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CULTURAL HERITAGE / ARCHAEOLOGY
MAIN CONTRACT
NFMHS, PORTRANE, CO. DUBLIN

Burnt Spread & Associated Features
FINAL EXCAVATION REPORT



LICENCE REF: 17E0377
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Director: Redmond Tobin
For: Rhatigan OHL Ltd
On behalf of: HSE

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ABSTRACT

This report presents the results of the archaeological excavation (Licence ref: 17E0377) of a burnt spread and associated prehistoric remains, which were located along the north-western limit of the footprint for the proposed National Forensic Mental Health Services (NFMHS) hospital site, St. Ita's Hospital, Portrane Demesne, County Dublin (Figs 1-4). The National Forensic Mental Health Services (NFMHS) facility is currently being developed at Portrane to replace the Central Mental Hospital in Dundrum as the State's main centre providing psychiatric treatment in conditions of high and medium security, including acute, medium and longer term psychiatric care.

The excavation was carried out as part of the main works contract for Rhatigan OHL Ltd. The excavation was directed by Red Tobin of RedArc Consulting Limited under licence ref: 17E0377, between 31st July and the 5th September 2017. Preservation by record was the preferred mitigation in this case as the site would sustain direct impacts during the construction of the NFMHS Hospital.

The construction of the NFMHS Hospital at Portrane is designated as a Strategic Infrastructural Development (SID) and falls under the planning approval of An Bord Pleanála (06F. PA0037), and the conservation of the archaeological heritage was a specific condition (Condition 10). Condition 10 provides for *"the preservation, recording and protection of archaeological materials or features which may exist within the site"*. It goes on to state that the developer *"employ a suitably-qualified archaeologist prior to the commencement of development. The archaeologist shall assess the site and monitor all site development works"*.

Monitoring of the topsoil strip was carried out from the 8th May 2017 (Licence ref: 17E0210 and extensions). The burnt spread was unearthed during topsoil stripping along the northern limit of the site on the 8th May 2017.

Excavations on the site (Licence ref: 17E0377) revealed a burnt spread, 2 troughs, pits, stake hole clusters, a possible sweat lodge and some linear ditches crossing the site from east to west. The archaeological evidence suggests, at least, two distinct phases of activity relating to the burnt spread. A well-preserved wattle liner in the main trough gave a middle Bronze Age date for the second, later phase. The artefact assemblage gathered in the course of the excavation supports Bronze Age dates for the main phases of activity on the site.

CONTENTS

1	Introduction	1
2	Archaeological Background – Prehistoric	3
2.1	Mesolithic Period	3
2.2	Neolithic Period.....	3
2.3	Bronze Age.....	4
2.4	Lusk.....	5
2.5	Rush.....	6
2.6	Iron Age.....	6
3	Historical Background	7
3.1	Early Medieval Period.....	7
3.2	Norse Period.....	7
3.3	Anglo-Norman Period	7
3.4	Dissolution to the Twentieth Century.....	8
4	The Excavation	10
4.1	Background & Methodology.....	10
4.2	Geological Background.....	11
4.3	Archaeological Features & Stratigraphy.....	11
4.4	C13 – Trough / rectilinear pit (Fig.6 and Fig.7).....	12
4.5	Redeposited C2 material from C13 (Fig.6 and Fig.7)	13
4.6	C32, C42 & C11 (Fig.6 and Fig.7).....	14
4.7	C28 – ‘Keyhole Style’ Feature (Fig.5, Fig.8 and Fig.9).....	15
4.8	C37 – Trough (Fig.5, Fig.8 and Fig.9).....	15
4.9	Stake hole clusters (Fig.6)	16
4.10	F7 foundation trench / possible structure (Fig.6)	17
4.11	C6 – Burnt mound / spread (Fig.5).....	18
4.12	C53 - Water channel (Fig.5 and Fig.8).....	19
4.13	C92 – Metalled surface (Fig.5).....	20
4.14	Linear features (Fig.5, Fig.6 and Fig.8)	20
5	Finds	23
5.1	Lithic Assemblage.....	23
6	Discussion.....	25
7	Bibliography	30

FIGURES

- Fig 1. General site location
- Fig 2. Aerial image of site after the Advance Works contract 2016
- Fig 3. Google Earth image of the NFMHS site during construction (2018)
- Fig 4. 1st edition OS map (1837-43)
- Fig 5. Feature plan and layout/numbering of trenches. Pre excavation
- Fig 6. Post excavation plan of possible sweat lodge
- Fig 7. Profile through C13, C42, C32 and location of wicker liner C95
- Fig 8. Post excavation plan of cut features in the western part of the site
- Fig 9. Profiles through features C28, C37 and C32. Post excavation

PLATES

- Plate 1. General view over the excavation site from the north east
- Plate 2. General view over the excavation from the north
- Plate 3. General view of burnt spread from the south
- Plate 4. Excavation of strips through the burnt spread – C6, from the north
- Plate 5. Excavation through slot 4, cut of C3 visible to the right. From the east
- Plate 6. C13 (foreground), C11 and C32 mid excavation, in slot 13. From the north
- Plate 7. Grouping of features, C13, C11, C42, C32, C9 and C7. From the north
- Plate 8. C13 post excavation
- Plate 9. C94, basal fill of C13. Mid excavation
- Plate 10. C95, wattle liner, in situ. C58 and C59 also visible
- Plate 11. C95, wattle liner, in situ, set into the basal fill of C13, C94
- Plate 12. Detail – C49, clay lining to support C95 and to reshape C13
- Plate 13. Detail – C49, clay lining reshaping the C13 trough
- Plate 14. Detail – C58, wooden supports for C95
- Plate 15. View from the north west of C13, C95, C58 and C59 and C94
- Plate 16. C34, organic rich fill of C13
- Plate 17. C32 and C42, post excavation
- Plate 18. C32 post excavation showing stake hole C39
- Plate 19. Detail of C42 showing C43 mounded to the north end adjacent to C13
- Plate 20. General view, C42, and C32
- Plate 21. C28, keyhole style pit, pre excavation
- Plate 22. C28, keyhole style pit, mid excavation
- Plate 23. C28, keyhole style pit, post excavation
- Plate 24. Trough C37 mid excavation
- Plate 25. Trough C37 post excavation
- Plate 26. C7, stake hole cluster, pre excavation

- Plate 27. Foundation trench C7 (north west) showing stake hole cluster, post excavation
- Plate 28. C7 structure, post excavation. From the south
- Plate 29. C53, paleochannel post excavation
- Plate 30. C92, metallised surface, mid excavation
- Plate 31. Linear feature, C9, mid excavation
- Plate 32. Linear features C3 (left) and C9 (right) flanking C7. From the east
- Plate 33. Linear features C3, C9 and C19/C46. From the east
- Plate 34. Panorama of burnt spread site from the east
- Plate 35. 17E0377:1:1. Flint. Convex end scraper
- Plate 36. 17E0377:1:1. Flint Convex end scraper
- Plate 37. 17E0377:6:3. Flint. Multiplatform core
- Plate 38. 17E0377:6:3. Flint. Multiplatform core
- Plate 39. 17E0377:6:5. Concave scraper
- Plate 40. 17E0377:6:17. Flint. Strike-a-light
- Plate 41. 17E0377:6:20. Flint. Retouched flake
- Plate 42. 17E0377:6:20 Flint. Retouched flake
- Plate 43. 17E0377:7:1. Flint. Hollow scraper
- Plate 44. 17E0377:7:1. Flint. Hollow scraper
- Plate 45. 17E0377:9:1. Sandstone. Polisher
- Plate 46. 17E0377:13:4. Sandstone. Anvil
- Plate 47. 17E0377:13:4. Sandstone. Anvil
- Plate 48. 17E0377:13:8. Igneous. Anvil
- Plate 49. 17E0377:33:1. Flint. Edge retouched flake
- Plate 50. 17E0377:33:1. Flint. Edge retouched flake

APPENDICES

- Appendix 1 C14 Dates Report
- Appendix 2 Wood Analysis Report – Lorna O’Donnell
- Appendix 3 Sample Assessment – Penny Johnston
- Appendix 4 Lithics Report – Killian Driscoll
- Appendix 5 Site Registers

1 Introduction

This report presents the results of archaeological excavations of prehistoric remains located on the north-western boundary of the National Forensic Mental Health Services Hospital (NFMHS) site¹ (Figs 1-4). These excavations took place as part of the Main Works contract carried out at the NFMHS site by Rhatigan OHL Ltd. The remains consisted of a burnt spread, 2 troughs, pits, stake hole clusters, a possible sweat lodge and some linear ditches crossing the site from east to west. The burnt spread was unearthed on the 8th May 2017 during monitored topsoil removal (Licence ref: 17E0210 and extensions), the preliminary phase of groundworks associated with the construction of the NFMHS Hospital. The site was secured under a layer of geotextile while mitigation was discussed with the National Monuments Service. It was decided that preservation in-situ was not an option in this case and that the site would be best preserved by record. The site was excavated under licence (Licence ref: 17E0377). The site location is shown in Figures 1 to 4 inclusive.

Archaeological fieldwork on site was carried out by RedArc Consulting Ltd, under licence (17E0377) issued by the National Monuments section of the Department of Culture, Heritage and the Gaeltacht in consultation with the National Museum of Ireland. The work was directed by Red Tobin. The excavation commenced on the 31st July 2017 and was completed on the 5th September 2017. During the preliminary clean-up of the site, the basic component features were identified.

An Archaeological Impact Assessment (AIA) was undertaken by Archaeological Projects Ltd in 2014, which formed Appendix K of the Environmental Impact Statement (EIS) prepared for the NFMHS project. The assessment report highlighted several areas of archaeological potential requiring mitigation prior to the development. These areas were consequently excavated during 2016 (Licence ref: 15E0396 and extensions – Final Reports, Tobin 2019). The Archaeological Impact Assessment defined the risk for extant archaeological remains within the footprint of the development as low.

The construction of the NFMHS Hospital at Portrane is designated as a Strategic Infrastructural Development (SID) and under the planning approval of An Bord Pleanála (06F. PA0037), the conservation of the archaeological heritage was a specific condition (Condition 10). Condition 10 provides for *“the preservation, recording and protection of archaeological materials or features which may exist within the site”*. It goes on to state that the developer *“employ a suitably-qualified archaeologist prior to the commencement of development. The archaeologist shall assess the site and monitor all site development works”*.

Condition 10 (ABP 06F.0037) ensured that the footprint of the development was topsoil stripped under archaeological supervision (Licence ref: 17E0210) and that any sites unearthed were preserved by record. The topsoil strip also exposed a stone cist, a scatter of pits containing structured votive deposits and a sizeable ditch close to the southern boundary of the development site (Licence ref:17E0303 – Tobin 2019).

The site of the burnt spread was located in low ground at the base of an east to west ridge which runs through the St Ita’s Hospital campus terminating on the coast slightly to the south of Portrane and looking over Lambay Island to the north-east. This ridge offers a good settlement location with the village of Portrane nestled to the north east in its lee. The ridge crest and southern facing slope offer extraordinary views over Dublin Bay from Ireland’s Eye to Bray Head, with the Dublin and Wicklow mountains dominating the skyline. The views to the north from the ridge crest encompass the coastline north to include Clogher Head and the Mourne. This ridge was one of the principal reasons for siting the Portrane Mental Asylum at this location and also tantamount to the location of Portrane House (Mount Evans) and Demesne (Figs 1-4).

¹ Td: Portrane Demesne. By: Nethercross Ph: Donabate/Portrane. ITM: 724810.063 / 750595.473. OD: 5.13m

The area has long been associated with habitation from isolated Bronze Age settlements to more defined medieval boroughs. While the land is arable it is poorly drained and historically would have been better suited to pasture and woodland.

The burnt spread and associated features are just part of a wider prehistoric landscape. The general area has been subject to archaeological investigations and assessments as part of various developments over time including the NFMHS hospital. These developments and excavations are summarized in the archaeological background section that follows. In 2016 the results of an excavation in the western part of the NFMHS site (Area 5, licence ref: 15E0396 ext.) was suggestive of scattered or marginal prehistoric activity, with later post-medieval agricultural and industrial activity also recorded (Tobin 2019).

The main focus of activity on this site was a large burnt spread / levelled mound (Licence ref: 17E0377) which was bisected by later ditches, possibly post medieval in date. The burnt spread is typical of the Bronze Age pyrolithic monument type, the fulachta fiadh / burnt mound. The excavation revealed considerable evidence for water management and industrial processes. The evidence included a fine wicker liner to the main trough/well which gave a middle Bronze Age date of 1922-1758 cal.BC (2 sigma) (Appendix 1). Throughout the project large quantities of lithics have been gathered from the footprint of the site and the coastal fields. These will be subject to analysis and presented in a separate report (Licence ref:17E0210 and extensions, Tobin, forthcoming).

2 Archaeological Background – Prehistoric

Archaeological remains, in the form of field monuments and artefacts, point to occupation in this part of north Dublin from early prehistoric times.

Large numbers of flint artefacts have been collected along the coastal stretch from Howth to Balbriggan. This massive scatter along the north Dublin coastline shows that the area was exploited for flint throughout prehistory beginning in the Mesolithic and extending through to the later Bronze Age / Iron Age interface. The extent of the flint scatter is problematic as this material has, through time, been ploughed over and contaminates later archaeological deposits and features.

2.1 *Mesolithic Period*

Evidence for Ireland's earliest inhabitants in the Mesolithic was traditionally thought to have been confined to the coast. Archaeological research has shown that contrary to this traditional viewpoint, the hunter gatherers that personify the Mesolithic lifestyle moved throughout the country. In County Dublin the Mesolithic is easily identifiable through the stone technology, and collectors of worked flints, other stone tools have identified the coastal area of north County Dublin as particularly rich. The nature of the Mesolithic economy is defined by hunting and gathering and is considered to be transitory and seasonal, with small mobile groups exploiting richly available foodstuffs along the coast.

One of the earliest artefacts from north County Dublin dates from the Mesolithic (c. 7000–4000 BC), an early Mesolithic microlith found at Knocklea near Rush. Two later Mesolithic flint Bann flakes are also recorded from Kilcrea (NMI IA/52/62). In addition, quantities of Mesolithic material have been recovered through systematic fieldwork on Lambay Island (Dolan and Cooney, 2010). The results of the analysis of these artefacts show clear evidence of a presence both in the later Mesolithic and the early Mesolithic.

The presence of Mesolithic groups on Lambay also demonstrates that, even at this early period of prehistory, vessels were being constructed to facilitate off-shore activities. In the 1930s, workers in Sutton, Co. Dublin unearthed the remains of a log boat formed out of oak. This vessel was never dated but its discovery indicates that boats capable of coastal activity were being built in prehistory.

Midden sites found at Sutton and Bremore suggest that hunter gatherer groups were staying along the coast for extended periods.

2.2 *Neolithic Period*

The Neolithic period is characterised by the advent of agricultural practice and with that a more sedentary lifestyle. The widespread development of long term settlement and housing occurred as the Neolithic progressed. The Neolithic is also defined by organised burial practices as demonstrated through the construction and use of megalithic tombs. Flint artefacts continue to represent this period although the style varies considerably from the Mesolithic forms. The artefact record also includes polished stone axes and various types of pottery vessels.

A cave in the cliffs at Portrane has yielded flint artefacts dating from the Neolithic period (c. 4000–2400BC). Other finds from this area include a flint flake from Newtown Haggard (NMI 1976:37)

The Rogerstown estuary is particularly rich in evidence for early human activity (Stout and Stout 1992).

In addition to the flint finds described above, evidence for prehistoric activity in the environs of the Rogerstown estuary and at Knocklea include a Neolithic passage tomb,

and three cist burials, at least one of which was a secondary insertion into the passage tomb.

Thomas K Moylan (1947) in reference to the construction of Portrane Mental Asylum (St. Ita's Hospital), states that '*in making excavations for the foundations of the building, the workmen found a sepulchral chamber, lined with long stones. A long passage, also lined with stone, led to it and in the chamber was the skeleton of a man of large size. The whole was unfortunately cleared away without any expert examination and, according to Rev. Edmund Hogan S.J., the bones were thrown on the bank of rubbish*'. This anecdotal evidence is not supported by any other records but may indicate the existence of another Passage Tomb on the Portrane Peninsula.

