

**Limerick Southern Ring Road, Phase II
E2083, Cratloemoyle Site 1, Co. Clare**

Final Archaeological Excavation Report

for

Limerick County Council

Fiona Reilly

Job J04/20

(NGR 151152E 159479N to 151623E 159327N)

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December 2010

Summary

Scheme name: Limerick Southern Ring Road II

Ministerial Directions reference number: A005/000

Site name: E2083, Cratloemoyle Site 1, Co. Clare

Scheme sub-number: A005/2012

Record number: E2083

Townland: Cratloemoyle

Parish: Killeely

Barony: Bunratty Lower

County: Clare

NGR: 151152E 159479N to 151623E 159327N

OS 6" Sheet No: Co. Clare Sheet 62

Chainage: 9700

Client: Limerick County Council, Mid West National Road Design Office, Lissanalta House, Dooradoyle, Co. Limerick

Landowner: Limerick County Council, County Hall, Dooradoyle, Limerick

Naturally occurring geology: Outcropping limestone bedrock with glacial till (pinkish orange silty clay)

TVAS Ireland job no: J04/20

Licence eligible director: Fiona Reilly

Report author: Fiona Reilly

Site activity: Excavation

Site area: 1139.5m²

Date of fieldwork: 14th June-10th August 2005

Date of report: 13th December 2010

Summary of results: Six areas were investigated revealing a burnt stone pit, a post-medieval building, ditches, a lime kiln and a single inhumation burial. The site is adjacent to Cratloemoyle Castle, a 16th century tower house, and some of the features are probably related to domestic or military activity at the castle.

Monuments identified: Iron Age pit, post-medieval pits, ditches, inhumation burial, lime kiln and house.

Location and reference of archive: The primary records (written, drawn and photographic) are currently held at TVAS Ireland Ltd, Ahish, Ballinruan, Crusheen, Co. Clare.

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by Fiona Reilly

Introduction

This report documents the final results of an archaeological excavation of an Iron Age pit, post-medieval ditches, inhumation burial, lime kiln and house (E2083) on the route of the Limerick Southern Ring Road Phase II, Cratloemoyle, Co. Clare (NGR 151152E 159479N to 151623E 159327N) (Fig. 1). The excavation forms part of the Limerick Southern Ring Road, Phase II, Northern Archaeological Contract.

A preliminary archaeological excavation report was submitted in December 2007 (Reilly 2007).

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

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

Policy and Guidelines on Archaeological Excavation (DAHGI 1999b)

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

The archaeological work was carried out following Ministerial Direction given under the National Monuments (Amendment) Act 2004. The record number assigned to the site is E2083.

Project background

The Limerick Southern Ring Road Phase II (LSRR II) will extend west from the end of the Limerick Southern Ring Road Phase I at Rossbrien, to the existing N18 near Cratloe Castle. Once completed, LSRR II will form the final part of a southern bypass network around Limerick City, linking all converging routes.

LSRR II incorporates a fourth crossing of the River Shannon and involves the construction of approximately 10 km of new dual carriageway and 2 km of associated link roads and side roads. The PPP (Public Private Partnership) project involves an immersed tube tunnel, approximately 900 m in length, linking the townland of Coonagh West, on the northern bank, with the townland of Bunlicky on the southern bank of the Shannon. Material extracted from the river during tunnel construction is deposited across 27 ha of ground in Coonagh West.

The road scheme is in accordance with European, national and regional roads objectives and forms part of the development strategy for national primary roads as outlined in the National Development Plan (2007-2013). LSRR II is a joint project of Limerick County Council, Clare County Council and Limerick City Council in partnership with the National Roads Authority (NRA).

NRA Project Archaeologist Celie O Rahilly requested a series of archaeological investigations along the route of the new road. This archaeological work included assessment of sites previously recognised and prospection for sites without surface expression by means of mechanical test trenching. A number of archaeological sites were confirmed or recognised during this testing. As preservation *in*

situ was not a reasonable option, the resolution strategy for these sites was preservation by record, i.e. full archaeological excavation.

For the purposes of the archaeological component of the road scheme the project was divided into two contract lots: Southern and Northern Archaeological Services Contracts with the River Shannon separating the two elements.

The archaeological fieldwork and post-excavation work were funded by Limerick County Council through the National Roads Authority under the National Development Plan.

Location, topography and geology

The site was located in the townland of Cratloemoyle, parish of Killeely barony of Lower Bunratty, Co. Clare and was located between NGR 151152E 159479N and 151623E 159327N (Figs 1-3) in a narrow strip along the northern side of the N18.

The general topography of the road route is flat pasture with reeds, intersected by deep ditches draining into the River Shannon. A thin layer of topsoil typically overlies fine dark blue/grey alluvial clay that deepens toward the River Shannon. The ground on the north bank of the river that will be used by the road and the dispersal area for material extracted during tunnel construction has been formed by the receding Shannon and by relatively modern reclamation (Deery 2003, Healy and Hickey 2002, Hull 2005). The modern ground surface, in most of the northern portion of the road route, lies between 0.50 m below and 2 m above Ordnance Datum (OD). Slightly higher ground (up to 4 m above OD) was encountered adjacent to the village of Coonagh, at the Clonmacken roundabout and at Cratloe Castle. In these locations a pinkish sandy clay with gravel (glacial till) was observed.

In the area of Cratloemoyle Site 1 (E2083) the topography is undulating pasture. A layer of topsoil typically overlies glacial till. The site lay along a long narrow strip to the north of and parallel to the N18, straddling two pasture fields which were separated from each other by a deep boundary ditch. The ground in the central area, on either side of the boundary ditch, had been built up by as much as 2.50 m to facilitate an N18 road improvement scheme in last few decades. Cratloemoyle tower house (CL062:021) lay 32 m to the north of the western end of the site. The ditch dividing the two fields continued under the N18 to the south and meandered along a natural course from the north-west.

The topsoil overlying the archaeological deposits varied from 0.20 m to 0.25 m. The underlying natural deposits (boulder clay or alluvial material) varied from 0.40 m to 3.70 m below modern ground level.

The site lay at approximately 5 m above Ordnance Datum (OD).

Archaeological and historical background

As part of the Environmental Impact Statement (EIS) for this road project, a Cultural Heritage and Archaeology Report (Deery 2003) was commissioned. This assessment of archaeology and built/cultural heritage was based on a desktop study of published and unpublished documentary and cartographic sources, supported by a field inspection and aerial inspection of the proposed route and an underwater archaeological assessment of Ballinacurra Creek, the River Shannon, Meelick Creek, and Cratloe Creek.

As well as noting previously recognised monuments ranging in date from the prehistoric to modern periods, the EIS indicated the potential for further archaeological deposits to be found along the road route. The following is a summary, by period, taken in part from the EIS and from further research:

Prehistoric

Archaeological research, and the distribution of sites on the Shannon Estuary, suggests that the estuary was the focus of settlement and of traffic/trading during the prehistoric period. Intertidal and dry land surveys indicate that quite significant Bronze Age populations were active along the river shoreline and its hinterland, with settlements extending far inland. The earliest evidence for prehistoric activity in the study area is found adjacent to Coonagh East where a Neolithic submerged forest was exposed in peats on the upper foreshore at Meelick Rocks (approximately 200 m west of the proposed route). A possible Neolithic stone axe was also found (NMI 95E0228: 3) with a variety of animal bones on the lower part of this foreshore in peats that were dated to the Mesolithic.

The Bronze Age (2300–700 BC) saw new developments in agriculture including the introduction of tillage. This period also saw new developments in ritual activity. A variety of burial monuments date to this period including wedge tombs, cairns, tumuli and barrows. Evidence for Late Bronze Age (1100–700BC) activity is also found in the study area to the north of the Shannon in Clonmacken, where a fragmented Bronze Age sword was found during the construction of the Ennis Road. An isolated Late Bronze Age cremation burial was excavated at Clonmacken during this road project (E2109, Ruttle and Taylor 2010).

Fulachtaí fia (or burnt stone mounds) were also recognised as monuments likely to be found on the low-lying wetlands adjacent to the River Shannon. Indeed, a number of *fulachtaí fia* and burnt stone spreads were excavated as part of this road project. Sites E2086 (Taylor 2010a), E2093 (Reilly 2010a), E2092 (Reilly 2010b) and E2897 (Delaney 2008) lay within 3 km to the south-east and two examples were found within Site E2091, also 3 km to the south-east (Taylor 2010b). An additional example was revealed during monitoring (E2456) adjacent to Cratloemoyle Castle (O'Mahony 2010, 8-9).

Early Medieval (AD 450–1169)

An enclosure thought to be of this period is located in Coonagh East (LI005:056) 70 m north of the proposed route. Aerial photography in the vicinity of the site revealed the presence of possible associated rectilinear field systems, which radiate from the site in a south-south-east direction.

A circular ditched enclosure was excavated 3 km to the south-east of Site E2083 during this project. Site E2091 produced artefactual material that dates it to the early medieval period (Taylor 2010b).

Medieval (AD 1169–1600)

There are several later castles and 'sites of' castles situated in the vicinity of the proposed route, testifying to the intensity of Anglo-Norman and later medieval settlement in the East Limerick area. These castles take the form of tower houses - the small, fortified residences of the gentry from the fourteenth to sixteenth centuries. Examples of tower houses in the vicinity of the proposed road on the north side of the Shannon include the sites or ruins of Coreen Castle (LI005:001) in Coonagh West in County Limerick and Cratloekeel (CL062:018), Cratloemore (CL062:014) and Cratloemoyle (CL062:021) which lie in County Clare. A church is also associated with the Cratloemoyle tower house.

Children's burial grounds, sometimes known as killeens (*cillín*) or caldraghs (*ceallúrach*), are patches of unconsecrated ground where unbaptised babies or victims of suicide or drowning were buried. There is a children's/infants' burial ground (LI005:004) approximately 100 m north of the proposed Clonmacken Link Road in the townland of Coonagh West.

Post-medieval and modern

Brick manufacturing on land reclaimed in the modern period on both the north and south banks of the Shannon estuary has been recognised from documentary and cartographic sources (Deery 2003). Brick Holes and Brick Fields are marked on the 1841 Ordnance Survey (OS) 1st Edition maps at locations along the road route and these indicate the exploitation of the underlying clay. The bricks for the buildings of later 18th century Limerick are very likely to have been sourced from the area described in

this report. Indeed, Barrington's Pier (5 km to the south-east) was built for boats to bring bricks from the Coonagh brickfields to the city in the later 18th century (OL 1976).

Brick clamps (or kilns) and brick deposits were excavated during this road project at Site E2080 (Reilly 2010c), E2089 (Reilly 2010d) and at E2106 (Ruttle 2008) 3 km to the south-east of E2083.

History of Cratloe and Cratloemoyle Castle

Cratloe occupies a strategic location as it is on a major routeway from Munster to Connacht where mountains to the north and the Shannon to the south restrict travellers to a relatively narrow passage. It is therefore not surprising that three tower houses are to be found in the locality, Cratloemoyle, Cratloekeel and Cratloemore. Cratloemoyle Castle (CL062:021) lies just 32 m north of the road route.

The area of Cratloe is mentioned as early as AD 379 in the Annals of the Four Masters as the location where the widow of Eoghy, King of Ireland, poisoned her brother who had been holding the throne until her young son came of age (Ua Cróinín and Breen 1991).

A 10th century poem written by Cormacan Eigeas, the Bard of the King of Aileach (from Ulster) mentions Cratloe:

*I did not see since I left my house,
A pass like unto Cratloe
Book of Invasion, RIA (quoted in O'Donovan and Curry 1997, 256-7).*

There are a number of references to 16th century skirmishes and battles at Cratloe. In 1510 the MacNamaras were involved in a battle at Cratloe that resulted in the defeat of the Earl of Kildare's army who had marched into Thomond. In 1564 the residents of the area rose up against the Earl who had raided them for cattle and killed nearly 100 of his men (Annals of the Four Masters in Ua Cróinín and Breen 1991).

It is from this period that Cratloemoyle Castle (also known as Cratloe Castle) dates. The castle is a tower house, with no evidence of a bawn, which was built by the MacNamaras in the 16th century. It is one of three in the immediate vicinity all built by the MacNamaras and known as the Cratallaghs in 1682 (Molyneux reproduced 1998, 63). In 1570 the castle was owned by John (called Fionn), son of Tadhg MacConmara (Ua Cróinín and Breen 1991, 26) and later passed in succession to Cumeadha, John, Daniel, Donagh and John (High Sherriff of Clare, 1689 and Member for the County in James II parliament 1689-90). During the Cromwellian settlement of the 1650s Donagh lost his extensive lands. In 1663 his son John made a petition to Charles II for his family's lands to be restored as they were loyal to the crown. He was partially successful in that the court found in his favour but having found that Pierce Creagh and Laurence White, transplanted Catholics, had already been assigned some of the land only Cratloemoyle, Ballymorris and Garryncurra were restored to him (Frost 1893, 393). Cratloemoyle which had been solely in the hands of his father Donogh in 1641 was now divided between John and Sir Henry Ingoldsby (*Books of Survey and Distribution* transcribed in Frost 1893, 411). Cratloemoyle was passed to John's son Francis and finally to the last of the main line of MacNamaras, John who died without issue about 1780 (ibid. 60). John MacNamara resided in Cratloemoyle Castle, until about the year 1770, when his property was sold, under a decree of the Court of Chancery, to George Quin, Esq. of Quinsborough. It was subsequently inherited by his grandson Lord George Quin (ibid. 411). In the 19th century the land was possibly rented by James Frost who seems to have owned it by 1901 (Census of Ireland 1901) and then by John Begley in 1911 (Census of Ireland 1911 and Geraldine Pearl pers. comm.) when it was known as Begley's castle. In 1973 an Irish-American bought the castle and although the surrounding land was later sold, he retained ownership of the castle (Ua Cróinín and Breen 1991).

A brief study of the available cartographic evidence, demonstrates that Cratloemoyle castle is indicated on Henry Pelham's Grand Jury map of 1787 (Fig. 4) and appears to be habitable. Although the scale of the map is small, it is clear that the Limerick-Ennis road (now the N18) is not present and

the closest through-route is the Wood Road to the north of the castle. A small road runs north from the castle to join this larger road. The 1st Edition Ordnance Survey map surveyed in 1840 (Co. Clare) shows the road that is now the N18, Cratloe Castle ('in ruins') and the Church ('in ruins') (Fig. 5). The immediate area around the castle and church is illustrated as containing a number of trees, a formal garden and another large building possibly a house. A small tree-lined avenue is marked leading south past the western gable of the castle to the Limerick-Ennis road and a longer access road leads to the north, presumably the original access. On Fisher's map of 1861 the church, castle and other building are all marked but by the 1888-1913 25" Edition of the Ordnance Survey map only the castle and church remain.

The tower house is about 20 m tall and has five storeys on the western side with three storeys on the eastern - each floor being a separate large hall. Several alterations have been made to it over the years, for example, the addition of fireplaces possibly by Donnchadh MacConmara and his wife Margaret Barrie in A.D. 1638 (Ua Cróinín and Breen 1991, 27), the enlargement of windows (possibly in the late 18th century (Twigge quoted in Ua Cróinín and Breen 1991, 27)) and the destruction of the staircase at an unknown date. There is evidence on the southern exterior wall above the door, now obscured under ivy, of a steeply pitched roof line (Reilly 1992, 68). On the 1st Edition OS map (surveyed 1840) a roofed structure is visible on the southern side of the tower. There appears to be three joined buildings represented. This addition would have resulted in the medieval door being obsolete and explains why a door was opened in the northern wall. On examination of this wall, it is clear that this door was broken through a window (ibid. 70). It is possible that this extension was added in the late 18th century when the windows in the tower were apparently enlarged. The entrance would then face the access road marked on Henry Pelham's Grand Jury map of 1787. Building waste found in the excavation indicates that a structure roofed with stone tiles and pan tiles dated to the 17th-19th century once stood here. Brick found in the excavation was also dated to the same period and brick was used for repairs in the tower at some stage. Other artefacts found during the excavation suggest that fine windows of diamond shaped glass held with lead flashing had been used. This form of glazing died out during the 18th century (Roche 2007, 414). Another sherd of glass found suggested that there also had been a decorative window. A biscuit-fired floor tile dating to the first half of the 17th century with a Dutch provenance suggests that the owners of the castle were wealthy. Perhaps Donnchadh MacConmara and his wife were responsible for this choice of flooring. It is not known whether the dumped material found in the excavation was associated with the tower house itself, the extension or another building.

On the 1840 map there is no indication of the outcrop on which the tower is built and it seems impossible that an extension could have been built on such uneven ground. It might be that the ground level was higher on the southern side of the tower at the time the extension existed. If there had been full scale removal of soil along with the extension and the house to the north after 1840 it would also explain why no evidence for the driveway marked on this map was found in the excavation. By 1888-1913 there was no sign of the northern building, the formal garden or the extension but the outcrop is clearly marked. It is also clear on this map that drainage works had taken place to the north and east of the tower.

Lying 50 m north-west of the castle is Cratloemoyle church, formerly the chapel for the castle (CL062:020). The church is described in the Ordnance Survey Letters of 1839 as being in a fairly ruinous and overgrown state (O'Donovan and Curry 1997, 256-7). Further north still is a holy well dedicated to St John (CL062:019).

Samuel Lewis, in describing Killeely parish makes little mention of Cratloe (Lewis 1842, 139) and none at all of the castle.

While inhabited it is likely that this tower house and the church of St John were a centre of activity in the local community and many auxiliary functions such as lime burning would have been carried out in the vicinity.

Earlier test excavations (Plate 1)

Site E2083 was identified during centre-line and offset testing of the road route (E2813, Hull and Taylor 2010).

A large open area, a test trench and six test pits were excavated. Ten cut features and twelve deposits were identified in five discrete areas across the site, described from south-east to north-west.

The remains of a building were revealed at the south-eastern end of the site. This area was subsequently excavated as Area A and the results of the test investigations are described with the excavation results below.

A small pit (1) was fully excavated during testing and was not subsequently reinvestigated. The results are described below within Area B.

An 8 m by 5 m area containing seven possible features was revealed and one of the deposits (54) was partially excavated. These features were excavated at the resolution stage and detailed results are given below as Area C.

A ditch (2) was found in the centre of the site on the western edge of the hillside where the land dropped steeply to the wet ground between the castle and another hillock. The ditch and associated features were further excavated and recorded as Area D.

Testing of the lower ground between the castle and the small hillock to the east demonstrated that the ground level had been raised by up to 2.50 m by filling in the hollow with a series of dumped layers of imported material (Plate 1). It is likely that originally the low ground would have been far wetter than it is today. The upper levels of the infill were clearly of fairly modern date and relate to the recent upgrading of the N18. Beneath these layers of clay and gravel was a buried sod layer that still retained grass fragments in places. The presence of the sod layer demonstrates that the below ground deposits in this area were largely undisturbed when the new road was constructed in the last few decades. The area of land which had been built up in modern times, from south of the tower house to the boundary ditch in area D, corresponds to an area visible on a 1995 aerial photograph which is distinct from the surrounding field, it seems that the grass had not yet become fully established (<http://maps.osi.ie/publicviewer/#V1,551345,659533,7>)

At the east and in the centre of the hollow, naturally deposited alluvium was seen beneath the buried sod. At the western end of the hollow, directly south of the castle, an extensive deposit of mixed material (57) was seen beneath the buried sod. This deposit covered the full width of the CPO (10 m), was 15 m long and was shown in test pits to be up to 0.50 m deep. This layer was a loose dark brown soil with some stones and a large concentration of artefactual material including brick, window glass, bottle glass, glazed pottery, clay tobacco pipe, stone roof tile, metal objects and oyster shell. It is likely that the deposit is a combination of rubble and domestic refuse. The clay tobacco pipe includes a bowl that has an 18th century date. The artefacts appear to be of mixed date ranging from the 17th century to the modern period.

A number of possible linear features were revealed beneath and to the west of the overburden, buried sod and rubble layers (4, 5, 6, 7, 8, 9 and 10). These features, where subsequently investigated in Areas E and F, were renumbered and reinterpreted.

Of the five locations in which archaeological deposits were identified, one (Area B) was fully resolved during testing and four were excavated at the resolution stage, one in two parts (Areas E and F).

Following the submission of a report on the testing (Taylor 2005) the site was excavated under Ministerial Directions number E2083.

Objectives and methodology

The aims of the excavation were to:

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

The fieldwork took place between the 14th June and the 10th August 2005 and was directed by Fiona Reilly, supervised by Roy Krakowicz and assisted by Deirdre Forde, Vincent Hanley, Jim McKeon and Aisling Mulcahy. Metal detection was carried out of features and topsoil by Tim Dean.

It had been intended that four areas would be excavated in locations identified during archaeological testing. The three eastern areas (Areas A, C and D) lay within the zone that had been fully stripped during testing and were simply re-stripped around the known features. At the western end of the site, south of the tower house, the proposed methodology proved unworkable. In this location it had been intended to strip topsoil and overburden from an area measuring 148 m by 8 m in the east and tapering to a point in the west. The eastern end of this area, between Areas D and E, however, was found to be too deeply buried by modern built-up material and, as the underlying natural and potentially archaeological deposits will not be disturbed during construction work, this part of the site was not excavated. The area between areas E and F was also stripped but no archaeological features were found and the area was not investigated further.

The stripped areas and their size were as follows:

- Area A: 11 m by 9 m = 99 m²
- Area B: not reinvestigated
- Area C: 15 m by 10 m = 157 m²
- Area D: 30 m by 16 m = 498 m²
- Area E: 37 m by 7.50 m = 169 m²
- Area F: 40 m by 7.50 m = 253m²

Therefore a total area of 1176 m² was stripped of topsoil by machine.

Excavation results (Figs 2-30, Plates 2-26)

Six areas were investigated (including one fully resolved during testing). The features excavated include a house site, pits, boundary ditches, a lime kiln, other ditches and a human burial. A context list is given as Appendix 1. Each area was excavated separately and identified by a letter- Areas A-F. The results of the excavation can be broken into four phases: Iron Age, 16th-18th century AD, 19th century AD and modern. The discussion of the site follows the specialist reports.

Phase 1: Iron Age

Area B - Pit with burnt stones (Figs 2 and 6, Plate 2)

A small pit was discovered during testing and was fully excavated at that stage. Pit 1 was oval in plan, measured 0.63 m by 0.55 m and was 0.15 m deep with a concave profile (Fig. 6). The fill (50) was loose dark brownish grey sandy silt with frequent fire-cracked sandstone pieces and a moderate amount of charcoal (Plate 2). No artefacts were recovered from the feature but dating of a charcoal sample revealed a radiocarbon date of 2223±25 BP (UBA-13260) producing a 2 sigma calibrated date of 382-204 cal. BC (see Table 25 below).

Phase 2: 16th – 18th century AD

Features excavated in three different areas (C, D and E) are assigned to this phase, however it is not possible to demonstrate any relationships between the areas. A complex sequence of events was recorded in Area E and this was assigned to eight sub-phases, 2a-2h, largely on the basis of stratigraphy.

Area C – Possible military camp site (Figs 2 and 7, Plates 3-4)

Hearths and a pit were uncovered during testing and fully excavated during resolution. The features were located on the high ground overlooking what would have been low marshy land to the north-east and north-west (Fig. 2). Three deposits (54, 64 and 65) were found to be very shallow spreads (Fig. 7, Plate 3). There was evidence of burning in all three places as the natural geological deposit below was scorched red indicating the location of fires, perhaps camp fires. Circular pit 200 (filled with deposit 250) was excavated 0.90 m south of deposit 65, did not contain any evidence of burning (Plate 4). Four other deposits identified during testing (62, 63, 66 and 67) were found to be natural in origin.

Musket balls dating to the late 16th or 17th centuries and a 16th century coin found from the topsoil (71) in this area suggest that it might have been an encampment area for soldiers in the 16th or 17th centuries. There are several references to battles in Cratloe (Ua Cróinín and Breen 1991) and it is likely that the tower house would have been a focus of attack. Other topsoil finds from this area included copper alloy buttons dating to possibly the 19th and 20th centuries, a Victorian penny and a five pence piece from 1995.

Area D - Boundary ditches (Figs 2 and 8-10, Plates 5-6)

This area contained a boundary formed by two parallel ditches, one more substantial than the other, and possible bank between the two. On the 1st Edition map a field boundary can be seen in this location curving gently to the north-west as it followed the curve of the hill.

A boundary ditch (2) was initially found during testing and fully excavated during resolution (Fig. 2). A slot was excavated through the ditch during testing and at resolution stage two test trenches were excavated through it, with a third trench located to the west to investigate the modern made-up ground and the original slope of the land (Trench 1: 13m by 2m, Trench 2: 10m by 2m and Trench 3: 6m by 3m) (Fig. 8).

Ditch 2 ran roughly north to south and continued into both baulks. Within the excavated area the ditch was 19 m long, up to 1.80 m wide and was 0.36 m deep. The ditch contained three fills: the two base fills (259 and 260) were products of erosion from the sides of the ditch whilst the third fill (51) built up later (Fig. 9). Approximately 1.50 m to the west lay another linear and parallel depression or ditch (201). This feature varied in width and form being well defined and roughly 1.80m wide at the northern baulk (Fig. 9) to less well defined and shallower further south.

There was some evidence in the northern baulk that there had been a bank (281) between ditch 2 and depression or ditch 201 (Fig. 9, Plate 5). It seems likely that the bank was built with the material dug from both features. Three deposits (255, 278 and 286) then built up in depression 201, prior to the bank collapsing into it. A stone rich deposit (279) was found to the west of, and was partially covered by, a redeposited natural layer (256) and these deposits have together been interpreted as the collapsed bank. It is probable that the stones had been incorporated into the bank or had been placed in its western face. The stony deposit (279) was obvious for 7 m at the northern end of the site but continued as a less dense scattering of stones for a further 6 m to the south, whilst the redeposited natural material and collapsed bank (256) was visible for the entire length of the boundary ditch (Fig. 8).

The contemporary land surface sloped steeply downwards to the west and in this area two of the test trenches showed that the old sod layer (several deposits including 253, 254, 266, 273, 274, 277, 282

and 283) dipped below a number of dumped layers (252/263, 261, 264, 265 and 268) (Fig. 10, Plate 6). Red brick fragments, slate and glass sherds were found in one of these layers (263). In Trench 2 preserved moss was seen on the old topsoil (266). Various glacial till (270, 271 and 276) and alluvial layers (267, 269 and 275) were also recorded, the latter of which contained glass and bone fragments.

The boundary was marked on the 1840 1st Edition OS map (Fig. 5) but it had been removed by the time of the 3rd Edition OS map in 1922 (not illustrated). It is probable that the ditch dates from at least the 18th century. Though no specific dating evidence was found, boundary ditches can date to the medieval period.

Phase 2a

Area E - Ditches, linear features and pits (Figs 3 and 11-16)

Three parallel ditches (207, 213 and 215) were aligned north-west to south-east and all continued into the northern baulk (Fig. 11). Each cut slightly overlapped the north-eastern side of its neighbour and it was not clear whether they were contemporary or whether they represented a boundary that moved north-eastwards over time. The most southerly and westerly ditch (213) was 2.30 m wide, 9 m long and 0.25 m deep within the site, petering out at its south-eastern end. Ditch 207 was cut into the fill (563) of ditch 213 (Fig. 12). A Charles II halfpenny dated 1680 was recovered from the base of this well-stratified fill (563).

Ditch 207 was 12 m long, 2.30 m wide and 0.75 m deep within the site with a rounded terminal at the south-east. The ditch contained three fills (353, 394 and 494), the lower of which (353) contained stone tile, bone, brick fragments, pottery and glass sherds and floor tile (Fig. 13). The brick, floor tile and pantile date to the late 17th-19th centuries; the pottery to the 17th-19th centuries except one possible intrusive piece dated from the 19th/20th century; the glass dated to pre-19th century except for one modern sherd.

On the north-eastern side of ditch 207 was ditch 215. This area was disturbed by a later kiln cut (228) (Fig. 14) so it is not possible to decipher the relationship between these two ditches. The north-eastern ditch (215) was at least 11 m long and 0.50 m deep and seemed to have a curved south-eastern terminal. The top of the northern edge of the ditch was outside the limit of the excavation but its side could be seen rising in one area and was at least 2.80 m wide at this point. Another wide cut (227) continued in a south-eastern direction from where the ditch 215 ended. This cut had been truncated by one of the test trenches excavated during the testing phase. It was not clear whether ditch 215 and feature 227 were contemporary but they may have formed part of a continuous boundary feature.

At the base of ditch 215 was a depression (231) filled with material rich in charcoal and charred cereal grain (552). Charred wheat grains from this deposit produced a radiocarbon date of 218±20 BP (UBA-13261), a 2 sigma calibrated date of 1646-1679 cal. AD (see Table 25 below). It was not clear whether depression 231 was contemporary with the ditch or had been truncated by it but this feature was certainly truncated on its northern side by the later kiln. A similar depression (229 – filled with deposit 553) was located in the western area of ditch 215. This feature might be a stone socket that was formed when a stone was disturbed during the excavation of the kiln. As stated above, the stratigraphic relationship between ditches 215 and 207 was not clear at this point and it was also not possible to distinguish between their fills. The fills of ditch 215 can be divided into two main phases. The earliest fills (384/385), which produced a clay pipe fragment, bone, burnt clay hearth-lining and 17th/18th century pottery sherds, were truncated by a grave cut (214 – see below) (Figs 16-17). The later fills that sealed the grave are described below.

There were a number of linear features and pits to the east of the ditches (Fig. 11). A shallow linear cut or depression (221) produced two sherds of late medieval/transition ware pottery (15th/16th century), an unidentifiable corroded iron object and bone from its fill (455) (Fig. 15). Feature 221 was cut into the natural geological deposits and was sealed by two later deposits (488 and 463). In the eastern corner of

the site pit 217 (filled with deposit 450) produced late 17th century clay pipe fragments, bone and a 17th-19th century pottery sherd. A linear cut (222) was filled with a single deposit (458) that contained bone, pre-19th century glass and clay pipe fragments.

A test trench cut through another roughly linear feature (227). This feature continued from the eastern end of ditch 215 in a south-easterly direction for 6 m and produced a stone roof slate, 17th/18th century pottery sherds, bone and a clay pipe sherd from its fill (471). At the south-eastern end of linear feature 227, two pits (219 and 226) continued in the same alignment. Pit 219 contained four fills (452, 456, 467, and 468), one of which (452) produced an iron ring or buckle frame, a piece of lead window flashing, window fragments, bone, oyster shell, clay pipe fragments and 17th-19th century pottery sherds. Pit 226 contained a single fill (472) but no artefacts. This pit had been truncated by both pit 219 and linear feature 227.

Phase 2b

Area E - Grave (Figs 16-17, Plates 7-8)

A west to east orientated grave (214) was, as described above, cut into the lowest fill (384/385) of ditch 215 and sealed by a later fill (383). Grave 214 was 1.14 m long, 0.60 m wide and 0.40 m deep (Figs 16-17). The grave contained, beneath the fill (374 – that contained animal bone fragments), the skeletal remains of an adult male (373) who was between 26 and 35 years of age (Fibiger below) (Plates 7-8). There was no evidence of a coffin but the body position suggests that a winding cloth or shroud was used. There was a small depression in the ground surface under the skull. A number of interesting pathologies were apparent on the skeleton: the individual had suffered soft tissue trauma to his left hand and had a healed trauma to the cranium. Dental disease, circulatory and metabolic disorders (rickets) were also observed. Both the arm and leg bones showed evidence of rickets, indicating that the individual was affected up to the age of about 2 years old. Strontium and oxygen isotope analysis suggested that the individual did not grow up in the Limerick area but may have come from north-east Ireland or south-east England (Evans and Lamb below). A sample of bone from the skeleton produced a radiocarbon date of 150±40 (Beta-209519), giving a 2 sigma calibrated date of AD 1660-1950 (see Table 25 below).

Phase 2c

Area E: Pre- kiln and post-grave features (Figs 13-14)

Following the inhumation, ditch 215 continued to become infilled, as represented by several deposits (382, 383, 386/368/551 and 378). Deposit 551 was found under the kiln stones at the intersection of ditches 207 and 215 and is probably the same as deposit as 386 and possibly 353 (a fill of ditch 207) but was given a separate number because it was excavated separately. A copper alloy object and bone fragments were found in deposit 368; bone, 17th-19th century brick and 17th-19th century pottery sherds in 378; an iron staple hasp (possibly medieval), hearth-lining, 17th-19th century brick fragments, clay pipe fragments (one of late 17th century date), bone and a glass sherd in 383; oyster shell, bone and a copper alloy strip in 551; and bone and a prehistoric chert scraper in 386.

Phase 2d

Area E: Kiln construction and first phase of use (Figs 18-19, 21, 22, 24-25, 27-29, Plates 9-12, 15, 19)

A lime kiln, approximately half of which lay within the excavation area, was excavated and shown to have several phases of construction and use which are described in turn. The kiln was located 44 m south of Cratloemoyle Castle (Plate 9). From the excavated portion it appeared that the kiln consisted of a tapering circular stone-lined chamber, 1.20-1.75 m internal diameter, with flues on the west and east sides, the latter of which was remodelled after a period of use.

There were four main construction features of the kiln: the kiln cut (228/230), a bowl-shaped depression in the eastern flue area (224), the stone kiln walls and flue lining of the kiln (364) and the later brick-lined feature (216) that altered the eastern flue .

The cut for the lime kiln was dug through the fills of ditch 215 described above. At this stage the ditch was partially infilled with the fills gently sloped downwards into the centre. The initial kiln cut (230) was excavated from this level and the upcast material (498) was piled up on top of ditch fill 551, which had the effect of making the kiln deeper. This deeper hole was numbered 228. Part of the stone component of the kiln was constructed on top of the upcast (498) which also produced bone and a sherd of 18th/19th century pottery.

Kiln cut 228/230 was roughly semi-circular in shape (within the site) with two splayed cuts on the eastern and western sides (Figs 18-19, Plate 15). The central part of the kiln cut measured approximately 2 m east to west and 1.40 m north to south within the excavated area. The cut was deepest in the bowl area at approximately 1.12 m. There was bedrock at the base of the kiln and at the west and it is possible that the rock might have been crudely shaped to facilitate the kiln. The eastern flue was 1.20 m long, 1.05 m wide at the western, kiln end and splayed out to 1.45 m wide at the east. The western flue was less clear as little of this feature lay within the excavated site but it could be seen that the splay on its southern side was less obtuse than the eastern flue.

At the entrance of the eastern flue the ground had been lowered into a bowl shape (224) possibly to give a larger working space, although the area was still very restricted. The southern edge of the cut could be seen, but it appeared to have been truncated on the northern side by a later flue (216) (Fig. 21). Bowl 224 was filled with four deposits, (396, 460, 461 and 466); all but the lower deposit (466) were hard caked lime. The northern sides of these deposits appeared to have been cut by later flue 216 suggesting that the kiln had been used before this flue was inserted (Plate 12).

The stone component of the kiln (364) was not fully excavated as it continued into the northern baulk outside the area of excavation (Fig. 22). The structure tapered inwards from top to bottom and was constructed of water-rolled, fine-grained stone of various sizes and roughly hewn limestone (Fig. 27, Plates 10-11). Smaller rounded stones were used to line the bowl of the kiln one stone thick (Fig. 24). The internal diameter of the bowl was 1.75 m and the widest part of the limestone wall section was 1.40 m. Internally the kiln survived to a depth of 1.40 m. The flues were also lined in the same manner with larger stones used at the base (Fig. 24). Some of the rounded sandstones used in the western flue had been split and two stones were found to conjoin. The upper section of the kiln was constructed from roughly hewn limestone on inner and outer faces while smaller packing stones formed a rubble core (Plate 11). This lining survived as two courses on the southern side and one course elsewhere. Two lintelled openings, one on the eastern side (0.32 m wide) and one on the western side (0.38 m wide), formed openings from the bowl into the flues (Figs 28-29). Soil (371) was found between the stones and sometimes on the inner face of the kiln where it was oxidised red. This deposit produced a clay pipe stem fragment, bone and a glass fragment possibly from a decorative glass window. A silty soil (495) was found between the back of the western flue stones and the side of cut 228. A sandy silt (497) was found between and under some of the lower large limestone pieces in the upper section of the flue wall.

At the base of the kiln bowl was a deposit (479) that overlay bedrock, was similar to natural and contained some charcoal flecks and occasional limestone fragments. Four large upright stones (565) were inserted into this deposit, one to each side of the flue openings (Fig. 28). The upright stones stood higher than the capstones of later brick-lined feature 216 and might have supported a grate or fire box or have been part of an earlier draft system that was superseded by the brick-lined flue. The later flue (216) was also inserted into deposit 479.

Phase 2e

Area E: Second use of kiln (Figs 14, 16, 18, 20-23, 25,26, 28 and Plates 13-14, 16-18, 20, 22,23)

The eastern flue was altered at a later stage by a long curved brick-lined feature (216). The feature started at the inner entrance of the eastern flue of the kiln and meandered roughly eastwards for over 7 m (Figs 18 and 22, Plate 13). The cut truncated the upper fill of ditch 215 and was truncated at its

eastern end by a test trench (Figs 17 and 20). The cut was on average 0.50 m wide and 0.50 m deep, becoming deeper as the slope descended to the east.

Flue 216 had five flat capstones (398) in place within the flue area of the kiln, two at the eastern end had been dislodged into the cavity beneath and four other capstones were found in the base of the kiln bowl itself (Figs 22, 26 and 28, Plates 14 and 18). No evidence was found to indicate whether further capstones had been removed east of the *in situ* examples. Some of the external capstones sat on loosely placed yellow and red bricks (489) (Figs 23, 26 and 28, Plates 16-17). The capstones themselves had become cemented in place by lime and a hard stone and lime deposit (399) filled the gap between the capstones and the flue wall to the south (Fig. 22). Internally four capstones and one brick sat on yellow bricks which lined flue 216. Hard caked lime (491) was found adhered to the underside of the capstones within the kiln and also to the sides of the side bricks (Fig. 26). No brick was found under the most western flat, capstone. The four large upright stones (565), that were found in the base of the kiln, stood higher than the capstones of 216 and might have supported a grate or fire box, or have been part of an earlier draft system that was superseded by the brick-lined feature 216. At the base of the brick-lined flue 216 within the kiln were two deposits: the lowest (493) was clayey silt with some lime crumbs; over this was a hard, caked lime (492) from the production phase of the kiln (Fig. 26). Within the capped section of the flue 216 a similar lime deposit (474) was seen in patches (Figs 20-21). The lime deposit continued at the same level in the uncapped part for a further 2.50 m eastwards. Immediately to the east of this area but still within the capstones area, three fills containing small to large limestone pieces were seen. The upper two fills (380 and 379) contained charcoal flecks and hard lime crumbs (Fig. 20). One of the fills (379) continued westwards to immediately east of the capstones in flue 216 and contained red and yellow brick fragments, stone roof tiles, a 17th/18th century pottery sherd, a clay pipe fragment, bone, shell and a prehistoric chert flake. Shell, bone, a stone roof tile fragment, a clay pipe fragment and bottle glass sherds were found in one of the upper fills (380) whilst the lower fill (381) produced c. 1640-early 18th century glass bottle sherds, bone and a clay pipe fragment.

The stone deposit (465) within the kiln bowl and the capstones of flue 216 were covered in up to 0.15 m of indurated lime (464) (Fig. 28). The lime formed a linear channel (223) over the capstones that might have been created when the lime was raked out (Plate 20). Within and above this was a deep deposit of lime (389), closely packed but friable, that contained sherds of glass (Plate 23). Adhered to the inner surface of the kiln and along the base was a cemented deposit of lime (391) that included some charcoal (Fig. 25). Between these lime deposits were patches of charcoal (390). Further deposits (454 and 457) were also found at this level but contained little or no charcoal. Carbonised peat was found in both deposits 390 and 454.

Lime was found in the eastern and western flues. It was not possible to properly investigate the western flue because most of it lay outside the area of excavation, however its floor level could be seen rising steeply (Plate 19). Deposit (556) was found in the external area beneath a lime layer (554). Because of the steepness of the western flue it seems more likely that the lime would have been removed from the eastern flue.

In the eastern flue lime rake-out from the kiln was represented by two deposits (387 and 395) (Fig. 25, Plate 22). An iron nail, bone, 17th-19th century red brick fragments, a clay pipe fragment, glass sherds and a piece of stone slate were found in the former deposit. This material had been removed from the kiln after flue 216 had been infilled. In the northern baulk a small patch of ash (499) 0.02 m deep was noted above lime rake out layer (387) but below the destruction phase.

Phase 2f

Area E: Kiln out of use (Fig. 26)

After the kiln went out of use natural silting and worm deposited soil occurred while the site was idle. The duration of this period of abandonment is unclear but it was followed by destruction of the kiln.

There was evidence of worm deposited soil (490) and a film of lime at the base of the later inserted flue 216. Within the capped section of the flue a lime deposit (474) was again sealed by a worm generated deposit (473/490) not associated with the use of the kiln. At the base of the brick lined feature within the kiln, lime deposits were sealed by silt (496) (Fig. 26).

An earlier shallow linear cut (221) was sealed by two deposits (488 and 463) that were in turn sealed by a stony deposit (550). At the eastern end of the excavated area a layer (483) was revealed.

Phase 2g

Area E: Kiln destruction (Fig. 14, Plate 21)

Clast rubble (376) mixed with some reddish sandy clay (375) was found above the lime layer in the kiln bowl (Fig. 14, Plate 21). Vast quantities of early 18th century and late 17th/18th century glass bottle sherds were found in the rubble. Some of the sherds dated to c. 1700-1720 and c. 1640-1720. There were also some 18th/19th century examples and 17th/18th century pantiles, brick, oyster shell and the bones of four dog puppies. On the eastern exterior the destruction phase of the kiln was represented by two deposits (probably 377 and 388) that produced bone, brick fragments, stone slates, pottery sherds (mostly 17th/18th century but also including two 20th century sherds from the same vessel), clay pipe fragments, metal, oyster shells and sherds of both window glass (18th century or earlier) and bottle glass (18th century) and a biscuit-fired floor tile dating to the first half of the 17th century. On the western side this destruction phase was represented by another deposit (555). A shallow, 0.10 m deep, depression in the destruction layer (377) along the northern baulk was filled with a layer (393). A scattering of rubble (370) was also removed from within the top of the destroyed kiln.

The probable destruction layer (377) partially covered a stony deposit (550). Above the stony deposit was an ashy and heat reddened clay deposit (478) about 2 m long and 0.05 m deep that was in turn covered by a stony layer (462) that covered a large area to the east of the kiln activity and merged with destruction layer. The stony layer also contained a lens of redeposited natural (477).

Phase 2h

Area E: Post kiln destruction (Fig 11, 13-15)

Layer 367 was found above the internal fills and the destroyed western part of the kiln whilst another fill (372) was found over the eastern destroyed area of the kiln and continued eastwards. A loose silty clay (392) was found under the lintel in the eastern flue. Glass window sherds (18th century and earlier), bone, late 17th century clay pipe fragments, shell, biscuit-fired floor tile (first half 17th century) and an early 18th century glass onion bottle were found in these deposits (367, 392, 372). Spread 363 was found over layers 367 and 372 and continued westwards.

Cut into destruction layers of clay and limestone pieces 462 and 483 and truncating pits 217, 222 and 225 was a large pit (218), almost entirely filled with stones (451) but with two further fills (481 and 482) in the top. Glass bottle sherds including a true cylinder bottle - c. 1740-1850 and bone were found amongst the stones of the main pit fill (451). The pit and other deposits in this corner of the site were covered by an old sod layer (486). This layer merged with the present grass layer at its western end but descended steeply beneath modern made-up ground (487) as it continued east.

Phase 2 unknown

Area E: Features of unknown sub-phase

Several features cut natural glacial deposits but from their fills could be dated to pre-19th century and 17th-19th century but they could not be tied in stratigraphically with the kiln. Linear feature 222, pits 217 and 225 and probable tree-bowl 220 fall into this category. The relationship between feature 222 and pit 217 was unclear but both, along with small pit 225, were truncated by the large stone-filled pit 218 mentioned above. Pit 225 (Fig. 11) contained the skeleton of a one-year-old pig (480).

Phase 3: 19th century

Area A -Building (Figs 2, 30 and 31, Plate 25)

The remains of a small structure were initially revealed during testing and fully resolved during the excavation (Fig. 2). The remains were very badly preserved and were truncated on the north-eastern side by later agricultural activity or possibly during embankment works associated with the adjacent river. Three sides of the house were visible; the south-western side lay beyond the limit of excavation (Fig. 30, Plate 25). The external dimensions of the rectangular structure were 8.20 m by at least 4.20 m.

The outline of the building was visible as a mortar/lime deposit (53) which was found in a foundation trench (3), typically 0.50 m wide and 0.15 m deep with steep sides and a flat base. A number of 17th-19th century bricks and brick fragments were recovered from the fill of the foundation trench. Also retrieved from the trench were corroded iron objects including nail shafts and a post-medieval horseshoe. The trench could be seen to be cut into the contemporary ground surface (295) (Fig. 31).

A deposit of hard mortar/lime (52) was found at the western side of the building interior. This deposit might have been a floor surface or a bedding material for a more substantial part of the structure, such as a fireplace.

Above the *in situ* structural remains was a layer of destruction material (294) that contained occasional fragments of limestone and 17th-19th red brick suggesting that some brick and limestone were used in the house's construction (Fig. 31). Brick, being fire proof, was often used in chimney construction. An undiagnostic object was also found in the destruction layer (294). The scarcity of building material uncovered suggests that the structure was either robbed out, completely bulldozed away during the embankment works, or had not been constructed entirely of stone. It is likely that it was a stone and mud construction.

Five parallel deposits orientated north to south were recorded to the north of the structure (Fig. 30). These deposits (287, 288, 289, 290 and 291) may have been plough furrows and are likely to be contemporary with the structure as they stop short of its northern wall.

A prehistoric chert flake was recovered from this area but it was not stratified.

Phase 4: Modern

Area F: Linear features (Figs 3 and 32, Plate 26)

A linear feature (4) thought to be a ditch was identified at the extreme western end of the site at the testing phase. During resolution three features were recorded in the area, a large 4.10 m long depression (205), and two small parallel linear depressions (202 and 203). The large depression contained five smaller charcoal-rich depressions (208, 209, 210, 211, and 212). The depression was not a man-made cut but might have been a tree bowl. Pottery sherds found in it included 19th/20th century sherds as well as 18th and 19th century and 17th-19th century sherds.

Finds

A range of artefacts of different dates, materials and types were retrieved from the various areas within this site (Appendix 2). Artefacts found included domestic detritus, military material and more structural finds such as brick and slate fragments.

Domestic finds included sherds of pottery and glass, clay pipe fragments, a whetstone, animal bone and oyster shells.

Military finds include lead musket balls.

Structural finds include fragments of brick and tile and limestone roof tiles.

Burial finds consisted of a single male human skeleton.

Other artefacts are pieces of struck chert, slag and metal objects.

Human bone by Linda Fibiger

Introduction

In July 2005 archaeological excavations at Cratloemoyle, Co. Clare, carried out by TVAS Ireland under the direction of Fiona Reilly, exposed human skeletal remains. These consisted of one articulated burial. The remains were excavated, recorded, lifted, cleaned and submitted for osteological analysis. The skeleton is recorded as context 373, find 373:1.

Preservation and post-excavation processing

Preservation of the skeletal remains was very good with little fragmentation or surface damage. During post-excavation processing, the bones were carefully cleaned using water, sponges and soft brushes, air-dried and stored in re-sealable polythene bags.

Analysis

The osteological analysis was based on standards outlined in the Heritage Council Publication ‘Human remains in Irish archaeology. Legal, scientific, planning and ethical considerations’ (O’Sullivan et al. 2002) and the BABAO/IFA Paper ‘Guidelines to the standards for recording human remains’ (Brickley and McKinley 2004). Appendices 3-6 should be used as reference in the reading of this report; Appendix 3: Bones of the adult human skeleton, Appendix 4: Bones and sutures of the skull, Appendix 5: Permanent dentition and Appendix 6: Glossary of Osteological terms.

Burial position and orientation

The individual at Cratloemoyle had been buried in a supine and extended position. Both arms were flexed at the elbow, and the hands were probably folded and rested on the pelvis. The feet appeared to overlie each other (Plate 8). Burial orientation was east-west with the head to the west. No evidence for a grave marker or coffin was present, but the folding of the arms and the position of the feet might indicate that a winding sheet or shroud was used to contain the burial (O’Brien 2003). Orientation and burial position correspond well with the standard Christian burial rite.

Age and sex assessment

The remains were probably those of an adult male. Sex assessment was based on the observation of morphological features of the pelvis and skull (Tables 1-2). Age assessment was based on observing the final stages of epiphyseal fusion, including the medial clavicle, iliac crest (Webb and Suchey 1985) and 1st and 2nd sacral body (Scheuer and Black 2000), as well as assessing morphological changes of the pubic symphysis (Brooks and Suchey 1990) and the auricular surface of the ilium (Lovejoy et al. 1985). These observations gave an age of between 26 and 35 years.

Table 1: Cratloemoyle Burial: Morphological Features of the Skull

Morphological Feature	Score
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Morphological Feature	Score
Supraorbital margins (M-rounded; F-sharp)	F
Supraorbital ridges (More pronounced in M)	M
Glabella (More pronounced in M)	M
Frontal eminences (F more pronounced than M)	M?
Parietal eminences (F more pronounced than M)	M
Zygomatic root (M-extends beyond external auditory meatus)	?
Nuchal crest (More pronounced/rugose in M)	F
Mastoid processes (Larger in M)	F
Depth of digastric fossa (M deeper than F)	F
Palate (M-larger, u-shaped; F-smaller, parabolical)	M
Gonial flare/rugosity (More pronounced in M)	M?
Gonial angle (M-approximately 90°; F- >90°)	M
Mental tubercles (M-often bilateral)	?
Height of mandibular symphysis (Greater in M)	M

(M=Male. F=Female. ?=Indistinguishable. n.a.= not available)

(After Herrmann *et al.* 1990, 73ff; Buikstra & Ubelaker 1994, 16ff)

Table 2: Cratloemoyle Burial: Morphological Features of the Pelvis

Morphological Feature	Score
Sub-pubic concavity (M-V-shaped and narrow; F-rounder & wider)	M
Sciatic notch (Wider in F)	F?
Ventral arc (Present in F)	M
Pre-auricular sulcus (More frequently present in F)	F
Pelvic inlet (M-Heart-shaped; F-circular/elliptical)	M
Ilium (M-high/vertical; F-laterally divergent)	?
Obturator foramen (M-large/ovoid; F-smaller/triangular)	M
Acetabulum (m-large/laterally divergent; F-smaller/anterior-lateral)	?
Pubic symphysis (Higher in M)	M
Ischio-pubic ramus (M-slightly everted/thick; F-strongly everted/thin)	M
Sacral curvature (More pronounced in M)	M

(M=Male, F=Female, ?=Indistinguishable, n.a.= not available)

(After Herrmann *et al.* 1990, 73ff; Buikstra & Ubelaker 1994, 16ff)

Metric summary and stature

In order to record the physical characteristics of the skeletal remains from Cratloemoye and to calculate stature, sets of measurements based on the standards in Buikstra and Ubelaker (1994) were taken. This included 22 measurements of the cranium and mandible and 28 post-cranial measurements, though due to some fragmentation not all measurements were available (Tables 3-4).

Stature of the individual from Cratloemoye was calculated from the maximum length of the left femur and tibia based on the regression formula developed by Trotter (1970). This gave a height of 169.80 ± 2.90 cm. Although the Trotter formula was developed on American anatomical collections, at present it is the most widely used formula for stature calculation applied to archaeological populations and therefore at least allows a degree of comparability with other reports. It should also be noted that the individual from Cratloemoye had suffered from a metabolic disease during childhood (see below), which resulted in bowing deformities of the long bones. These deformities reduce the maximum length measurements of the bones and the result of the stature calculation therefore only gives a minimum value.

Table 3: Cratloemoye Burial: Cranial Measurements in cm (L=Left; R=Right)

Measurement	cm
Cranial Length	18.5
Cranial Breadth	14.4
Bizygomatic diameter	13.3
Basion-Bregma height	13.3
Cranial base length	10
Biauricular breadth	12.5
Minimum frontal breadth	10
Upper facial height	n.a.
Upper facial breadth	10.2
Nasal height	n.a.
Nasal breadth	n.a.
Orbital breadth	n.a.
Orbital height	n.a.
Maxillo-alveolar breadth	n.a.
Maxillo-alveolar length	4.6
Frontal chord	11
Parietal chord	10.8
Occipital chord	9.7
Chin height	3.2
Bigonial width	11
Bicondylar breadth	12.2
L Minimum ramus breadth	3

Table 4: Cratloemoye Burial: Post-Cranial Measurements in cm (L=Left; R=Right)

Measurement	cm
L Clavicle length	14.7
L Clavicle mid-circumference	3.7
L Scapula height	17
L Scapula breadth	10.6
L Glenoid length	4.1

Measurement	cm
L Glenoid width	2.9
L Humerus length	32.9*
L Humerus epicondylar width	6.6
L Humerus head diameter	4.6
L Humerus minimum circumference midshaft	6.2
L Radius length	24.3
L Ulna length	26.1*
Sacrum anterior length	8.7
Sacrum anterior superior breadth	10.5
L Os coxae height	22.3
L Femur length	45.6*
L Femur oblique length	n.a.
L Femur epicondylar breadth	n.a.
L Femur midshaft circumference	9*
L Femur head diameter	4.8
L Femur A-P subtrochanteric diameter	2.8
L Femur M-L subtrochanteric diameter	3
L Tibia length	36.4*
L Tibia proximal epiphyseal breadth	7.8
L Tibia distal epiphyseal breadth	5.1
L Tibia A-P diameter	3.2
L Tibia M-L diameter	2.3
L Fibula length	n.a.
R Clavicle length	14.7
R Clavicle mid-circumference	3.8
R Scapula height	16.2
R Scapula breadth	10.5
R Glenoid length	n.a.
R Glenoid width	n.a.
R Humerus length	33.4*
R Humerus epicondylar width	6.6
R Humerus head diameter	4.8
R Humerus minimum circumference midshaft	6.3
R Radius length	23.8
R Ulna length	26*
R Os coxae height	22.4
R Femur length	44.7*
R Femur oblique length	44.5*
R Femur epicondylar breadth	8.2
R Femur midshaft circumference	9.1*
R Femur head diameter	4.8
R Femur A-P subtrochanteric diameter	2.8
R Femur M-L subtrochanteric diameter	3.1
R Tibia length	36.4*
R Tibia proximal epiphyseal breadth	7.8
R Tibia distal epiphyseal breadth	5.3
R Tibia A-P diameter	3.2
R Tibia M-L diameter	2.4
R Fibula length	35.6*

* Measurement affected by pathological condition (see below)

Figure 33 shows the stature of the adult male from Cratloemoye in comparison with adult males from other Irish as well as British post-medieval skeletal assemblages. It indicates that body height of the individual from Cratloemoye appears to have been at the lower end of the average stature for the time

and similar values were obtained from assemblages of low (Cross Bones burial ground), mixed (Creagh Junction) as well as relatively wealthy (Christ Church) socio-economic backgrounds.

Dental health and disease

Thirty-two tooth positions and 32 teeth were available for observation.

Dental Wear

Attrition or dental wear is the wearing away of tooth enamel as a result of chewing or grinding. In an Irish context, it is more pronounced in prehistoric and pre-industrialised populations with coarser diets or non-mechanised milling techniques. The latter allow for the presence of residual grit and larger particles in bread-flour, which results in greater tooth wear. Tooth wear at Cratloemoye, based on the scoring system of Brothwell (1981, 72) was slight to moderate.

Calculus

Calculus is a mineralised plaque deposit commonly occurring in archaeological populations. It can range from small flecks to substantial lumps and generally builds up faster with a sucrose-rich diet (Roberts and Manchester 1995, 55). Although its occurrence is usually painless, it can contribute to the development of other dental conditions, such as infections and periodontal disease. Slight calculus deposits were noted on 25 teeth.

Caries

Caries lesions can vary in appearance from discolorations of the enamel surface to substantial cavities in the tooth crown or root. They are the result of a combination of bacterial activity and the presence of carbohydrate. During the fermentation of food sugars, the bacteria create acids which demineralise teeth and eventually result in macroscopic defects (ibid, 46). Any naturally occurring fissures or cavities on the tooth increase the risk for developing caries, as they allow for the accumulation of food debris and plaque and therefore increase bacterial activity. The right mandibular first molar displayed caries, which, together with a dental abscess, had resulted in the total destruction of the tooth crown (Plate 27). Only the proximal root of the tooth remained.

Dental Abscesses

Dental abscesses are usually diagnosed through the presence of draining sinuses in the alveolar bone of the maxillae or mandible. The abscesses are caused by infection as a result of exposure of the pulp cavity or root of the tooth to bacterial attack, or where severe periodontal disease leads to an accumulation of plaque between the teeth and the gums. In the course of the infection, pus starts to build up within the chamber in the bone, which results in increasing pressure and eventually a sinus (hole) develops to allow the pus to drain out (ibid, 50). One dental abscess was recorded, affecting the right mandibular first molar (Plate 27).

Dental Enamel Hypoplasia

Hypoplastic enamel defects are the result of episodes of nutritional, pathological, physiological or psychological stress during enamel formation, resulting in growth disturbances recognisable as lines, grooves or pits on the enamel surface (Hillson 1996, 165). As crown formation of the permanent dentition is complete by approximately the seventh year of life, hypoplastic defects indicate systemic stress during foetal development and early childhood only and cannot be used to assess adult health status (Holst and Coughlan 2000, 83). Of the 31 observable tooth crowns present, 27 showed evidence for linear enamel hypoplasia (Plate 28).

Dental Anomalies

The only dental anomaly noted at Cratloemoye was the anterior rotation of the left maxillary second molar.

Degenerative joint disease

Degenerative joint disease is one of the most frequently recorded and reported pathological changes recognisable on human skeletal remains. As a degenerative condition, its occurrence tends to be age-related and changes seen are primarily the result of general wear and tear of the joint. The presence of joint disease, however, should never be used as the sole parameter for age assessment (Rogers and Waldron 1995, 9). Joint disease can also be accelerated by trauma or develop secondary to other pathological conditions which change the shape or strength of the joint (Ortner 2003, 546-7). The main diagnostic features include osteophyte formation (bony growth around the joint margin), porosity (characterised by pitting of the joint surface) and eburnation (polishing of the joint surface as result of bone-to-bone contact). Other indicators of joint degeneration can be new bone formation on the joint surface or changes in the size or shape of the joint (joint contour change). Eburnation is pathognomonic of osteoarthritis (Rogers and Waldron 1995, 36), but the more general term degenerative joint disease (DJD) was used when at least two joint changes other than eburnation were present.

Intervertebral joints can also be affected by Schmorl's Nodes, small depressions in the superior or inferior surface of the vertebral body that are caused by herniation of disc material into the adjacent vertebral body. They are considered to be a result of considerable (compressive) strain on the spine during heavy labour or lifting, especially during the second and third decade of life.

Spinal Joint Disease

Seven cervical, twelve thoracic and five lumbar vertebrae as well as the first sacral vertebra were available for observation. Seven thoracic and four lumbar vertebral bodies presented with Schmorl's nodes (Plate 29).

Extra-Spinal Joint Disease

Only the very early stages of extra-spinal joint degeneration were noted, including porosity of the left and right sterno-clavicular joint and two left and two right rib heads, as well as slight osteophytosis of the left patella and left and right first metatarso-phalangeal joint (Table 5).

Table 5: Cratloemoyle Burial: Extra-Spinal Degenerative Joint Disease

Joint	Left		Right	
	Observable	DJD	Observable	DJD
Temporo-mandibular	Yes	No	Yes	No
Acromio-clavicular	Yes	No	No	No
Sterno-clavicular	Yes	Porosity	Yes	Porosity
Gleno-humeral	Yes	No	Yes	No
Ribs	Yes	Porosity	Yes	Porosity
Elbow	Yes	No	Yes	No
Wrist	Yes	No	Yes	No
Hand	Yes	No	Yes	No
Hip	Yes	No	Yes	No
Knee	Yes	Osteophytosis	Yes	No
Ankle	Yes	No	Yes	No
Foot	Yes	Osteophytosis	Yes	Osteophytosis

Metabolic disease

Most of the long bones of the arms and legs showed an abnormal or exaggerated curvature (Plate 30). This curvature was the result of rickets, a condition the individual had suffered during early childhood. Rickets is essentially a deficiency disease caused by insufficient levels of Vitamin D in the growing skeleton. It is rarely dietary, but usually associated with insufficient sun exposure. The ultraviolet rays of the sun help the body to synthesize Vitamin D, and in their absence (e.g. in crowded cities, with

housebound individuals or as a result of restrictive clothing) a lack of Vitamin D can adversely affect bone formation in the growing skeleton. Insufficiently mineralised long bones will exhibit bowing deformities over time as weight is placed upon them while standing or walking (Ortner and Mays 1998). Both the arm and leg bones are affected, indicating that the condition arose during the crawling stage of early childhood (under 1 year) and persisted into the age when the individual started to walk (1-2 years).

Circulatory disorders

Osteochondritis dissecans is a circulatory disorder, but has traumatic origins. It is characterised by the occurrence of a small area of necrosis on a joint surface, frequently affecting the knee, elbow or shoulder joint (Aufderheide and Rodríguez-Martin 1999, 81). The defect is recognisable as a small depression on the joint surface and can involve the exposure of underlying trabecular bone. The defect usually occurs in younger, more active individuals during the second or third decade of life (Knüsel 2000, 116). The bone affected at Cratloemoyle was the left talus (Plate 31).

Trauma

Soft tissue Trauma

An area of solid compact bone was noted protruding from the lateral aspect of the distal articular surface of the second left proximal hand phalanx. It is most probably the result of soft tissue trauma to the joint capsule or associated tendons or ligaments.

Non-Accidental Trauma

Healed blunt force trauma was present on the left parietal. On the anterior aspect of the bone, an almost linear depression with smooth edges was noted, running from the anterior-lateral right to the posterior-lateral left, originating at the sagittal suture (Plate 32). Although the main aspect of the wound is linear, another area of only slightly depressed bone is extending laterally left from the mid-point of the main part of the wound. It is difficult to envision the instrument or weapon that would have caused the wound and left the depression, but the blow would have come from a superior aspect and probably would have been non-accidental. The wound healed completely without any obvious complications.

Stable isotopes

In the course of radiocarbon dating, carbon and nitrogen stable isotope data was also obtained for the Cratloemoyle burial. The analysis was carried out by Beta Analytic, Florida.

Food provides the elements necessary to build and maintain body tissues including bone (“You are what you eat”), and different foods will leave different isotopic ‘signatures’ in bone collagen (DeNiro 1987; Ambrose and Norr 1993). Carbon and nitrogen make up two thirds of bone collagen by weight, each occurring in two isotopic forms with different masses (^{12}C and ^{13}C ; ^{14}N and ^{15}N). The ratio between the two stable isotopes of carbon compared to a known standard is written as $\delta^{13}\text{C}$, and for stable isotopes of nitrogen as $\delta^{15}\text{N}$.

During the metabolism of carbon and nitrogen atoms from food carbon and nitrogen isotope ratios are changed in a known way. $\delta^{13}\text{C}$ ratios are about 1‰, $\delta^{15}\text{N}$ ratios 3-5‰ higher than the protein portion of the diet they are derived from. Whereas $\delta^{13}\text{C}$ values indicate the relative importance of marine protein compared to terrestrial protein.

Bone collagen in adults is completely replaced approximately every 10-20 years, so stable isotope analysis records long-term dietary trends. As environmental isotope values can vary considerably between sites, every human data-set should be compared with reference data derived from animal bones from the same location and time period. In the absence of this reference data, only very general conclusions can be drawn from human isotope values, comparing them to values typical for temperate

North-West Europe. $\delta^{13}\text{C}$ values for humans living on an almost exclusive terrestrial protein range typically around -20 to -21‰, and the Cratloemoyle value of -19.5‰ therefore suggests a largely terrestrial diet (van Klinken 1999; Richards 2000; Katzenberg & Harrison 1997). A predominantly agriculturalist diet based primarily on plant protein results in $\delta^{15}\text{N}$ values of between 6 to about 12‰, and again the value from Cratloemoyle of 9.4‰ falls into that category (Katzenberg & Harrison 1997).

Conclusion

The skeletal remains from Cratloemoyle, Co. Clare dated to the post-medieval period and were those of an adult male aged between 26 and 35 years, who had been buried in an extended and supine position, oriented east-west according to standard Christian burial practice. The bones were in very good condition, and a number of pathologies, including dental disease, soft tissue trauma, circulatory and metabolic disorders and healed trauma to the cranium were noted. Due to the isolated nature of the burial, no further conclusions could be drawn.

Catalogue

Abbreviations

Dental

AMTL	Ante-mortem tooth loss
U	Unerupted
x	Tooth lost ante-mortem
/	Tooth lost post-mortem
C	Caries
A	Abscess
c	Calculus
R	Root only
NP	Not present (unobservable)
Con	Congenitally absent

General

VB	Vertebral body
VF	Vertebral facet
C	Cervical vertebra
T	Thoracic vertebra
LV	Lumbar vertebra
S	Sacral vertebra
R	Right
L	Left
DJD	Degenerative joint disease
VB	Vertebral body
VF	Vertebral articular facet
Na	Not available

Permanent Dentition

Right Maxilla								Left Maxilla							
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
Right Mandible								Left Mandible							

Anatomical elements used for sex and age assessment and stature calculation are given in brackets.

C373*Radiocarbon Date: Cal AD 1660-1950**Sex: Male (Pelvis & skull)* δC^{13} : -19.5 ‰; $\delta^{15}N$: 9.4‰*Age: 26-35 years (Auricular surface, pubic symphysis, epiphyseal fusion)**Stature: 169.80 ± 2.99 cm (L Femur & tibia)**Bones present: Fig. 34**Condition: Very good**Burial type: Simple**Burial position: Supine and extended. Both arms flexed at elbow, hands probably folded and resting on pelvis. Feet overlying each other.**Burial orientation: East-West (Head to the West)**Dentition:*

c	cH	cH	cH	cH	cH	H	cH	cH	cH	H	cH	H	H	H	c
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
c	cH	RCA?	cH	cH	cH	cH	cH	cH	cH	cH	H	cH	cH	cH	c

Dental Pathology: Caries (1/32), abscess (1/32), calculus (25/32-slight), linear enamel hypoplasia (27/31) and slight tooth wear. The second left maxillary premolar is rotated anteriorly ~45 degrees.*Skeletal pathology:**Spinal DJD:* Schmorl's nodes T6-12, LV1-5.*Extra-spinal DJD:* Porosity of L&R sterno-clavicular joint and 2 L & 2 R rib heads. Slight osteophytosis of L knee (patella) and L&R 1st metatarso-phalangeal joint.*Metabolic disease:* Healed rickets: substantial lateral bowing of L&R proximal tibia (more pronounced on L) and prominent anterior edge of L&R tibial diaphysis, exaggerated anterior bowing of L&R femoral diaphysis, pronounced medial bowing of L&R fibular diaphysis, pronounced lateral bowing of L&R proximal humerus and medial bowing of L&R proximal ulna.*Circulatory disorders:* Osteochondritis dissecans of posterior calcaneal articular surface of L talus.*Trauma:* Healed blunt force trauma to L parietal: On the anterior half of the L parietal, an almost linear depression with smooth edges is running from the R anterior-lateral to the L posterior-lateral, originating at the sagittal suture. It measures 2.60 cm in maximum length, between 0.30 and 0.80 cm in breadth and 0.20 cm in maximum depth. Although the main aspect of the wound is almost linear, another area of only slightly depressed bone is extending laterally left from the mid-point of the main part of the wound for about 1 cm in maximum length and 0.60 cm in maximum breadth. It is difficult to envision the instrument or weapon that would have caused the wound, but the blow would have come from a superior aspect.An exostosis of solid compact bone is present on the lateral aspect of the distal articular surface of the L 2nd proximal hand phalanx. This is probably the result of soft tissue trauma to the joint capsule or associated tendons or ligaments.*Congenital anomalies:* Incomplete fusion of the L&R transverse foramen of the atlas.*Non-metric traits:* Supraorbital notch (L&R), lambdoid ossicle, palatine torus and suprascapular notch (L&R).*Strontium and oxygen isotope analysis of tooth enamel* by Jane Evans and Angela Lamb*Introduction*

A second molar from an archaeological site in Cratloemoyle, County Clare, Ireland was received from TVAS Ireland, for isotope analysis. The aim was to determine whether the individual was raised locally or originated elsewhere.

Analytical Method - Sr isotopes

The available enamel surface of the tooth was abraded from the surface to a depth of >100 microns using a tungsten carbide dental bur and the removed material discarded. Thin enamel slices were then cut from the tooth using a flexible diamond edged rotary dental saw. All surfaces were mechanically cleaned with a tungsten carbide bur to remove adhering dentine. A sample of soil was leached in de-ionised water for 24 hours, centrifuged and the supernatant fluid sampled. The resulting samples were transferred to a clean (class 100, laminar flow) working area for further preparation. In a clean laboratory, the samples were first cleaned ultrasonically in high purity water to remove dust, rinsed twice, dried down in high purity acetone and then weighed into pre-cleaned Teflon beakers. The tooth enamel sample were mixed with ^{84}Sr tracer solution and dissolved in Teflon distilled 16M HNO_3 . Strontium was collected using Dowex resin columns. Strontium was loaded onto a single Re Filament with TaF following the method of Birck (1986) and the isotope composition and concentrations were determined by Thermal Ionisation Mass spectroscopy (TIMS) using a Thermo Triton multi-collector mass spectrometer. The international standard for $^{87}\text{Sr}/^{86}\text{Sr}$, NBS987, gave a value of 0.710222 ± 8 ($n=35$, 2σ) for static analysis. All strontium ratios have been corrected to a value for the standard of 0.710250. Blank values were in the region of 100pg. Data are presented in Table 6.

Analytical method - Oxygen isotopes

Small fragments of clean enamel (15-20 mg) from the tooth were treated to extract PO_4 radicals and precipitated as silver phosphate, using the method of O'Neil *et al* (1994). The fragments of enamel were cleaned in concentrated hydrogen peroxide for 24 hours to remove organic material and subsequently evaporated to dryness. The sample was then dissolved in 2 M nitric acid and transferred to clean polypropylene test tubes. The sample was then treated with 2 M potassium hydroxide and 2 M hydrogen fluoride to remove calcium from the solution by precipitation. The sample was then centrifuged and the supernatant added to a beaker containing ammoniacal silver nitrate solution and heated gently to precipitate silver phosphate. The silver phosphate was, rinsed, dried and weighed into silver capsules for analysis. Oxygen isotope measurements on the sample were analysed in triplicate by thermal conversion continuous flow isotope ratio mass spectrometry (TC/EA-CFIRMS). The reference material NBS120C, calibrated against certified reference material NBS127 (assuming $\delta^{18}\text{O}$ of NBS127 = +20.3‰ versus SMOW; IAEA 2004), has an accepted value of 21.70‰ (Chenery *et al* in press). The reproducibility of NBS120C during this set of analyses was $21.70\text{‰} \pm 0.38$ (1σ , $n=8$). Drinking water values are calculated using Levinson's equation (Levinson *et al* 1987), after correction of +1.4‰ for the difference between the average published values for NBS120C used at NIGL and the value for NBS120B used by Levinson *et al* (1987) (Chenery *et al* in press). Data are presented in Table 6.

Table 6: The strontium and oxygen isotope composition of tooth enamel and soil from E2083

Sample	Subsample	ppm	$^{87}\text{Sr}/^{86}\text{Sr}$	$\delta^{18}\text{O}$	1sd	DW	1sd
E2083	Enamel, M2	69.33	0.710046	17.28	0.13	-7.66	0.28
E2083-s	Soil leach		0.709270				

DW = drinking water $\delta^{18}\text{O}$ values calculated using Levinson *et al* (1987) according to Chenery *et al* (in press).

Discussion

The tooth enamel resulted in a Sr value of 0.71005, which is close to the soil sample obtained from the site (0.70927) and so the Sr isotope data does not provide any support for the individual to be non local. However, the oxygen isotope drinking water (-7.7) value is slightly off set from the values expected for the Limerick area of Ireland which is near to the boundary of the orange and yellow zones (Fig. 35) and hence would be expected to be close to a value of -6. The combination of the oxygen and the strontium isotopes fit better with either a childhood in a more north-easterly part of Ireland, or south-east England which record the appropriate oxygen (Fig. 35) and strontium (Fig. 36) values. Such combination of data can also be found on the continent.

Conclusions

The individual is unlikely, on the basis of oxygen isotope composition, to have spent his childhood in the Limerick area of Ireland. The two more likely places of origin are either parts of north-east Ireland or south-east England.

Animal bone by Matilda Holmes

Introduction

Animal bones were recovered from subsoil and foundation trench contexts from the house in Area A, the boundary ditch in Area D and depression, pit, layer, ditch, and other linear features from Area E, as well as features related to the kiln and the grave fill (Table 7). Nearly all animal bones came from Area E. The assemblage is dated to the post-medieval period.

This is a small sample, of fewer than 300 bones identified to species (Table 7), which is below the level recommended for detailed investigation (Hambleton 1999). Nonetheless, Area E will be considered in terms of species representation and other selected interpretations.

