F1013 near its southeastern corner	n/a	F1013	F1020	4
F1020	Fill of stakehole	F1019	n/a	0.1m	0.1m	0.08m	Fill of stake-hole	Basal fill of stake-hole F1020. Loosely compacted dark blackish grey silt with charcoal and fire-cracked stone inclusions	SS#8	F1019	F1027	4

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F1021	Stakehole	n/a	F1022	0.12m	0.12m	0.15m	Cut of stake-hole	Circular stake-hole cut into the base of charcoal-filled pit F1013 near its southeastern corner and west of stake-hole F1019	n/a	F1013	F1022	4
F1022	Fill of stakehole	F1021	n/a	0.12m	0.12m	0.15m	Fill of stake-hole	Loosely compacted dark blackish grey silt with charcoal and fire-cracked stone inclusions	n/a	F1021	F1014	4
F1023	Stakehole	n/a	F1024	0.1m	0.1m	0.15m	Cut of stake-hole	Circular stake-hole cut into the base of charcoal-filled pit F1013 along its southern side	n/a	F1013	F1024	4
F1024	Fill of stakehole	F1023	n/a	0.1m	0.1m	0.15m	Fill of stake-hole	Loosely compacted dark blackish grey silt with charcoal and fire-cracked stone inclusions	SS#9	F1023	F1014	4
F1025	Stakehole	n/a	F1026	0.12m	0.12m	0.2m	Cut of stake-hole	Circular stake-hole cut into the base of charcoal-filled pit F1013 along its southwestern side	n/a	F1013	F1026	4
F1026	Fill of stakehole	F1025	n/a	0.12m	0.12m	0.2m	Fill of stake-hole	Loosely compacted dark blackish grey silt with charcoal and fire-cracked stone inclusions	SS#10	F1025	F1014	4
F1027	Fill of stakehole	F1019	n/a	0.1m	0.1m	0.05m	Fill of stake-hole	Upper fill of stake-hole F1019. Clay marl	n/a	F1020	F1015	4
F1028	Cut of pit	n/a	F1029	0.5m	0.5m	0.33m	Cut of pit	Circular pit to the northwest of charcoal-filled pit F1013. Slightly convex sides becoming near vertical 0.15m from the top. Flat base, sharp breaks of slope	n/a	Natural	F1029	4

Context	Type	Fill of	Filled by	L. (m)	W. (m)	D. (m)	Interpretation	Description	Finds/ Ecofacts	Context Above	Context Below	Area
F1029	Fill of pit	F1028	n/a	0.5m	0.5m	0.33m	Fill of pit	Grey silty sand with orange mottling	n/a	F1028	F1	4
F1030	Fill of ditch	F1009	n/a	2m min.	0.6m	0.25m	Fill of ditch	Compact dark greyish brown redeposited natural to the east mixed with a mid-grey clayey silt to the west. Possibly a backfilling of the ditch or dumping of bank material into the ditch	n/a	F1010	F1031	4
F1031	Fill of ditch	F1009	n/a	2m min.	0.65m	0.1m	Fill of ditch	Upper fill of Ditch F1009. Mottled light yellowish brown gritty sandy silt with occasional pebbles.	n/a	F1030	F1007	4
F1032	Fill of ditch	F1007	n/a	2m min.	0.35m	0.05m	Fill of ditch re-cut	Mottled grey clay marl. Main water-borne silting up of the ditch	n/a	F1008	F1033	4
F1033	Fill of ditch	F1007	n/a	2m min.	0.7m	0.2-0.45m	Fill of ditch re-cut	Upper fill of Dithc re-cut F1007. Beige compact clay with occasional stones and patches of redeposited natural	n/a	F1032	F1005	4
F1034	Ditch	n/a	F1035	10m min.	0.65m	0.25m	Cut of shallow ditch	Cut of N-S running shallow linear ditch in the northern end of Field 12. This was a shallow linear ditch running towards medieval ditch F169. It was tested but largely preserved in situ. Shallow U-shaped cut with a flat base	n/a	Natural	F1035	4
F1035	Fill of ditch	F1034	n/a	10m min.	0.65m	0.25m	Fill of shallow ditch	Fill of shallow linear ditch F1034. Brownish grey clayey silt.	n/a	F1034	F1	4