The Stone Cist excavated at Portrane (17E0303) was quite unique in the Irish archaeological record. Structurally and materially it bore similarities with the larger megalithic tombs of the Neolithic period and also the more anomalous Linkardstown style cists which date to the middle Neolithic. The Portrane Stone Cist was constructed using greywacke sandstone similar to the material employed in the great passage tombs of the Boyne Valley. A middle Neolithic date has been suggested for the Portrane Cist based on the structural evidence from the site (Tobin 2019).

When considering the archaeological and historical landscape in this part of north County Dublin, the island of Lambay must be considered. From 1993-2001, Professor Gabriel Cooney excavated a Neolithic axe factory where porphyritic andesite was quarried and formed into high quality axes. All stages of production have been recorded at this site. During this research project, large scatters of flint flakes and artefacts have been recovered on the island and the location of two burial mounds, possibly passage graves, recorded.

A collection of flint artefacts gathered in the 1950s and 60s by Miss Gwendoline Stacpoole, a member of the Royal Society of Antiquaries of Ireland, was examined and attributed to the 'Larnian Culture'. The collection which was gathered from a variety of locations including Portrane is of particular interest. The 'Larnian Culture' was long held to be of Mesolithic date but the discovery of similar artefact types on late Neolithic / early Bronze Age sites would suggest a much later date for the collection. Similar flint artefact types are found in conjunction with Grooved Ware and date to the interface between the Stone Age and the Bronze Age of later prehistory.

2.3 Bronze Age

The Bronze Age sees a consolidation of agricultural practices and the introduction of new, distinctive ritual and burial practices. While stone tools continue to be used, their forms change. Different pottery types also characterise the Bronze Age along with different house forms.

Bates (2001) noted the discovery of a possible Beaker vessel and cist graves at Burrow, but these finds could not be confirmed in the files of the National Museum.

Excavations in the townland of Beaverstown, south of the Rogerstown Estuary (02E1708) produced evidence of Neolithic, Bronze Age and Beaker material (4000-1500BC) (Hagen, 02E1708 and 03E1634).

Test excavations relative to the Donabate Local Area Action Plan identified the remains of two circular enclosures, a circular hut, several pits and two burnt mounds in the townland of Ballymastone.

A spread of burnt mound material and a *fulacht fíadh* with associated ditches and pits were identified in Corballis Lands, directly to the south of Turvey Avenue (Baker 2006; Frazer 2007).

Further evidence for prehistoric activity in this area comes in the form of a stone axehead (NMI 1932:5626) and two flint waste flakes (NMI1978:20-21).

Recorded prehistoric sites in the area include a possible prehistoric burial in Portrane (DU008-032), a ring barrow (DU012-060) in Kilcrea and an enclosure site in Turvey (DU012-025). An archaeological complex (DU012-00101-102) is recorded in Bellinstown and ring ditch in Lissenhall Little (DU012-003). Test excavation in 1999 revealed no archaeological deposits within the archaeological complex (DU012-001). An earthwork (DU0012-004) illustrated in Corballis townland on the 1837 edition OS map also indicated prehistoric activity in this area.

Several flint flakes and artefacts are also recorded from the townlands surrounding Donabate, such as from Balcarrick (NMI 1946:292), Ballymadrough (NMI 1978:69-72), Kilcrea (NMI 1965:56, 1967:180-184 and 1976:147), Lanestown (NMI 1978:27-42 and 1978:73-74) and Turvey (NMI 1978:80-116). Two hammer stones from Balcarrick (NMI 1941:409) and Donabate (no NMI ref.) may also belong to this period. A flint scraper was found in the townland of Portrane (NMI 1978:8).

Bronze age material was identified during previous archaeological work. In advance of the construction of the Portrane, Donabate, Lusk and Rush Waste Water Treatment Scheme geophysical survey was carried out under licence ref: 08R0029 (Harrison, MGL, 2008). Arising from this survey a programme of archaeological testing was carried out under licence (ref: 10E0121. McQuade 2010). The test excavation confirmed the findings of the geophysical survey and features sustaining a direct impact during construction were preserved by record. A dense scatter of features identified as a Bronze Age habitation site/structure and ancillary features was preserved in situ as it could be avoided during the construction phase. This site, designated as 'Portrane 1', is now listed on the RMP for Co. Dublin as DU012 – 095001, 002 and 003. 'Portrane 2' lay to the north of the preserved site. It too proved to represent prehistoric settlement activity, but dateable evidence was not retrieved. 'Portrane 3', a burnt mound/spread, was located to the east along the route of the wayleave for the outflow from the Waste Treatment Plant. It was excavated, returning an Early Bronze Age date of 2272 – 2037 cal. BC.

Further archaeological remains were found in the area to the north of Portrane and north of Rogerstown Estuary, in the townlands of Whitestown and Rogerstown. The scattered features identified at Whitestown Site 1 and Rogerstown Site 1 were the only surviving remains of what was probably a large area of settlement. Some structural remains and associated domestic features were excavated further west at Rogerstown Site 2. A number of flint artefacts (including a scraper) and several pieces of worked flint were recovered from the plough soil during monitoring at Whitestown and Portrane. Although these artefacts were not in their primary context, their presence does indicate that some level of prehistoric activity took place in the wider area surrounding the identified sites.

A test excavation was carried out over the footprint of the proposed NFMHS Hospital development in 2014 by Claire Walsh of Archaeological Projects Ltd (Licence reference 14E0140). Twenty test trenches were excavated which revealed surviving foundations on the site of Portrane House (Mount Evans) and foundations of the yards associated with Portrane House which were altered and used as part of the Temporary Asylum (Tobin 2019. Licence reference; 15E0396 and extensions). The Temporary Asylum accommodated 400 individuals while the main Portrane Mental Asylum was under construction (1896-1903). This test excavation also identified prehistoric features in a greenfield site on the western extremity of the site. The area was subsequently stripped and scattered prehistoric features excavated under licence ref 15E0396 (and extensions). An unstratified arrowhead may suggest a late Neolithic / Early Bronze Age date to the features excavated (Tobin 2019).

2.4 Lusk

Evidence for prehistoric settlement around the area of the town of Lusk comes from a series of excavations that were undertaken. Prehistoric burial pits and kilns, dated by

possible Groove Ware vessels (2800-2400 BC), were recorded to the south of Lusk (McCabe, 02E0871). A ring-ditch of possible Bronze-Age date was also discovered (McCabe, 02E1029). Excavations north of Lusk found features of similar type and date (McCabe, 02E0794; 02E1031). A possible Bronze Age burnt mound / *fulachta fiadh* was also discovered west of Lusk (Wallace, 02E1719).

2.5 Rush

Prehistoric evidence for Rush and its surrounding environs comprises a passage grave and a cist burial (DU008-01301, RPS-259), which produced a food-vessel and skeletal remains (NMI 1934:432,433). Cist burials were also uncovered in the townland of Beau (DU008-035, RPS-285) and were found with several fragments of cremated bone (NMI 1977:1204) and worked flint (NMI 1977: 1198-1199). Probable burial mounds in Balleally West (DU008:019-01;02; 033) and Regles (DU008-008) all indicate activity from the Neolithic Period through to the Bronze Age. A polished stone axehead from the townland of Lusk, along with a flat bronze axehead and various finds of cinerary urns and human bone from Balleally West (NMI 1940: 81-a/c; 1958: 37-a/b) are noted from the National Museum files. In addition, bone fragments (NMI 2004:196) and pottery sherds (NMI 2004:195) were recovered from Rush Demesne.

2.6 Iron Age

Settlement in the Iron Age is well-attested on the east coast, with the notable promontory fort of Drumanagh at Loughshinny (DU008-006001), where Roman finds (including sherds of 1st century AD Samian ware) have been recovered from ploughsoil. Illegal metal detectorists have uncovered Roman coins and decorative metalwork from the site, now impounded and held by the National Museum. Warner promoted the idea that Drumanagh was a bridgehead of a planned Roman invasion of Ireland in 82 A.D. National Monuments files (Archaeology.ie) state that the site may have served as a distribution centre for Roman produce on the east coast. Burials with Roman brooches and other decorative metalwork have been uncovered at nearby Lambay Island, also indicating a Roman presence in the area. Lambay may be identified as Limnos in Ptolemy's Geography, compiled in Alexandria (Stout and Stout 1992, 12). Drumanagh is now in the ownership of Fingal County Council.

3 Historical Background

3.1 Early Medieval Period

In the early medieval period, Portrane formed part of the southern Uí Neill kingdom of Brega. Ringforts and associated field systems are known from the area, identified from oblique aerial photography, but none are close to the site. It is probable that at this period, settlements along the coast were not enclosed, thereby having little surface expression. Major ecclesiastic centres at Lusk and Swords lay inland of the site.

Localised and scattered ecclesiastic settlement is attested from numerous holy wells, DU008-00902 (St Kenny's well) DU008-007, and DU012-009), St Mochuda's Church, the "Chapel Bank" (DU008-028), St Canice's church (DU008-03101) and a chapel site close to the cliff at Portrane Demesne (DU012-009001).

The 'Chapel (site of)' DU012-009001 and St Kenny's Well DU012-009002 are situated within the property boundary of the St Ita's (HSE Estates) Hospital Campus in land long used for agriculture. The cartographic location of the two sites has been considered erroneous and the geophysical surveying carried out in 2008 (Licence ref:08R0029 – Harrison) suggested a more likely location to be approximately 70m to the north. This chapel site may be earlier than St Canice's. Peadar Bates (2001, 67) states that approximately 40 years ago, what was left of this church was dismantled and the stones used to fill the adjoining St Kenny's well. Cartographic analysis carried out as part of a 2016 assessment would dispute the validity of these statements (Tobin 2016) as the cartographic evidence is quite conclusive and the location of the well can still be determined.

North east of the chapel site and St Kenny's well is Chink Well (DU012-007). This natural spring rises in a cave along the shoreline. Accessible only at low tide the well was supposed to cure Whooping cough or 'chin cough'. An offering of bread was placed in the well and if taken out with the tide demonstrated that a cure was forthcoming (Cordner 1946, 32).

3.2 Norse Period

No archaeological sites of the Norse period have been identified to date in the area of Portrane. However, place name evidence along the coast from Dublin, Howth to Skerries, indicates that lands along the coast were settled. Raids on the monasteries of the east coast are documented from 795A.D. (Courtney and Goucher 2007, 11).

More anecdotal evidence from local historian Peadar Bates mentions Knockaman in the Burrow as the site of a battle, possibly of the Norse period. The finds were apparently placed in the National Museum in 1872, however Courtney and Goucher (2007, 12) could find no trace of their donation. The Black Book of Christ Church states that in 1040, King Sitric of Dublin granted Portrane to Bishop Donatus of Dublin, along with the lands of Baldoyle (Comerford, accessed 13/03/2013).

3.3 Anglo-Norman Period

Evidence from field work in north county Dublin indicates that patterns of settlement continued from the early medieval period into the Anglo-Norman period. Following the Anglo-Norman invasion, the rich lands of Portrane and Donabate were intensively settled and confirmed to the See of Dublin. When Archbishop John Comyn of Dublin asserted his claims to Portrane in 1197 the canons of Christ Church agreed to forgo their claims to Portrane on condition they received 100 rabbits a year from the 'warren of Portrahen' (Mc Neill 1950, 30). The church in Portrane was granted to the Prioress of Grace Dieu, an Augustinian convent at Ballyboghill founded in 1190 by Archbishop Comyn (Comerford, accessed 13/03/2013).

The tower house at Portrane, DU008-030, known as Stella's Castle due to the association with Jonathan Swift's correspondent Esther Johnston, is one of a distinctive type in Fingal, having a projecting turret. The first castle on this site was probably built in the thirteenth century as '*one of four castles stretching in a defensive line from the coast to Belinstown*' (Bates 2001, 207). It was held by Grace Dieu, and tenanted by the Cusack family, until the Reformation, when the lands and buildings were transferred to the Barnewalls of Turvey (Comerford, accessed 13/03/2013).

Some placenames in Portrane have gone out of use, with tenancies noted in 1326 A.D. at Englishtown, and Ballycaman. Rocque's map depicts a sizeable settlement on the headland at Oldtown, now gone.

There was probably a harbour at Portrane throughout the medieval period. Peadar Bates (2001, 220) states that the Corporation of Dublin obtained a grant for the ensuing 40 years from revenues on all merchandise imported into the harbours of, including others, Portrane. In 1529, a small fishing port was noted in 1529 at Portrane (Griffith Inquisitions 77, cited by Courtney and Goucher 2007, 40). Portrane is included in the list of harbours and havens in county Dublin mentioned in medieval sources by Niall Brady (2009, 309). The quay is prominent on Rocque's map of 1760. Shipping had its dangers, with the presence of numerous nationalities of pirates at Lambay Island noted in 1467-8 (O' Neill 1987, 125).

3.4 Dissolution to the Twentieth Century

The nuns of Grace Dieu may have moved to Portrane and were living there with their own chaplain until at least 1577, when they were finally dispersed. In 1576, the church and rectory of Portrane were granted to Francis Agard, when 18 acres of land were attached to Portrane Rectory, along with Portrane Castle, a close east of the castle, and a house in ruins north of the old hall, a range of stables, the slaughterhouse of the manor, the kitchen and '*a long stretch of houses called the New Hall in the south corner of which the chaplain to the said prioress had his chamber, and celebrated divine service in the parish church*'. Clearly there was a sizeable household in the castle at this time.

Tenancies of the rectory of Portrane changed throughout the following centuries. Lands and cottages in Portrane are also noted, although no locations are given (Bates 2001, 222- 223).

In 1654, Portrane was the property of Ralph Wallis, which lands included '*an old castle with a thatch hall adjoining*', a diminution since the inventory of 1576 (Bates 2001, 223; Comerford, accessed 13/03/2013). The farm of Portrane, as indicated in Petty's survey, consisted of 156 acres, and contained one barn, one stable, four small cabins, and one old parish church. Several small holdings, consisting in total of five tenements and garden plots, were also listed by Petty.

The lands of Portrane, belonging to the archbishop, were auctioned in 1649 to Christopher Mapas to fund Trinity College, who sold them to Wallis. A small interest was retained by the Archbishop, entitling him to an annual rent until the lands were sold in the late 19th century.

Several large estates grew following the Dissolution, when the bulk of the lands of the Portrane-Donabate peninsula were conveyed to the Barnewall family. Turvey House was built in the 16th century, allegedly using much of the stone from the nunnery at Grace Dieu. Several houses of significance are indicated on the 1654-6 Down Survey map of the area, including a house at Beaverstown (DU008-044), another at Ballisk, Balliellis, and Balmastowne. No manor house is shown at Portrane, however Portrane Castle and the church (unroofed) are shown on the map. Two '*coney warrens*' are also depicted on the map, indicating the continuing importance of rabbits as a source of food and fur.

Portrane Castle appears to have been substantially rebuilt in the early 18th century and is known as '*Stella's castle*' because Swift's '*Stella*' spent some time there. It was the residence of the tenancy of the lands of Portrane. The castle was sold to Eyre Evans, MP for Limerick, in 1728 who built a new house (Mount Evans/ Portrane House) on the estate soon after (Comerford, accessed 13/03/2013, also Bates 2001). In the dispute which arose between Cobbe of Donabate and Evans concerning the extent of the lands in legal ownership, it was noticed in 1744 that Evans had destroyed the boundary ditch which had separated the lands belonging to the nuns from those of the archbishop. The ditch began at the sea and ran by the castle to the recently built house.

In 1709, the tenant of Portrane estate is listed as Charles Wallis, with the tenancy of the estate being sold by Ralph Wallis to Eyre Evans MP. Mount Evans, the house constructed on the Portrane Estate, was either built by Eyre Evans or his son George Evans who was MP for Queen's County (Laois). George Evans was succeeded by his brother Hampden. Rocque's map of 1760 reveals the nature of the demesne prior to the development of the later landscape park. There are two houses shown in the area which later became the centre of the demesne, one of them likely to be the precursor of Portrane House. George Evans, MP and Sheriff for County Dublin, succeeded his father Hampden in 1820.