Table 7: Species representation from hand collected assemblage (fragment count)

Species	Area A	Area D	Area E									Total
	Phase 3	Phase 3	Phase 2a	Phase 2b	Phase 2c	Phase 2d	Phase 2e	Phase 2g	Phase 2h	Phase 3	Area E Total	
Cattle			42		20	6	5	23	17	13	126	126
Sheep/ Goat		2	18		6	2	4	21	9	8	67	69
Sheep		1	2				1	2			5	6
Goat			1					2	1		4	4
Pig			24			1		4	2*	1	30	30
Horse			3	1	3		5		5		17	17
Dog			8	4	4		1	4*		1	18	18
Fallow Deer			1								1	1
Hare								1			1	1
Chicken	1		1*				2	2			4	5
Goose	1							5			5	6
Duck											0	0
Crow				2				3*			2	2
Toad									2		2	2
Total Identified	2	3	99	7	33	9	18	60	34	23	283	288
Medium mammal			14		3	1		14	1		33	33
Large mammal			9		5	1	8	20	13	4	60	60
Mammal			3								3	3
Bird	2				1	1		1	2		5	7
Total	4	3	125	7	42	12	26	95	50	27	384	391

* associated bone groups included as a count of 1

Table 8: Identification of animal bone assemblage

Find No	Cut	Deposit	Sample	No.	Weight (g)	Species
53:4	3	53		9	16	Chicken, large bird, large mammal, unidentified mammal
54:1		54	4	1	<1	Unidentified mammal
56:5	6	56		2	125	Cattle
57:41		57		43	1685	Pig, sheep/ goat, large mammal, cattle, dog, medium mammal, unidentified mammal
59:4	5	59		2	136	Cattle, sheep/ goat
251:8		251		13	67	Sheep/ goat, sheep
263:17		263		5	49	Medium mammal, large mammal
275:6		275		13	2	Medium mammal, pig
293:9		293		1	7	Goose
350:24	205	350		1	<1	Unidentified mammal
351:16	205	351		23	200	Horse
353:54	207	353		237	2017	Dog, chicken, horse, large mammal, medium mammal, cattle, pig, sheep/ goat, unidentified mammal
363:13		363		3	47	Goat, large mammal, medium mammal
366:4		366		5	24	Large mammal, pig, sheep/ goat, medium mammal
367:11		367		21	104	Large mammal
368:2	215	368		12	185	Large mammal, cattle
371:2	228	371		4	5	Medium mammal
372:4	228	372		7	9	Medium mammal, cattle, toad, medium bird
374:1	214	374		16	183	Crow
374:2	214	374	10	ca 60	6	Dog
374:3	214	374	11	ca 40	8	Horse
375:60	228	375		202	720	Dog, large mammal, cattle
377:163		377		189	3316	Crow, chicken, goat, goose, hare, large mammal, medium mammal, cattle, pig, sheep/ goat, sheep, large bird, unidentified mammal
378:5	215	378		11	322	Dog, large mammal, cattle
379:19	216	379		26	945	Dog, horse, large mammal, cattle, sheep/ goat, unidentified mammal
380:10	216	380		6	313	Horse, large mammal, cattle, sheep/ goat
381:7	216	381		5	71	Large mammal, cattle
381:8	216	381	12	4	16	Large mammal, cattle,
383:10	215	383		61	1050	Dog, horse, large mammal, cattle, sheep/ goat, unidentified mammal

Find No	Cut	Deposit	Sample	No.	Weight (g)	Species
384:7	215	384		38	399	Dog, large mammal, cattle, unidentified mammal
386:2	215	386		18	271	Dog, horse, cattle, sheep/ goat, medium mammal
387:8		387		18	212	Chicken, horse, large mammal, cattle, sheep/ goat, sheep
388:44		388		37	256	Crow, large mammal, cattle, sheep/ goat, unidentified mammal
392:9	228	392		2	1	Medium bird
393:1		393		2	23	Large mammal
450:4	217	450		4	141	Large mammal, cattle, pig
451:10	218	451		29	2918	Horse, large mammal, cattle, sheep/ goat
452:16	219	452		59	875	Goat, large mammal, medium mammal, cattle, pig, sheep/ goat, sheep
452:17	219	452	66	21	229	Horse, large mammal, sheep/ goat
453:1	220	453		12	316	Cattle, pig, unidentified mammal
455:4	221	455		63	550	Dog, fallow deer, large mammal, cattle, sheep/ goat, sheep, unidentified mammal, medium mammal
458:4	222	458		3	90	Cattle, large mammal
470:1	225	470		19	840	Large mammal, cattle, pig, sheep/ goat, unidentified mammal, medium mammal
471:9	227	471		35	1132	Large mammal, medium mammal, cattle, sheep/ goat, unidentified mammal
480:1	225	480		63	727	Cattle, pig
495:1	228	495		3	75	Large mammal, cattle
498:2		498		24	282	Medium mammal, cattle, sheep/ goat, large mammal, unidentified mammal
551:4	215	551		12	234	Large mammal, medium mammal, cattle, unidentified mammal
552:1	231	552	68	1	<1	Unidentified mammal
553:1	229	553		2	65	Large mammal
559:26		559		18	576	Dog, large mammal, medium mammal, cattle, sheep/ goat
560:2		560		6	<1	Unidentified mammal
562:31		562		21		Large mammal, medium mammal, cattle, sheep/ goat, unidentified mammal

Methodology

Bones were identified using the author's reference collection and identification manuals as necessary (Table 8). Due to anatomical similarities between sheep and goat, bones of this type were assigned to the category 'sheep/goat', unless a definite identification using guidelines from Prummel and Frisch (1986) or Payne (1985) could be made. Bones that could not be identified to species were, where possible, categorised according to the relative size of the animal represented (small – rodent /rabbit sized, medium – sheep / pig / dog sized or large – cattle / horse size). Ribs and vertebrae were not identified to species with the exception of 1st and 2nd cervical vertebrae and sacral elements. Maxilla, zygomatic arch and occipital areas of the skull were identified from skull fragments.

Tooth wear and eruption were noted using guidelines from Grant (1982) and Silver (1969), as were bone fusion (Amorosi 1989; Silver 1969), metrical data (Albarella and Payne 2005; Davis 1992; von den Driesch 1976), anatomy, side, zone (Serjeantson 1996), pathology, butchery (Lauwerier 1988; Sykes 2007), bone working and condition (Lyman 1994) of the bones.

A number of sieved samples were collected but because of the highly fragmentary nature of such samples a selective process was undertaken, whereby fragments were recorded only if they could be identified to species and/ or element, or showed signs of taphonomic processing.

All fragments were recorded, although articulated or associated fragments were entered as a count of 1, so they did not bias the relative frequency of species present. Details of articulated bones were recorded in a separate table.

Condition and taphonomy

The bones were in fair condition, with a mean of 17% of the assemblage from Area E showing signs of fresh breaks. Some of these, as well as a number of fragments that had broken in antiquity were re-fitted to make larger fragments (Table 9), suggesting that the bones were friable, and not conducive to optimum preservation. This was reflected in the ratio of loose teeth to mandibles (1:1.2), which also indicates that preservation was fair.

There was no evidence for burning, although approximately 6% of the assemblage showed signs of rodent or canid gnawing, suggesting that the bones were not always buried immediately after disposal.

There were a large number of associated bone groups from this site:

- Ditch 207, deposit 353, Area E phase 2a, 40 fragments of a mature chicken skeleton, with both spurs present, and exostosis on the phalanges.
- Kiln 228, deposit 375, Area E phase 2g, 108 fragments from a minimum number of four puppy skeletons.
- Destruction layer, deposit 388, Area E phase 2g, nine fragments of a crow skeleton.
- Pit 225, deposit 480, Area E phase 2h, 103 fragments (right foreleg and vertebrae) from a pig circa 1 year old.
- Alluvial layer, deposit 275, Area D, 11 fragments of a partial skeleton from a pig, less than 42 months old.

With the exception of the partial crow skeleton, these associated bone groups are all from domestic animals. There were no signs of butchery, burning or gnawing on any of these animal burials, and it is most likely that, given the mix of food and non-food animals, these represent the opportune disposal of animals.

Table 9: Condition and factors affecting the assemblage from Area E

Condition	Phase 2a	Phase 2b	Phase 2c	Phase 2d	Phase 2e	Phase 2g	Phase 2h	Phase 3	Total %
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Condition	Phase 2a	Phase 2b	Phase 2c	Phase 2d	Phase 2e	Phase 2g	Phase 2h	Phase 3	Total %
1 Excellent	1	2			1	1	2		2
2 Good	28		11	3	11	50	9	2	34
3 Fair	71		26	7	9	39	26	16	58
4 Poor	8	5	1	1	2		2	2	6
5 Unrecognisable									0
Butchery	5		1		2	8	3	5	7
Burning									0
Gnawing	4		2	1		8	2	1	5
Fresh break	16	1	10		2	8	10	2	14
Refit	23=10	4=1	17=6	2=1	7=4	6=3	4=2	5=1	68=28
Loose teeth (mandibles)									14:17

Diet and Butchery

In all sub-phases cattle were the most common animal recovered (Table 7), then sheep/goats, with the exception of sub-phase 2a, when pigs were the second most common species. Pig, horse and dog bones were recovered from most sub-phases, in small numbers, although the absence of butchery marks on the latter two species may indicate that these animals did not form part of the diet. Wild mammals were recovered from sub-phases 2a (fallow deer) and 2g (hare). The toad recovered in sub-phase 2h is a background species, which indicates that part of the local environment provided a damp habitat preferred by these animals.

Domestic fowl were present in small numbers from sub-phases 2a, 2e and 2g, and geese from 2g. Although there were no clear indicators of whether the geese were wild or domestic, the only definitely wild bird species were represented by crow bones which were found in phases 2b and 2g.

Few of the highly fragmented bones from environmental samples were identified to species (Table 10), which included sheep/ goat and pig bones from sub-phase 2a, and a dog metapodial from sub-phase 2b.

Butchery marks were found on cattle bones, mostly as chop marks, and on sheep/ goat and pig bones as chop and cut marks (Figure 37). This is not unusual and reflects the use of heavy chopper implements to dismember the larger cattle bones, whereas the more slender limbs of sheep and pigs were more easily disarticulated using a knife. The use of a saw was also noted on a cattle humerus.

As the majority of the assemblage came from the main domesticates (sheep/goat, cattle and pig) which bear evidence of butchery, it is likely that it reflects the animals eaten by those living in and around the area. Of these, beef would have been the most common meat eaten, then lamb and pork. It is probable that some of the other species also formed part of the diet, particularly the domestic fowl, goose, deer and hare. Dog and horse may also have been eaten, although there is no sign of butchery on their bones. The toad and crow were most likely background species, and of no economic or dietary importance to the local population.

Table 10: Species representation from samples (fragment count)

Species	Area E	
	Phase 2a	Phase 2b
Sheep/ goat	1	-
Pig	1	-
Dog	-	1

The assemblage

All parts of the cattle carcass were present (Fig. 38, Table 11), although with a greater number of proximal metatarsals than any other part of the body. Sheep/ goats were best represented by forelimbs and mandibles, although hind limbs and lower legs were recovered. Pigs were also skewed towards the upper limbs, although this was a small sample. The absence of sheep and pig phalanges is possibly the result of recovery bias, as these elements are notoriously likely to be missed during excavation (Payne 1972).

The vast majority of cattle were mature at death, with no evidence for animals which died before reaching 2 years of age in the fusion data (Figure 39), and nearly 80% of the assemblage alive into maturity. Of the two mandibles complete enough to use for tooth wear and eruption analysis, one was from an animal approximately 2-3 years old (wear stage E/F, based on Hambleton 1999), and another from a calf that had died in the second half of the first year (with the 2nd molar erupting). This perhaps reflects differences in butchery patterns between young and old animals. The general trend, however, is one where cattle were used for secondary products (milk or traction), primarily, and were not killed at prime meat ages.

A compromise was noted in the sheep husbandry (Figs 39-40), where a steep kill-off is in evidence in both the fusion and tooth wear evidence, when half the population is culled between 13 and 36 months to supply meat, and other animals kept alive over 3 years, to supply wool, milk or manure. This is a common trend in post medieval Ireland (Murphy 2007).

Pigs are traditionally culled at young ages, as they are of little use for secondary products. This is reflected in the fusion data (Fig. 39), where there is a steep kill-off of animals from one year of age, when they would be nearing the optimum age for meat productivity (Noddle 1990).

All dog and horse bones were fused, suggesting that these animals were not killed until they had led a productive working life. However, at least four puppies had been disposed of in a kiln, which may have been the result of natural neonatal casualties, a cull of animals excess to requirements, or have had some symbolic nature.

The fallow deer was represented by an unfused calcaneus, which would have come from an animal less than 29 months old and the hare by a fused proximal ulna. All chicken and goose remains came from mature animals.

Table 11: Fragment representation Area E (Epiphysis only count)

Element	Cattle	Sheep	Pig
Skeleton			1
Skull	1		
Horn Core	4		
Occipitale	1	1	1
Zygomaticus	2		
Mandible	3	6	2
Atlas	4		
Axis	2	2	
Sacrum	1		
Scapula D	3	4	
Humerus P	1		2
Humerus D	1	11	2
Radius P	4	5	
Radius D	3	3	
Pelvis	5	4	1
Femur P	2		1

Element	Cattle	Sheep	Pig
Femur D	2	1	2
Tibia P	4		1
Tibia D	3	4	3
Metacarpal P	1	1	1
Metacarpal D			1
Metatarsal P	10	2	
Metatarsal D	2	1	
1st phalange	2		
2nd phalange	1		
3rd phalange	1		
Total	63	45	18

Summary

This small assemblage has been useful enough to suggest some trends from the animal bones recovered from Area E in the post-medieval period. There was no evidence for breeding or rearing cattle or sheep on the site, and it is likely that they were bought in for food purposes. Cattle would have been used for secondary products, and sheep a mixture of meat and secondary product production.

Glass by Edel Ruttle

Four hundred and twenty three pieces of glass were examined (Appendix 7). All the material was hand collected. The highest quantity of material (342 pieces) came from the kiln and flue within Area E; context 376, a fill of the kiln, producing 149 pieces alone.

A maximum of 304 bottles, 14 vessels and 68 pieces of window glass are represented in this assemblage. The material was examined and features identified that give an indication of the date and type of manufacture (Banks 1997, Hedges 1975 and Roche 2007).

Bottle glass

Base and body sherds

There are 320 base and body sherds in the assemblage (representing 283 bottles). The majority of the sherds are dark green in colour and are patinated.

Onion bottles - early 18th century

With a whole base and 70% of the body intact find 392:1a-b is the best example of an onion shaped bottle from the assemblage (Fig. 41). The bottle is 130 mm in diameter, has a 35 mm kick-up with a pontil mark. Find 376:60 has a whole base, the kick-up is off centre and ranges from 20 to 25 mm high and the pontil mark is blue in colour (Fig. 42). The blue colour suggests that waste glass was used to attach the pontil rod and makes it probable that this bottle was hand blown.

Finds 377:153a-b are the co-joining base and body sherds of a circular onion bottle. The base is 145 mm in diameter with 23 mm kick-up. There are two small sized onion bottles, 375:29a-b & 57a-c, measuring approximately 115 mm in diameter and finds 293:8, 376:104a-c and 376:112a-b are sherds of onion bottle bodies.

Mallet or squat cylinder - c. 1740-1850

Finds 375:30 and 376:195 co-join to form an almost complete base of a mallet or squat cylinder bottle. If complete the base would be 145 mm in diameter and have a 23 mm kick-up. Find 376:70 is a squat cylinder bottle with a pontil mark (Fig. 42).

True cylinder bottle - c. 1740-1850

Finds 451:3-6 and 8 co-join to form part of the base and body of a true cylinder bottle with a 15 mm kick-up (Fig. 43). Find 9 is from the same bottle but does not co-join with the other pieces. Finds 350:20 and 353:41 are also sherds from a true cylinder bottle. Find 353:41 is black and has a 30 mm kick-up (Fig. 43).

Undated

The remaining base sherds ranged in diameter from 120 to 145 mm with kick-ups ranging from 18 to 32 mm. Pontil marks were also evident on these sherds. Find 353:39 is opaque blue and white in colour. Impurities or cobalt in the sand could have caused this colour of glass. Indeed some of the pontil marks seen in the assemblage were blue in colour. Find 376:63 has possible a seam line (from a wooden mould).

Modern bottles

Seven sherds are from modern bottles. Finds 57:21, 71:1-2 and 353:40 are clear thick body sherds that are moulded, 263:11 is amber coloured and 351:14-15 are green sherds with bubbles in the glass.

Neck sherds

There are 26 neck sherds in the assemblage (representing 21 bottles). As with the bases and bodies, the sherds are predominately green in colour and are patinated. The length of the necks ranged from 56 to 74 mm. The average diameter of lips is 20 mm.

Approximately half of the sherds have lip and string rims present whose development can be dated (Banks 1997) as seen in Table 12.

Table 12: Datable neck sherds

Find No	Date	Comments
E2083:59:1	c. 1640 to early 18 th century	
E2083:59:2a-b	c. 1640 to early 18 th century	
E2083:375:49	Early 18 th century	Fig. 44
E2083:375:58a-b	Early 18 th century	
E2083:376:66	Early 18 th century	
E2083:376:67	c. 1700-1720	Fig. 44
E2083:376:68	c. 1640 to 1720	
E2083:376:72	Early 18 th century	
E2083:376:73	Early 18 th century	
E2083:376:74	Early 18 th century	
E2083:376:75	Early 18 th century	
E2083:377:154	c. 1760	Development of having the string rim smoothed off (Fig. 45)
E2083:381:2	c. 1640 to early 18 th century	Metal wire still attached (Fig. 45, Plate 33)
E2083:392:2	Early 18 th century	Onion bottle style neck (Fig. 46)

Vessels

Similarly decorated vessels came from two deposits 377 & 388; finds 377:84 and 388:29 have the same exterior decoration of oval shaped hollow facets (Fig. 46) and 377:85 & 133-134 has hexagon shaped hollow facets. Find 388:29 has a rim and the decoration starts 8 mm below the rim. All the sherds have become patinated from decay. The glass is too thick for the vessels to be drinking glasses; however five drinking glasses are represented in the assemblage. The drinking glass sherds are clear and 1mm thick.

Finds 71:34-36 are modern glass fragments that are clear on the inside and white on the outside.

Window glass

Sixty-one fragments of window glass were recovered. Twenty-two sherds are clearly modern, while 39 pieces of window glass in this assemblage are likely to be pre-19th century as they are thin. Ten of the sherds are clear and 28 are green, they vary in thickness from 1 to 2 mm and some are patinated.

Diamond shaped glass and the use of lead flashing died out during the eighteenth century (Roche 2007, 414). Decorative and stained glass windows were used as a display of wealth in this period. Two sherds, 367:5 and 377:87, are a possible diamond shape and two sherds come from deposit 452 which has lead flashing present in the deposit. Find 371:3 is an opaque flat glass sherd that could be from a decorative window.

Pottery by Clare McCutcheon and Edel Ruttle

A total of 127 sherds were presented for study. Following identification and reassembly this was reduced to 102 sherds of pottery. All the material was collected by hand with the highest quantity (30) coming from deposit 71 topsoil, followed by 27 sherds from deposit 377 kiln rubble.

Methodology

The sherds were identified visually and the results are shown in Table 13, showing the *record number*, *context* and *finds* number; the *identification* of the fabric type; the diagnostic *description* i.e. rim, handle etc; the *link* of certain sherds within and with other contexts and a *date*.

Table 13: Identification of post-medieval pottery from E2083

Find No.	Area	Cut	Deposit	Identification	Description	Link	Date
E2083:57:2	E		57	Tin glazed earthenware	Handle from a chamber pot?; white		17 th / 18 th c
E2083:57:3	E		57	Tin glazed earthenware	Base from a platter; white	Co-joins 57:4	17 th / 18 th c
E2083:57:4	E		57	Tin glazed earthenware	Base from a platter; white	Co-joins 57:3	17 th / 18 th c
E2083:57:5	E		57	Creamware	Body		18 th c
E2083:57:7	E		57	Tin glazed earthenware	Body; brown swirl pattern	Same pattern as 57:8	17 th / 18 th c
E2083:57:8	E		57	Tin glazed earthenware	Body; brown swirl pattern	Same pattern as 57:7	17 th / 18 th c
E2083:60:1	-		60	Stoneware	Body; with blue glaze		19 th c
E2083:71:4	All		71	Stoneware	Rim of a storage jar		19 th / 20 th c
E2083:71:5	All		71	Stoneware	Rim of a storage jar		19 th / 20 th c
E2083:71:6	All		71	Stoneware	Body of a storage jar		19 th / 20 th c
E2083:71:7	All		71	Stoneware	Base and body of a storage jar		19 th / 20 th c
E2083:71:8	All		71	Porcelain	Base of a saucer	Same pattern as 71:9 & 12-13	20 th c
E2083:71:9	All		71	Porcelain	Rim of a saucer	Same pattern as 71:8 & 12-13	20 th c
E2083:71:10	All		71	Porcelain	Base		20 th c
E2083:71:11	All		71	Porcelain	Base		20 th c
E2083:71:12	All		71	Porcelain	Rim	Co-joins 71:13, same pattern as 71:8-9	20 th c
E2083:71:13	All		71	Porcelain	Rim	Co-joins 71:12, same pattern as 71:8-9	20 th c
E2083:71:14	All		71	Stoneware	Base of a mug; with print decoration	Co-joins 71:17, same decoration as 71:15-23	19 th / 20 th c
E2083:71:15	All		71	Stoneware	Handle of a mug; with print decoration	Same decoration as 71:14 & 16-23	19 th / 20 th c
E2083:71:16	All		71	Stoneware	Body of a mug; with print decoration	Co-joins 71:22, same decoration as 71:14-15 & 17-23	19 th / 20 th c
E2083:71:17	All		71	Stoneware	Base of a mug; with print decoration	Co-joins 71:14, same decoration as 71:14-16 & 18-23	19 th / 20 th c

Find No.	Area	Cut	Deposit	Identification	Description	Link	Date
E2083:71:18	All		71	Stoneware	Body of a mug; with print decoration	Same decoration as 71:14-17 & 19-23	19 th / 20 th c
E2083:71:19	All		71	Stoneware	Rim of a mug; with print decoration	Same decoration as 71:14-18 & 20-23	19 th / 20 th c
E2083:71:20	All		71	Stoneware	Body of a mug; with print decoration	Same decoration as 71:14-19 & 21-23	19 th / 20 th c
E2083:71:21	All		71	Stoneware	Body of a mug; with print decoration	Same decoration as 71:14-20 & 22-23	19 th / 20 th c
E2083:71:22	All		71	Stoneware	Body of a mug; with print decoration	Co-joins 71:16, same decoration as 71:14-21 & 23	19 th / 20 th c
E2083:71:23	All		71	Stoneware	Body a mug; with print decoration	Same decoration as 71:14-22	19 th / 20 th c
E2083:71:24	All		71	Transfer print ware	Rim of a plate		19 th / 20 th c
E2083:71:25	All		71	Stoneware	Rim of a storage jar		19 th / 20 th c
E2083:71:26	All		71	Creamware	Body		18 th c
E2083:71:27	All		71	Transfer print ware	Rim of a plate		19 th / 20 th c
E2083:71:28	All		71	Creamware	Rim		18 th c
E2083:71:29	All		71	Stoneware	Body		19 th c
E2083:71:30	All		71	Creamware	Base		18 th c
E2083:71:31	All		71	Transfer print ware	Rim of a cup		19 th / 20 th c
E2083:71:32	All		71	Creamware	Body		18 th c
E2083:71:33	All		71	Transfer print ware	Base		19 th / 20 th c
E2083:350:9	F	205	350	Tin glazed earthenware	Body		18 th c
E2083:350:10	F	205	350	Shell-edged ware	Rim, perforated		19 th / 20 th c
E2083:350:11	F	205	350	Glazed red earthenware	Rim; slip decorated		19 th c
E2083:350:12	F	205	350	Glazed red earthenware	Body		17 th / 19 th c
E2083:350:13	F	205	350	Glazed red earthenware	Body	Co-joins 351:10	17 th / 19 th c
E2083:350:14	F	205	350	Glazed red earthenware	Body	Co-joins 350:15 & 18-19	17 th / 19 th c
E2083:350:15	F	205	350	Glazed red earthenware	Body	Co-joins 350:14 & 18-19	17 th / 19 th c
E2083:350:16	F	205	350	Glazed red earthenware	Body	Co-joined 350:17	17 th / 19 th c

Find No.	Area	Cut	Deposit	Identification	Description	Link	Date
E2083:350:17	F	205	350	Glazed red earthenware	Body	Co-joined 350:16	17 th / 19 th c
E2083:350:18	F	205	350	Glazed red earthenware	Body	Co-joins 350:14-15 & 19	17 th / 19 th c
E2083:350:19	F	205	350	Glazed red earthenware	Body	Co-joins 350:14-15 & 18	17 th / 19 th c
E2083:351:6	F	205	351	Glazed red earthenware?	Body	Same fabric as 351:7-8	17 th / 19 th c
E2083:351:7	F	205	351	Glazed red earthenware?	Body	Same fabric as 351:6 & 8	17 th / 19 th c
E2083:351:8	F	205	351	Glazed red earthenware?	Body	Same fabric as 351:7-8	17 th / 19 th c
E2083:351:9	F	205	351	Glazed red earthenware	Body		17 th / 19 th c
E2083:351:10	F	205	351	Glazed red earthenware	Body	Co-joins 350:13	17 th / 19 th c
E2083:351:11	F	205	351	Glazed red earthenware	Body		17 th / 19 th c
E2083:351:12	F	205	351	Glazed red earthenware	Base		17 th / 19 th c
E2083:351:13	F	205	351	Transfer print ware	Rim of a plate		19 th / 20 th c
E2083:353:27	E	207	353	Creamware	Base		18 th c
E2083:353:29	E	207	353	Transfer print ware	Base		19 th / 20 th c
E2083:353:30	E	207	353	Creamware	Rim	Co-joins 353:31	18 th c
E2083:353:31	E	207	353	Creamware	Rim	Co-joins 353:30	18 th c
E2083:353:55	E	207	353	Glazed red earthenware	Rim		17 th / 19 th c
E2083:366:1	E		366	Frechen stoneware	Body of a Bartmann jug	Co-joins 378:4 & 384:3	17 th c
E2083:366:2	E		366	Black glazed ware	Body		18 th / 19 th c
E2083:366:3	E		366	Black glazed ware	Rim of a pancheon		18 th / 19 th c
E2083:375:4	E	228	375	Black glazed ware	Rim of a pancheon	Co-joins 375:5	18 th / 19 th c
E2083:375:5	E	228	375	Black glazed ware	Rim of a pancheon	Co-joins 375:4	18 th / 19 th c
E2083:377:27	E		377	Tin glazed earthenware	Handle		17 th / 18 th c
E2083:377:28	E		377	Porcelain	Rim of vase?; blue pattern	Co-joins 377:29	20 th c
E2083:377:29	E		377	Porcelain	Rim of vase?; blue pattern	Co-joins 377:28	20 th c
E2083:377:30	E		377	Transfer print ware	Rim		19 th / 20 th c
E2083:377:31	E		377	Tin glazed earthenware	Body, curved; blue pattern		17 th / 18 th c
E2083:377:33	E		377	Tin glazed earthenware	Body, curved; blue pattern	Same pattern as 377:34-36	17 th / 18 th c

Find No.	Area	Cut	Deposit	Identification	Description	Link	Date
E2083:377:34	E		377	Tin glazed earthenware	Body, curved; blue pattern	Same pattern as 377:33 & 35-36	17 th / 18 th c
E2083:377:35	E		377	Tin glazed earthenware	Rim, curved; blue pattern	Same pattern as 377:33-34 & 36	17 th / 18 th c
E2083:377:36	E		377	Tin glazed earthenware	Rim, curved; blue pattern	Same pattern as 377:33-35	17 th / 18 th c
E2083:377:37	E		377	Creamware	Base		18 th c
E2083:377:38	E		377	Frechen stoneware	Body		17 th / 18 th c
E2083:377:39	E		377	Glazed red earthenware	Rim of a bowl	Co-joins 377:40-42, 44-45 & 52	17 th / 19 th c
E2083:377:40	E		377	Glazed red earthenware	Rim of a bowl	Co-joins 377:39, 41-42, 44-45 & 52	17 th / 19 th c
E2083:377:41	E		377	Glazed red earthenware	Rim of a bowl	Co-joins 377:39-40, 42, 44-45 & 52	17 th / 19 th c
E2083:377:42	E		377	Glazed red earthenware	Body of a bowl	377:39-41, 44-45 & 52	17 th / 19 th c
E2083:377:43	E		377	Black glazed ware	Body	Co-joins 377:51	18 th / 19 th c
E2083:377:44	E		377	Glazed red earthenware	Body of a bowl	Co-joins 377:39-42, 45 & 52	17 th / 19 th c
E2083:377:45	E		377	Glazed red earthenware	Body of a bowl	Co-joins 377:39-42, 44 & 52	17 th / 19 th c
E2083:377:46	E		377	Stoneware	Rim, with brown glaze		19 th c
E2083:377:47	E		377	Transition ware?	Body		15 th / 16 th c
E2083:377:48	E		377	Glazed red earthenware	Body		17 th / 19 th c
E2083:377:49	E		377	Black glazed ware	Body		18 th / 19 th c
E2083:377:50	E		377	Glazed red earthenware	Base		17 th / 19 th c
E2083:377:51	E		377	Black glazed ware	Body	Co-joins 377:43	18 th / 19 th c
E2083:377:52	E		377	Glazed red earthenware	Body of a bowl	Co-joins 377:39-42 & 44-45	17 th / 19 th c
E2083:377:53	E		377	Frechen stoneware	Body		17 th / 18 th c
E2083:377:54	E		377	Black glazed ware	Body		18 th / 19 th c
E2083:378:2	E	215	378	Black glazed ware	Body		18 th / 19 th c
E2083:378:3	E	215	378	Frechen stoneware	Body		17 th / 18 th c
E2083:378:4	E	215	378	Frechen stoneware	Body of a Bartmann jug	Co-joins 366:1 & 384:3	17 th c
E2083:379:7	E	216	379	Tin glazed earthenware	Base of a platter		17 th / 18 th c

Find No.	Area	Cut	Deposit	Identification	Description	Link	Date
E2083:384:3	E	215	384	Frechen stoneware	Body of a Bartmann jug	Co-joins 366:1 & 378:4	17 th c
E2083:384:4	E	215	384	Frechen stoneware	Body	Co-joins 384:5	17 th / 18 th c
E2083:384:5	E	215	384	Frechen stoneware	Body	Co-joins 384:4	17 th / 18 th c
E2083:388:30	E		388	Frechen stoneware	Rim		17 th / 18 th c
E2083:450:1	E	217	450	Black glazed ware	Body		18 th / 19 th c
E2083:452:3	E	219	452	Glazed red earthenware	Base		17 th / 19 th c
E2083:452:4	E	219	452	Frechen stoneware	Body		17 th / 18 th c
E2083:452:5	E	219	452	Tin glazed earthenware	Rim		18 th c
E2083:455:1	E	221	455	Transition ware?	Body	Co-joins 455:2	15 th / 16 th c
E2083:455:2	E	221	455	Transition ware?	Body	Co-joins 455:1	15 th / 16 th c
E2083:471:2	E	227	461	Tin glazed earthenware	Rim of a chamber pot?	Co-joins 471:3-4	17 th / 18 th
E2083:471:3	E	227	461	Tin glazed earthenware	Rim of a chamber pot?	Co-joins 471:2 & 4	17 th / 18 th
E2083:471:4	E	227	461	Tin glazed earthenware	Rim of a chamber pot?	Co-joins 471:2-3	17 th / 18 th
E2083:471:5	E	227	461	Tin glazed earthenware	Body/rim of a chamber pot?		17 th / 18 th
E2083:471:6	E	227	461	Tin glazed earthenware	Body of a chamber pot?		17 th / 18 th
E2083:471:7	E	227	471	Tin glazed earthenware	Body; blue pattern		17 th / 18 th
E2083:498:1	E		498	Black glazed ware	Body		18 th / 19 th c
E2083:559:3	N/A		559	North Devon gravel tempered	Rim of a pancheon		17 th c
E2083:559:4	N/A		559	Glazed red earthenware	Base		17 th / 19 th c
E2083:559:5	N/A		559	Creamware	Base		18 th c
E2083:559:6	N/A		559	Creamware	Rim		18 th c
E2083:559:7	N/A		559	Creamware	Base		18 th c
E2083:559:23	N/A		559	Frechen stoneware	Body		17 th / 18 th c
E2083:562:18	E		562	Glazed red earthenware	Rim		17 th / 19 th c
E2083:562:19	E		562	North Devon gravel tempered	Base		17 th c
E2083:562:20	E		562	North Devon gravel tempered	Base		17 th c
E2083:562:21	E		562	Glazed red earthenware	Body		17 th / 19 th c
E2083:562:22	E		562	Glazed red earthenware	Body		17 th / 19 th c
E2083:562:23	E		562	Tin glazed earthenware	Body		17 th / 18 th c
E2083:562:24	E		562	Creamware	Body		18 th c

Discussion

Eleven groups of pottery emerged from the study; late medieval transition ware, stoneware, Frechen stoneware, tin glazed earthenware, North Devon gravel tempered ware, glazed red earthenware, black glazed ware, porcelain, creamware, transfer print ware and shell-edged ware. This is a varied assemblage of domestic ware, showing German and English imports.

Late medieval transition ware

There are three pieces in the assemblage that may be transition ware dated to the 15th or 16th centuries. The sherds (377:47 and 455:1-2) have a greyish red fabric with a brown outer glaze.

Stoneware

Stoneware originated in Germany from the 16th century. Stoneware was developed in the later 17th century in England to compete with imported German wares. In the 19th and early 20th centuries stoneware bottles were widely used for storage (i.e. ink bottles) and food and drink processing (i.e. beers and whiskeys). Five sherds of storage jars are represented and there is a single mug with a brown swirl pattern with red apples painted on a black background (71:14-23).

Frechen stoneware

This type of stoneware was made in the town of Frechen, Germany from the mid 16th to 19th centuries (McCutcheon 2003). The fabric is dark grey stoneware with a mottled brown salt glaze. There are six different glazes identified in the assemblage and one example of a Bartmann jug (366:1, 378:4 & 384:3) (Plate 34). Bartmann jugs are sometimes referred to as 'Bellarmine'. William Chaffers gave the name of Bellarmine to mottled stoneware vessels with bearded masks as decoration which were imported from Germany (Holmes 1951). The bearded masks were thought to be a satire of Cardinal Bellarmine of the Reformed Church. However Holmes argues that the jugs could have been in existence before the time of Bellarmine and they may well be representations of other champions of the Reformation such as Oecolampadius or Frederick III. The mask represented here is Holmes Type IX which, after the excavation of the ship *Vergulde Draeck*, is dated to pre 1655 (Wood Lessman 1997). The masks are made by pressing clay into a wooden mould and then applying it to the jug before final glazing and firing.

Tin glazed earthenware

This ware was first developed in Europe in the 12th century in Italy with the ware reaching England in the late 16th century (Draper 1984, 25). Tin glazed earthenware was made in Ireland throughout the 17th and 18th centuries until it was replaced by creamware. There a number of tin glazed earthenware sherds in the assemblage with differing patterns as well as just plain white glazes. Finds 57:7-8 have a brown swirl pattern and 377:33-36 have a blue floral pattern.

North Devon gravel tempered ware

This ware was manufactured in North Devon from the 17th century. The ware was exported to Ireland in the second half of the 17th century (Grant 1983). The ware has a fine pinkish fabric with a grey core with the addition of quartz sand and has a clear lead glaze fired to a green or brown colour. The ware was used for larger domestic vessels. The rim of a pancheon is identified in this assemblage (559:3).

Glazed red earthenware

These are also known as brownwares and were made widely in England and Ireland in the later 17th and 18th centuries (Dunlevy 1988, 24-5). A typical 18th century kiln was excavated at Tuam, Co. Galway with milk pans and dishes comprising a majority of the vessels (Carey and Meenan 2004). The clear lead glaze used takes its colour from the fabric (Jennings 1981, 157). 350:11 is slip glazed. There are six different fabrics of glazed red earthenware represented. The only vessel that could be reconstructed was that of a bowl (377:39-42, 44-45 & 52) (Plate 35).

Black glazed ware

Blackwares were produced in the Buckley region of North Wales in the 18th and 19th centuries (Davey 1975) and also in Lancashire and there are occasional production sites in Ireland. They are red fired clay with a black glaze, caused from iron added to the lead glaze. Two rims of pancheons were identified in the assemblage (366:3 and 375:4-5) (Plate 36).

Porcelain

Porcelain was imported from China in the 18th century. The imports were often plain and decorated in Europe. Two patterns are represented in the assemblage; blue decoration on the rim (71:8-9 & 12-13) and an overall blue floral decoration (377:28-9).

Creamware

This ware was made in factories in the United Kingdom, mainly in Staffordshire, from the late 18th century and was developed by Josiah Wedgwood to compete with porcelain. This mass produced tableware replaced tin glazed earthenware as the everyday tableware (Savage and Newman 1985, 88). Its proliferation in the archaeological record indicates that it was easily obtainable and inexpensive (Meenan 2007).

Transfer printed ware

Transfer print was a decorative technique developed in the mid-18th century and used on creamwares, pearlwares and stonewares. This consisted of inking engraved copper plate, transferring the design to paper and then pressing it onto the vessel when still wet (Savage and Newman 1985, 296).

Shell-edged ware

One of the most popular and long-lived styles ever produced by the English ceramics industry was the shell edge (Miller and Hunter 1990). Made mainly in Staffordshire the shell edge was used as decoration on creamwares and was inspired by rococo design elements. The ware was made and exported in large quantities between 1780 and 1860. In the 19th century the ware is simply known as edged. Find E2083:350:10 is perforated (perhaps for repair?).

Metal

Ferrous and Non Ferrous Artefacts by Miriam Carroll and Annette Quinn

Introduction

One hundred and four ferrous and non-ferrous artefacts were recovered during excavations at Cratloemoyle Site 1 (A005/2012) E2083. A variety of objects were recovered from the excavation, some of which were found during metal detecting. The assemblage includes five coins (E2083:71:48, E2083:71:49, E2083:71:50, E2083:558:11 and E2083:563:1) including a 16th century silver threepence. Dress accessories such as buttons (E2083:71:51, E2083:71:52, E2083:71:53, E2083:71:54, E2083:71:55, E2083:71:56, E2083:71:57 and E2083:558:12) and a purse clasp (E2083:71:37) are also represented. A number of items (39) which could not be readily assigned a definite classification are listed under miscellaneous. The artefacts recovered are discussed below according to type and general function, where possible, and each section is followed by a catalogue.

Dress Accessories

Purse Frame/ Clasp

One purse frame or clasp (E2083:71:37) was recovered from the topsoil. It consists of a well-preserved frame and clasp which is elaborately decorated with loops and raised rosette motifs. Purse frames are known in the archaeological record since the medieval period with one copper alloy example from a 14th century deposit in London (Egan and Pritchard 2002, 356). Manuscript illuminations from the first half of the 14th century show gamebags which appear to have circular frames and were fastened by drawstrings and it has been suggested that most purses with metal frames from this period were used for this purpose (*ibid.*). The purse frame from Cratloemoyle would appear

to be much later in date and in form resembles purse frames which came into use during the Victorian era. Knitted and beaded purses and bags came into fashion in the Victorian period and had a variety of shapes and styles. Purses and bags of this time had metal frames of silver, gold and copper alloy which were often elaborately decorated. The purse frame from Cratloemoyle is likely to be 19th century in date.

Purse frame/ clasp. E2083:71:37. *Cu Alloy*. L. 71.3mm, W. 6.4mm, Th. 7.2mm, Wt. 17.9mm. Complete. Small purse clasp comprising two D-shaped hinged frames in the closed position. 12 small perforations for attachment to purse extant on each frame. Elaborately decorated with continuous loops in each of which is a small raised rosette motif. Each end of the frames splays out where hinge mechanism is located. Splayed ends decorated with three leaves in relief. Tiny leaf motif also apparent along top of frame. Opening mechanism partially extant in form of small rivet at top of frame which would have been pressed down to release the iron mechanism hidden inside frame (extant). Small decorated copper alloy ring attached to small loop on one side of frame. Conserved

Buttons

Eight buttons (E2083:71:51, E2083:71:52, E2083:71:53, E2083:71:54, E2083:71:55, E2083:71:56, E2083:71:57 and E2083:558:12) were recovered from the site at Cratloemoyle, the majority of which came from the topsoil. The range of button types produced during the 19th and 20th centuries is vast. Many 19th century examples are flat disk-type buttons which are usually distinguished by stamped designs, lettering or the manner in which the eye has been attached. According to Noël Hume (1969, 90) a typology of buttons from two colonial sites in America places flat disk buttons with stamped words on the back in the first half of the 19th century.

Button. E2083:71:54. *Cu Alloy & white metal?* D. 18mm, Th. 1mm, Wt. 1.9g. Complete. Flat disk button with looped eyelet. Traces of copper plating on underside with partial remains of lettering reading ‘...LATED’ and number 30. Word possibly originally read ‘Plated’. Upper surface is plain and has silvery appearance. Post-medieval in date. Possibly 19th century?

Button. E2083:71:55. *Cu Alloy & Fe?* D. 14.5mm, Th. 1mm, Wt. 1.5g. Complete. Flat disk button with looped eyelet. Possibly iron button plated with copper alloy. Lettering on underside reads ‘PLATED’ with three rosettes beneath. Post-medieval in date. Possibly 19th century?

Button. E2083:71:57. *Fe?* D. 12.4mm, Th. 0.8mm, Wt. 0.7g. Complete. Flat disk button with looped eyelet. Traces of lettering on underside possibly reads ‘PLATED’. Post-medieval in date. Possibly 19th century?

Button E2083:71:53. *Cu Alloy & Fe?* D. 19.3mm, Th. 1.6mm, Wt. 3.7g. Complete. Flat disk button with looped eyelet. Traces of copper plating on underside with partial remains of lettering reading ‘...S....AND COLOUR’. Upper surface is plain. Post-medieval in date. Possibly 19th / 20th century.

Button. E2083:71:52. *Cu Alloy & white metal?* D. 18.6mm, Th. 1.3mm, Wt. 3.1g. Complete. Flat disk button with looped eyelet. Traces of copper plating on underside with partial remains of lettering reading ‘TREBLE STAND COLOUR’. Upper surface is plain. Post-medieval in date. Possibly 19th / 20th century.

Button. E2083:71:51. *Cu Alloy & white metal?* D. 20.3mm, Th. 1.9mm, Wt. 4.8g. Incomplete. Flat disk button with stump of eyelet shank extant. Traces of copper plating/gilt on underside and illegible inscription. Upper surface is plain. Post-medieval in date. Possibly 19th century?

Button. E2083:558:12. *Cu Alloy*. D. 18mm, Th. 1.2mm, Wt. 2.2g. Incomplete. Flat disk button with partial remains of looped eyelet in boss on underside of button. Upper surface plain.

Button. E2083:71:56. *White metal?* D. 16.5mm, Th. 0.8mm, Wt. 0.6g. Incomplete. Concave circular button with rilled decoration around perforations on upper surface. Originally 4 circular perforations, division between worn or broken.

Buckles

One iron buckle frame (E2083:71:43) was recovered from the topsoil. The D-shaped frame is rectangular in cross-section, however the pin is not extant. Simple iron D-shaped buckles such as this were in use since the medieval period and may have been used on belts or as part of horse equipment. Given simple form of this buckle and the lack of any secure contextual information it is not possible to determine a precise date for the object.

Buckle. E2083:71:43. *Fe*. L. 24mm, W. 36.4mm, Th. 4.1mm, Wt. 6g. Complete. D-shaped buckle, sub-rectangular in cross section. Pin not extant.

Coins

Five coins (E2083:71:48, E2083:71:49, E2083:71:50, E2083:558:11 and E2083:563:1) ranging in date from 1579 to 1995 were recovered from the site at Cratloemoye. Three coins (E2083:71:48, E2083:71:49, E2083:71:50) came from the topsoil, E2083:558:11 was a metal detecting find and one coin (E2083:563:1) came from the fill of a ditch (213).

The earliest coin in the assemblage is a silver Elizabeth I threepence (E2083:71:48) which was recovered from the topsoil. The coin is dated 1579 and the mint mark of a greek cross visible in the legend indicates that it is 4th issue. Elizabeth I reigned from 1558-1603 and according to Spink (2004, 236) has particularly interesting coinage due to the large number of denominations issued. It is a hammered coin which did not form part of the debased coinage produced and circulated in Ireland during the later years of her reign. These coins featured a crowned harp on the reverse and the royal arms within a circle on the obverse (Colgan 2003, 100). The coin from Cratloemoye features the crowned bust of Queen Elizabeth with a rose to the right on the obverse.

An incomplete James I shilling (E2083:558:11) possibly dating to 1603-4 or 1604-7 was recovered during metal detecting. The coin has been halved and is poorly preserved with only the lower portion of a harp visible on the reverse. The detail of the obverse is obscured by corrosion and the legend on either side is illegible. The lack of detail on the coin does not therefore allow for a more definitive dating. The first of James' coins were issued between 1603 and 1604 and consisted of an issue of shillings and sixpences (*ibid.* 104). The second of James' I coinage was issued between 1604 and 1607 and again consisted of a shilling and sixpence which also featured a crowned harp (*ibid.*, 105-6).

A Charles II halfpenny (E2083:563:1) was recovered from the fill of ditch (213). The coin appears to date to 1680 and is of the 'large lettered' variety as the legend is written in large lettering. A second type of this halfpenny was issued in 1681 but featured small lettering in the legend (*ibid.*, 134). In July 1680 a proclamation was issued by the lord lieutenant authorising the use of the new halfpennies and forbidding the making or counterfeiting of the halfpennies or any other tokens. This proclamation effectively brought to an end the unofficial production of trade tokens (*ibid.*, 135).

Later coinage in the assemblage is represented by a Victoria penny dating to 1861 or 1867 and an Irish five pence dating to 1995.

Coin. E2083:71:49. *Cu Alloy*. D. 30mm, Th. 1.3mm, Wt. 8g. Complete. Victoria Penny. Obverse shows young head facing left and partially visible legend reads BRIT. Reverse depicts seated Britannia facing right with date of 1861/7? below in exergue. Legend illegible.

Coin. E2083:558:11. *Cu Alloy*. D. 26.7mm, Th. 1.1mm, Wt. 2.9g. Incomplete. James I Shilling. Half of possible James I shilling. Lower portion of harp visible on reverse. Legend illegible. Detail on obverse obscured by corrosion. Possibly first or second coinage with date of 1603-4 or 1604-7.

Coin. E2083:563:1. *Cu Alloy*. D. 26mm, Th. 1.1mm, Wt. 5g. Complete. Charles II Halfpenny. Obverse highly corroded. Legend partially visible reads CAROLVS II(?) DEI. Reverse shows crowned harp and partially legible legend reads FRA ET. Dates to 1680.

Coin. E2083:71:50. *Cu Alloy*. D. 18.4mm, Th. 1.6mm, Wt. 3.2g. Complete. Irish Five Pence. Obverse shows harp, legend reads ÉIRE 1995. Reverse depicts bull facing left with 5P in exergue.

Coin. E2083:71:48. *Ag*. D. 18.5mm, Th. 0.72mm, Wt. 1.2g. Incomplete. Elizabeth I Threepence. Obverse shows bust with crown and rose to right. Detail of bust obscured by wear and punched hole. Legend, partially legible, reads ELIZABETH DG ANG FR ET ----GINA. Mint mark of greek cross also visible in legend. Reverse shows the coat of arms in a circle with the date of 1579 above. Legend partially legible reads POSVI D -----MEV. 4th issue.

Horse Equipment

Horseshoes

Two horseshoes (E2083:53:6 and E2083:562:1) were recovered from the excavations at Cratloemoyle. The horseshoes are corroded however x-rays show rectangular nail holes and a fullering groove on each shoe. Fullering is a groove around the shoe in which the nails sit and is a post-medieval innovation (Clark 2004, 82).

Horseshoe. E2083:53:6. *Fe*. L. 67.5mm, W. 68.2mm, Th. 3.9mm, Wt. 27g. Complete. X-ray shows five rectangular nail holes. Fullering groove also apparent. Corroded. Post-medieval in date.

Horseshoe. E2083:562:1. *Fe*. L. 58.6mm, W. 56.4mm, Th. 5.2mm, Wt. 26.4g. Complete. Small corroded horseshoe. X-ray shows four rectangular nail holes and fullering groove. Post-medieval in date.

Structural Ironwork and Fittings

Hasps

One hasp was recovered from the fill of ditch 215 at Cratloemoyle. It consists of a staple hasp which as the name suggests are distinguished from other hasps by the presence of a staple. Such hasps were used as an alternative to barrel padlocks are thought to have been used on chests and doors in conjunction with a mounted lock (Carroll and Quinn 2003, 281). In the case of use on a chest the hasp was attached to the lid of same. The staple fitted into a slot in the mounted lock at the front of the chest and was held in place by a sliding bolt (Ottaway 1992, 643). Several examples of staple hasps have been recovered from medieval contexts in York (*ibid.*, 645) with one example from a mid 13th – early 14th century context in Cork city (Carroll and Quinn 2003, 280-1).

Hasp. E2083:383:1. *Fe*. L. 94.8mm, W. 24.5mm, Th. 2.7mm, Wt. 17.7g. Incomplete. Staple hasp, rectangular in section. Rectangular sectioned loop towards one end. End near loop slightly tapered and curled back. Opposing end perforated, holds folded metal strip. Strip is rectangular in section and tapers towards either end. Conserved.

Nails

Twenty-seven nails or nail shafts were recovered from the site. While different nail types can be identified through their distinct heads and/or size (e.g. horseshoe nails), little can be said of the

typological development of nails with rectangular or circular heads which continued in use from the medieval period through to the 19th century.

Nail shaft. E2083:53:13. *Fe.* L. 29mm, W. 7.7mm, Th. 6mm, Wt. 3.1g. Incomplete. Corroded and fragmented nail shaft, rectangular in cross section. Head missing.

Nail shaft. E2083:71:39. *Fe.* L. 149mm, W. 10.3mm, Th. 4.5mm, Wt. 37.4g. Incomplete. Large slender nail shaft, rectangular in section, shaft bent. Tapers to broken point. Head missing.

Nail shaft. E2083:53:11. *Fe.* L. 26.9mm, W. 8.7mm, Th. 2.9mm, Wt. 1.7g. Incomplete. Nail shaft, rectangular in section. Shaft bent towards tip. Head missing.

Nail shaft. E2083:350:2. *Fe.* L. 49.6mm, W. 15.2mm, Th. 12mm, Wt. 10.9g. Incomplete. Nail shaft, rectangular in section. Head missing. Highly corroded.

Nail shaft. E2083:350:3. *Fe.* L. 45.4mm, W. 14.3mm, Th. 9.4mm, Wt. 8.5g. Incomplete. Nail shaft, rectangular in section. Head missing. Highly corroded.

Nail. E2083:350:4. *Fe.* L. 59.4mm, W. (head) 13.9mm, Th. (shaft) 5.3mm, Wt. 9.7g. Complete. Rectangular sectioned shaft. Rectangular slightly domed head. Highly corroded.

Nail shaft. E2083:59:5. *Fe.* L. 39.6mm, W. 7mm, Th. 5.3mm, Wt. 6.4g. Incomplete. Nail shaft, rectangular in section. Head missing. Highly corroded.

Nail shaft. E2083:351:2. *Fe.* L. 46.2mm, W. 12mm, Th. 7.9mm, Wt. 7.7g. Incomplete. Nail shaft, rectangular in section. Head missing. Highly corroded.

Nail shaft. E2083:351:3. *Fe.* L. 33.7mm, W. 11.7mm, Th. 8.2mm, Wt. 4.3g. Incomplete. Nail shaft, rectangular in section. Head missing. Highly corroded.

Nail. E2083:353:56. *Fe.* L. 49.5mm, W. (head) 13.9mm, Th. (shaft) 6.3mm, Wt. 4.8g. Complete. Rectangular sectioned shaft. Flat oval head. Highly corroded.

Nail. E2083:363:1. *Fe.* L. 40.5mm, W. (head) 14.6mm, Th. (shaft) 2.8mm, Wt. 5.2g. Complete. Rectangular sectioned shaft. Rectangular slightly domed head. Highly corroded.

Nail. E2083:351:1. *Fe.* L. 19.9mm, W. (head) 13.9mm, Th. (shaft) 3.8mm, Wt. 1.9g. Incomplete. Fragment of small iron nail with flat, possibly rectangular head extant. Highly corroded.

Nail shaft. E2083:363:2. *Fe.* L. 53.9mm, W. 6.6mm, Th. 5.7mm, Wt. 8.5g. Incomplete. Nail shaft, rectangular in section. Head missing. Highly corroded.

Nail. E2083:377:1. *Fe.* L. 61.6mm, W. (head) 11.3mm, Th. (shaft) 4.2mm, Wt. 6.3g. Complete. Rectangular sectioned shaft. Rectangular slightly domed head. Corroded.

Nail. E2083:377:5. *Fe.* L. 30.3mm, W. (head) 11.6mm, Th. (shaft) 4.6mm, Wt. 3.7g. Complete? Rectangular sectioned shaft. Rectangular slightly domed head. Highly corroded.

Nail shaft. E2083:377:6. *Fe.* L. 35.9mm, W. 9.3mm, Th. 5mm, Wt. 6.2g. Incomplete. Nail shaft, rectangular in section. Head missing. Highly corroded.

Nail. E2083:377:7. *Fe.* L. 43.7mm, W. (head) 14mm, Th. (shaft) 3mm, Wt. 3.2g. Complete. Rectangular sectioned shaft. Flat sub-rectangular. Highly corroded.

Nail shaft. E2083:377:8. *Fe*. L. 49.5mm, W. 4.2mm, Th. 2.9mm, Wt. 2.5g. Incomplete. Nail shaft, rectangular in section. Head missing. Highly corroded.

Nail. E2083:377:9. *Fe*. L. 51.7mm, W. (head) 12.9mm, Th. (shaft) 4.5mm, Wt. 6.7g. Complete. Rectangular sectioned shaft. Rectangular slightly domed head. Highly corroded.

Nail. E2083:377:10. *Fe*. L. 38mm, W. (head) 11.5mm, Th. (shaft) 4.8mm, Wt. 6.7g. Complete. Rectangular sectioned shaft. Expanded rectangular head. Highly corroded.

Nail. E2083:387:1. *Fe*. L. 43mm, W. (head) 11.3mm, Th. (shaft) 3.4mm, Wt. 3.1g. Complete. Rectangular sectioned shaft. Flat rectangular head. Highly corroded.

Nail. E2083:557:1. *Fe*. L. 29.8mm, W. (head) 7.6mm, Th. (shaft) 4.7mm, Wt. 1.7g. Complete. Rectangular sectioned shaft. Flat rectangular head. Corroded.

Nail. E2083:557:4. *Fe*. L. 26.4mm, W. (head) 7mm, Th. (shaft) 4.8mm, Wt. 1.7g. Complete. Rectangular sectioned shaft. Small L-shaped head. Corroded.

Nail. E2083:558:2. *Fe*. L. 50.4mm, W. (head) 14.8mm, Th. (shaft) 5.7mm, Wt. 9.7g. Incomplete. Rectangular sectioned shaft. Flat sub-rectangular head. Corroded.

Nail. E2083:562:4. *Fe*. L. 43.7mm, W. (head) 7mm, Th. (shaft) 2.8mm, Wt. 2g. Complete. Rectangular sectioned shaft. Small flat rectangular head. Corroded.

Nail. E2083:562:2. *Fe*. L. 36.2mm, W. (head) 11.7mm, Th. (shaft) 3.6mm, Wt. 3.8g. Incomplete. Rectangular sectioned shaft, tip missing. Sub-circular domed head. Corroded.

Nail shaft. E2083:558:8. *Fe*. L. 38.2mm, W. 4.4mm, Th. 2.6mm, Wt. 4.8g. Incomplete. Nail shaft, rectangular in section. Head missing. Highly corroded.

Miscellaneous

A number of items which are not readily classifiable due to their fragmentary or highly corroded state, or which are undiagnostic are included here. A total of 39 objects whose precise function could not be determined are listed below with a basic description. The items include a vessel fitting (E2083:71:41) which would have been attached to a bucket or similar vessel and held the handle in place. A lynchpin (E2083:350:1) is also in the assemblage. It consists of a square-sectioned tapering shank with a rectangular sectioned perforated head. The head of the lynchpin would have held a ring or chain link. The tapered shank would have been driven into an item such as a door or gate. Similar items are known from medieval contexts in York (Ottaway 1992, 654; fig. 278:3572-3) but continued in use well into the post-medieval period.

Three fragments of window lead (E2083:377:2 and 3 and E2083:452:2) were also recovered from the excavations. Window leads consist of grooved strips of lead which were used to hold multiple small panes of glass known as 'quarries'. They are generally known as 'comes' but more appropriately as 'turned lead' (Noël Hume 1969, 233). Glass panes were cut into diamonds, rectangles and squares in the 17th and first half of the 18th century and H-sectioned lead strips were used to hold them together (Carroll and Quinn 2003, 291). One of the lead strips from Cratloemoye (E2083:377:3) displays the distinctive H-shaped section while the other does not.

Other items listed below include a possible knife blade fragment (E2083:557:2) and a possible wall hook (E2083:558:9). Wall hooks may have been used for hanging or suspending domestic items. Examples are known from medieval contexts in York (Ottaway 1992, 651) but these items certainly continued in use throughout the post-medieval period. Modern finds such as a bottle cap and key (E2083:558:6 and E2083:558:1) were also apparent in the assemblage.

Miscellaneous. E2083:57:1. *Cu Alloy*. L. 33.4mm, W. 27.8mm, Th. 1.7mm, Wt. 14g. Complete? Possibly originally hemispherical hollow object, now bent out of shape. Convex surface smooth and undecorated but abraded. Concave surface has stump of rectangular shaped projection now broken. Possibly for attachment to other item. Function unknown.

Miscellaneous. E2083:551:1. *Cu Alloy*. L. 53mm, W. 11.9mm, Th. 1.8mm, Wt. 3.6g. Complete? Curving copper alloy strip, rectangular in cross section. Tapers towards one end. Opposing wider end also tapers to a point. One edge has scalloped effect. Function unknown.

Miscellaneous. E2083:557:7. *Pb?* L. 30.2mm, W. 14.5mm, Th. 7mm, Wt. 9g. Incomplete. Irregular shaped piece of lead waste, one portion of underside flat.

Miscellaneous. E2083:368:1. *Cu Alloy*. L. 15.8mm, W. 7mm, Th. 5mm, Wt. 0.9g. Incomplete. Fragment of copper alloy sheet folded to form tube. Tapers towards on end. Oval in cross section. Numerous possible functions including lace chape, or needle case. Precise function unknown.

Miscellaneous. E2083:71:58. *Pb*. L. 28.6mm, W. 22mm, Th. 9.4mm, Wt. 21.8g. Incomplete. Irregular shaped piece of lead waste, underside flat.

Miscellaneous. E2083:71:59. *Pb*. L. 33.7mm, W. 19.2mm, Th. 2.2mm, Wt. 8.3g. Incomplete. Flat piece of lead waste, roughly rectangular in shape.

Miscellaneous. E2083:71:45. *Pb*. L. 17.3mm, W. 11.2mm, Th. 5.3mm, Wt. 5g. Incomplete. Irregular shaped piece of lead waste.

Miscellaneous. E2083:557:5. *Fe*. L. 129mm, W. 30.9mm, Th. 4.6mm, Wt. 41.8g. Incomplete. Iron strip, rectangular in section tapers to damaged point. Appears to be broken at wide end, function unknown.

Miscellaneous. E2083:71:38. *Fe*. L. 90.8mm, W. 18.4mm, Th. 17.8mm, Wt. 130.8g. Complete. Large iron bar, rectangular in section. Tapers to a blunt point. Possible punch.

Miscellaneous. E2083:53:5. *Fe*. L. 93mm, W. 97mm, Th. 2.5mm, Wt. 152.9g. Incomplete. Irregular 'shield' shaped object. Rectangular in section. Slightly concave. Possible blade from tool? Function unknown.

Miscellaneous. E2083:53:7. *Fe*. L. 122mm, W. 49.9mm, Th. 12.2mm, Wt. 130g. Incomplete. Curving iron object, triangular in section. Tapers towards one end. Irregular in shape. Function unknown.

Miscellaneous. E2083:53:8. *Fe*. L. 56.8mm, W. 19.9mm, Th. 3.2mm, Wt. 21.4g. Incomplete. Three fragments of sheet metal folded to form tube. Corroded. Function unknown.

Miscellaneous. E2083:53:9. *Fe*. L. 77.5mm, W. 28.8mm, Th. 2.1mm, Wt. 14.2g. Incomplete. Fragment of corroded iron strip, rectangular in cross section. Tapers slightly towards one end which is rounded.

Miscellaneous. E2083:53:10. *Fe*. L. 87mm, W. 29.7mm, Th. 2.5mm, Wt. 19.2g. Incomplete. Fragment of corroded iron strip, rectangular in cross section. Undiagnostic.

Miscellaneous. E2083:71:40. *Fe*. L. 63.7mm, W. 48.8mm, Th. 5.5mm, Wt. 67.8g. Incomplete. Fragment of undiagnostic iron object, rectangular in section. Bent at one end.

Vessel fitting. E2083:71:41. *Fe*. 72mm, W. 51.6mm, Th. 2.8mm, Wt. 32.9g. Complete. fitting for bucket or vessel to allow attachment of handle. Lozenge-shaped at one end with two rivets to facilitate

attachment to vessel. Opposing end rectangular in shape with rounded terminal and circular perforation for vessel handle. Post-medieval in appearance.

Miscellaneous. E2083:71:44. *Fe*. D. 31.7mm, Th. 1.9mm, Wt. 6.8g. Complete. Flat circular disk with central circular perforation. Possible washer. Post-medieval/ modern in appearance.

Miscellaneous. E2083:293:1. *Fe*. L. 89.6mm, W. 67.9mm, Th. 3mm, Wt. 122.9g. Incomplete. Flat rectangular object, highly corroded. Function unknown.

Miscellaneous. E2083:71:42. *Fe*. L. 53.9mm, W. 10.4mm, Th. 10.7mm, Wt. 13.8g. Incomplete. Highly corroded and fragmented iron bar, rectangular in section. Undiagnostic.

Miscellaneous. E2083:293:2. *Fe*. L. 49.8mm, W. 20.6mm, Th. 0.86mm, Wt. 5.8g. Incomplete. Fragment of flat iron object. Corroded and fragmented. Undiagnostic.

Miscellaneous. E2083:294:1. *Fe*. L. 49.4mm, W. 46.9mm, Th. 8.5mm, Wt. 92.8g. Incomplete. Fragment of rectangular-shaped iron object. Undiagnostic.

Lynchpin. E2083:350:1. *Fe*. L. 86.2mm, W. 29.5mm, Th. 12.9mm, Wt. 77.4g. Complete. Iron lynchpin with square section tapering shank. Head is rectangular in section with circular perforation. Corroded.

Window lead frag. E2083:377:2. *Pb*. L. 44.3mm, W. 8mm, Th. 3.2mm, Wt. 2.3g. Incomplete. Window lead fragment with w-shaped section. Tapers towards one end.

Window lead frag. E2083:377:3. *Pb*. L. 49mm, W. 6.5mm, Th. 2.4mm, Wt. 2.4g. Incomplete. Window lead fragment with H-shaped section.

Window lead frag. E2083:452:2. *Pb*. L. 51.7mm, W. 8.5mm, Th. 2.6mm, Wt. 2.6g. Incomplete. Window lead fragment with H-shaped section. Flattened and twisted.

Miscellaneous. E2083:377:4. *Fe*. L. 63.8mm, W. 7.5mm, Th. 4.9mm, Wt. 13.9g. Incomplete. Iron bar, rectangular in section. Bent at one end. Function unknown.

Ring/ link. E2083:452:1. *Fe*. L. 44.3mm, W. 34.7mm, Th. 6.4mm, Wt. 18.9g. Complete. Iron ring/ link, rectangular in shape and cross section. Possible buckle frame, although no evidence for pin.

Miscellaneous. E2083:455:3. *Fe*. L. 59.2mm, W. 41.8mm, Th. 14mm, Wt. 42.1g. Incomplete. Fragment of porous ferrous object. Rectangular in section. Undiagnostic.

Poss. knife blade frag. E2083:557:2. *Fe*. L. 56.9mm, W. 12.8mm, Th. 3mm, Wt. 9.4g. Incomplete. Possible fragment of knife blade, triangular in cross section. Possible stump of whittle tang extant. Possible Type C. Corroded and fragmented.

Miscellaneous. E2083:557:3. *Fe*. L. 37mm, W. 8mm, Th. 5mm, Wt. 5.2g. Incomplete. Rectangular sectioned iron bar, broken at either end. Undiagnostic.

Miscellaneous. E2083:562:3. *Fe*. L. 44.4mm, W. 8.2mm, Th. 4.7mm, Wt. 4.5g. Incomplete. Rectangular sectioned iron bar, tapers towards one end. Rounded terminal at opposing end. Undiagnostic.

Miscellaneous. E2083:558:3. *Fe*. L. 36mm, W. 40mm, Th. 3.8mm, Wt. 6.7g. Incomplete. Highly corroded and fragmented U-shaped object. Rectangular in section. Undiagnostic.

Bottle cap. E2083:558:6. *Fe*. L. 32.5mm, W. 25.8mm, Th. 9.4mm, Wt. 6.7g. Complete. Modern bottle cap.

Miscellaneous. E2083:558:9. *Fe*. L. 51.2mm, W. 19.4mm, Th. 6.1mm, Wt. 16.8g. Incomplete. Hooked iron object, rectangular in section. Possible wall hook?

Miscellaneous. E2083:558:5. *Pb*. L. 29mm, W. 18.5mm, Th. 4.6mm, Wt. 7.6g. Incomplete. Irregular shaped lead fragment. Flat on one surface. Undiagnostic.

Miscellaneous. E2083:558:4. *Pb*. L. 20.5mm, W. 19.9mm, Th. 12.9mm, Wt. 20g. Complete? Cone-shaped lead object with central circular perforation. Possible weight.

Miscellaneous. E2083:558:10. *Fe*. L. 104mm, W. 46.5mm, Th. 23mm, Wt. 226g. Incomplete? Highly corroded triangular shaped object. Function unknown.

Miscellaneous. E2083:558:7. *Cu Alloy*. L. 56mm, W. 16.9mm, Th. 0.8mm, Wt. 3.2g. Incomplete. Possible rim fragment made of thin sheet metal.

Miscellaneous. E2083:558:1. *Cu Alloy*. L. 31.5mm, W. 22mm, Th. 2.3mm, Wt. 6.6g. Incomplete. Fragment of modern key.

Lead shot by Damian Shiels

The Context of the Assemblage

The two pieces of lead shot were recovered from Area C of the excavation. This consisted of three shallow spreads all of which revealed evidence of burning, and a circular pit. The topsoil in this area produced copper alloy buttons and a 16th century coin as well as the lead shot. The preliminary interpretation of these features is as a possible encampment for soldiers in the 16th century.

Lead Shot in Ireland

In order to suggest a potential date for the lead shot from Cratloemoyle it is first necessary to set the parameters of study within an Irish context. The earliest potential reference to guns in Ireland is in 1394 when a 'Richard Sonner' is recorded as being employed in Carlow in order to make 'gonnes' (Otway-Ruthven 1968, cited in de hÓir 2006). Despite this it is the late 15th century before any confident references to firearms can be found, with the first reference to the firing of a gun in Ireland dating to 1487 (de hÓir 2006). Even at this point small arms and artillery were not a common sight in Ireland, and it is not until the second half of the 16th century that there is a major upsurge in the numbers of firearms present. Indeed, it would seem reasonable to suggest that it is with the Elizabethan period that we see a major increase in the use of these weapons amongst the Gaelic Irish. The spherical lead ball was to hold sway in the armies of Europe and much of the world from the 16th century through to the 19th century; indeed they were still to be found on battlefields of the American Civil War (1861-1865) as late as the second half of the 19th century. The date of deposition for the Cratloemoyle material is therefore most likely to lie within the period 1500-1900AD. To further narrow the potential date range the weight and size of the shot must be taken into consideration, as well as the shot's association with other objects and features recovered in the immediate vicinity.

E2083:71:46

E2083:71:46 is the smaller of the two lead balls from the assemblage (Plate 37). It has a weight of 7.10 grams and a diameter of 10.76 mm. The bore (the number of this type of ball that could be produced from a pound of lead) is 64. The ball in general is in poor condition and has suffered some surface corrosion most likely due to soil conditions. A white patina has developed across much of its

surface. Apart from the weighing and measuring of the ball it was also analysed under a stereo microscope at ten times magnification. This was undertaken in order to assess if features such as the mould sprue or mould line were in evidence (both by products of the casting technique) or if there was any evidence for firing (in the form of either melting or impact damage). Due to the condition of the ball no clear mould evidence was observed, although the possible presence of a snapped and filed sprue was noted. The ball is covered in a series of indentations that have deformed its original spherical shape, and there is some potential that these have been caused during firing with other similar sized lead balls; the force of the reaction when the balls were expelled from the weapon would have caused them to deflect against one another creating such a pattern. However this form of firing cannot be conclusively stated due to the condition of the ball, and the possibility that it is a stand alone pistol ball should also be considered. It does however seem probable that the ball has been fired.

In general the potential that this is a sporting ball cannot be entirely discounted, but it is this author's opinion that this is unlikely. The patina and degradation of the ball suggest it has lain in the soil for a substantial period of time, and there are parallels for this size ball in 16th and 17th century assemblages. A recently excavated assemblage with a probable date of 1650AD from Castledonovan, Co. Cork (excavated by Headland Archaeology Ltd on behalf of the Department of the Environment, Heritage & Local Government) revealed two pistol balls among a cache of musketballs. The size and weight of these examples nicely bracket the Cratloemoyle example, weighing 5.9 and 7.8 grams respectively and measuring 10.20 and 11.99 mm (Table 14). Yet to be examined shot from the Discovery Programme excavations at Tulsk, Co. Roscommon which most likely date to the late 16th century may also prove to be similar in form. E2083:71:46 is most probably either a pistol ball or shot designed to be fired with other balls from a musket or carbine (somewhat akin to 'buck' shot). Given the associated finds and its acceptable parallels within 17th century assemblages a potential date of c.1550-1700AD can be put forward for the artefact.

E2083:71:47

E2083:71:47 is the larger of the two lead balls from the assemblage (Plates 38-39). It has a weight of 29.8 grams and a diameter of 15.50 mm. The bore is 15.5. The ball in general is in poor condition and has suffered some surface corrosion most likely due to soil conditions. A white patina has developed across much of its surface. Apart from the weighing and measuring of the ball it was also analysed under a stereo microscope at ten times magnification. This was undertaken in order to assess if features such as the mould sprue or mould line were in evidence (both by-products of the casting technique) or if there was any evidence for firing (in the form of either melting or impact damage). Under magnification there was a suggestion of the mould line surviving around the central circumference of the ball. It is also possible to discern the slight raised flat area where the original mould sprue was located and filed down in order to make the ball ready for use (this area is located at the top of the ball in Plate 38). It is not possible to determine if the ball has been fired due to its condition.

This ball fits firmly within the parameters for a lead ball of late 16th or 17th century date. It does not firmly match either the expected bore for a musket or caliver of the Elizabethan period, but its diameter is comparable to some of the 1601AD Lord Deputy's Camp assemblage recovered by the Kinsale Battlefield Project from Kinsale, Co. Cork, particularly one of 15 bore (Table 14). It is therefore possible that this may represent a caliver shot (a lighter gun than a musket of the period, the latter requiring a musket rest to fire). The Cratloemoyle example also has a similar diameter to those of probable 1650AD date recovered from Castledonovan, Co. Cork and is most closely matched by two 15 bore examples from the battle of Aughrim which date to 1691, recovered during metal detection on behalf of the National Roads Authority in advance of the N6 Galway to Ballinasloe Scheme (Table 14, Plate 40). It would therefore seem probable that this ball dates to the period c.1550-1700AD, and is most likely derived from a caliver (if Elizabethan) or similar weapon, most probably somewhat lighter than a standard musket.

Conclusions

The balance of evidence would suggest that the two lead balls recovered at Cratloemoyle date to the period c.1550-1700AD. It is reasonable to suggest that the lead shot was deposited as a result of military activity; this is particularly true of the larger ball which was less likely to be utilised for hunting. In terms of weapons, pistols and carbines of the period were generally carried by cavalry or in the case of the former, officers, while calivers were the most common firearms used by both sides during the Elizabethan period.

It is unlikely that there would have been significant numbers of firearms available to the forces engaged around the Castle in 1510. Therefore the 1564 fighting and the potential Cromwellian event would seem the more likely scenarios where this material was deposited, although the possibility remains that they are associated with unrecorded activity at the site. The nearby discovery of an Elizabethan coin could indicate a mid 17th century event as much as a 16th century one; the mass grave excavated at Carrickmines Great, Co. Dublin by Dr Mark Clinton dated to 1642 but the balance of coinage from the pit was of Elizabethan mint (Clinton et al 2007). However the recovery of other material in the topsoil such as a Victorian penny suggests that there may be no association between these depositions whatsoever. The potential that at least E2083:71:47 may be associated with a campsite is perfectly plausible, as the assemblage of twenty-one lead shot recovered by the Kinsale Battlefield Project at Camphill, Kinsale was targeted on a camp area dating to 1601, where significant quantities of shot appear to have been produced around campfires (O'Keeffe and Shiels 2008). Any radiocarbon dates from the possible hearths in Area C may go some way to suggesting if this is a possible military campsite at Cratloemoyle, but regardless it would seem likely that there was military activity in this area in the early modern period.

Table 14: Comparative data from other Irish assemblages

Site	Probable Date	Excavation No	Weight (g)	Bore	Diameter (mm)
Aughrim	1691	AR024/5.1	28.40	16	17.42
Aughrim	1691	AR024/5.1	17.50	26	14.6
Aughrim	1691	AR024/5.1	30.40	15	17.75
Aughrim	1691	AR024/5.1	30.50	15	17.42
Carrickmines	1642	00E0525	39.90	11.5	18.84
Carrickmines	1642	00E0525	40.70	11.5	19.26
Carrickmines	1642	00E0525	14.10	32.5	14.44
Carrickmines	1642	00E0525	22.40	20.5	15.86
Kinsale	1601	07E0732	22.30	20.5	15.72
Kinsale	1601	07E0732	23	20	15.59
Kinsale	1601	07E0732	27.20	17	17.2
Kinsale	1601	07E0732	37.30	12.5	18.61
Kinsale	1601	07E0732	22.40	20.5	15.48
Kinsale	1601	07E0732	30.30	15	17.68
Castledonovan	1650	02E1569	34	13.5	18.23
Castledonovan	1650	02E1569	31.60	14.5	17.48
Castledonovan	1650	02E1569	31.90	14.5	18.17
Castledonovan	1650	02E1569	32.30	14.5	17.62
Castledonovan	1650	02E1569	31.70	14.5	17.45
Castledonovan	1650	02E1569	7.80	58.5	11.99
Castledonovan	1650	02E1569	5.90	77	10.2
Cratloemoyle	16 th /17 th c?	E2083	29.80	15.5	17.38
Cratloemoyle	16 th /17 th c?	E2083	7.10	64	10.76

Clay Building Materials by Joanna Wren

Introduction

This assemblage consisted of 127 sherds of post-medieval clay building material. The vast majority of the sherds, some 92%, came from bricks with the other 8% comprising seven sherds from pantiles and three from floor tiles (Table 15).