William Duncan's map of 1821 shows a smaller demesne laid out, probably by Hampden Evans. The line of the avenue to the house from the northwest appears to follow the course shown on later maps. The walled garden is shown in its current location to the west of the house and outbuildings. The location of the house appears to correlate with that of Portrane House, though the plan is different. The outbuildings, as shown, appear to be in a different location and are of a different plan from those shown on later map editions.

By the 1837 edition of the Ordnance Survey, the landscape park was fully laid out. The house is shown in a parkland setting, approached by an entrance drive through a wide swath of woodland which envelops the house, outbuildings and walled garden. A second service entrance leads directly to the outbuildings from the Portrane road in the north. Farmland is shown extending along the public road towards Portrane, while the parkland to the south front of the house opens out towards the coastline. A large deer park and rabbit warren are located on the eastern side of the demesne. Thomas K Moylan (1946, 28) stated that the northern boundary of this Deer Park, adjacent to the road was lined with the ruins of houses. This 'settlement' was known as Oldtown. Moylan goes on to say that '...there are various indications in the adjoining field that Oldtown must have been a fairly extensive place'.

Samuel Lewis describes Portrane House and Demesne in *A Topographical Dictionary of Ireland* (1837), as '*a spacious brick building in the centre of a fine demesne of 420 acres, well stocked with deer, and commanding extensive and splendid views*'.

When George Evans died in 1844, his wife Sophie erected a Celtic Revival round tower on the grounds of the demesne. A '*pigeon house*' is annotated on Duncan's map which may well have been removed to accommodate the new tower or integrated within the structure. Sophie Evans died in 1853 and bequeathed Mount Evans and its demesne to her nephew George. He was resident at Portrane until 1864, leaving Ireland due to health reasons. Portrane Demesne was rented for some years to St John Butler, Sheriff for Dublin County and son of James Butler 13th/23rd Baron Dunboyne.

In April 1884, 461 acres of the Evans' lands including Mount Evans were put up for auction. The sale took place in November 1885 and James Considine, a Clare landowner bought the house and lands for £9,000.

Considine, in turn, sold it on some seven years later to the Governing Board of Lunatic Asylums in Ireland for £10,000.

4 The Excavation

4.1 *Background & Methodology*

Topsoil stripping over the footprint of the NFMHS Hospital site was carried out in May 2017 under constant archaeological supervision. The monitoring archaeologists on site were James Kyle, Red Tobin and Peter Kerins. All monitoring work on the NFMHS site has been licenced by the National Monuments Service and the National Museum of Ireland (Licence ref: 17E0210 and extensions). Topsoil stripping commenced in the north east portion of the site to the west of the derelict farm buildings. On the 8th May 2017 the topsoil strip revealed the burnt spread and associated archaeological features which were preserved by record (Licence ref: 17E0377). The topsoil strip continued over the whole site and on the 18th May 2017 revealed the surface evidence for the stone cist, the pit scatter and ditch, which were preserved by record (Licence ref: 17E0303).

The location of the burnt spread (Figs 1-4) was north of the Avenue that originally serviced Portrane House while also later providing access to the Portrane Mental Asylum. The spread was sited west of the 19th century farm buildings and due south of the deep drainage ditch that defines the northern boundary of the NFMHS development site, separating it from the football fields immediately to the north. The burnt spread lay to the east of the wayleave for the rising main that carries wastewater to the treatment plant located to the south of the NFMHS development site.

The nature and extent of the site was defined, photographed and planned. The area was then sealed beneath a layer of geotextile until such time as an acceptable mitigation strategy had been discussed and approved by the Department of Culture, Heritage and the Gaeltacht, the National Museum of Ireland and Fingal County Council.

Prior to the commencement of hand excavation, an area measuring 13m north-south and 15m east-west was stripped and excavated to mitigate for the dispersed nature of the archaeological remains (Fig 5, Plates 1-3). The topsoil was reduced to the level of archaeological deposits using a tracked 360° excavator equipped with a flat, toothless bucket under constant archaeological supervision. On completion of the topsoil strip the areas to be excavated were secured with geotextile and Heras fencing.

A site grid was set up at 10m centres and subsequently calibrated to the national grid (ITM) using GPS survey equipment. Ordnance datum was established at 5.131m. All features revealed by the topsoil removal and subsequent removal of the burnt spread were investigated to establish their archaeological authenticity. Some of these features were natural in origin and others were the result of agricultural practices or landscaping activities throughout the development of the Portrane Demesne. Any archaeological features and/or deposits identified were cleaned and excavated by hand, and then recorded using customised field record sheets or feature sheets. Supporting archival records in the form of registers or lists of drawings and photographs were also created.

All archaeological features were drawn to an appropriate scale and photographed, and levels taken. Soil samples were taken from all features for analysis.

A complete photographic record was maintained throughout the excavation. Digital photographs were taken of all features and of work in progress. As part of the topsoil removal, cleaning and excavation process, all archaeological finds recovered from were logged and bagged for specialist analysis. In some cases, levels and grid co-ordinates were taken on particular finds and find sites.

A number of issues constrained the excavation. Principally, the weather was problematic with severe rainfall causing the site to be inundated with water until the contractor created a series of bunds to divert the runoff from the south around and

away from the excavation. During periods of excessive rainfall, the site continued to flood requiring the hand bailing of deep excavations, the creation of a sump on the north west side of the site (outside the limit of excavation) and the use of a diesel pump. Trafficking by heavy plant (excavators and dumpers) was also a constraint. The immediate area around the excavation was being used as a spoil bund. The dumper traffic heavily rutted the access to the site making it difficult for pedestrian access.

4.2 Geological Background

The site was located on the northern slope of an east-west ridge which has its geological origin in the Carboniferous period, being a marine shelf bioclastic limestone. The ridge extends eastwards into an area of Ordovician basalt. The ridge is flanked to the north by a localised deposit of sandstone conglomerate. This area is noted as a source for porphyritic andesite, used in the manufacture of polished stone axes and mined in prehistory on the island of Lambay. The conglomerate is also noted as a source of Red Jasper, a material favoured in antiquity because of its vibrant colour. In prehistoric Ireland it saw widespread use in the manufacture of wrist bracers. Further inland the bioclastic limestone gives way to calc limestone which extends westwards to the Shannon basin. Greywacke sandstone is also present on the ridge (St Ita's formation).

The natural subsoil over the development site is a glacial till whose derivation is defined by the local sandstone and shale. Tills are densely packed, mixed glacial deposits containing multiple angular rock fragments. The pH of the soil cover was thought to vary between 5 and 7 but tests carried out on samples from boreholes show the dominant pH at between 8 and 9. This suggests that the soils are predominantly alkaline.

The subsoil (C2) over the excavation site was a yellow brown glacial till that contained sand and silt and a high frequency of decayed, weathered stone fragments. The stone inclusions are typical for a glacial till, being sharp and angular. The till on the northern slopes of the ridge is extremely deep.

All deposits, including the topsoil and archaeological features contained flint in varying concentrations. Flint scatters are typical of most of the east coast of Ireland with flint present in varying concentrations along a broad coastal strip extending from Wexford to Louth. Some of this flint is in the form of natural pebbles while some shows signs of the knapping process and/or plough strikes. The density of the flint spread meant that all man-made features on site, even those readily identifiable as modern contained flint.

The topsoil layer (C1) contained considerable quantities of natural and worked flint and has no clear context of origin. This material has either been ploughed up over time from buried archaeological strata or, in the case of waste flakes and debitage, dropped or discarded during the knapping process.

4.3 Archaeological Features & Stratigraphy

During stripping, the topsoil of the site (C1) showed a considerable frequency of flint, both natural and worked. The density of flint noted in the topsoil increased in frequency local to the site of the excavation and its immediate environs.

The natural subsoil (C2) was a yellowy-brown, sandy, silty clay of glacial origin, with weathered stone inclusions.

The prehistoric activity identified and recorded during the excavation was associated with a burnt mound/spread which dated to the middle Bronze Age. The probable Bronze Age features at Portrane consisted of troughs, pits, a possible well, a sub-rectangular foundation trench, post holes, an extensive, focussed scatter of stake holes, further scattered stake holes and an anomalous metal surface.

The dominant grouping of features is a combination of C13 (and its component contexts), C32, C42 and C25 (Fig.5 and Fig.6). These features constitute the functional core of the site, comprising two probable troughs (C13 and C32) linked by a well-defined leat or channel (C42) all of which were excavated through redeposited C2 (C25, C33 and C93). This grouping could potentially be extended to include the sub rectangular slot trench, F7.

4.4 C13 – Trough / rectilinear pit (Fig.6 and Fig.7)

C13 was the cut of a trough/rectilinear pit, rectangular in plan 2.30m in length, 1.80m in width and 1.78m in depth (Plates 6-8). The long axis of C13 was from east to west. C13 displayed a definite V profile with straight internal sides except on the west where the inner face was stepped to facilitate ease of access. The base of C13 was concave in profile although quite uneven (Fig.7).

The base of C13 contained C94 (Plate 9). The C94 deposit filled an area 0.90m in diameter to a maximum depth of 0.30m. The fill was a dark grey silty clay mottled throughout with charcoal, quite moist and of moderate compaction. It contained some gravel, peat sediment and wood fragments. The structure of the C94 deposit would suggest that it was formed through natural processes. C94 formed a good base for the structure C95 (Fig.7).

C95 is a wooden structure, semi-circular in plan form as exposed during excavation (Fig.6; Plates 10 and 11). It is likely that the original structure was circular in plan. The structure consists of a wattle hurdle with its sails formed on ten upright posts. These posts were driven directly into the C94 deposit to stabilise the structure. There was no evidence for any lining to the base only the upper extent of the C94 deposit. C95 was constructed predominantly using hazel but with some alder, oak and pomaceous fruitwood (Appendix 2). The structure was 0.90m in diameter and survived to a height of 0.40m. While the wood survived intact, it had sustained some damage over time or through its use period. The northern part of the wattle hurdle remained intact and upright while the southern section had slumped inwards. The top of the wattle hurdle in the south west quadrant had suffered direct damage possibly through the collapse of the structural components (C58) (Plate 14). The eastern side of the structure had sustained a considerable impact possibly as a result of stone slippage (C59) (Plate 15) which nearly obliterated all trace of the structure. Hazelnuts were recovered from the C95 structure. Hazel from the wicker sails of C95 was submitted to QUB for C14 analysis (Appendix 1).

When one considers that the C94 deposit is likely to have been a natural accumulation in the base of C13 it implies that the C95 structure is a later insertion into the cut of C13. There was considerable evidence to support this hypothesis when other contexts function solely to either secure and stabilise C95 or to alter the form of C13 while C95 was being used.

C49 was a deposit of almost pure clay with some silt and some burnt organic inclusions. The C49 material was applied to the original C13 cut to reduce its diameter to support the C95 wicker structure (Fig.7). C49 changed the plan form of C13 while also suggesting a change in function (Plate 13). The C49 offered strong support to the northern side of C95 evidenced by the integrity of the C95 structure at this point (Plate 12). The southern C49 does not directly support the wicker sails of C95. The supporting role falls to C58 and C59 (Plates 14 and 15).

C58 was a context composed of a collection of loose structural wood that slipped or collapsed into C13 and came to rest on top of C95. However, several pieces of wood appear to have been deliberately selected and placed in the gap between C95 and the C49 lining on the south western side of C13 (Plates 14 and 15). The function of these timbers would appear to offer protection to the footings of the C95 structure considering

that it is structurally vulnerable from the north east to the south west. It is interesting that the most damage to C95 took place within this exposed area.

C59 was a variation on these timber pieces, formed by a series of contiguously set stones whose function was the protection of the C95 structural foundations. The stones utilised were rounded as against the angular stones contained naturally within the glacial drift (C2). These stones were selected on the surface and brought to this location for inclusion as support and protection to the C95 structure (Plate 15).

C95, C58 (selected), C59 and C49 were the structural components utilised to alter the shape and function of the original C13 cut. C95 contained a single fill, C56, a moist, loose organic fill. C56 was black peat with a low frequency of stones, wood fragments and charcoal. The C56 fill was completely contained within the C95 structure and showed no evidence for classic pyrolithic function (Fig.7).

C56 is sealed by C57 (same as C35) which is totally contained within the limits defined by the C49 structural clay (Fig.7).

C57 was sealed by C36, a dark grey deposit of peaty clay containing a high percentage of burnt stone. This C36 deposit was largely identical in composition to the C14 pyrolithic deposit (secondary fill of C13) but with inclusions of wood fragments and charcoal. The C36 and C34 deposits were located above the upper limits of the C49 structural clay and were likely to represent gradual slumping from the main burnt mound into the silted up C13 cut (Plate 16).

C108 and C109 were two well defined stake holes in the eastern internal face of the C13 cut. C108 was 0.10m in diameter, sub circular in plan and produced the poorly preserved pointed head of the stake that formed the actual feature. The stake had been driven into the C2 natural which defined the limit of the C13 trough.

C109 was of similar dimensions but sub oval in plan and vertically driven into the C2 at a lower level than C108. The fill was a light grey clay similar to C49 (see above). This marked similarity would suggest that these stakes (C108 and C109) were placed to either support a superstructure over the wooden lined trough or as hand or foot supports to enable ease of access to the trough itself. C109 is also located close to the point where C42 enters C13 and may also have an association with the two stake holes C44 and C45.

C14 (same as C12) was the secondary fill of C13. C14 was characteristic pyrolithic waste. It consisted of a soil mixture of silt, clay, coarse sand and peat mottled through with yellow silty sand. This soil formed the matrix for a dense deposit of heat shattered stone (80%). The C14 deposit extends to a depth of 0.60m from its interface with the primary fill C6, the surface remains of the burnt mound/spread.

4.5 Redeposited C2 material from C13 (Fig.6 and Fig.7)

C93 was a spread of redeposited C2 material located on the northern side of C13. The spread extended 1.5m from north to south and 1.1m from east to west and reached a maximum depth of 0.17m. C93 was truncated on its western side by a later agricultural furrow. The C93 material was yellow/grey silty clay with slight inclusions of fine and coarse sand varieties and contained some decayed stone. C93 was slightly banked on the northern side of C13 which suggested that it was deposited as up cast from the original excavation of C13 or its subsequent recut and alterations.

C25 was another spread of redeposited C2 extending south from the southern limit of C13. C25 extended 2.35m from north to south and 2.20m from east to west. C25 was again, a yellow/grey silty clay with slight inclusions of small stones. The surface of the C25 spread displayed impacted burnt mound material and some charcoal flecking. C25 was cut by C11. To the east of C11 (see below), C25 was redefined as C33 based on its obvious sterility. C33 extended 0.40m from the eastern limit of C11 but the full extent of the C33 spread was truncated by the linear cut, C9 to the south, and by the linear

cut C19 to the north. C33 was a yellowish sandy silt with some gravel inclusions. C33 also produced a fine edge retouched flint flake (17E0377:33:1. Plates 49 and 50).

C93, C25 and C33 all displayed similarities being different gradings of the C2 natural probably originating, at least in part, from the excavation of the C13 trough and its subsequent alterations.

C25 was cut by C11, C32 and C42.

4.6 C32, C42 & C11 (Fig.6 and Fig.7)

C32 was situated 1.20m to the south of C13 and linked to it by C42 (Plate 7). C32 was a sub-circular pit 0.90m in diameter and 1.20m in depth. C32 displayed a concave profile with straight sides apart from its southern side which appeared stepped (Fig.7, Plate 18). The base of C32 was concave with a gradual break in slope from the sides. C32 was lined with C41, a compacted grey clay. The stepped southern side of C32 was cut by a stake hole C39 which also penetrated the C41 lining. C39 was circular in plan with a diameter of 0.12m and a maximum depth of 0.12m. C39 had a U shaped profile with straight sides and a concave base. It was filled with C40, a dark brown clayey silt with charcoal flecking throughout. The C41 clay lining suggested a function involving the retention of water. C32 was designed structurally to function either as a well or cistern to either supply water to C13 or to accommodate overflow from C13 via C42 (Plate 17). The basal fill of C32 was C24, a waterlogged fill of black silty clay with burnt stone inclusions. C23 was a lens of yellow clay that separated the C24 primary fill from the C12 secondary fill of C32. C12 is beneath the C6 surface pyroclitic spread and displays a concave profile. The C12 is a southern extension of the C14 fill of the trough C13. C12 is 1.70m in length, 0.90m in width and 0.60m in depth. It is predominantly silt (40%) mixed with coarse sand (10%), clay (20%) and peat (30%). As with the C14 fill, C12 has a lower burnt stone content and a higher frequency of charcoal than C6. It is highly likely that the C6 material was identical to both C12 and C14, but the soil and charcoal content was leached out through surface agricultural activity and rainfall over time, leaving the burnt stone to appear particularly dense (Plate 20).

C42 was a short (1.10m) linear channel which linked C32 to C13. C42 was 0.33m in width and 0.15m in depth. It was cut into the C25 redeposit and was filled with C43. C42 displayed a flattened concave profile with gradual sides to the east and west and a concave base. The C43 fill was a yellow/brown sandy clay with slight gravel content and was very similar to C33. It is probable that C42 was filled with material washed in from the C33 deposit to the east. Two stake holes, C44 and C45 were noted toward the northern extremity of C42. They were sited side by side approximately 0.90m north of C32 and were dug into and wholly contained within the C43 fill. Both stake holes were circular in plan with a wide V profile and 0.08m in depth. The C43 deposit is mounded at the point where C42 opens into C13 (Fig.7, Plate 19). This would suggest that the flow of water to/from C32 was curtailed deliberately.

C11 was the uppermost presentation of both C32 and C42 (Fig.7, Plate 7). C11 was sub rectangular to oval in plan, 1.90m in length from north to south, 1.40m in width from east to west and 0.60m in depth. C11 is filled by C6 and C12. The presence of C12 in C11 and C32 confirmed that C11 and C32 were part of the same feature. The function of C11 was not clear but it allowed easier access to C32 and also increased the capacity of the combined features to retain water. C11 sloped gently from its northern end to the south thereby directing water towards C32.

Stratigraphically, C32 and C13, linked by C42 were originally designed to function together. However, the blockage of C42 with the mounded C43 'dam' effectively separated them functionally. The C43 'dam' increased the capacity of C32 by harnessing the additional depth provided by the 'new' C11. C11 and C13 continued to be used contemporaneously but separately until the site was abandoned. The C24 fill

of C32 contained burnt mound material which was indicative of pyrolithic activity. The C56 and C57 fills of C13 did not contain any pyrolithic waste which suggests a completely different activity, one that possibly required a supply of hot, cleaner water. The water was heated by the classic pyrolithic method in C32 with the heated water being channelled into C13 via C42.

The closure of C11 (including C32 and C42) and C13 using burnt mound material (C12 and C14) may have been a gradual process of slippage of the mounded pyrolithic waste. It may also have been evidence of a deliberate abandonment of activity in this portion of the site with a shift to the other peripheral troughs in the western portion of the site.

4.7 C28 – ‘Keyhole Style’ Feature (Fig.5, Fig.8 and Fig.9)

C28 was located 2.20m due west of C13 and was bisected by C19, the linear cut which also crossed C42/C43 passing due south of C13. C28 was directly impacted by C19, which destroyed the southern part of the feature. The remains of C28 displayed a ‘keyhole style’, curvilinear plan form on its surviving northern side (Plates 21-23). C28 was orientated from east to west with a maximum length of 1.30m. Its width, from the C19 cut line, was 0.55m at its widest (west) and 0.20m at its narrowest (east). The depth of C28 fluctuated between 0.12m and 0.15m. It displayed a gradual U profile, with concave sides and a flat base. C28 was cut directly into the C2 natural and showed no evidence for lining. It contained two distinct fills, C29 and C63.

C63 was a fill deposit located at the eastern, narrow end of C28 (Fig.9, Plate 22). This was also the deeper end of the feature. C63 was 0.08m - 0.14m in depth and covered an area 0.60m in length by 0.20m in width. The material was a black silty sand and stone free. C63 was sampled (Sample 26) and submitted for archaeobotanical analysis. It produced a good frequency of charcoal but no seeds. The C63 fill was in turn sealed by C29.

C29 filled the rest of C28, varying in depth from 0.05m – 0.08m. C29 consisted of black to dark grey clay with a high frequency of pyrolithic waste (Fig.9).

The function of C28 is not clear. The C63, charcoal rich deposit coupled with the ‘keyhole style’ plan is more suggestive of a cereal drying kiln than a trough associated with the burnt mound activity. The kiln interpretation was supported by the difference in depth from east to west. While the depth fluctuates by barely 0.03m it would be enough to create a draught between the eastern fire/charcoal setting and the western kiln. Using a charcoal rich firing system reduces the likelihood of sparks igniting the cereals in the kiln, but the total absence of grains raises an element of doubt over this interpretation.

4.8 C37 – Trough (Fig.5, Fig.8 and Fig.9)

C37 was situated 1.30m to the north west of C28 and 3.80m west north west of C13 (Fig.8). C37 was visible following the topsoil strip and initial site surface trowelling, slightly to the north west of the limits of the C6 burnt spread. C37 was clearly aligned from north to south and measured 2.35m in length on the surface and 2.00m at its base. Its width varied from 1.20m on the surface to 0.75m at the base. Its depth was 0.77m except for the south where the profile was stepped down from the surface by 0.40m and again to the base by 0.30m. The step was 0.40m in width. C37 was sub rectangular to an elongated oval in plan. The internal sides, with the exception of the southern stepped profile, were concave with gradual breaks in slope at the top and again at the base. The base was concave and uneven. C37 contained a single fill, C38 (Fig.9, Plate 24).

C38 was a dark grey/black silty clay with a high frequency of burnt stone fragments. The C38 material was loose and friable displaying yellow/brown mottling throughout. This material was sampled (Sample 11) and analysed. Charcoal was rare in the

sample, there were no seeds present but some fragments of flint debitage were recovered.

C37/C38 would appear to have been a trough, peripheral to the burnt spread (C6). A slight depression, irregular in plan and measuring 0.80m (north to south) and 0.90m (east to west). This depression accommodated a shallow deposit of C6 material and may have served as an access point to the southern step into the C37 cut (Fig.8, Plate 25).

To the south west of this depression was a grouping of four stake holes C110/111, C112/113, C114/115 and C116/117 (Fig.8).

C110 was located 0.18m due north of C19 and 1.40m south southwest of C37. C110 was 0.06m in diameter and 0.12m in depth, steep sided and tapering to a point at the base. C111, the fill of C110, was dark grey brown sandy silt darker closer to the surface where the fill was directly in contact with the C6 burnt spread.

C112 was 0.31m north northeast of C110. C112 was 0.045m in diameter and 0.08m in depth, steep sided and tapering to a point at the base. C112 contained C113, a fill identical to C111.

C114 was located 0.07m north of C112. C114 was 0.06m in diameter and 0.09m in depth, steep sided and tapering to a point at the base. C114 contained C115, identical in composition to C111 and C113.

C116 was located 0.09m west northwest of C114. C116 was 0.035m in diameter and 0.05m in depth, steep sided and tapering to a point at the base. C116 contained C117, identical in composition to C111, C113 and C115.

A further stake hole, C118/119, was identified 0.50m south east of the C37 cut and 0.10m east of the depression extending C37 to the south. C118 was 0.05m in diameter and 0.09m in depth, steep sided and tapering to a point at the base. C118 contained C119, identical in composition to C111, C113, C115 and C117 (Fig.8).

All these stake holes are likely to have been associated with the function of C37.

4.9 Stake hole clusters (Fig.6)

Approximately 1.00m due south of C32 was a substantial localised scatter of stake holes (103 in total). These stake holes occupied an area 2.15m from north to south and 2.05m from east to west, bounded on the north by the ditch C9 and to the south by the ditch C3 (Fig.6, Plates 26 and 27). The layout of the stake holes appeared quite random, but it is likely that they represented several periods of use. The stake holes were allocated group context numbers and recorded thus. The context numbers were decided based on obvious discrete groupings or how the stake holes were grouped in relation to the foundation trench F7 (Fig.6). Group F72 (F72:1 – F72:12) contained 12 stake holes discretely located in the western interior of the structure defined by F7. Group F73 (F73:1 – F73:14) consisted of 14 stake holes located south east of F72. Group F74 (F74:1 – F74:35) was a large cluster of 35 stake holes east of F72 and north of F73. Group F75 (F75:1 – F75: 16) was located to the north of F74 and bounded by the north western arc of the F7 foundation slot. F75 consisted of 16 stake holes. Group F76 (F76:1 – F76:26) was allocated to the 26 stake holes that were located outside the enclosing arc of F7.

The stake holes ranged in depth from 0.04m to 0.15m, and in some cases cut other stake holes within the same cluster. They were predominantly vertical, varying in profile from U to V shaped. Only two showed a slight inclination to the north, both in group F76 (F76:22 and F76:24).

All of the stake holes contained the same generic type of fill, a dark grey silty peat with occasional charcoal inclusions and small fragments of pyrolithic waste. Several fill samples were analysed (Appendix 3) but produced nothing suggestive of date or

function. It is likely that all of the stake holes were associated through function and that the cluster was probably augmented as required. The density of the cluster conceals any possible structural layout that might suggest a clear function. However, if the cluster is viewed as a collection of upright, individual stakes it could well have functioned as a means of air-drying fish caught locally and brought for processing.

In addition to the main grouping of 103, five more stake holes were recorded immediately west of group F76 and were undoubtedly related to the main cluster.

F64 was the most northerly and was just 0.35m west of F7. It measured 0.5m in diameter and 0.1m in depth.

F68 was located 0.22m southwest of F64, with a diameter of 0.09m and depth of 0.09m.

F70 was 0.05m south of F68, with a diameter of 0.06m and depth of 0.08m. F66 was 0.2m southeast of F70, with a diameter of 0.06m and depth of 0.1m. F120 was just 0.07m east of F66, with a diameter of 0.06m and depth of 0.07m.

Each stake hole contained the same generic fill, dark-grey peaty clay with occasional charcoal flecks and small heat-shattered stones near the surface.

Another group of small postholes lay 2m west of the north western arc of F7 and west of the main cluster of stake holes. These features were aligned roughly east to west over a distance of 0.8m.

The most westerly, F98, was circular in plan, with a diameter of 0.18m, and was 0.26m in depth. The profile was U-shaped, and it was filled by F99, a dark grey clayey silt with heat-shattered stone inclusions.

F100, another smaller posthole, was located 0.23m to the east of F98. It was 0.1m in diameter and 0.11m deep. It was U-shaped in profile and contained F101, a black silty clay with heat-shattered stone inclusions.

F102 was located 0.02m east of F100, had a diameter of 0.14m and a depth of 0.22m. Also U-shaped, with a slight inclination to the west, it contained F103, which was the same material as F101.

F104 was located 0.09m to the east of F102, with a diameter of 0.13m and depth of 0.135m. It contained F105, which was the same colour and consistency as F101 and F103.

4.10 F7 foundation trench / possible structure (Fig.6)

F7, a sub-rectangular slot trench was revealed on the more elevated southern part of the site (Plates 7 and 28). It was crossed on the south by F3 and bounded to the north by F9. The external measurements of the F7 enclosure/foundation were 4.00m east to west and 4.30m from north to south. The internal dimensions for the area defined by F7 were 3.50m from east to west and 3.60m from north to south. The foundation slot displayed a U shaped profile and was 0.32m in width. The sides were straight and vertical and 0.24m in depth. The base was uneven and undulating with post and plank impressions throughout the entire length. It is clear from this evidence that the F7 slot was a foundation trench for a structure / enclosure. The F7 cut contained a single deposit F8, which was dark grey peaty clay containing heat-shattered stone mainly concentrated in the upper level. The fact that the foundation slot contained a single fill would suggest that the structure / enclosure was utilised over a relatively short period of time and was not subjected to any repair work. There were no obvious breaks in the foundation that might suggest a defined entrance or doorway. It is possible that such evidence was destroyed by F3 when it cut through the F7 foundation trench.

The F7 foundation trench cuts through the stake hole cluster particularly the C76 group and the C75 group. F7 physically cuts through the wall of several stake holes exposing

the fill in profile (Plate 27). This is clear stratigraphic evidence that F7 postdates the stake hole cluster

Several postholes and stake holes were recorded around and within F7 (Fig.6). The following features were located within or around the eastern arc of F7.

F51 appeared to be a posthole truncated to the south by F3 (Fig.6). It measured 0.52m north to south and 0.51m east to west. It was in fact quite shallow, surviving to a maximum depth of 0.09m. The east, north and western sides were gently sloping, while the south side was truncated by F3. The fill, F52, was dark grey peaty clay and heat-shattered stones, similar to the F8 fill of the foundation trench. When fully excavated, a stake hole (F60) was revealed in the north east of the F51 cut containing the same F52 deposit. F60 measured 0.11m in diameter and 0.13m in depth. The sides were straight and vertical on the south, east and west but steeply sloped at the north. The base was tapered to a point.

A small posthole F61, was located 1.35m north west of F60 and within the area enclosed by F7 (Fig.6). This feature measured 0.11m in diameter with a maximum depth of 0.13m. The sides were vertical, except at the north where it was steeply slanted. The base had a U-shaped profile. It was filled by F62, a dark grey clayey peat, containing charcoal flecks. It was close to the western extent of the stake hole cluster that dominated the north western quadrant of F7.

An isolated stake hole F96, was located 0.3m outside the north-eastern arc of F7. It was sub-circular in shape, measuring 0.07m N-S and 0.06m E-W. The sides were straight and vertical to a depth of 0.05m where there was a small step before tapering to the base. The overall depth was 0.09m. It contained F97 dark-grey silty clay, with small heat-shattered stones near the surface and infrequent charcoal inclusions.

Outside and to the south of F7, a posthole, F79, was truncated on the north by F3. It measured 0.40m east to west and >0.25m from north to south. The southeast, southwest and southern sides sloped steeply for 0.10m - 0.15m breaking sharply to a flat base. It contained a single deposit (F80) of mid grey sandy, silty clay with inclusions of heat-shattered stone.

A smaller stake hole F81, was located 0.09m to the southeast of F79. F81 was sub-circular in plan and measured 0.16m east to west and 0.18m north to south with a sub-angular stone overhanging the southern edge. The sides were very steep tapering to a point at a maximum depth of 0.28m. F81 was filled by F82, a dark grey friable sandy, silty clay with inclusions of small heat-shattered stones and sub-angular pebbles.

At a distance of 1.4m to the east of F79, on the western edge of the linear F21, another potential posthole F54, was located. Like F51, this feature also turned out to be quite shallow, with a depth of 0.09m. The overall dimensions on the surface were 0.34m in length and 0.28m in width. The sides were steeply sloping on the north, south and east, with a more gradual slope to the west. The base was circular in plan, concave in profile and situated in the eastern part of the cut. The base was enclosed by the three steep sides while the more gradual western side would suggest that F54 is a post pit. The fill (F55) was mid grey sandy clay with occasional gravel inclusions and rare charcoal flecks.

4.11 C6 – Burnt mound / spread (Fig.5)

The burnt mound / spread was identified during a monitored topsoil strip adjacent to the northern boundary of the NFMHS development site on the 8th May 2017. The initial identification was made when the characteristic pyrolithic material of blackened soil and heat shattered stones (C6) was exposed (Fig 5, Plates 1-2).

The excavation commenced on the 31st July 2017 with further surface clearance to remove residual topsoil and determine the full extent of the burnt mound/spread. Once completed, this process defined a sizeable spread of C6 material measuring 15.00m

from east to west and 13.00m from north to south (Fig.5). Pockets of C6 material were recorded dotted around the main concentration with a lateral spread to the west and north west. These pockets were excavated and while many resolved into shallow pockets of C6, three satellite features were identified cutting the C2 natural, C28, C37 (see above) and C53. A further feature C92, a metallised surface, was identified 2.60m north of the main focus of the burnt spread.