Methodology

The tiles were grouped according to fabric and then subdivided on the basis of form. They were weighed as the most accurate way of assessing quantity. The total numbers and weights of each form of tile were recorded according to context. All percentages used in the text are based on weight. The report is divided for discussion on the basis of the fabric groupings and ordered chronologically. Dating is based on a combination of typology, contextual information and comparative material from other sites.

Biscuit Fired Floor Tiles

Two sherds (E2083:388:1-3; E2083:372:2) were made in a sandy red earthenware fabric with sparse red-brown and cream inclusions, up to 4 mm across. Both tiles were covered with apple green lead glaze above a white slip. The glaze had a somewhat crazed or flaky appearance.

Seven sherds of floor tile, with the same white slip and crazed apple green glaze, were found during excavations at Church Street in Dublin (Wren forthcoming). A 17th century date was suggested for the Church Street tiles on contextual grounds and because the flaked glaze may have resulted from the tiles being biscuit fired prior to glazing. Biscuit fired floor tiles were imported into Ireland, from the Netherlands, during the 17th century (E Eames pers. comm.). Excavations at St Peter's Church in Waterford uncovered examples of this form of tile (Wren 1997, 360), here covered with a white slip and an amber glaze, which were used in flooring the chancel during the first half of the 17th century (Hurley and Scully 1997, 219).

It is possible that the Cratleomoye tiles originated from the same source as those found at Church Street and that both groups of tile were imported from continental Europe in the 17th century. To verify this theory however samples from both sites would have to be submitted for thin-section analysis. A 17th century date for these floor tiles might suggest that they were used in nearby Cratloe Castle which was occupied until the late 18th century. With only two displaced tiles surviving however, any connection with the Castle remains conjectural.

At the Church Street site the tiles were found amongst rubble from smaller domestic buildings (Wren forthcoming) and the Cratleomoye tiles may have come from similar dwellings somewhere in the site's wider hinterland. Both of them (E2083:388:1-3; E2083:372:2) were found in layers filling the remains of the dismantled lime kiln and the tiles presumably came from an earlier floor which was dismantled sometime in this period.

Pantiles

Seven sherds made in sandy red earthenwares came from pantiles. One sherd (E2083:353:28) came from the fill of a ditch (207) directly below the lime kiln, which contained pottery dating to the 17th and 18th centuries (C McCutcheon pers. comm.). The other six sherds came from the fill of a boundary ditch (6). These tiles were used to roof a wide variety of Irish buildings during the 17th and 18th centuries. The seven sherds from Cratleomoye represent debris from dismantled roofs, casually dumped at the site; sometime in the 18th or 19th centuries.

Red Earthenware Floor Tile

One sherd of floor tile (E2083:353:44), made in a similar sandy red earthenware to the pantiles, was found in ditch 207 (fill 353) below the limekiln. This form of floor tile is often found with pantiles and has a date range from the late 17th to the 19th century.

Cratloemoyle Bricks (CB1)

The bricks found at this site were divided into two fabrics, called Cratloemoyle Brick One (CB1) and two (CB2). The first of these fabrics was cream-buff in colour, rough with a hand made appearance with no visible inclusions but a number of voids measuring up to 4 mm. There were a total of 27 sherds in this fabric including some complete bricks, which measured 225 mm long, 110 mm wide and 50 mm thick. They all weighed 2400 g allowing us to estimate that the assemblage included the remains of at least nine bricks.

The majority of these sherds (80%) came from deposits within the lime-kiln. In particular 45% of the bricks were found *in situ* as part of the lining wall of a secondary flue (216). It seems most likely that all of the bricks originally formed part of the structure of this kiln. Given their hand made appearance they could have been produced locally for just this purpose. The presence of a well-documented brick manufacturing industry in the area from the late 18th century onwards makes this particularly likely.

Six sherds found in earlier ditches were probably amongst intrusive material, as the kiln directly overlay these deposits and another 1% of these bricks came from later 19th century rubble deposits and field boundaries. Brick production in Ireland appears to date from the 17th and 18th centuries (Pavia and Roundtree 2005, 222), with the possibility of a few rare earlier examples. The pre-kiln deposits, in which some sherds were found, also contained pottery dating to the 16th to 18th centuries (C McCutcheon pers. comm.). It seems most likely that these bricks were produced sometime in the 18th century for use within the structure of the lime kiln.

Cratloemoyle Bricks (CB2)

The second brick fabric had a strong brick red-orange colour and a finer texture than CB1. It contained moderate amounts of red-grey slate-like inclusions measuring up to 10 mm in size. Some of the bricks made in this fabric were covered with a honeycomb of small holes or pock marks.

The assemblage included 90 sherds from bricks made in CB2 fabric. These had a very different deposition pattern to that observed for the bricks made in CB1 fabric. Most of them (50%) came from contexts associated with the demolished building in Area A. This appeared to have been a small cottage with associated cultivation trenches, which was constructed of brick, limestone and possibly clay. The bricks were either deliberately for use in the fireplace or were mixed with limestone and clay in the fabric of the walls. The date of this building is uncertain.

The other 50% of these sherds were found scattered throughout various features for another 250 m east of the demolished building. Approximately 23% of them came from ditch fills (353, 383) in Area E, which also contained pottery dating the late 17th to 20th centuries (*ibid.*). Another 5% were found in within the limekiln; some in backfill layers in the brick-lined flue (216, 387) and others in rubble deposits which post-dated the kiln's destruction (372, 377). The post-destruction layers produced pottery dating to the 18th and 19th centuries (*ibid.*). Another 2% came from 19th century field boundaries and rubble deposits and the final 20% were amongst unstratified material.

All of the CB2 bricks found in Area A represent rubble from the demolished structure. It is quite possible that the rest of the CB2 bricks also include rubble from this building, scattered by agricultural activity, such as ditch digging and work on the lime kiln. On visual examination all these bricks appear similar they may have been made at the same location, somewhere within the Shannon estuary. Red bricks are widespread in the post-medieval period however, and it is possible that this grouping actually includes more than one fabric type and that some them are introduced, from locations in the site's wider hinterland. The earliest contexts in which these bricks are found appear to date to the late 17th or 18th century and the bricks themselves are unlikely to date any earlier.

Table 15: Identification of clay building materials from E2083

Cut	Deposit	Object	Fabric	Decoration	Amount	Weight (g)	Date
3	53	Brick	CB1		1	25	17 th – 19 th c
3	53	Brick	CB2	3 complete length, L 230mm x W 105mm x T 60mm	4	4475	17 th – 19 th c
6	56	Pantile	REW		6	375	17 th – 18 th c
6	56	Brick	CB2		3	75	17 th – 19 th c
6	56	Brick	CB1?		1	100	17 th – 19 th c
	57	Brick	CB1		1	25	17 th – 19 th c
	57	Brick	CB2		5	50	17 th – 19 th c
	263	Brick	CB2		2	50	17 th – 19 th c
	293	Brick	CB2		5	100	17 th – 19 th c
	294	Brick	CB2		10	225	17 th – 19 th c
205	350	Brick	CB2		2	50	17 th – 19 th c
205	351	Brick	CB2		1	25	17 th – 19 th c
207	353	Pantile	REW		1	100	17 th – 18 th c
207	353	Plain floor tile	REW	44	1	300	17 th – 19 th c
207	353	Brick	CB1	Very hand made look, 353:13-14 & 42 kiln furniture?	5	4000	17 th – 19 th c
207	353	Brick	CB2	353:47 & 53 seem kiln damaged? Rash of small pock marks	20	2200	17 th – 19 th c
	363	Brick	CB2		5	75	17 th – 19 th c
228	372	Floor tile	REW	Apple green glaze to white slip (Church St, Dublin F4)	1	150	17 th c?
228	372	Brick	CB2		1	50	17 th – 19 th c
	377	Brick	CB2		2	25	17 th – 19 th c
	377	Brick	CB1?	377:160 possibly a rectangular brick or maybe more square, yellowish but otherwise resembles CB1 kiln furniture?	2	925	17 th – 19 th c
	377	Brick	CB1		4	3525	17 th – 19 th c
215	378	Brick	CB1?		1	25	17 th – 19 th c
216	379	Brick	CB2		5	350	17 th – 19 th c
216	379	Brick	CB1		7	2275	17 th – 19 th c
215	383	Brick	CB2		3	75	17 th – 19 th c
	387	Brick	CB2		2	50	17 th – 19 th c
	388	Floor tile	REW	Apple green glaze to white slip (Church St, Dublin F4)	1	75	17 th c?
	388	Brick	CB1		1	800	17 th – 19 th c
216	489	Brick	CB1	All complete lengths, 2400g each, L 225mm x W 110mm x T 50mm	4	9600	17 th – 19 th c
	557	Brick	CB2		5	1500	17 th – 19 th c
	559	Brick	CB2		4	25	17 th – 19 th c
	562	Brick	CB2		11	375	17 th – 19 th c

Stone roof tile by Edel Ruttle

A collection of 68 stone finds were examined (Table 16). The finds were collected by hand from various deposits. The most numerous finds came from deposit 377 (layer, probable kiln rubble) yielding thirteen finds, followed by eleven finds from deposit 353 (fill of ditch 207) and ten unstratified finds (559).

Roof tile fragments with perforations

Eleven roof tile fragments had a single perforation, two of which were broken at the perforation (E2083:251:4 & 377:22). All the tiles were flat grey coloured sandstone. The perforations measured between 4 and 8 mm in diameter, the majority were 5 mm in diameter. Notable tiles that had traces of mortar are described below.

There is 10 mm thick mortar bed on the underside of E2083:377:25 (Fig. 47). This technique of placing mortar on the back of the tiles to keep them in place is known as ‘parging’.

Finds E2083:375:1 (Fig. 48), 377:26 & 471:1 have traces of mortar on the underside of the tiles, while 375:3 has mortar on the underside and discolouration on the front of the tile (Fig. 49) and 377:24 has traces of mortar on the front and back of the tile.

Roof tile fragments

The other identifiable roof tiles were fragmented. The tiles were all flat and a mix of grey sandstone and five of blue limestone. Again, some of the tiles had possible edges and mortar present and others had ridging for tiling.

Find 251:3 had a 63 mm long straight edge which was ridged for tiling. The ridge would have lain over the neighbouring tile; 263:9 also had a 107 mm long ridge for tiling.

Finds 353:24, 375:2, 377:17 & 377:21 still had mortar on the underside of the tiles.

Possible roof tile fragments

The remainder of the eighteen fragments had no diagnostic features.

Discussion

Cratloemoyle is situated on Waulsortian limestones which are massive unbedded lime/mudstones (GSI 1999). While some of the tiles are limestone, and presumably quarried locally, others are sandstone. Co. Clare has ‘a variety of natural slates, including Broadford, Killaloe and Moher’ (Clare County Council website) as well as other quarries that produced lesser quality slates. The tiles from deposit 251 particularly have characteristics of Broadford slate. Broadford slate was used during the medieval periods on churches and castles, Dysert O’Dea for example and was quarried up to the beginning of the 19th century.

Table 16: Catalogue of roof tiles from E2083

Find No.	Cut	Deposit	Description	Straight edge (mm)	Diameter peg hole (mm)	Peg distance from edge (mm)	Weight (g)	Dimensions (mm)
E2083:56:7	6	56	Roof tile fragment				241	217x105x5
E2083:56:8	6	56	Roof tile fragment				33	80x70x5
E2083:56:9	6	56	Roof tile fragment	51			40	100x55x4
E2083:57:17	-	57	Roof tile fragment				29	78x42x5
E2083:57:18	-	57	Possible roof tile fragment				11	49x32x5
E2083:57:19	-	57	Possible roof tile fragment				6	32x30x5
E2083:57:20	-	57	Possible roof tile fragment				4	42x22x4
E2083:57:40	-	57	Roof tile fragment				193	122x85x7-14
E2083:251:2	-	251	Possible roof tile fragment				8	42x37x2
E2083:251:3	-	251	Roof tile fragment	63			75	87x75x7
E2083:251:4	-	251	Roof tile fragment with a possible perforation		5		69	94x67x7
E2083:251:5	-	251	Possible roof tile fragment				27	65x53x5
E2083:251:6	-	251	Roof tile fragment	59			30	60x39x7
E2083:263:3	-	263	Roof tile fragment				36	55x54x5
E2083:263:4	-	263	Roof tile fragment	107			148	118x98x5-7
E2083:263:5	-	263	Possible roof tile fragment				98	95x72x5-10
E2083:263:6	-	263	Roof tile fragment				122	130x105x5
E2083:263:7	-	263	Roof tile fragment				202	140x100x8
E2083:263:8	-	263	Possible roof tile fragment				35	76x54x6
E2083:263:9	-	263	Roof tile fragment	107			287	155x115x9
E2083:263:10	-	263	Possible roof tile fragment				15	65x37x5
E2083:350:7	205	350	Possible roof tile fragment				11	58x28x5
E2083:350:8	205	350	Possible roof tile fragment				26	55x50x6
E2083:351:5	205	351	Possible roof tile fragment				11	50x34x5
E2083:353:15	207	353	Possible roof tile fragment				8	38x35x4
E2083:353:16	207	353	Roof tile fragment				23	64x40x5
E2083:353:17	207	353	Roof tile fragment	52			29	55x54x6
E2083:353:18	207	353	Roof tile fragment				18	45x45x6
E2083:353:19	207	353	Roof tile fragment				47	60x60x8
E2083:353:20	207	353	Roof tile fragment				69	100x54x8
E2083:353:21	207	353	Possible roof tile fragment				129	100x60x13

Find No.	Cut	Deposit	Description	Straight edge (mm)	Diameter peg hole (mm)	Peg distance from edge (mm)	Weight (g)	Dimensions (mm)
E2083:353:22	207	353	Roof tile fragment				81	100x65x4-9
E2083:353:23	207	353	Roof tile fragment				47	84x60x6
E2083:353:24	207	353	Roof tile fragment				27	65x47x6
E2083:353:25	207	353	Roof tile fragment				22	65x7x5
E2083:353:26	207	353	Roof tile fragment				16	52x30x6
E2083:363:8	-	363	Possible roof tile fragment				21	62x40x5
E2083:375:1	228	375	Roof tile fragment with perforated hole	200	6	39	743	262x145x4-9
E2083:375:2	228	375	Roof tile fragment				98	112x95x4
E2083:375:3	228	375	Roof tile fragment with perforated hole		8	26	212	135x150x 4
E2083:377:14	-	377	Roof tile fragment with perforated hole	45	8	34	38	82x62x5
E2083:377:15	-	377	Roof tile fragment	78			46	85x53x4-7
E2083:377:16	-	377	Roof tile fragment	89			48	90x38x9
E2083:377:17	-	377	Roof tile fragment				30	70x47x5
E2083:377:18	-	377	Possible roof tile fragment				10	72x30x4
E2083:377:19	-	377	Possible roof tile fragment				4	40x30x3
E2083:377:20	-	377	Possible roof tile fragment				7	65x23x4
E2083:377:21	-	377	Roof tile fragment	85			214	116x100x8
E2083:377:22	-	377	Roof tile fragment with half perforation		5		225	123x114x3-9
E2083:377:23	-	377	Roof tile fragment	125			326	145x133x8
E2083:377:24	-	377	Roof tile fragment with perforated hole		5	24	380	185x131x8
E2083:377:25	-	377	Roof tile fragment with perforated hole & mortar bed		4-6	12	327	190x110x5
E2083:377:26	-	377	Roof tile fragment with perforated hole	94	7	41	153	115x113x5
E2083:379:5	216	379	Roof tile fragment with perforated hole	85	5	31	141	121x107x 7
E2083:379:6	216	379	Possible roof tile fragment				15	54x33x4
E2083:387:4	-	387	Possible roof tile fragment				64	87x 70x5
E2083:471:1	227	471	Roof tile fragment with perforated hole		4		325	199x135x4-8

Find No.	Cut	Deposit	Description	Straight edge (mm)	Diameter peg hole (mm)	Peg distance from edge (mm)	Weight (g)	Dimensions (mm)
E2083:559:12	-	559	Possible roof tile fragment				182	131x87x9
E2083:559:13	-	559	Possible roof tile fragment				109	94x70x13
E2083:559:14	-	559	Possible roof tile fragment				22	55x43x8
E2083:559:15	-	559	Possible roof tile fragment				19	50x38x6
E2083:559:16	-	559	Possible roof tile fragment				2	25x21x3
E2083:559:17	-	559	Possible roof tile fragment				5	35x26x3
E2083:559:18	-	559	Roof tile fragment with perforated hole		5	4	67	77x68x5-9
E2083:559:19	-	559	Possible roof tile fragment				32	77x52x7
E2083:559:20	-	559	Possible roof tile fragment				4	45x36x2
E2083:559:21	-	559	Possible roof tile fragment				4	40x34x2
E2083:562:17	-	562	Possible roof tile fragment				7	34x30x3

Dimensions are at widest point

Clay pipe by Edel Ruttle

Forty-one pieces of clay tobacco pipe were examined (Table 18). All the material was hand collected with the highest quantity of material coming from deposit 57 (rubble layer) and deposit 377 (layer probable kiln rubble) yielding 8 finds each. A maximum number of forty-one clay tobacco pipes are represented in this assemblage.

There are four complete bowls in the assemblage. Find 57:9 has no markings and has been broken from its stem and spur however, the shape of the bowl fits well in the style of having the spur parallel to the rim, dated to the 18th century (Ayto 2002, 8) (Fig. 50). The other three pipes (367:2, 383:6 (Fig. 50) and 450:2) are of an earlier date, late 17th century (*ibid*, 5), and they are all milled below the rim (E2083:383:6 and 450:2 have a very similar pattern) Finds 367:2 and 383:6 both have a pedestal spur which is wider than the bowl and parallel with the rim, 383:6 has a slightly larger bowl and 450:2 has a forward protruding spur.

Find 388:4 is a broken bowl with a co-joining stem. The spur is broken off but does appear to have been parallel to the rim. The tip is present and it is blackened. Find 559:2 is a bowl fragment that has been milled below the rim.

One of the thirty five stem fragments one has a stamp; 371:1 survives with part of a pedestal spur which is stamped, however, the location of the break means that the stamp is unrecognisable.

Discussion

The clay tobacco pipes in this assemblage date from, at the earliest, c. 1660-1770 AD. This date corresponds with other finds from the site.

Table 18: Catalogue of clay tobacco pipe from E2083

Find no.	Cut	Deposit	Identification	Dimensions (mm)							Pcs	Wgt (g)	Comment
				L	H	Cross-sec	Bore	Bowl Th	Diam	Spur L			
E2083:57:9	-	57	Bowl		27			2	15		1	9	18 th c
E2083:57:10	-	57	Stem fragment	64		oval 8 x 7	2.50				1	4	
E2083:57:11	-	57	Stem fragment	55		oval 8 x 7	3				1	4	
E2083:57:12	-	57	Stem fragment	54		circular 7 to 6	2.50				1	3	Slightly curved
E2083:57:13	-	57	Stem fragment	34		circular 8	3				1	3	
E2083:57:14	-	57	Stem fragment	36		circular 7	2				1	2	
E2083:57:15	-	57	Stem fragment	35		oval 7 x 6 to 6 x 5	3				1	2	
E2083:57:16	-	57	Stem fragment	22		oval 8 x 7	3				1	1	
E2083:251:1	-	251	Stem fragment	39		oval 8 x 7 to 7 x 6	1.50				1	3	
E2083:367:1	-	367	Stem fragment	56		circular 8	2				1	5	
E2083:367:2	-	367	Bowl		33		2.50	3	12	5	1	10	Milled just below the rim, pedestal spur, late 17 th c
E2083:371:1	228	371	Stem fragment	22		circular 7	3			3	1	1	Stamped pedestal spur
E2083:375:6	228	375	Stem fragment	25		oval 6 x 5	3				1	<1	
E2083:377:55	-	377	Stem fragment	29		circular 6	2.50				1	<1	
E2083:377:56	-	377	Stem fragment	24		oval 7 x 6	3				1	<1	
E2083:377:57	-	377	Stem fragment	37		circular 6	3				1	2	
E2083:377:58	-	377	Stem fragment	24		circular 7	2				1	2	
E2083:377:59	-	377	Stem fragment	19		circular 6	3				1	<1	
E2083:377:60	-	377	Stem fragment	28		oval 10 x 9	2.50				1	3	
E2083:377:61	-	377	Stem fragment	56		circular 7	2.50				1	4	
E2083:377:62	-	377	Stem fragment	27		oval 7 x 6	2.50				1	2	
E2083:379:8	216	379	Stem fragment	43		circular 11 to 10	3				1	6	
E2083:380:1	216	380	Stem fragment	58		circular 8 to 7	2.50				1	3	
E2083:381:1	216	381	Stem fragment	14		oval 7 x 6	2				1	<1	Slightly curved

Find no.	Cut	Deposit	Identification	Dimensions (mm)							Pcs	Wgt (g)	Comment
				L	H	Cross-sec	Bore	Bowl Th	Diam	Spur L			
E2083:383:6	215	383	Bowl with stem fragment	15	33	oval 11 x 10	2.50	2	14	5	1	15	Milled below the rim, pedestal spur, late 17 th c
E2083:383:7	215	383	Stem fragment	40		oval 8 x 7	2				1	3	
E2083:383:8	215	383	Stem fragment	29		oval 8 x 7 to 7 x 6	2.50				1	1	
E2083:384:6	215	384	Stem fragment	67		circular 10 to 8	3				1	8	
E2083:387:5	-	387	Stem fragment	33		oval 8 x 7 to 7 x 6	2.50				1	1	
E2083:388:4a-c	-	388	Stem with bowl fragments	99	40	circular 7 to 9	2.50	2	18	3	3	13	
E2083:450:2	217	450	Bowl with stem fragment	13	33	oval 9 x 8	2.50	2	11	5	1	9	Milled just below the rim, spur, late 17 th c
E2083:450:3	217	450	Stem	39		oval 10 x 9 to 9 x 8	2				1	3	
E2083:452:6	219	452	Stem fragment	65		circular 8 to 7	2				1	5	
E2083:452:7	219	452	Stem fragment	55		oval 8 x 7	2				1	4	
E2083:452:8	219	452	Stem fragment	41		circular 9	3				1	4	
E2083:452:9	219	452	Stem fragment	36		oval 7 x 6	2				1	2	
E2083:458:1	222	458	Stem fragment	47		oval 11 x 9 to 10 x 8	2				1	6	
E2083:471:8	227	471	Stem fragment	28		oval 7 x 6	3				1	1	
E2083:559:1	-	559	Stem fragment	28		oval 7 x 6	3				1	2	
E2083:559:2	-	559	Bowl fragment	29				2-4			1	3	Milled just below rim
E2083:562:25	-	562	Stem fragment	24		oval 7 x 6	3				1	1	

Whetstone by Miriam Carroll

Introduction

One stone artefact (besides the stone roof tiles) was recovered from the excavations at Cratloemoyle Site 1, (A005/2012) E2083. This item is a whetstone (E2083:57:39) which came from a mixed deposit (57) in front of the castle. The item is described below and is followed by a catalogue.

Whetstones

The whetstone from Cratloemoyle consists of a long narrow rectangular stone which tapers slightly towards one end. One surface of the stone is highly smoothed from use. The opposing surface may also have been utilised, although it is now fractured. Whetstones may be defined as pieces of abrasive rock used to sharpen metal objects (O'Connor 1991, 45). Whetstones and sharpening stones have a long period of use which spans from the Iron Age through to the post-medieval period. Throughout this time however, there is a notable lack of typological development which would assist in assigning particular forms of whetstone to specific date ranges. Whetstones can take a variety of forms and shapes. While they may be typically regarded as block-like in shape with two broad surfaces and two narrow sides this may vary depending on the raw material used. For example, water-rolled pebbles and stones are used as whetstones and frequently retain their characteristically rounded form (*ibid.*, 48).

Incomplete or broken whetstones have been recovered from numerous excavations and their presence on such sites has provoked varied explanations. According to O'Connor (1991, 46) over half of the whetstones examined as part of the study were incomplete. It is suggested that small fragments of whetstones were no longer of any use and were simply discarded when broken. Larger fragments may, however, have continued in use. The presence of large quantities of whetstones – both broken and unbroken – on sites has been used as an indicator of the prolonged use of the site but alternatively may simply reflect the ease with which these objects were discarded and replaced.

No pin grooves are apparent on the smooth surface of the stone from Cratloemoyle. A possible groove is apparent on one side of the stone, however, it is unclear if it represents a pin groove or other similar striation. Such marks are believed to be the result of bringing objects such as pins and awls to a point and possibly working the ends of knives (O'Connor 1991, 57).

Whetstone. E2083:57:39. *Sandstone.* L. 195mm, W. 36.9mm, Th. 35.9mm, Wt. 560g. Complete. Rectangular stone with one flat, highly smoothed surface. Surface of all other sides fractured. One possible shallow groove on one surface. Tapers slightly at one end.

Lithic by Joanna Wren

Introduction

This report details the analysis of the lithic assemblage excavated at site E2083 on the route of the Limerick Southern Ring Road, Phase II. Five items of chert were recovered. The details of the artefacts were catalogued on a Filemaker™ database. The descriptive terminology in the catalogue and report follows Woodman et al 2006.

The area where this road was built is “underlain by bedded Carboniferous Limestone with glacial drift deposits of varying thickness covering the limestone.....General overburden geology of the area consists of soft alluvial and estuarine silts, clays, peats and muds underlain by glacial tills including gravels and boulder layers in the lower lying areas with firmer glacial clays and dense gravels in the more elevated parts” (Limerick County Council 2000, 46). This limestone area with some areas of glacial gravel would provide sources for the chert raw material used in this assemblage.

Results

Five items were recovered from this site (Table 19). Lithics occurred in areas A and E, these two groups of features were over 350 m apart.

In Area A a flake (560:1) was recovered from context 560 'locale of house'.

In Area E a scraper (386:1) was recovered from context 386, a pre-kiln fill of ditch 215 which post-dates a post-medieval burial in this ditch. A flake (379:9) came from context 379, an upper fill of feature 216 which was a secondary flue channel added to the lime kiln. This fill contained a mix of early modern finds. Area E demonstrates a good deal of what appears to be early modern activity which probably disturbed the lithics from their original contexts.

A further two items are recorded as 'general unstratified finds', these are a broken blade (559:24) and a piece of struck debitage (559:25).

This group of lithics cannot be treated as an assemblage. The two areas, A and E, which produced lithics were over 350 m apart and the other lithic items are stray finds from within the larger testing area.

Table 19: Lithic material from excavations at E2083

Find no.	Item	L (mm)	W (mm)	T (mm)	Retouch	Raw material
E2083:379:9	Flake	20.16	15.48	3.19	No	Chert
E2083:386:1	Scraper; side & 1-end	20.30	22.27	5.74	Yes	Chert
E2083:559:24	Blade, broken	35.11 +	14.90	5.87	No	Chert
E2083:559:25	Debitage, struck	18.24	13.64	3.05	No	Chert
E2083:560:1	Flake	24.46	14.92	4.64	No	Chert

The five lithic items recovered in these excavations came from a variety of contexts; three are recorded as unstratified and two were recovered in the excavation of features that date to the post-medieval - modern period. Therefore it must be assumed that the lithic material has been disturbed out of context and, where contexted, incorporated into features generated by substantially later activity.

The five items are all struck cherts; a blade (559:24), two flakes (379:09 & 560:01), a piece of struck debitage (559:25) and one artefact: an end and side scraper made on a bi-polar core (386:01). The blade is very regular, the other struck pieces are fairly rough and are probably waste from core-reduction. The scraper is quite neatly made with regular retouching to create two alternate scraping edges.

The chert ranges in colour from black to grey black, it is a nice fine-grained raw material. The pieces have differing levels of post-depositional wear consistent with their various depositional contexts.

As the items derive from disturbed contexts unrelated to their original depositional circumstances and because they were recovered across a wide area they cannot be viewed together to represent trends for the activities that produced them. Technologically they all appear to derive from later prehistoric activities. They are probably all knapping waste, even the scraper has been made on a bi-polar core.

Slag and high temperature debris by Lynne Keys

A very small quantity (45 g) of material – initially described as slag - was examined and quantified for this report. Most pieces had been recovered by hand but one came from sample 76. The assemblage was examined by eye and categorised on the basis of morphology (Table 20).

The assemblage consists in the main of vitrified hearth-lining. This material can vary from highly vitrified (nearest the tuyère region of highest temperature in an industrial hearth) to burnt clay on the side furthest from heat. By itself it is not diagnostic of industrial activity unless associated with other diagnostic material, which is not the case here. It may be material from domestic hearths dumped in ditch 215.

A small quantity of run slag was recovered from topsoil (562) above the limekiln. This is almost certainly re-deposited material from elsewhere and is not indicative of iron working in the immediate vicinity.

Table 20: Slag and high temperature debris from E2083

Find No	Cut	Deposit	Sample no	Slag description	Weight (g)
E2083:383:2	215	383		Vitrified hearth-lining	9
E2083:384:1	215	384		Vitrified hearth-lining	19
E2083:384:2	215	384		Vitrified hearth-lining	8
E2083:562:5		562	76	Run slag	9
					Total weight 45g

Oyster shell by Edel Ruttle

Thirty-nine pieces of shell were examined and are catalogued in Table 21. All the finds come from Area E. The largest amount of shell is found in deposit 377, which is a destruction layer of the kiln, however it could not be considered to be a midden. This deposit contains numerous other finds and appears to be a mixture of rubbish.

As the River Shannon is within view of the Cratloemoyle Castle it is certain that the shell was locally sourced and then eaten and deposited at the site. Oyster shell was often used in manure mixes and this could account for the shell being spread around the deposits on the site.

Table 21: Catalogue of shell from E2083

Find	Area	Cut	Deposit	Description	Dimensions (mm)
E2083:56:6	E	6	56	Oyster shell (bottom)	83x70x7
E2083:57:32	E	-	57	Oyster shell (top)	82x75x10
E2083:57:42	E	-	57	Oyster shell (top)	80x50x10
E2083:57:43	E	-	57	Oyster shell (bottom)	70x55x8
E2083:57:44	E	-	57	Oyster shell fragment (top)	85x55x8
E2083:353:32	E	207	535	Oyster shell fragment (top)	53x33x6
E2083:353:33	E	207	535	Oyster shell fragment (bottom)	37x25x3
E2083:353:34	E	207	535	Oyster shell fragment	35x11x3
E2083:367:3	E	-	367	Oyster shell fragment (bottom)	55x47x5
E2083:367:4	E	-	367	Oyster shell (top)	75x70x10
E2083:375:7	E	228	375	Oyster shell (top)	98x85x15
E2083:377:63	E	-	377	Oyster shell fragment (bottom)	65x50x6
E2083:377:64	E	-	377	Oyster shell fragment (bottom)	80x75x8
E2083:377:65	E	-	377	Oyster shell (bottom)	80x66x6
E2083:377:66	E	-	377	Oyster shell (bottom)	72x58x7
E2083:377:67	E	-	377	Oyster shell fragment (top)	70x50x5
E2083:377:68	E	-	377	Oyster shell fragment (bottom)	70x70x10
E2083:377:69	E	-	377	Oyster shell (top)	80x58x10
E2083:377:70	E	-	377	Oyster shell (bottom)	70x63x10
E2083:377:71	E	-	377	Oyster shell (bottom)	73x70x7
E2083:377:72	E	-	377	Oyster shell (top)	75x64x5
E2083:377:73	E	-	377	Oyster shell (top)	60x50x6

Find	Area	Cut	Deposit	Description	Dimensions (mm)
E2083:377:74	E	-	377	Oyster shell fragment (top)	44x40x4
E2083:377:75	E	-	377	Oyster shell (top)	101x90x15
E2083:377:76	E	-	377	Oyster shell (top)	77x75x5
E2083:377:77	E	-	377	Oyster shell (top)	92x80x8
E2083:377:78	E	-	377	Oyster shell (bottom)	80x66x6
E2083:377:79	E	-	377	Oyster shell (top)	86x73x10
E2083:377:80	E	-	377	Oyster shell (top)	83x63x11
E2083:377:81	E	-	377	Oyster shell (bottom)	65x57x6
E2083:377:82	E	-	377	Oyster shell fragment (bottom)	60x53x7
E2083:377:83	E	-	377	Oyster shell fragment (top)	52x42x2
E2083:380:2	E	216	380	Oyster shell fragment (bottom)	34x24x1
E2083:388:5	E	-	388	Oyster shell (top) with hole 2mm diameter, 4mm from the edge	68x65x10
E2083:452:10	E	219	452	Oyster shell (top)	70x62x5
E2083:452:11	E	219	452	Oyster shell (bottom)	55x41x3
E2083:452:12	E	219	452	Oyster shell fragment (bottom)	33x22x1
E2083:452:13	E	219	452	Oyster shell fragment (bottom)	29x12x1
E2083:551:3	E	215	551	Oyster shell (bottom)	70x58x5

Mortar analyses by Jason Bolton

Introduction

This report was prepared at the request of TVAS Ireland. The purpose of the report is to analyse a series of mortar samples from Cratloemoyle Site 1, excavated as part of the Limerick Southern Ring Road, Phase II (Site A005/2012, E2083, NGR 151152E 159479N to 151623E 159327N).

Methodology

The evaluation of the mortar followed the methodologies laid out in Teutonico (1988), Pavía & Bolton (2000 & 2001), Hughes & Cuthbert (2000), Fitzner & Heinrichs (2002), Groot *et al* (2004), van Hees *et al* (2004), Bolton & Pavía (2005), Schnabel (2009) and Bolton (forthcoming) while also considering the requirements of current planning guidelines (DoEHLG 2004).

The analyses consisted of a petrographic assessment (in hand specimen, supported by instrumental optical microscopic analysis), and geochemical (acid test) analyses of the chemical composition of the samples.

Microscopic analysis

Thin sections of selected mortar and plaster fragments from the sample population were prepared for petrographic analysis. Samples selected were those considered to be the most useful for comparison to provide relevant information regarding the construction materials used at the site. These samples were in good condition and free from contamination, therefore suitable to provide the data necessary for useful comparison. This analysis provides essential information on the composition and properties of the aggregate and binder(s) comprising the plastering and bedding mortars. In addition, a partially calcinated limestone, considered to be evidence of the local firing of limestone for the purposes of building, was also examined.

In order to preserve the original features of these mortars, the samples were impregnated in a deep blue coloured resin under vacuum before thin sectioning. This resin appears a deep blue colour in the petrographic microscope photographs (e.g. Plates 41-44). The impregnation with resin pre

consolidates the samples preserving their minerals and micro structure, and also facilitates identification and description of its pore space characteristics.

As an aid to mineral identification during analysis, the section was stained using a standard dual carbonate alizarin red-S and potassium ferricyanide chemical stain to help determine the composition of any carbonate cement phases and grains present (e.g. Plate 43). The staining differentiates non-ferroan calcite (pale red) from ferroan calcite (mauve→ purple → dark blue with increasing Fe-content); from dolomite (no colour); from ferroan dolomite (pale to deep turquoise with increasing Fe-content).

The thin sections of the selected samples were polished to the standard thickness of approximately 30 microns, covered with a glass slip and examined with the petrographic microscope. The petrographic examination was carried out by using transmitted both natural and polarised light.

Acid test

The chemical compound hydrochloric (or muriatic) acid is the aqueous (water-based) solution of hydrogen chloride (HCL) gas. The acid was used as a simple acid catalyst to test for the presence of calcium carbonate (which effervesces vigorously releasing carbon dioxide).

Other analyses

Bulk mortar analytical methods (e.g. A.D. & sieving) have been shown to give erroneous results and were not carried out.

Bulk mortar analysis methods (e.g. wet chemical analysis and other means based on weight proportions popular in the past) destroy textural relationships in a mortar, and are notorious for giving inaccurate results for any historic mortar which contains limestone (as most Irish mortars do) or lime lumps (common to lime mortars from most historic periods).

Sampling

Table 22: Mortar samples provided for analysis

Sample No	Area	Cut	Deposit	Type	Comment
3	A		52	Lime/mortar	Mortar sample
7	A		52	Lime/mortar	Mortar 'floor' sample
8	A		296	Lime/mortar	Mortar sample
13	E	228	391	Lime/mortar	Mortar sample
15	E	216	474	Lime/mortar	Lime sample
16	E	224	396, 460, 461	Lime/mortar	Lime sample
56	E	-	365	Lime/mortar	Mortar sample
90	E	228	389	Lime/mortar	Lime sample
108	E	228	391	Lime/mortar	Mortar sample
127	C	-	57	Mortar	Mortar sample
128		-	Tower house	Mortar	Mortar sample-inside 1st floor chimney, N side, taken from tower house
129		-	Tower house	Mortar	Mortar sample-1st floor wall plaster, on floor, NE side, taken from tower house
130		-	Tower house	Mortar	Mortar sample- ceiling, 1st floor, over plaster, taken from tower house
131		-	Tower house	Mortar	Mortar sample- S window, sound floor, centre taken from tower house

Background to the Study

The mortars originate from a three areas: a lime kiln, a rectangular structure and a tower house. The site rests on bedrock of Waulsortian limestones. The term ‘Waulsortian’ was introduced in 1863 for a particular assemblage of limestones in the Lower Carboniferous of Belgium. These limestones are massive unbedded lime-mudstones, forming part of a large mudbank complex which originally extended over an area of about 7,000 square miles in Ireland (Lees 1964). Lees (1961) notes “It is suggested that the (Waulsortian limestone) banks are accretionary structures formed *in situ* by accumulation of carbonate mud and bioclastic sand trapped and retained by organisms, probably plants, which are not preserved”.

The tower house (Cratloe Castle) is believed to be a 16th century building and the lime kiln is in close proximity to it, approximately 32 metres away. One of the aims of the study of the mortar from the site was to establish any links between the mortars found from the lime kiln and the mortars found from Cratloe Castle.

Results

Area A – Building

Three mortar samples were provided from the building.

Sample No. 3, Area A, Deposit 52

The sample, weighing 778g, was taken from the western side of a rectangular structure, and believed to be a floor surface or a bedding material for a building element such as a fireplace. It is a medium textured mortar containing sub-angular to sub-rounded aggregate suspended in a binder-supported matrix.

Strong reaction with dilute HCL showed binder to be carbonated lime with abundant lime lumps c. 3mm ø showing retraction fractures. Aggregate is predominantly sub-angular to sub-rounded sparry limestone. It also includes a high proportion of sandstone, lime lumps and partially burnt limestone fragments. Ratio of binder and aggregate is 2:1. Pozzolan additions (fired clay fragments) are also present in the sample (Plates 45-47).

Sample No. 7, Area A, Deposit 52

This ‘mortar floor’ sample weighing 2096g survives as five fragments of fully carbonated lime mortar, accompanied by loose disaggregated powdered lime. Sample thicknesses range between 30-36 mm, and there are very clear ‘upper’ and ‘lower’ surfaces. The upper surface appears as a thin (>2mm thick) layer of fine lime without aggregate, while the lower surface is the exposed underside of the main mortar fabric – appearing as a medium- to coarse-grained mortar with abundant aggregate ‘floating’ in a binder-dominated matrix.

Strong reaction with dilute HCL showed binder to be carbonated lime with common lime lumps of variable sizes (c. 12 mm ø - <2 mm ø) displaying retraction fractures. Aggregate is sub-rounded to sub-angular sparry and micritic limestone predominates, with a lesser lithic fraction composed of sub-angular red sandstone, and occasional chert and cream sandstone/siltstone. Binder and aggregate ratio is 3:1. No significant charcoal, timber or other additives were visible in the sample. The upper surface shows signs of recrystallisation normally indicative of water-related decay processes (Plates 48-49).

Sample No. 8, Area A, Deposit 296

This sample weighing 793g is finely textured, binder-rich, lime-based mortar.

Strong reaction with dilute HCL showed binder to be carbonated lime binder. The mortar is binder rich, consisting of a sharp limestone sand 'floating' in a binder-rich matrix. While Irish medieval lime mortars (Pavía & Bolton 2000, Bolton forthcoming) are typically binder-rich, the textural assemblage found in Sample 296 is dissimilar in proportions to historic bedding, pointing mortars used to bond traditional masonry, and is more akin to a modern 'limecrete' flooring mortar in make-up. The binder shows a number of weathering forms, including micro-fracturing and loss of binder:aggregate cohesion. The aggregate consists of fine (<2mm ø) sub-rounded, sub-angular and angular (sharp) limestone grains, with a minor fraction of quartz, mica and other lithics. Though the site is within reasonable distance of the River Shannon, the morphology of the aggregate does not indicate that a river sand was used, and no shell was observed in the mortar. Binder and aggregate ratio is 3:1. Lime lumps are commonly found through the mortar, averaging <4mm ø but occasional large agglomerations c.18mm ø were observed. Wood fragments are abundant in the mortar, and are normally added to increase mechanical strength and reduce shrinkage fractures when the mortar is curing. Much of the sample has disaggregated into a loose powder, and deterioration processes have also affected the surviving fragments. Consequently, there would be a certain amount of doubt over how representative data obtained from these fragments would be due to micro-structural alterations over time. Due to the degree of weathering & secondary alteration noted, this sample is not suitable for thin sectioning and more detailed examination as the surviving mortar fragments are unlikely to be representative of the original unweathered material (Plate 50).

Area E – Lime Kiln

Six mortar samples were provided from the lime kiln, a structure lying 44 m from Cratloe Castle. This bowl-shaped kiln was constructed with water-rolled and hewn limestone and sandstone. The kiln is believed to have had three phases of use, numbered consecutively as Phase 1 (deposits 396, 460 & 461), Phase 2 (insertion of brick-lined flue 216) and Phase 3 (lime deposits 387 & 395).

Sample No. 13, Area E, Cut 228, Deposit 391

This sample, lime adhered to the inner surface of the kiln, weighs 1219g.

Strong reaction with dilute HCL showed binder to be orange-red stained carbonated lime with abundant unslaked massive lime lumps. There is no significant aggregate content, though fragments of partially burnt limestone retain sedimentary structures including fine lamination and sparry calcite matrix, but without obvious indications of fossil content or other similar diagnostic elements, although fragments of fossils or microfossils are sometimes only visible during thin section analysis. Also present in abundance is charcoal c. 45 mm in maximum dimension (these have C14 dating potential). Much of the sample is weathered (Plates 51-53).

Sample No. 15, Area E, Cut 216, Deposit 474

The sample is large fragment of lime mortar, similar in character to well-core material and it weighs 2.5kg.

Strong reaction with dilute HCL showed binder to be carbonated lime with lime blowing and pitting common. Aggregate is sub-angular to sub-rounded pebble to cobble-sized limestone, typically of limestone sizes traditionally used for firing. Binder and aggregate ratio is 1:1. Also present in the sample is abundant charcoal (Plates 54-55).

Sample No. 16, Area E, Cut 224, Deposits 396, 460 & 461

The sample of lime kiln deposit containing charcoal, partially burnt limestone and lime lumps weighs 2039g.

Strong reaction with dilute HCL showed binder to be carbonated lime with abundant lumps of variable size (to c. 26 mm in maximum dimension). Some of the lumps show retraction fractures. Aggregate component comprises partially burnt limestone and lime lumps of variable size. Aggregate component comprises partially burnt limestone and lime lumps of variable size (Plates 56-58).

Sample No. 56, Area E, Deposit 365

Deposit 365, weighing 300g, is large fragment of off-white and black-coloured lime-based material containing abundant charcoal fragments.

Strong reaction with dilute HCL showed binder to be carbonated lime with massive lime lumps >15 mm ø and abundant shrinkage fractures and evidence of re-working through dissolution and recrystallisation of the lime. There is no significant aggregate content, aside from lime lumps and partially calcinated limestone – waste by-products of the firing process. Also present are charcoal to 22 mm max. dimension (suitable for C14 dating), partially burnt limestone, pozzolan (ceramic fragment). There is no surviving wood, but casts in the lime preserve the outline of now-lost wood fibres (Plates 59-60).

Sample No. 90, Area E, Cut 228, Deposit 389

This sample is finely textured, binder-rich, lime-based mortar.

Binder is carbonated lime with occasional lime lumps while aggregate is limestone and quartz. Also present are abundant charcoal and alteration textures. Binder and aggregate ratio is 1-1½:1 (Plates 61-66).

Sample No. 108, Area E, Cut 228, Deposit 391

This coarsely textured, binder-rich, lime-based mortar, probably lime kiln waste, weighs 1716g.

Strong reaction with dilute HCL showed binder to be orange-red stained carbonated lime with unslaked lime lumps. Aggregate is partially burnt limestone retained within binder-supported matrix. Also present is abundant charcoal to c. 70 mm in maximum dimension retaining original organic structure showing good potential for C14 dating (Plates 67-69).

Tower House

Four mortar samples were provided from the tower house.

Sample 128: 1st floor chimney

This sample, weighting 22g, is finely textured, binder-rich, lime-based mortar showing sub-angular aggregate grains 'floating' in a binder matrix.

Strong reaction with dilute HCL showed binder to be carbonated lime with scarce, fine lime lumps (<0.5 mm ø), with occasional lumps c. 1.5 mm ø and visible open porous network. Sub-angular poorly sorted limestone aggregate predominates. Red sandstone, quartz & chert can also be seen. Majority of aggregate is <2-4 mm ø, with occasional grains to maximum observed dimension of 13 mm. The sample size is too small to accurately determine mix proportions. Mortar is very hard, showing no signs of deterioration. Outer weathered surface shows minor biological colonisation (Plates 70-73).

Sample 129: 1st floor wall plaster

This is a very good example of a medieval plastering mortar, retaining the high binder:aggregate ratio, sharp sand aggregate and addition of animal hair which was to become the hallmark of high quality plastering work in the post-medieval period.

The sample, weighing 35g, is finely textured, binder-rich, lime-based two-coat plastering mortar showing sub-angular aggregate grains 'floating' in a binder matrix. The surface plaster skim appears as a very thin layer (<0.75 mm thick).

Strong reaction with dilute HCL showed binder to be carbonated lime with abundant lime lumps of variable sizes (max 4 mm) showing retraction fractures. Aggregate is predominately sub-angular limestone. Irregular lime lumps also form part of the aggregate fraction. The sample size is too small to accurately determine mix proportions. Abundant fine to medium reddish animal hair, normally occurring in clumps is also present. Hair is added to add mechanical strength and reduce shrinkage cracks in plastering mortars. Also present is scarce charcoal (burnt fuel remnant) (Plates 74-80).

Sample 130: 1st floor ceiling plaster

This sample comprising medium textured, binder-rich, lime-based mortar, showing aggregate grains 'floating' in a binder matrix, with scarce point contacts weighs 25g.

Strong reaction with dilute HCL showed binder to be carbonated lime with large lime lumps to c. 13x8 mm, suggesting the lime was not screened. Aggregate comprises fine sub-angular limestone. The sample size is too small to accurately determine mix proportions. Examination of unaltered areas of the thin section suggest a binder:aggregate ratio of 1-½ :1. Scarce charcoal can be observed strewn through the binder matrix as can be very scarce ceramic fragments (Plates 81-88).

Sample 131: South window, ground floor, centring

This sample comprising finely textured, binder-rich, lime-based mortar weighs 13g.

Strong reaction with dilute HCL showed binder to be carbonated lime with scarce fine lime lumps (c. 1 mm ø). Aggregate is scarce fine sub-angular limestone. The sample size is too small to accurately determine mix proportions. No additions were noted. However, due to the small sample size (25x11x11 & powdered lime) of this sample, it is difficult to determine how representative the mortar is (Plates 89-90).

Area C – Possible Hearth & Pit

One possible mortar sample was provided from Area C, a location containing archaeological deposits and *in situ* burning.

Sample 57 has a cream-brown mottled appearance.

There was no reaction to diluted HCL. The nature of the binder is not known. Some off-white weathered elements showed a very weak reaction to HCL. There is no aggregate component. The material is very weathered showing an open porous network usually indicative of long-term dissolution.

It is not clear what this material is. Preliminary inspection suggests a severely-weathered fired ceramic product. The sample is NOT a mortar (Plates 91-92).

Discussion

Provenance of the Lime used to make the Mortar

The mortar from the tower house, the mortar from the lime kiln, and the lime deposits from the lime kiln all use the same limestone type showing the same polygonal calcite structure in unfired limestone, partially burnt limestone and as relict structures surviving in lime lumps (Plates 41-44). Consequently, in the absence of any firm data to the contrary, it seems reasonable to assume that a common source was used for the mortar used in both structures. Considering that limestone forms the bedrock of the area on which both the tower house and the lime kiln occur, it would be useful to examine any rocky outcrop / historic quarry face in the immediate vicinity to determine if the local bedrock formed the source of the stone used to produce the lime.

Lime Binder

Lime binder normally appears as very finely crystallised calcite derived from the carbonation of slaked lime that cannot be resolved under polarisation fluorescence microscopy. However, underburned limestone and relict sedimentary structures contained in 'lime lumps' can be useful in determining the provenance of the limestone used to produce the lime. Much of the lime at Cratloemoyle was underburned (evidence by partially burnt limestone and the preservation of relict sedimentary structures within lime lumps) and no overburned limestone fragments were noted suggesting that only relatively low temperatures were reached within the kiln. Overburned limestone is weakly reactive, and will slowly hydrate and carbonate. From an archaeological perspective, overburned limestone is useful as it can help determine the maximum firing temperature reached in the kiln. Lime lumps of varying sizes were commonly found within all the mortars. The origin of these structures is not agreed upon. Some authors consider the presence of lime lumps as evidence of the practise of dry slaking (using a minimum amount of water to convert CaO to Ca(OH)_2) as in the recently revived mortar preparation practice of hot mixing. However, other authors suggest that lime lumps are derived from the carbonate crust which forms on top of maturing lime putty (Bruni *et al* 1997). However, as lime lumps were noted in the lime kiln waste from Cratloemoyle where mortar mixing did not occur, and lime putty was not formed in a pit, we must assume that there are multiple ways in which lime lumps may be formed, and these cannot be used as evidence of a particular building practice in the absence of other supporting evidence.

Charcoal

Charcoal survives in abundance in deposits of lime recovered from the lime kiln, often of sizable dimension (i.e. > 25 mm ϕ), and are remnants of the firing process. Identification of the species would be useful as it is normally assumed (in the absence of published data) that locally available scrub and loose timber was used to fire kilns. It would be interesting to know if a single species predominated or if a range of species were found, as this would prove a useful insight into historic lime burning practice, and contribute to the interpretation of any radiocarbon dates which may be recovered from the charcoal. Charcoal can sometimes have a weak reaction with a lime binder, effectively contributing a hydraulic reaction to the mortar matrix.

Pozzolan Additions

A few fragments of pozzolan material (fired clay ceramic) were recorded in a deposit from the lime kiln. Pozzolans are known from studies Irish medieval mortars (found in 18% of medieval mortars studied to date – Bolton forthcoming), but are added during the mixing phase and would not have been normally added during lime burning. These ceramic fragments were interpreted as contaminants. These ceramic fragments may originate from the brick flue, however the ceramic fragments in the lime were too small (< 1.5 mm in maximum dimension) to allow any meaningful comparison with the brick from the flue. Ceramic fragments were also noted from the mortar used on the ceiling of the tower house of Cratloe Castle. However, these did not show any significant reaction rim (distinct pozzolan activity is found when ceramics are fired at temperatures of 600-900°C).

Organic Additives

Organic additives such as egg, milk, blood, wax etc (see Pavía & Bolton 2000) are known from the historical literature to have been incorporated into mortars and plasters to enhance working properties and improve durability. The round bubble-like voids seen in the mortar from the ceiling of the tower house is usually interpreted as evidence of entrained air, which in historic materials probably arose from the addition of admixtures (surfactants) which would have been protein-containing organic materials (Sickels 1981). This is useful (albeit negative) evidence for a highly skilled approach to manipulating the mortar mix to produce a more workable and durable material.

Area C Sample 127

The sample from Area C (hearth and pit) is not a mortar, and is possibly a very weathered ceramic fragment.

Samples

A total of 37 samples were taken from the site (Appendix 8). The samples included 13 bulk soil, 14 of lime/mortar, 9 of charcoal and one of preserved wood in lime. Eleven of the soil samples have been wet sieved and floated through a 300 micron mesh and then through a 2 mm mesh to recover charred plant material and small finds.

Charred plant remains by Mark Robinson

Excavations at Cratloemoyle Site 1 (E2083) discovered various post-medieval structures including a house site, a boundary ditch, some hearths and a lime kiln. Sixteen samples were analysed for carbonised plant remains and the results given in Tables 23-24.

Samples were floated in water onto a 0.30 mm mesh and the dried flots were scanned under a binocular microscope for charcoal, seeds, chaff etc. A representative range of charcoal was picked out, broken transversely and examined at x50 magnification, enabling ring-porous taxa to be identified. When a fragment of diffuse-porous charcoal was noted, it was broken in the appropriate planes and examined by high-power incident-light microscopy at magnifications of up to x400. An estimate was made of the abundance of each taxon of charcoal. Those samples seen to contain seeds, chaff etc were sorted. The remains were identified under a binocular microscope at magnifications of up to x50 and counted.

Some of the samples contained much charcoal, particularly of *Alnus glutinosa* (alder) or *Quercus* sp. (oak) although charcoal of *Fraxinus excelsior* (ash) was abundant in one sample. There was little charcoal of shrubs. It is likely that fuel was being obtained from damp woodland. However, two samples had evidence that peat ('turf') was also being burnt.

Four of the samples had a very slight presence of cereal grains but one, sample 68, had an extremely high concentration of cereal remains. There were over 750 grains per litre in the sample. The great majority of the grains were from a free-threshing species of *Triticum* (rivet or bread wheat). Wheat chaff comprised only 1.4% of the remains and most of it could not be identified further. However, there was one rachis fragment of *T. turgidum* (rivet wheat) and four rachis fragments of *T. aestivum* (bread-type wheat). It is possible that the wheat grain was also a mixture of these species. 2.3% of the grain was *Avena* sp. (oat) and there was also a slight trace of hulled *Hordeum* sp. (hulled barley). Weed seeds comprised 0.4% of the assemblage and all were of plants which readily grow as arable weeds, for example *Rumex* sp. (dock).

It is thought likely that the non-charcoal remains in sample 68 represented the accidental burning of a mixed crop of rivet and bread wheat which had already been threshed and cleaned. The grains of oats and barley were perhaps from plants growing as volunteers amongst the wheat crop. Rivet wheat is no longer grown commercially in Ireland but was formerly a crop (Stace 1997, 898).

Table 23: Charcoal from E2083

Feature	1	214	216	228	-	215	219	231	228	201	228	215	218	205	-	216
Context	50	374	381	454	365	383	452	552	375	278	390	388	451	351	562	380
Sample	1	10	12	14	52	64	66	68	72	94	109	116	122	124	125	126
Sample volume (litres)	2	60	15	2			4	4			4					
<i>Prunus</i> sp. (sloe, cherry etc)	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Pomoideae indet. (hawthorn, apple etc)	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+
<i>Ulmus</i> sp. (elm)	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
<i>Betula</i> sp. (birch)	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Alnus glutinosa</i> (L.) Gaert. (alder)	+	-	+++	-	+++	-	-	-	++	-	++++	++	+	-	+	-
<i>Quercus</i> sp. (oak)	-	+	-	-	-	++	+++	+++	-	++	-	-	-	-	-	++
<i>Fraxinus excelsior</i> L. (ash)	+++	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Carbonised peat	-	-	-	+++	-	-	-	-	-	-	+++	-	-	-	-	-

+ present, ++ some, +++ much, ++++ very much

Table 24: Charred plant remains (excluding charcoal) from E2083

Feature	214	216	219	231	218
Context	374	381	452	552	451
Sample	10	12	66	68	122
Sample volume (litres)	60	15	4	4	
CEREAL GRAIN					
<i>Triticum</i> sp. (rivet or bread wheat, short free-threshing grain)	-	-	-	2561	-
<i>Hordeum</i> sp. (hulled barley)	-	2	-	10	1
<i>Avena</i> sp. (oats)	-	-	-	73	-
Cereal indet.	1	2	1	489	-
Total Cereal Grain	1	4	1	3,133	1
CEREAL CHAFF					
<i>Triticum turgidum</i> L. (rachis, rivet wheat)	-	-	-	1	-
<i>T. aestivum</i> L. (rachis, bread wheat)	-	-	-	4	-
<i>T. turgidum</i> L. or <i>aestivum</i> L. (rachis, rivet or bread wheat)	-	-	-	39	-
Total Cereal Chaff	0	0	0	44	0
WEED SEEDS					
Chenopodiaceae indet.	-	-	-	2	-
<i>Rumex</i> sp. (dock)	-	-	-	8	-
<i>Odontites verna</i> (Bel.) Dum. (red bartsia)	-	-	-	1	-
<i>Carduus</i> or <i>Cirsium</i> sp. (thistle)	-	-	-	1	-
Weed seeds indet.	-	-	-	2	-
Total Weed Seeds	0	0	0	14	0
Total Items	1	4	1	3,191	1

Radiocarbon date

A radiocarbon determination was made by Beta Analytic Inc, Miami, Florida of bone from skeleton, find no. 373:1, and a further two determinations were made by Queens University Belfast from samples from cuts 1 and 231 (Table 25). References for the relevant databases used are Stuiver et al 1998 and Reimer et al 2004.

Table 25: Radiocarbon determination

Lab code	Cut	Deposit	Sample no.	Sample material	Radiometric age	Calendrical calibrations	Database used
Beta-209519	214	373		Bone collagen (human)	150±40 BP	2 sigma (95%) Cal AD 1660 to 1950 1 sigma (68%) Cal AD 1670 to 1700 Cal AD 1720 to 1780 Cal AD 1800 to 1820 Cal AD 1840 to 1880 Cal AD 1920 to 1950	INTCAL 98
UBA-13260	1	50	1	Charcoal (ash)	2223±25 BP	2 sigma (95.4%) Cal BC 382 to 341 Cal BC 327 to 204 1 sigma (68.3%) Cal BC 363 to 351 Cal BC 299 to 227	INTCAL 04

Lab code	Cut	Deposit	Sample no.	Sample material	Radiometric age	Calendrical calibrations	Database used
UBA-13261	231	552	68	Charred seeds (wheat)	218±20 BP	2 sigma (95.4%) Cal AD 1646 to 1679 Cal AD 1764 to 1800 Cal AD 1939 to 1951 1 sigma (68.3%) Cal AD 1654 to 1668 Cal AD 1782 to 1797 Cal AD 1948 to 1950	INTCAL 04

The bone dated is actually part of the skeleton so is well stratified and relates directly to the burial itself. Unfortunately the radiocarbon age intercepts five times with the calibration curve and at this stage the date given is within a very broad range between the mid 17th and mid 20th centuries. However considering the stratigraphy of the site it is more likely that the skeleton dates to the earlier part of the date range.

Pit 1 was an isolated pit containing burnt stone and, with an Iron Age date is the earliest dated feature within Cratloemoyle Site 1.

Cut 231 was a depression in the base of ditch 215. This feature was stratigraphically earlier than the aforementioned skeleton, however both have broad date ranges.

Discussion

The excavation of Cratloemoyle Site 1 has revealed several areas of interest; an Iron Age area of burning, a possible military camp site, a post-medieval field boundary, human burial, post-medieval lime kiln and several pits and ditches and an 18th/19th century building.

The site area ran in a narrow strip along the northern edge of the present N18. Before upgrading of the N18 the land had sloped down from the east and west into a low valley in the central area. Three test trenches were excavated in this central area in the testing phase. It was found that the modern dumped material was up to 2.50 m in depth. According to local knowledge, road works on the N18 in the last 20 years or so filled in a dangerous dip in the road at this point.

Phase 1, Iron Age

Area B – Pit with burnt stones

The isolated pit with a burnt stone fill is open to a number of interpretations. Burnt stone features are often thought to be similar to prehistoric *fulachtaí fia* or burnt stone mounds, perhaps representing a single incident of boiling water with hot stones for cooking or bathing. The heating activity could, however, have occurred at almost any time in the past. Although no artefacts were recovered from the feature a charcoal sample revealed a radiocarbon date of 2223±25 BP (UBA-13260) producing a 2 sigma calibrated date of 382-204 cal. BC (Table 25).

The closest known Iron Age settlement is at Mooghaun hillfort approximately 15 km to the north-west, though activity at the site seems to be concentrated in the Late Bronze Age and Late Iron Age (Grogan 2005, 244). In addition an isolated Iron Age pit dating to AD 265-615 was excavated 9.5 km to the south-east at Crabbsland, Co. Limerick, as part of the Limerick Southern Ring Road Phase I (Coyne 2001). It should not be surprising that there is an Iron Age presence in the Cratloe area as it is diverse in terms of food resources and occupies an important strategic position along a land and river route.

Phase 2, 16th - 18th century AD

Area E- Near tower house

The tower house (Cratloe Castle) approximately 44 m to the north was constructed in the 16th century and it is likely that it and the church of St John were a centre of activity in the local community. Many auxiliary functions would have been carried out in the vicinity including the burning of lime as discussed below.

The discovery of three sherds of transition pottery from the 15th/16th centuries indicated activity in the area during this period. Two of the sherds were found in a linear cut to the east of the kiln and potentially date this feature to the medieval/early post-medieval period. Another was found in a post-kiln destruction deposit. Though sherds of pottery were often added to manure heaps as rubbish and therefore found their way onto agricultural ground during manuring, it is more likely that this pottery was associated with the tower house. This tower house locally known as Cratloe Castle was built by the MacNamaras in the late 16th century. It was owned by John (called Fionn), son of Tadhg MacConmara in 1570 and inhabited until at least the late 18th century when it was occupied by another John, the last of the main line of MacNamaras (see above for more detail). Another potentially early artefact found was that of a staple hasp which was used as a lock on chests and doors. These items are usually medieval in date.

Area D - Boundary

This boundary took the form of a ditch on the eastern side with a shallower ditch on the western side of a central bank. Material from the ditches would have been used to create the bank and it appeared that the bank had either been faced with stones or stones had been used in its construction (probably to consolidate it). The boundary was marked on the 1840 OS Fair Plan map but had been infilled by the 3rd Edition OS map in 1922.

The excavated features functioned as a field boundary that is likely to date to the 18th or early 19th century, although an earlier origin cannot be ruled out. The enclosure of land was most aggressive during the 18th century agricultural revolution (Aalen et al 1997, 134). Boundaries were built not only to enclose land but also to provide shelter for animals and to help with the management of meadow land. Locally, boundaries today are ditches and banks with blackthorn, haw, ash, holly and willow growth on top. Though many boundaries are post-medieval in date many have medieval origins. The more modern examples are straighter and more ordered; examples of such may be the regularly sized fields to the east of this site on the 1840 OS map. The excavated boundary is slightly curved and, though it follows the curve of the land and may be a practical response to the general topography, it suggests that it boasts an earlier origin.

Area C - Possible military camp site

Hearths and a pit were uncovered during testing and fully excavated during resolution. The features were located on the high ground overlooking what would have been low marshy land between them and Cratloemoyle Castle, 230 m to the north-west.

Musket balls dating to the late 16th or 17th centuries and a 16th century coin found from the topsoil in this area suggest that it might have been an encampment area for soldiers in the 16th or 17th centuries. There are several references to battles in Cratloe (Ua Cróinín and Breen 1991) and it is likely that the tower house would have been a focus of attack.

Area E – Ditches

In the central part of the trench three parallel ditches (207, 213 and 215), 2.30-2.80 m wide, were found running north-west to south-east; all continued into the northern baulk (Fig. 11) and might have been dug around the time of one of the skirmishes and battles in the area that took place during the 16th

and 17th centuries. A Charles II halfpenny of 1680 was recovered from the base of the first ditch. The coin, floor tile fragment (late 17th-19th century), brick (17th-19th century), pan tile (17th-18th century), glass sherds (pre-19th century) and pottery (17th-19th century) date the infilling of the ditches to the late 17th-19th century. However one 19th/20th century pottery sherd and one modern glass sherd discovered in the fill of one of the ditches (207) suggests a later date. Taking all artefacts and the later more secure contexts into consideration it seems likely that these two finds were intrusive.

If the ditches are late 17th century in date, as the discovery of a 1680 Charles II coin in one of the fills suggests, they may have been dug during a period in which the lands and castle of Cratloemoyle were confiscated from and then subsequently restored to the MacNamaras.

Area E – Burnt cereal deposit

At the base of the middle ditch (215) was a shallow depression that contained an extremely high concentration of charred cereal grains. It is likely that the mixed rye and bread wheat grains were accidentally burnt after they had been threshed and cleaned as only a very small percentage of chaff and weed seeds were found. Rye wheat is no longer grown commercially in Ireland but was formerly a crop (Stace 1997, 898). It is difficult to say whether the deposit was in a cut that was truncated by the later ditch (215) or was deposited in the base of the ditch itself. Possible interpretations are that the shallow depression was the ephemeral remains of a corn-drying kiln that was cut by the ditch or that the cereal was the dumped remains of a crop whose storage or drying went terribly wrong. A radiocarbon determination from the cereal returned a two sigma date of cal. AD 1646 to 1679, cal. AD 1764 to 1800 and cal. AD 1939 to 1951. Considering the dating evidence of the later deposits it seems that either of the earlier of date ranges is possible.

Area E – Post cereal deposit ditch fills

The ditches seem to have been filled in a relatively short period of time, this will be discussed later. Two pre-grave cut fills (384/385) were identified in the base of ditch 215 and these produced a clay tobacco pipe fragment, animal bone, hearth-lining and 17th/18th century pottery sherds. These deposits were truncated by the later grave cut (214) (Figs 16-17).

Area E – Grave

A single grave of Christian burial tradition of a male was found dug into the lowest fills of ditch 215. A piece of Frechen pottery found in the lowest fill of the ditch conjoined with a piece in a deposit at the top of the ditch suggesting that the ditch was not open for a significant period of time between the grave being cut and the ditch being filled and suggests that it might have been deliberately back filled. Considering the type of finds recovered from the later fills (such as 383 and 378) it becomes apparent that this was an area for dumping domestic rubbish such as broken pottery and animal food waste and also some building materials in the form of brick. This is not a typical location for a Christian burial. The west to east orientated grave was, as described above, of an adult male who was between 26 and 35 years of age at death (Fibiger above) (Plates 7-8) and had possibly been wrapped in a winding cloth or shroud. A number of pathologies were apparent on the skeleton: the individual had suffered soft-tissue trauma to his left hand and had a healed, non-accidental, blunt force trauma to the cranium. Dental disease, circulatory and metabolic disorders (rickets) were also observed. Both the arm and leg bones showed evidence of rickets, indicating that the individual was affected up to the age of about 2 years old.

The presence of Schmorl's Nodes on his vertebrae indicate that this individual was involved in heavy labour or lifting and the occurrence of *Osteochondritis dissecans* indicates that he experienced trauma, both during the second and third decades of his life. This suggests that despite his rickets he had an active life; his healed head trauma might even suggest that he had been involved in a battle. His rickets which were the result of low exposure to sunlight in his infancy suggest that he was kept indoors and may suggest that he had been a sickly child. The stable isotope analysis suggests that he lived

predominantly on an agriculturalist diet based primarily on plant protein which might indicate that he had not been a wealthy individual.

Though there is no evidence that burial ever occurred at the church (the castle oratory to the north) it seems strange that this man was buried in a place so close to a church yet so obviously not within sacred ground. He was in fact buried in the bottom of a ditch used for dumping household waste before he was interred and continued to be so afterwards. Was this because he was an outsider? Strontium and oxygen isotope analysis suggested that the individual did not grow up in the Limerick area but may have come from north-east Ireland or south-east England (Evans and Lamb above). This man may have been one of the attackers of the castle in the 17th century, but if this was the case we would expect more burials and perhaps a mass grave. There was no evidence in his skeleton of what caused his death so it could have been by peaceful means.

A radiocarbon date of 150 ± 40 (Beta-209519) produced a 2 sigma calibrated date of AD 1660-1950 (see Table 25 above). This result does not aid the dating of the inhumation.

Area E – Lime kiln

Lime kilns, in which limestone was burned and converted into calcium oxide or quicklime, are Ireland's most common industrial monument (Rynne 2006, 157). Most which survive today are large rectangular structures and are common along road sides in most counties. The Cratloemoyle example was circular in shape and much smaller than these large-scale, mason-built structures and would have produced much smaller quantities of quicklime.

Lime was a valuable, multipurpose product and was used in building as a component of mortar; in industry as a flux for blast furnaces, in the purification of town gas, in the production of bleaching powder and in the tanning process for de-hairing hides (*ibid*). In agriculture it was used to enhance soil fertility (Rynne 2006, O'Sullivan and Downey 2005 and Collins 2008) and as the final coating on wheat grains in a process to prevent 'smut and other fungoid diseases' (Anon 1853). It was also mixed with dry peat-mould or peat charcoal and mixed with potatoes in store to help preserve them until the spring. These final two jobs were carried out in the month of October (*ibid*). Other less well discussed uses were as a disinfectant wash in the farmyard, as a slug repellent and ant killer (Sleeman 1990, 95) and as a worm medicine for children where a lump of hot lime was put in a basin of water, strained and drunk (Hickey 1975, 48).

Traditionally kilns were of two main types though other versions were also used: the flare kiln (also called the intermittent, arch, standing or French kiln) was an earlier design and the draw kiln (also called the continuous, perpetual or running kiln) (Rynne 2006, O'Sullivan and Downey 2005 and Collins 2008). The same chemical reaction occurred in whichever kiln was used- the limestone being calcium carbonate on burning lost its carbon dioxide and became calcium oxide (quicklime, roch, roche or roach lime). In this form it still retained the shape of the limestones but was much lighter (Collins 2004, 36). It was in this form that it was placed in the fields in piles and when it rained or water was poured on it, it burst into a white powder (Hickey 1975, 48). This chemical reaction resulted in heat being expended and the resultant powder was slaked lime or calcium hydroxide. For obvious reasons great care had to be taken so as not to allow quicklime to become wet while it was in a cart.

There is no evidence in early Irish sources (7th and 8th centuries) for the application of ground limestone (and presumably burnt lime) to the land (Kelly 2000, 230). Its application seems to be a post-Norman settlement development (Collins 2008, 171) though old enough to warrant an old Irish saying reminding farmers that over application exhausts the land- 'Lime enriches the father but impoverishes the son', (O'Sullivan and Downey 2005, 21). Its use as a soil improver became its most common use in the countryside in the 18th and early 19th centuries. With improved agricultural techniques and the growth in population (Quain 1984, 14), the demand for lime in the second half of the 18th century increased, and consequently the production of lime was carried out in larger continuous draw kilns (Rynne 2006, 158) which were more economical to run and produced more

lime. Types of temporary kilns were pot kilns (described by McEnvoy in 1802 as a hole dug in a bank, built up with stones without any cement and where the side of the kiln had to be broken open to extract the lime - Collins 2008, 174) and those made of sods of earth (ibid, 194). The burning of lime required skill and experience. For instance, an inexperienced lime burner might feed too much fuel into the lime so causing the kiln to get too hot and 'get stuck'. This was when the limestone and culm (type of coal) would fuse and stick to the side of the kiln (Downes 2003, 20).

Boate in 1652 describes two types of kiln: the draw kiln and the French kiln in which wood, turf or sea coal was burned (Boate 1652, 158). By the 18th century it seems that a shortage of wood had resulted in turf being commonly used and furze to a lesser extent (Collins 2008, 173; Lucas 1958, 64-65). Culm was also used where it was accessible or imported. Kilns were commonly found in farmyards in the 18th and early 19th centuries. Many are shown on the 1st Edition OS maps often grouped together close to sources of fuel or limestone or beside roads, in farmyards or in fields (Collins 2008, 194). Collins (2008, 194) comments that those marked on the OS maps (depicted with a circle with an eccentrically-placed dot) are the permanent 'more enduring works of a mason' and not the small temporary structures that were often built of sod and destroyed in the burning process. A local example can be seen approximately 250 m to the south-south-west in Cratloekeel (Fig. 5). It is possible that small kilns on individual farms were not needed in the area when this larger kiln was operational and hence the demise of the Cratloemoyle kiln. Outcrops of stone have also been marked in the same field and it is possible that they were used for raw material. This kiln can be seen on the later 25" map where it is annotated as 'Lime Kiln Disused' and seems to be rectangular in plan. There is no trace of it on the 1922 map.

Later in the 19th century burning of lime in small scale furnaces on farms was replaced by industrial sized production in large kilns adjacent to quarries. Farmers travelled, with horse and cart, up to ten miles in the night to be sure of being at the kiln for the day's draw of lime. The freshly burnt lime was easier to handle and therefore the preferred option (Downes 2003, 20). Four large-scale industrial lime kilns or disused lime kilns can be seen on the 25" map of Limerick city; in clockwise direction - on the Dock Road, at Prospect Hill, St John's and Killeely. They are all in the outskirts and adjacent to quarries or disused quarries and only two had been in use in the 1840s. All are depicted as large rectangular structures and three are depicted as being double kilns. Of the four, only the Dock Road kiln was still functional in 1888-1913. By 1903 there was no trace of them, reflecting how much lime burning had become obsolete by the early 20th century. The availability of other forms of fertilisers also became widespread and in the 20th century the spreading of burnt lime was superseded by the use of crushed limestone (O'Sullivan and Downey 2005, 22). The demise of the small-scale lime burners can also be seen in the trade directories of the 19th century where ten lime burners were listed pre-1850 and only six were listed post-1850 to 1870. In the last three decades of the 19th century no lime burners are listed but in their place four lime works are testament to the changing nature of the business (Limerick trade directories, Limerick City Library). One of these listed in an 1884 trade directory at Prospect Hill is marked on the 25" map 1888-1913 as 'disused'.

Various kiln descriptions have been collected by Collins from Boate (1652), Rye (1730), Young (1770s), de Montbret (1790s), Tighe (1802) and others (Collins 2008). From the descriptions it is obvious that kilns varied greatly in size and form. Most were described as flare or draw kilns built into slight slopes or with a ramp built up to the mouth of the kiln. This allowed the stone to be carted to the mouth and loaded from the top of the kiln. Single door examples seem to have been the most common but others with two or multiple doors existed such as at Trim where 17th century examples were excavated by Sweetman (Sweetman et al, 1978). They also varied in external shape, some round but mostly rectangular and most worthy of description was the shape of the internal shaft. There seems to be a general consensus that the kiln shaft should be gently curved to stop the charge from sticking to the sides though cylindrical examples with a tapered point did exist (Tighe 1802 in Collins 2008, 181). In 1802 the ideal proportions of a kiln were recorded as the width in the centre as being half the height and the mouth at least one-fourth of the height (Thompson in Collins 2008, 181). Kilns had to burn steadily between 900°C -1100°C (Collins 2008, 171) so constant vigilance was required and men

needed to be on duty 24 hours a day during the burning, which could last from between a few days to months depending on the amount of lime being produced.