On initial examination it became quite clear that the burnt mound/spread had been impacted on by agricultural activities which probably levelled any mound of C6 and spread that material over a considerable distance to the west and north west. The burnt spread had also been bisected by a number of linear features, from the south, C83, C3, C9 and C19. These linear features crossed the site from east to west. A further linear C21/C85 crossed the eastern part of the burnt spread from south to north.

Following the surface clearance, a line was established across the C6 corresponding to the site grid line 9N/14E to 9N/27E (Fig.5, Plate 3). Using this as a baseline, the burnt spread (C6) was divided into 1.00m strips running from south to north. In total, 13 strips were marked out but were numbered 1 to 26 as each strip was divided into a northern and southern section by the baseline (9N) (Fig.5, Plates 3-5). The northern strips were odd numbers while the southern strips were even. Excavation of the strips involved the removal of alternate strips north and south of the baseline, allowing the substrata to be assessed visually while also providing 13 complete profiles across the full extent of the burnt spread (Plates 4-5). All strips were excavated by hand and profiles recorded except for the south western quadrant (corresponding to strips 20, 22, 24, 26) which were removed in total as the C6 deposit was at its thinnest. This excavation system was suggested to the writer by Dr John Ó'Neill to maximise the information accrued from the burnt mound/spread, as in many excavations the burnt spread is removed in its entirety without much consideration as to its potential value. In this particular case it resulted in the recovery of a considerable number of artefacts from within the burnt spread itself.

The C6 material was spread quite thinly reaching a maximum thickness of 0.20m. The C6 was made up of dark grey to black soil, composed mainly of silt mixed with lesser proportions of peat and clay. At least 50% of the bulk of C6 was made up of heat affected and shattered stones. These components are the classic by products of the pyrolithic activities expedited at this location.

The nearest water source was a field drain immediately north of the site which also defined the northern boundary of the development site. However, it is more likely that the burnt spread was located in an area of poor drainage and as such this location was liable to flooding during heavy rainfall. The area to the north west is a wetland area and liable to localised flooding.

4.12 C53 - Water channel (Fig.5 and Fig.8)

C53 was initially identified by its fill C48. C48 was a grey silt mixed with clay and pyrolithic waste. The material was dry and friable. The same grey silty material was found all over the site resting on the C2 natural but without the pyrolithic inclusions. Any archaeological features encountered in this material have been cut into it suggesting that it was naturally deposited. The pyrolithic inclusions in the case of C48 were likely to have been dragged in from the adjacent trough C37.

The C53 cut was 2.15m in length, varying in width from 0.40m to 3.45m and with a depth of between 0.20m and 0.06m (Plate 29). C53 was orientated east to west. C53 has the western side of the trough, C37 as its point of origin. The C48 fill was generally sterile except where the burnt mound material had been in contact with its upper surface.

C53 could be explained either by long term erosion by water overflowing from the C37 trough or as the remnants of a much older paleochannel.

4.13 C92 – Metalled surface (Fig.5)

C92 was located about 2.60m north of C13. C92 was a metalled surface/spread with an uneven plan form. It measured between 5.00m and 8.00m in length from west to east and between 1.00m and 2.60m in width from north to south (Plate 30). It was laid down to a thickness that varied from 0.02m to 0.08m. C92 rested directly on the C2 natural. The metalling was formed using various locally available cobbles (limestone, sandstone and conglomerate/millstone grit). Some fine pyroclitic material was noted between the cobbles of C92 but this could be explained as outwash from the burnt spread.

The antiquity of C92 is unknown. It is unlikely to relate to the burnt spread as it lies at some distance from C13 and therefore would not serve any purpose as a work platform. The cobbles that formed C92 were too small to have been collected for use in the troughs. However, on the Ordnance Survey 1st edition map of the area (1837), two parallel dotted lines cross this area from the farm outbuildings to the east to a pumped water source in the low lying ground to the west. It is more likely that the C92 metalled/cobbled surface is the remnants of the surfacing for this service track, which would place it as a 19th century feature associated with the Portrane Demesne and/or the late 19th / early 20th century Portrane Lunatic Asylum.

4.14 Linear features (Fig.5, Fig.6 and Fig.8)

The burnt spread (C6) was truncated by four individual linear features, running parallel to each other on an east to west alignment. These were visible after the initial topsoil strip and prior to the commencement of the excavation.

The southernmost linear feature, C83, skirted the southern limit of excavation and was sampled but not fully excavated. It contained sterile yellow-grey clay, C84, and no finds were retrieved.

The linear feature, C3, was 2.50m north of, and parallel to, C83 (Plates 32 and 33). C3 was sampled at four locations corresponding to strips 4, 8, 12 and 16 excavated from south to north across the burnt spread C6. C3 continued to extend beyond the limit of excavation (LoE) to both the east and west. The C3 cut reached a maximum width at 1.40m and 0.40m in depth. C3 displayed a U-shaped profile with straight and steep sides and a flat base. It contained two fills, C4 and C5. C4, the basal deposit, was sterile, pale, orange-brown clay with no associated finds. It measured a maximum 1.25m in width and a maximum 0.21m in depth. There was no evidence of sedimentation within or beneath this deposit, indicating deliberate backfilling of the feature shortly after it was opened.

The upper deposit, C5, was also orange-brown clay, but contained small quantities of heat shattered stone. This was probably a result of the pyroclitic waste, C6, being mixed with the upper level of C4 during agricultural activity. C5 was 1.40m in width and 0.20m in depth. Some small fragments of animal bone were retrieved from this deposit.

The linear feature, C9 was 2.60m north of, and parallel to C3 (Plates 32 and 33). It was sampled in two locations, corresponding to strips 13, 15 and 17. C9 was wider and deeper than the previous linear features (C3 and C83) and contained more fills. C9 measured 1.52m in width with a maximum depth of 0.74. It displayed a U-shaped profile with straight and steep sides, and a narrow, concave base. C9 contained four distinct fills; C15, C16, C17 and C10.

The basal, primary fill, C15, was light brown clay 0.57m in width and 0.10m in depth. The C15 fill was both moist and friable. Overlying C15 was a thin layer of yellowish-orange clay, C16, which was 0.60m wide and 0.12m deep. The layer sealing C16 was C17, a light grey silty clay with yellow mottling, measuring 0.89m in width and 0.19m in depth. The final fill layer, C10, was mid grey / brown silty clay with yellow clay mottling and heat shattered stone (C6) inclusions. The maximum dimensions were 1.52m in

width and 0.30m in depth. Except for C10, which was contaminated with C6 material ploughed in, all of the fills were sterile.

Running alongside the southern edge of C9 was a narrow gully/drain feature, C46 (Plate 33). C46 was not visible on the surface and only identified during excavation. The gully was located 0.10m from the southern edge of C9. Further to the west C9 cut through the gully C46. C46 was 0.09m in width and 0.27m in depth and filled by C47. C47 was grey black sandy silt containing burnt mound material.

The linear feature C19 was located 1.60m north of, and parallel to C9 (Plate 33). C19 also displayed a U-shaped profile but straight-sided on the south and stepped on the north with a flat base. C19 was 0.45m in width and 0.29m in depth. It contained a single fill composed of mid brown gravelly clay (C20). The presence of gravel in the C20 fill might suggest that C19 functioned as a land drain.

All of these linear features cut through the C6 burnt spread and were clearly not prehistoric in origin. The linear features, in all cases, extended in both directions beyond the accepted limit of excavation (Plate 34).

Two other linear features, probably also related to agricultural activity, traversed the eastern side of the site from north northeast to south southwest. The linear feature C21 extended from the north northeastern LoE and extended beneath the burnt spread (C6) (Fig.6). C21 was cut by C83, C3, C9 and C19, and was 0.75m in width and 0.3m in depth. The cut was shallow and concave and terminated north of the burnt spread. The basal deposit, C31, was mid grey silty clay with yellow orange mottling. C31 was 0.60m in width and 0.20m in depth. This deposit was recorded throughout most of C21 but was absent in the length between C3 and C9. To the southern extent of C21, C31 was partly sealed by C30, a mottled orange and grey sandy silt and partially overlaid by a different deposit, C22, which was composed of dark-grey peaty silt and heat-shattered stones.

At 0.14m from the northern terminus of C21, a separate linear feature, C85 commences, following in the same direction to the northern LoE and beyond. C85 was U-shaped in profile with straighter, steeper sides than C21. It measured 0.60m in width and 0.35m in depth. It contained three deposits: C90, C89 and C86. C90, the basal fill, was grey sandy clay, which covered the base and, in some places, extended up the sides of the cut. C89 was mid-orange-brown sandy silt extending along the eastern side of the cut close to the northern LoE. The main fill, C86, was well-compacted, dark blue grey clay 0.60m wide and 0.35m deep.

C86 was truncated on the surface by a plough or hand-dug furrow, C87, running in the same direction as C86. C87 was 0.70m wide and 0.15m deep and contained C88 mid-greyish-brown silty clay.

Furrows such as C87, of varying lengths and depths, were encountered throughout the northern section of the site. These were regularly spaced, of the same width and containing the same type of fill as C88. As the northern part of the site was at a lower level than the southern, it is curious that they were not encountered on the southern higher ground.

The excavation was completed on the 5th September 2017. The site of the excavation was used for the stockpiling of excavated material from the rest of the site. The quantity of stored material has been reduced over the duration of the project and this area will be the location of a long-term soil storage bund.

Any later features of this location were clearly modern and associated with St Ita's Hospital and its development and functionality. The excavation was completed on the 5th September 2017. The location of the excavation continued to be used as a storage bund until such time as the area became overstocked. Some of this stockpile was removed from this location and spread over the coastal fields (Compartments 20 West and 20 East) prior to their use in the creation of new environmental habitats. The

location of the excavation will accommodate a bund of material as part of the overall development. The coastal fields were subjected to geophysical survey (Leigh 2016), archaeological assessment (Tobin 2016) and fieldwork arising out of the assessment (17E0210; Tobin 2019 – forthcoming) prior to their use for the spreading of subsoil generated by the development.

5 Finds

5.1 *Lithic Assemblage*

During the excavation of the burnt spread a considerable quantity of lithics was recovered. The lithic assemblage was collected over the whole site including the C1 topsoil.

The analysis of the lithics assemblage was carried out by Dr Killian Driscoll (Appendix 4), his findings are summarised here (Plates 35-50 – pieces photographed selected by Dr Driscoll).

The lithic assemblage totalled 65 artefacts, along with 66 finds deemed to be natural, and a further 14 indeterminate pieces. The 65 artefacts include flaked stone tools – cores and flakes – formed on flint, and ground stone tools – anvils, hammerstones, and polishers – formed on sandstone, limestone, quartzite, and igneous rock. The flaked stone tool component is dominated by small to medium-sized flakes, with the retouched artefacts dominated by edge retouched flakes and scrapers. The majority of the lithics would appear to represent a Neolithic and Bronze Age assemblage.

The flint appears to be derived from pebbles and small cobbles. Such flint is available in the glacial till and nearby beaches, while the sandstone may also be locally sourced.

The majority of the artefacts were patinated or weathered with a very small number burnt. Over half have some degree of edge damage. While some of this edge damage may represent pre-depositional use and/or damage, it may imply a degree of post-depositional disturbance. The artefacts, however, do not appear to have a high level of fragmentation, which suggests a relative lack of post-depositional breakage.

The flaked stone tool component of the assemblage is dominated by small to medium-sized cores and flakes, with a significant proportion of bipolar artefacts. The relatively infrequent occurrence of retouched lithics – along with the probable use of some of the unretouched flakes and blades as tools suggests that alongside stone tool production, some of the prehistoric communities' lithic-focused activity in the area was stone tool use for a variety of tasks, with scrapers and retouched cores and flakes dominating.

Of the flaked stone tools, cores comprise 21% and are dominated by bipolar cores.

The debitage is dominated by small to medium-sized flake fragments, with bipolar flakes accounting for almost a quarter of the flakes.

Modified artefacts comprise 12% of the flaked stone tools, dominated by retouched pieces and scrapers. For the ground stone tools, there are 3 anvils, 3 hammerstones, and 2 polishers.

The lithic assemblage was distributed as follows:

C1 – Topsoil and C2 natural subsoil

The topsoil contained the convex end scraper and C2 contained 1 flake.

C4 – Basal fill C3 linear feature and C5 – upper fill of C3 linear feature

C4 contained 1 polisher, and C5 contained 2 flakes.

C6 – Burnt spread over the whole site

C6 contained 1 anvil, 2 hammerstones, the strike-a-light, 4 cores, 1 retouched flake, the concave scraper, and 16 flakes.

C8 – Fill of C7 curvilinear slot trench and C7

C7 and its fill contained the hollow scraper and 2 flakes.

C9 – Linear feature and its fills C10 and C15

C9 and its fills contained 5 cores, 3 flakes, and 1 polisher.

C16 – Orange/yellow clay layer above C15

C16 contained 3 cores.

C12 – Pyrolithic material forming fill of C13 cut of large sub circular pit/trough and C13

C13 and its fill contained 2 anvils, 1 hammerstone, and 8 flakes.

C19 – Linear feature north of C9

C19 contained 3 flakes.

C33 – Yellow "natural" under C13/C15/C17

C33 contained the edge retouched flake.

C77 – Natural deposit in western part of the site

C77 contained 1 flake and 1 debris.

C106 – Cut of small posthole.

C106 contained 1 flake.

As with most lithic assemblages, the majority of the lithics from the excavation cannot be assigned to a particular time period. The direct percussion and bipolar knapping techniques were used throughout the later prehistoric period (Woodman *et al.* 2006), with bipolar becoming more prevalent during the Bronze Age (O'Hare 2005) but seen from the Early Neolithic (Driscoll 2016).

None of the retouched artefacts are particularly diagnostic to a time period, beyond a Middle Neolithic date for the hollow scraper, a Neolithic date for the concave scraper, and a probable Neolithic date for the convex end scraper. The lack of blades, however, and the significant proportion of bipolar artefacts, does suggest a Bronze Age date for some of the assemblage.

6 Discussion

This site (17E0377) was clearly a focus for burnt mound activity in the vicinity, established because of a convenient and constant water source. Various interpretations have been put forward for the use of these burnt mound/spread sites, including the traditional interpretation as cooking sites. It is generally agreed that their primary function was to heat or boil water, using stones which were pre-heated in an adjacent fire. The burnt mounds/spreads probably accommodated multiple activities, dependant on individual requirements. The residue or waste accrued at these sites is always a constant, irrespective of the particular function. The residue of fire-shattered stone was routinely emptied out of the water-container, or trough, after each use and what could not be reheated and reused was disposed of adjacent to the work area. The process of disposal led to a substantial accumulation of waste producing a 'burnt mound'. The 'mound' or 'spread' is made up of blackened soil and large quantities of fire reddened and shattered stone fragments. Intact mounds can take a variety of forms including kidney shaped and horseshoe shaped. It is difficult to estimate the use period of a site as the mound of waste can build up over lengthy periods of time and the characteristic material represents the stone waste that can no longer be recycled for use. It is quite usual for such mounds of material to be ploughed down by later agricultural practices, which invariably seals associated features, including the trough, beneath the spread.

Archaeological testing and the monitored topsoil strip (17E0210) did not offer any indication as to a possible location for settlement within the confines of the NFMHS development. However, the area has been subject to considerable disturbance from the 18th century with the landscaping of the Portrane (Mount Evans) Demesne, the construction of the Portrane Lunatic Asylum (1896-1903) and subsequent extensions to the St Ita's Hospital campus in the 1950s to 1970s. Impacts on the prehistoric archaeological landscape through the 200 year period are not quantifiable. Archaeological material was found and excavated within the footprint of the NFMHS development to the south west of the burnt mound activity. This included a middle Neolithic stone cist and Bronze Age pit scatter (17E0303, Tobin 2019) and a group of prehistoric pits and features (15E0396 and extensions, Tobin 2019). Also, within the footprint of the development considerable quantities of lithics have been collected (17E0210, Tobin 2019 forthcoming) during monitoring of topsoil removal. Further to the south, during the construction of a waste water treatment facility the remains of a Bronze Age settlement were found, tested and preserved in situ (10E0121, McQuade 2011). This settlement site is included in the RMP for Co Dublin, referenced as DU012-095001-003. Further evidence for possible settlement was found near Donabate on the townland of Ballymastone in the form of a possible hut site and some burnt mound/spread activity (Baker 2006). Further testing in this area revealed more settlement evidence and burnt mound/spread activity (Frazer 2007). The burnt mound/spread activity was quite limited with small spreads and solitary troughs (Portrane 3, McQuade 2011). Portrane 3 is likely to be a feature commonly referred to as a 'pot boiler' which is a pit/trough containing pyrolithic waste but with no evidence for a mound or spread. These are a common archaeological feature of north Co. Dublin and Co. Louth.

In comparison the Portrane site (17E0377) was defined by a substantial burnt spread and evidence for at least two phases of intensive activity with outlying features that cannot be directly linked stratigraphically to either phase of activity.

The earliest phase of activity appears to focus on the C13 trough. The up cast subsoil from the excavation of C13 is evident in a number of distinct areas of redeposited C2 which were allocated the following context numbers: C25, C33 and C93. Both C33 and C93 are very sterile almost pure deposits of the C2 natural and would appear to represent the material up cast during the creation of C13. C25 is again a redeposited

C2 from C13 but it contains pyrolithic waste. This might suggest a radical clean out of C13 and a partial recut to facilitate a change of function.

Initially C13 in conjunction with the burnt spread C6 satisfies the basic operational requirements for a standard functional burnt mound or classic fulachta fiadh. It is difficult to determine how long the Portrane site (17E0377) functioned thus. Considering the nature and extent of the C25 redeposit and its burnt stone content, it is likely that the alterations commenced quite early in its lifespan.

The Portrane site (17E0377) was structurally changed to function in an alternate way. To facilitate this change C13 was cleaned out and recut, resulting in the creation of the C25 redeposited C2 which included pyrolithic waste. The area due south of C13 was altered by cutting through the redeposited C25, C33 and C93 to create the C32 pit, the C42 leat / launder and the C11 cut.

The C13 trough was substantially altered at this time. The C95 wicker liner was constructed within C13 with its uprights embedded into the basal C94 silt. The position and base of the liner was secured using wood and stone settings (C58 and C59). The upper sides of the C13 cut were altered through the deliberate placement of C49 silty clay narrowing the plan form of C13 closer to the circumference of the C95 wattle liner. Above the upper limit of the C49 the C13 trough reverts to its original sub rectangular plan form. The fills contained within the C95 wattle structure and to the upper limit of the C49 (C94, C56 and C57) were all free of pyrolithic waste. A wood sample from the C95 wattle structure gives a 2 sigma date of 1922-1758 cal. BC, placing it in the middle Bronze Age (Appendix 1). The evidence from the excavation would suggest that C13 served as a reservoir/well/cistern for clean water. The depth of C13 (1.78m) ensured that natural seepage maintained a constant level of ground water. The waterlogged nature of the C56 and C91 deposits supports this. Wattle liners have been found in a number of burnt mound/spread excavations throughout Ireland with a broad date range extending from the Chalcolithic (2500-2000 BC). In the case of the Portrane site (17E0377) the wattle liner is quite late being in the middle Bronze Age. Wattle liners cannot be viewed as a form of watertight containment but rather a type of filtration system that would catch any large impurities from the sides of the pit or that fell in from above. This action might explain the formation of the C91 deposit.

Pits like C13 and interpreted as wells/cisterns are a relatively new phenomenon in the archaeological record for burnt mounds and spreads. They have been recorded all over the country and mainly date from the middle to later Bronze Age. Middle Bronze Age examples were excavated to the west of Portrane (17E0377) during the construction of the N2 Finglas to Ashbourne Road Scheme. On the townland of Rath, a large well/cistern 10.7m by 6.50m and 1.30m in depth was excavated in association with burnt mound material and a probable sweat lodge and water management system (Schweitzer 2009). At Muckerstown, Co. Meath two substantial pits were identified and interpreted as 'waterholes', while not associated with burnt mound activity they were similar to the Portrane example (17E0377) and dated to the middle Bronze Age (Moore 2009). Recent excavations in Oldtown, Swords, Co. Dublin (17E0104) revealed a number of wells/cisterns in a secure Bronze Age context, although only one was in association with burnt mound activity (Rice 2018).

Waterlogged material (C91) extracted from the sails of the wattle liner was analysed and produced considerable quantities of berry seeds while also illustrating clearly the types of plants growing in the immediate vicinity of the site during the Bronze Age (Appendix 3 – Penny Johnston). These included buttercup, hazel, stitchwort, brassica, cherry, mint, elder, yarrow and dock. Such plants are representative of the type of growth that occurs at the edge of woodland and settlement areas.

The fills above C57 would indicate a progressive silting up of C13, initially with a good density of organics but gradually giving way to pyrolithic waste, C14. C14 (same as

C12) indicated the final closure of C13 but was sealed by C6. C6 was the same material as C14/C12 but with the soil content heavily leached out over time.

The C42 leat / launder opens into the southern side of C13 although the natural slope within C42 is to the south. This would suggest that the C42 leat / launder served as a channel to transfer water from C13 to fill C32. C42 could also have functioned in reverse carrying overflow from C31 back to C13. C42 was filled with a gravel rich sandy clay, mounded at the juncture to C13. This action effectively disabled the functionality of C42 and resulted in the creation of C11 and increased the capacity of C32. The closure of C42 may have resulted from burnt material overflowing from C32 tainting the water in C13.

C32 was designed specifically to hold water. The C32 cut was lined throughout with C41, a pure grey clay, designed to retain water. The function of C32 was pyroclitic which the fill C24 confirms. C24 was a waterlogged deposit of black silty clay with burnt stone inclusions indicating that water heating took place in C32 rather than in C13 which appears to have served as a cistern / reservoir for holding water. Features like C13, designed as reservoirs / cisterns are a relatively recent phenomenon in the archaeology of burnt mounds/spreads. In general, they tend to date to the middle Bronze Age (Hawkes 2018) and have a widespread distribution. C14 analysis from Portrane (C95) supports this hypothesis (Appendix 1).

Structures have previously been recorded in association with burnt mounds/spreads, with the earliest excavation taking place at Ballyvourney, in Co Cork (O’Kelly, 1954). The Ballyvourney site was an oval structure, 5.00m by 6.00m in diameter, defined by stake holes. The most recent published information states that 69 structures have been identified by excavation (Hawkes, 2018) with 7 having defined slot/foundation trenches. The Bronze Age house identified, tested and preserved in situ to the south west of C7 (Portrane 1, McQuade 2010 – 10E0121) was a far more substantial structure (6.00m internal diameter) with clear evidence for internal and external post holes suggesting a substantial roof structure.

The sub rectangular foundation trench, C7, is sited slightly higher than and 1.00m due south of C32. The C7 foundation trench displayed post and stake impressions in the C2 natural but there was no evidence for substantial posts within the interior of the structure. This would imply that the structure was constructed using light, young wood, set in the foundation trench and pulled together to form a tepee-like structure rising to a pointed apex.

This type of light, tented structure (Type C – Hawkes 2018) is the most common type of structure associated with burnt mounds/spreads. These have often been interpreted as sweat lodges but in some cases the absence of internal features confounds this interpretation. In some cases, small oval depressions have been found which may have been used to hold hot stones onto which cold water was poured to generate steam. Such was the case with the C7 structure where a shallow, oval feature, C51 was recorded in the eastern part of the interior. However, it remains a possibility that the structure was erected as a temporary shelter for the individuals working the site (Hawkes 2018). The possible association between the C7 structure and C32, C42, C13 is suggestive of a more complex variation of the sweat lodge theme. The association between tented structures, troughs and cisterns has also been interpreted as a sweat lodge, although in most cases the structure displays a sunken floor level. A site at Rathpatrick, Co. Kilkenny (Gleeson 2004, Hawkes 2018) displays such a layout.

The Portrane site (17E0377) does not show a direct, structural association between C7 and C32/C11. The area between C7 and C32/C11 is also disturbed by the linear feature C9, which effectively destroyed any structural remains in this area. The Portrane site does feature two contexts that could have served as receptacles for hot stone to generate steam. C51 was very representative of the characteristic type of shallow pit that has been noted within the light tented structures. C32 could also have

functioned in this way being a sub circular clay lined pit. It may have been designed as a reservoir to hold water for use within the sweat lodge. The presence of burnt stone fragments in the waterlogged fill (C24) may indicate a later reuse or alternatively, material that slumped into the base of C32 from C12/C6.

A sweat lodge is an ideal secondary use or re-use of an existing burnt mound / spread. The practice of heating stones and pouring water over the stones to generate steam is almost the opposite of using heated stones to boil large quantities of water. In practice a sweat lodge could function by heating the waste material from an abandoned burnt mound. The possible sweat lodge at the Portrane site (17E0377) does appear to represent a distinct, secondary use for the burnt mound / spread site. The stratigraphy of the burnt stone rich fills did not appear to represent further activity on the site, but rather natural slumping of the upper fills (C12, C14, C6) into C32, C11 and C13 and its redistribution over time by agricultural activity.

Some features that fell outside of the limits of the burnt mound / spread could not be stratigraphically associated with the activities focussed on C13, C32, C42, C11 and C7. These features include C28, C37 and its associated stake holes and the cluster of stake holes cut by the C7 foundation trench.

The cluster of stake holes cut by C7 is clearly stratigraphically earlier than the sweat lodge complex and spatially could have been associated with the earlier burnt mound activity on the site. The cluster could also relate to an activity without any clear association to the burnt mound / spread but making use of the cleared space.

C28 was peripheral to the main C6 spread. It was truncated along its long axis by C19 which obliterated all traces of the original plan form of C28. The 'keyhole style' plan was characteristic of a cereal drying kiln of indeterminate age, but the absence of seeds makes this interpretation doubtful. It is more likely that C28 served as a roasting pit.

C37 and its associated stake holes was also peripheral to the main spread of C6 and displayed a single fill, C38, a dark grey silty clay with burnt stone fragments. This singular fill is more typical of a pot boiler type feature than a well-used trough in a burnt mound / spread. It is possible that C73 was dug as a trough but was located badly and disused. Alternatively, it was purpose dug as a potboiler and only used over a short period before being deliberately back filled.

In general, the extent of the C6 spread was deceptive. It is suggestive of a much larger burnt mound / spread. In reality the depth of C6 material across the full extent of the site was negligible from 0.01m in depth to 0.20m in depth, clearly dragged and spread over a considerable area over time. The C6 spread inundated all of the main features of the site, leaving its distinctive residue in the upper fills of all features. The clear final phase of activity was the middle Bronze Age redesign of the site to function as a sweat lodge. This would suggest that the site functioned purely as a burnt mound prior to the middle Bronze Age alterations. The time lapse between phases of activity is unknown but might not actually be that long.

The secondary use of C13 is defined by a substantial clean up involving the removal of any C6 material in the trough / pit, the recutting of the trough back to clean C2, the placement of the wattle liner to act as a 'trap' to catch any debris either falling or washed into C13 and the alterations to the shape of C13 using redeposited C2 (C49). This suggests that the cleanliness of the water in C13 was of great importance in the secondary use of the Portrane site (17E0377).

The concept that structures associated with burnt mounds may have functioned as sweat lodges has long been discussed but remains a hypothesis rather than a proven interpretation. Ethnographic analogies would indicate a variety of reasons why sweat lodges may have been significant to a prehistoric population. Evidence of ritual bathing from Finland and Russia involving the use of sweat lodges has been linked to rituals of

purification (Eogan 2007). The sweat lodge was in general use in Ireland in the 18th and 19th century, predominantly in the Irish speaking areas (Clark 1922) where 'vapour' baths were viewed as therapeutic. The sweat lodge on Rath Townland (Schweitzer 2009) was found in association with a large 'water hole' or cistern and was located 150m from the site of four middle Bronze Age ritual enclosures (Byrnes 2002). Similar cisterns have been excavated at Oldtown, Co. Dublin also in proximity to large ritual enclosures (Rice 2018). These sites are sited on the top of ridges with panoramic views. The Portrane site (17E0377) was located to the north-east of a stone cist and pit scatter with structured votive deposits (Tobin 2019 – 17E0303) which again was sited on the top of a ridge with panoramic views.

There is a possibility that the change of function of the Portrane site (17E0377) was associated with purification relating to the function of the ritual site to the south-west. Water has a certain spiritual significance in prehistoric Irish landscapes as evinced through the extensive deposition of votive and sacrificial offerings in lakes, ponds and rivers (Cooney and Grogan 1994).

The relationship between the later linear features and the C6 spread offers some insight into their dating. While the linear features are late in the chronology of the site, they are indicative of the timespan for the levelling of the burnt mound and the development of the spread. The linear feature C19 crosses the site from east to west cutting between C13 and C32 and C42. Excavation of C19 showed it to have a single fill, C20. C20 had a gravel content but no traces of C6. Running in tandem with C19/C20 was an earlier linear feature C46/C47. C47 did contain inclusions of C6 and was cut by C19/C20. This would suggest that the C20 fill was imported from elsewhere and deliberately placed to fill C19.

The linear features C3 and C9 were both excavated and partially backfilled using clean material. The final fill in both cases, C5 and C10, both contained C6 material. It is possible that when the linear features were dug that the burnt mound was still extant and located to the north and west of C46. C19, because it cut C46 was stratigraphically later than C46. C3, C9 and C46 all appear to have been dug to catch runoff from the steep slope rising immediately to the south of the Portrane site (17E0377). These drains would carry the runoff to the north-west where it could disperse into the wetland area beyond. C19 was also dug for this purpose but at a later stage.

These drains would appear to have been part of a programme of works to improve the low-lying northern portion of the Portrane Demesne to create useable agricultural land. Between the Ordnance Survey 1st edition (1837-1842) and the Ordnance Survey 2nd edition (1888-1913) the field boundary to the north of the burnt mound site (17E0377) was augmented with a deep, open land drain. This drain was excavated to drain this wetland area reclaiming it into viable agricultural land and to accommodate new farm buildings to the east. Following the successful drainage and reclamation it would be likely that the land was ploughed over and levelled before being used as pasture. This action would have levelled the burnt mound and spread it over a large area, as revealed during the topsoil strip in 2017. While it is likely that the linear features were part of this 19th century programme of reclamation, no supporting evidence was recovered during the excavation.

Excavations on this site were completed on the 5th September 2017. The excavation site was utilised to accommodate a soil storage bund during the construction of the NFMHS Hospital and the development of the site. A soil storage bund will be permanently located here as part of the overall development. The new National Forensic Mental Health Services Hospital due to be completed in 2019 and inaugurated in 2020.