The flare kiln was used for a single burning of lime at a time. In these kilns an arch of stones was set above the firebox and the charge or limestone to be burnt was loaded on top of the arch through the mouth of the kiln. The fire was lit at the bottom of the kiln through a stroke-hole and fuel was added at the bottom as necessary. As the charge turned into lime the arches sank and were also turned to lime. The lime was then unloaded. This method had the advantage that the lime did not mix with the fuel so could be used for a greater variety of purposes. Also the stone did not have to be broken into small pieces before burning. The disadvantage was that more fuel was used than in the draw kiln and not as much lime was produced. (Rynne 2006, O'Sullivan and Downey 2005 and Collins 2008).

The draw kiln had a permanent grate over the fire-box. Alternative layers of fuel and limestone were loaded in the kiln from the mouth. As the stone burned it dropped through the grate and could be removed or withdrawn (hence the name (Quain 1984, 15)) through the draw-hole. The larger kilns were big enough to allow a man and horse and cart to be drawn close to the stoke-hole and loaded accordingly. More fuel could be added to the top until the required amount of lime was produced. The disadvantages of this type of kiln were that the lime mixed with the ash and the stone had to be broken in to small pieces prior to burning. The design, however, was more fuel efficient and could make large quantities of lime. (Rynne 2006, O'Sullivan and Downey 2005 and Collins 2008)

The excavated round lime kiln probably dates to the early 18th century and does not fit the description of either common kiln type described above in that it had two opposing stoke holes or doors and was also not built into a slope. Its internal bowl dimensions were 1.75 m wide at its mouth, 1.20 m at its base and 1.40 m at its deepest, although originally it could have been several metres deep. The bowl was lined, as described in other kilns, with water rolled fine-grained stones as were both flues. Like at Rossbrien kiln, Co. Limerick (E3933), a much larger, flare kiln, across the river Shannon from Cratloemoyle, the courses were bounded with clay and the clay had oxidised in places with the heat of the kiln (Janes 2005, 143). The upper section of the Cratloemoyle kiln wall was constructed of large roughly hewn limestones on the inner and outer faces with smaller packing stones in the interior and was 1.40 m at its widest. Its size suggests that the kiln would have continued to a height. If the ideal dimensions of a kiln are considered - of the width being half the height (Thompson in Collins 2008, 181) - and it is presumed that the maximum width of the kiln has been preserved, the conjectured internal height would have been 3.50 m. This begs the question how they loaded the limestones at such a height if the kiln was not set in a slope? No evidence for scaffolding or a soil ramp was found in the excavated area but the existence of such in the unexcavated area to the north cannot be ruled out. In 1730 Rye described a two door, round draw kiln which burned culm. He commented that turf was also used in this type but he considered the flare kiln as a much superior kiln for the use of turf (Collins 2008, 174). Kilns with two and three flues were found at Trim castle, the two flue example had smaller internal dimensions (the diameter of the bowl at the base 0.50 m and 1.30 m at the rim) and dated to the 17th century but did not have a circular external plan unlike the two other contemporary kilns found close-by (Sweetman et al 1978, 152).

The fuel used in the excavated kiln was turf with alder and birch probably used as kindling. If the Cratloemoyle kiln was a draw kiln we would expect the grate to be *in situ* as the remains of the final burnt charge remained in the base of the kiln (389) but none was found. There were however four large stones (565) on which a grate might have rested. This arrangement would have positioned the grate a little above the cap stones of the later brick-lined flue (216) and the possible rake out channel (223) as would be expected. Lime was raked out through the eastern door. The last charge of lime was found in the base of the kiln in the form of white powder and, not in its calcium carbonate form as it would have been directly following a burning, but since it had been in a wet environment had converted to slaked lime or calcium hydroxide. A similar deposit was found in the base of the flare kiln in Rossbrien (Janes 2005, 143). Analysis of the lime found in the kiln and in the tower house mortar shows that the lime was underburned (Bolton above) and it is possible that lime burnt in the kiln could have been used in the repairs or alterations to the tower house. Maintaining the required

temperature for burning of between 900°C -1100°C could be thwarted by wind, lack of care and attention or lack of skill.

The stone for burning in the kiln could have come from many of the limestone outcrops in the area and analysis of the lime from the kiln and mortar from the tower house indicated that the source for the limestone was the same. There are two quarries marked on the 1st Edition OS map in the vicinity, one to the south-west and one to the north-east though there is a possibility that the stones from the destroyed staircase in the tower could have also been used. Lewis' comments that 'limestone abounds [in the parish of Killeely] and is used for manure, and there is some bog near the Shannon' (Lewis 1842, 77) indicates that in the mid-19th century lime was being spread on the land in the parish. It is also possible that the turf used in the excavated kiln came from the bog described.

The burning of lime in kilns produced a lot of heat which was sometimes used for secondary purposes such as making salt. There is a late 19th example from Cork at the Salt and Lime Works, Leitrim St (O'Sullivan and Downey 2005, 22). The heat was also used in heating greenhouses and domestic heating (Collins 2008, 171). In Cork, as in Limerick, a lime works was located, off Anglesey Road, next to quarries and the gas works. These lime works also manufactured salt (1st Edition OS map) and as in Limerick they did not survive into the 20th century. At Cratloemoyle the later brick-lined flue (216) which was capped by flags in the kiln bowl and flue might have originally been covered along its entire length and so funnelled heat away to be used for secondary purposes, of which no trace remains.

The kiln was in an area of dumping and a lot of domestic detritus was found in pits and cuts in the vicinity - a typical back yard scenario. The discarded pottery found was a mixture of domestic wares made in Ireland and imported from England and Germany. Animal bones found across the area indicate that cattle, sheep/goat and pig formed the highest proportion of meat consumed. The cattle were not killed at their prime meat age but had been slaughtered after the age of two after they had contributed in other ways such as for milk production, traction (Holmes above) and manuring. Wild animals also formed an element of the diet in the form of oysters, fallow deer (introduced into Ireland by the Normans (Wild Deer Association of Ireland)) and hare. It is not surprising that fallow deer were consumed as the ancient woodland of Cratloe, which would have been an ideal habitat for deer, is very close-by. The amount of meat consumed suggests that the inhabitants were wealthy and taken together with the other elements of refuse might indicate that this domestic waste derived from the castle itself.

The kiln appears to have gone out of use by the mid 18th century as indicated by the large amount of early 18th century and late 17th/18th century glass bottle sherds that were found dumped into it after it had become a convenient hole to deposit rubbish into. Some of the sherds dated more specifically to c. 1700-1720 and c. 1640-1720. Other rubbish amongst the clast rubble included some 18th/19th century glass sherds and 17th/18th century pan tiles, brick, oyster shell and the bones of four unfortunate dog puppies.

In summary, the Cratloemoyle kiln does not fit the description of either common kiln type; the flare kiln or the draw kiln, as described by Rynne (2006), O'Sullivan and Downey (2005) and Collins (2008), but may be a local variant. It was most likely used like a draw kiln with evidence indicating that the charge was removed from the eastern flue. The function of the western flue is not clear but multiple flue kilns do exist as mentioned above. Since the western flue was not fully excavated, it is not possible to comment further on its exact function. The kiln seems to have been in use from the early- to mid-18th century and it is possible that the lime was used in works carried out in the towerhouse or was used for agricultural purposes.

Lime kilns, once so common in the landscape, were places where chemistry met practicality and where the skill and knowledge of the lime burner allowed this alchemy to occur. 'Lime burning was an art that only the experienced lime burner fully comprehends. That the veteran burner, who may have no formal education, was like a French chef: while the formally trained engineer, fortified with

extensive experience in other pyrochemical processes be compared to a novice cook' (Boynton 1980 quoted in Downes 2003, 20).

Phase 3, 19th century AD

Area E- Near tower house

The few sherds of pottery and glass dating to the 19th/20th centuries found on site might have been introduced into the soil by manuring or were associated with the large structure or house on the 19th century map to the north-west of the tower house.

On the 1st Edition OS map a driveway was marked to the east of, and also partly overlapping part of, the kiln. No evidence for this driveway was found in the excavation but if large-scale clearance of the area occurred, as conjectured above, during the removal of the building to the north-west of the tower house and of the extension any trace is likely to have been removed at that time. Both buildings and the driveway disappeared between the 1st and 25th Edition map dates of 1840 and 1888-1913 respectively.

Nearly all of the townland was still in the hands of the Quin family (Lord George Quin) in the 1850s (Griffith 1852). The listing for this townland does not match the map references but by a process of deduction the house to the north of the castle on the maps was rented by James Frost along with approximately 144 acres of land including the castle and church. It is possible to deduce this since on the listing James Frost is listed as 22a and the Constabulary force as 22b. On the accompanying map 7a and 7b are marked where we would expect 22a and b and no Constabulary Barrack is marked. However, on the 25th 1888-1913 map a Constabulary Barrack is marked at 7b. If the acreage, which is also marked on this map, is totalled it amounts to approximately 142 acres minus a piece of mud flat not quantified in the later map, close to the amount James Frost was renting from George Quin which according to the listings was approximately 144.

Area A – Building

The remains of the building were insubstantial. It is likely that it was a rectangular mud-and-stone building with red brick used for the chimney construction. The evidence for agricultural activity to the north indicates that the building was standing during the ploughing. There was no evidence of internal divisions or an entrance way which was probably on the unexcavated southern side of the structure, facing the road.

The building is marked on the 1st Edition OS map but had disappeared by 1888-1913. The lack of pottery sherds suggests that the building did not have a domestic function though the chicken bones might indicate that people did at least eat here. The nails and single post-medieval horse shoe and the location of the building immediately adjacent to the road might indicate that it was a forge. It has also been suggested (K Taylor pers comm.) that it might have been a toll cottage for the nearby bridge over Cratloe Creek. This is a possibility, however, a toll house at D'Esterre's bridge in Rossmanagher, near Bunratty, is marked on the 1840 map and there is still local knowledge of this, so it seems unlikely that this was also one as no tradition or map evidence exists.

Archaeological potential off the road CPO

Excavation of this site has demonstrated that archaeological features and deposits continue beyond the northern limits of the CPO into the adjacent fields. In particular the ditches investigated in Area D continue to the north.

A number of features, including the lime kiln, extend beyond the edge of Areas E and F into the field south-west of Cratloemoyle Castle. It is likely, given the concentration of features in Area E that

further evidence of activity of a similar post-medieval date is to be found in this field. These features should continue to be protected under the National Monuments Acts due to their proximity to Recorded Monument CL062-021.

Further work

The results of this excavation will be published as part of an NRA monograph of the scheme in 2011-12.

A summary of the findings of the excavation has been submitted to *Excavations 2005*.

The finds have been cleaned, numbered and labelled and will be properly packed and deposited with the National Museum of Ireland in accordance with *Advice Notes for Excavators* (NMI 2010).

The author recommends the environs of the site extending beyond the excavation area, particularly to the east and south of Cratloemoyle castle, be entered onto the RMP for County Clare

Fiona Reilly
TVAS Ireland Ltd
13th December 2010

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Appendix 1: Catalogue of features and deposits

Context no.	Area	Description	Fills	Dimensions (m)
1	B	Cut of pit. Sub-oval, sharp break of slope at top, sloping sides and concave base.	50	0.63 x 0.55 x 0.15
2	D	Cut of boundary ditch. Aligned N/S through site. Gradual sides and break of slope base and top. Central section had steeper sides than N and S ends.	51, 259, 260	Average 1.0 wide, min 19.0 long, max 0.36 deep
3	A	Cut of foundation trench. Rectangular/linear cut. Steep break of slope top and flat base. Gradually sloping sides.	53	7.5 x 3.5 x 0.15
4	F	Cut of ditch. Linear cut with U shaped profile.	55	Min 2.5 x 0.90 x 0.25
5	E	Cut of possible ditch. Recorded in testing, re-numbered and re-recorded in resolution. Only one edge seen.	59	Min 2.5 x 1.3 x 0.2
6	E	Cut of possible ditch. Not excavated in testing. Possibly same as 207.	56	Min 6m long
7	-	Cut of possible ditch. L shaped in plan. Not excavated at resolution stage.	58	3.8 wide, 0.60 deep
8	-	Cut of possible ditch. Concave profile. Recorded in section only. Not excavated at resolution stage.	69	0.60 wide, 0.16 deep
9	-	Cut of possible ditch. Concave profile. Recorded in section only. Not excavated at resolution stage.	70	0.60 wide, 0.18 deep
10	-	Cut of possible ditch. Linear edge visible. Not excavated at resolution stage.	61	Min 2.5 long
50	B	Fill of pit 1. Crumbly, dark brownish grey sandy silt with moderate charcoal flecking and frequent fire-cracked sandstone pieces.		0.63 x 0.55 x 0.15
51	D	Fill of ditch 2.		Average 1.0 wide, min 20.0 long, max 0.36 deep
52	A	Patch of mortar floor. Hard, variable colour-pale brown to pale grey, mortar or lime with limestone inclusions 70/30. Limestone varies up to 0.10m in size. Inclusions of some small sandstone fragments 10%. In places only ephemeral remains. Best seen in section where it was 0.02-0.04m thick. It sat on natural subsoil. Full extent unknown.		4.0 x 0.40 x 0.02-0.06 deep
53	A	Fill of foundation trench 3. Hard where better preserved, loose and crumbly in places. Variable colour from cream white to pale brown. Mortar or lime 70% and limestone 30% small generally but one large rock 0.16x0.17x0.20m. Inclusions of occasional fragments of red brick less 5% and very occasional charcoal flecks and coal fragments.		9.0 and 3.0 long, 0.40-0.60 wide, max 0.15 deep
54	C	Compact red <i>in situ</i> burnt natural sandy clay.		1.30 x 1.00 x 0.10
55	F	Fill of ditch 4. Moderately compact, pale brown silt. Sterile.		Min 2.5 x 0.90 x 0.25
56	E	Fill of ditch 6. Moderately compact brown silt.		Min 6 long
57	E	Rubble layer. Recorded in testing, re-numbered and re-recorded in resolution. Loose, dark brown humic soil with stone/brick/tile/slate/glass/pottery etc.		15 long, 0.55 thick
58	-	Fill of ditch 7. Compact pale grey silt.		3.8 wide, 0.60 deep
59	E	Fill of ditch 5. Moderately compact brown silt.		Min 2.5 x 1.3 x 0.2
60	-	Layer. Firm dark grey brown silt. Recorded in section only. Not excavated at resolution stage.		1.5 long, 0.30 deep

Context no.	Area	Description	Fills	Dimensions (m)
61	-	Fill of ditch 10. Firm pale grey silt.		Min 2.5 long
62	C	Linear patch of grey clayey sandy silt. Non-archaeological.		1.0 x 0.60
63	C	Sub-circular patch of brownish grey clayey sandy silt. Non-archaeological.		0.55 diameter
64	C	Oval patch of <i>in situ</i> burnt natural sandy clay.		0.50 x 0.30 x 0.10
65	C	Oval patch of <i>in situ</i> burnt natural sandy clay.		0.50 x 0.44 x 0.05
66	C	Sub-rectangular patch of mid brown sandy silt. Non-archaeological.		2.30 x 0.60 x 0.05
67	C	Sub-rectangular patch of mid brown sandy silt. Non-archaeological.		0.60 x 0.30 x 0.05
68	E	Buried sod layer. Dark brownish grey silt.		0.10 thick
69	-	Fill of ditch 8. Firm pale grey silt.		0.60 wide, 0.16 deep
70	-	Fill of ditch 9. Firm pale grey silt.		0.60 wide, 0.18 deep
71	All	Topsoil		
200	C	Cut of pit. Sub-circular in plan, concave sides and base.	250	0.50 x 0.47 x 0.29
201	D	Cut of linear feature aligned N/S. Flat base, moderately gentle sloped sides. Edges truncated by digger.	255, 256, 278, 279, 286	18.0 long, 0.60 wide base and 1.30-1.80 top, 0.30 deep
202	F	Cut of possible furrow. Linear, U-shaped cut with steep sides and rounded base. Runs parallel with 203. East side more vertical than west. Continues into south facing baulk and stops short of north facing. Undulating base shallower 1.85m from S end for a stretch of c.1m N.	297	9.30 x 0.30-0.40 x max 0.13
203	F	Cut of possible furrow. Linear cut with sharp sides and slightly rounded base. Parallel to 202.	298	7.70 x 0.36 x 0.07
205	F	Probably a natural depression or tree bowl. Continued beyond baulk. Several small depressions in its base.	350, 351	4.1 long
206	E	Possibly burnt out tree stump. Oblong, irregular with large degraded limestone on base. Sharp break of slope top.	352, 354, 355, 356, 357	1.2 diameter, max 0.40 deep
207	E	Cut of ditch. Roughly rectangular and linear cut aligned N-W / S-E. Continued into the south facing baulk. Base generally flat, sides gentle.	353, 394, 494	12.0 x 2.30 x 0.75
208	F	Depression in base of 205. Oval cut with flat bottom and vertical sides.	358	0.18 x 0.14 x 0.16
209	F	Depression in base of 205. Sub-circular cut with roughly flat base and vertical sides.	359	0.20 x 0.14 x 0.08
210	F	Depression in base of 205. Roughly circular, vertical sides where adjoins 205, slightly sloping on opposite edge.	360	0.13 diameter, 0.06 deep
211	F	Depression in base of 205. Roughly circular, shallow cut with vertical sides on western edge and slightly sloped elsewhere. Maybe stone socket.	361	0.52 diameter, max 0.10 deep
212	F	Depression in base of 205. Semi-circular cut, but continues into south facing baulk.	362	0.48 x 0.23 x 0.08
213	E	Cut of ditch. Linear, U-shaped cut with flat base and gentle sloped sides, sharp break of slope top, gentle break of slope base. Seemed to continue east. Continues into south-facing baulk.	563	Min 8.40 x 2.30 x 0.15-0.35
214	E	Oval grave cut with steep sides and sharp break of slope top and base. Orientated E/W. Squared west end and more rounded east. Base uneven, 2 limestones protrude from the base. There was a circular depression at the west end where skeleton's head lay.	373, 374	1.14 x max 0.60 x 0.40

Context no.	Area	Description	Fills	Dimensions (m)
215	E	Cut of ditch. Linear cut possibly curved eastern end. Continued into south-facing baulk. Western end was not clear as it was truncated by 228 and possibly a second cut. Might have continued east and included 227, 226 and 219. Best preserved section sharp break of slope top and gentle base. Side gentle, base flat. Box trench in south-facing baulk showed dimensions.	368, 378, 382, 383, 384, 385, 386, 551	Min 2.80 wide at top, min 1.70 wide at base
216	E	Cut of possible flue. Meandering course from kiln entrance approx. eastwards down slope. Steep sided cut with flattened base.	379, 380, 381, 395, 398, 399, 473, 474, 489, 490, 491, 492, 493, 496	Min 7.0 long, 0.80 wide at top, 0.70 deep
217	E	Cut of pit. Roughly oval, cut by 218. Irregular sides, base pitted, roughly flat and concave. Sides very gentle, steep on south side. Gentle rough break of slope top, sharp break of slope on south side.	450	1.50 long, 0.22 deep
218	E	Cut of pit Rectangular cut tapers to north and runs into this baulk. Flat base, steep sides break of slope sharp at top.	451, 481, 482	2.0 wide, 0.50 deep
219	E	Cut of pit. Oval with gentle sides and concave base. Gentle break of slope top.	452, 456, 467, 468	2.0 x 1.5 x 0.40
220	E	Cut of depression. Oval, irregular sides and base.	453	3.0 x 1.67 x 0.46
221	E	Linear depression runs into the south facing baulk. Gradual break of slope base and top. Sides irregular mostly concave.	455	7.0 x 0.70 x 0.16
222	E	Linear, regular cut, U-shaped base, very steep sides, sharp break of slope top. Runs into or part of 217.	458	2.2 x 0.35 x 0.25
223	E	Possible lime raking cut. Linear cut continues into south-facing baulk. Relatively flat base, straight sides. Within kiln.	389	1.03 x 0.29 x 0.05-0.15
224	E	Roughly bowl-shaped at east side and narrows along the side of the kiln flue. U-shaped with rounded base. Possibly cut by 216.	396, 460, 461, 466	0.40 deep
225	E	Cut of pit. Linear, flat base, N and E sides gradual and moderate at top. S steep and sharp at top. Cut by 218 on W.	470, 480	0.74 wide, 0.23 deep
226	E	Cut of possible pit. Oval depression, irregular, concave base, break of slope top sharp, gradual base. Sides steep on north and south and gentle elsewhere. Possibly truncated by 227 and 219 to east and west.	472	1.90 or 1.40 x 0.90 x 0.34
227	E	Disturbed linear or kidney-shaped cut, true edges survived on south and east. Truncated by earlier test trench on north and west. Sharp break of slope top and gradual base. 2 depressions in base contained the same fill. Might have been continuation of 215 to the north-west.	471	4.50 x 2.00 x 0.40-0.60
228	E	Final cut of kiln after upcast material 498 placed around edges, i.e. shape of kiln without stones. Irregular, partially excavated as runs into northern baulk. Roughly circular with 2 flared cuts on east and west sides. Eastern flue narrower at kiln end and flayers out to 1.45m wide. Length 1.20m. Western flue almost a continuation from the south side of the kiln cut. Base of kiln was deepest in the area of flue 216 that presumably formed a linear cut through the centre of the kiln.	364, 370, 371, 372, 375, 376, 389, 390, 391, 392, 454, 457, 464, 465, 479, 495, 554, 555, 556, 565	4.50 long. Max depth in bowl 1.12. Eastern flue 1.20 long x 1.05-1.45 wide

Context no.	Area	Description	Fills	Dimensions (m)
229	E	Cut of U-shaped depression with narrow base and moderately steep sides. Probably animal disturbance or a stone socket.	553	0.60 x 0.60 x 0.30
230	E	Original cut of kiln. Irregular cut, sharp break of slope top and base in flue areas but gentle on se side of bowl part. The bedrock in the base might have been shaped to facilitate the kiln. The bedrock is most prominent on the western side. Continues into south facing baulk.	See fills of 228	Length of bowl and flues 4.20, max 1.70 deep and 1.40 wide
231	E	Cut of irregular depression, gradual break of slope top and base, irregular undulating base with stones protruding. Truncated by 228 on northern side.	552	0.87 x 0.50 x 0.12
250	C	Fill of pit 200. Loose mid brown clayey sandy silt. Occasional small stone inclusions.		0.50 x 0.47 x 0.29
251	D	Topsoil. Loose and soft, brown soil with occasional small stones.		0.27 deep
252	D	Deliberately dumped modern material. Moderately compact, mottled yellow silty sand and pockets of grey, stony, clayey sand. Inclusions of occasional stones. Gets deeper as goes west. Same as 263. Recorded in section.		Max 0.03-0.67 deep
253	D	Buried topsoil. Loose and friable, grey, silty, sandy clay. Recorded in section.		Max 0.20 deep
254	D	Buried topsoil. Same as 253 but browner and more iron panning. Probably same as 278 to east. Recorded in section.		Max 0.36 deep
255	D	Possibly fill of ditch 201. Soft and loose, pink grey with iron panning, silty sand. Natural. Recorded in section.		Min 0.30 deep
256	D	Possibly collapsed bank, partially in ditch 201. Loose and friable, pale mottled grey, silty sand and inclusions of some stones.		19.0 x 1.0 x max 0.19
257	D	Natural. Loose and friable, pale pink grey with yellow mottling, silty sand. Inclusions of yellow sandstones. Recorded in section.		Max 0.13 deep
258	D	Natural. Loose and friable, pale pinkish grey, silty sand. Recorded in section.		Min 0.36 deep
259	D	Fill of ditch 2. Loose, brown grey, silty sand. Degraded layer under 51. Inclusions of iron panning. Probably caused by erosion from sides. Recorded in section.		Max 0.16 deep
260	D	Fill of ditch 2. Moderately, loose, brown, silt. Recorded in section.		Max 0.07 deep
261	D	Reinstated topsoil. Loose, mid-brown soil including stones and boulders. Recorded in section.		Max 0.35 deep
262	D	Deliberately dumped modern material. Moderately loose, light grey hardcore stone. Recorded in section.		Max 0.05 deep
263	D	Deliberately dumped modern material. Moderately loose and friable, brown grey, silty topsoil in west and yellow pink silty sand in east. Same as 252. Recorded in section.		Max 0.30 deep
264	D	Deliberately dumped modern material. Loose, crumbly, chalky, light grey white gritty clay-like layer includes stones, lenses of topsoil (265) and a patch of tar/bitumen. Recorded in section.		Max 0.75 deep
265	D	Deliberately dumped modern material. Moderately loose, brown black, sandy silt. Lens within 264. Recorded in section.		0.04-0.05 thick
266	D	Buried topsoil. Soft, pliable, light brown grey, gritty clay. Moss was visible on the surface. Recorded in section.		Max 0.37 deep

Context no.	Area	Description	Fills	Dimensions (m)
267	D	Alluvial layer. Moderately soft, plastic, blue grey, silty clay with some small stone inclusions. Recorded in section.		Max 0.30 deep
268	D	Deliberately dumped modern material. Loose, black brown, gritty, sandy silt. Associated with 264. Recorded in section.		Max 0.05 deep
269	D	Natural. Soft, friable, sandy glacial till. Blue grey to pink brown with stone inclusions. May have been water logged. Recorded in section.		Max 0.21 deep
270	D	Natural. Soft, friable, orange grey, sandy silt glacial till. Recorded in section.		Max 0.21 deep
271	D	Natural. Soft, friable, orange grey, sandy silt with some clay and decayed colourful yellow and pink either decayed stones or patches of sand. Glacial till. Recorded in section.		Max 0.17 deep
272	D	Soil layer. Soft, friable, orange grey, silty clay with some stone inclusions. Merges with 266 to west. Recorded in section.		Max 0.26 deep
273	D	Buried topsoil. Moderately loose, friable, brown grey silt. Yellow moss was found on the surface. Recorded in section.		Max 0.15 deep
274	D	B-horizon for buried topsoil. Moderately loose, friable, mid-grey, sandy silt. Recorded in section.		Max 0.20 deep
275	D	Alluvial or anaerobic layer. Soft, plastic, blue grey, silty clay.		Max 0.28 deep
276	D	Natural. Loose, gritty, orange grey sandy silt with some sandstone. Recorded in section.		Max 0.17 deep
277	D	Buried topsoil. Loose, gritty, orange brown, sandy silt. Recorded in section.		Max 0.11 deep
278	D	Fill of ditch 201. Loose and friable, grey brown, silty sand with inclusions of occasional large stones approx. 0.15m by 0.30m. Runs N/S continues into south-facing baulk.		1.0 wide, max 0.34 deep
279	D	Stone scatter / collapse partially in ditch 201. Loose, grey, scattering of stones of various sizes all unworked. Most dense at N end.		Min 7.0 long, 0.40 wide in test area
281	D	Possibly remnants of a bank. Moderately compact, grey brown, sandy silt with iron pan patches. Slightly different colour to 257 below. Recorded in section.		0.10 deep
282	D	Old sod layer post dates destruction of boundary ditch and bank. Moderately compact, brown topsoil. Recorded in section.		Max 0.20 deep
283	D	Possibly old topsoil. Moderately compact, brown, silty sand. Recorded in section.		0.14 deep
284	D	Interface between 283 and 256. Moderately compact, yellow brown, silty sand mottled with grey. Recorded in section.		0.26 wide, 0.11 deep
285	D	Old topsoil contemporary with depression or ditch 201. Moderately compact, yellow brown, silty sand. Recorded in section.		Max 0.14 deep
286	D	Fill of ditch 201. Loose and friable, grey purple and mottled orange, silty sand. Same as 255. Ran length of 201. Might be degraded natural subsoil.		0.60 wide, 0.10 deep
287	A	Possible furrow. Moderately compact, friable green grey clayey silt with occasional charcoal flecks. Continues into south-facing baulk.		0.95 x 0.32 x 0.04
288	A	Possible furrow. Moderately compact, friable green grey clayey silt with occasional charcoal flecks. Continues into south-facing baulk.		0.94 x 0.31x 0.03

Context no.	Area	Description	Fills	Dimensions (m)
289	A	Possible furrow. Moderately compact, friable green grey clayey silt with occasional charcoal flecks. Continues into south-facing baulk.		0.92 x 0.30 x 0.04
290	A	Possible furrow. Moderately compact, friable green grey clayey silt with occasional charcoal flecks. Continues into south-facing baulk.		0.91 x 0.75 x 0.05
291	A	Possible furrow. Moderately compact, friable green grey clayey silt with occasional charcoal flecks. Continues into south-facing baulk.		0.67 x 0.21 x 0.04
292	A	Topsoil. Loose, heavily root disturbed, dark brown with red undertones, smooth textures, friable, organic silt with occasional small stones less 5% inclusions. Recorded in section.		Max 0.20 deep
293	A	B soil horizon. Moderately compact but some root disturbance, mid brown with red undertones. Smooth textured silt and coarse sand 10%. Inclusions of small to medium stones 5%. Recorded in section.		Max 0.15 deep
294	A	Destruction layer of house. Moderately compact but friable, mix of light tan mortar crumbs 30% and mid brown with red undertones silt 70%. Inclusions occasional fragments of red brick and limestone. Recorded in section.		Max 0.10 deep
295	A	Original ground surface. Compact, brown with yellow red undertones, silt 90% and coarse sand 10%. Inclusions of occasional large fragments of limestone less 5%. Recorded in section.		Max 0.12 deep
296	A	Mortar patch, possibly part of destruction layers. Compact but not set hard, breaks down under hand pressure. Light grey with blue undertones, gritty mortar or lime. Recorded in section.		0.35 x min 0.06 x 0.05
297	F	Fill of furrow 202. Soft, mid-brown, silty sand with occasional charcoal flecks and occasional medium sub-angular and sub-rounded pebbles and medium sub-angular and sub-rounded stones. Topsoil like.		9.30 x 0.30-0.40 x max 0.13
298	F	Fill of furrow 203. Loose, friable, light brown, sandy, clayey silt. Occasional flecks of charcoal and occasional small stones and pebbles inclusions.		7.70 x 0.36 x 0.07
350	F	Fill of depression 205. Moderately loose, friable, orange brown, sandy silt with inclusions of stones 2% and flecks of charcoal and modern finds. Continues into south facing baulk.		4.1 long, max 0.12 deep
351	F	Fill of depression 205. Moderately loose, friable, orange brown, sandy silt with inclusions of stones 2% and charcoal. With a concentration of charcoal in se corner. Continues into south facing baulk.		4.1 long, max 0.03 deep
352	E	Fill of hollow 206. Moderately loose, brown, silty clay with flecks of charcoal inclusions.		1.2 diameter, 0.04 deep
353	E	Fill of ditch 207. Close-textured but friable under finger pressure, dark brown with reddish undertones, silt with inclusions of some large fragments of limestone and occasional small sandstone fragments.		Not fully excavated 6.5 x 1.6 x 0.40
354	E	Fill of hollow 206. Moderately loose, dark brown, silty clay and charcoal inclusions. In two pockets.		a-0.20 x 0.10 b-0.20 x 0.10
355	E	Fill of hollow 206. Compact, pink yellow, sandy clay with occasional small stone inclusions.		0.40 long 0.05 deep
356	E	Fill of hollow 206. Hard, compact, red pink clay.		0.16 x 0.04
357	E	Fill of hollow 206. Loose and friable, pale pink, sand probably degraded sandstone.		0.06 long, 0.07 deep
358	F	Fill of 208. Moderately loose, friable, orange brown sandy silt with flecks of charcoal.		0.18 x 0.14 x 0.16
359	F	Fill of 209. Moderately loose, friable, orange brown sandy silt with flecks of charcoal.		0.20 x 0.14 x 0.08

Context no.	Area	Description	Fills	Dimensions (m)
360	F	Fill of 210. Moderately loose, friable, orange brown sandy silt with flecks of charcoal.		0.13 diameter, 0.06 deep
361	F	Fill of 211. Moderately loose, friable, orange brown sandy silt with flecks of charcoal, inclusion of 2 large stones.		0.52 diameter, max 0.10 deep
362	F	Fill of 212. Moderately loose, friable, orange brown sandy silt with flecks of charcoal, inclusion of one large stone.		0.48 x 0.23 x 0.08
363	E	Layer. Closely packed but friable under finger pressure, mid-brown with orange undertones, sandy silt with inclusions of some small limestone fragments and occasional medium sized limestone fragments, roofing slate and mortar. Recorded in section.		0.40 deep max
364	E	Kiln structure in 228. Not fully excavated as ran into south facing baulk. Water rolled, fine grained stone of various sizes and roughly hewn limestone. Smaller rounded stones were used to line the bowl of the kiln. The lining was one stone thick. The eastern flue was also lined as such. The upper section of the kiln was constructed from roughly hewn limestone on inner and outer faces and smaller packing stones formed a rubble core. Survived as 2 courses on south side and 1 course on western. 2 lintelled openings, one on the eastern and one on the western, formed openings from the bowl into the flues. Some of the rounded sandstones used in the western flue had been split. Larger stones were used for the base. Deposit 371 was found between the stones and sometimes on the inner face of the kiln where it was scorched red.		The internal diameter of the bowl was 1.75 and the widest part of the limestone wall section was 1.40. Internally it was 1.40 at its deepest.
365	E	Layer. Hard set lime/mortar lumps with large chunks of charcoal		0.60 x 0.20-0.25 x 0.10-0.25
366	E	Layer. Loose, medium, angular and sub-angular limestones and pebbles and one non limestone rounded medium stone in mid-brown sandy silt with occasional soft charcoal lumps and lime crumb.		0.15-0.35 deep
367	E	Layer. Tightly packed, light grey brown, sandy silt with inclusions of frequent small and medium stones.		2.0 x 0.35
368	E	Fill of ditch 215. Tightly packed, brown, sandy silt with inclusions of small stones.		0.80 x 0.24
369	E	Layer. Hard and brittle lime/mortar, off white/pale brown.		0.50 wide. 0.10 deep
370	E	Fill of kiln 228. Compact, grey, stone rubble ranged in size from 0.20m wide to 0.05m wide. Stone is fine grained not limestone, some are water rolled and some angular. Inclusions of occasional fragments of red brick.		2.24 x 1.15
371	E	Fill of kiln 228. Varied from bright red to dark red depending on degree of burning. Silty feel when not as burnt (dark red) and slightly sandier feel when bright red. Used as bonding agent around stones 364. Also partially covered face of stones. Probably same as soil behind stones which was also scorched but to a lesser degree. In places it was in its unscorched state as dark brown, slightly sandy silt such as behind scorched material between the kiln stones.		N/A
372	E	Fill of kiln 228. Loose and friable, mid-brown, sandy silt with inclusions of frequent small angular pebbles and small lumps of lime/mortar. Surrounds rubble 370.		1.20 x 2.20
373	E	Fill of grave 214. Human skeleton see specialist report		See specialist report

Context no.	Area	Description	Fills	Dimensions (m)
374	E	Fill of grave 214. Mixed texture of hard lumps of redeposited orange pink natural silt surrounded by loose grey pink silt. Inclusions of very occasional small fragments of limestone less 5% and occasional large fragments of limestone 5%.		0.45 wide, 0.30 deep
375	E	Fill of kiln 228. Friable, mid-brown and orange red sandy clay with inclusions of lumps of baked red clay. Found above rubble filled interior of the kiln and extended further on the eastern side. Also percolated down into the rubble filled interior.		Unclear 2.5 x 2.0.
376	E	Fill of kiln 228. Loose, sandstone and limestone within the kiln 364. Mixed with soil matrix 375 that probably percolated down after 376 was deposited. Limestone - largest 0.29x0.16x0.15m to large angular pebble size.		0.59 deep
377	E	Layer, probably kiln rubble. Loose, friable, dark brown, silt. Inclusions of frequent small and large, sub-angular and sub-rounded stones predominantly limestones and occasional small lumps of sandstone.		2.7 x 2.0 not fully excavated, max 0.30 deep
378	E	Fill of ditch 215. Compact but friable under finger pressure, mid-brown, silt. Inclusions of small and large sub-rounded, sub-angular limestones, very occasional charcoal flecks and occasional brick crumbs. Same as 366?		1.2 wide, 0.20 deep
379	E	Fill of flue 216. Compact/close-packed, mid to dark brown with orange undertones, silt. Inclusions of small and large, sub-angular and sub-rounded fragments of limestone and sandstone 30%, charcoal flecks 1% and lumps/crums of lime 1%.		Max 0.80 wide, 0.30 deep
380	E	Fill of flue 216. Closely packed/compact, mid to dark grey with pink undertones, silt. Inclusions of small, sub-rounded, sub-angular limestone fragments, charcoal flecks 1% and fragments of lime.		0.50 wide, 0.25 deep
381	E	Fill of flue 216. Closely packed, mix of pale brown silt and pink brown redeposited natural sandy silt. Inclusions of sub-angular. Sub-rounded limestone fragments 30%.		0.20 wide, 0.20 deep
382	E	Fill of ditch 215. Closely packed, compact but breaks down under finger pressure, brown silt and redeposited natural sandy silt. Inclusions of occasional large, sub-rounded limestone fragments 10%.		1.0 wide, 0.20 deep
383	E	Fill of ditch 215. Compact but easily breaks down under finger pressure, dark grey brown, silt with inclusions of small limestone fragments less 5% and charcoal flecks less 1%.		2.0 wide, 0.25 deep
384	E	Fill of ditch 215. Compact/ closely packed but easily breaks down, pink, grey, brown, silt with inclusions of occasional large limestone rocks 10%, small, sub-angular and sub-rounded limestone and sandstone fragments and occasional charcoal flecks. Same as 385.		0.20 deep
385	E	Fill of ditch 215. Compact but easily breaks down under finger pressure, pink grey brown, silt with inclusions of occasional charcoal flecks less 1%. Same as 384.		0.40 wide, min 0.15 deep
386	E	Fill of ditch 215. Compact but friable under finger pressure, reddish brown to grey silt. Redder in south and west. Inclusions of very occasional small sub-rounded limestone and sandstone fragments less 5% and very occasional charcoal flecks.		0.20 deep
387	E	Layer. Mix of hard (caked) lime and loose stones, soil and lime. Layer of caked lime associated with heterogeneous mix of silt, sub-angular, angular limestone fragments and lime crumb.		Approx. 2.5 wide, 0.05-0.15 deep

Context no.	Area	Description	Fills	Dimensions (m)
388	E	Layer, probably kiln rubble. Loose and friable, mid-brown, sandy clay with inclusions of charcoal flecks 1%, small stones 5%, some frequent large stones.		1.35 x 1.03
389	E	Fill of channel 223 and kiln 228. Compact and hard but crumbles when trowelled, white and pale yellow hardened lime. Within 364. Extends into flue.		1.40 diameter
390	E	Fill of kiln 228. Loose and friable, black, charcoal and large chunks of charred wood. Within 364.		N/A
391	E	Fill of kiln 228. Very compact and cemented in places especially at base. Grey white with flecks of black, hard lime with inclusions of charcoal. Found at base of kiln and on lower internal sides of kiln.		at base 1.20 x 0.20 x 0.03-0.04
392	E	Fill of kiln 228. Moderately loose, mid brown, silty clay with inclusions of charcoal flecks, lime and red clay.		0.60 wide, 0.20-0.30 deep
393	E	Layer. Closely packed but friable dark reddish brown to grey, smooth textured silt. Inclusions of occasional red brick and roofing slate fragments, some medium, sub-angular, rounded limestone fragments, less 5% crumbs of lime and occasional charcoal flecks.		0.10 deep
394	E	Fill of ditch 207. Closely packed but easily breaks down, mix of brown silt and orange redeposited natural. Inclusions of occasional medium sized fragments of limestone.		Approx. 2.5 long, 0.10 deep
395	E	Fill of flue 216. Hard and brittle, white to light brown, thin layer of lime powder hardened by water intermixed with reddish brown silt.		Approx. 0.50 wide, 0.05 deep
396	E	Fill of bowl 224. Hard but brittle, off-white, light brown layer of caked lime with small amounts 20% of brown silt. Inclusions of some sub-angular limestone fragments and charcoal flecks. Lime has become wet and caked hard.		0.05 deep
397	E	Layer. Moderately compact but friable under finger pressure, mid brown with orange undertones, sandy silt 10/90 split. Inclusions of some medium lumps of sub-angular and sub-rounded limestone 5%.		2.0 diameter, max 0.30 deep
398	E	Fill of flue 216. 6 flat slabs-capping stones on brick supports 489 in cut 216. Ran along northern side of eastern flue of kiln. Stones varied in size from 0.47x0.31x0.06m - 0.30x0.20x0.13m.		1.20 x 0.41
399	E	Fill of flue 216. Hard set, cemented, dirty white, medium sized stones and lime.		1.0 x 0.05-0.21
450	E	Fill of pit 217. Loose, brown grey, silt.		1.50 long, 0.22 deep
451	E	Fill of pit 218. Loose, brown grey, silt with inclusions of rocks and bricks.		2.20 long, 0.50 deep
452	E	Fill of pit 219. Fairly loose, black brown sandy silt with inclusions of charcoal flecks and small lumps of charcoal, large angular stones, brick and slate 5%.		2.5 long, 0.15 deep
453	E	Fill of depression 220. Compact, pink and grey, loose, sand. Inclusions of charcoal flecks and large and small stones.		3.0 x 1.67 x 0.46
454	E	Fill of kiln 228. Loose and friable, reddish grey with frequent black, silty clay and charcoal 20%. Found at base of kiln and partly up the internal sides of the kiln.		0.36 x 0.20 x 0.08-0.15
455	E	Fill of depression 221. Soft, light brown with pink hue and speckled light orange, sandy silt with inclusions of medium pebbles and small stones and very occasional charcoal flecks. Natural build up in depression.		7.00 x 0.70 x 0.16
456	E	Fill of pit 219. Hard, closed compact, mid to dark brown with orange undertones, silty sand. Inclusions of small limestones and broken slate fragments and charcoal flecks. Same as 452?		2.00 x 1.5 x 0.40
457	E	Fill of kiln 228. Loose and friable, grey brown, silty clay.		0.40 x 0.23 x 0.04-0.05

Context no.	Area	Description	Fills	Dimensions (m)
458	E	Fill of linear feature 222. Compact, silty brown, silty sand. Inclusions of small sub-rounded stones less 5%.		0.40 long, 0.15 deep
460	E	Fill of bowl 224. Hard but brittle, off white and blue white inclusions, lime which has hardened with water. Inclusions of small sub-angular limestones 10% and occasional charcoal flecks less 1%.		0.05 deep
461	E	Fill of bowl 224. Hard but brittle mix of brown silt 60%, off-white and grey caked lime powder. Inclusions of sub-angular limestone fragments and charcoal flecks.		0.05 deep
462	E	Layer. Fairly compact, dark grey brown mix of silty clay and limestones and limestones. Inclusions of infrequent slate less 1%. Recorded in section.		8.4 long, 0.10-0.35 deep
463	E	Layer. Friable, yellow green, silty clay. Recorded in section.		1.1 long, 0.04-0.11 deep
464	E	Fill of kiln 228. Very compact, indurated, mostly white grey with frequent occurrences of red and black, lime and possible crushed stone.		1.3 x 0.50 x 0.15
465	E	Fill of kiln 228. Grey brown, water rolled and roughly hewn limestones. At base of 364, some seem crudely shaped. Depression forms 223 covered with 464.		1.20 x 0.44
466	E	Fill of bowl 224. Compact but friable when trowelled mix of pink, orange, grey and brown heterogeneous mix of sand and silt 40/60 split. Inclusions of small sandstones 10% and occasional charcoal flecks.		0.05 deep
467	E	Fill of pit 219. Fairly loose, orange brown sand.		0.50 wide, 0.10 deep
468	E	Fill of pit 219. Fairly loose, mid-brown, sandy silt with few small stones and charcoal flecks.		1.7 wide, 0.10 deep
470	E	Fill of pit 225. Loose, brown grey, silt with inclusions of bones and limestone rocks.		0.74 wide, 0.23 deep
471	E	Fill of linear feature 227. Heavy compacted, pink brown, clayey silt with inclusions of stones, bones and charcoal flecks.		6.0 x 2.60 x 0.85
472	E	Fill of pit 226. Fairly compact, reddish brown sandy redeposited natural mixed with sandy brown silt. Inclusions of small sub-angular and sub-rounded stones less 5%.		1.3 wide, 0.20 deep
473	E	Fill of flue 216. Loose, worm cast deposit. Reddish brown, silt with inclusions of lime crumb 20%, small sub-angular limestone fragments 5% and charcoal flecks less 1%. Same as 490?		0.30 wide, 0.20 deep
474	E	Fill of flue 216. Hard and brittle, multi hued-white/off white with reddish brown inclusions. Heterogeneous mix of caked lime powder and varying quantities of reddish brown silt and or reddish sandy silt. Silt components 20% of deposit. Same as 492?		Approx. 3.0 x 0.30 x max 0.05
477	E	Layer. Friable, mottled yellow green, perhaps redeposited natural, silty clay. Inclusions of small stones 1-2%. Recorded in section.		1.5 long, 0.10-0.18 deep
478	E	Layer. Loose/friable, red brown, mottled yellow, ashy clay with charcoal inclusions 5-10%. Recorded in section.		1.99 long, 0.05-0.06 deep
479	E	Fill of kiln 228. Compact and malleable, red with orange undertones sandy clayey silt 20/20/60 split. Very similar to 'natural' overlying limestone bedrock. Some inclusions of charcoal flecks less 1% and occasional small, limestone fragments less 5%. Within this deposit were set bricks and stone uprights.		1.0 diameter approx. 0.10 deep
480	E	Fill of pit 225. Partial articulated skeleton.		N/A
481	E	Fill of pit 218? Moderately compact, light to mid-brown, silty clay with inclusions of frequent stones 10%. Recorded in section.		1.21 long, 0.06-0.21

Context no.	Area	Description	Fills	Dimensions (m)
482	E	Fill of pit 218? Moderately compact, brown with orange and yellow flecks. Infrequent inclusions of stone 1% or less. Recorded in section.		0.22 long, 0.19 deep
483	E	Layer. Moderately compact but friable in places, dark grey brown, silty clay with inclusions of frequent stones 1-2%, slate less 0.5%. Recorded in section.		2.1 long, 0.20-0.30 deep
484	E	Layer. Loose, light green/brown, peaty clay. Recorded in section.		0.55 long, 0.05-0.06 deep
485	E	Layer. Loose and friable, yellow/green redeposited sub-soil/natural. Recorded in section.		1.4 long, 0.05 deep
486	E	Buried sod layer. Moderately loose/friable, dark grey. Inclusions of small stones 1%. Recorded in section.		0.10-0.20 deep
487	E	Made up ground of varying layers. Varies in compaction friable to compact, light yellow with darker lenses. Inclusions of stone 5%. Recorded in section.		9.4 long, 0.10-0.50 deep
488	E	Layer. Friable, light brown grey, silty clay with inclusions of medium stones 1-2%. Recorded in section.		6.0 long, 0.05-0.21 deep
489	E	Fill of flue 216. Bricks lining cut 216. 9 partially red and yellow bricks but mostly all yellow. 5 are complete and others broken. Haphazardly placed. North side consists of 7 similarly placed bricks also yellow/red mix but mostly plain yellow. 3 complete remainder broken. All bricks were placed on their long sides. Generally 0.23x0.11x0.06m.		Generally 0.23 x 0.11 x 0.06
490	E	Fill of flue 216. Loose, mid-brown, silt, very crumbly, breaks down into large crumbs. Worm casts visible, probably worm deposited. Also found behind some bricks especially on the southern side. A film of lime was found at the base. Same as 473.		1.00 x 0.12 x 0.08
491	E	Fill of flue 216. Hard, off white to light brown with some yellow. A heterogeneous mix of caked lime powder and a dirty yellow deposit formed by moisture within the lime.		1.0 x 0.30 x 0.01-0.10
492	E	Fill of flue 216. Hard and brittle, off white/pale yellow-brown, lime powder that caked due to moisture and heat. Inclusions small, sub-angular limestone fragments 10% and medium sized, sub-angular limestone fragments 10%. At the west end of the deposit the deposit was a mass that filled the capped channel 216 but to the east it tapers to a thin hard film. Contemporary or same as 474.		Approx. 1.0 x 0.30 x max 0.15
493	E	Fill of flue 216. Moderately compact reddish brown, clayey silt 20/80 split with inclusions of lime crumbs 5% and charcoal flecks 5%.		1.0 x 0.10 x 0.05
494	E	Fill of ditch 207. Closely packed, brown with orange hue, sandy silt with inclusions of small and large stones and occasional red brick and slate. Recorded in section.		1.40 long, 0.16 deep
495	E	Fill of kiln 228. Moderately compact but friable, brown with reddish undertones, silt. Inclusions of small sub-angular and rounded stones 5% and occasional charcoal flecks.		
496	E	Fill of flue 216. Compact, brown with grey undertones, silt with inclusions of lime crumbs 5%, lumps of fire-hardened/reddened soil 5% and some dirty yellow formations.		Approx 1.0 x 0.30 x max 0.10
497	E	Layer or possible fill of kiln 228. Moderately compact but breaks down under finger pressure, dark brown with grey undertones, sandy silt 10/90 split. Inclusions of occasional lumps of caked lime and large snail shells.		0.55 wide, 0.15 deep

Context no.	Area	Description	Fills	Dimensions (m)
498	E	Upcast from kiln cut 230, used to create kiln bowl 228. Moderately compact but friable when trowelled. Mix of colours brown with diffuse areas of orange red and yellow brown. A heterogeneous mix of sandy silt and redeposited natural 70/30. Occasional inclusions of medium sized lumps of sub-angular and rounded limestone and sub-angular sandstones 10%.		0.90-1.0 wide, 0.30 max deep
499	E	Layer. Friable, mid-red, ash, heat affected clay with inclusions of charcoal flecks 1%. Recorded in section.		0.18 x 0.15 x 0.02
550	E	Layer. Loose, dark grey brown, stony clay. Stones more frequent in some places at 5-10%, almost totally absent in others. Occasional inclusions of slate. Recorded in section.		10.85 long, 0.05-0.38 deep
551	E	Fill of ditch 215. Fine textured brown, with red grey undertones, moderately compact silt with 10% medium to large sub-rounded and sub-angular stones some limestones and some sandstones. Probably same as 353 but confined to area below kiln.		3.40 x 0.90 x 0.46
552	E	Fill of depression 231. Firm, mid-brown, silt with large areas of black stained silt and charcoal flecks and lumps. Inclusions of occasional rounded and sub-rounded small stones and 1 large stone set on its side, occasional dark orange sandy lumps. Truncated on north side by 228.		0.87 x 0.50 x 0.025 max
553	E	Fill of depression 229. Moderately compact, brown with red undertones, smooth-textured silt with inclusions of small and medium stones sub-angular and rounded 10-15%.		0.60 x 0.60 x 0.30
554	E	Fill of kiln 228, western flue. Hard and brittle in places, moderately compact but breaks down under finger pressure in others. Mix of brown and cream/off white heterogeneous mix of sandy silt (20/80) and lime 'cake'/particles. Silt to lime ratio variable on average 60/40. Inclusions of occasional charcoal flecks and small angular lumps of limestone 5%.		1.7 long, max 0.10 deep
555	E	Fill of kiln 228, western flue. Moderately compact but friable when trowelled, variable colour-brown with orange undertones to brown with red undertones. Sandy silt 20/80. Inclusions 20% large sub-angular rocks of limestone, 5% small limestones and sandstones, less 1% limestone particles randomly distributed and less 1% small fragments of fire-hardened/reddened earth.		?
556	E	Fill of kiln 228 western flue. Moderately compact but breaks down easily, brown with subdued orange undertones. Sandy silt 20/80. Inclusions of very occasional charcoal flecks.		0.70 x 0.15
557	E	Unstratified finds in Area E		N/A
558	N/A	Metal detection finds		N/A
559	N/A	General unstratified finds		N/A
560	A	Unstratified finds in Area A		N/A
561	D	Unstratified finds in Area D		N/A
562	E	Topsoil finds found above kiln		N/A
563	E	Fill of ditch 213. Closely packed but friable under finger pressure, mid-brown with orange undertones, sandy silt with inclusions of some small limestone fragments and occasional medium sized limestone fragments, roofing slate and mortar.		8.40 x 2.30 x 0.15-0.35
564	E	Very narrow deposit along northern edge of test trench from testing phase. May be fill of 219 or 215 - not possible to determine. Originally given the number 383 but not possible to determine if they are the same.		1.42 x 0.36

Context no.	Area	Description	Fills	Dimensions (m)
565	E	Fill of kiln 228. Four upright stones in the base of the kiln one at each side of the flue openings. Average stone size 0.20x0.30x0.30m		N/A

Appendix 2: Catalogue of finds

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
53:1	A	3	53		Brick/tile	Red brick	1	1940
53:2	A	3	53		Brick/tile	Red brick	1	822
53:3	A	3	53		Brick/tile	Red brick	1	1769
53:4	A	3	53		Bone	Bone fragments	9	16
53:5	A	3	53		Metal	Iron object- concave	1	160
53:6	A	3	53		Metal	Iron horseshoe	1	39
53:7	A	3	53		Metal	Iron object- flat, heavy	1	129
53:8	A	3	53		Metal	Iron tube, pieces co-joining	4	20
53:9	A	3	53		Metal	Iron object- flat, thin	1	17
53:10	A	3	53		Metal	Iron object- flat, thin	1	19
53:11	A	3	53		Metal	Iron tack	1	1
53:12	A	3	53		Metal	Iron object- large nail?	1	49
53:13	A	3	53		Metal	Iron nail	1	5
53:14	A	3	53		Brick/tile	Red brick fragment	1	4
53:15	A	3	53		Brick/tile	Red brick fragment	1	<1
53:16	A	3	53		Brick/tile	Red brick fragment	1	<1
54:1	C		54	4	Bone	Few burnt fragments	5	<1
56:1	E	6	56		Brick/tile	Yellow brick fragment	1	114
56:2	E	6	56		Brick/tile	Red brick fragment	1	22
56:3	E	6	56		Brick/tile	Red brick fragment	1	27
56:4	E	6	56		Brick/tile	Red brick fragment	1	59
56:5	E	6	56		Bone	Bone	2	125
56:6	E	6	56		Shell	Oyster shell	1	33
56:7	E	6	56		Stone	Slate fragment	1	241
56:8	E	6	56		Stone	Slate fragment	1	33
56:9	E	6	56		Stone	Slate fragment	1	40
56:10	E	6	56		Brick/Tile	?Tile fragment	1	232
56:11	E	6	56		Brick/Tile	?Tile fragment	1	46
56:12	E	6	56		Brick/Tile	?Tile fragment	1	4
56:13	E	6	56		Brick/Tile	?Tile fragment	1	20
56:14	E	6	56		Brick/Tile	?Tile fragment	1	7
56:15	E	6	56		Brick/Tile	?Tile fragment	1	19

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
57:1	E		57		Metal	Copper alloy object	1	14
57:2	E		57		Pottery	Glazed pottery handle	1	26
57:3	E		57		Pottery	Glazed body sherd	1	14
57:4	E		57		Pottery	Glazed body sherd	1	5
57:5	E		57		Pottery	Glazed body sherd	1	3
57:6	E		57		Pottery	Glazed base sherd	1	<1
57:7	E		57		Pottery	Marbled glazed body sherd	1	2
57:8	E		57		Pottery	Marbled glazed body sherd	1	2
57:9	E		57		Clay tobacco pipe	Bowl	1	9
57:10	E		57		Clay tobacco pipe	Stem fragment	1	4
57:11	E		57		Clay tobacco pipe	Stem fragment	1	4
57:12	E		57		Clay tobacco pipe	Stem fragment	1	3
57:13	E		57		Clay tobacco pipe	Stem fragment	1	3
57:14	E		57		Clay tobacco pipe	Stem fragment	1	2
57:15	E		57		Clay tobacco pipe	Stem fragment	1	2
57:16	E		57		Clay tobacco pipe	Stem fragment	1	1
57:17	E		57		Stone	Slate fragment	1	29
57:18	E		57		Stone	Slate fragment	1	11
57:19	E		57		Stone	Slate fragment	1	6
57:20	E		57		Stone	Slate fragment	1	4
57:21	E		57		Glass	Bottle fragment	1	34
57:22	E		57		Glass	Bottle fragment	1	8
57:23	E		57		Glass	Window glass fragment	1	7
57:24	E		57		Glass	Window glass fragment	1	3
57:25	E		57		Glass	Window glass fragment	1	3
57:26	E		57		Glass	Window glass fragment	1	3
57:27	E		57		Glass	Window glass fragment	1	2
57:28	E		57		Glass	Window glass fragment	1	1
57:29	E		57		Glass	Window glass fragment	1	1
57:30	E		57		Glass	Window glass fragment	1	1
57:31	E		57		Stone	Concrete piece	1	55
57:32	E		57		Shell	Oyster shell	1	33
57:33	E		57		Brick/tile	Brick fragment	1	21
57:34	E		57		Brick/tile	Brick fragment	1	4
57:35	E		57		Brick/tile	Brick fragment	1	9

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
57:36	E		57		Brick/tile	Brick fragment	1	4
57:37	E		57		Brick/tile	Brick fragment	1	8
57:38	E		57		Brick/tile	Yellow brick fragment	1	9
57:39	E		57		Stone	Limestone polished one side	1	565
57:40	E		57		Stone	Slate fragment	1	193
57:41	E		57		Bone	Bone	43	1685
57:42	E		57		Shell	Oyster shell	1	16
57:43	E		57		Shell	Oyster shell	1	13
57:44	E		57		Shell	Oyster shell	1	23
59:1	E	5	59		Glass	Bottle body sherd	1	124
59:2	E	5	59		Glass	Bottle body sherd	1	12
59:4	E	5	59		Bone	Bone	2	136
59:5	E	5	59		Metal	Iron nail	1	13
60:1	-		60		Pottery	Sherd of glazed pottery	1	4
71:1	-		71		Glass	Bottle-clear glass	1	42
71:1	-		71		Glass	Window glass fragment	1	69
71:2	-		71		Glass	Bottle-clear glass	1	25
71:2	-		71		Glass	Bottle glass sherd	1	43
71:3	-		71		Glass	Bottle-clear glass	1	69
71:3	-		71		Glass	Bottle glass sherd	1	26
71:4	-		71		Pottery	Glazed sherd	1	94
71:5	-		71		Pottery	Glazed sherd	1	59
71:6	-		71		Pottery	Glazed sherd	1	28
71:7	-		71		Pottery	Glazed sherd	1	36
71:8	-		71		Pottery	Glazed sherd	1	19
71:9	-		71		Pottery	Glazed sherd	1	12
71:10	-		71		Pottery	Glazed sherd	1	9
71:11	-		71		Pottery	Glazed sherd	1	6
71:12	-		71		Pottery	Glazed sherd	1	4
71:13	-		71		Pottery	Glazed sherd	1	5
71:14	-		71		Pottery	Glazed sherd	1	19
71:15	-		71		Pottery	Glazed sherd	1	11
71:16	-		71		Pottery	Glazed sherd	1	5
71:17	-		71		Pottery	Glazed sherd	1	6
71:18	-		71		Pottery	Glazed sherd	1	6

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
71:19	-		71		Pottery	Glazed sherd	1	5
71:20	-		71		Pottery	Glazed sherd	1	3
71:21	-		71		Pottery	Glazed sherd	1	3
71:22	-		71		Pottery	Glazed sherd	1	4
71:23	-		71		Pottery	Glazed sherd	1	3
71:24	-		71		Pottery	Glazed sherd	1	17
71:25	-		71		Pottery	Glazed sherd	1	10
71:26	-		71		Pottery	Glazed sherd	1	12
71:27	-		71		Pottery	Glazed sherd	1	9
71:28	-		71		Pottery	Glazed sherd	1	8
71:29	-		71		Pottery	Glazed sherd	1	4
71:30	-		71		Pottery	Glazed sherd	1	5
71:31	-		71		Pottery	Glazed sherd	1	<1
71:32	-		71		Pottery	Glazed sherd	1	1
71:33	-		71		Pottery	Glazed sherd	1	2
71:34	-		71		Glass	Opaque sherd	1	2
71:35	-		71		Glass	Opaque sherd	1	3
71:36	-		71		Glass	Opaque sherd	1	1
71:37	A		71		Metal	Decorated purse clasp with textile remains	1	19
71:38	C		71	MD	Metal	Iron object- ?peg/chisel?	1	160
71:39	C		71	MD	Metal	Iron nail- long, bent	1	38
71:40	C		71	MD	Metal	Iron object- flat, curved end	1	104
71:41	C		71	MD	Metal	Iron object- flat, loop at end	1	32
71:42	C		71	MD	Metal	Iron fragment- heavy peg?	1	19
71:43	C		71	MD	Metal	Iron buckle? Squared loop	1	11
71:44	C		71	MD	Metal	Iron washer, circular	1	8
71:45	C		71	MD	Metal	Lead piece	1	5
71:46	C		71	MD	Metal	Lead musket ball	1	7
71:47	C		71	MD	Metal	Lead musket ball	1	30
71:48	C		71	MD	Metal	Coin-silver 6d, Elizabeth I, 1561-1571	1	1
71:49	C		71	MD	Metal	Coin-Victorian penny 1837	1	8
71:50	C		71	MD	Metal	Coin-5 pence piece 1995	1	3
71:51	C		71	MD	Metal	Copper alloy button	1	5
71:52	C		71	MD	Metal	Copper alloy button	1	2
71:53	C		71	MD	Metal	Copper alloy button	1	3

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
71:54	C		71	MD	Metal	Copper alloy button	1	2
71:55	C		71	MD	Metal	Copper alloy button	1	1
71:56	C		71	MD	Metal	Button	1	1
71:57	E		71	MD	Metal	Copper alloy button	1	1
71:58	E		71	MD	Metal	Lead waste	1	21
71:59	E		71	MD	Metal	Lead waste	1	8
251:1	D		251		Clay tobacco Pipe	Pipe stem- broken section	1	3
251:2	D		251		Stone	Slate fragment	1	8
251:3	D		251		Stone	Slate fragment	1	75
251:4	D		251		Stone	Slate fragment	1	69
251:5	D		251		Stone	Slate fragment	1	27
251:6	D		251		Stone	Slate fragment	1	30
251:7	D		251		Glass	Bottle body sherd	1	30
251:8	D		251		Bone	Bone fragments	13	67
263:1	D		263		Brick/tile	Red brick fragment	1	25
263:2	D		263		Brick/tile	Red brick fragment	1	10
263:3	D		263		Stone	Slate fragment	1	36
263:4	D		263		Stone	Slate fragment	1	148
263:5	D		263		Stone	Slate fragment	1	98
263:6	D		263		Stone	Slate fragment	1	122
263:7	D		263		Stone	Slate fragment	1	202
263:8	D		263		Stone	Slate fragment	1	35
263:9	D		263		Stone	Slate fragment	1	287
263:10	D		263		Stone	Slate fragment	1	15
263:11	D		263		Glass	Bottle body sherd	1	11
263:12	D		263		Glass	Glass sherd- flat	1	2
263:13	D		263		Glass	Glass sherd- flat	1	3
263:14	D		263		Glass	Glass sherd- flat	1	3
263:15	D		263		Glass	Glass sherd- flat	1	2
263:16	D		263		Glass	Glass sherd- flat	1	<1
263:17	D		263		Bone	Bone fragments	5	49
275:1	D		275		Glass	Bottle body sherd	1	6
275:2	D		275		Glass	Bottle body sherd	1	1
275:3	D		275		Glass	Bottle body sherd	1	1
275:4	D		275		Glass	Bottle body sherd	1	<1

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
275:5	D		275		Glass	Bottle body sherd	1	<1
275:6	D		275		Bone	Bone fragments	13	2
293:1	A		293		Metal	Iron object- flat	1	134
293:2	A		293		Metal	Iron object- small, flat	1	5
293:3	A		293		Brick/tile	Red brick fragment	1	23
293:4	A		293		Brick/tile	Red brick fragment	1	28
293:5	A		293		Brick/tile	Red brick fragment	1	14
293:6	A		293		Brick/tile	Red brick fragment	1	2
293:7	A		293		Brick/tile	Red brick fragment	1	4
293:8	A		293		Glass	Bottle body sherd	1	126
293:9	A		293		Bone	Bone fragments	1	7
294:1	A		294		Metal	Iron object- flat, heavy	1	92
294:2	A		294		Brick/tile	Red brick fragment	1	57
294:3	A		294		Brick/tile	Red brick fragment	1	43
294:4	A		294		Brick/tile	Red brick fragment	1	22
294:5	A		294		Brick/tile	Red brick fragment	1	33
294:6	A		294		Brick/tile	Red brick fragment	1	12
294:7	A		294		Brick/tile	Red brick fragment	1	11
294:8	A		294		Brick/tile	Red brick fragment	1	22
294:9	A		294		Brick/tile	Red brick fragment	1	5
294:10	A		294		Brick/tile	Red brick fragment	1	6
294:11	A		294		Brick/tile	Red brick fragment	1	21
350:1	F	205	350		Metal	Iron- 'key' shape, looped	1	99
350:2	F	205	350		Metal	Iron object- nail?	1	11
350:3	F	205	350		Metal	Iron object- nail?	1	8
350:4	F	205	350		Metal	Iron object- nail?	1	15
350:5	F	205	350		Brick/tile	Red brick fragment	1	10
350:6	F	205	350		Brick/tile	Red brick fragment	1	7
350:7	F	205	350		Stone	Slate fragment	1	11
350:8	F	205	350		Stone	Slate fragment	1	26
350:9	F	205	350		Pottery	Glazed sherd	1	<1
350:10	F	205	350		Pottery	Glazed sherd with hole	1	6
350:11	F	205	350		Pottery	Red rim sherd- glazed one side	1	7
350:12	F	205	350		Pottery	Red body sherd- glazed one side	1	7
350:13	F	205	350		Pottery	Red body sherd- glazed one side	1	6

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
350:14	F	205	350		Pottery	Red body sherd- glazed one side	1	4
350:15	F	205	350		Pottery	Red body sherd- glazed one side	1	2
350:16	F	205	350		Pottery	Red body sherd- glazed one side	1	<1
350:17	F	205	350		Pottery	Red body sherd- glazed one side	1	<1
350:18	F	205	350		Pottery	Red body sherd- glazed one side	1	<1
350:19	F	205	350		Pottery	Red body sherd- glazed one side	1	1
350:20	F	205	350		Glass	Bottle body sherd	1	123
350:21	F	205	350		Glass	Bottle body sherd	1	21
350:22	F	205	350		Glass	Bottle body sherd	1	7
350:23	F	205	350		Glass	Bottle body sherd	1	2
350:24	F	205	350		Bone	Bone fragment	1	<1
351:1	F	205	351		Metal	Iron nail head? Small tack?	1	2
351:2	F	205	351		Metal	Iron nail	1	7
351:3	F	205	351		Metal	Iron nail	1	4
351:4	F	205	351		Brick/tile	Red brick fragment	1	8
351:5	F	205	351		Stone	Slate fragment	1	11
351:6	F	205	351		Pottery	Red clay sherd?? Maybe brick??	1	<1
351:7	F	205	351		Pottery	Red clay sherd?? Maybe brick??	1	<1
351:8	F	205	351		Pottery	Red clay sherd?? Maybe brick??	1	<1
351:9	F	205	351		Pottery	Red body sherd- glazed one side	1	6
351:10	F	205	351		Pottery	Red body sherd- glazed one side	1	2
351:11	F	205	351		Pottery	Red base sherd- glazed one side	1	6
351:12	F	205	351		Pottery	Red body sherd- glazed one side	1	<1
351:13	F	205	351		Pottery	Glazed sherd- rim	1	<1
351:14	F	205	351		Glass	Bottle body sherd	1	8
351:15	F	205	351		Glass	Bottle body sherd	1	2
351:16	F	205	351		Bone	Bone fragments	23	200
353:1	E	207	353		Brick/tile	Red brick fragment	1	19
353:2	E	207	353		Brick/tile	Red brick fragment	1	24
353:3	E	207	353		Brick/tile	Red brick fragment	1	6
353:4	E	207	353		Brick/tile	Red brick fragment	1	16
353:5	E	207	353		Brick/tile	Red brick fragment	1	12
353:6	E	207	353		Brick/tile	Red brick fragment	1	34
353:7	E	207	353		Brick/tile	Red brick fragment	1	74
353:8	E	207	353		Brick/tile	Red brick fragment	1	49

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
353:9	E	207	353		Brick/tile	Red brick fragment	1	6
353:10	E	207	353		Brick/tile	Red brick fragment	1	4
353:11	E	207	353		Brick/tile	Red brick fragment	1	24
353:12	E	207	353		Brick/tile	Red brick fragment	1	226
353:13	E	207	353		Brick/tile	Red brick fragment	1	435
353:14	E	207	353		Brick/tile	Red brick fragment	1	1097
353:15	E	207	353		Stone	Slate fragment	1	8
353:16	E	207	353		Stone	Slate fragment	1	23
353:17	E	207	353		Stone	Slate fragment	1	29
353:18	E	207	353		Stone	Slate fragment	1	18
353:19	E	207	353		Stone	Slate fragment	1	47
353:20	E	207	353		Stone	Slate fragment	1	69
353:21	E	207	353		Stone	Slate fragment	1	129
353:22	E	207	353		Stone	Slate fragment	1	81
353:23	E	207	353		Stone	Slate fragment	1	47
353:24	E	207	353		Stone	Slate fragment	1	27
353:25	E	207	353		Stone	Slate fragment	1	22
353:26	E	207	353		Stone	Slate fragment	1	16
353:27	E	207	353		Pottery	Glazed sherd- rim	1	5
353:28	E	207	353		Pottery	Red clay sherd- body, unglazed	1	92
353:29	E	207	353		Pottery	Glazed sherd- base, blue motif	1	11
353:30	E	207	353		Pottery	Glazed sherd- rim	1	3
353:31	E	207	353		Pottery	Glazed sherd- rim	1	3
353:32	E	207	353		Shell	Oyster shell	1	9
353:33	E	207	353		Shell	Oyster shell fragment	1	3
353:34	E	207	353		Shell	Oyster shell fragment	1	1
353:35	E	207	353		Glass	Glass sherd- flat	1	1
353:36	E	207	353		Glass	Glass sherd- flat	1	1
353:37	E	207	353		Glass	Glass sherd- flat	1	5
353:38	E	207	353		Glass	Bottle body sherd	1	24
353:39	E	207	353		Glass	Bottle base sherd	1	83
353:40	E	207	353		Glass	Bottle body sherd	1	7
353:41	E	207	353		Glass	Bottle base sherd	1	172
353:42	E	207	353		Brick/tile	Red Brick fragment	1	1358
353:43	E	207	353		Brick/tile	Red brick fragment	1	816

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
353:44	E	207	353		Brick/tile	Red brick fragment	1	830
353:45	E	207	353		Brick/tile	Red brick fragment	1	269
353:46	E	207	353		Brick/tile	Tile fragment- Red brick clay	1	323
353:47	E	207	353		Brick/tile	Red brick fragment	1	248
353:48	E	207	353		Brick/tile	Red brick fragment	1	120
353:49	E	207	353		Brick/tile	Red brick fragment	1	93
353:50	E	207	353		Brick/tile	Red brick fragment	1	114
353:51	E	207	353		Brick/tile	Red brick fragment	1	36
353:52	E	207	353		Brick/tile	Red brick fragment	1	75
353:53	E	207	353		Brick/tile	Red brick fragment	1	135
353:54	E	207	353		Bone	Bone fragments	237	2017
353:55	E	207	353		Pottery	Red rim shed	1	18
353:56	E	207	353		Metal	Iron nail	1	7
363:1	E		363		Metal	Iron nail	1	6
363:2	E		363		Metal	Iron nail/peg	1	19
363:3	E		363		Brick/tile	Red brick fragment	1	27
363:4	E		363		Brick/tile	Red brick fragment	1	13
363:5	E		363		Brick/tile	Red brick fragment	1	4
363:6	E		363		Brick/tile	Red brick fragment	1	5
363:7	E		363		Brick/tile	Red brick fragment	1	<1
363:8	E		363		Stone	Slate fragment	1	21
363:9	E		363		Glass	Glass sherd- flat	1	8
363:10	E		363		Glass	Glass sherd- flat	1	3
363:11	E		363		Glass	Glass sherd- flat	1	3
363:12	E		363		Glass	Glass sherd- flat	1	1
363:13	E		363		Bone	Bone fragments	3	47
366:1	E		366		Pottery	Glazed body sherd- with face	1	26
366:2	E		366		Pottery	Red body sherd- glazed	1	2
366:3	E		366		Pottery	Red rim sherd- glazed one side	1	135
366:4	E		366		Bone	Bone fragments	5	24
367:1	E		367		Clay tobacco Pipe	Stem- broken	1	5
367:2	E		367		Clay tobacco Pipe	Bowl	1	10
367:3	E		367		Shell	Oyster shell	1	12
367:4	E		367		Shell	Oyster shell	1	37
367:5	E		367		Glass	Glass sherd- flat	1	12

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
367:6	E		367		Glass	Glass sherd- flat	1	6
367:7	E		367		Glass	Glass sherd- flat	1	2
367:8	E		367		Glass	Glass sherd- flat	1	<1
367:9	E		367		Glass	Glass sherd- flat	1	<1
367:10	E		367		Glass	Glass sherd- flat	1	1
367:11	E		367		Bone	Bone fragments	21	104
368:1	E	215	368		Metal	Copper object- folded, hollow	1	<1
368:2	E	215	368		Bone	Bone fragments	12	185
371:1	E	228	371		Clay tobacco Pipe	Stem- broken	1	1
371:2	E	228	371		Bone	Bone fragments	4	5
372:1	E	228	372		Brick/tile	Red brick fragment	1	47
372:2	E	228	372		Brick/tile	Tile fragment – green glaze	1	141
372:3	E	228	372		Glass	Bottle body sherd	1	5
372:4	E	228	372		Bone	Bone fragments	7	9
373:1	E	214	373		Human bone	Skeleton		c. 4000
374:1	E	214	374		Bone	Bone fragments	16	183
374:2	E	214	374		Bone	Bone fragments	20	28
374:3	E	214	374		Bone	Bone fragments	6	8
375:1	E	228	375		Stone	Slate fragment- roof tile, peg hole	1	743
375:2	E	228	375		Stone	Slate fragment	1	98
375:3	E	228	375		Stone	Slate fragment- roof tile, peg hole	1	212
375:4	E	228	375		Pottery	Red rim sherd- glazed one side	1	56
375:5	E	228	375		Pottery	Red rim sherd- glazed one side	1	77
375:6	E	228	375		Clay tobacco Pipe	Stem- broken	1	<1
375:7	E	228	375		Shell	Oyster shell	1	108
375:8	E	228	375		Glass	Bottle glass sherd	1	13
375:9	E	228	375		Glass	Bottle glass sherd	1	8
375:10	E	228	375		Glass	Bottle glass sherd	1	7
375:11	E	228	375		Glass	Bottle glass sherd	1	6
375:12	E	228	375		Glass	Bottle glass sherd	1	8
375:13	E	228	375		Glass	Bottle glass sherd	1	3
375:14	E	228	375		Glass	Bottle glass sherd	1	5
375:15	E	228	375		Glass	Bottle glass sherd	1	5
375:16	E	228	375		Glass	Bottle glass sherd	1	1
375:17	E	228	375		Glass	Bottle glass sherd	1	2