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- www.osi.ie Ordnance Survey of Ireland
- www.jstor.org Academic articles available online

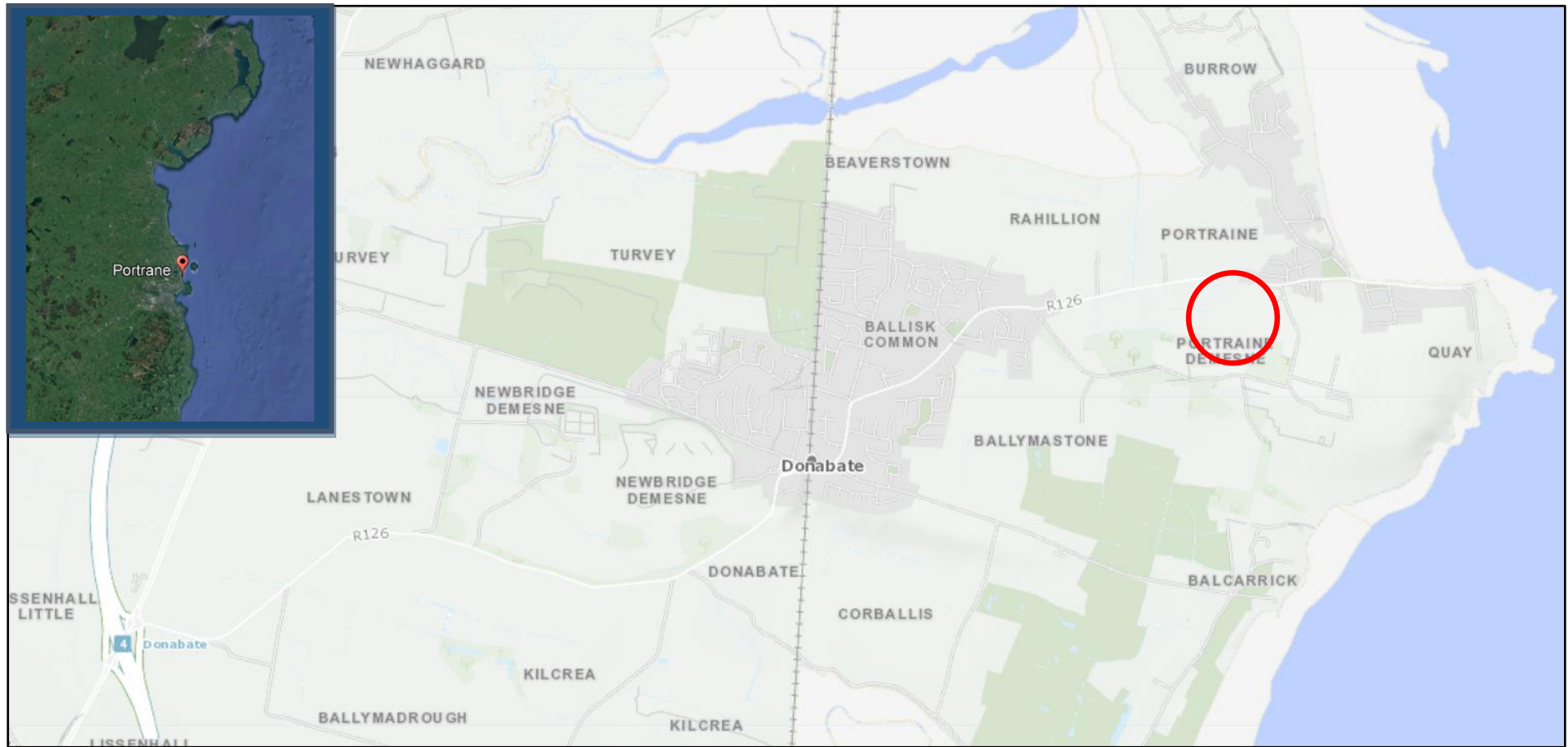


Fig 1. General site location (indicated in red)



Fig 2. Aerial image of site after the Advance Works contract 2016 – location of 2017 stone cist excavation indicated in red

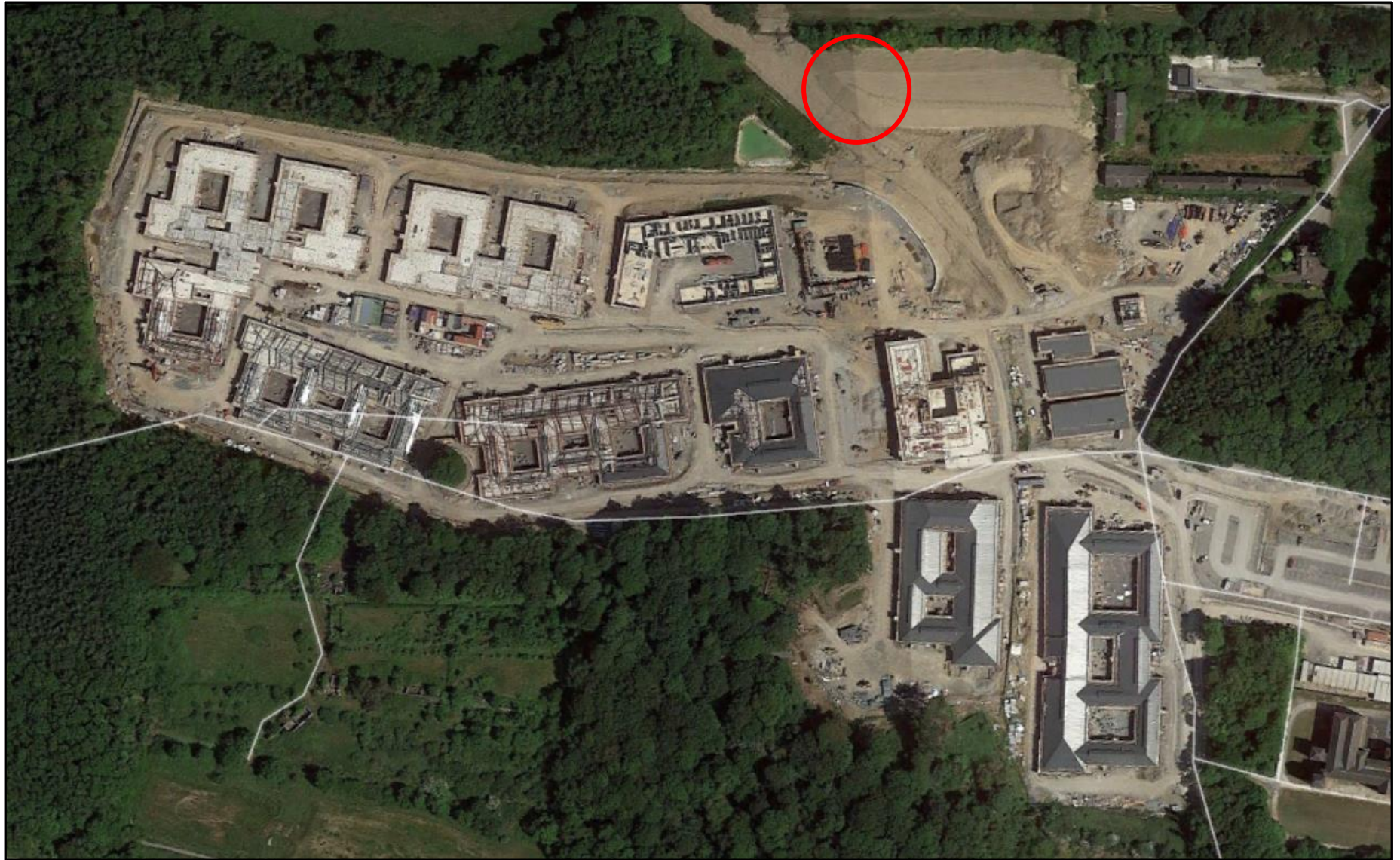


Fig 3. Google Earth image of the NFMHS site during construction (2018). Location of stone cist excavation indicated in red.

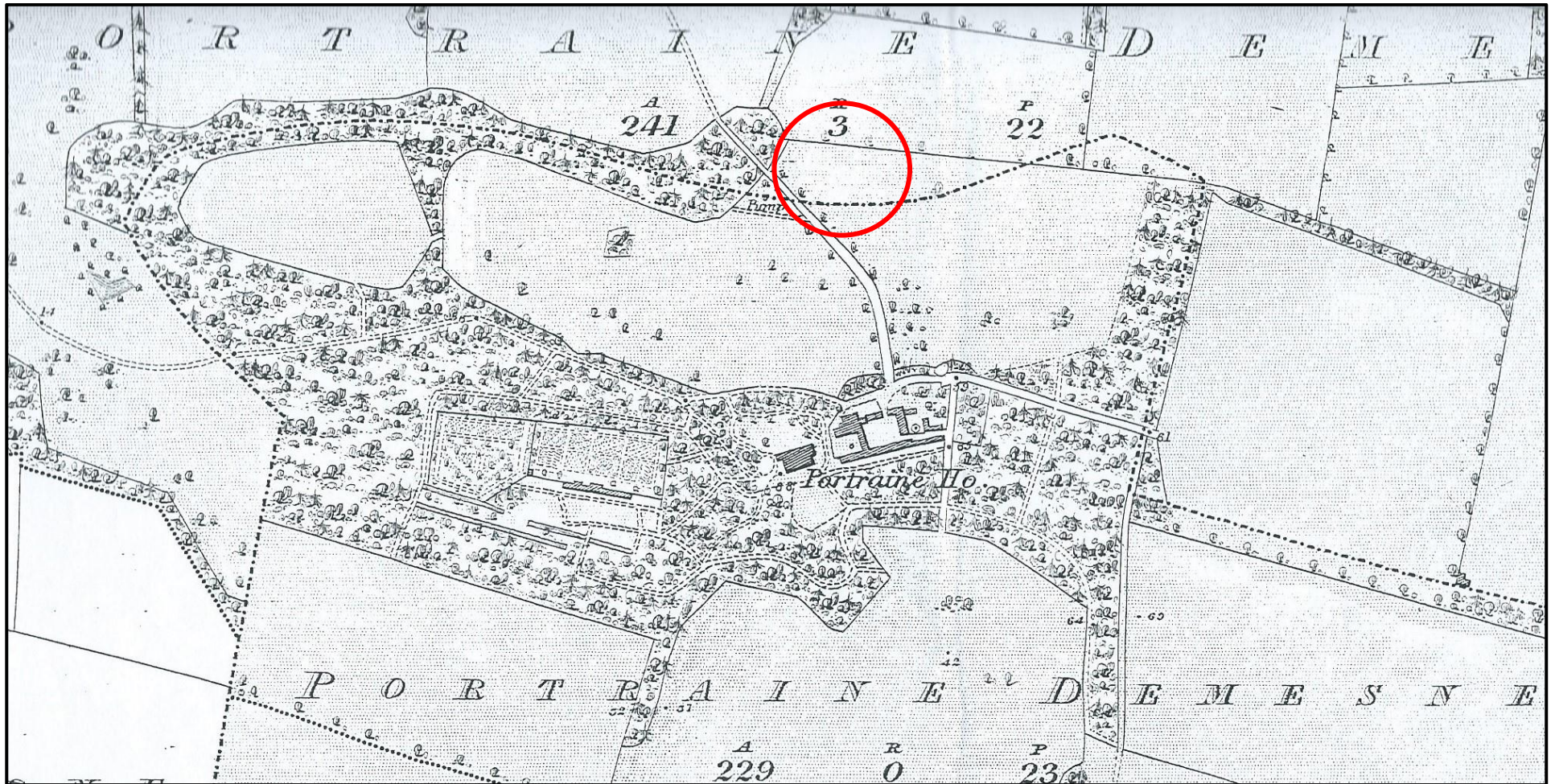


Fig 4. 1st edition OS map (1837-43) – Location of excavation indicated in red

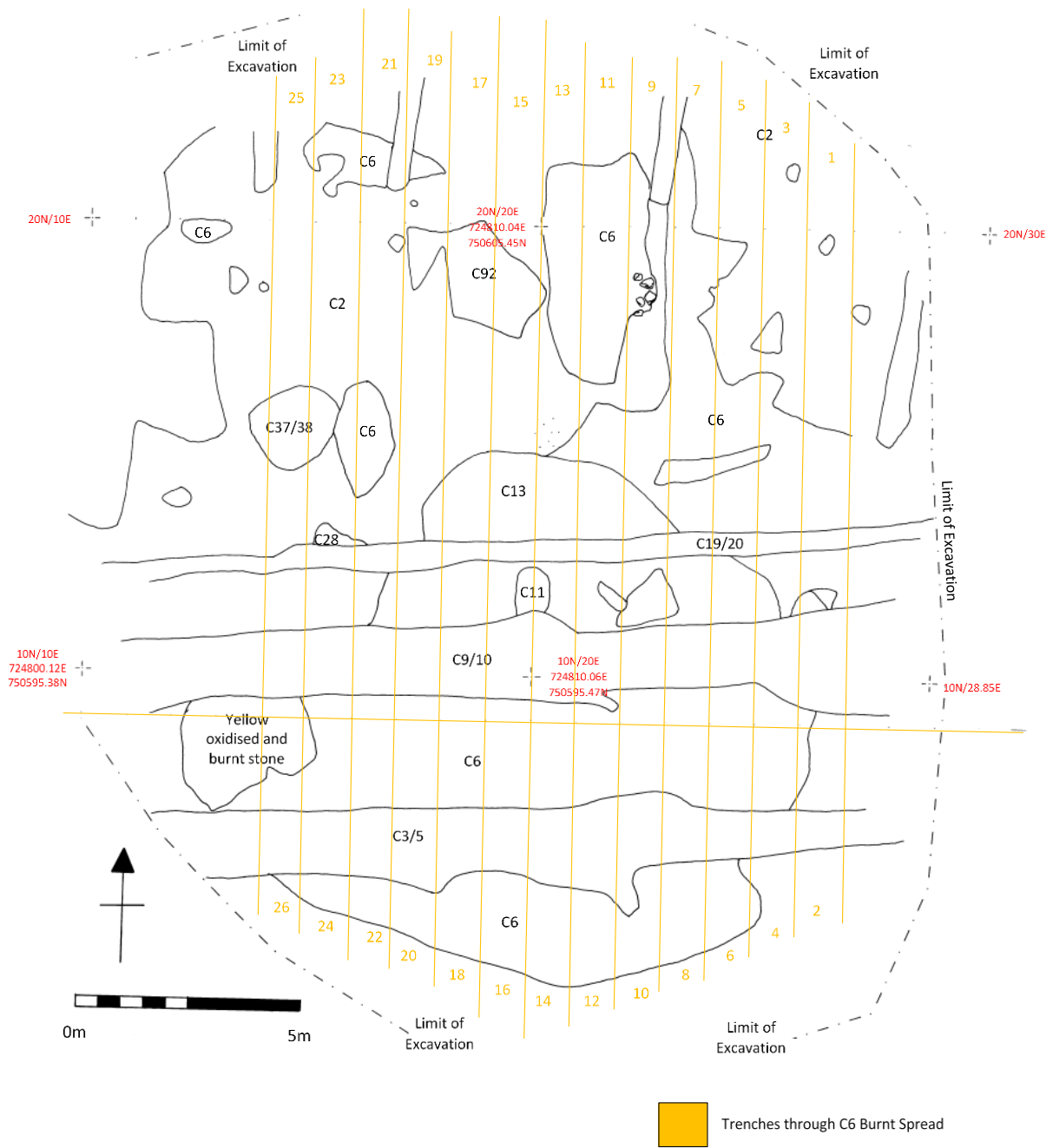


Fig 5. Feature plan and layout/numbering of trenches through the burnt spread. Pre excavation. Scale 1:50