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
375:18	E	228	375		Glass	Bottle glass sherd	1	<1
375:19	E	228	375		Glass	Bottle glass sherd	1	<1
375:20	E	228	375		Glass	Bottle glass sherd	1	1
375:21	E	228	375		Glass	Bottle glass sherd	1	1
375:22	E	228	375		Glass	Bottle glass sherd	1	1
375:23	E	228	375		Glass	Bottle glass sherd	1	2
375:24	E	228	375		Glass	Bottle glass sherd	1	2
375:25	E	228	375		Glass	Bottle glass sherd	1	<1
375:26	E	228	375		Glass	Bottle glass sherd	1	<1
375:27	E	228	375		Glass	Bottle glass sherd	1	<1
375:28	E	228	375		Glass	Bottle glass sherd	1	<1
375:29	E	228	375		Glass	Bottle body sherd	1	121
375:30	E	228	375		Glass	Bottle base sherd	1	313
375:31	E	228	375		Glass	Bottle neck sherd	1	167
375:32	E	228	375		Glass	Bottle glass sherd	1	13
375:33	E	228	375		Glass	Bottle glass sherd	1	13
375:34	E	228	375		Glass	Bottle glass sherd	1	8
375:35	E	228	375		Glass	Bottle glass sherd	1	29
375:36	E	228	375		Glass	Bottle glass sherd	1	12
375:37	E	228	375		Glass	Bottle glass sherd	1	9
375:38	E	228	375		Glass	Bottle glass sherd	1	6
375:39	E	228	375		Glass	Bottle glass sherd	1	9
375:40	E	228	375		Glass	Bottle glass sherd	1	13
375:41	E	228	375		Glass	Bottle glass sherd	1	6
375:42	E	228	375		Glass	Bottle glass sherd	1	6
375:43	E	228	375		Glass	Bottle glass sherd	1	4
375:44	E	228	375		Glass	Bottle glass sherd	1	7
375:45	E	228	375		Glass	Bottle glass sherd	1	5
375:46	E	228	375		Glass	Bottle glass sherd	1	7
375:47	E	228	375		Glass	Bottle glass sherd	1	7
375:48	E	228	375		Glass	Bottle glass sherd	1	4
375:49	E	228	375		Glass	Bottle neck sherd	1	124
375:50	E	228	375		Glass	Bottle glass sherd	1	4
375:51	E	228	375		Glass	Bottle glass sherd	1	4
375:52	E	228	375		Glass	Bottle glass sherd	1	3

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
375:53	E	228	375		Glass	Window glass sherd	1	4
375:54	-	-	-	-	-	CANCELLED	-	-
375:55	E	228	375		Glass	Bottle base sherd	1	79
375:56	E	228	375		Glass	Bottle base sherd	1	57
375:57	E	228	375		Glass	Bottle base sherd	1	68
375:58	E	228	375		Glass	Bottle neck sherd	1	26
375:59	E	228	375		Glass	Bottle neck sherd	1	38
375:60	E	228	375		Bone	Bone	202	720
376:1-59	-	-	-	-	-	CANCELLED	-	-
376:60	E	228	376		Glass	Bottle base sherd	1	724
376:61	E	228	376		Glass	Bottle base sherd	1	98
376:62	E	228	376		Glass	Bottle base sherd	1	132
376:63	E	228	376		Glass	Bottle base sherd	1	114
376:64	E	228	376		Glass	Bottle base sherd	1	146
376:65	E	228	376		Glass	Bottle base sherd	1	192
376:66	E	228	376		Glass	Bottle neck sherd	1	159
376:67	E	228	376		Glass	Bottle neck sherd	1	93
376:68	E	228	376		Glass	Bottle neck sherd	1	36
376:69	E	228	376		Glass	Bottle base sherd	1	192
376:70	E	228	376		Glass	Bottle base sherd	1	588
376:71	E	228	376		Glass	Bottle base sherd	1	332
376:72	E	228	376		Glass	Bottle neck sherd	1	130
376:73	E	228	376		Glass	Bottle neck sherd	1	106
376:74	E	228	376		Glass	Bottle neck sherd	1	117
376:75	E	228	376		Glass	Bottle neck sherd	1	44
376:76	E	228	376		Glass	Bottle neck, sherds co-joining	2	57
376:77	E	228	376		Glass	Bottle body sherd	1	19
376:78	E	228	376		Glass	Bottle body sherd	1	17
376:79	E	228	376		Glass	Bottle body sherd	1	16
376:80	E	228	376		Glass	Bottle body sherd	1	20
376:81	E	228	376		Glass	Bottle body sherd	1	11
376:82	E	228	376		Glass	Bottle body sherd	1	12
376:83	E	228	376		Glass	Bottle body sherd	1	35
376:84	E	228	376		Glass	Bottle body sherd	1	28
376:85	E	228	376		Glass	Bottle body sherd	1	52

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
376:86	E	228	376		Glass	Bottle body sherd	1	14
376:87	E	228	376		Glass	Bottle body sherd	1	53
376:88	E	228	376		Glass	Bottle body sherd	1	23
376:89	E	228	376		Glass	Bottle body sherd	1	39
376:90	E	228	376		Glass	Bottle body sherd	1	26
376:91	E	228	376		Glass	Bottle body sherd	1	14
376:92	E	228	376		Glass	Bottle body sherd	1	23
376:93	E	228	376		Glass	Bottle body sherd	1	25
376:94	E	228	376		Glass	Bottle body sherd	1	42
376:95	E	228	376		Glass	Bottle body sherd	1	37
376:96	E	228	376		Glass	Bottle body sherd	1	34
376:97	E	228	376		Glass	Bottle body sherd	1	17
376:98	E	228	376		Glass	Bottle body sherd	1	24
376:99	E	228	376		Glass	Bottle body sherd	1	43
376:100	E	228	376		Glass	Bottle body sherd	1	41
376:101	E	228	376		Glass	Bottle body sherd	1	59
376:102	E	228	376		Glass	Bottle body sherd	1	24
376:103	E	228	376		Glass	Bottle body sherd	1	33
376:104	E	228	376		Glass	Bottle body sherd	1	39
376:105	E	228	376		Glass	Bottle body sherd	1	29
376:106	E	228	376		Glass	Bottle body sherd	1	44
376:107	E	228	376		Glass	Bottle body sherd	1	40
376:108	E	228	376		Glass	Bottle body sherd	1	42
376:109	E	228	376		Glass	Bottle body sherd	1	9
376:110	E	228	376		Glass	Bottle body sherd	1	44
376:111	E	228	376		Glass	Bottle body sherd	1	17
376:112	E	228	376		Glass	Bottle body sherd	1	22
376:113	E	228	376		Glass	Bottle body sherd	1	28
376:114	E	228	376		Glass	Bottle body sherd	1	15
376:115	E	228	376		Glass	Bottle body sherd	1	22
376:116	E	228	376		Glass	Bottle body sherd	1	27
376:117	E	228	376		Glass	Bottle body sherd	1	12
376:118	E	228	376		Glass	Bottle body sherd	1	17
376:119	E	228	376		Glass	Bottle body sherd	1	23
376:120	E	228	376		Glass	Bottle body sherd	1	15

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
376:121	E	228	376		Glass	Bottle body sherd	1	11
376:122	E	228	376		Glass	Bottle body sherd	1	10
376:123	E	228	376		Glass	Bottle body sherd	1	14
376:124	E	228	376		Glass	Bottle body sherd	1	12
376:125	E	228	376		Glass	Bottle body sherd	1	12
376:126	E	228	376		Glass	Bottle body sherd	1	9
376:127	E	228	376		Glass	Bottle body sherd	1	9
376:128	E	228	376		Glass	Bottle body sherd	1	9
376:129	E	228	376		Glass	Bottle body sherd	1	14
376:130	E	228	376		Glass	Bottle body sherd	1	11
376:131	E	228	376		Glass	Bottle body sherd	1	36
376:132	E	228	376		Glass	Bottle body sherd	1	7
376:133	E	228	376		Glass	Bottle body sherd	1	9
376:134	E	228	376		Glass	Bottle body sherd	1	10
376:135	E	228	376		Glass	Bottle body sherd	1	7
376:136	E	228	376		Glass	Bottle body sherd	1	15
376:137	E	228	376		Glass	Bottle body sherd	1	15
376:138	E	228	376		Glass	Bottle body sherd	1	8
376:139	E	228	376		Glass	Bottle body sherd	1	12
376:140	E	228	376		Glass	Bottle body sherd	1	11
376:141	E	228	376		Glass	Bottle body sherd	1	7
376:142	E	228	376		Glass	Bottle body sherd	1	3
376:143	E	228	376		Glass	Bottle body sherd	1	15
376:144	E	228	376		Glass	Bottle body sherd	1	6
376:145	E	228	376		Glass	Bottle body sherd	1	8
376:146	E	228	376		Glass	Bottle body sherd	1	10
376:147	E	228	376		Glass	Bottle body sherd	1	8
376:148	E	228	376		Glass	Bottle body sherd	1	11
376:149	E	228	376		Glass	Bottle body sherd	1	14
376:150	E	228	376		Glass	Bottle body sherd	1	8
376:151	E	228	376		Glass	Bottle body sherd	1	8
376:152	E	228	376		Glass	Bottle body sherd	1	6
376:153	E	228	376		Glass	Bottle body sherd	1	3
376:154	E	228	376		Glass	Bottle body sherd	1	8
376:155	E	228	376		Glass	Bottle body sherd	1	4

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
376:156	E	228	376		Glass	Bottle body sherd	1	3
376:157	E	228	376		Glass	Bottle body sherd	1	4
376:158	E	228	376		Glass	Bottle body sherd	1	7
376:159	E	228	376		Glass	Bottle body sherd	1	5
376:160	E	228	376		Glass	Bottle body sherd	1	8
376:161	E	228	376		Glass	Bottle body sherd	1	5
376:162	E	228	376		Glass	Bottle body sherd	1	3
376:163	E	228	376		Glass	Bottle body sherd	1	7
376:164	E	228	376		Glass	Bottle body sherd	1	3
376:165	E	228	376		Glass	Bottle body sherd	1	2
376:166	E	228	376		Glass	Bottle body sherd	1	5
376:167	E	228	376		Glass	Bottle body sherd	1	7
376:168	E	228	376		Glass	Bottle body sherd	1	3
376:169	E	228	376		Glass	Bottle body sherd	1	3
376:170	E	228	376		Glass	Bottle body sherd	1	4
376:171	E	228	376		Glass	Bottle body sherd	1	6
376:172	E	228	376		Glass	Bottle body sherd	1	2
376:173	E	228	376		Glass	Bottle body sherd	1	2
376:174	E	228	376		Glass	Bottle body sherd	1	6
376:175	E	228	376		Glass	Bottle body sherd	1	3
376:176	E	228	376		Glass	Bottle body sherd	1	4
376:177	E	228	376		Glass	Bottle body sherd	1	1
376:178	E	228	376		Glass	Bottle body sherd	1	2
376:179	E	228	376		Glass	Bottle body sherd	1	5
376:180	E	228	376		Glass	Bottle body sherd	1	3
376:181	E	228	376		Glass	Bottle body sherd	1	3
376:182	E	228	376		Glass	Bottle body sherd	1	2
376:183	E	228	376		Glass	Bottle body sherd	1	1
376:184	E	228	376		Glass	Bottle body sherd	1	2
376:185	E	228	376		Glass	Bottle body sherd	1	<1
376:186	E	228	376		Glass	Bottle body sherd	1	1
376:187	-	-	-	-	-	CANCELLED	-	-
376:188	-	-	-	-	-	CANCELLED	-	-
376:189	-	-	-	-	-	CANCELLED	-	-
376:190	E	228	376		Glass	Bottle base sherd	1	110

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
376:191	E	228	376		Glass	Bottle base sherd	1	71
376:192	E	228	376		Glass	Bottle base sherd	1	75
376:193	E	228	376		Glass	Bottle base sherd	1	49
376:194	E	228	376		Glass	Bottle base sherd	1	74
376:195	E	228	376		Glass	Bottle base sherd	1	105
376:196	E	228	376		Glass	Bottle base sherd	1	38
376:197	E	228	376		Glass	Bottle base sherd	1	19
376:198	E	228	376		Glass	Bottle base sherd	1	30
376:199	E	228	376		Glass	Bottle base sherd	1	24
376:200	E	228	376		Glass	Bottle base sherd	1	21
376:201	E	228	376		Glass	Bottle base sherd	1	16
376:202	E	228	376		Glass	Bottle base sherd	1	23
376:203	E	228	376		Glass	Bottle base sherd	1	20
376:204	E	228	376		Glass	Bottle base sherd	1	13
376:205	E	228	376		Glass	Bottle base sherd	1	12
376:206	E	228	376		Glass	Bottle base sherd	1	9
376:207	E	228	376		Glass	Bottle base sherd	1	9
376:208	E	228	376		Glass	Bottle base sherd	1	5
376:209	E	228	376		Glass	Bottle body sherd	1	2
377:1	E		377		Metal	Iron nail	1	6
377:2	E		377		Metal	Lead flashing from window	1	2
377:3	E		377		Metal	Lead flashing from window	1	2
377:4	E		377		Metal	Iron nail	1	17
377:5	E		377		Metal	Iron nail	1	3
377:6	E		377		Metal	Iron nail	1	6
377:7	E		377		Metal	Iron nail	1	3
377:8	E		377		Metal	Iron nail	1	2
377:9	E		377		Metal	Iron nail	1	7
377:10	E		377		Metal	Iron nail	1	7
377:11	E		377		Brick/tile	Red brick fragment	1	16
377:12	E		377		Brick/tile	Red brick fragment	1	13
377:13	E		377		Brick/tile	Red brick fragment	1	8
377:14	E		377		Stone	Slate fragment-roof tile, peg hole	1	38
377:15	E		377		Stone	Slate fragment	1	46
377:16	E		377		Stone	Slate fragment	1	48

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
377:17	E		377		Stone	Slate fragment	1	30
377:18	E		377		Stone	Slate fragment	1	10
377:19	E		377		Stone	Slate fragment	1	4
377:20	E		377		Stone	Slate fragment	1	7
377:21	E		377		Stone	Slate fragment	1	214
377:22	E		377		Stone	Slate fragment	1	225
377:23	E		377		Stone	Slate fragment-roof tile, peg hole,	1	326
377:24	E		377		Stone	Slate fragment-roof tile, peg hole	1	380
377:25	E		377		Stone	Slate fragment-roof tile, peg hole	1	327
377:26	E		377		Stone	Slate fragment-roof tile, peg hole	1	153
377:27	E		377		Pottery	Glazed sherd pale lilac- handle	1	4
377:28	E		377		Pottery	Glazed sherd - blue pattern, rim	1	7
377:29	E		377		Pottery	Glazed sherd- blue pattern, rim	1	3
377:30	E		377		Pottery	Glazed sherd- blue pattern, rim	1	<1
377:31	E		377		Pottery	Glazed sherd- blue pattern	1	<1
377:32	E		377		Pottery	Glazed sherd- blue pattern	1	<1
377:33	E		377		Pottery	Glazed sherd- blue pattern	1	3
377:34	E		377		Pottery	Glazed sherd- blue pattern	1	5
377:35	E		377		Pottery	Glazed sherd- blue pattern	1	8
377:36	E		377		Pottery	Glazed sherd- rim, blue pattern	1	11
377:37	E		377		Pottery	Glazed body sherd	1	3
377:38	E		377		Pottery	Glazed body sherd	1	13
377:39	E		377		Pottery	Clay rim sherd- glazed inside	1	26
377:40	E		377		Pottery	Clay rim sherd- glazed inside	1	58
377:41	E		377		Pottery	Clay rim sherd- glazed inside	1	35
377:42	E		377		Pottery	Clay body sherd- glazed inside	1	44
377:43	E		377		Pottery	Clay body sherd- glazed inside	1	19
377:44	E		377		Pottery	Clay body sherd- glazed inside	1	15
377:45	E		377		Pottery	Clay body sherd- glazed inside	1	13
377:46	E		377		Pottery	Glazed sherd rim	1	<1
377:47	E		377		Pottery	Clay body sherd- glazed inside	1	<1
377:48	E		377		Pottery	Red clay sherd, incised line	1	2
377:49	E		377		Pottery	Glazed body sherd	1	5
377:50	E		377		Pottery	Clay base sherd- glazed inside	1	28
377:51	E		377		Pottery	Clay body sherd- glazed one side	1	33

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
377:52	E		377		Pottery	Clay body sherd- glazed one side	1	9
377:53	E		377		Pottery	Clay body sherd- glazed one side	1	5
377:54	E		377		Pottery	Clay body sherd- glazed one side	1	13
377:55	E		377		Clay tobacco Pipe	Stem- broken	1	<1
377:56	E		377		Clay tobacco Pipe	Stem- broken	1	<1
377:57	E		377		Clay tobacco Pipe	Stem- broken	1	2
377:58	E		377		Clay tobacco Pipe	Stem- broken	1	2
377:59	E		377		Clay tobacco Pipe	Stem- broken	1	<1
377:100	E		377		Glass	Bottle body sherd	1	24
377:101	E		377		Glass	Glass body sherd	1	31
377:102	E		377		Glass	Glass sherd	1	54
377:103	E		377		Glass	Glass sherd	1	16
377:104	E		377		Glass	Bottle base sherd	1	158
377:105	E		377		Glass	Bottle body sherd	1	21
377:106	E		377		Glass	Bottle body sherd	1	42
377:107	E		377		Glass	Bottle body sherd	1	13
377:108	E		377		Glass	Bottle body sherd	1	10
377:109	E		377		Glass	Bottle body sherd	1	15
377:110	E		377		Glass	Bottle body sherd	1	12
377:111	E		377		Glass	Bottle body sherd	1	27
377:112	E		377		Glass	Bottle body sherd	1	14
377:113	E		377		Glass	Bottle body sherd	1	11
377:114	E		377		Glass	Bottle body sherd	1	7
377:115	E		377		Glass	Bottle body sherd	1	14
377:116	E		377		Glass	Bottle body sherd	1	9
377:117	E		377		Glass	Bottle body sherd	1	12
377:118	E		377		Glass	Bottle body sherd	1	23
377:119	E		377		Glass	Bottle body sherd	1	16
377:120	E		377		Glass	Bottle body sherd	1	12
377:121	E		377		Glass	Bottle body sherd	1	7
377:122	E		377		Glass	Bottle body sherd	1	6
377:123	E		377		Glass	Bottle body sherd	1	3
377:124	E		377		Glass	Bottle body sherd	1	3
377:125	E		377		Glass	Bottle body sherd	1	4
377:126	E		377		Glass	Bottle body sherd	1	3

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
377:127	E		377		Glass	Bottle body sherd	1	8
377:128	E		377		Glass	Bottle body sherd	1	3
377:129	E		377		Glass	Bottle body sherd	1	3
377:130	E		377		Glass	Bottle body sherd	1	2
377:131	E		377		Glass	Bottle body sherd	1	2
377:132	E		377		Glass	Bottle body sherd	1	2
377:133	E		377		Glass	Bottle body sherd	1	5
377:134	E		377		Glass	Bottle body sherd	1	10
377:136	E		377		Glass	Glass sherd- flat	1	2
377:137	E		377		Glass	Glass sherd- flat	1	1
377:138	E		377		Glass	Glass sherd- flat	1	2
377:139	E		377		Glass	Glass sherd- flat	1	1
377:140	E		377		Glass	Glass sherd- flat	1	<1
377:141	E		377		Glass	Glass sherd- flat	1	1
377:142	E		377		Glass	Glass sherd- flat	1	1
377:143	E		377		Glass	Glass sherd- flat	1	2
377:144	E		377		Glass	Glass sherd- flat	1	<1
377:145	E		377		Glass	Glass sherd- flat	1	<1
377:146	E		377		Glass	Glass sherd- flat	1	<1
377:147	E		377		Glass	Glass sherd- flat	1	<1
377:148	E		377		Glass	Glass sherd- flat	1	<1
377:149	E		377		Glass	Glass sherd- flat	1	<1
377:150	E		377		Glass	Glass sherd- flat	1	<1
377:151	E		377		Glass	Glass sherd- flat	1	<1
377:152	E		377		Glass	Glass sherd- flat	1	<1
377:153	E		377		Glass	Bottle base, pieces co-joining	2	296
377:154	E		377		Glass	Bottle neck sherd	1	58
377:155	E		377		Glass	Bottle base sherd	1	219
377:156	E		377		Glass	Bottle base sherd	1	145
377:157	E		377		Glass	Bottle body sherd	1	16
377:158	E		377		Glass	Bottle body sherd	1	8
377:159	E		377		Brick/tile	Yellowish brick	1	1323
377:160	E		377		Brick/tile	Yellowish brick	1	727
377:161	E		377		Brick/tile	Red brick/tile?	1	1030
377:162	E		377		Brick/tile	Yellowish brick	1	1263

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
377:163	E		377		Bone	Bone fragments	189	3316
377:60	E		377		Clay tobacco Pipe	Stem- broken	1	3
377:61	E		377		Clay tobacco Pipe	Stem- broken	1	4
377:62	E		377		Clay tobacco Pipe	Stem- broken	1	2
377:63	E		377		Shell	Oyster shell	1	21
377:64	E		377		Shell	Oyster shell	1	33
377:65	E		377		Shell	Oyster shell	1	31
377:66	E		377		Shell	Oyster shell	1	25
377:67	E		377		Shell	Oyster shell	1	12
377:68	E		377		Shell	Oyster shell	1	26
377:69	E		377		Shell	Oyster shell	1	36
377:70	E		377		Shell	Oyster shell	1	28
377:71	E		377		Shell	Oyster shell	1	32
377:72	E		377		Shell	Oyster shell	1	31
377:73	E		377		Shell	Oyster shell	1	18
377:74	E		377		Shell	Oyster shell	1	7
377:75	E		377		Shell	Oyster shell	1	87
377:76	E		377		Shell	Oyster shell	1	33
377:77	E		377		Shell	Oyster shell	1	38
377:78	E		377		Shell	Oyster shell	1	33
377:79	E		377		Shell	Oyster shell	1	44
377:80	E		377		Shell	Oyster shell	1	57
377:81	E		377		Shell	Oyster shell	1	15
377:82	E		377		Shell	Oyster shell	1	18
377:83	E		377		Shell	Oyster shell fragment	1	10
377:84	E		377		Glass	Bottle body sherd	1	<1
377:85	E		377		Glass	Bottle body sherd	1	13
377:86	E		377		Glass	Bottle body sherd	1	<1
377:87	E		377		Glass	Bottle body sherd	1	4
377:88	E		377		Glass	Bottle body sherd	1	3
377:89	E		377		Glass	Bottle body sherd	1	5
377:90	E		377		Glass	Bottle body sherd	1	5
377:91	E		377		Glass	Bottle body sherd	1	6
377:92	E		377		Glass	Bottle body sherd	1	16
377:93	E		377		Glass	Bottle body sherd	1	43

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
377:94	E		377		Glass	Bottle body sherd	1	4
377:95	E		377		Glass	Bottle body sherd	1	9
377:96	E		377		Glass	Bottle body sherd	1	22
377:97	E		377		Glass	Bottle body sherd	1	28
377:98	E		377		Glass	Bottle body sherd	1	21
377:99	E		377		Glass	Bottle body sherd	1	54
378:1	E	215	378		Brick/tile	Red brick fragment	1	5
378:2	E	215	378		Pottery	Clay body sherd, glazed	1	30
378:3	E	215	378		Pottery	Clay body sherd, glazed	1	23
378:4	E	215	378		Pottery	Clay body sherd, glazed	1	24
378:5	E	215	378		Bone	Bone fragments	11	322
379:1	E	216	379		Brick/tile	Red brick fragment	1	9
379:2	E	216	379		Brick/tile	Red brick fragment	1	12
379:3	E	216	379		Brick/tile	Red brick fragment	1	26
379:4	E	216	379		Brick/tile	Red brick fragment	1	31
379:5	E	216	379		Stone	Slate fragment-roof tile, peg hole	1	141
379:6	E	216	379		Stone	Slate fragment	1	15
379:7	E	216	379		Pottery	Glazed body sherd- plate	1	33
379:8	E	216	379		Clay tobacco Pipe	Stem- broken	1	6
379:9	E	216	379		Lithic	Chert flake	1	<1
379:10	E	216	379		Brick/tile	Red/yellow brick fragment	1	46
379:11	E	216	379		Brick/tile	Red/yellow brick fragment	1	42
379:12	E	216	379		Brick/tile	Red/yellow brick fragment	1	227
379:13	E	216	379		Brick/tile	Red/yellow brick fragment	1	290
379:14	E	216	379		Brick/tile	Red/yellow brick fragment	1	302
379:15	E	216	379		Brick/tile	Red/yellow brick fragment	1	172
379:16	E	216	379		Brick/tile	Red/yellow brick fragment	1	232
379:17	E	216	379		Brick/tile	Red brick fragment	1	1327
379:18	E	216	379		Shell	Oyster shell	1	14
379:19	E	216	379		Bone	Bone fragments	26	945
380:1	E	216	380		Clay tobacco Pipe	Stem- broken	1	3
380:2	E	216	380		Shell	Oyster shell fragment	1	1
380:3	E	216	380		Glass	Bottle body sherd	1	39
380:4	E	216	380		Glass	Bottle body sherd	1	21
380:5	E	216	380		Glass	Bottle body sherd	1	19

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
380:6	E	216	380		Glass	Bottle body sherd	1	18
380:7	E	216	380		Glass	Bottle body sherd	1	18
380:8	E	216	380		Glass	Bottle body sherd	1	5
380:9	E	216	380		Glass	Bottle body sherd	1	3
380:10	E	216	380		Bone	Bone fragments	6	313
381:1	E	216	381		Clay tobacco Pipe	Stem fragment	1	<1
381:2	E	216	381		Glass	Bottle neck sherd with metal tie	1	65
381:3	E	216	381		Glass	Bottle body sherd	1	13
381:4	E	216	381		Glass	Bottle body sherd	1	15
381:5	E	216	381		Glass	Bottle body sherd	1	4
381:6	E	216	381		Glass	Bottle body sherd	1	8
381:7	E	216	381		Bone	Bone fragments	5	71
381:8	E	216	381	12	Bone	Bone fragments	4	16
383:1	E	215	383		Metal	Iron, flat, hook on end, nodule	1	34
383:2	E	215	383		Slag	Slag	1	9
383:3	E	215	383		Brick/tile	Red brick fragment	1	7
383:4	E	215	383		Brick/tile	Red brick fragment	1	4
383:5	E	215	383		Brick/tile	Red brick fragment	1	51
383:6	E	215	383		Clay tobacco Pipe	Bowl	1	15
383:7	E	215	383		Clay tobacco Pipe	Stem- broken	1	3
383:8	E	215	383	12	Clay tobacco Pipe	Stem- broken	1	1
383:9	E	215	383		Glass	Glass sherd	1	3
383:10	E	215	383		Bone	Bone fragments	61	1050
384:1	E	215	384		Slag	Slag	1	19
384:2	E	215	384		Slag	Slag	1	8
384:3	E	215	384		Pottery	Glazed body sherd- with face	1	35
384:4	E	215	384		Pottery	Glazed body sherd- small	1	2
384:5	E	215	384		Pottery	Glazed body sherd- tiny	1	<1
384:6	E	215	384		Clay tobacco Pipe	Stem-broken	1	8
384:7	E	215	384		Bone	Bone fragments	38	399
386:1	E	215	386		Lithic	Chert scraper	1	2
386:2	E	215	386		Bone	Bone fragments	18	271
387:1	E		387		Metal	Iron nail- bent	1	3
387:2	E		387		Brick/tile	Red brick fragment	1	33
387:3	E		387		Brick/tile	Red brick fragment	1	5

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
387:4	E		387		Stone	Slate fragment	1	64
387:5	E		387		Clay tobacco Pipe	Stem, broken	1	1
387:6	E		387		Glass	Bottle body sherd	1	12
387:7	E		387		Glass	Bottle body sherd	1	13
387:8	E		387		Bone	Bone fragments	18	212
388:1	E		388		Pottery	Red body sherd- glazed one side	1	38
388:2	E		388		Pottery	Red body sherd- glazed one side	1	23
388:3	E		388		Pottery	Red body sherd- glazed one side	1	3
388:4	E		388		Clay tobacco Pipe	Bowl & stem, pieces co-joining	3	13
388:5	E		388		Shell	Oyster shell	1	21
388:6	E		388		Glass	Bottle base sherd	1	223
388:7	E		388		Glass	Bottle base sherd	1	103
388:8	E		388		Glass	Bottle base sherd	1	36
388:9	E		388		Glass	Bottle body sherd	1	22
388:10	E		388		Glass	Bottle body sherd	1	34
388:11	E		388		Glass	Bottle body sherd	1	43
388:12	E		388		Glass	Bottle body sherd	1	23
388:13	E		388		Glass	Bottle body sherd	1	46
388:14	E		388		Glass	Bottle body sherd	1	22
388:15	E		388		Glass	Bottle body sherd	1	14
388:16	E		388		Glass	Bottle body sherd	1	18
388:17	E		388		Glass	Bottle body sherd	1	13
388:18	E		388		Glass	Bottle body sherd	1	12
388:19	E		388		Glass	Bottle body sherd	1	17
388:20	E		388		Glass	Bottle body sherd	1	11
388:21	E		388		Glass	Bottle body sherd	1	9
388:22	E		388		Glass	Bottle body sherd	1	7
388:23	E		388		Glass	Bottle body sherd	1	14
388:24	E		388		Glass	Bottle body sherd	1	4
388:25	E		388		Glass	Bottle body sherd	1	3
388:26	E		388		Glass	Bottle body sherd	1	3
388:27	E		388		Glass	Bottle body sherd	1	<1
388:28	E		388		Glass	Bottle body sherd	1	2
388:29	E		388		Glass	Glass body sherd	1	28
388:30	E		388		Pottery	Glazed sherd- rim	1	6

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
388:31	E		388		Glass	Bottle base sherd	1	134
388:32	E		388		Glass	Bottle body sherd	1	31
388:33	E		388		Glass	Bottle body sherd	1	24
388:34	E		388		Glass	Bottle body sherd	1	17
388:35	E		388		Glass	Bottle body sherd	1	13
388:36	E		388		Glass	Bottle body sherd	1	13
388:37	E		388		Glass	Bottle body sherd	1	10
388:38	E		388		Glass	Bottle body sherd	1	4
388:39	E		388		Glass	Bottle body sherd	1	6
388:40	E		388		Glass	Bottle body sherd	1	40
388:41	E		388		Glass	Bottle body sherd	1	2
388:42	E		388		Glass	Bottle body sherd	1	2
388:43	E		388		Brick/tile	Red brick fragment	1	785
388:44	E		388		Bone	Bone fragments	37	256
389:1	E	228	389		Glass	Bottle body sherd	1	3
389:2	E	228	389		Glass	Bottle body sherd	1	<1
389:3	E	228	389		Glass	Bottle body sherd	1	1
389:4	E	228	389		Glass	Bottle base sherd	1	203
389:5	E	228	389		Glass	Bottle base sherd	1	147
389:6	E	228	389		Glass	Bottle base sherd	1	66
389:7	E	228	389		Glass	Bottle body sherd	1	33
389:8	E	228	389		Glass	Bottle body sherd	1	18
389:9	E	228	389		Glass	Bottle body sherd	1	5
392:1	E	228	392		Glass	Bottle base/body sherd	1	767
392:2	E	228	392		Glass	Bottle neck sherd	1	113
392:3	E	228	392		Glass	Glass sherd	1	15
392:4	E	228	392		Glass	Glass sherd	1	9
392:5	E	228	392		Glass	Glass sherd	1	14
392:6	E	228	392		Glass	Glass sherd	1	5
392:7	E	228	392		Glass	Glass sherd-clear glass	1	1
392:8	E	228	392		Glass	Glass sherd-clear glass	1	1
392:9	E	228	392		Bone	Bone fragments	2	1
393:1	E				Bone	Bone fragments	2	23
450:1	E	217	450		Pottery	Clay body sherd- glazed	1	4
450:2	E	217	450		Clay tobacco Pipe	Bowl, complete	1	9

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
450:3	E	217	450		Clay tobacco Pipe	Stem, broken	1	3
450:4	E	217	450		Bone	Bone fragments	4	141
451:1	E	218	451		Glass	Glass body sherd	1	24
451:2	E	218	451		Glass	Glass body sherd	1	15
451:3	E	218	451		Glass	Glass body sherd	1	73
451:4	E	218	451		Glass	Glass body sherd	1	17
451:5	E	218	451		Glass	Glass body sherd	1	26
451:6	E	218	451		Glass	Glass body sherd	1	57
451:7	E	218	451		Glass	Glass body sherd	1	7
451:8	E	218	451		Glass	Glass body sherd	1	6
451:9	E	218	451		Glass	Glass body sherd	1	6
451:10	E	218	451		Bone	Bone fragments	29	2918
452:1	E	219	452		Metal	Iron square loop- buckle?	1	19
452:2	E	219	452		Metal	Lead flashing from window	1	2
452:3	E	219	452		Pottery	Red body sherd- glazed one side	1	17
452:4	E	219	452		Pottery	Glazed body sherd	1	<1
452:5	E	219	452		Pottery	Glazed rim sherd	1	1
452:6	E	219	452		Clay tobacco Pipe	Stem-broken	1	5
452:7	E	219	452		Clay tobacco Pipe	Stem- long, broken	1	4
452:8	E	219	452		Clay tobacco Pipe	Stem- broken	1	4
452:9	E	219	452		Clay tobacco Pipe	Stem- broken	1	2
452:10	E	219	452		Shell	Oyster shell	1	14
452:11	E	219	452		Shell	Oyster shell	1	6
452:12	E	219	452		Shell	Oyster shell fragment	1	<1
452:13	E	219	452		Shell	Oyster shell fragment	1	<1
452:14	E	219	452		Glass	Glass sherd- flat	1	2
452:15	E	219	452		Glass	Glass sherd- flat	1	3
452:16	E	219	452		Bone	Bone fragments	59	875
452:17	E	219	452		Bone	Bone fragments	21	229
453:1	E	220	453		Bone	Bone fragments	12	316
455:1	E	221	455		Pottery	Clay body sherd- glazed one side	1	12
455:2	E	221	455		Pottery	Clay body sherd- glazed one side	1	5
455:3	E	221	455		Metal	Iron object- flat	1	43
455:4	E	221	455		Bone	Bone fragments	63	550
458:1	E	222	458		Clay tobacco Pipe	Stem- broken	1	6

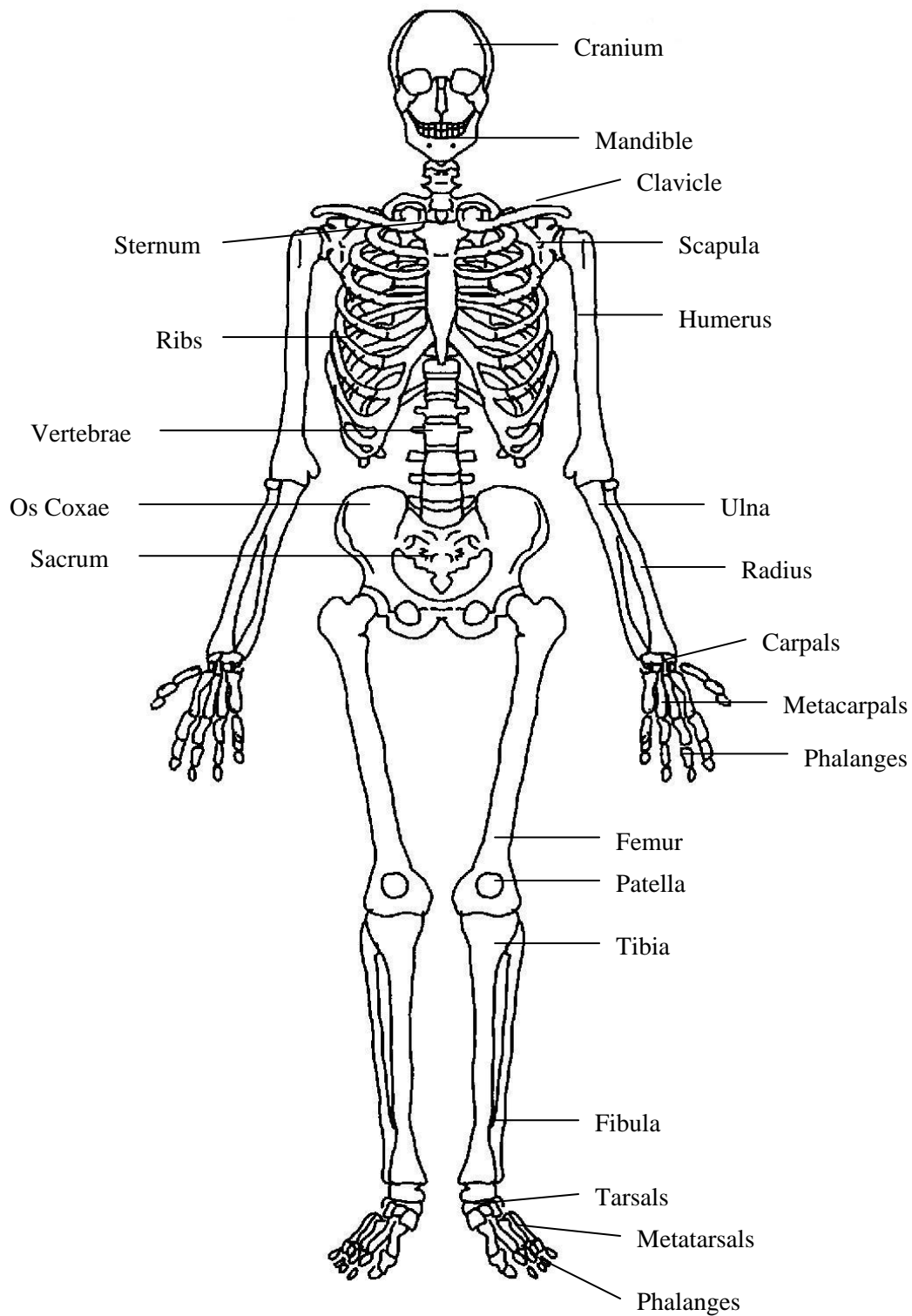
Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
458:2	E	222	458		Glass	Glass sherd-flat	1	2
458:3	E	222	458		Glass	Glass sherd-flat	1	<1
458:4	E	222	458		Bone	Bone fragments	3	90
470:1	E	225	470		Bone	Bone fragments	19	840
471:1	E	227	471		Stone	Slate fragment-roof tile, peg hole	1	325
471:2	E	227	471		Pottery	Glazed sherd- rim	1	7
471:3	E	227	471		Pottery	Glazed sherd- rim	1	3
471:4	E	227	471		Pottery	Glazed sherd- rim/body	1	37
471:5	E	227	471		Pottery	Glazed body sherd	1	4
471:6	E	227	471		Pottery	Glazed body sherd	1	1
471:7	E	227	471		Pottery	Glazed body sherd- tiny	1	<1
471:8	E	227	471		Clay tobacco Pipe	Stem, broken section	1	1
471:9	E	227	471		Bone	Bone fragments	35	1132
480:1	E	225	480		Bone	Bone fragments	63	727
480:2	E	225	480		Glass	Sherd window glass	1	<1
489:1	E	216	489		Brick/tile	Yellowish Brick- whole	1	2230
489:2	E	216	489		Brick/tile	Yellowish Brick- whole	2	2367
489:3	E	216	489		Brick/tile	Yellowish Brick- whole	1	2090
489:4	E	216	489		Brick/tile	Red/yellowish Brick- whole	1	1951
495:1	E	228	495		Bone	Bone fragments	3	75
497:2	E		497		Glass	Glass sherd- flat	1	5
497:3	E		497		Glass	Glass sherd- flat	1	2
498:1	E		498		Pottery	Clay sherd- glazed both sides	1	<1
498:2	E		498		Bone	Bone fragments	24	282
551:1	E	215	551		Metal	Copper- leaf-shaped	1	4
551:2	E	215	551		Shell	Oyster shell	1	6
551:3	E	215	551		Shell	Oyster shell	1	16
551:4	E	215	551		Bone	Bone fragments	12	234
552:1	E	231	552		Bone	Bone fragments	1	<1
553:1	E	229	553		Bone	Bone fragments	2	65
557:1	E		557		Metal	Iron nail	1	1
557:2	E		557		Metal	Iron object- flat	1	12
557:3	E		557		Metal	Iron nail	1	5
557:4	E		557		Metal	Iron nail	1	1
557:5	E		557		Metal	Iron- large peg, triangular head	1	63

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
557:6	E		557		Metal	Iron- flat, curved end	1	86
557:7	E		557		Metal	Silver? Ingot/waste?	1	10
557:8	E		557		Brick/tile	Red brick fragment	1	309
557:9	E		557		Brick/tile	Red brick fragment	1	390
557:10	E		557		Brick/tile	Red brick fragment	1	364
557:11	E		557		Brick/tile	Red brick fragment	1	260
557:12	E		557		Brick/tile	Red brick fragment	1	172
558:1			558	MD	Metal	Key- modern	1	6
558:2			558	MD	Metal	Iron nail	1	10
558:3			558	MD	Metal	Iron bracket/ hook	1	17
558:4			558	MD	Metal	Lead/silver/iron? Knob	1	20
558:5			558	MD	Metal	Lead waste- blob?	1	7
558:6			558	MD	Metal	Bottle cap?- modern	1	6
558:7			558	MD	Metal	Lead flashing? Copper rim?	1	3
558:8			558	MD	Metal	Iron nail	1	4
558:9			558	MD	Metal	Iron object- hook shaped	1	17
558:10			558	MD	Metal	Iron object- triangular, wedge	1	226
558:11			558	MD	Metal	Coin- 1/2	1	3
558:12			558	MD	Metal	Button	1	1
559:1			559		Clay tobacco pipe	Stem- broken	1	2
559:2			559		Clay tobacco pipe	Bowl- broken	1	3
559:3			559		Pottery	Clay rim sherd- chunky	1	114
559:4			559		Pottery	Clay body sherd- glazed inside	1	9
559:5			559		Pottery	Glazed sherd with hint of base	1	17
559:6			559		Pottery	Glazed sherd	1	3
559:7			559		Pottery	Glazed sherd	1	2
559:8			559		Brick/tile	Brick fragment	1	5
559:9			559		Brick/tile	Brick fragment	1	5
559:10			559		Brick/tile	Brick fragment	1	3
559:11			559		Brick/tile	Brick fragment	1	7
559:12			559		Stone	Slate fragment	1	182
559:13			559		Stone	Slate fragment	1	109
559:14			559		Stone	Slate fragment	1	22
559:15			559		Stone	Slate fragment	1	19
559:16			559		Stone	Slate fragment	1	2

Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
559:17			559		Stone	Slate fragment	1	5
559:18			559		Stone	Slate fragment- peg hole	1	67
559:19			559		Stone	Slate fragment	1	32
559:20			559		Stone	Slate fragment	1	4
559:21			559		Stone	Slate fragment	1	4
559:22			559		Glass	Bottle body sherd	1	6
559:23			559		Pottery	Clay body sherd-glazed	1	6
559:24			559		Lithic	Chert blade	1	3
559:25			559		Lithic	Chert debitage	1	<1
559:26			559		Bone	Bone fragments	18	576
560:1	A		560		Lithic	Chert flake	1	2
560:2	A		560		Bone	Bone fragments	6	<1
562:1	E		562		Metal	Iron- horseshoe	1	28
562:2	E		562		Metal	Iron nail	1	4
562:3	E		562		Metal	Iron nail, curved	1	5
562:4	E		562		Metal	Iron nail	1	2
562:5	E		562		Slag	Slag	1	8
562:6	E		562		Brick/tile	Red brick fragment	1	53
562:7	E		562		Brick/tile	Red brick fragment	1	38
562:8	E		562		Brick/tile	Red brick fragment	1	31
562:9	E		562		Brick/tile	Red brick fragment	1	12
562:10	E		562		Brick/tile	Red brick fragment	1	15
562:11	E		562		Brick/tile	Red brick fragment	1	9
562:12	E		562		Brick/tile	Red brick fragment	1	3
562:13	E		562		Brick/tile	Red brick fragment	1	34
562:14	E		562		Brick/tile	Red brick fragment	1	62
562:15	E		562		Brick/tile	Red brick fragment	1	84
562:16	E		562		Brick/tile	Red brick fragment	1	2
562:17	E		562		Stone	Slate fragment	1	7
562:18	E		562		Pottery	Red rim sherd- glazed one side	1	11
562:19	E		562		Pottery	Clay body sherd- glazed one side	1	26
562:20	E		562		Pottery	Clay body sherd- glazed one side,	1	15
562:21	E		562		Pottery	Red body sherd- glazed one side	1	16
562:22	E		562		Pottery	Red clay sherd- body	1	4
562:23	E		562		Pottery	Glazed body sherd	1	2

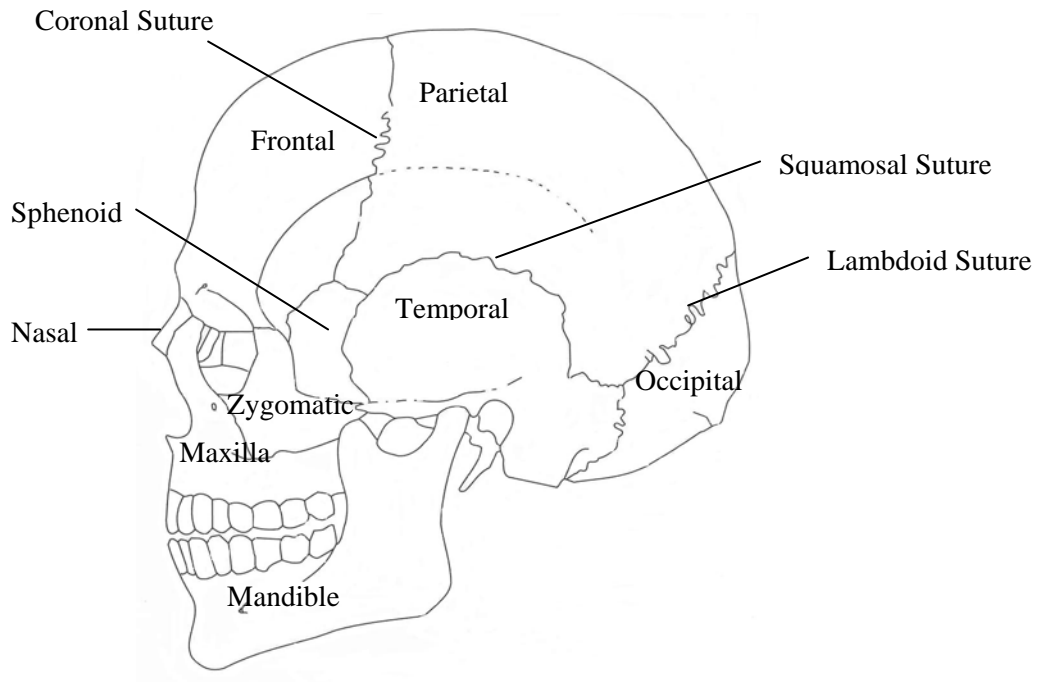
Find No.	Area	Cut	Deposit	Sample No. or metal detecting	Category	Description	No pieces	Weight (g)
562:24	E		562		Pottery	Glazed body sherd	1	2
562:25	E		562		Clay tobacco Pipe	Stem section	1	1
562:26	E		562		Glass	Glass sherd- flat	1	1
562:27	E		562		Glass	Glass sherd- flat	1	1
562:28	E		562		Glass	Glass sherd- flat	1	1
562:29	E		562		Glass	Glass sherd- flat	1	1
562:30	E		562		Glass	Glass sherd- flat	1	1
562:31	E		562		Bone	Bone fragments	21	250
563:1	E	213	563		Metal	Coin	1	4

Appendix 3: Bones of the human skeleton

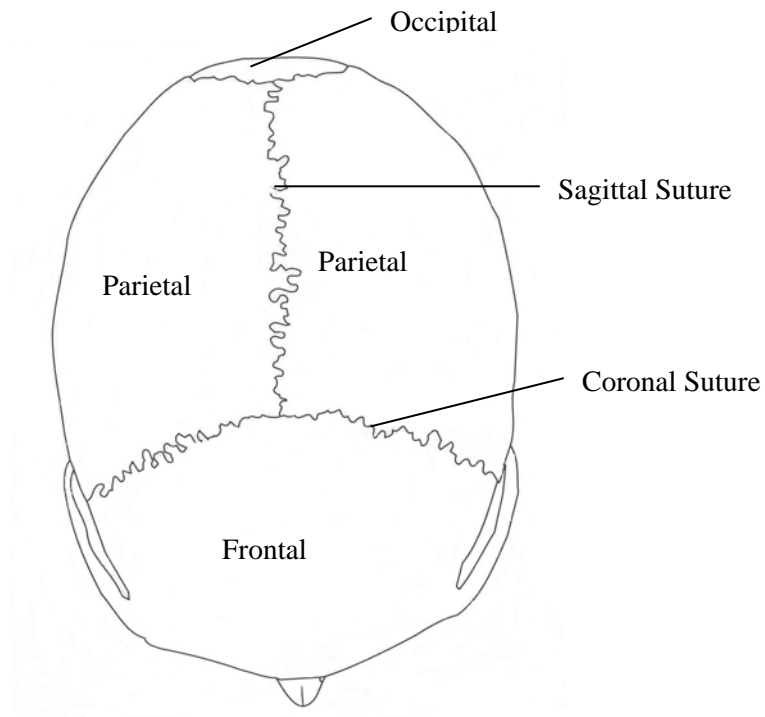


Appendix 4: Bones and sutures of the skull

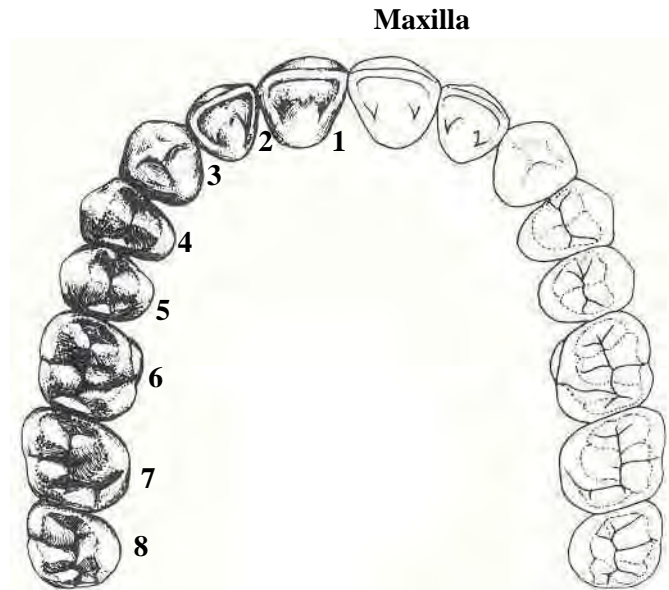
Lateral View



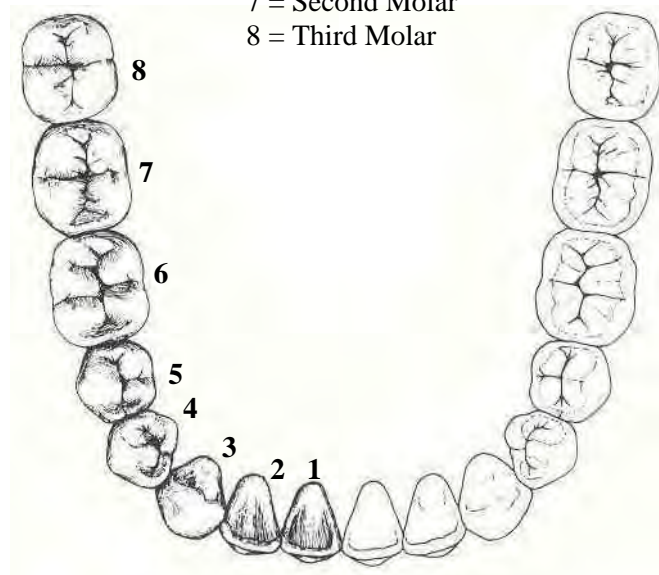
Superior View



Appendix 5: Permanent dentition



- 1 = Medial Incisor
- 2 = Lateral Incisor
- 3 = Canine
- 4 = First Premolar
- 5 = Second Premolar
- 6 = First Molar
- 7 = Second Molar
- 8 = Third Molar



Mandible

Appendix 6: Glossary of Osteological terms

Terms of Direction

Anterior	Towards the front of the body
Posterior	Towards the back of the body
Superior	Towards the head
Inferior	Towards the feet
Medial	Towards the midline of the body
Lateral	Away from the midline of the body
Proximal	Closer to the trunk (most frequently used for long bones)
Distal	Further from the body

Anatomical Features

Articulation	Area of joint between bones
Cortical bone	Dense outer layer of bone, thickest in long bone shafts
Diaphysis	Shaft of a long bone
Epiphysis	End of a long bone
Facet	Small, flat articular surface
Metaphysis	Growth area between epiphysis and diaphysis
Process	A thin projection
Sinus	A void
Trabecular bone	Less dense bone with honeycomb structure (e.g. ends of long bone)
Tuberosity	Raised, roughened area, often site of ligamentous or tendinous attachment

M. biceps brachii Name of muscle

Pathological Terms

Lesion Change to bone as result of disease or trauma

Appendix7: Catalogue of glass

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
57:21	E	-	57	Clear bottle body sherd	Modern, same as 71:1-2	1	34		4	
57:22	E	-	57	Dark green bottle body sherd		1	8		4	
57:23	E	-	57	Window glass fragment – slightly curved edge	Pre 19 th C	1	7		2	
57:24	E	-	57	Window glass fragment	Modern, same as 57:25-29	1	3		2	
57:25	E	-	57	Window glass fragment	Modern, same as 57:24, 26-29	1	3		2	
57:26	E	-	57	Window glass fragment	Modern, same as 57:24-25, 27-29	1	3		2	
57:27	E	-	57	Window glass fragment	Modern, same as 57:24-26, 28-29	1	2		2	
57:28	E	-	57	Window glass fragment	Modern, same as 24-27, 29	1	1		2	
57:29	E	-	57	Window glass fragment	Modern, same as 24-28	1	1		2	
57:30	E	-	57	Window glass fragment	Pre 19 th C	1	1		2	
59:1	E	5	59	Light green bottle body & neck sherd	Late 17 th – early 18 th C, same as 59:2a-b	1	124		3-6	
59:2a-b	E	5	59	Light green bottle body sherd	Late 17 th – early 18 th C, same as 59:1	2	30		2-4	
71:1	All	-	71	Clear bottle body sherd	Modern, same as 57:21 & 71:2	1	42		5	
71:2	All	-	71	Clear bottle body sherd	Modern, same as 57:21 & 71:1	1	25		5	
71:3	All	-	71	Window glass fragment	Modern	1	69	79	6	
71:34	All	-	71	Curved white coloured glass sherd	Modern, same as 71:35-36	1	2		2	
71:35	All	-	71	Curved white coloured glass sherd – rim	Modern, same as 71:34 & 36	1	3		2	
71:36	All	-	71	Curved white coloured glass sherd	Modern, same as 71:34-35	1	1		2	
251:7	D	-	251	Dark green bottle body sherd		1	30		5	
263:11	D	-	263	Amber bottle body sherd	Modern	1	11		4	
263:12	D	-	263	Window glass fragment	Modern, same as 263:13-16	1	2		1	
263:13	D	-	263	Window glass fragment	Modern, same as 263:12, 14-16	1	3		1	
263:14	D	-	263	Window glass fragment	Modern, same as 263:12-13 & 15-16	1	3		1	
263:15	D	-	263	Window glass fragment	Modern, same as 263:12-14, 16	1	2		1	
263:16	D	-	263	Window glass fragment	Modern, same as 263:12-15	1	<1		1	
275:1	D	-	275	Green bottle body sherd	Same as 275:2-5	1	6		2	
275:2	D	-	275	Green bottle body sherd	Same as 275:1, 3-5	1	1		2	

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
275:3	D	-	275	Green bottle body sherd	Same as 275:1-2, 4-5	1	1		4	
275:4	D	-	275	Green bottle body sherd	Same as 275:1-3, 5	1	<1		3	
275:5	D	-	275	Green bottle body sherd	Same as 275:1-4	1	<1		5	
293:8	A	-	293	Green bottle body sherd	Onion bottle	1	126		4	
350:20	F	205	350	Dark green bottle body sherd	True cylinder bottle	1	123		3-8	
350:21	F	205	350	Dark green bottle body sherd		1	21		5-8	
350:22	F	205	350	Dark green bottle body sherd		1	7		4	
350:23	F	205	350	Dark green bottle body sherd		1	2		4	
351:14	F	205	351	Dark green bottle body sherd	Modern	1	8		3	
351:15	F	205	351	Dark green bottle body sherd	Modern	1	2		5	
353:35	E	207	353	Window glass fragment	Pre 19 th C	1	1		1	
353:36	E	207	353	Window glass fragment	Pre 19 th C	1	1		1	
353:37	E	207	353	Window glass fragment	Pre 19 th C	1	5		2	
353:38	E	207	353	Dark green bottle base sherd		1	24		5-10	
353:39	E	207	353	Opaque blue/white bottle base sherd	Possible pontil mark	1	83		10	
353:40	E	207	353	Clear bottle body sherd	Modern – intrusive?	1	7		10	
353:41	E	207	353	Black bottle base sherd	True cylinder bottle, kick-up 30mm	1	172		4-10	
363:9	E	-	363	Window glass fragment	Modern, same as 363:10-12	1	8		1	
363:10	E	-	363	Window glass fragment	Modern, same as 363:9, 11-12	1	3		1	
363:11	E	-	363	Window glass fragment	Modern, same as 363:9-10, 12	1	3		1	
363:12	E	-	363	Window glass fragment	Modern, same as 363:9-11	1	1		1	
367:5	E	-	367	Window glass fragment	Pre 19 th C, same as 367:6-10, possible diamond shape	1	12		2	
367:6	E	-	367	Window glass fragment	Pre 19 th C, same as 367:5, 7-10	1	6		2	
367:7	E	-	367	Window glass fragment	Pre 19 th C, same as 367:5-6, 8-10	1	2		1	
367:8	E	-	367	Window glass fragment	Pre 19 th C, same as 367:5-7, 9-10	1	<1		1	
367:9	E	-	367	Window glass fragment	Pre 19 th C, same as 367:5-8, 10	1	<1		1	
367:10	E	-	367	Window glass fragment	Pre 19 th C, same as 367:5-9	1	1		1	
371:3	E	228	371	Opaque sherd - flat	Pre 19 th C	1	<1		1	
372:3	E	228	372	Dark green bottle body sherd		1	5		4	
375:8	E	228	375	Dark green bottle body sherd		1	13		5	
375:9	E	228	375	Dark green bottle body sherd		1	8		5	

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
375:10	E	228	375	Dark green bottle body sherd		1	7		4	
375:11	E	228	375	Dark green bottle body sherd		1	6		5	
375:12	E	228	375	Dark green bottle body sherd		1	8		9	
375:13	E	228	375	Dark green bottle body sherd		1	3		2	
375:14	E	228	375	Dark green bottle body sherd		1	5		5	
375:15	E	228	375	Dark green bottle body sherd		1	5		10	
375:16	E	228	375	Dark green bottle body sherd		1	1		4	
375:17	E	228	375	Dark green bottle body sherd		1	2		3	
375:18	E	228	375	Dark green bottle body sherd		1	<1		5	
375:19	E	228	375	Dark green bottle body sherd		1	<1		4	
375:20	E	228	375	Dark green bottle body sherd		1	1		8	
375:21	E	228	375	Dark green bottle body sherd		1	1		4	
375:22	E	228	375	Dark green bottle body sherd		1	1		4	
375:23	E	228	375	Dark green bottle body sherd		1	2		2	
375:24	E	228	375	Dark green bottle body sherd		1	2		2	
375:25	E	228	375	Dark green bottle body sherd		1	<1		4	
375:26	E	228	375	Dark green bottle body sherd		1	<1		4	
375:27	E	228	375	Dark green bottle body sherd		1	<1		2	
375:28	E	228	375	Clear vessel body sherd	Drinking glass	1	<1		1	
375:29a-b	E	228	375	Dark green bottle body & neck sherd	Small onion bottle	2	134		2-10	
375:30	E	228	375	Dark green bottle body and base sherd	Mallet/squat cylinder bottle, co-joins with 376:195, kick-up 23mm	1	313		2-10	145
375:31	E	228	375	Dark green bottle neck sherd	Lip, string rim, neck & part of shoulder present	1	167	74	4	17-35
375:33	E	228	375	Dark green bottle body sherd		1	13		4	
375:34a-c	E	228	375	Dark green bottle body sherd		3	28		2-13	
375:35	E	228	375	Dark green bottle base sherd		1	29		3-9	
375:36	E	228	375	Dark green bottle body sherd		1	12		4	
375:37	E	228	375	Dark green bottle body sherd		1	9		2-5	
375:38	E	228	375	Dark green bottle body sherd		1	6		2	
375:39	E	228	375	Dark green bottle body sherd		1	9		3	
375:41	E	228	375	Dark green bottle body sherd		1	6		4	
375:42	E	228	375	Dark green bottle body sherd		1	6		4	

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
375:43	E	228	375	Dark green bottle body sherd		1	4		4	
375:44a-b	E	228	375	Dark green bottle body sherd		2	11		3	
375:45	E	228	375	Dark green bottle body sherd		1	5		3	
375:47	E	228	375	Dark green bottle body sherd		1	7		3	
375:48	E	228	375	Dark green bottle body sherd		1	4		3	
375:49	E	228	375	Dark green bottle neck sherd	Early 18 th C, lip, string rim and neck present	1	124	71	5	18-50
375:51	E	228	375	Dark green bottle body sherd		1	4		2	
375:52	E	228	375	Dark green bottle body sherd		1	3		3	
375:53	E	228	375	Window glass fragment	Pre 19 th C	1	4		1	
375:57a-c	E	228	375	Dark green bottle body & base sherd	Small onion bottle, kick-up 19mm	3	204		3-10	
375:58a-b	E	228	375	Dark green bottle neck sherd	Early 18 th C, part of lip, string rim and neck present	2	64	56	3	19
376:60	E	228	376	Dark green bottle whole base & part of body sherd	Onion bottle, kick-up 20-25mm, pontil mark, residue on base	1	724		4-9	150
376:62	E	228	376	Dark green bottle base sherd	Kick-up (18mm)	1	132		10	
376:63	E	228	376	Dark green bottle base sherd	Kick-up (20mm)	1	114		3-10	
376:65a-b	E	228	376	Dark green bottle base sherd	Kick-up (32mm), pontil mark, residue on base	2	290		3-8	145
376:66	E	228	376	Dark green bottle neck & shoulder sherd	Early 18 th C, lip, string rim, neck and part of shoulder present	1	159	73	4	20-45
376:67	E	228	376	Dark green bottle neck sherd	Early 18 th C, lip and part of string rim & neck present	1	93	60	5	16
376:68	E	228	376	Dark green bottle neck sherd	Late 17 th – early 18 th C, lip and part of string rim & neck present	1	36		5	20
376:69	E	228	376	Dark green bottle base sherd	Kick-up (20mm)	1	192		10	
376:70	E	228	376	Dark green bottle body and base sherd	Squat cylinder bottle, kick-up 20mm, pontil mark	1	588		6	130
376:71	E	228	376	Dark green bottle base sherd	Kick-up (26mm), pontil mark	1	332		7	130
376:72	E	228	376	Dark green bottle neck & shoulder sherd	Early 18 th C, lip, string rim and part of neck & shoulder present	1	130	60	3	20-45
376:73	E	228	376	Dark green bottle neck & shoulder sherd	Early 18 th C, lip string rim, neck and part of shoulder present	1	106	60	5	20-45
376:74	E	228	376	Dark green bottle neck & shoulder sherd	Early 18 th C, lip part of string rim, neck and part of shoulder	1	117	60	4	20-50

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
					present					
376:75	E	228	376	Dark green bottle neck sherd	Early 18 th C, lip string rim and part of neck present	1	44	45	4	20-30
376:76a-b	E	228	376	Dark green bottle neck & shoulder sherd		2	57		4	
376:77	E	228	376	Dark green bottle body sherd		1	19		4	
376:78	E	228	376	Dark green bottle body sherd	Co-joins with 376:86	1	17		5	
376:79	E	228	376	Dark green bottle body sherd		1	16		4	
376:80	E	228	376	Dark green bottle body sherd		1	20		7	
376:81	E	228	376	Dark green bottle body sherd		1	11		4	
376:82	E	228	376	Dark green bottle body sherd		1	12		3	
376:83	E	228	376	Dark green bottle body & neck sherd		1	35		3	
376:84	E	228	376	Dark green bottle body sherd		1	28		4	
376:85a-b	E	228	376	Dark green bottle shoulder & neck sherd		2	52		5	
376:86	E	228	376	Dark green bottle body sherd	Co-joins with 376:78	1	14		4	
376:88	E	228	376	Dark green bottle body sherd		1	23		2-6	
376:89	E	228	376	Dark green bottle body sherd		1	39		3	
376:90	E	228	376	Dark green bottle body sherd		1	26		5	
376:91	E	228	376	Dark green bottle body sherd		1	14		4	
376:92	E	228	376	Dark green bottle body sherd		1	23		2-5	
376:94	E	228	376	Dark green bottle body sherd		1	42		4	
376:95	E	228	376	Dark green bottle body sherd		1	37		2	
376:96	E	228	376	Dark green bottle body sherd		1	34		4-10	
376:97	E	228	376	Dark green bottle body sherd		1	17		5	
376:98	E	228	376	Dark green bottle body sherd		1	24		2	
376:100	E	228	376	Dark green bottle body sherd		1	41		4	
376:101	E	228	376	Dark green bottle body sherd		1	59		3-9	
376:102a-b	E	228	376	Dark green bottle body sherd		2	49		2-10	
376:103	E	228	376	Dark green bottle body sherd		1	33		4	
376:104a-c	E	228	376	Dark green bottle body sherd	Onion bottle	3	136		4-9	
376:105	E	228	376	Dark green bottle body sherd		1	29		2	
376:107	E	228	376	Dark green bottle shoulder & neck sherd		1	40		4	
376:108a-b	E	228	376	Dark green bottle body & neck sherd		2	57		4	
376:109	E	228	376	Dark green bottle body sherd		1	9		3	
376:110	E	228	376	Dark green bottle body sherd		1	44		3	

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
376:111	E	228	376	Dark green bottle body sherd		1	17		2	
376:112a-b	E	228	376	Dark green bottle body sherd	Onion bottle	2	65		4-6	
376:113	E	228	376	Dark green bottle body sherd		1	28		6	
376:114	E	228	376	Dark green bottle body sherd		1	15		8	
376:115	E	228	376	Dark green bottle shoulder & neck sherd		1	22		5	
376:116	E	228	376	Dark green bottle body sherd		1	27		6	
376:117	E	228	376	Dark green bottle body sherd		1	12		2-5	
376:118	E	228	376	Dark green bottle body sherd		1	17		3	
376:119	E	228	376	Dark green bottle base sherd		1	23		10	
376:121	E	228	376	Dark green bottle body sherd		1	11		4	
376:122	E	228	376	Dark green bottle body sherd		1	10		3	
376:123	E	228	376	Dark green bottle body sherd		1	14		3	
376:124	E	228	376	Dark green bottle body sherd		1	12		3	
376:125	E	228	376	Dark green bottle body sherd		1	12		2-6	
376:126	E	228	376	Dark green bottle body sherd		1	9		2	
376:127	E	228	376	Dark green bottle body sherd		1	9		2	
376:128	E	228	376	Dark green bottle body sherd		1	9		2	
376:129	E	228	376	Dark green bottle body sherd		1	14		4	
376:130	E	228	376	Dark green bottle body sherd		1	11		3	
376:131	E	228	376	Dark green bottle base sherd		1	36		10	
376:132	E	228	376	Dark green bottle body sherd		1	7		3	
376:133	E	228	376	Dark green bottle body sherd		1	9		3	
376:134	E	228	376	Dark green bottle body sherd		1	10		6	
376:135	E	228	376	Dark green bottle body sherd		1	7		3	
376:136	E	228	376	Dark green bottle body sherd		1	15		4	
376:137	E	228	376	Dark green bottle body sherd		1	15		3	
376:138	E	228	376	Dark green bottle body sherd		1	8		9	
376:139	E	228	376	Dark green bottle neck sherd		1	12		5	
376:140	E	228	376	Dark green bottle body sherd		1	11		4	
376:141	E	228	376	Dark green bottle body sherd		1	7		2	
376:142	E	228	376	Dark green bottle body sherd		1	3		3	
376:143	E	228	376	Dark green bottle body sherd	Co-joins with 376:174	1	15		10	
376:144	E	228	376	Dark green bottle body sherd		1	6		3	
376:145	E	228	376	Dark green bottle body sherd		1	8		4	

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
376:146	E	228	376	Dark green bottle body sherd		1	10		4	
376:147	E	228	376	Dark green bottle body sherd		1	8		6	
376:148	E	228	376	Dark green bottle base sherd	Co-joins with 376:150 & 171, residue on base	1	11		10	
376:149	E	228	376	Dark green bottle body sherd		1	14		5	
376:150	E	228	376	Dark green bottle base sherd	Co-joins with 376:148 & 171	1	8		10	
376:151	E	228	376	Dark green bottle body sherd		1	8		5	
376:152	E	228	376	Dark green bottle body sherd		1	6		10	
376:153	E	228	376	Dark green bottle body sherd		1	3		2	
376:154	E	228	376	Dark green bottle body sherd		1	8		5	
376:155	E	228	376	Dark green bottle body sherd		1	4		4	
376:156	E	228	376	Dark green bottle body sherd		1	3		2	
376:157	E	228	376	Dark green bottle body sherd		1	4		2	
376:158	E	228	376	Dark green bottle body sherd		1	7		4	
376:159	E	228	376	Dark green bottle body sherd		1	5		3	
376:160	E	228	376	Dark green bottle body sherd		1	8		7	
376:161	E	228	376	Dark green bottle body sherd		1	5		5	
376:162	E	228	376	Dark green bottle body sherd		1	3		3	
376:163	E	228	376	Dark green bottle body sherd		1	7		4	
376:164	E	228	376	Dark green bottle body sherd		1	3		2	
376:165	E	228	376	Dark green bottle body sherd		1	2		2	
376:166	E	228	376	Dark green bottle body sherd		1	5		5	
376:167	E	228	376	Dark green bottle body sherd		1	7		7	
376:168	E	228	376	Dark green bottle body sherd		1	3		3	
376:169	E	228	376	Dark green bottle body sherd		1	3		5	
376:170	E	228	376	Dark green bottle body sherd		1	4		3	
376:171	E	228	376	Dark green bottle base sherd	Co-joins with 376:148 & 150	1	6		10	
376:172	E	228	376	Dark green bottle body sherd		1	2		2	
376:173	E	228	376	Dark green bottle body sherd		1	2		2	
376:174	E	228	376	Dark green bottle body sherd	Co-joins with 376:143	1	6		10	
376:175	E	228	376	Dark green bottle body sherd		1	3		2	
376:176	E	228	376	Dark green bottle body sherd		1	4		8	
376:177	E	228	376	Dark green bottle body sherd		1	1		2	
376:178	E	228	376	Dark green bottle body sherd		1	2		2	

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
376:179	E	228	376	Dark green bottle body sherd		1	5		10	
376:180	E	228	376	Dark green bottle body sherd		1	3		4	
376:181	E	228	376	Dark green bottle body sherd		1	3		8	
376:182	E	228	376	Dark green bottle body sherd		1	2		3	
376:183	E	228	376	Dark green bottle body sherd		1	1		3	
376:184	E	228	376	Dark green bottle body sherd		1	2		8	
376:185	E	228	376	Dark green bottle body sherd		1	<1		3	
376:186	E	228	376	Dark green bottle body sherd		1	1		2	
376:190a-c	E	228	376	Dark green bottle base sherd	Kick-up (24mm)	3	330		10	120
376:191	E	228	376	Dark green bottle base sherd		1	71		9	
376:192	E	228	376	Dark green bottle base sherd	Kick-up (18mm)	1	75		13	
376:193	E	228	376	Dark green bottle base sherd		1	49		10	
376:195	E	228	376	Dark green bottle base sherd	Mallet/squat cylinder bottle, co-joins with 375:30, kick-up 23mm	1	105		11	
376:196	E	228	376	Dark green bottle base sherd		1	38		2-11	
376:197	E	228	376	Dark green bottle base sherd		1	19		10	
376:198	E	228	376	Dark green bottle body sherd		1	30		10	
376:199	E	228	376	Dark green bottle base sherd		1	24		6-11	
376:200	E	228	376	Dark green bottle base sherd		1	21		8	
376:201	E	228	376	Dark green bottle base sherd		1	16		10	
376:202	E	228	376	Dark green bottle body sherd		1	23		10	
376:203	E	228	376	Dark green bottle base sherd		1	20		10	
376:204	E	228	376	Dark green bottle base sherd		1	13		11	
376:205	E	228	376	Dark green bottle base sherd		1	12		3-10	
376:206a-b	E	228	376	Dark green bottle base sherd		2	18		4-10	
376:208	E	228	376	Dark green bottle body sherd		1	5		8	
376:209	E	228	376	Clear curved vessel body sherd	Drinking glass	1	2		1	
377:84	E	-	377	Clear curved vessel body sherd – rim	Decorated, same as 388:29	1	<1		4	
377:85	E	-	377	Clear curved vessel body sherd	Decorated, same as 377:133-134	1	13		5	
377:86	E	-	377	Window glass fragment	Pre 19 th C	1	1		1	
377:87	E	-	377	Window glass fragment	Pre 19 th C, possible diamond edge	1	1		1	
377:88	E	-	377	Dark green bottle body sherd		1	3		5	

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
377:89	E	-	377	Dark green bottle body sherd		1	5		5	
377:90	E	-	377	Dark green bottle body sherd		1	5		3	
377:91	E	-	377	Dark green bottle body sherd		1	6		4	
377:92	E	-	377	Dark green bottle body sherd		1	16		5	
377:93	E	-	377	Dark green bottle body sherd		1	43		8	
377:94	E	-	377	Dark green bottle body sherd		1	4		4	
377:96	E	-	377	Dark green bottle base sherd		1	22		8	
377:98	E	-	377	Dark green bottle body sherd		1	21		8	
377:99	E	-	377	Dark green bottle body sherd		1	54		7	
377:100	E	-	377	Dark green bottle body sherd		1	24		5	
377:101	E	-	377	Dark green bottle body sherd		1	31		4	
377:102	E	-	377	Dark green bottle base sherd		1	54		8	
377:103a-c	E	-	377	Dark green bottle body sherd		3	53		4-7	
377:104	E	-	377	Dark green bottle base sherd		1	158		11	
377:105	E	-	377	Dark green bottle body sherd		1	21		4	
377:106	E	-	377	Dark green bottle base sherd		1	42		7	
377:107	E	-	377	Dark green bottle body sherd		1	13		4	
377:108	E	-	377	Dark green bottle body sherd		1	10		4	
377:109	E	-	377	Dark green bottle body sherd		1	15		3	
377:110	E	-	377	Dark green bottle body sherd		1	12		5	
377:111	E	-	377	Dark green bottle base sherd		1	27		7	
377:112	E	-	377	Dark green bottle body sherd		1	14		5	
377:113	E	-	377	Dark green bottle body sherd		1	11		6	
377:114	E	-	377	Dark green bottle body sherd		1	7		3	
377:115	E	-	377	Dark green bottle body sherd		1	14		4	
377:116	E	-	377	Dark green bottle body sherd		1	9		5	
377:117	E	-	377	Dark green bottle body sherd		1	12		7	
377:118	E	-	377	Dark green bottle body sherd		1	23		6	
377:119	E	-	377	Dark green bottle body sherd		1	16		7	
377:120	E	-	377	Dark green bottle body sherd		1	12		10	
377:121	E	-	377	Dark green bottle body sherd		1	7		5	
377:122	E	-	377	Dark green bottle body sherd		1	6		4	
377:123	E	-	377	Dark green bottle body sherd		1	3		3	
377:124	E	-	377	Dark green bottle body sherd		1	3		3	

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
377:125	E	-	377	Dark green bottle body sherd		1	4		3	
377:126	E	-	377	Dark green bottle body sherd		1	3		4	
377:127	E	-	377	Dark green bottle body sherd		1	8		12	
377:128	E	-	377	Dark green bottle body sherd		1	3		6	
377:129	E	-	377	Dark green bottle body sherd		1	3		5	
377:130	E	-	377	Dark green bottle body sherd		1	2		4	
377:131	E	-	377	Dark green bottle body sherd		1	2		3	
377:132	E	-	377	Clear curved vessel body sherd		1	2		2	
377:133	E	-	377	Clear curved vessel body sherd	Decorated, co-joins with 377:134 & same as 377:85	1	5		4	
377:134	E	-	377	Clear curved vessel body sherd	Decorated, co-joins with 377:133 & same as 377:85	1	10		4	
377:136	E	-	377	Window glass fragment	Pre 19 th C	1	2		1	
377:137	E	-	377	Window glass fragment	Pre 19 th C	1	1		1	
377:138	E	-	377	Window glass fragment	Pre 19 th C	1	2		1	
377:139	E	-	377	Window glass fragment	Pre 19 th C	1	1		1	
377:140	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:141	E	-	377	Window glass fragment	Pre 19 th C	1	1		1	
377:142	E	-	377	Window glass fragment	Pre 19 th C	1	1		1	
377:143	E	-	377	Window glass fragment	Pre 19 th C	1	2		1	
377:144	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:145	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:146	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:147	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:148	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:149	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:150	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:151	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:152	E	-	377	Window glass fragment	Pre 19 th C	1	<1		1	
377:153a-b	E	-	377	Dark green bottle base sherd	Onion bottle, kick-up 23mm	2	296		9	145
377:154	E	-	377	Dark green bottle neck sherd	c. 1760, lip, string rim and part of neck present	1	58		4	20
377:155	E	-	377	Dark green bottle base sherd	Kick-up (32mm)	1	219		8	120
377:156	E	-	377	Dark green bottle base sherd		1	145		10	

Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
377:157	E	-	377	Dark green bottle base sherd		1	16		7	
377:158	E	-	377	Dark green bottle body sherd		1	8		6	
380:3	E	216	380	Green bottle body sherd – with part of neck	Same as 380:4-8a-b	1	39		4-11	
380:4	E	216	380	Green bottle body sherd	Same as 380:3, 5-8a-b	1	21		5	
380:5	E	216	380	Green bottle body sherd	Same as 380:3-4, 6-8a-b	1	19		5	
380:6	E	216	380	Green bottle body sherd	Same as 380:3-5, 7-8a-b	1	18		4	
380:7	E	216	380	Green bottle body sherd	Same as 380:3-6, 8a-b	1	18		5	
380:8a-b	E	216	380	Green bottle body sherd	Same as 380:3-7	2	8		5	
381:2	E	216	381	Dark green bottle neck sherd	Late 17 th – early 18 th C, lip, string rim with metal tie still attached and part of neck present	1	65		6	18
381:3	E	216	381	Green bottle body sherd	Same as 381:4-6	1	13		5	
381:4	E	216	381	Green bottle body sherd	Same as 381:3, 5-6	1	15		6	
381:5	E	216	381	Green bottle body sherd	Same as 381:3-4, 6	1	4		5	
381:6	E	216	381	Green bottle body sherd	Same as 381:3-5	1	8		4	
383:9	E	215	383	Dark green bottle body sherd		1	3		4	
387:6	E	-	387	Dark green bottle body sherd		1	12		4	
387:7	E	-	387	Dark green bottle base sherd		1	13		8	
388:6a-b	E	-	388	Dark green bottle base	Kick-up (30mm), pontil mark, co-joins with 388:10 & 13	2	326		5-11	130
388:8	E	-	388	Dark green bottle body sherd		1	36		5	
388:9	E	-	388	Dark green bottle body sherd		1	22		4	
388:10	E	-	388	Dark green bottle base sherd	Co-joins with 388:6a-b & 13	1	34		10	
388:11	E	-	388	Dark green bottle base sherd		1	43		10	
388:12	E	-	388	Dark green bottle body sherd		1	23		10	
388:13	E	-	388	Dark green bottle base sherd	Co-joins with 388:6a-b & 10	1	46		10	
388:14	E	-	388	Dark green bottle body sherd		1	22		8	
388:15	E	-	388	Dark green bottle body sherd		1	14		3	
388:16	E	-	388	Dark green bottle body sherd		1	18		5	
388:17	E	-	388	Dark green bottle body sherd		1	13		4	
388:18	E	-	388	Dark green bottle body sherd		1	12		4	
388:19	E	-	388	Dark green bottle body sherd		1	17		4	
388:20	E	-	388	Dark green bottle body sherd		1	11		5	
388:21	E	-	388	Dark green bottle neck sherd		1	9		5	

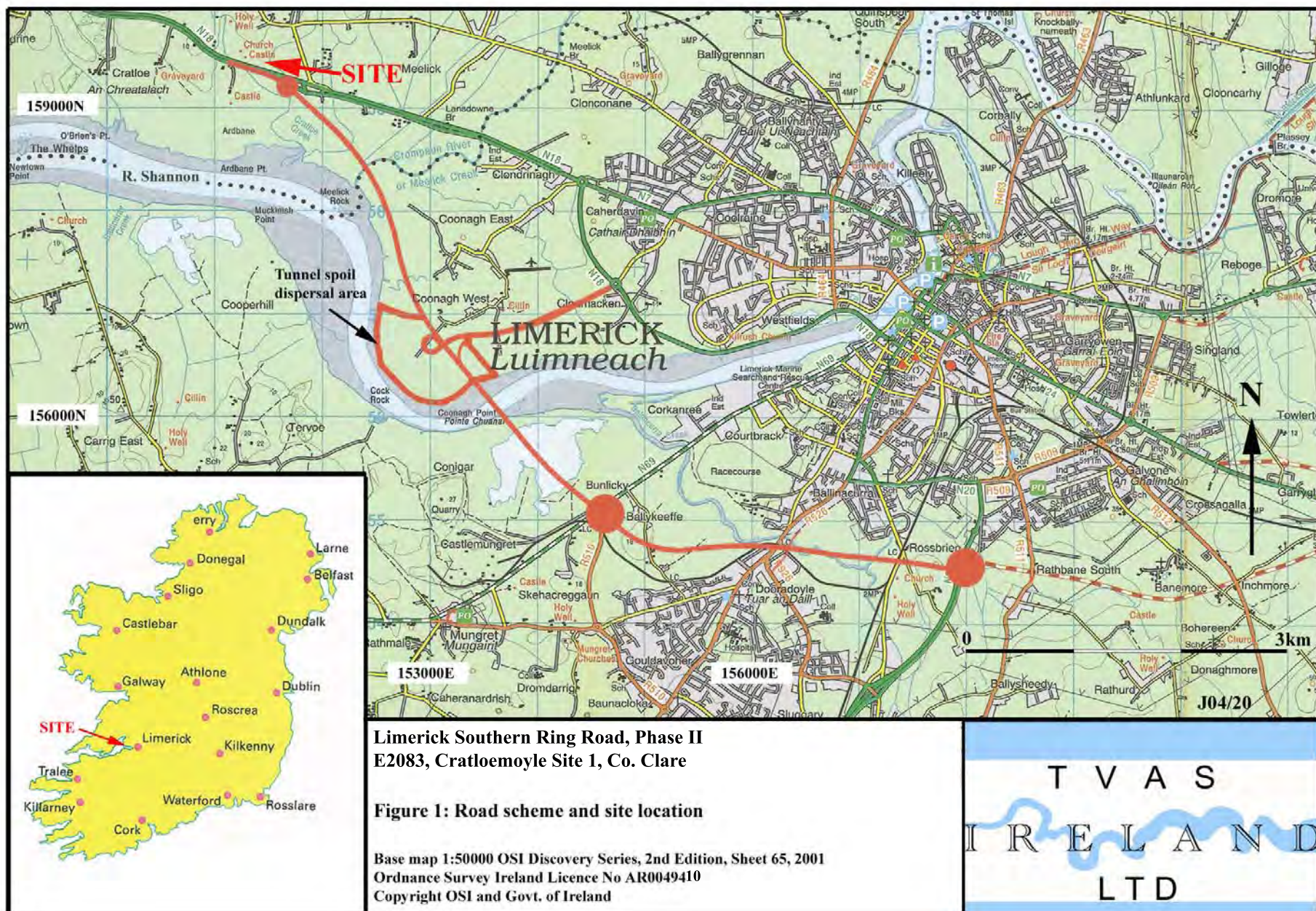
Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
388:22	E	-	388	Dark green bottle body sherd		1	7		5	
388:23	E	-	388	Dark green bottle body sherd		1	14		3	
388:24	E	-	388	Dark green bottle body sherd		1	4		5	
388:25	E	-	388	Dark green bottle body sherd		1	3		9	
388:26	E	-	388	Dark green bottle body sherd		1	3		5	
388:27	E	-	388	Dark green bottle body sherd		1	<1		4	
388:28	E	-	388	Dark green bottle body sherd		1	2		5	
388:29	E	-	388	Clear vessel body sherd – rim	Decorated, same as 377:84	1	28		5	
388:31	E	-	388	Dark green bottle base sherd		1	134		5-10	
388:32	E	-	388	Dark green bottle body & neck sherd		1	31		4	
388:33	E	-	388	Dark green bottle body sherd		1	24		6	
388:34	E	-	388	Dark green bottle body sherd		1	17		4	
388:35	E	-	388	Dark green bottle body sherd		1	13		4	
388:36	E	-	388	Dark green bottle body sherd		1	13		7	
388:37	E	-	388	Dark green bottle body sherd		1	10		6	
388:38	E	-	388	Dark green bottle body sherd		1	4		4	
388:39	E	-	388	Dark green bottle body sherd		1	6		6	
388:40	E	-	388	Dark green bottle body sherd		1	40		5	
388:41	E	-	388	Dark green bottle body sherd		1	2		5	
388:42	E	-	388	Window glass fragment	Pre 19 th C	1	2		1	
389:1	E	228	389	Clear vessel body sherd - rim	Drinking glass, same as 389:2-3	1	3		1	
389:2	E	228	389	Clear vessel body sherd	Drinking glass, co-joins with 389:3, same as 389:1	1	<1		1	
389:3	E	228	389	Clear vessel body sherd	Drinking glass, co-joins with 389:2, same as 389:1	1	1		1	
389:4	E	228	389	Dark green bottle body and base sherd	Kick-up (25mm)	1	203		3-8	
389:5a-b	E	228	389	Dark green bottle base sherd	Kick-up (20mm)	2	213		2-10	130
389:7	E	228	389	Dark green bottle body sherd		1	33		4	
389:8	E	228	389	Dark green bottle body sherd		1	18		3-7	
389:9	E	228	389	Dark green bottle body sherd		1	5		5	
392:1a-b	E	228	392	Dark green bottle whole base with body sherd	Onion bottle, kick-up 35mm, pontil mark	2	767		3	130
392:2	E	228	392	Dark green bottle neck with shoulder	Early 18 th C onion bottle, lip, string rim and neck present	1	113	60	4	18-40
392:3	E	228	392	Dark green bottle body sherd		1	15		3	

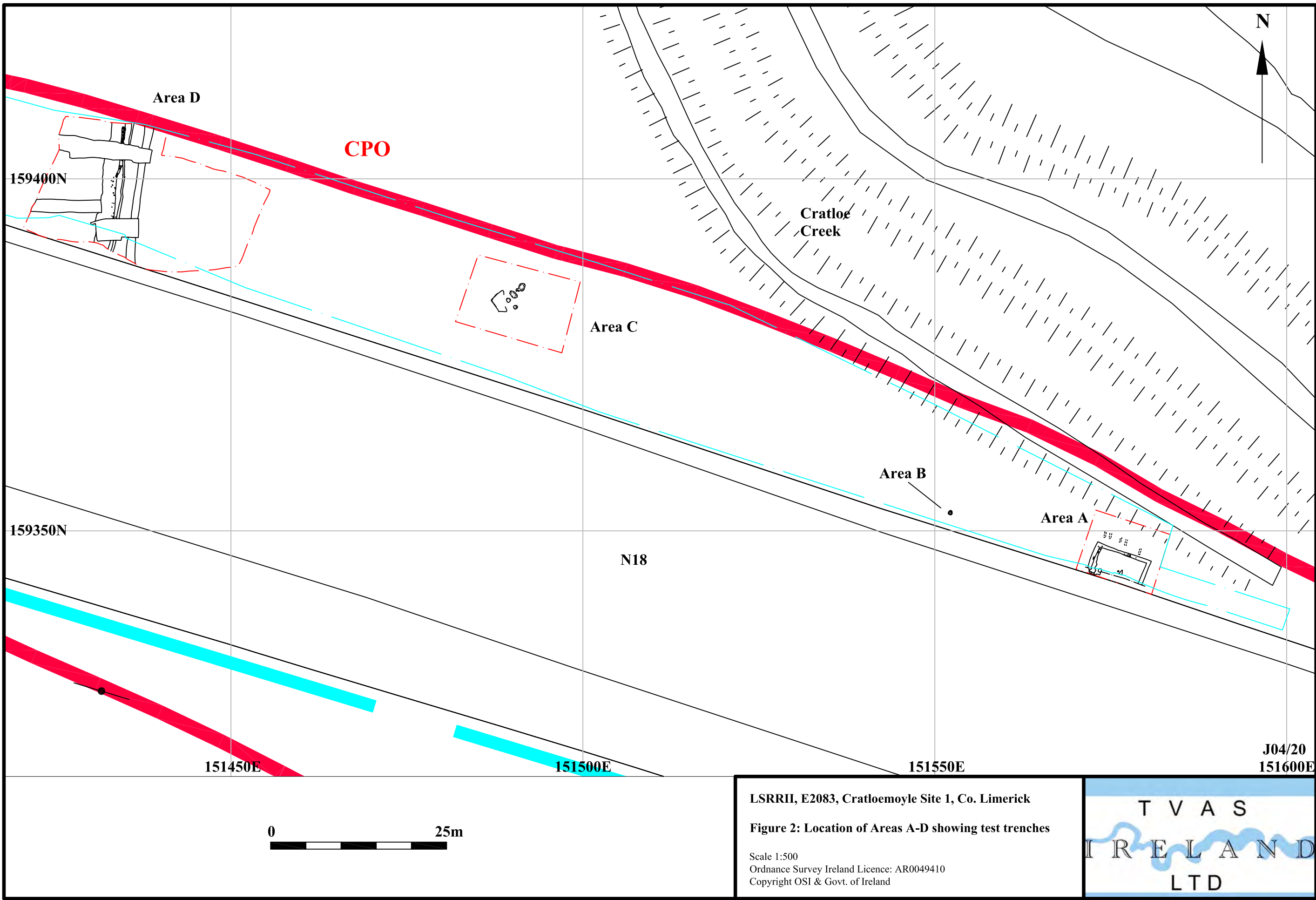
Find No	Area	Cut	Deposit	Description	Comment	Pcs	Weight (g)	Dimensions (mm)		
								L	Th	Diam
392:4	E	228	392	Dark green bottle body sherd		1	9		4	
392:5	E	228	392	Dark green bottle body sherd		1	14		6	
392:6	E	228	392	Dark green bottle body sherd		1	5		6	
392:7	E	228	392	Clear vessel body sherd - rim	Drinking glass, same as 392:8	1	1		<1	
392:8	E	228	392	Clear vessel body sherd	Drinking glass, same as 392:7	1	1		<1	
451:1	E	218	451	Dark green bottle body & base sherd		1	24		10	
451:2	E	218	451	Dark green bottle body sherd		1	15		7	
451:3	E	218	451	Dark green bottle body & base sherd	True cylinder bottle, co-joins with 451:4-6 & 8	1	73		10	
451:4	E	218	451	Dark green bottle body & base sherd	True cylinder bottle, co-joins with 451:3, 5-6 & 8	1	17		7	
451:5	E	218	451	Dark green bottle body & base sherd	True cylinder bottle, co-joins with 451:3-4, 6 & 8	1	26		8	
451:6	E	218	451	Dark green bottle base sherd	True cylinder bottle, co-joins with 451:3-5 & 8	1	57		11	
451:7	E	218	451	Dark green bottle body & base sherd		1	7		7	
451:8	E	218	451	Dark green bottle body sherd	True cylinder bottle, co-joins with 451:3-6	1	6		8	
451:9	E	218	451	Dark green bottle body sherd	True cylinder bottle, same as 451:3-6 & 8	1	6		7	
452:14	E	219	452	Window glass fragment	Pre 19 th C, same as 452:15	1	2		1	
452:15	E	219	452	Window glass fragment	Pre 19 th C, same as 452:14	1	3		1	
458:2	E	222	458	Window glass fragment	Pre 19 th C, same as 458:3	1	2		1	
458:3	E	222	458	Window glass fragment	Pre 19 th C, same as 458:2	1	<1		1	
480:2	E	225	480	Window glass fragment	Modern	1	<1		1	
497:2	E	-	497	Window glass fragment	Pre 19 th C, same as 497:3	1	5		1	
497:3	E	-	497	Window glass fragment	Pre 19 th C, same as 497:2	1	2		1	
559:22	-	-	559	Dark green bottle body sherd		1	6		5	
562:26	E	-	562	Window glass fragment	Modern	1	1		1	
562:27	E	-	562	Window glass fragment	Modern	1	1		1	
562:28	E	-	562	Window glass fragment	Modern	1	1		1	
562:29	E	-	562	Window glass fragment	Modern	1	1		1	
562:30	E	-	562	Window glass fragment	Modern	1	1		1	

Appendix 8: Catalogue of samples

Sample No	Area	Cut	Deposit	Description	Volume sieved (L)	Volume floated (L)	Finds	Stone sample	Charred plant remains
1	B	1	50	Soil	2	2	None	N	Y
2	B	1	50	Soil	2	2	None	Y	N
3	A		52	Lime/mortar	-	-	N	N	N
4	C		54	Soil	0.1	0.1	Bone	N	N
5-6	-	-	-	CANCELLED	-	-	-	-	-
7	A		52	Lime/mortar	-	-	N	N	N
8	A		296	Lime/mortar			N	N	N
9	E	214	374	Soil – pelvic region	15	15	N	N	N
10	E	214	374	Soil – over skeleton	60	60	Bone	N	Y
11	E	214	374	Soil – under skeleton	16	16	Bone	N	N
12	E	216	381	Soil	15	15	Bone	N	Y
13	E	228	391	Lime/mortar	-	-	N	N	N
14	E	228	454	Soil	2	2	N	N	Y
15	E	216	474	Caked lime	-	-	N	N	N
16	E	224	396, 460, 461	Composite of caked lime layers	-	-	N	N	N
17-51	-	-	-	CANCELLED	-	-	-	-	-
52	E		365	Charcoal	-	-	N	N	Y
53-55	-	-	-	CANCELLED	-	-	-	-	-
56	E		365	Lime/mortar	-	-	N	N	N
57-63	-	-	-	CANCELLED	-	-	-	-	-
64	E	215	383	Charcoal	-	-	N	N	Y
65	E	216	474	Lime/mortar	-	-	N	N	Y
66	E	219	452	Soil	4	4	Bone	N	Y
67	E	228	371	Oxidised soil	-	-	N	N	N
68	E	231	552	Soil	4	4	Bone	N	Y
69	E		377	Lime/mortar	-	-	N	N	N
70-71	-	-	-	CANCELLED	-	-	-	-	-
72	E	228	375	Charcoal	-	-	N	N	Y
73-76	-	-	-	CANCELLED	-	-	-	N	-
77	E		562	Lime/mortar	-	-	N	N	N
78	E	228	371	Soil	-	-	N	N	N
79	E	224	396/460	Wood, preserved in lime	-	-	N	N	N
80	E	207	353	Lime/mortar	-	-	N	N	N

Sample No	Area	Cut	Deposit	Description	Volume sieved (L)	Volume floated (L)	Finds	Stone sample	Charred plant remains
81-89	-	-	-	CANCELLED	-	-	-	-	-
90	E	228	389	Lime/mortar	-	-	N	N	N
91	-	-	-	CANCELLED	-	-	-	-	-
92	E	228	375	Snail shells	-	-	N	N	N
93	-	-	-	CANCELLED	-	-	-	-	-
94	D	201	278	Charcoal	-	-	N	N	Y
95-107	-	-	-	CANCELLED	-	-	-	-	-
108	E	228	391	Lime/mortar			N	N	N
109	E	228	390	Soil	4	4	N	N	Y
110-115	-	-	-	CANCELLED	-	-	-	-	-
116	E	215	388	Charcoal	-	-	N	N	Y
117	-	-	-	CANCELLED	-	-	-	-	-
118	E		377	Lime/mortar	-	-	N	N	N
119	E	228	371	Mortar with glass embedded	-	-	N	N	N
120	E	224	396/460	Preserved leaf	-	-	N	N	Y-preserved leaf
121	-	-	-	CANCELLED	-	-	-	-	-
122	E	218	451	Charcoal	-	-	-	N	Y
123	-	-	-	CANCELLED	-	-	-	-	-
124	F	205	351	Charcoal	-	-	N	N	Y
125	E		562	Charcoal	-	-	N	N	Y
126	E	216	380	Charcoal	-	-	N	N	Y



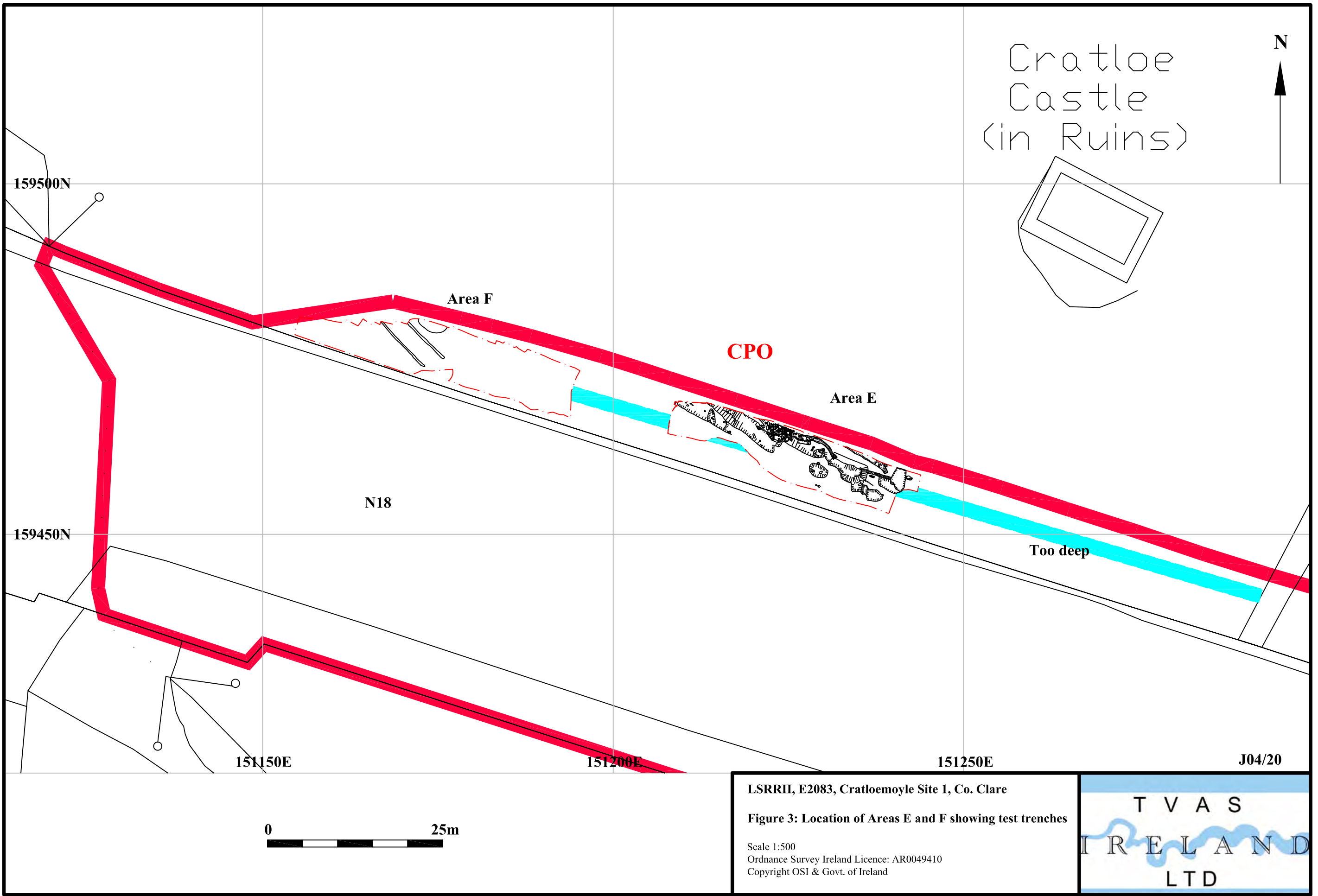


LSRRII, E2083, Cratloemoyle Site 1, Co. Limerick

Figure 2: Location of Areas A-D showing test trenches

Scale 1:500
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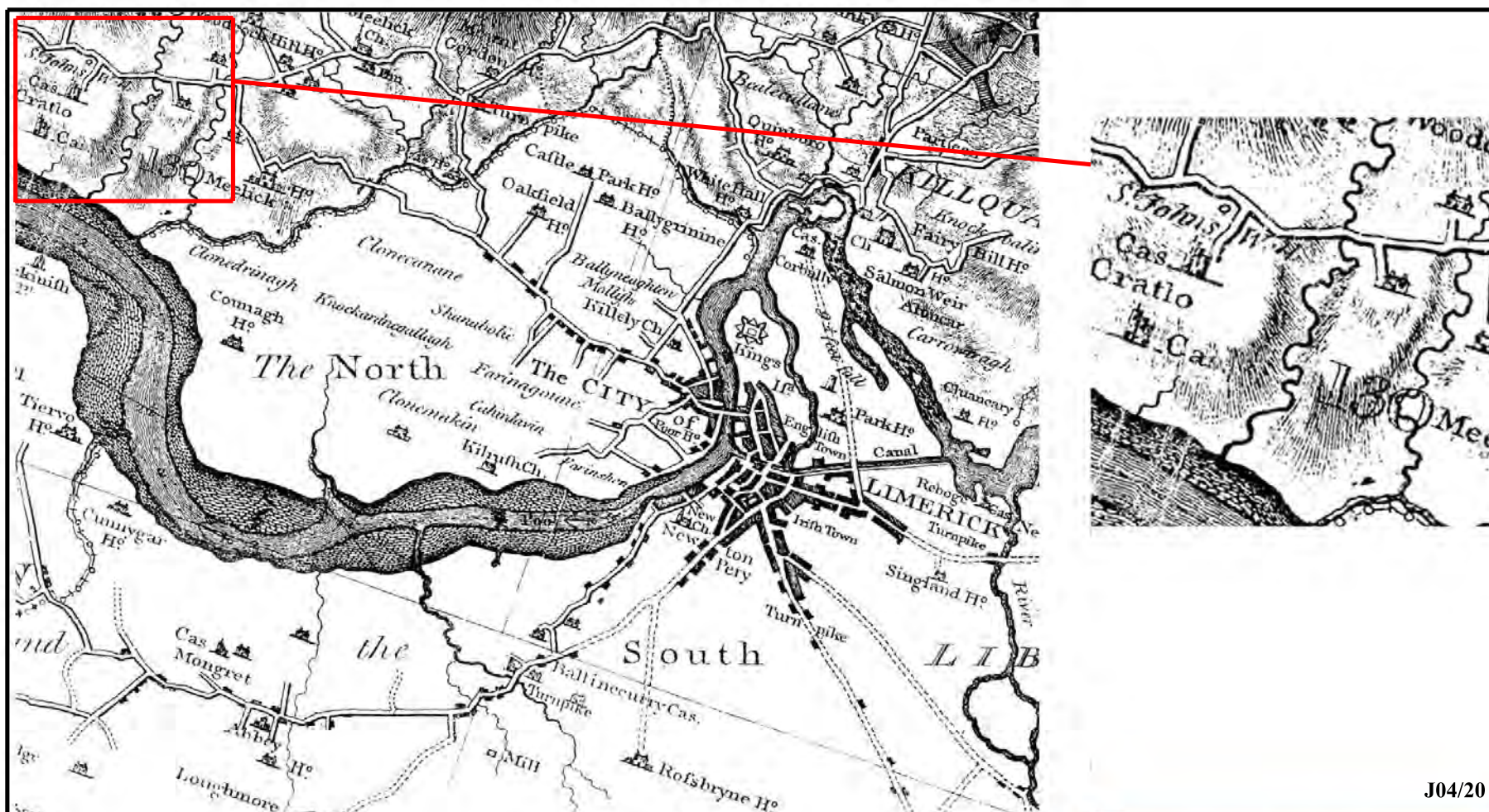


LSRRIL, E2083, Cratloemoyle Site 1, Co. Clare

Figure 3: Location of Areas E and F showing test trenches

Scale 1:500
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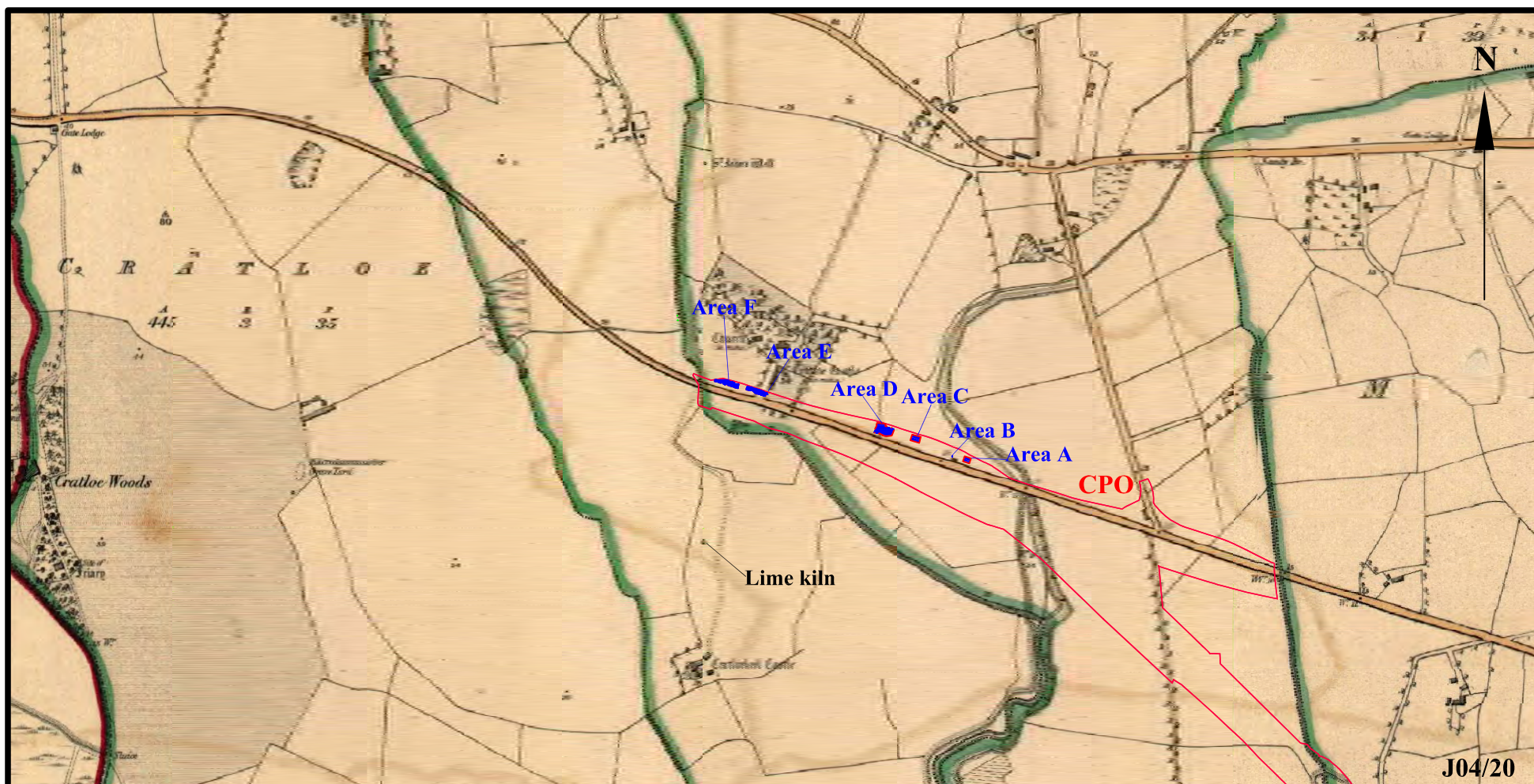
J04/20

LSRR11, E2083, Cratloeemoye Site 1, Co. Clare

Figure 4: Henry Pelham Map

1787, Henry Pelham, Grand Jury Map of County Clare [part]

T V A S
I R E L A N D
L T D



0 5m

LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

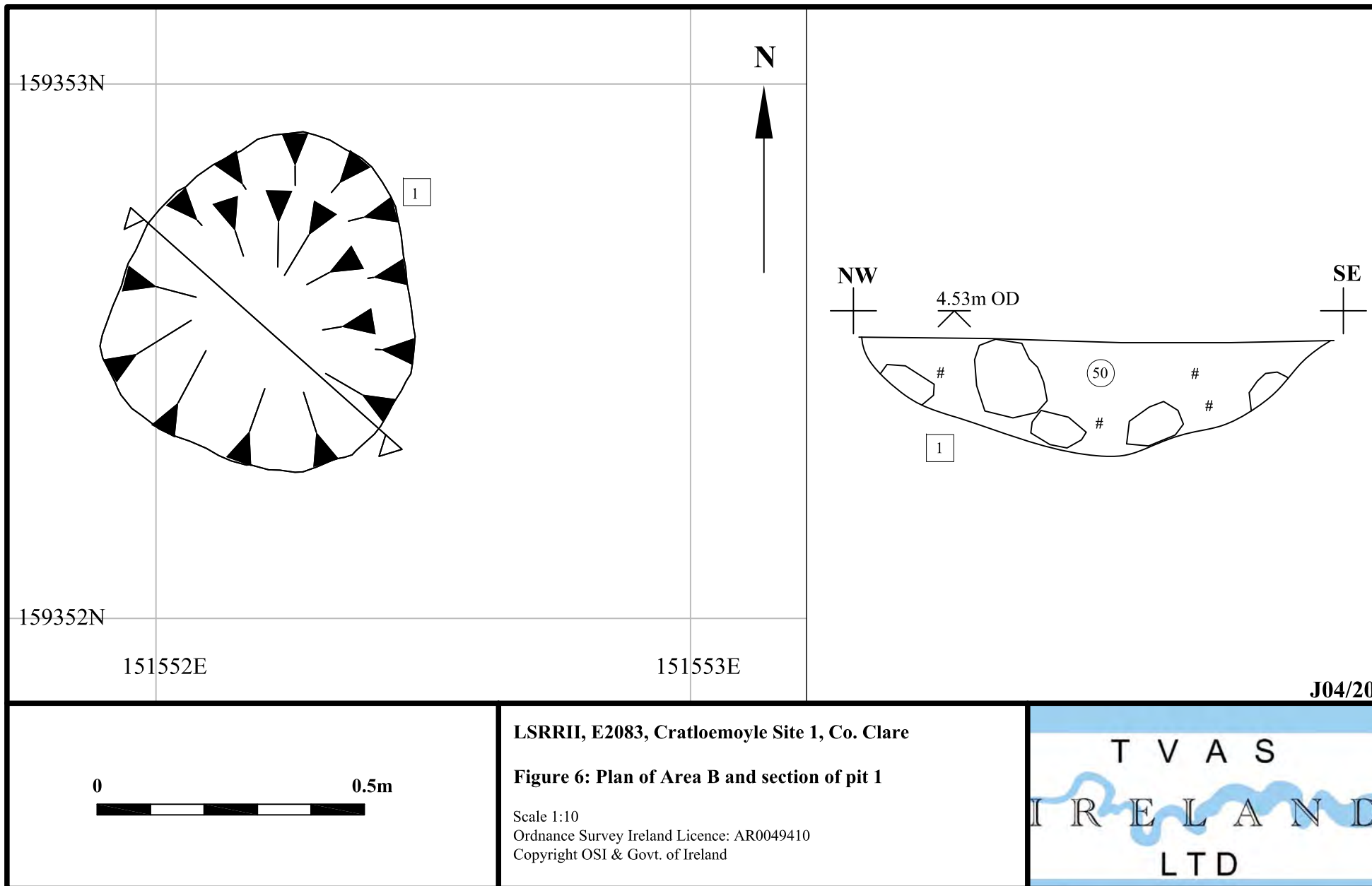
Figure 5: Site on 1st Edition Map (Surveyed 1840)

Scale 1: 100

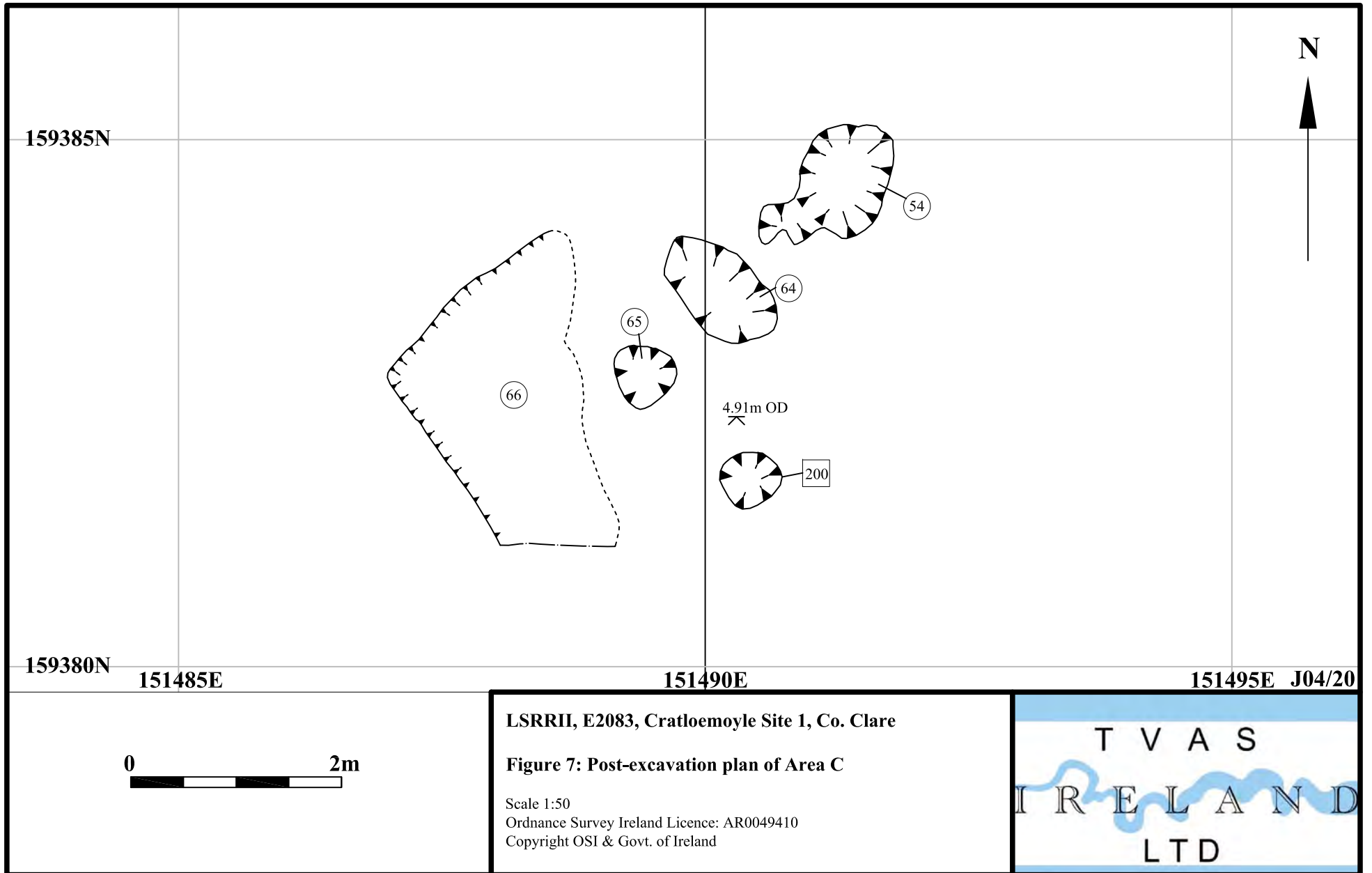
Ordnance Survey Ireland Licence: AR0049410

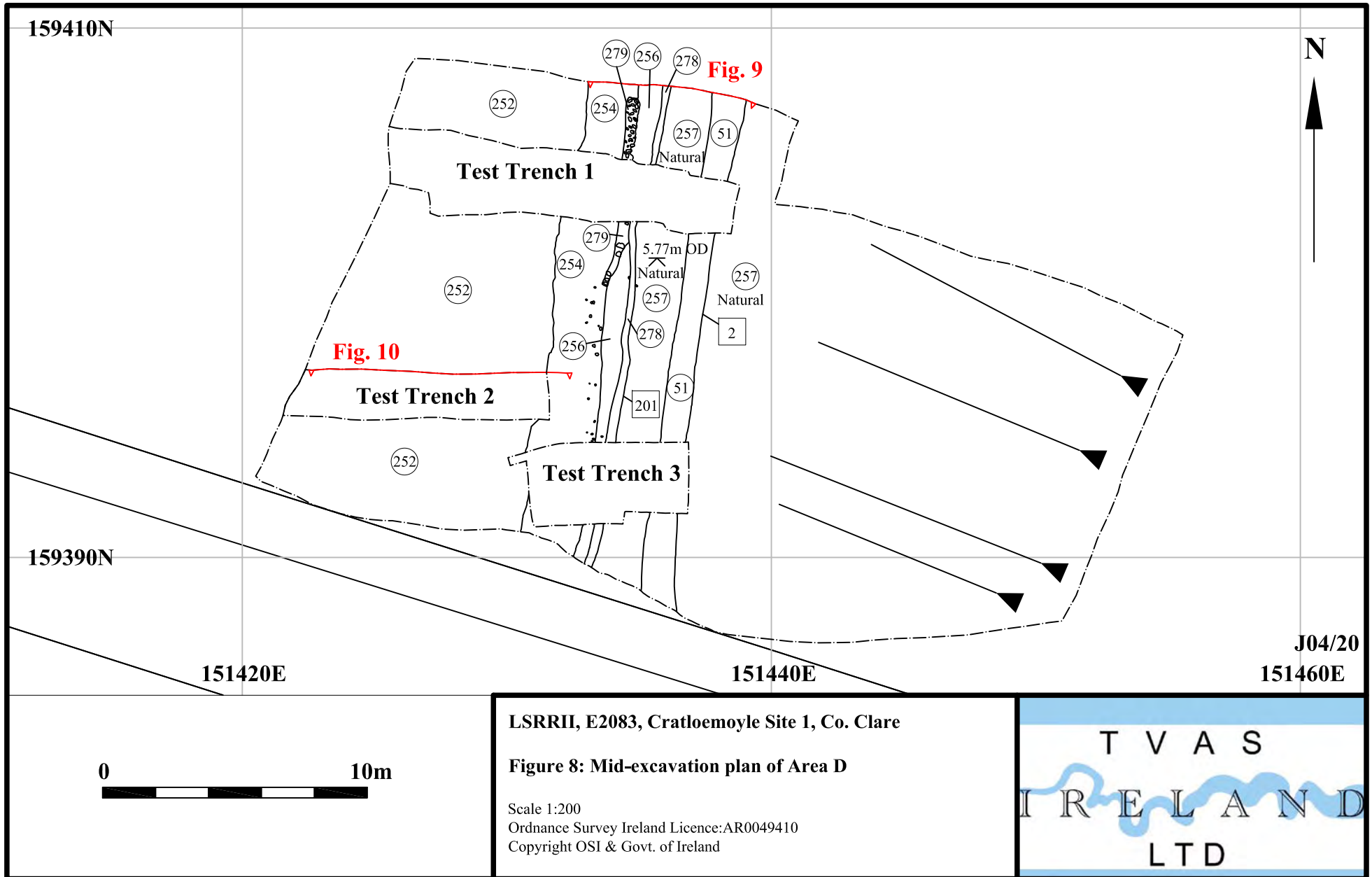
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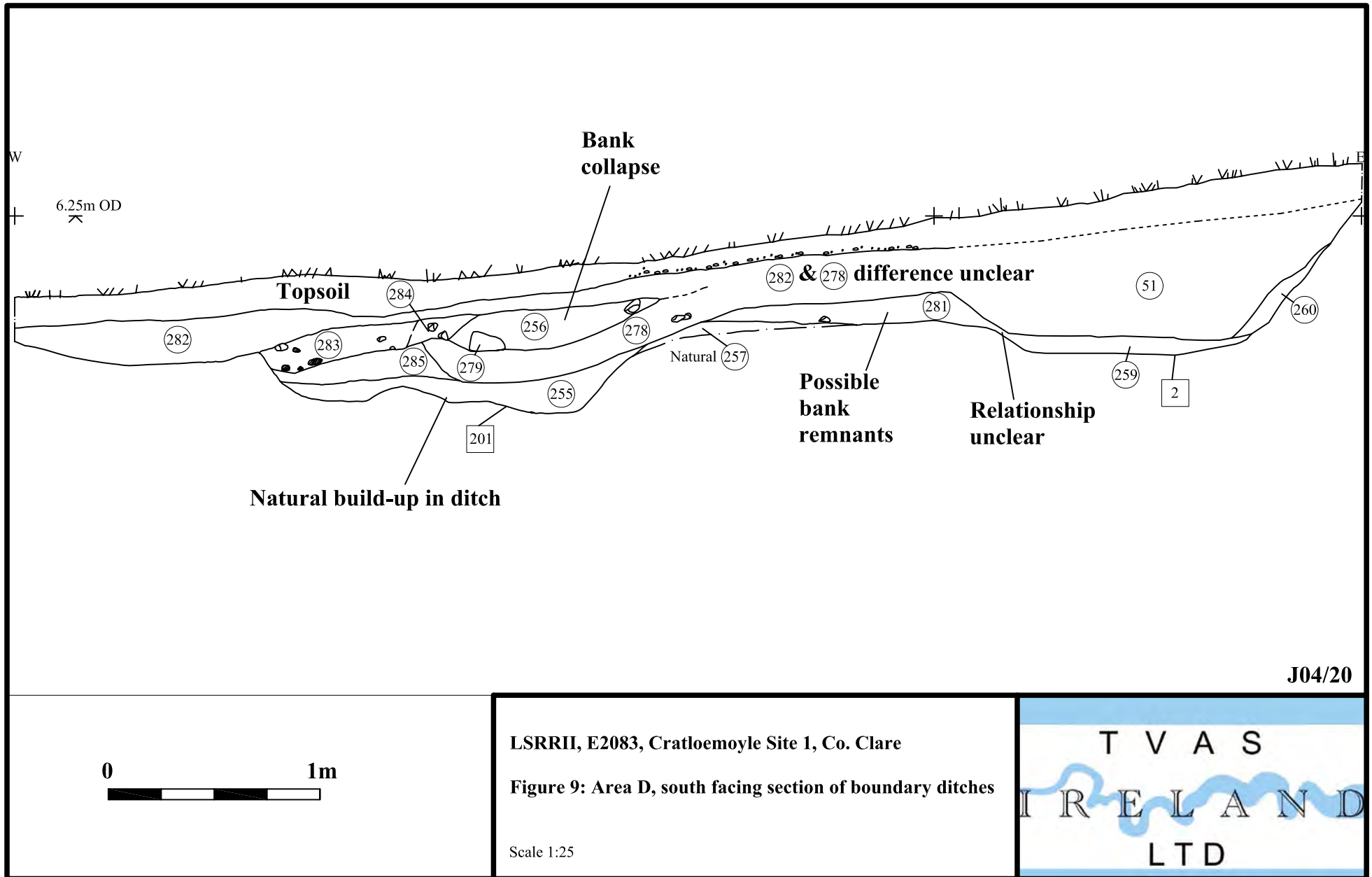
T V A S
I R E L A N D
L T D

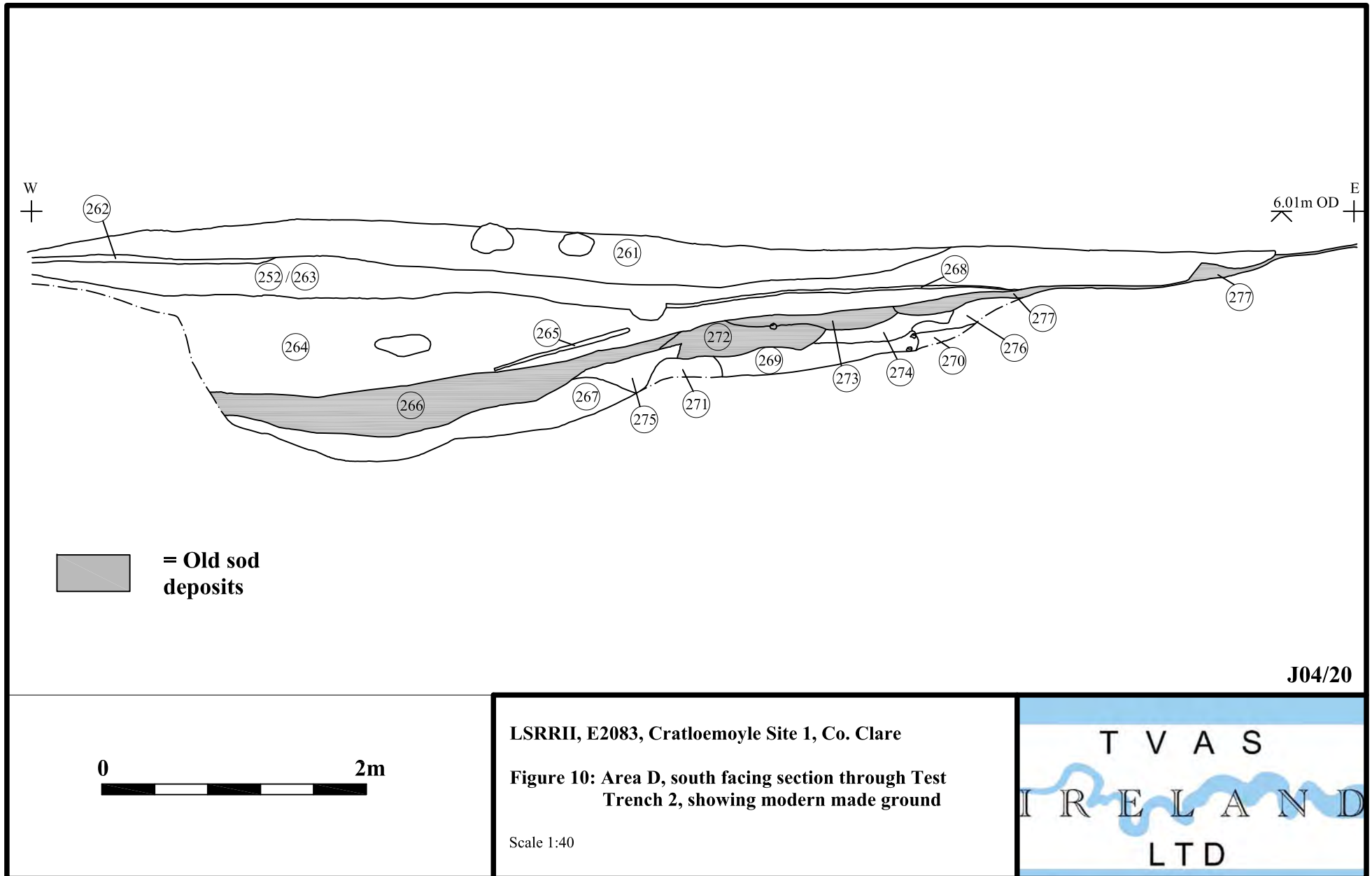


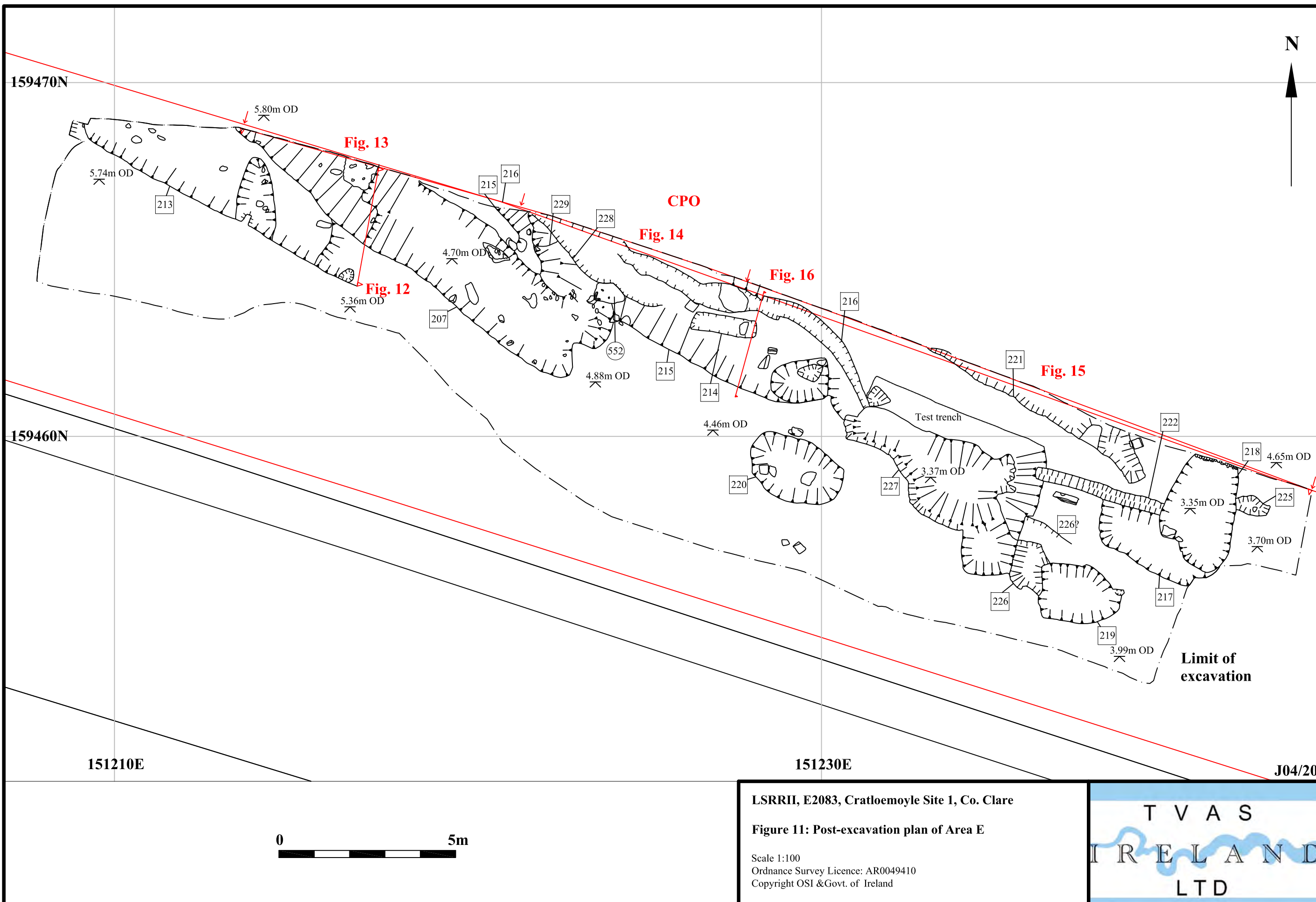
J04/20

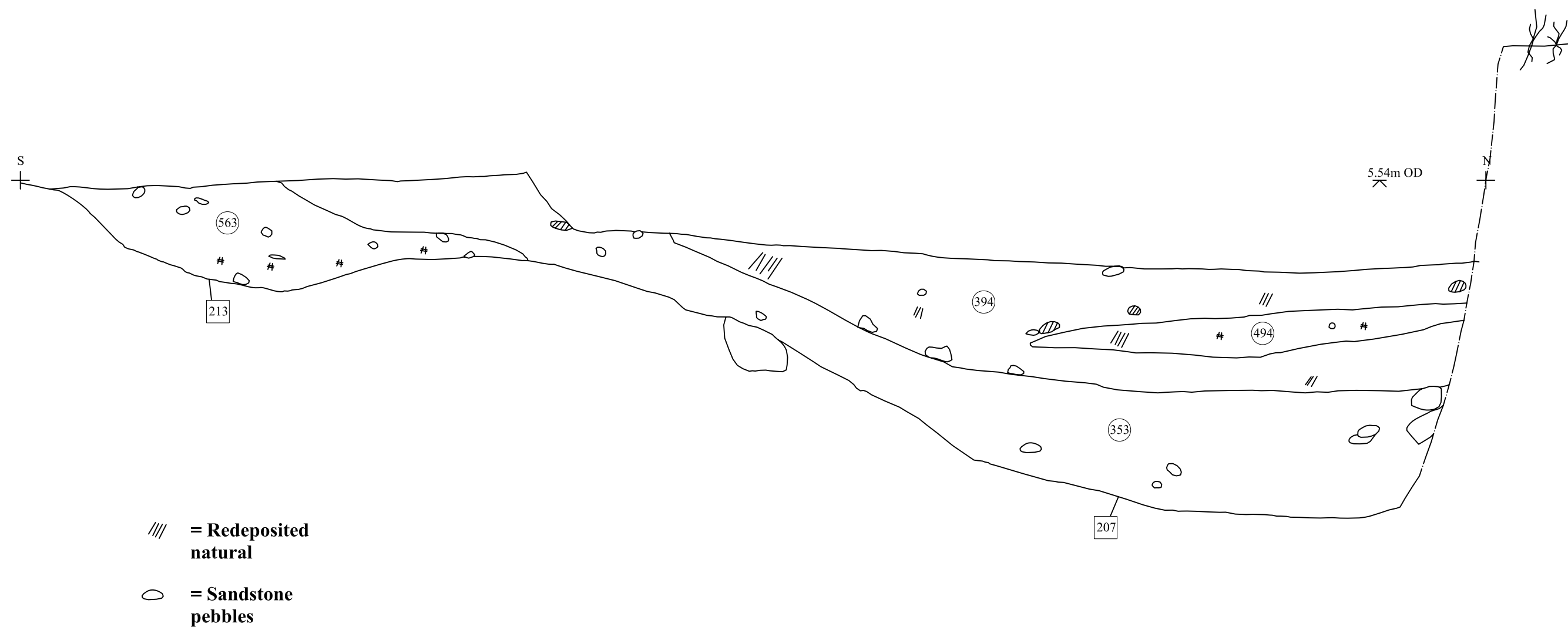












0 0.5m

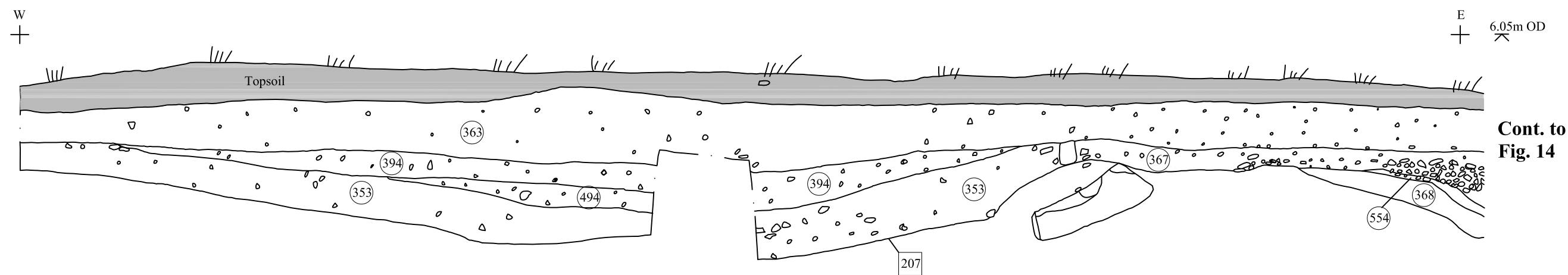
LSRRII, E2083, Cratloemoye Site 1, Co. Clare

Figure 12: Area E, east facing section through 213 and 207

Scale 1:10

J04/20

T V A S
I R E L A N D
L T D



0 1m

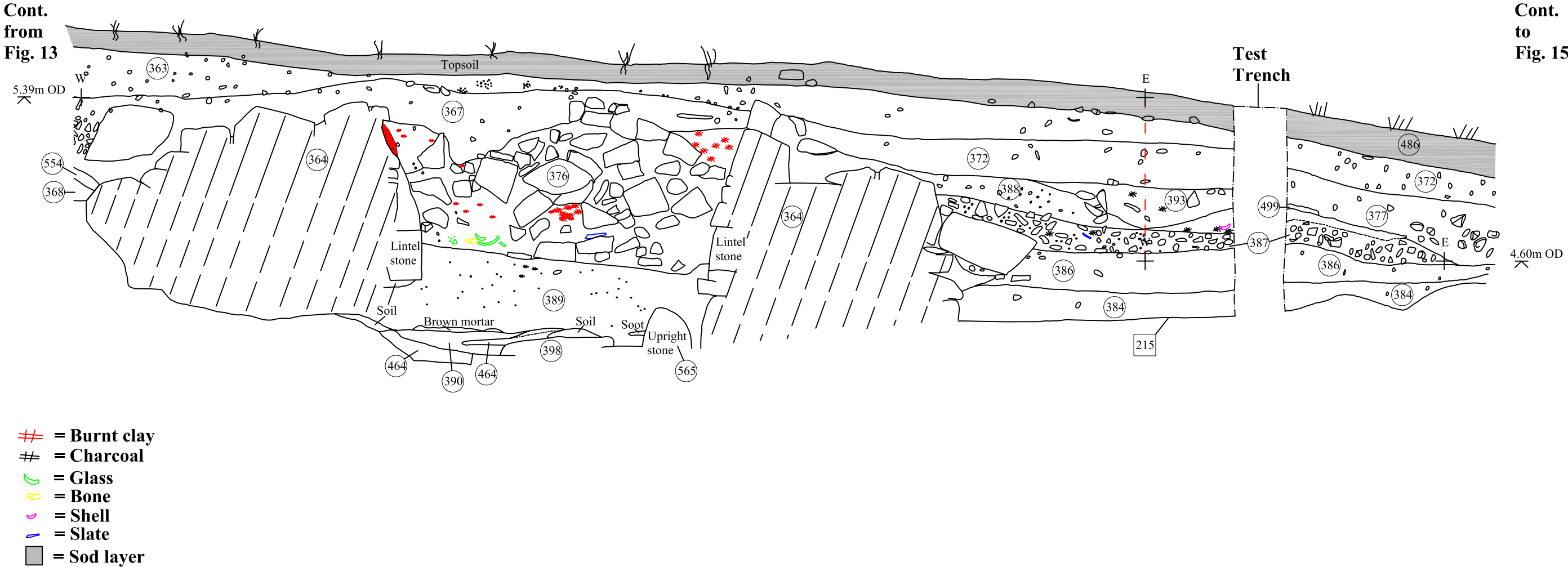
LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 13: Area E, south facing section of baulk, west of kiln

Scale 1:25

T V A S
I R E L A N D
L T D

J04/20



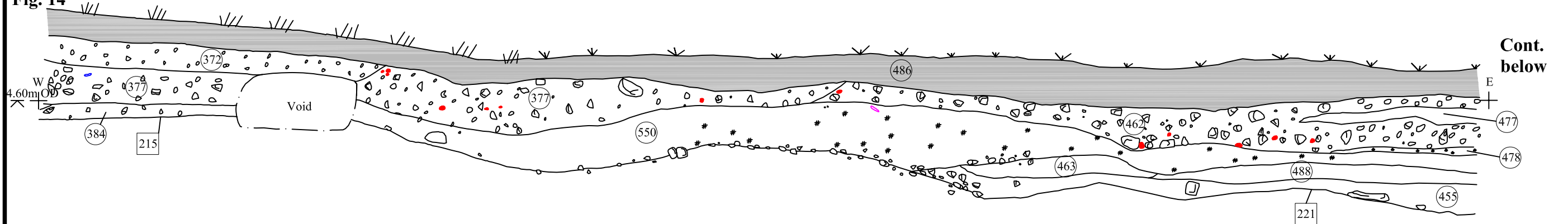
LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 14: Area E, south facing section of baulk, kiln

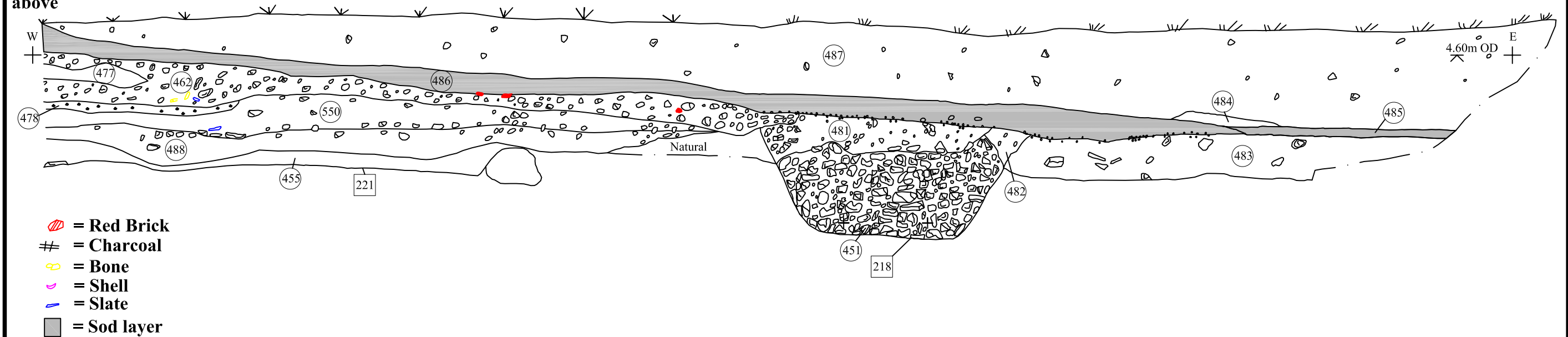
Scale 1:20






Cont.
from
Fig. 14



Cont.
from
above



-  = Red Brick
-  = Charcoal
-  = Bone
-  = Shell
-  = Slate
-  = Sod layer

0 1m

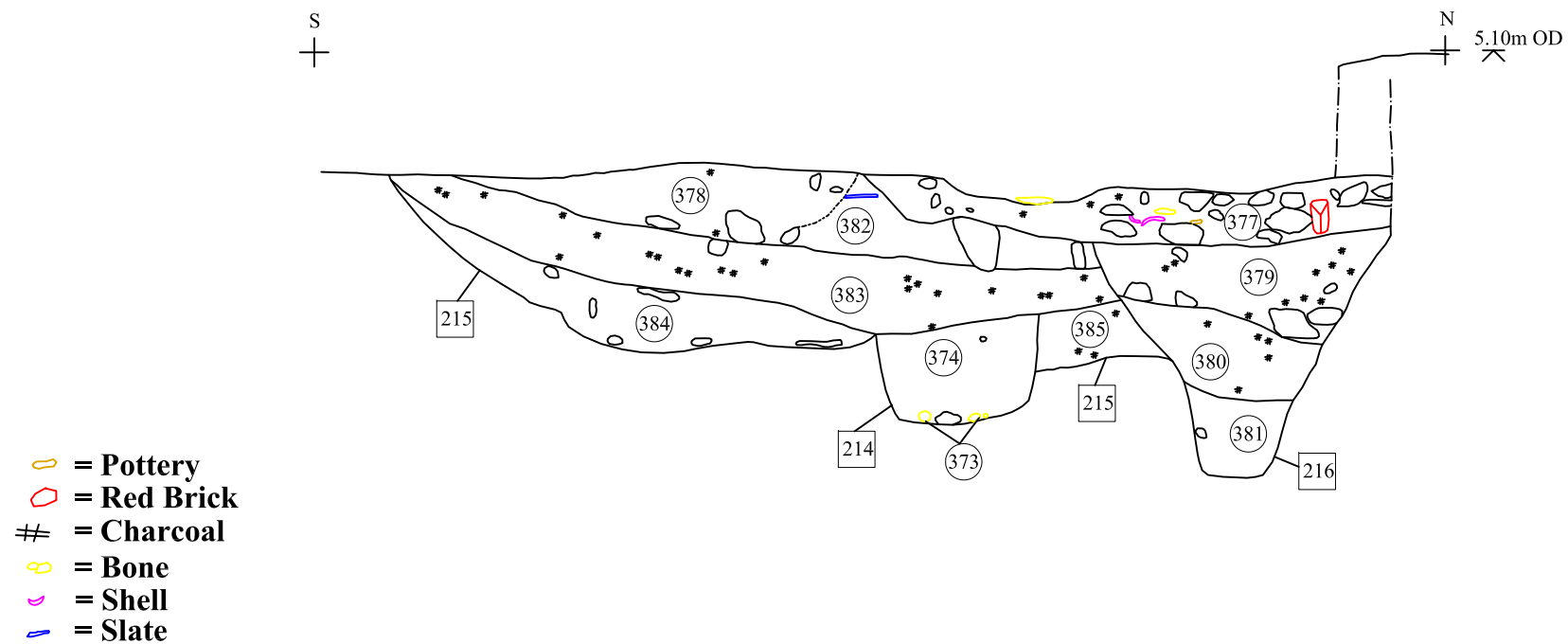
LSRRH, E2083, Cratloemoyle Site 1, Co. Clare

Figure 15: Area E, south facing section of baulk, east of kiln

Scale 1:25

J04/20

T V A S
I R E L A N D
L T D



J04/20

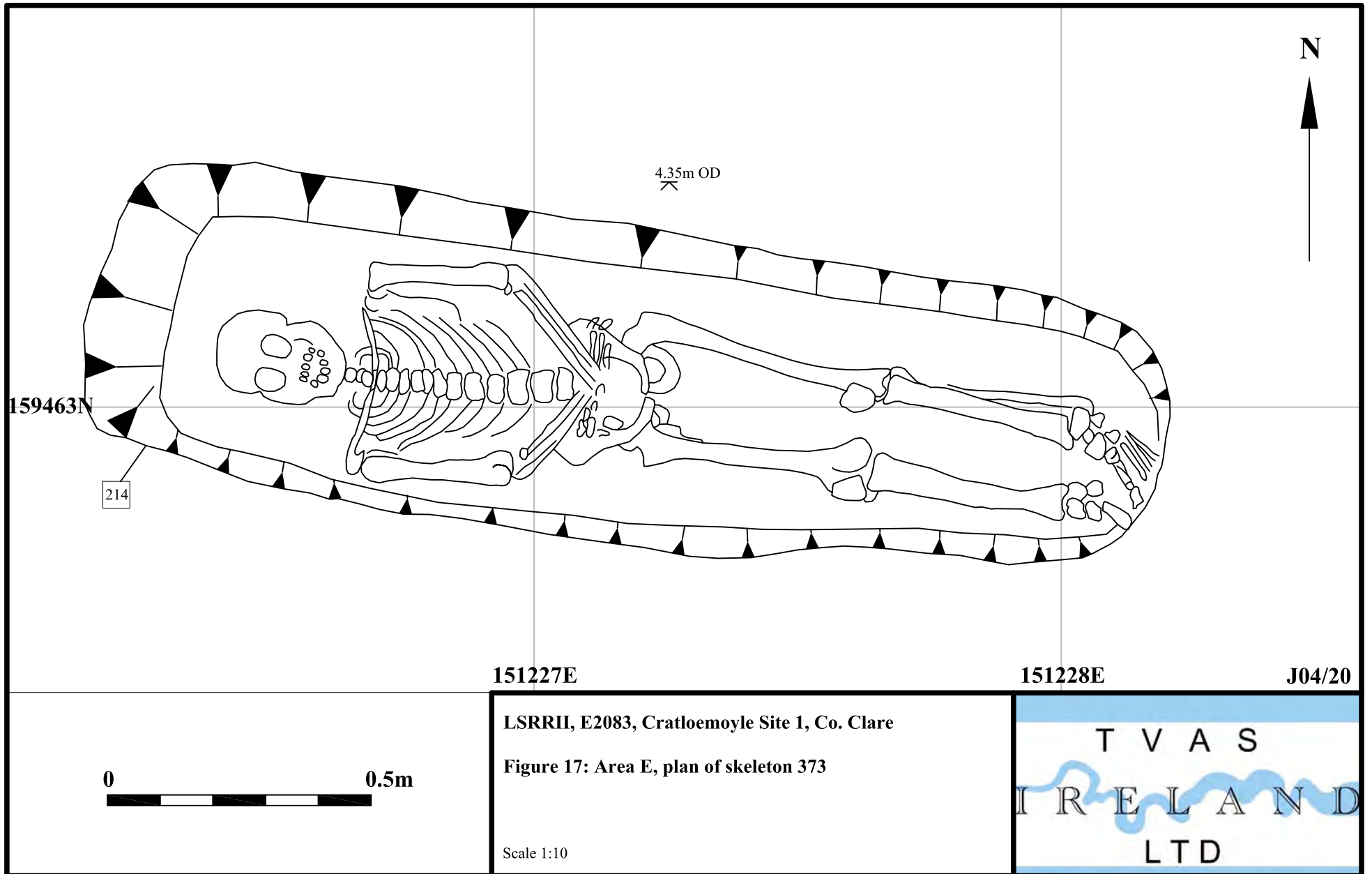
0 1m

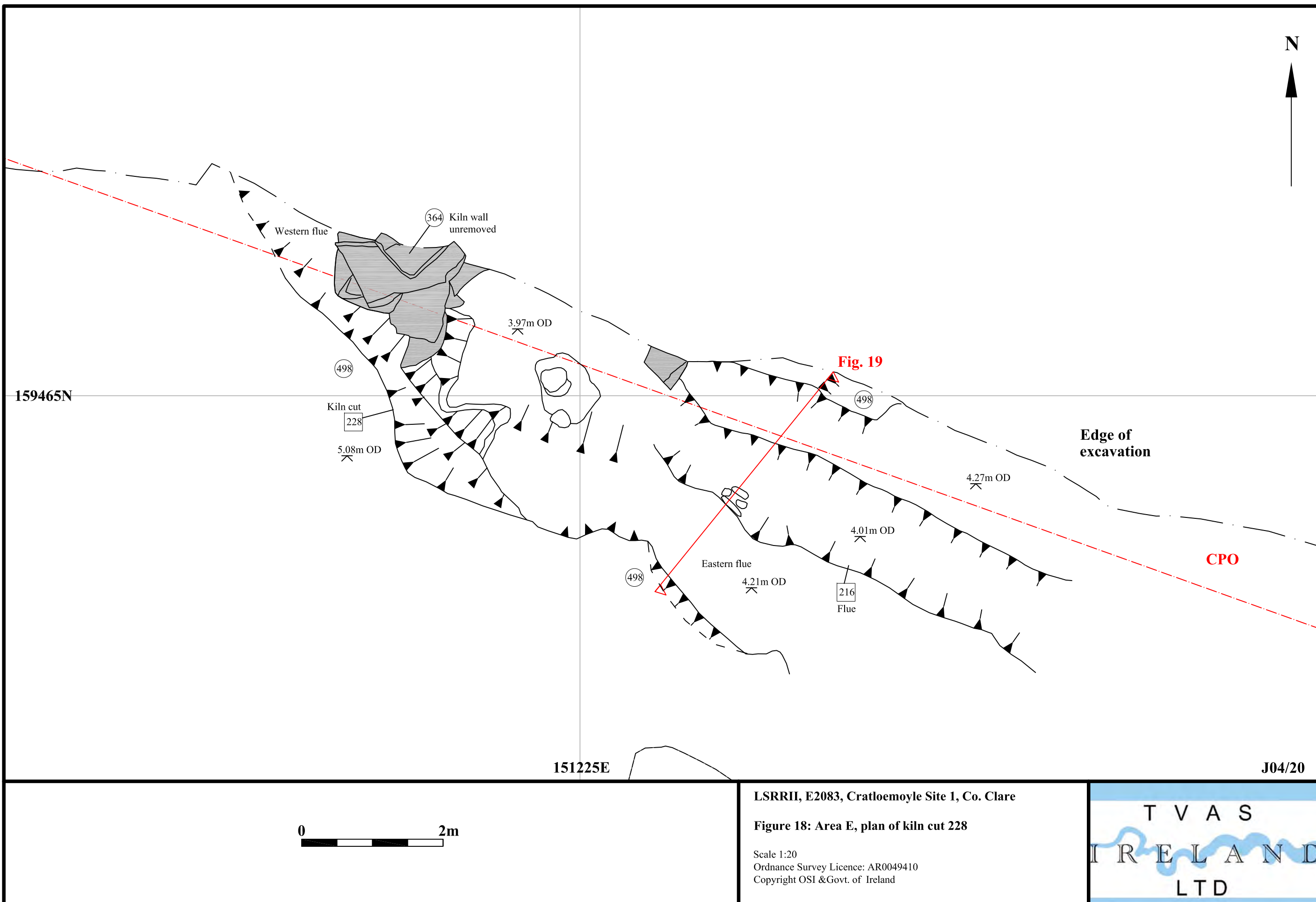
LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

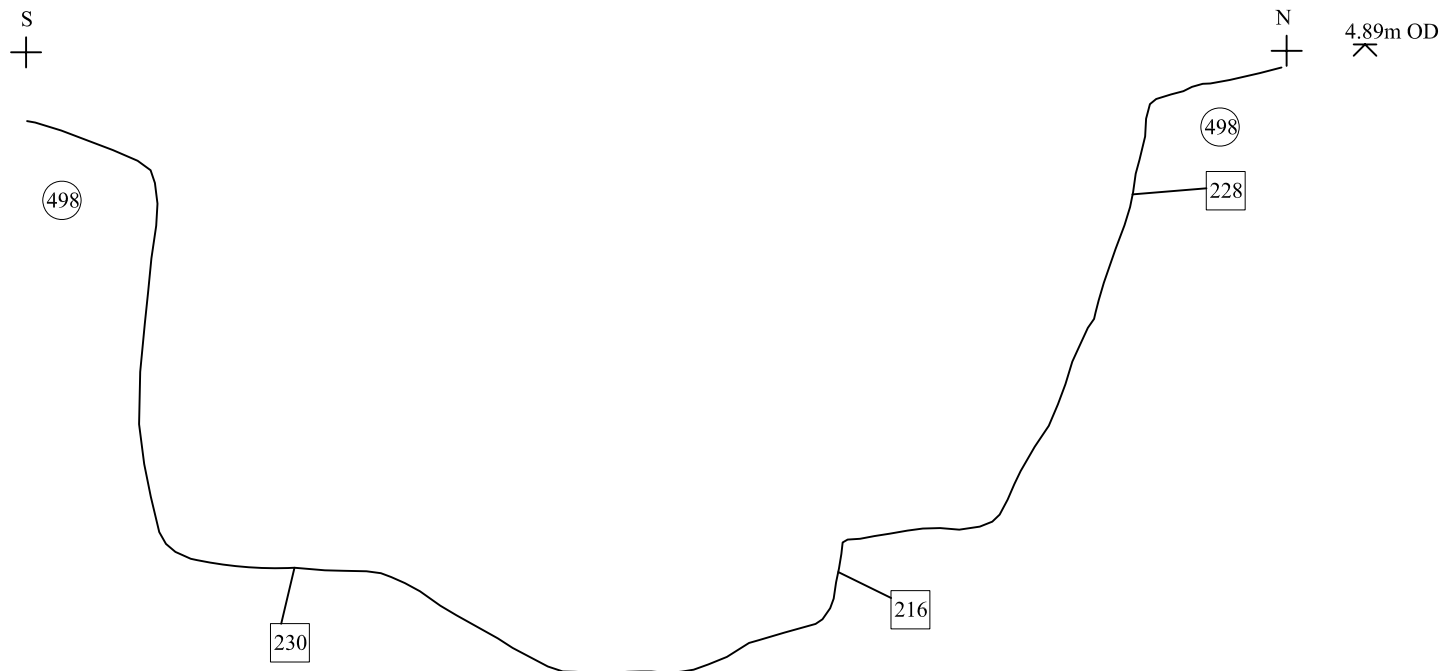
Figure 16: Area E, east facing section through 214, 215 & 216

Scale 1:20

T V A S
I R E L A N D
L T D







J04/20

0 50mm

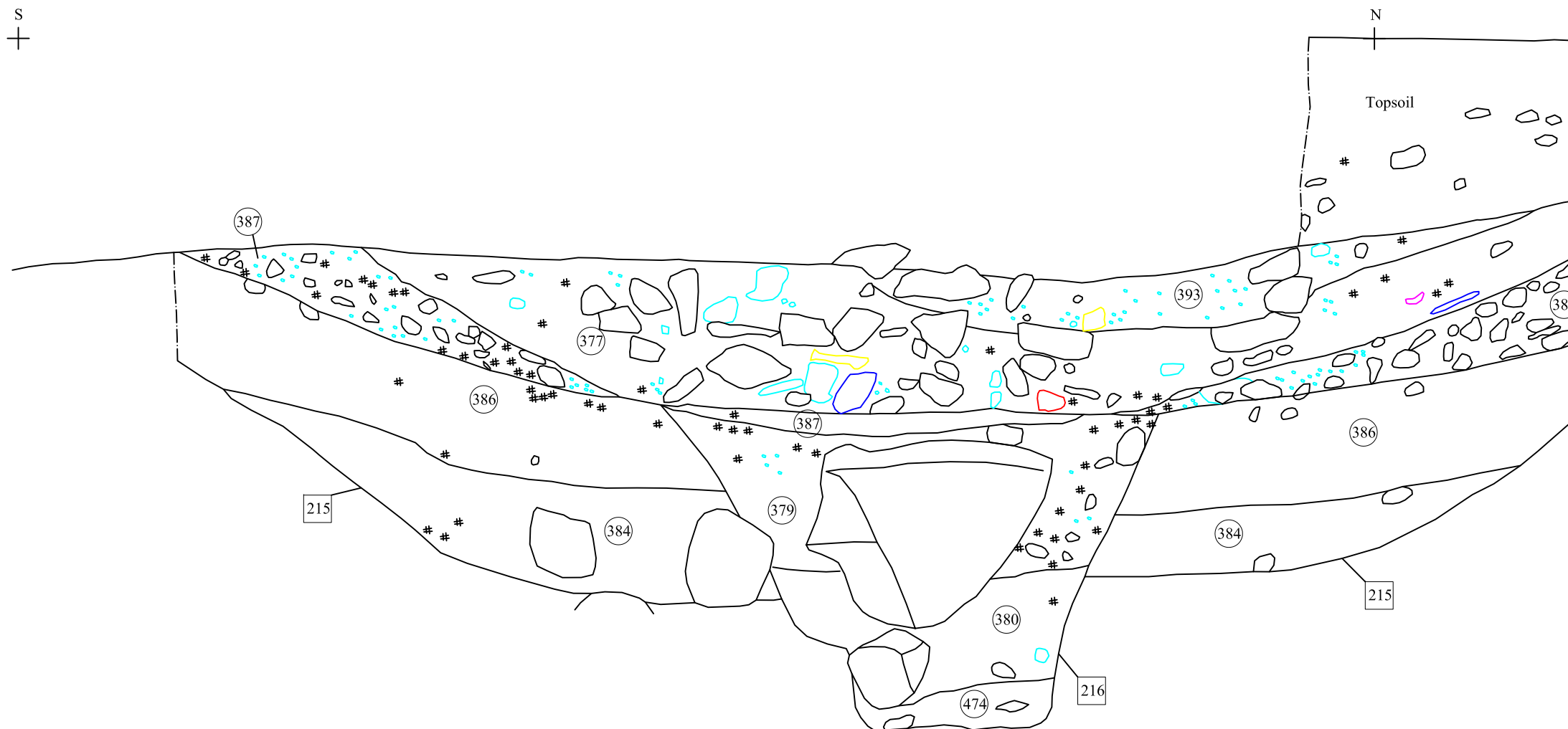
LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 19: Area E, profile of kiln cut 228 & linear cut 216

Scale 1:10

T V A S
I R E L A N D
L T D

5.36m OD
+
S



- = Mortar
- = Red Brick
- = Charcoal
- = Bone
- = Shell
- = Slate

0 0.5m

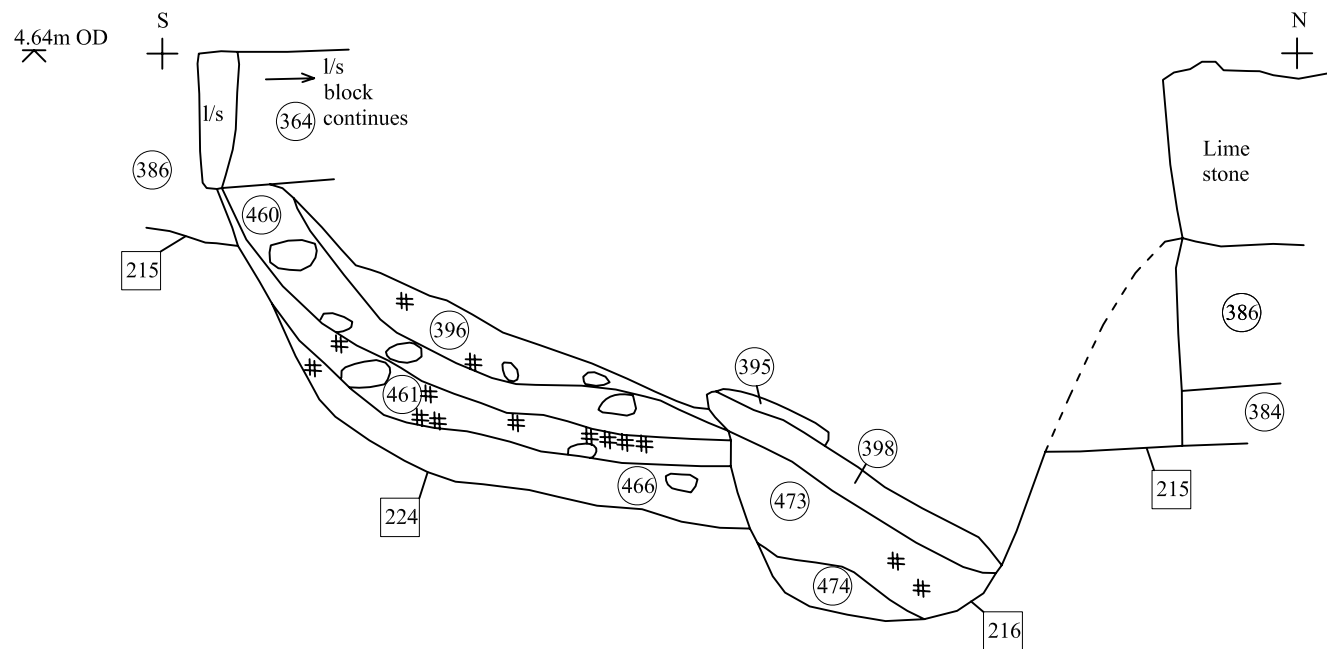
LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 20: Area E, east facing section through 215 & 216

Scale 1:10

J04/20

T V A S
I R E L A N D
L T D



= Charcoal

J04/20

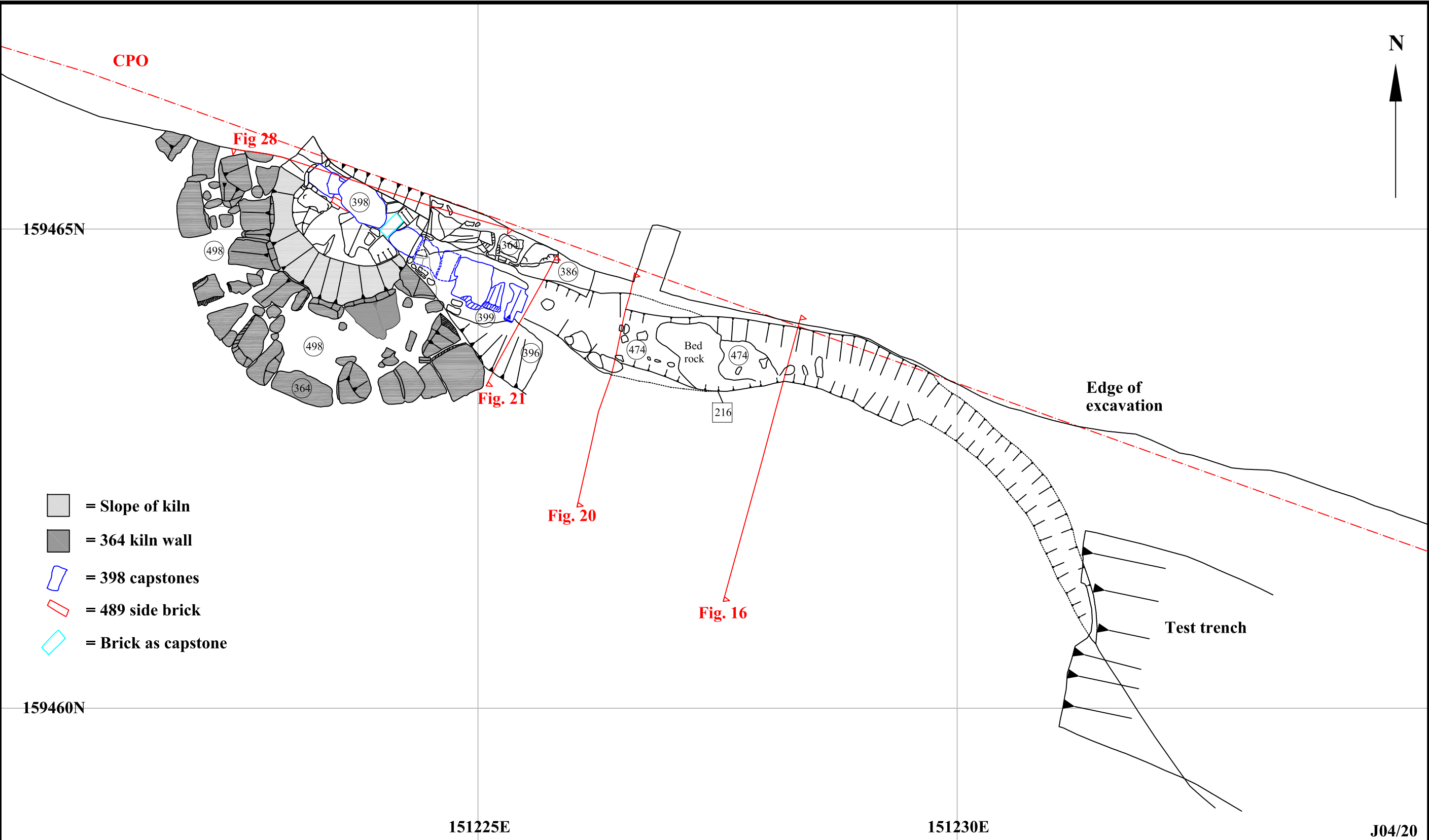
0 50mm

LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 21: Area E, east facing section through 216 & 224
in eastern flue area

Scale 1:10

T V A S
I R E L A N D
L T D



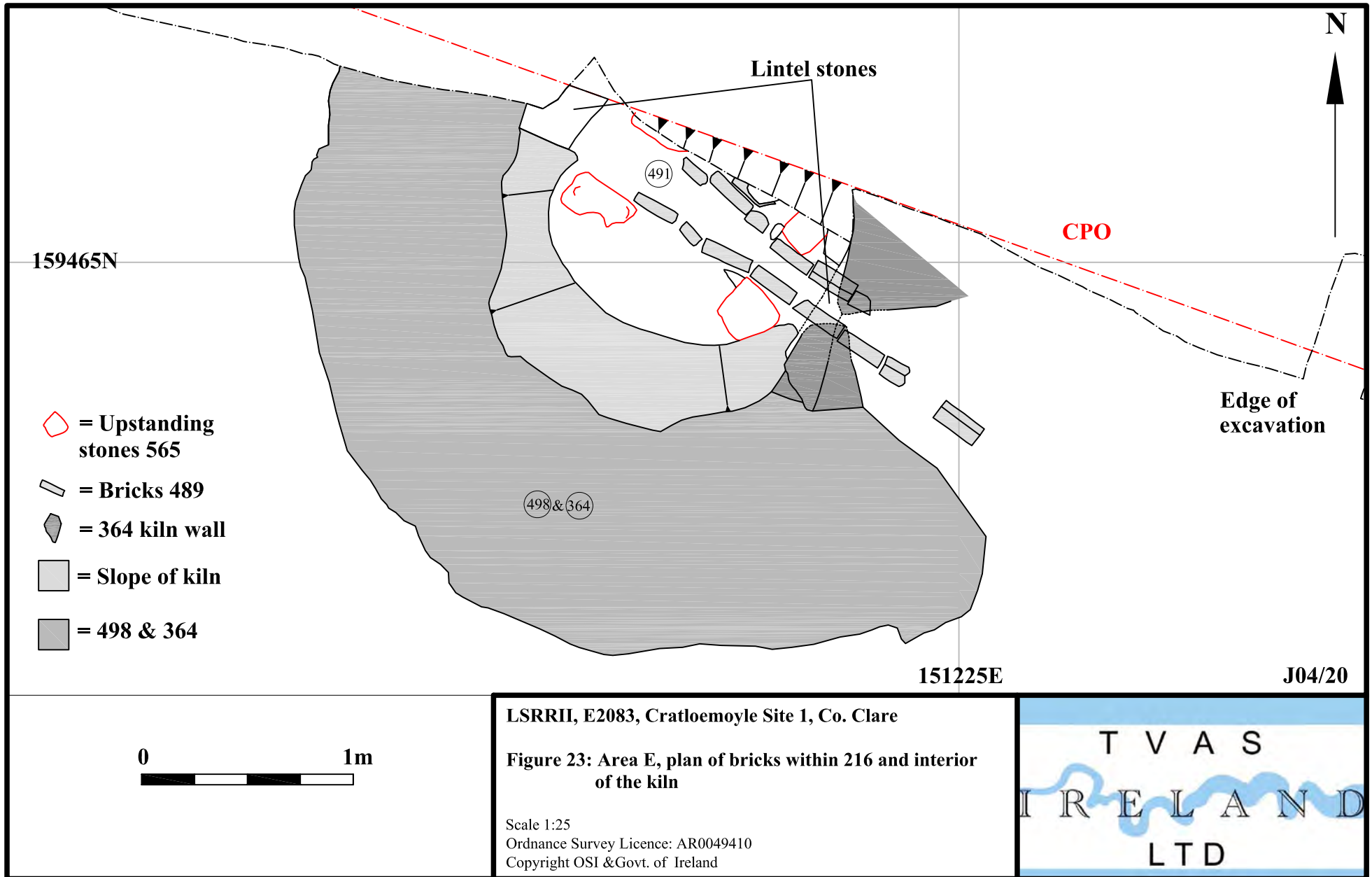
LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

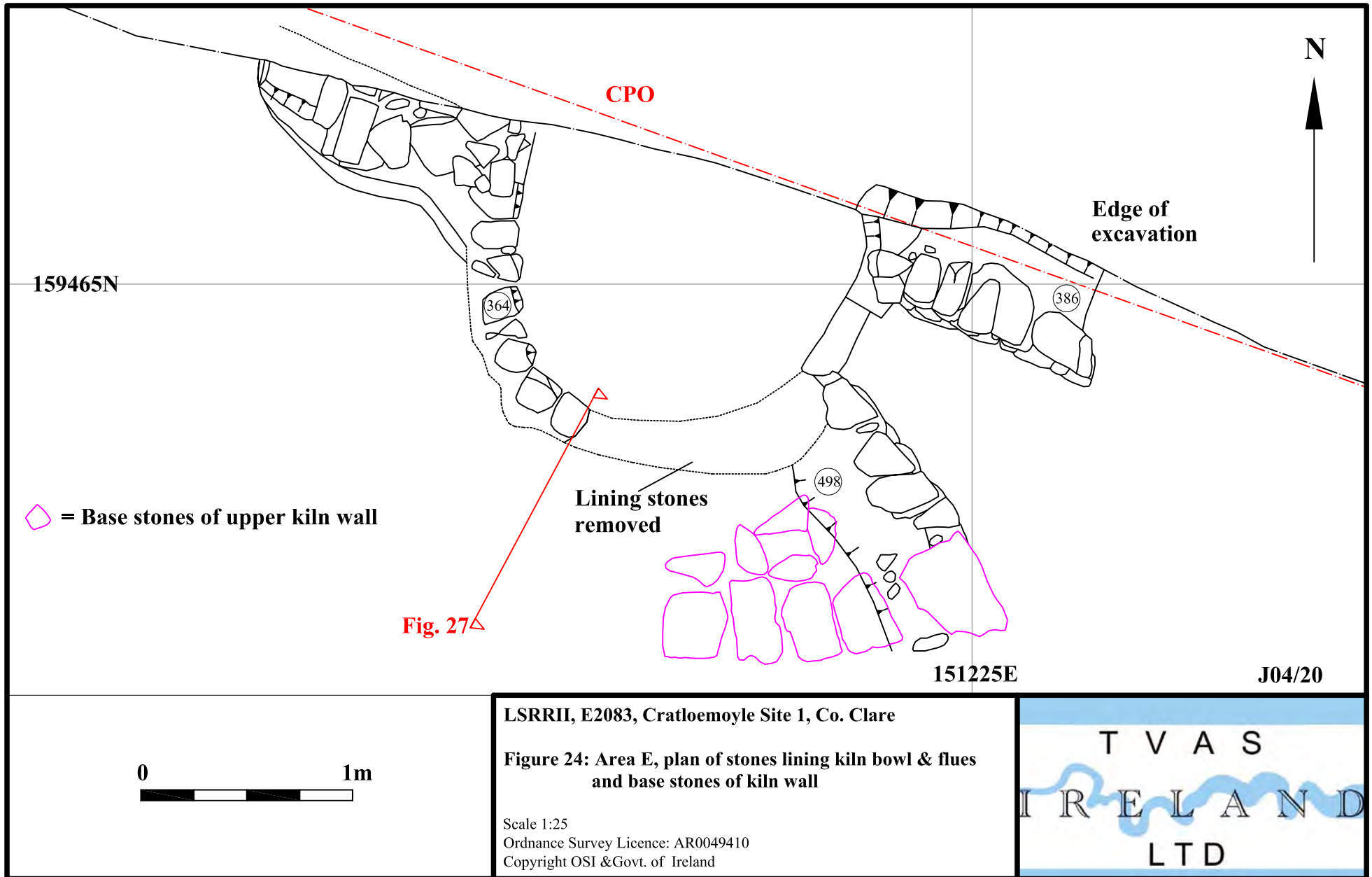
Figure 22: Area E, plan of kiln with capstones in place in cut 216

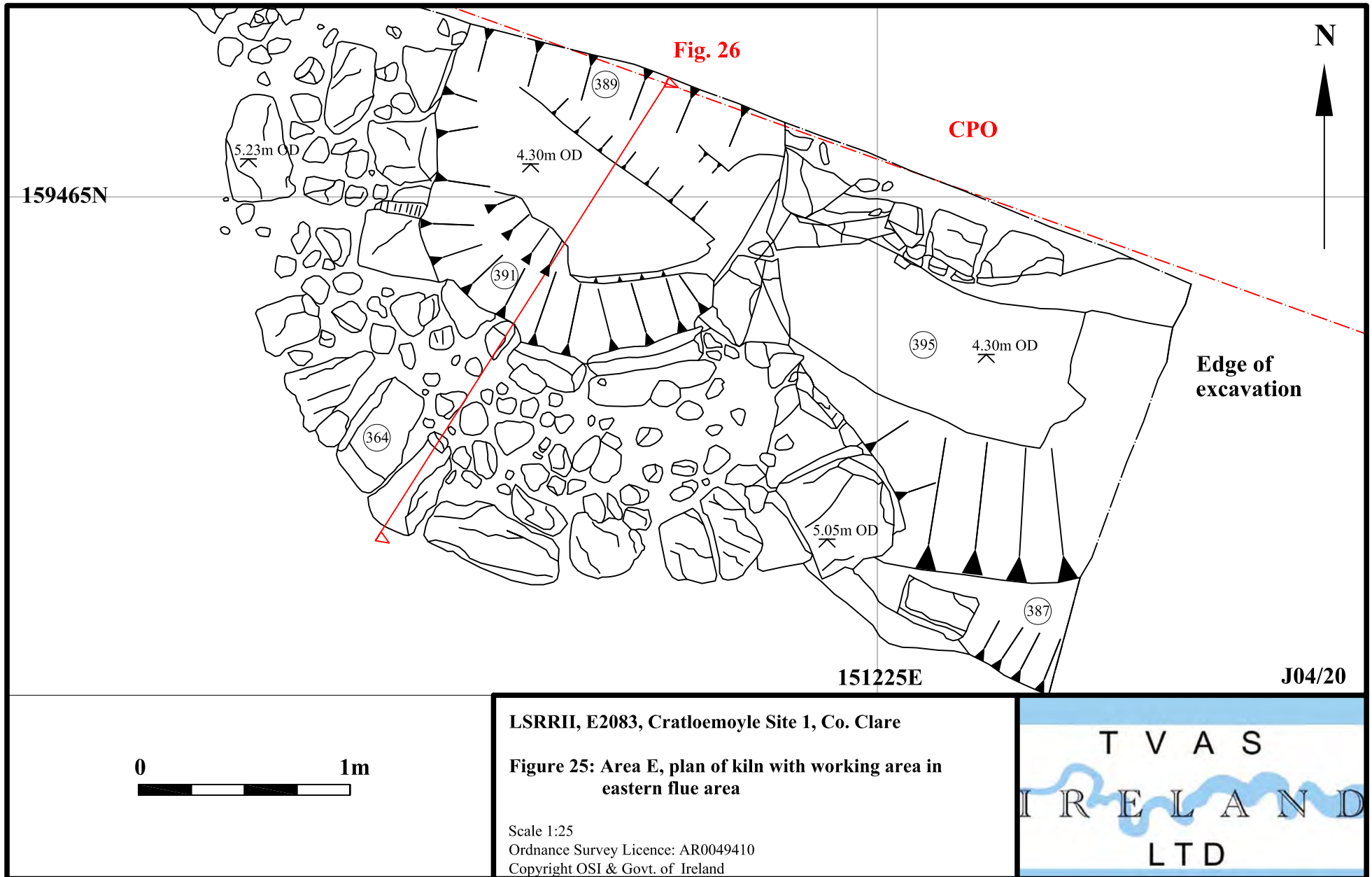
Scale 1:40
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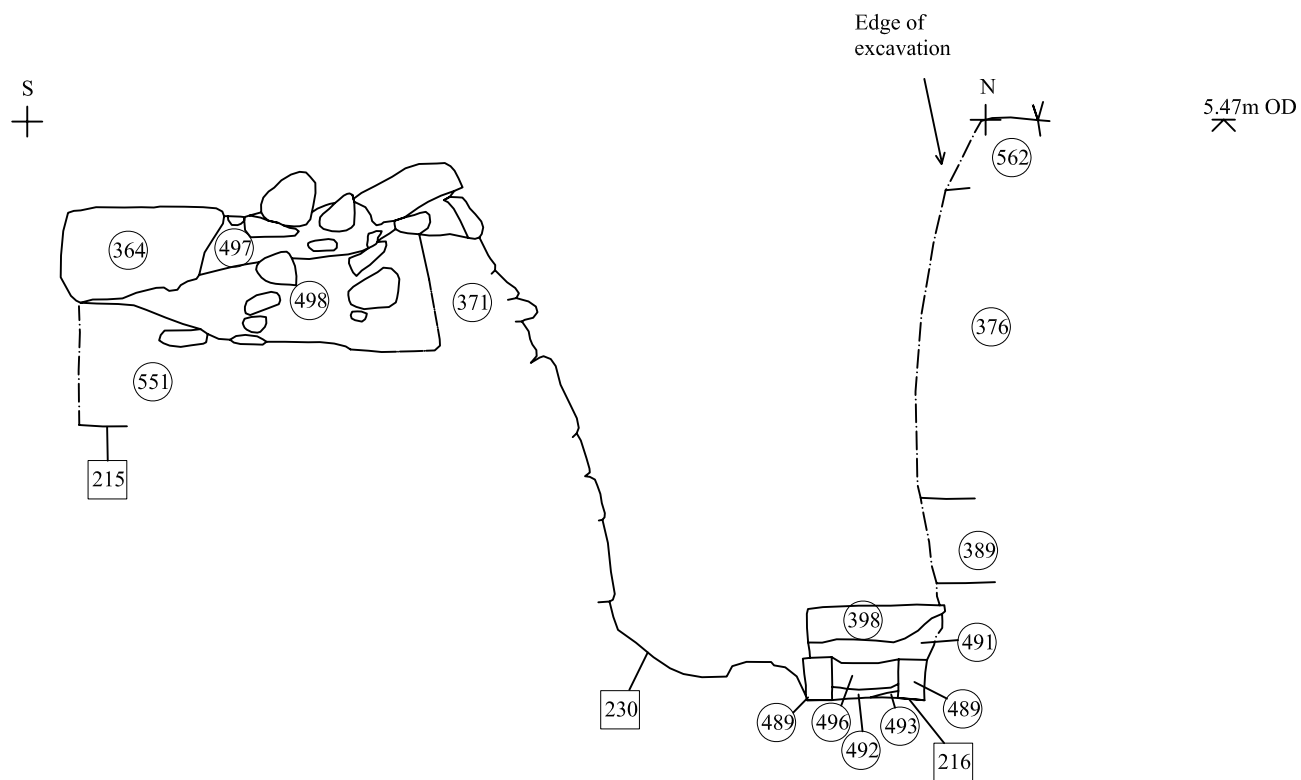


J04/20









0 1m

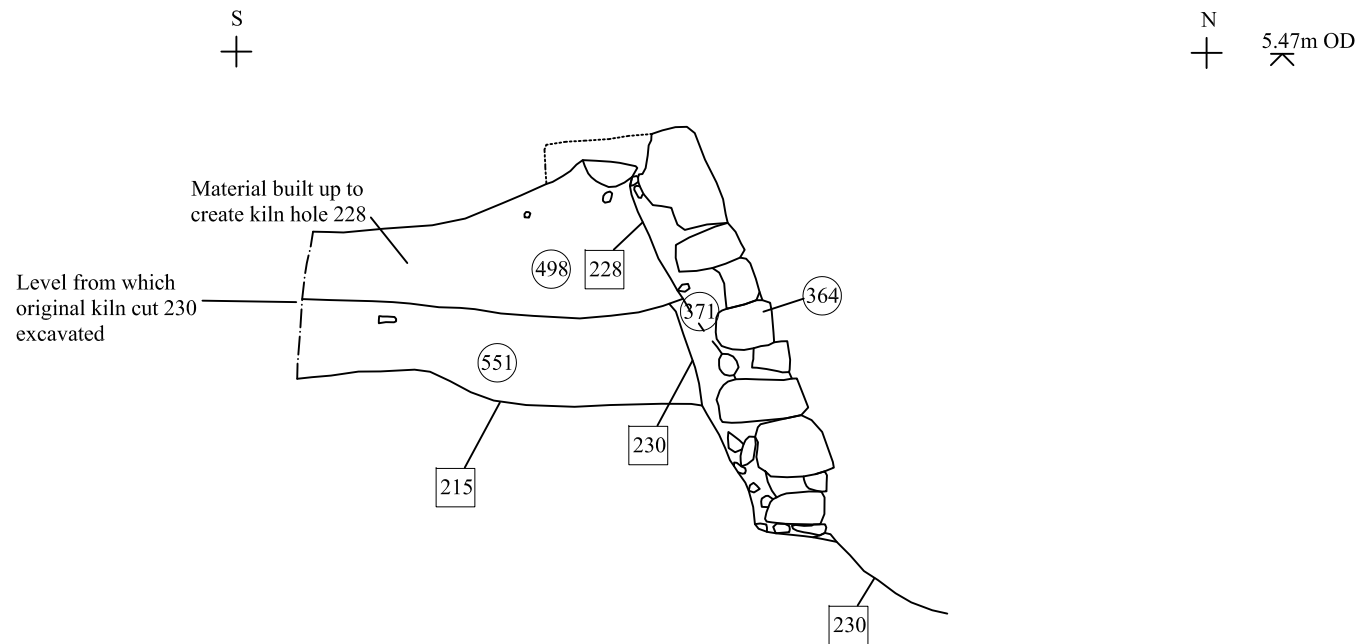
LSRRII, E2083, Cratloemoye Site 1, Co. Clare

Figure 26: Area E, east facing section through kiln

Scale 1:20

J04/20

T V A S
I R E L A N D
L T D



J04/20



LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

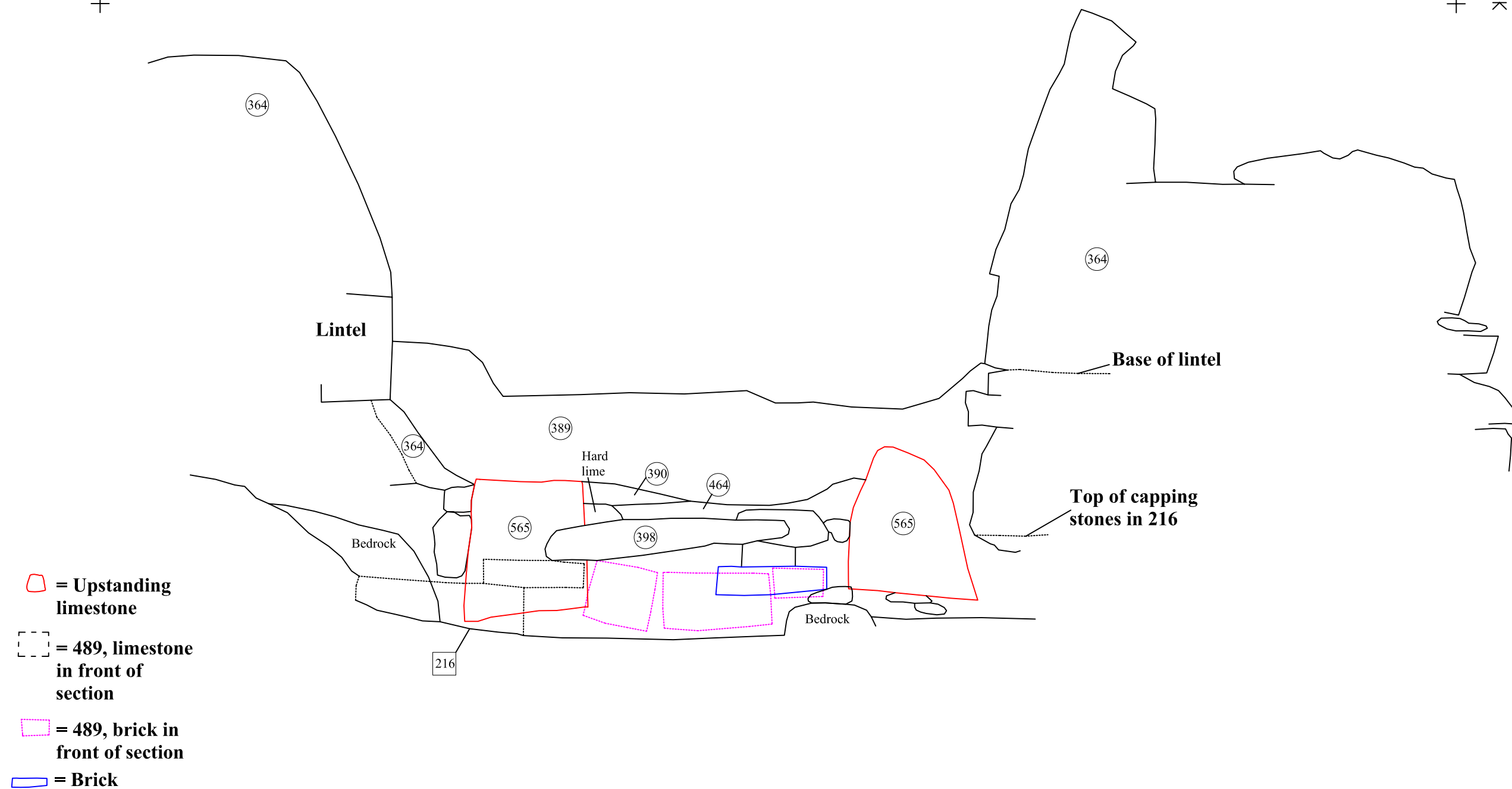
Figure 27: Area E, east facing section through kiln bowl lining and built up material

Scale 1:20



W
+

E
+ 5.39m OD
X



0 0.5m

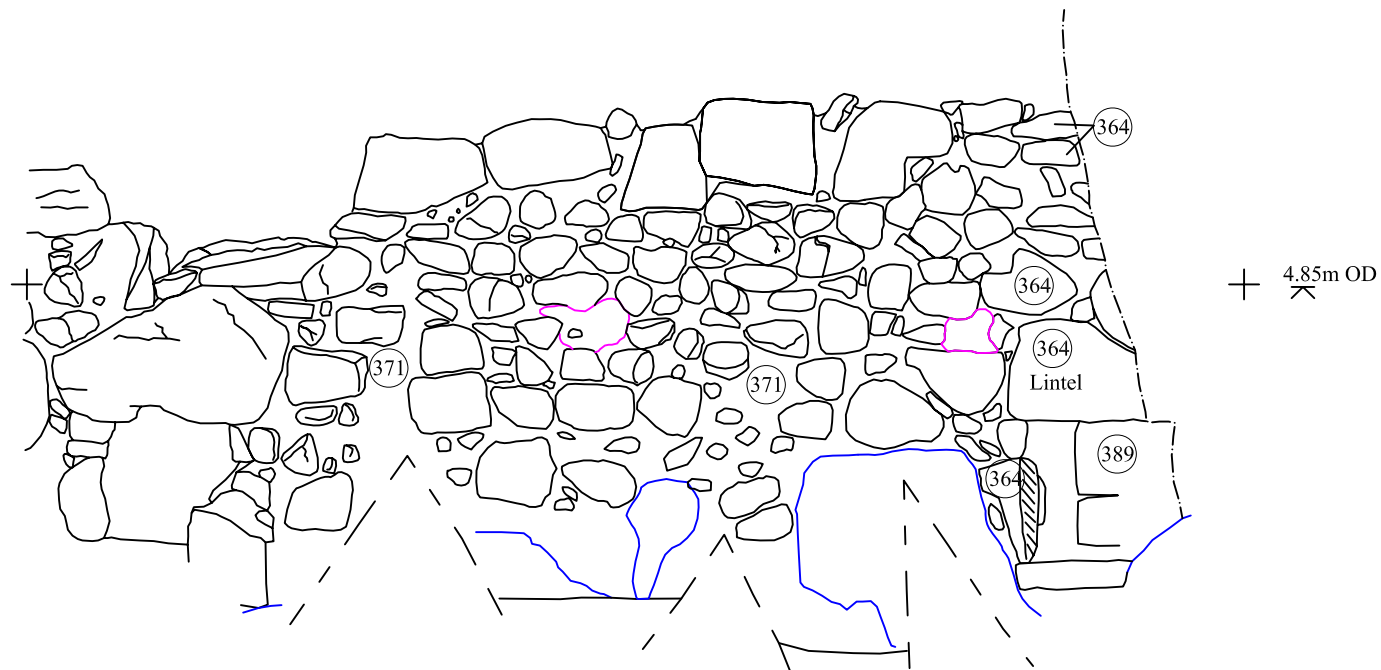
LSRR11, E2083, Cratloemoyle Site1, Co. Clare



Figure 28: Area E, south facing section through kiln after rubble 376 removed

Scale 1:10

J04/20

T V A S
I R E L A N D
L T D



 = Lime
 = Bedrock

J04/20

0 1m

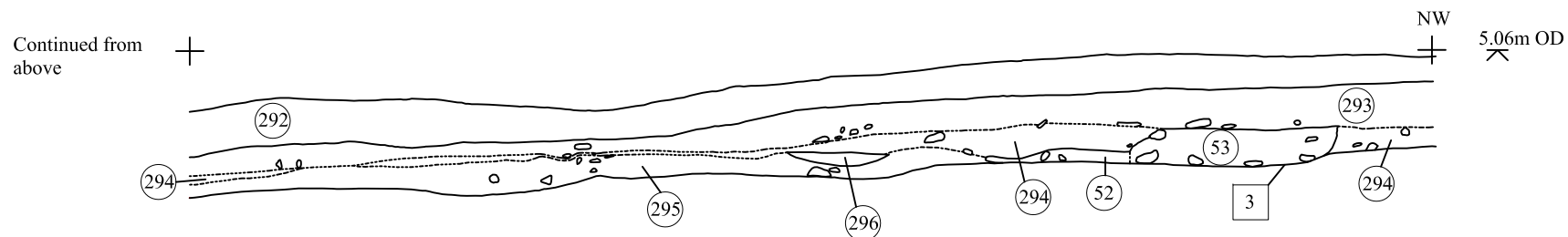
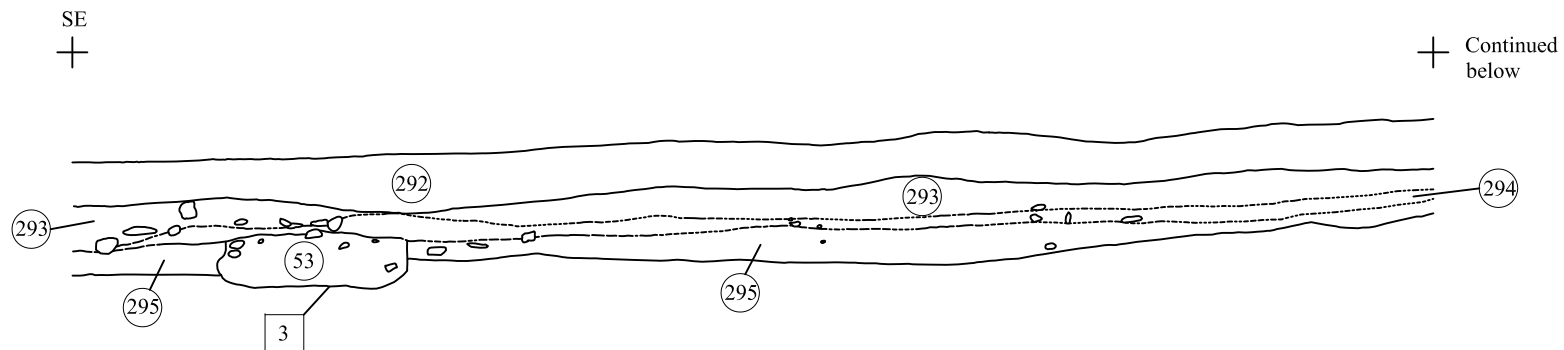


LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 29: Area E, interior elevation of kiln bowl showing
lintelled flue openings

Scale 1:20

T V A S
I R E L A N D
L T D



° = Stone

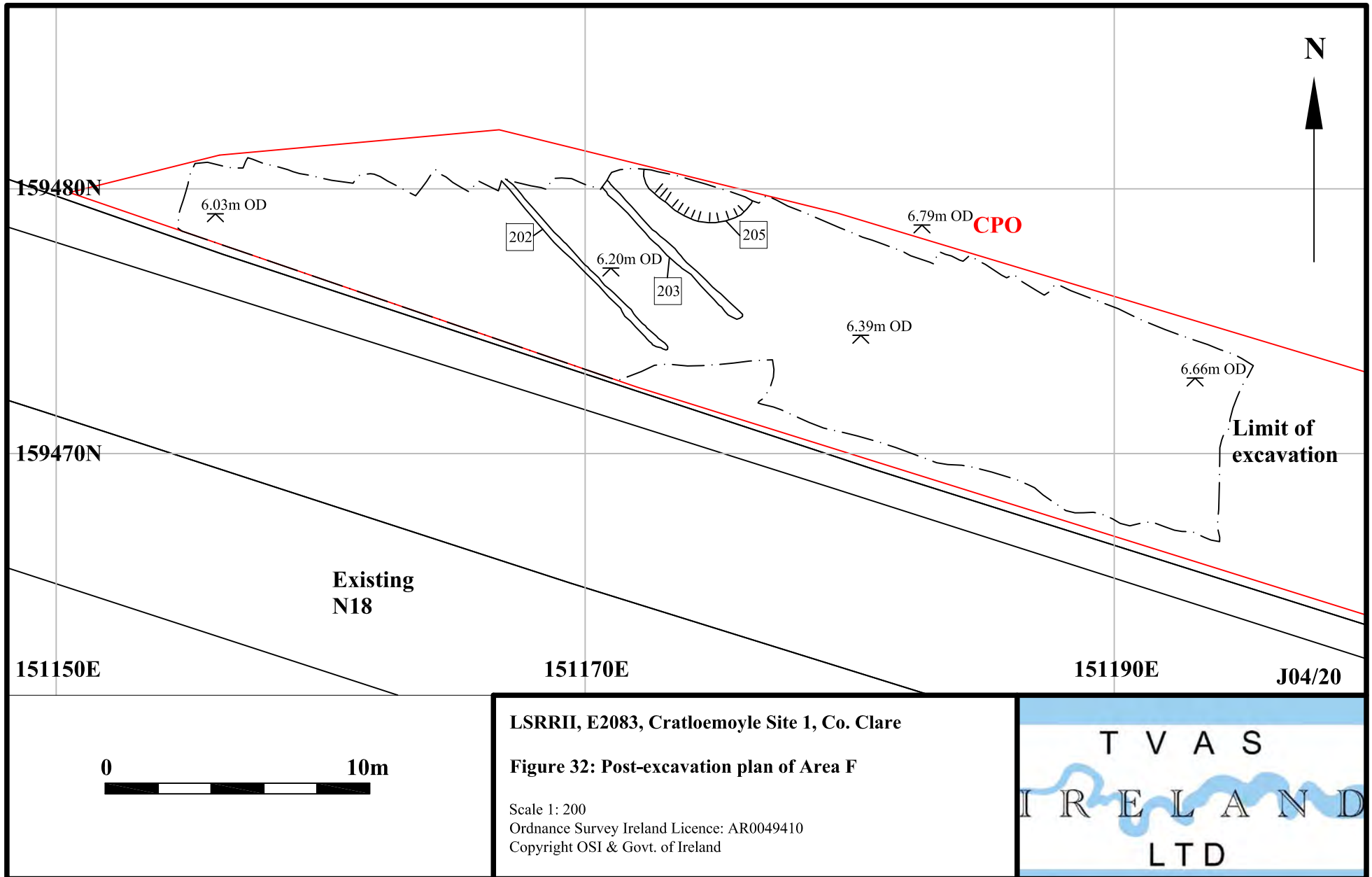
J04/20

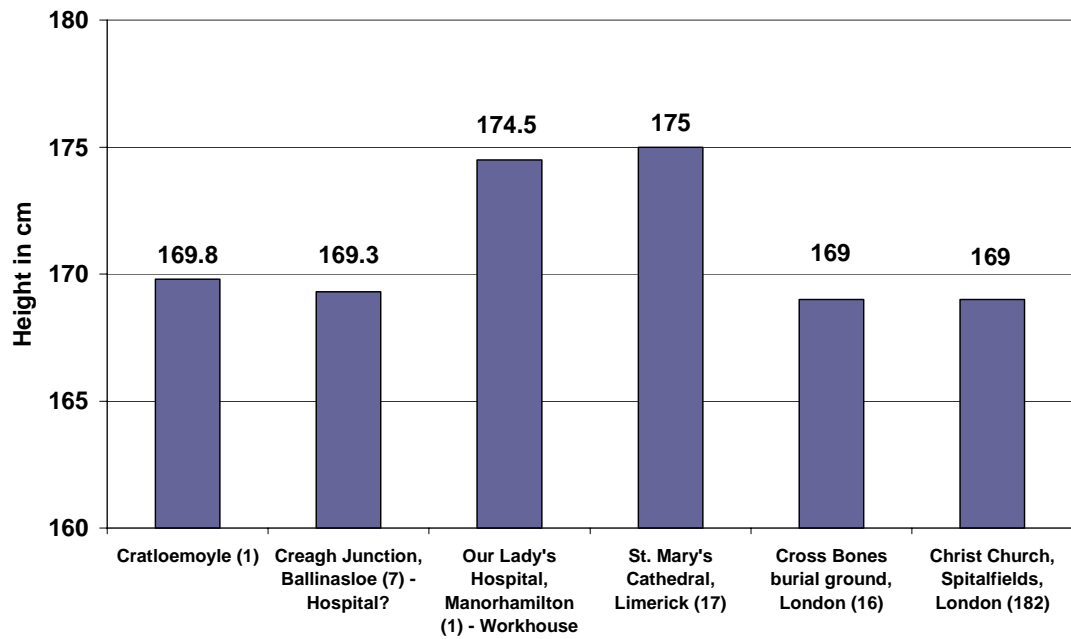


LSRRII, E2083, Cratloemoye Site 1, Co. Clare
Figure 31: Area A, north-east facing section of baulk

Scale 1:25

T V A S
I R E L A N D
L T D





(Data from Brickley *et al.* 1999; Fibiger 2003a; Fibiger 2003b; Molleson *et al.* 1993; Power 1995)

Figure 33: LSRR II, E2083, Cratloemoye: Skeletal Stature Comparison
(Number in brackets indicates size of assemblage)

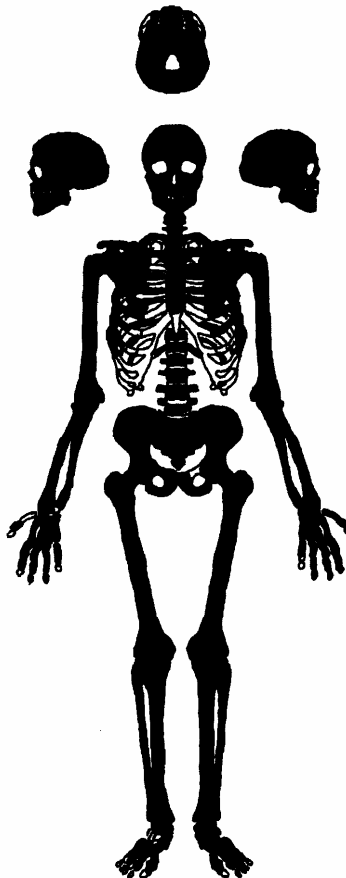


Figure 34: LSRR II, E2083, Cratloemoye: Skeleton 373, bones present

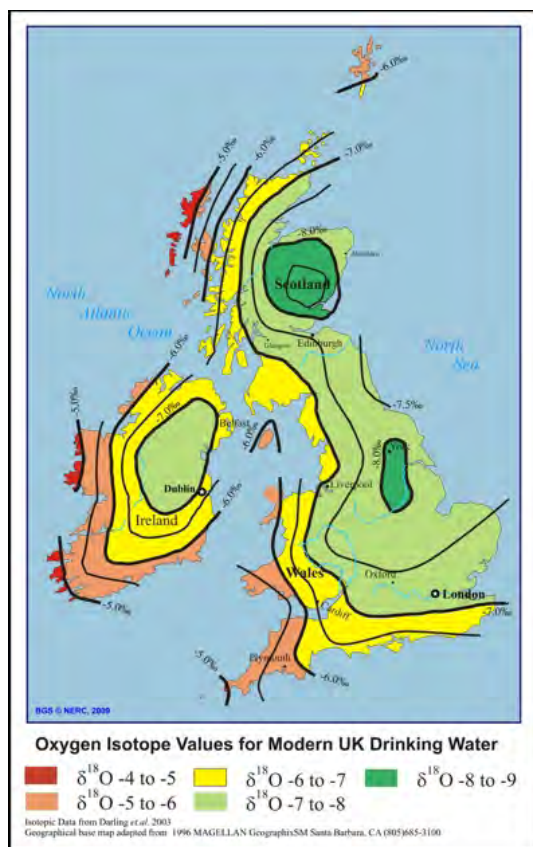


Figure 35: Drinking water variation across Britain and Ireland (Darling *et al* 2003)

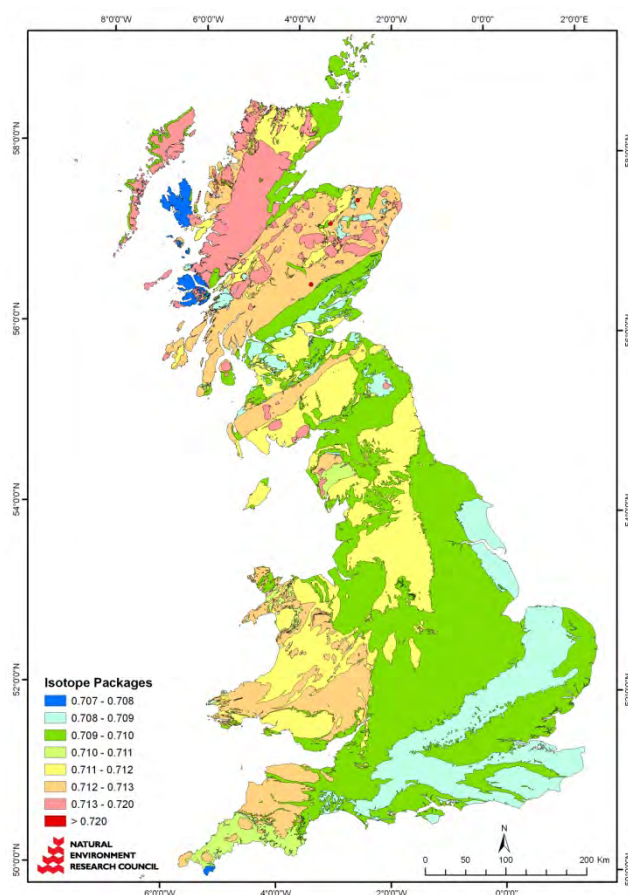


Figure 36: Biosphere variation in Britain (Evans *et al* 2010)

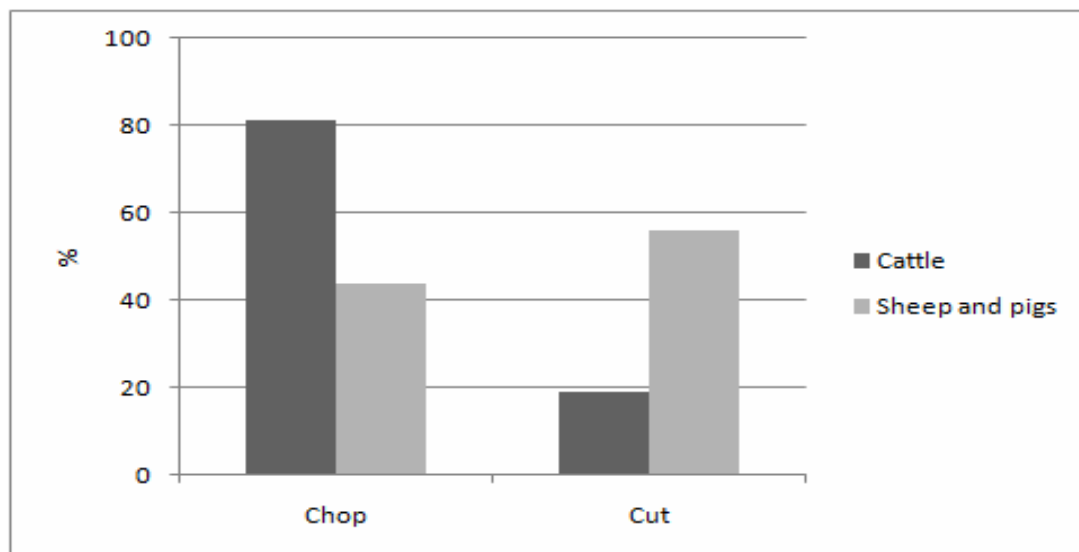


Figure 37: The presence of chop and cut marks on large and medium sized mammals in Area E

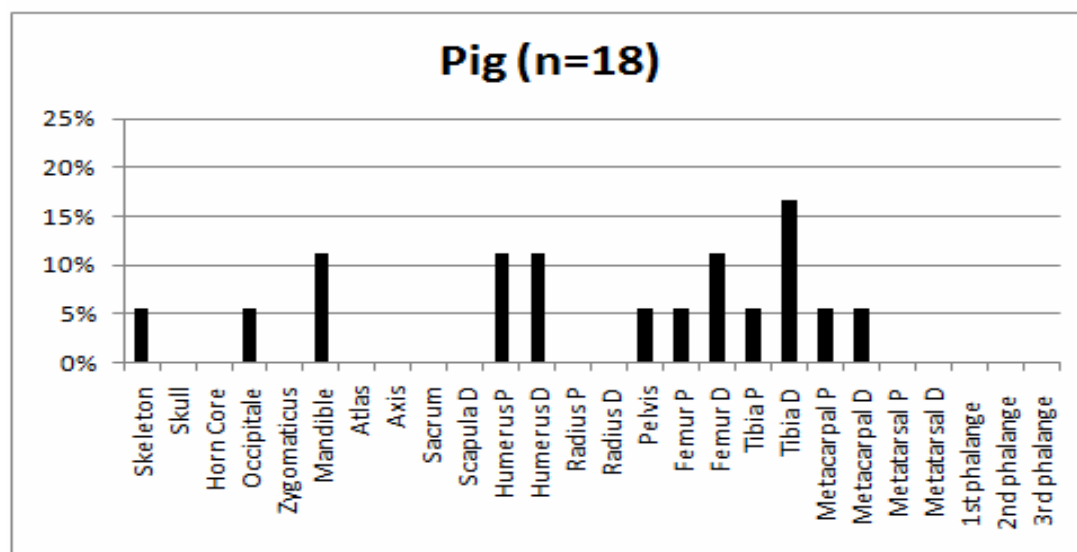
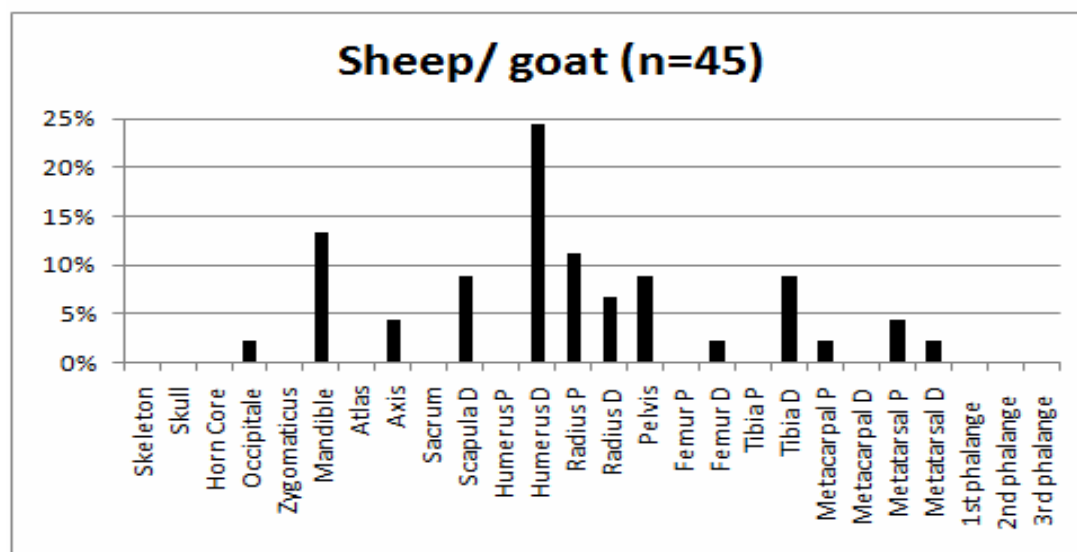
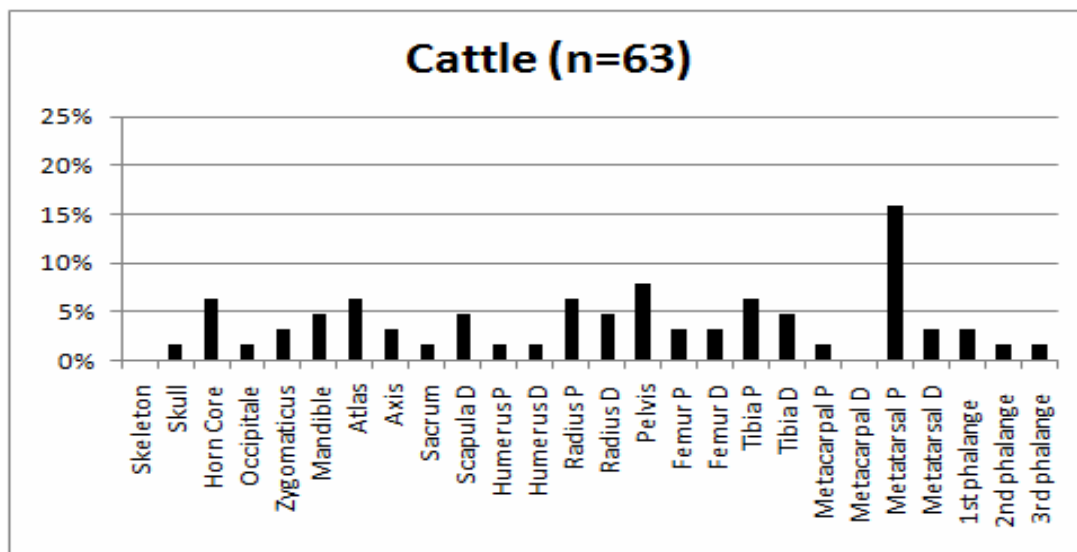


Figure 38: Body part representation Area E (epiphysis count)

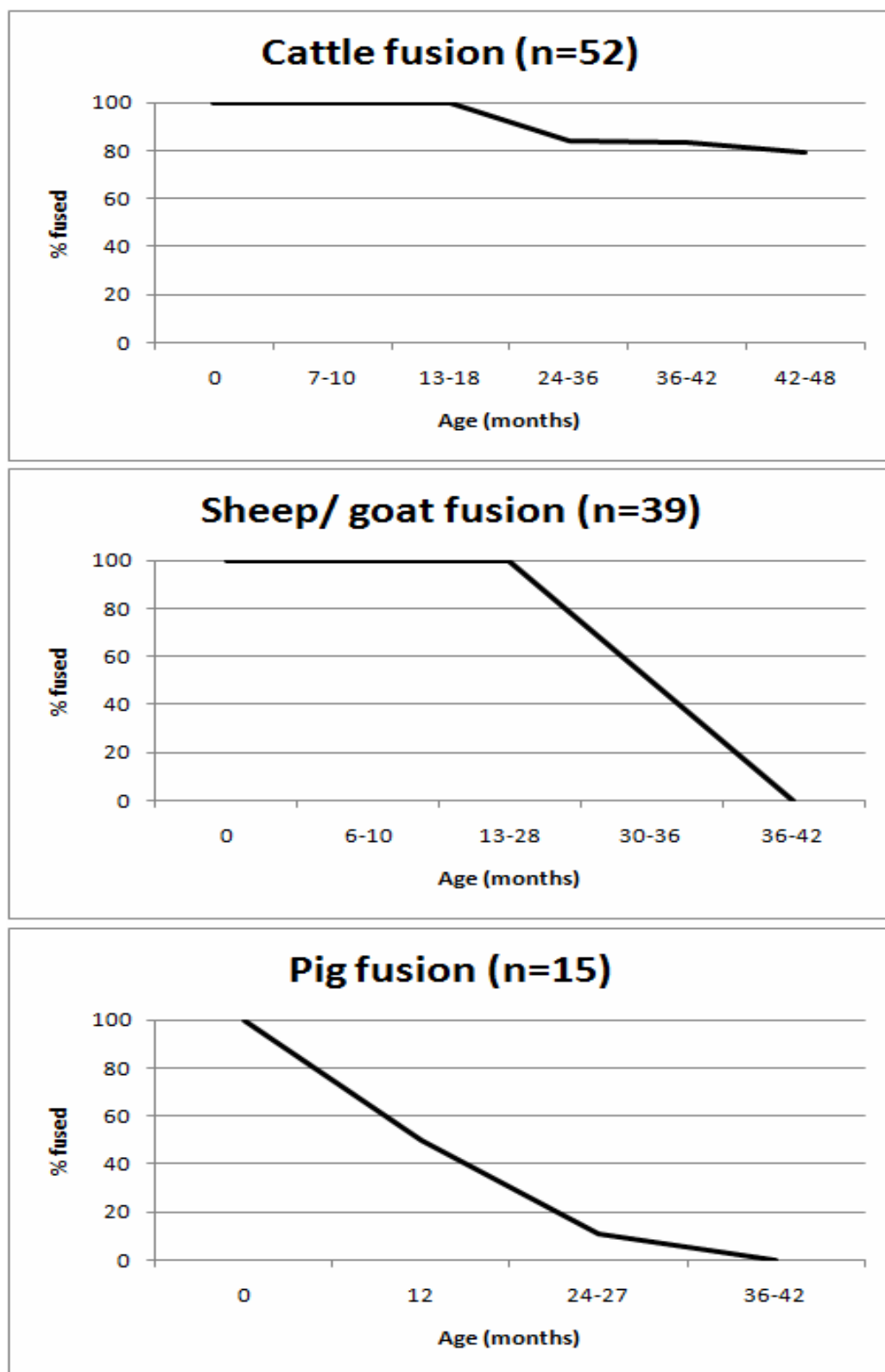


Figure 39: Fusion data for the main domesticates Area E. Using Silver 1969.

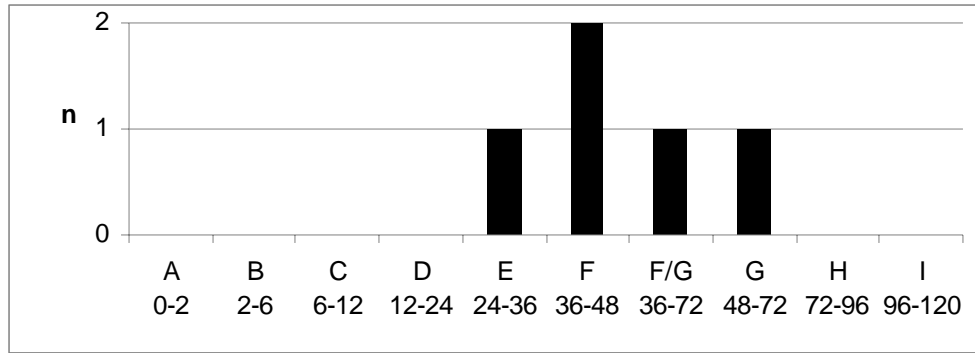
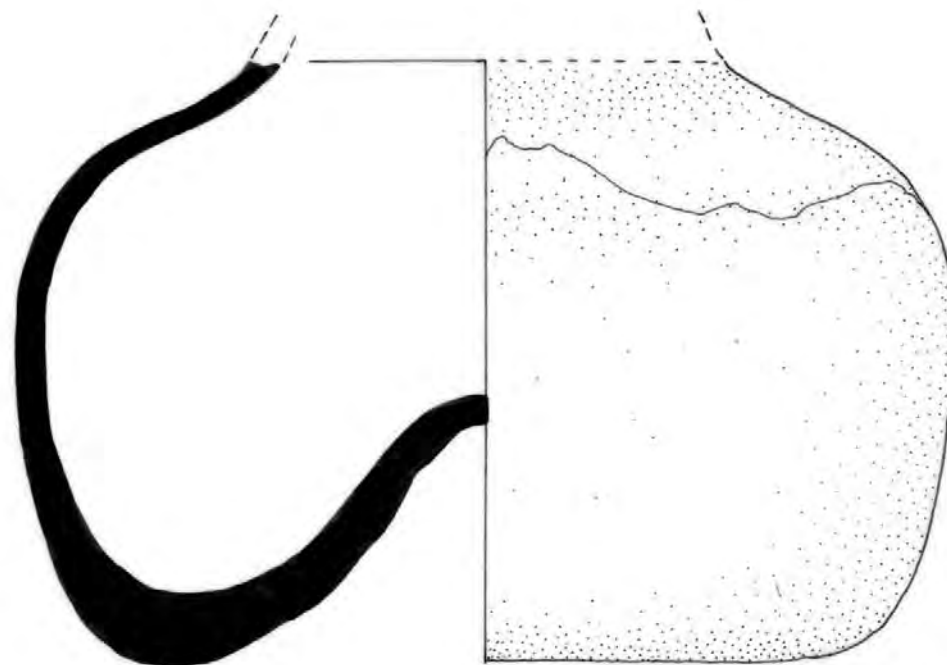


Figure 40: Sheep/goat tooth wear data. Based on Grant 1982, with age ranges from Hambleton 1999



0 5mm

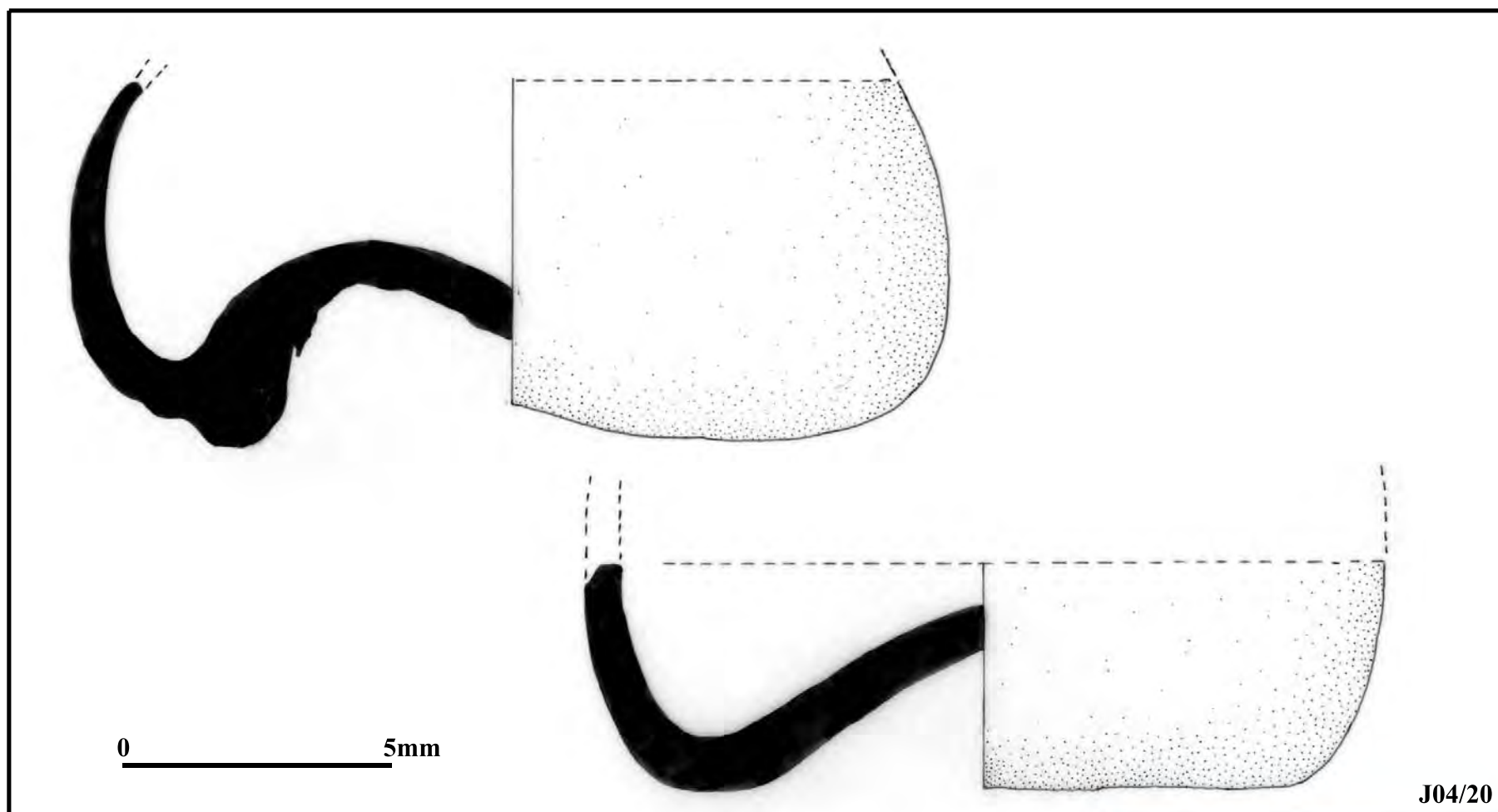
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LSRRII, E2083, Cratloemoye Site 1, Co. Clare

Figure 41: Find E2083:392:1a-b, early 18th century onion bottle

Drawn by Astrid Nathan

T V A S
I R E L A N D
L T D

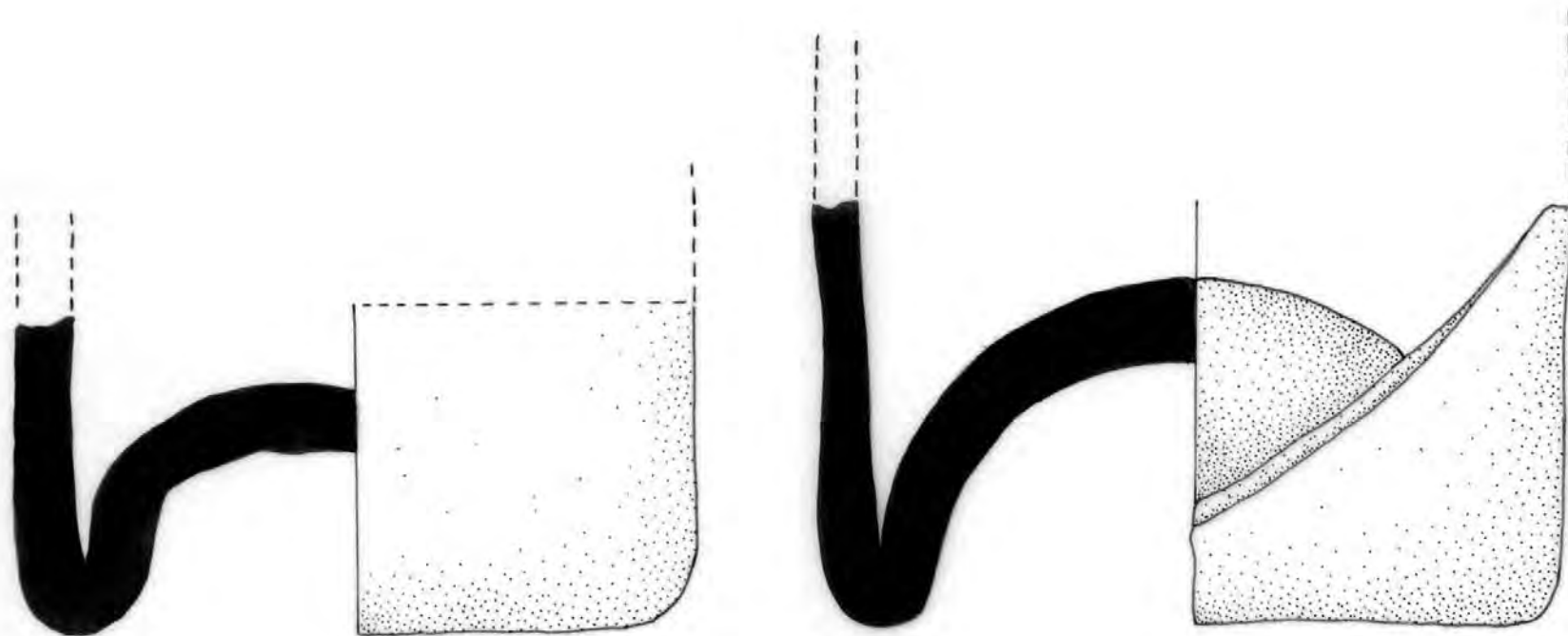


LSRRII, E2083, Cratlomoye Site 1, Co. Clare

Figure 42: Finds E2083:376:60, base of a 18th century onion bottle and E2083:376:70, base of a 18th/19th century mallet or squat cylinder bottle

Drawn by Astrid Nathan





0 5mm

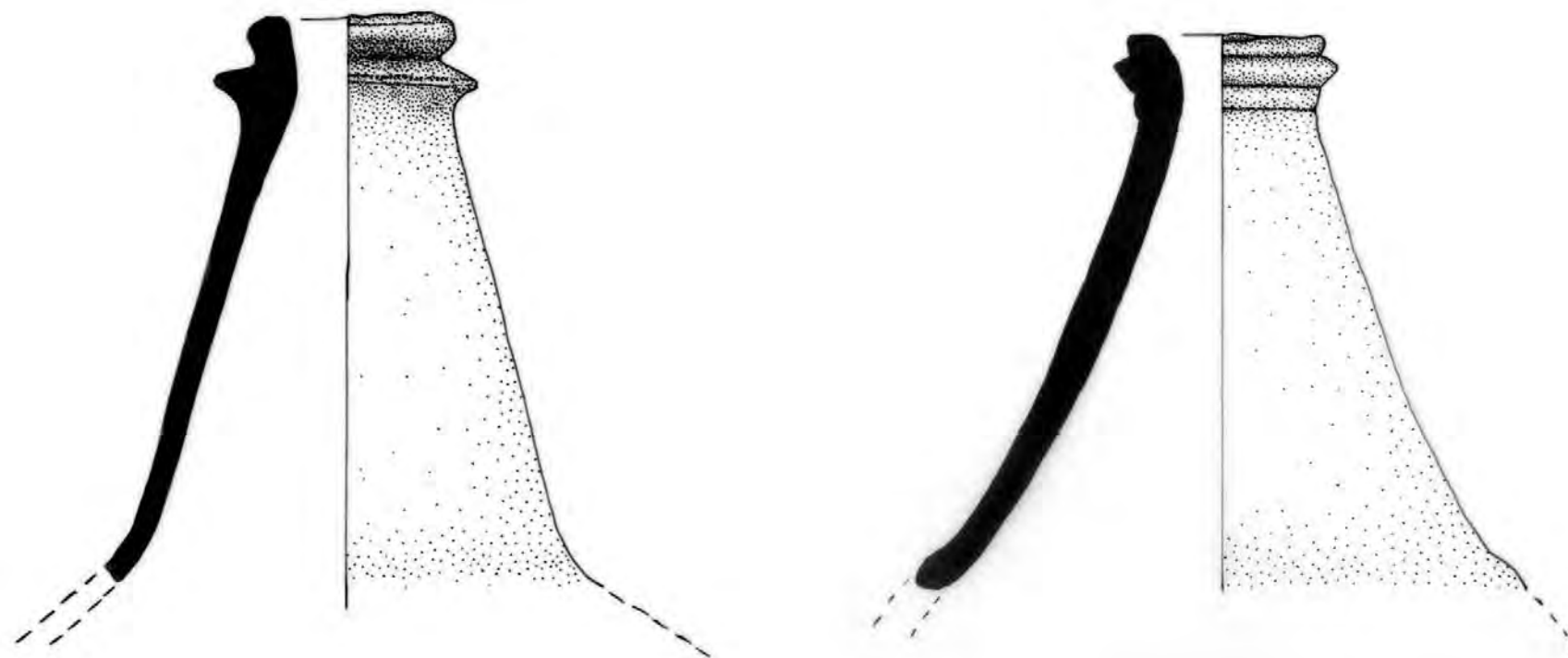
J04/20

LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 43: Finds E2083:451:6 and E2083:353:41, bases of 18th/19th century true cylinder bottles

Drawn by Astrid Nathan

T V A S
I R E L A N D
LTD



0 5mm

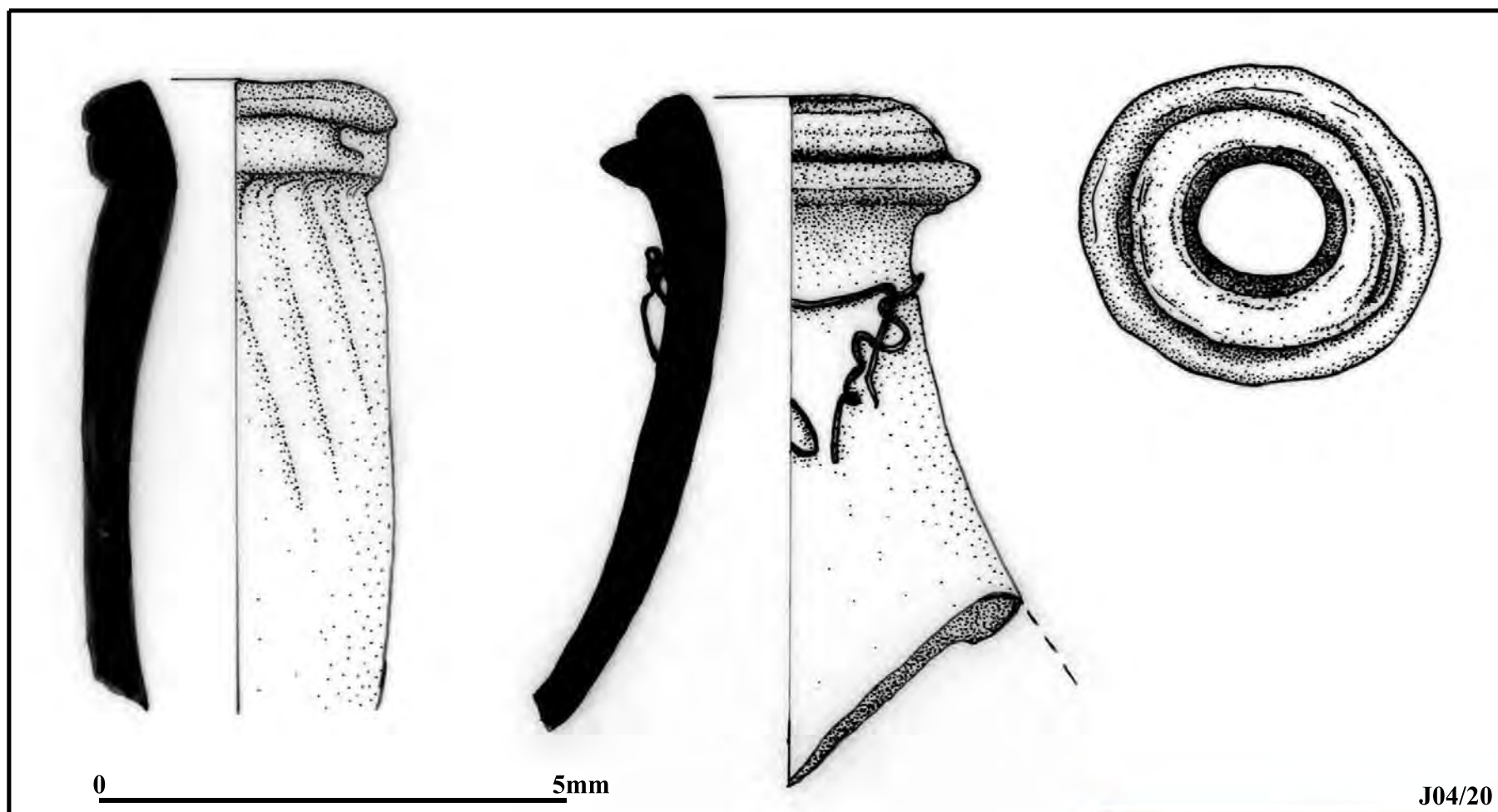
J04/20

LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 44: Finds E2083:375:49, early 18th century neck sherd and E2083:376:67, c.1700-1720 neck sherd

Drawn by Astrid Nathan

T V A S
I R E L A N D
L T D

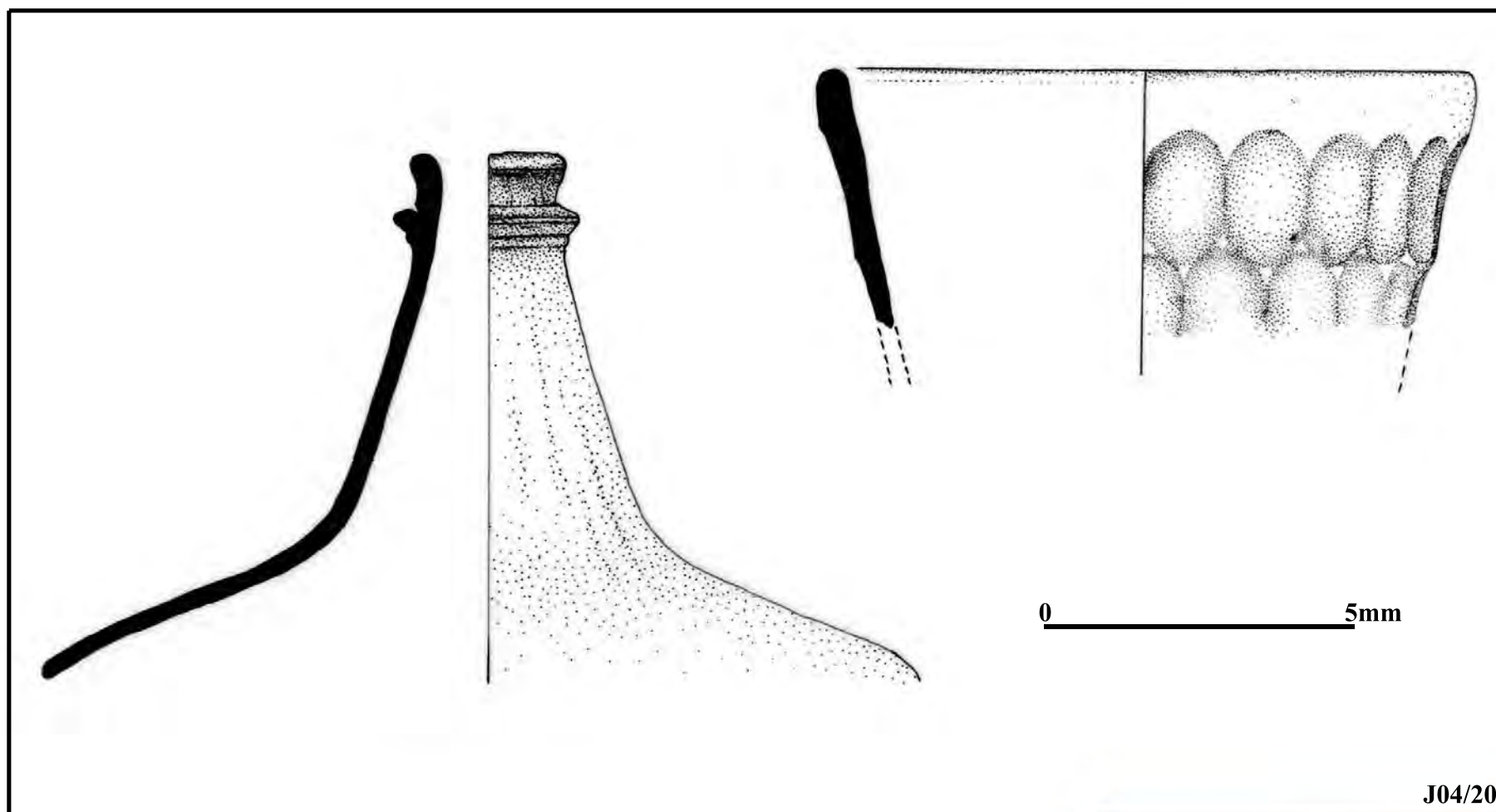


LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 45: Finds E2083:377:154, c.1760 neck sherd and E2083:381:2, c.1640 - early 18th century neck sherd

Drawn by Astrid Nathan

T V A S
I R E L A N D
L T D

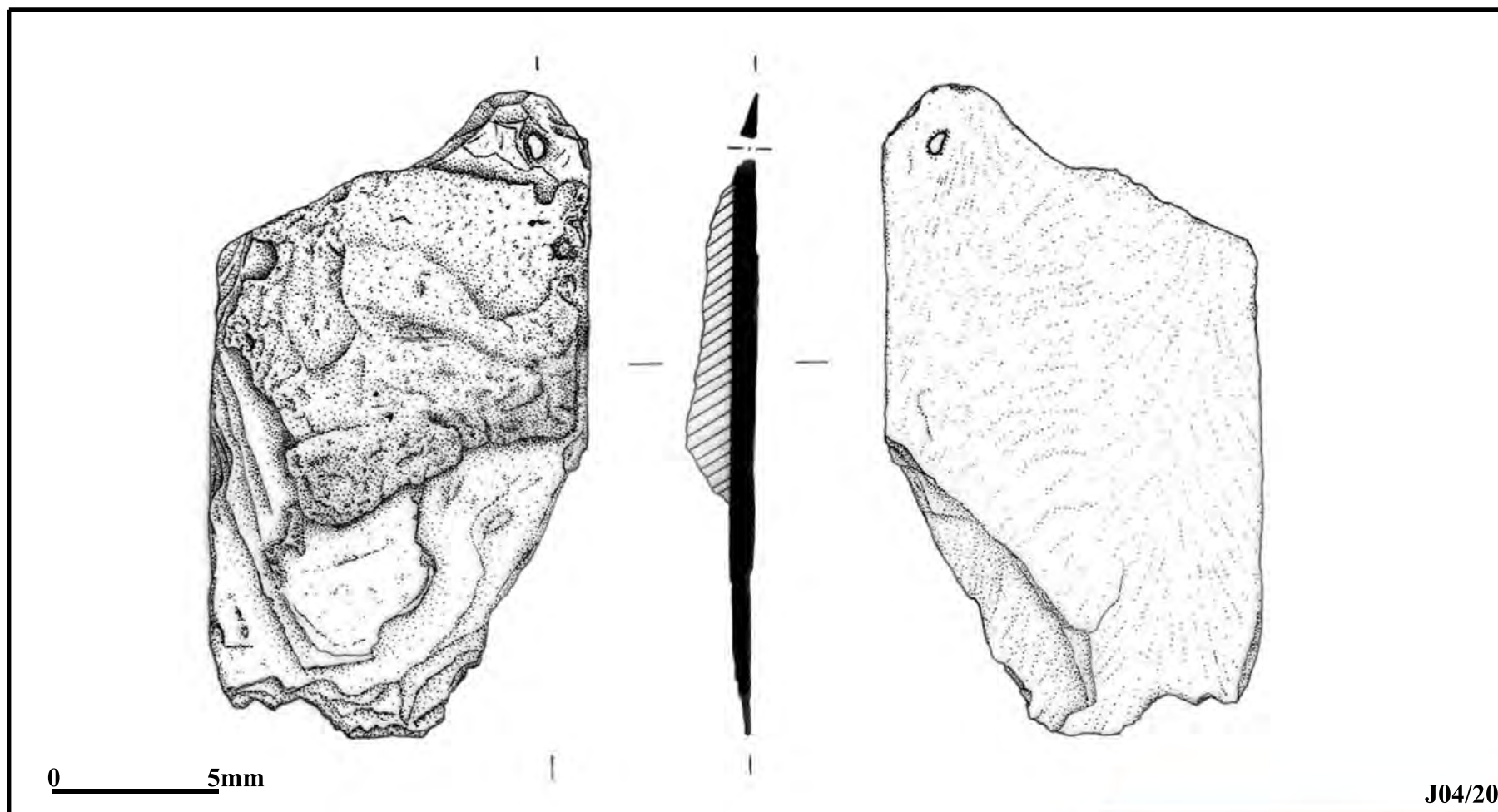


LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 46: Finds E2083:392:2, early 18th century onion bottle neck sherd and E2083:388:29, vessel sherd with oval shaped hollow facets

Drawn by Astrid Nathan



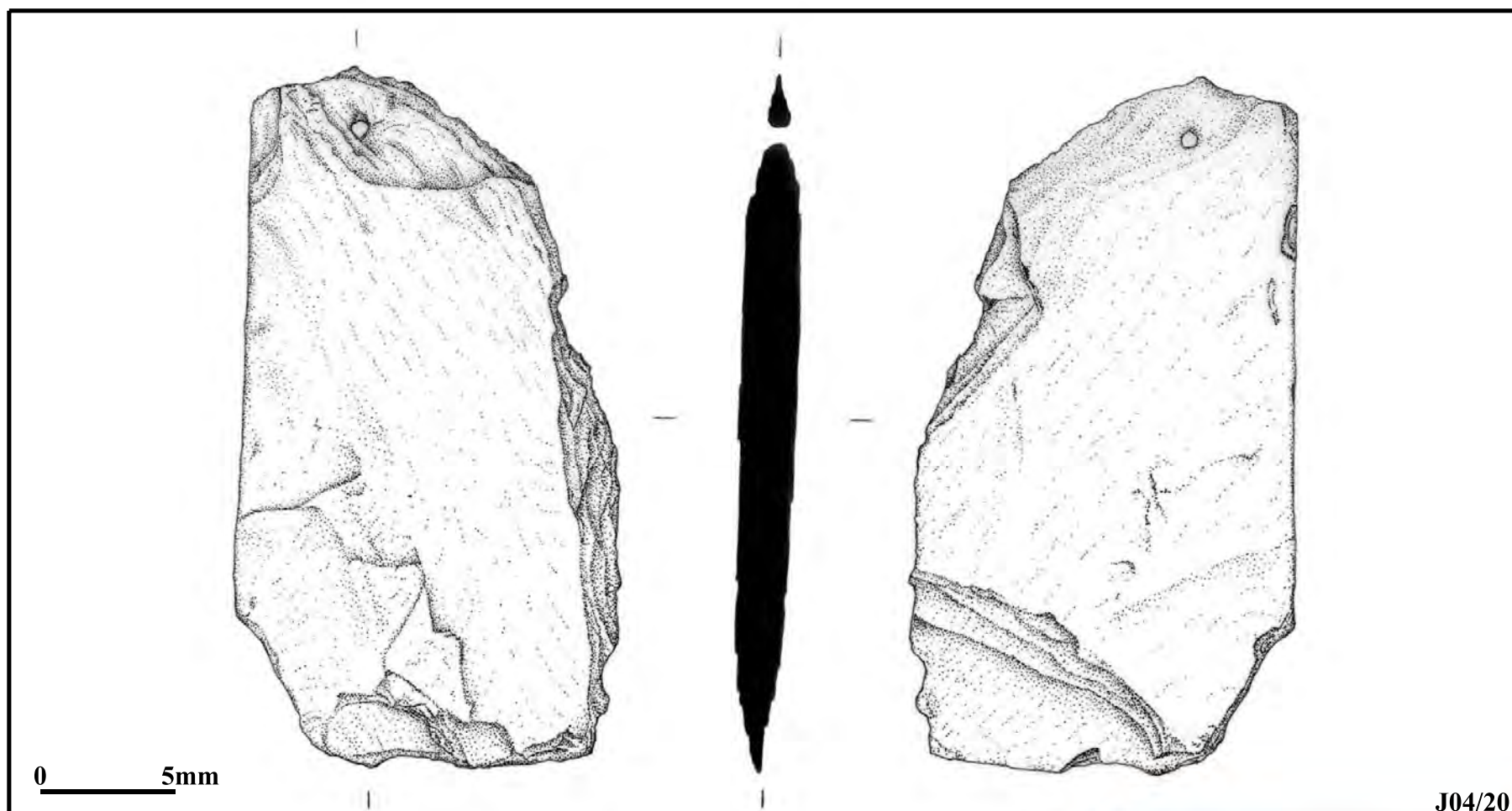


LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 47: Find E2083:377:25, stone roof tile

Drawn by Astrid Nathan

T V A S
I R E L A N D
L T D

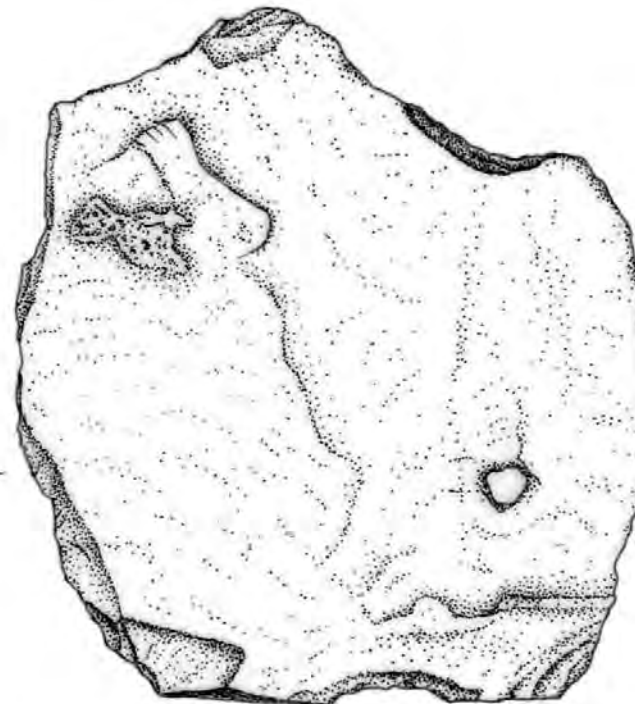
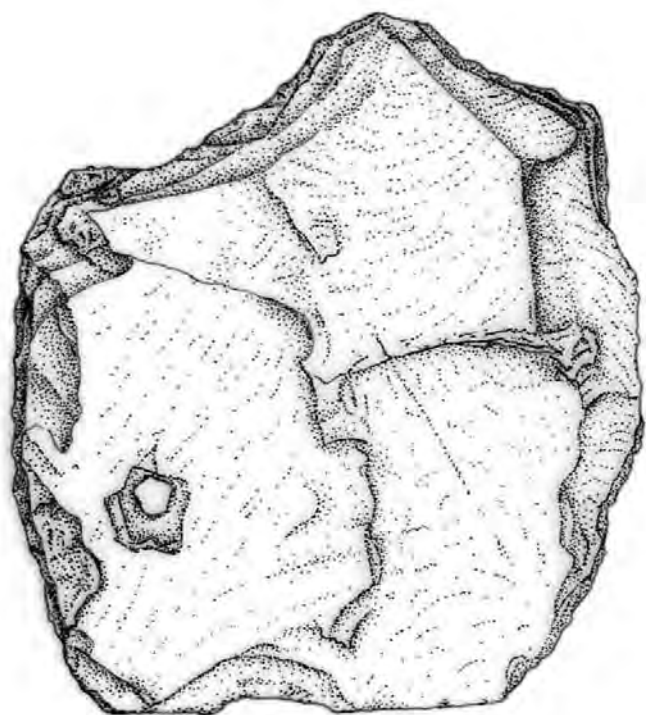


LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 48: Find E2083:375:1, stone roof tile

Drawn by Astrid Nathan

T V A S
I R E L A N D
L T D



0 5mm

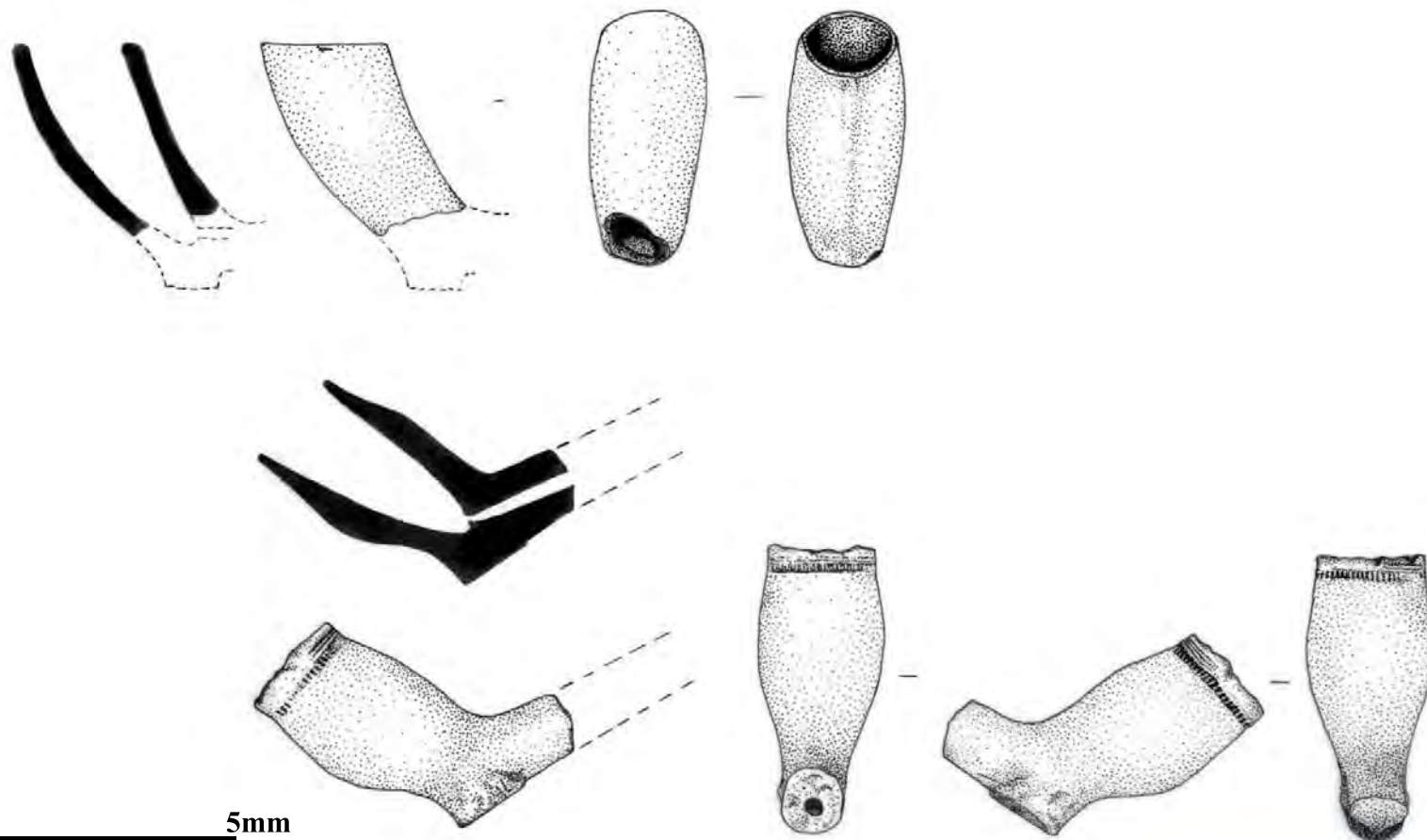
J04/20

LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 49: Find E2083:375:3, stone roof tile

Drawn by Astrid Nathan

T V A S
I R E L A N D
L T D



0 5mm

J04/20

LSRRII, E2083, Cratloemoyle Site 1, Co. Clare

Figure 50: Finds E2083:57:9 and E2083:383:6, clay tobacco pipes

Drawn by Astrid Nathan

T V A S
I R E L A N D
L T D



**Plate 1: Site during test trenching, Cratloemoyle Castle
in background, looking west**



**Plate 2: Pit 1, half sectioned, Area B. Looking north-east.
Scales 0.50m & 0.10m**



**Plate 3: Burnt patches, Area C. Looking west.
Scale 1m**



**Plate 4: Half section through pit 200, Area C. Northeast facing
section. Scale 0.30m**



Plate 5: Boundary ditch 2 & infilled ditch 201, with collapsed stone bank 279, Area D. Looking south. Scale 1m



Plate 6: Test trench 2 in boundary ditch, Area D. Note sharp drop in original ground level and built-up material. Looking west. Scale 1m.



**Plate 7: Grave fill 374, Area E. Note feet of skeleton visible in section.
Looking west. Scales 1m, 0.30m & 0.10m**



**Plate 8: Human male skeleton 373 & grave cut 214, Area E.
Looking west. Scales 1m & 0.30m**



Plate 9: Kiln during excavation showing distance to towerhouse, Cratloemoyle castle, Area E. Looking northeast. Scale 1m



Plate 10: Section through kiln wall showing rounded stones & scorched earth between the stones, Area E. Facing east. Scale 0.10m



Plate 11: Interior of kiln wall showing rounded stones in the kiln wall & larger limestone blocks on top. Facing south. Scale 1m



Plate 12: Section through 224 & 216 showing the build up of lime before 216 was cut. Looking west. Scales 1m, 0.30m & 0.10m



Plate 13: 216 meandering from the eastern flue of the kiln to the east, Area E. Looking west. Scales 1m & 0.30m



Plate 14: 216 at the mouth of the eastern flue, the start of the capping stones can be seen behind the 0.30m scale, Area E. Looking west. Scales 1m & 0.30m



**Plate 15: Base of kiln with all material removed, Area E.
Looking north. Scale 1m & 0.30m**



**Plate 16: Base of kiln with the bricks 489 still in place, Area E.
Looking north. Scale 0.30m**



Plate 17: The remains of the bricks 489 in 216 in the eastern flue, Area E. Looking west. Scale 0.30m & 0.10m



Plate 18: Base of kiln with capping stones 398 in place, Area E. Looking north. Scale 0.30m



**Plate 19: Eastern flue with capping stones in place, Area E.
Looking north. Scale 1m**



**Plate 20: Interior of kiln stone deposit 465 to south of capping stones 398
and channel like area 223 over the capstones, Area E. Looking
east. Scale 1m**



Plate 21: Interior section of kiln showing lime and the post-destruction rubble, Area E. Looking north. Scales 1m & 0.30m



Plate 22: Exterior area of eastern flue showing rake out lime 387, Area E. Looking west. Scales 1m & 0.30m



Plate 23: Kiln from above showing lime deposit 389, also note the internal and external faced limestone construction with rubble infill and the eastern flue on the left, Area E. Looking south. Scale 1m



Plate 24: Post-excavation of eastern end of towerhouse, Area E. Looking northeast. Scale 1m



**Plate 25: House area A, looking northwest.
Scales 1m & 0.30m**



**Plate 26: Post-excavation of Area F.
Looking east. Scale 1m**



Plate 27: Caries and abscess of right mandibular 1st molar



Plate 28: Dental enamel hypoplasia of right maxillary teeth



Plate 29: Caries Thoracic vertebral body with Schmorl's node



Plate 30: Bowing deformities of left and right tibia



Plate 31: Osteochondritis dissecans of left talus



Plate 32: Healed blunt force trauma to left parietal



Plate 33: Find E2083:381:2, c.1640 - early 18th century neck sherd with metal wire still attached. Scale 50mm



Plate 34: Finds 366:1, 378:4 and 384:3 co-joined, Bartmann jug with bearded mask. Scale 40mm



Plate 35: Finds E2083:377:39-42, 44-45 & 52, red earthenware pantheon. Scale 40mm

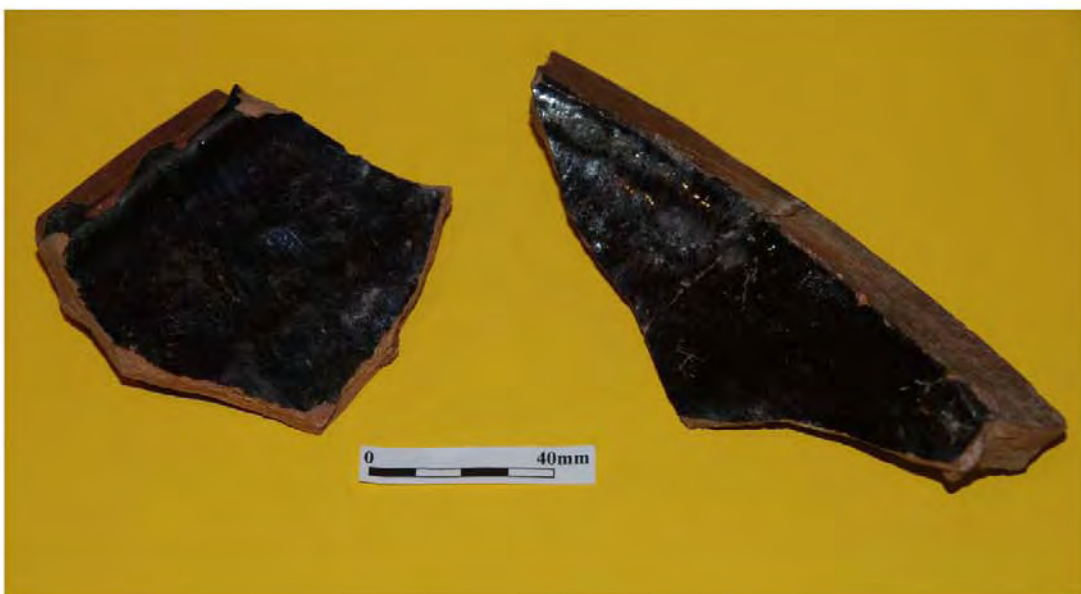


Plate 36: Finds 366:3 and 375:4 & 5 co-joined, black glazed ware pancheons. Scale 40mm



Plate 37: Find E2083:71:46, lead ball. Scale 15mm



Plate 38: Find E2083:71:47, lead ball. Scale 15mm



Plate 39: Finds E2083:71:46&47, lead balls. Scale 15mm



Plate 40: Find E2083:71:47, lead ball (second from left) with comparable examples from Castledonovan, Co. Cork and Aughrim, Co. Galway. Scale 15mm

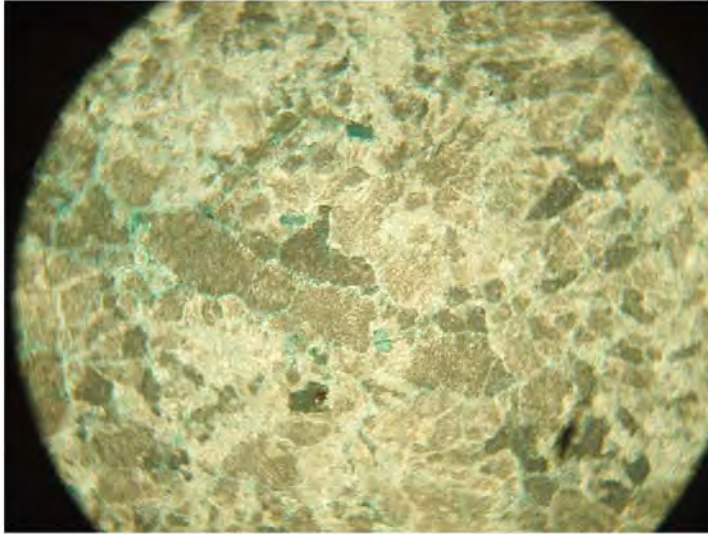


Plate 41: Limestone aggregate from Sample No. 90, Area E, Cut 228, Deposit 389 showing polygonal calcite structure

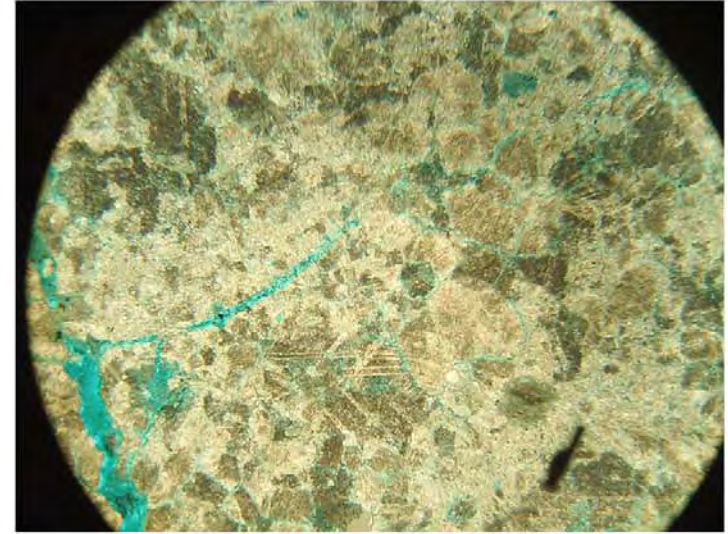


Plate 42: Detail of limestone aggregate found within lime kiln waste (Sample No. 16, Area E, Cut 224, Deposit 396

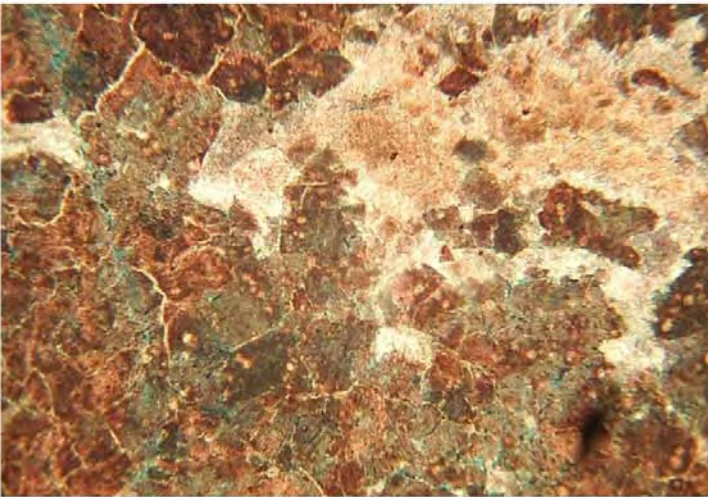


Plate 43: Detail of limestone aggregate (stained red in an aid to mineral identification) from the Tower House (Sample 130: 1st Floor Ceiling Plaster)

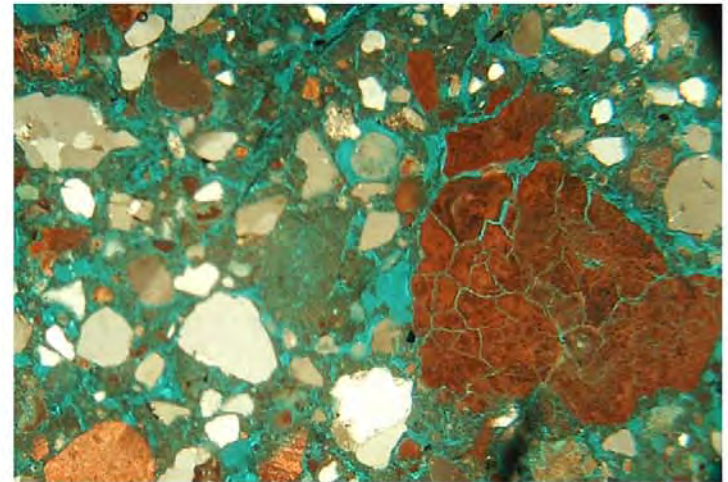


Plate 44: Lime lump (right) from the Tower House retaining relict polygonal structures from limestone prior to burning (Sample 130: 1st Floor Ceiling Plaster)



Plate 45: Sample No 3, Area A, Deposit 52



**Plate 46: General view of the exposed surface of the mortar
Sample No 3, Area A, Deposit 52**



**Plate 47: Cermaic (pozzolanic) fragments and lime lumps in
Sample No 3, Area A, Deposit 52**



Plate 48: Sample No 7, Area A, Deposit 52
General view of the mortar matrix



Plate 49: Sample No 7, Area A, Deposit 52
Detail of the (presumed) under-surface of the sample



Plate 50: Sample No 8, Area A, Deposit 296
General view of the mortar



**Plate 51: Sample No. 13, Area E, Cut 228
Deposit 391**



**Plate 52: Sample 13, Area E, Cut 228
Deposit 391**



Plate 54: Sample No. 15, Area E, Cut 216, Deposit 474

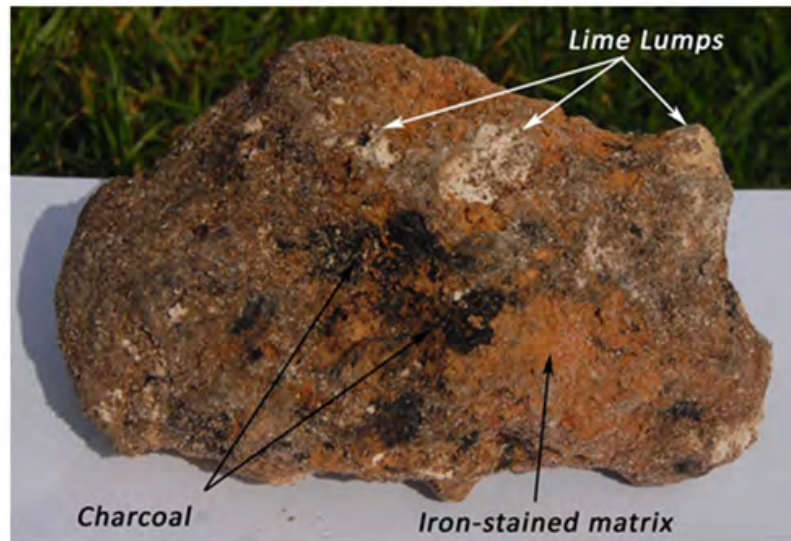


Plate 53: Sample No. 13, Area E, Cut 228, Deposit 391 showing lime lumps



**Plate 55: Sample No. 15, showing charcoal and partially-fired
limestone grains**



Plate 56: Sample No. 16, Area E, Cut 224
Deposits 396, 460 & 461



Plate 57: Sample 16, Area E, Cut 224
Deposits 396, 460 & 461

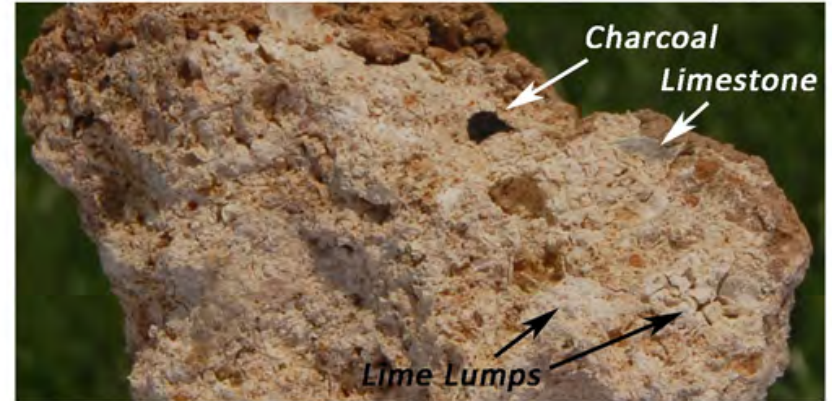


Plate 58: Sample No. 16, Area E, Cut 22 Deposits 396, 460 & 461
showing large lime lumps



Plate 59: Sample No. 56, Area E, Deposit 365

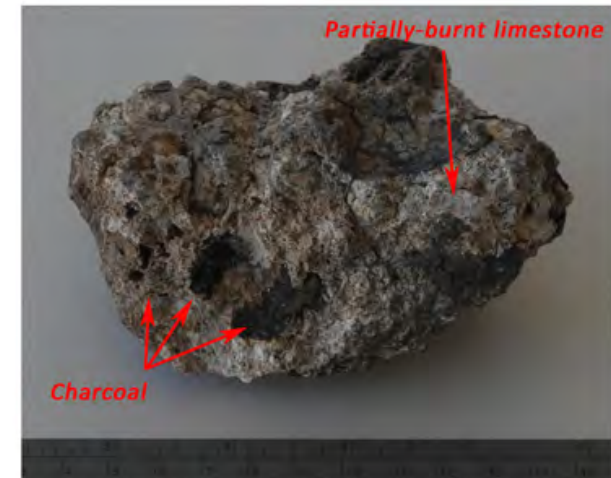
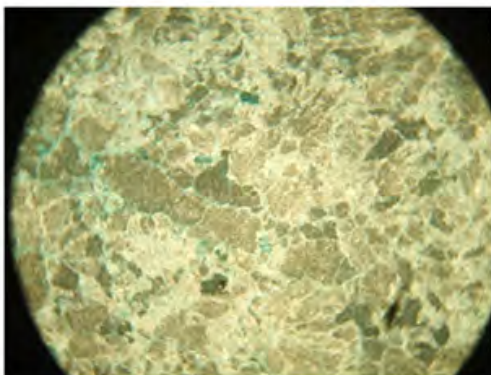
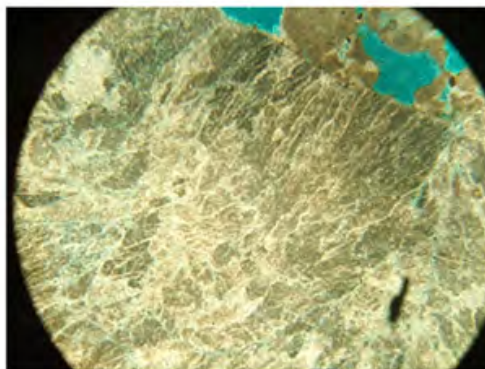


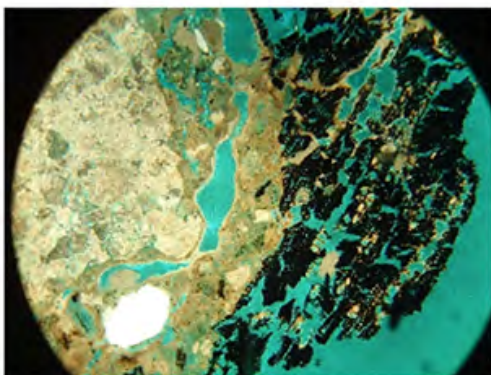
Plate 60: Sample No. 56, showing charcoal and partially-burnt
limestone fragments



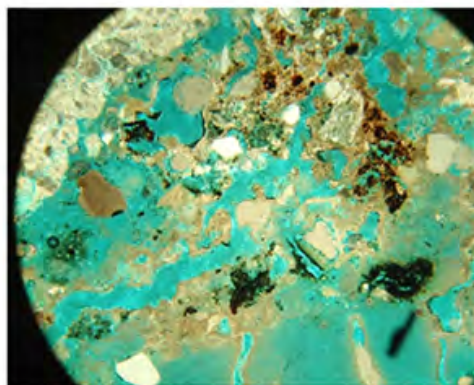
**Plate 61: Sample No. 90, Area E, Cut 228
Deposit 389 - Polygonal calcite crystals**



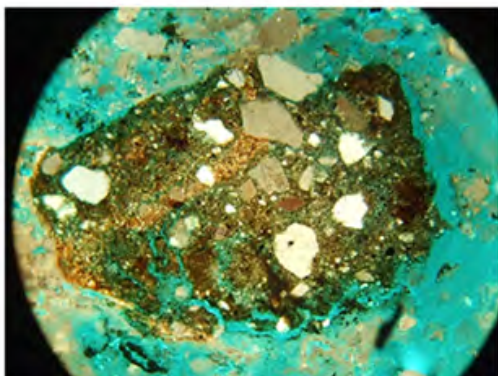
**Plate 62: Sample No. 90, Area E, Cut 228
Deposit 389 - Polygonal calcite crystals**



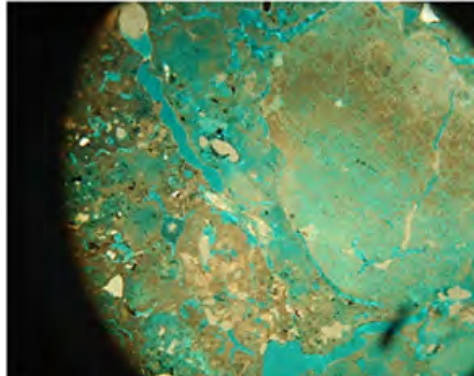
**Plate 63: Sample No. 90, Area E, Cut 228
Deposit 389 - limestone(left), lime binder
(centre) & charcoal fragment (right)**



**Plate 64: Sample No. 90, Area E, Cut 228
Deposit 389 - weathered lime binder**



**Plate 65: Sample No. 90, Area E, Cut 228
Deposit 389 - brick fragment contained
in mortar**



**Plate 66: Sample No. 90, Area E, Cut 228
Deposit 389 - lime lump (right)**

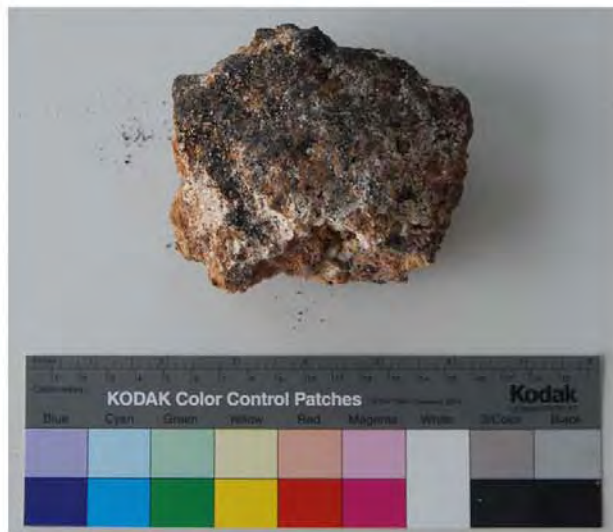


Plate 67: Sample No 108, Area E, Deposit 228, Deposit 391

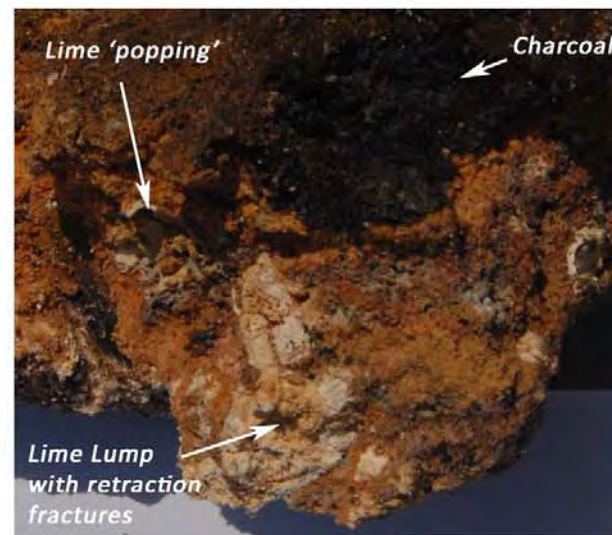


Plate 68: Sample No 108, Area E, Deposit 228, Deposit 391

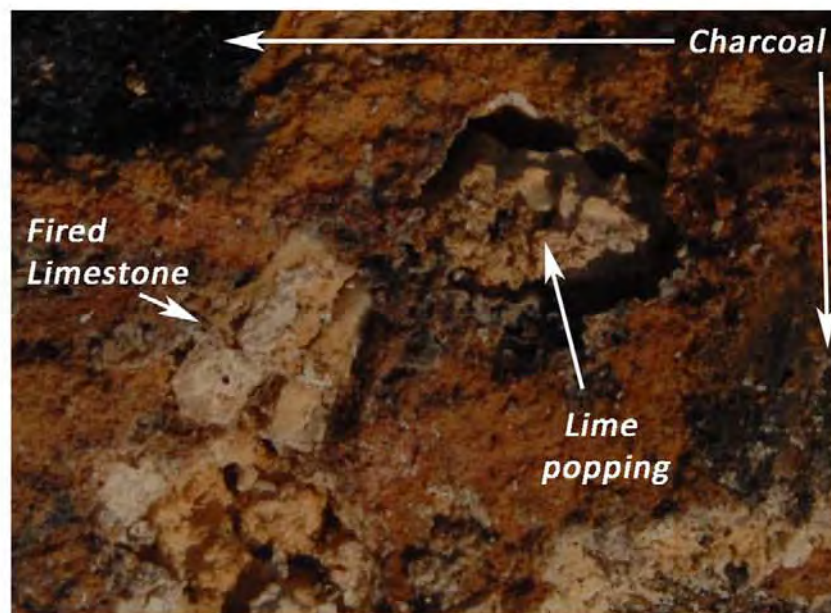


Plate 69: Sample No 108, Area E, Deposit 228, Deposit 391



Plate 70: Sample No 128, 1st Floor Chimney

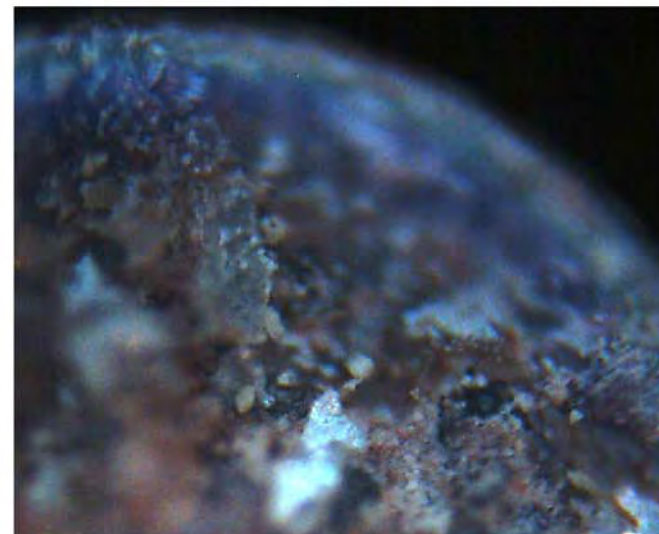


Plate 71: Sample No 128, iron-stained carbonated lime binder

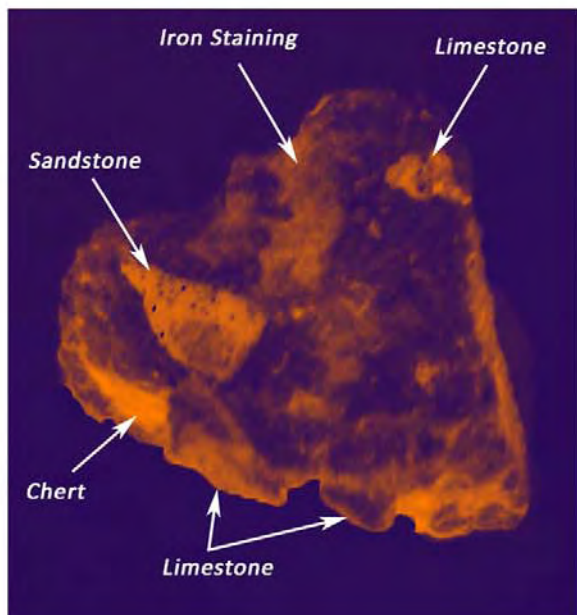


Plate 72: Sample No 128, aggregate grains

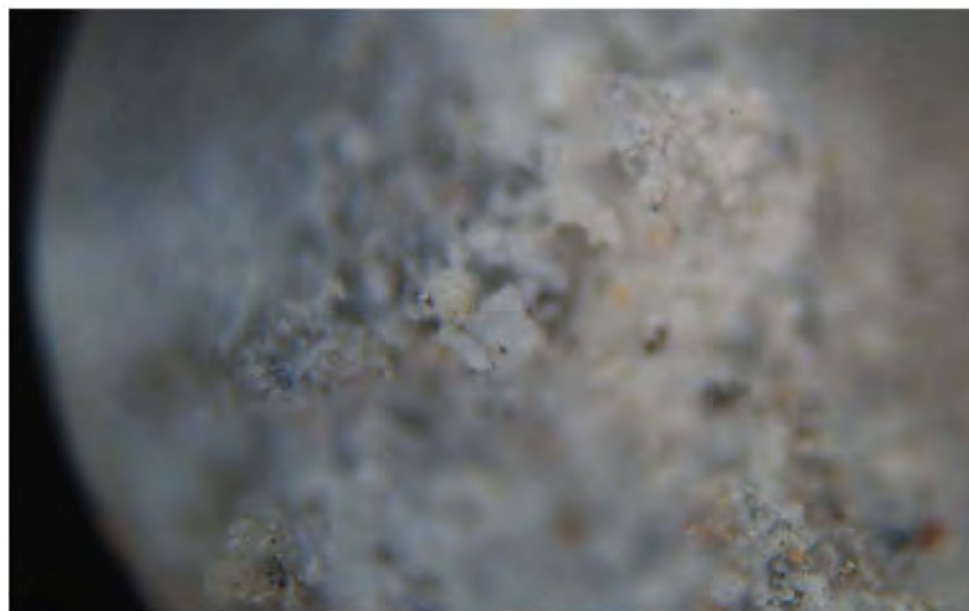


Plate 73: Sample No 128, carbonated lime binder with aggregate "floating"



Plate 74: Sample No 129, 1st Floor Wall Plaster,



Plate 75: Sample No 129, showing lime lumps and hair



Plate 76: Sample No 129, showing blue-grey limestone

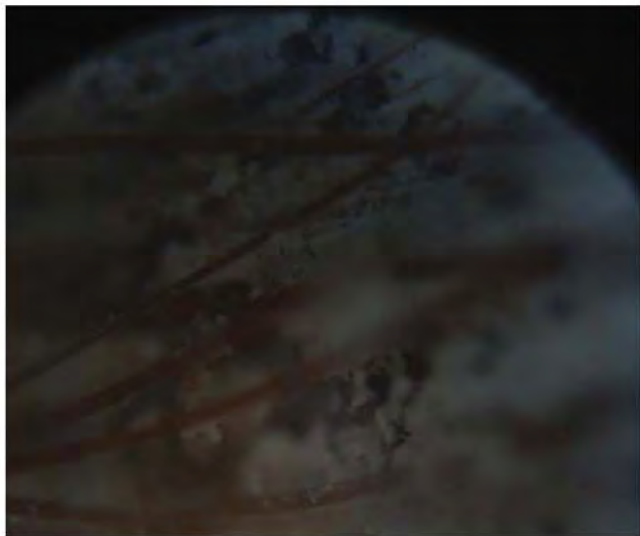


Plate 77: Sample No 129, detail of hair

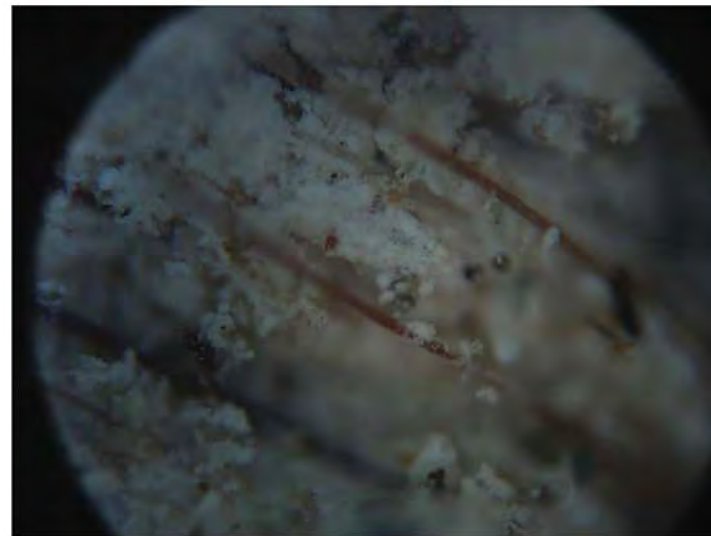


Plate 78: Sample No 129, detail of hair

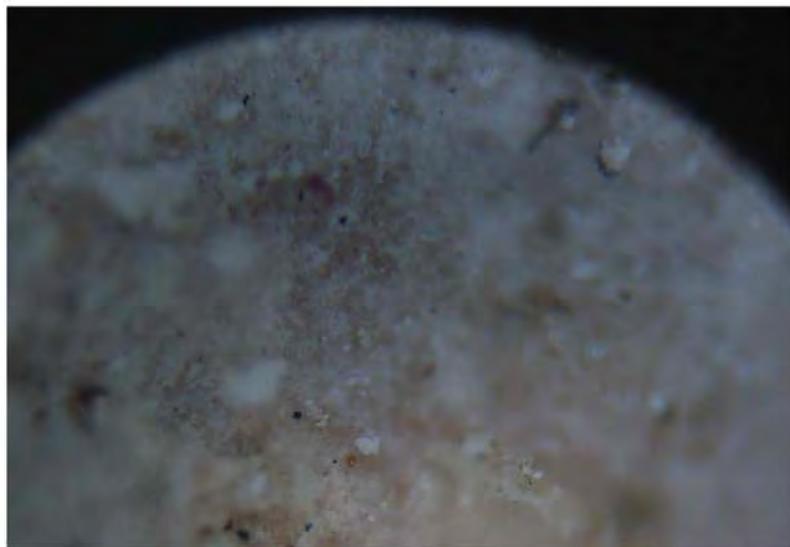


Plate 79: Sample No 129, detail of the skim coat



Plate 80: Sample No 129, detail of charcoal fragments



Plate 81: Sample No 130, 1st Floor Ceiling Plaster

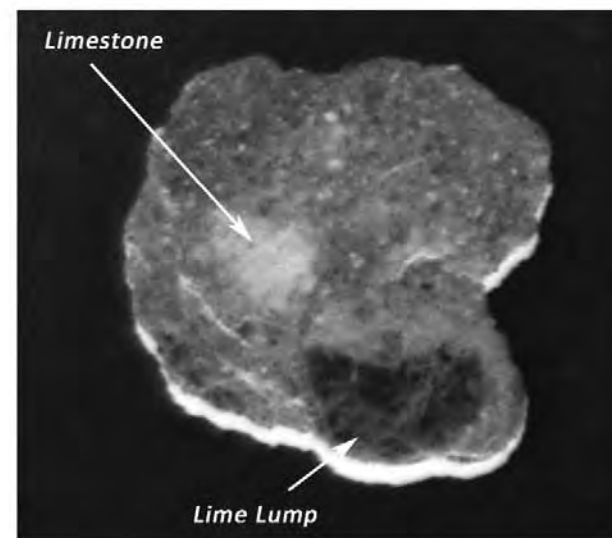


Plate 82: Sample No 130, showing fine limestone aggregate

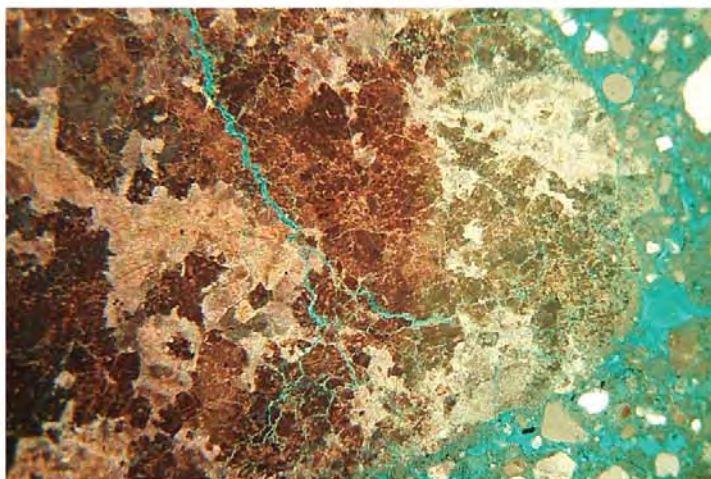


Plate 83: Sample No 130, showing polygonal calcite crystals forming the limestone aggregate

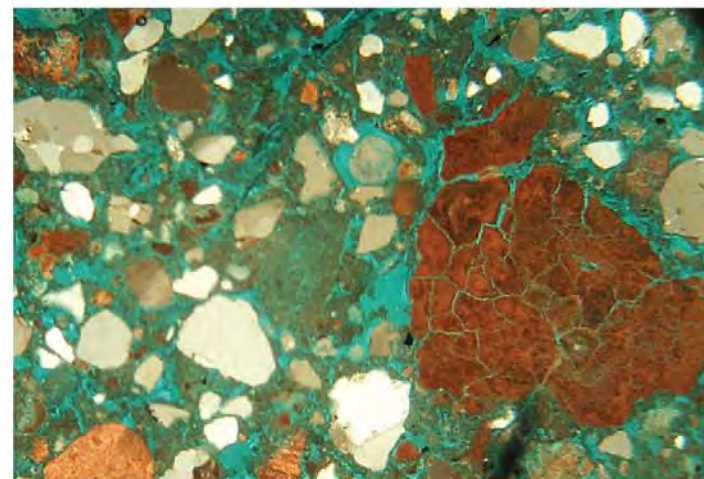


Plate 84: Sample No 130, showing lime lump (right)

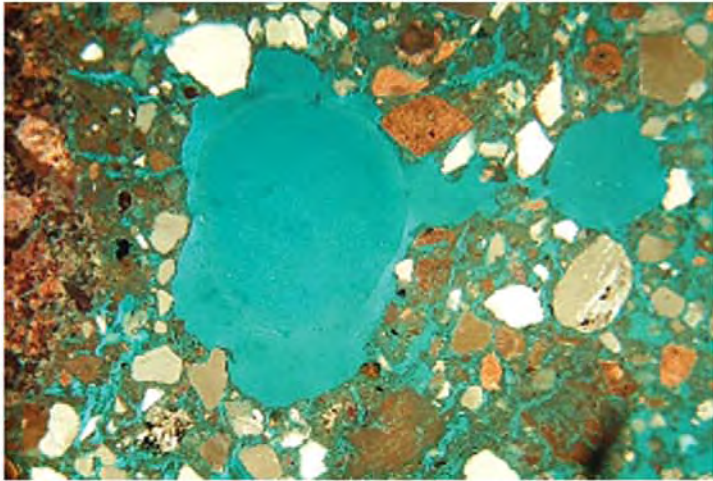


Plate 85: Sample No 130, showing air voids

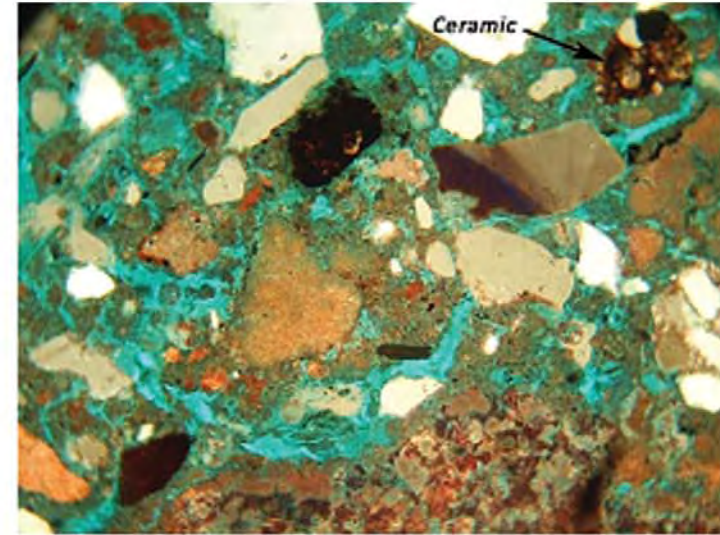


Plate 86: Sample No 130, showing mortar matrix

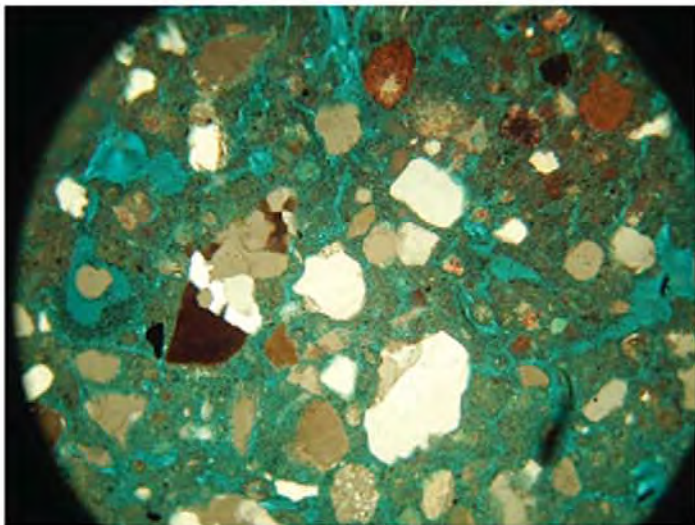


Plate 87: Sample No 130, showing poorly sorted aggregate grains

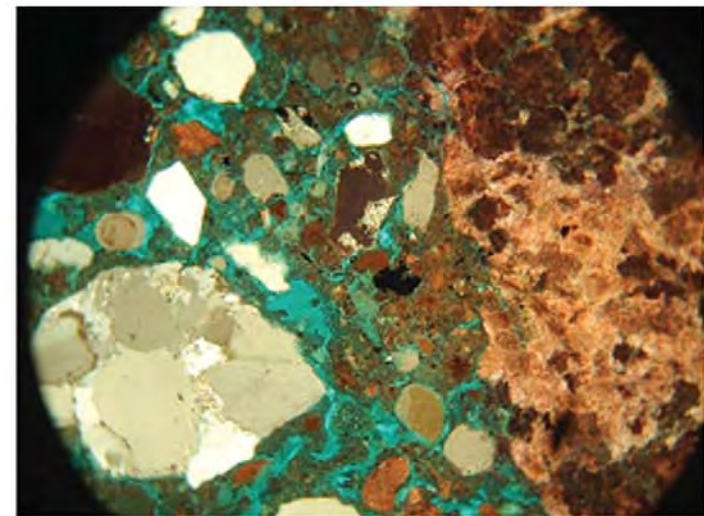


Plate 88: Sample No 130, showing poorly sorted aggregate grains, ceramic fragments and charcoal



Plate 89: Sample No 131, showing fine limestone aggregate



Plate 90: Sample No 131, showing carbonated lime binder



Plate 91: Sample No 57 Area C - possible hearth and pit



Plate 92: Sample No 57 showing a discoloured weathered porous surface