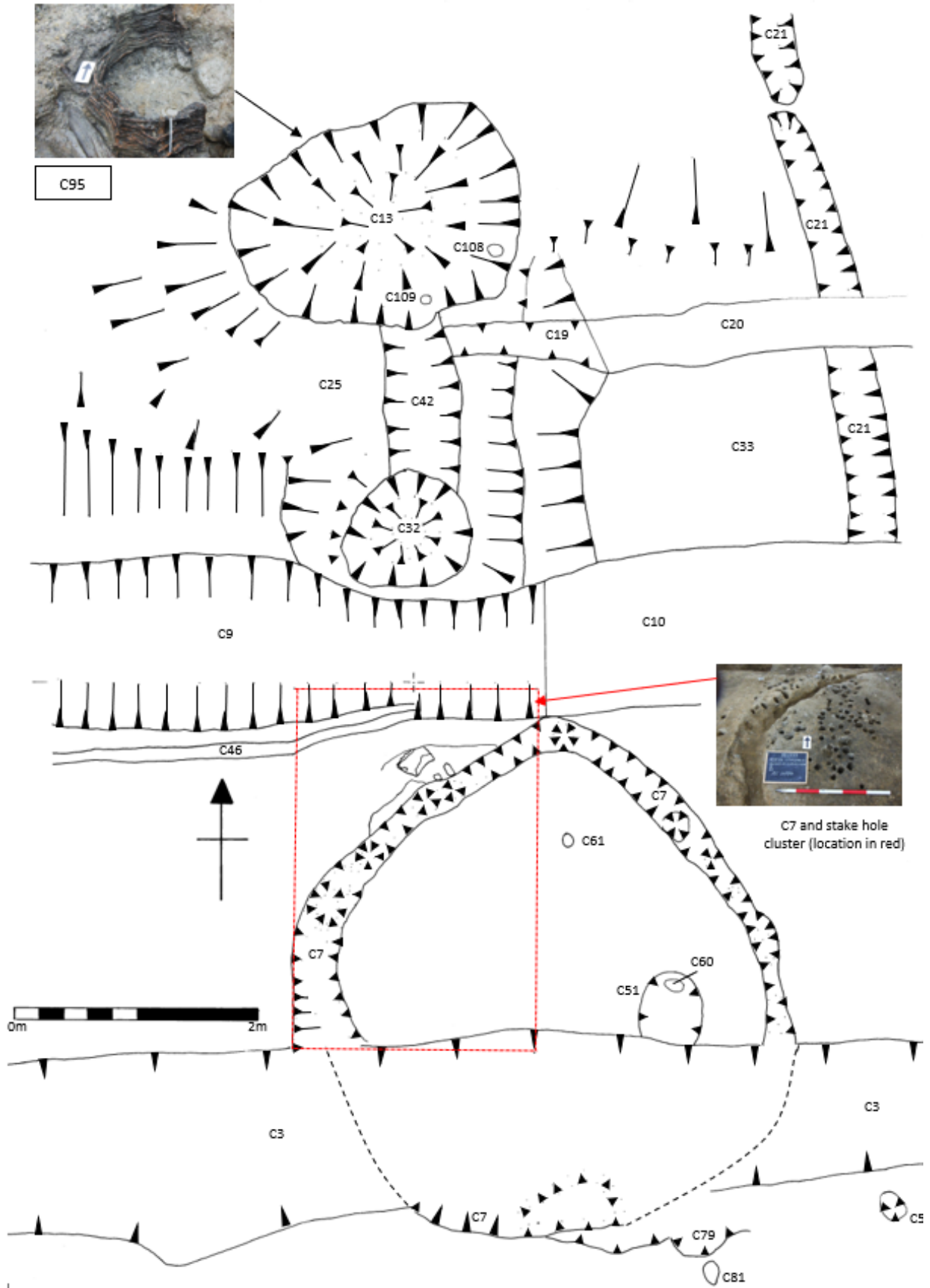


Fig 6. Post excavation plan of possible sweat lodge. Scale 1:20



Fig 7. East facing profile through C13, C42, C32 showing fills (mid-ex) of C13 and location of wicker liner C95. Scale 1:10

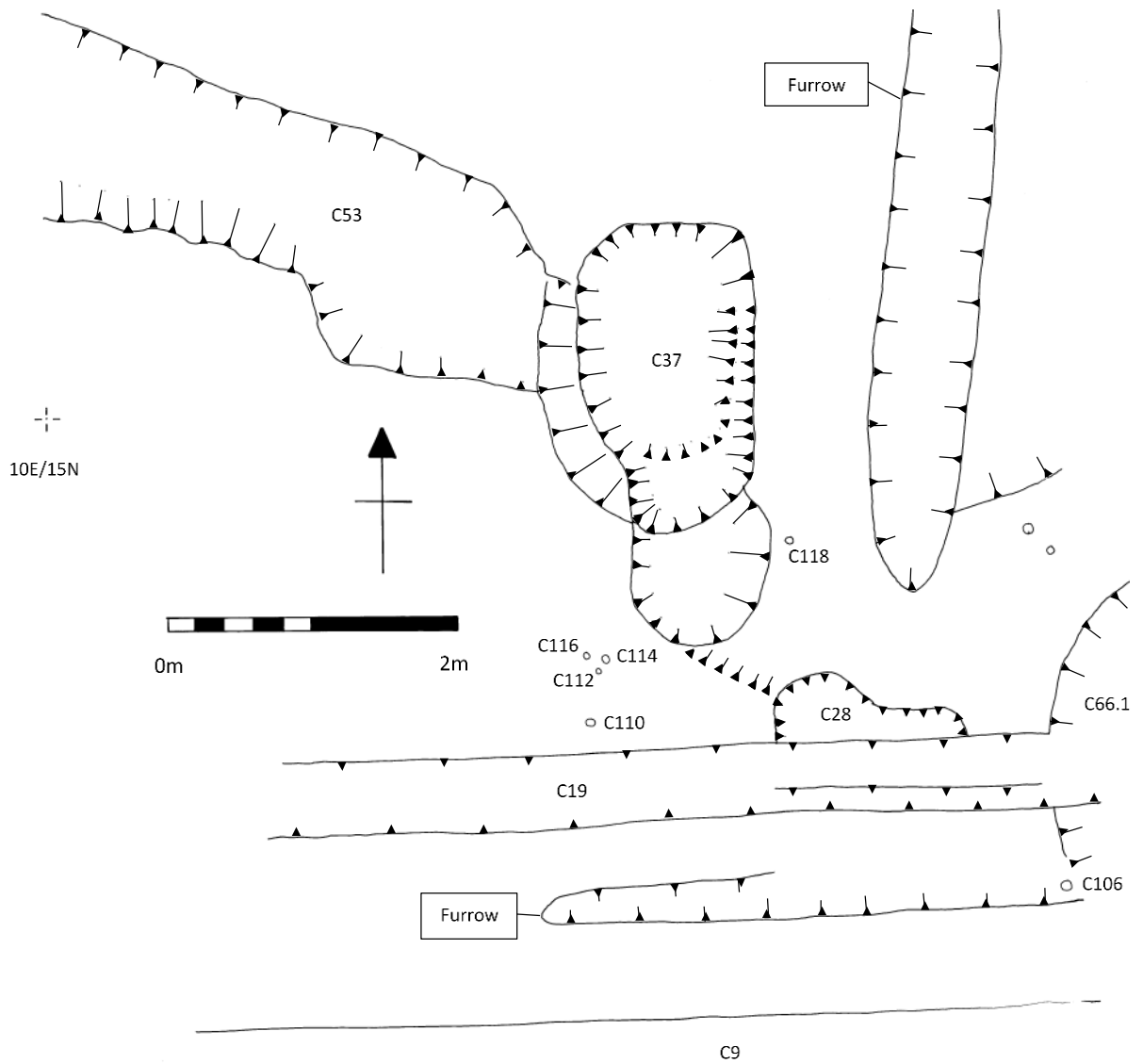


Fig 8. Post excavation plan of cut features in the western part of the site. Scale 1:20

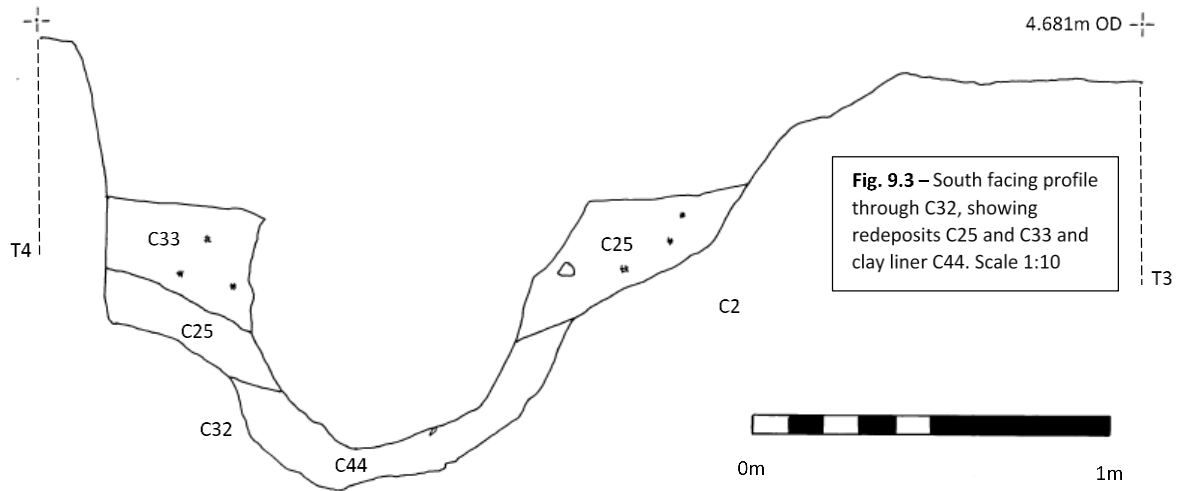
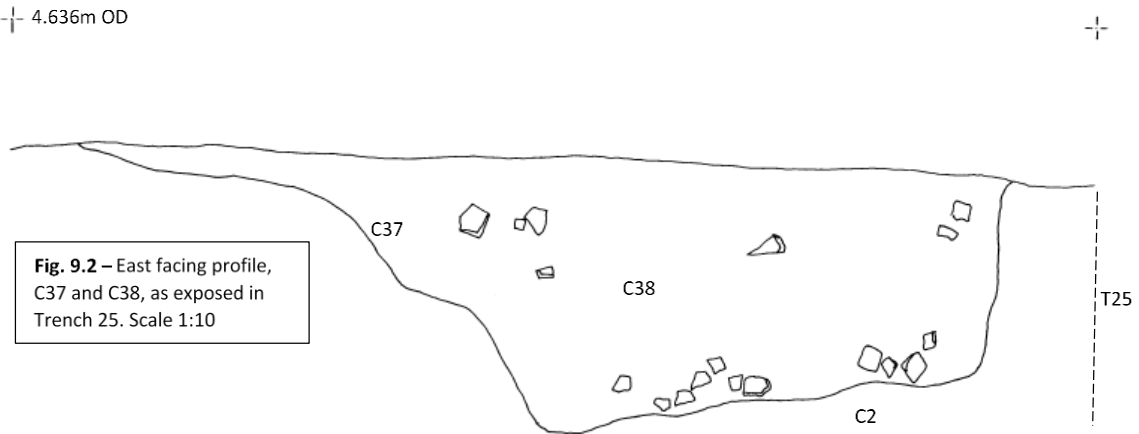
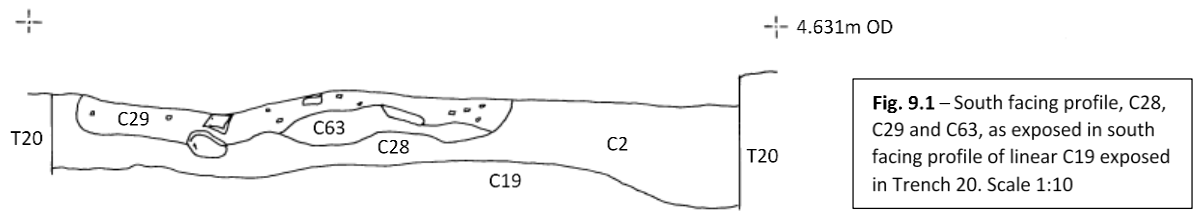


Fig 9. Profiles through features C28, C37 and C32. Post excavation. Scale 1:10



Plate 1. General view over the excavation site from the north east



Plate 2. General view over the excavation from the north



Plate 3. General view of burnt spread from the south



Plate 4. Excavation of strips through the burnt spread – C6, from the north



Plate 5. Excavation through slot 4, cut of C3 visible to the right. From the east



Plate 6. C13 (foreground), C11 and C32 mid excavation, in slot 13. From the north



Plate 7. Grouping of features, C13, C11, C42, C32, C9 and C7. From the north



Plate 8. C13 post excavation



Plate 9. C94, basal fill of C13. Mid excavation



Plate 10. C95, wattle liner, in situ. C58 and C59 also visible



Plate 11. C95, wattle liner, in situ, set into the basal fill of C13, C94



Plate 12. Detail - C49, clay lining to support C95 and to reshape C13



Plate 13. Detail – C49, clay lining reshaping the C13 trough



Plate 14. Detail – C58, wooden supports for C95



Plate 15. View from the north west of C13, C95, C58 and C59 and C94



Plate 16. C34, organic rich fill of C13



Plate 17. C32 and C42, post excavation



Plate 18. C32 post excavation showing stake hole C39



Plate 19. Detail of C42 showing C43 mounded to the north end adjacent to C13. Note stake holes C44 and C45



Plate 20. General view, C42, and C32



Plate 21. C28, keyhole style pit, pre excavation



Plate 22. C28, keyhole style pit, mid excavation



Plate 23. C28, keyhole style pit, post excavation



Plate 24. Trough C37 mid excavation



Plate 25. Trough C37 post excavation



Plate 26. C7, stake hole cluster, pre excavation



Plate 27. Foundation trench C7 (north west) showing stake hole cluster, post excavation



Plate 28. C7 structure, post excavation. From the south



Plate 29. C53, paleochannel post excavation



Plate 30. C92, metallised surface, mid excavation



Plate 31. Linear feature, C9, mid excavation



Plate 32. Linear features C3 (left) and C9 (right) flanking C7. From the east



Plate 33. Linear features C3, C9 and C19/C46. From the east



Plate 34. Panorama of burnt spread site from the east



Plate 35. 17E0377:1:1. Flint. Convex end scraper



Plate 36. 17E0377:1:1. Flint Convex end scraper



Plate 37. 17E0377:6:3. Flint. Multiplatform core



Plate 38. 17E0377:6:3. Flint. Multiplatform core



Plate 39. 17E0377:6:5. Concave scraper



Plate 40. 17E0377:6:17. Flint. Strike-a-light



Plate 41. 17E0377:6:20. Flint. Retouched flake



Plate 42. 17E0377:6:20 Flint. Retouched flake



Plate 43. 17E0377:7:1. Flint. Hollow scraper



Plate 44. 17E0377:7:1. Flint. Hollow scraper



Plate 45. 17E0377:9:1. Sandstone. Polisher



Plate 46. 17E0377:13:4. Sandstone. Anvil



Plate 47. 17E0377:13:4. Sandstone. Anvil



Plate 48. 17E0377:13:8. Igneous. Anvil



Plate 49. 17E0377:33:1. Flint. Edge retouched flake



Plate 50. 17E0377:33:1. Flint. Edge retouched flake

Appendix 1

C14 Dates Report

Red Tobin
RedArc Consulting
Ltd
35 Brook Meadow
Avoca, Co. Wicklow
Y14 R235
Ireland
VAT No.
IE3404427SH
Customer No.
2502954



¹⁴CHRONO
Centre
Queens University
Belfast
42 Fitzwilliam
Street
Belfast BT9 6AX
Northern Ireland

Radiocarbon Date Certificate

Laboratory Identification: UBA-40620
Date of Measurement: 2019-05-16
Site: Portrane Demesne, Co Dublin
Sample ID: 17E0377: Sample F13
Material Dated: wood
Pretreatment: AAA
mg Graphite: 0.981
Submitted by: Red Tobin

Conventional	3520±27
¹⁴ C Age:	BP
	using
Fraction	AMS
corrected	δ ¹³ C

Information about radiocarbon calibration

RADIOCARBON CALIBRATION PROGRAM*
CALIB REV7.0.1

Copyright 1986-2019 M Stuiver and PJ Reimer

*To be used in conjunction with:

Stuiver, M., and Reimer, P.J., 1993, Radiocarbon, 35, 215-230.
Annotated results (text) - -

40620

UBA-40620

Radiocarbon Age BP 3520 +/- 27

Calibration data set: intcal13.14c

% area enclosed cal AD age ranges

Reimer et al. 2013

relative area under

probability distribution

68.3 (1 sigma)	cal BC 1893- 1870	0.270
	1846- 1809	0.408
	1804- 1776	0.323
95.4 (2 sigma)	cal BC 1922- 1758	1.000

References for calibration datasets:

Reimer PJ, Bard E, Bayliss A, Beck JW, Blackwell PG, Bronk Ramsey C, Buck CE, Cheng H, Edwards RL, Friedrich M, Grootes PM, Guilderson TP, Hafliðason H, Hajdas I, Hattala C, Heaton TJ, Hogg AG, Hughen KA, Kaiser KF, Kromer B, Manning SW, Niu M, Reimer RW, Richards DA, Scott EM, Southon JR, Turney CSM, van der Plicht J.

IntCal13 and MARINE13 radiocarbon age calibration curves 0-50000 years calBP
Radiocarbon 55(4). DOI: 10.2458/azu_js_rc.55.16947

Comments:

* This standard deviation (error) includes a lab error multiplier.

** 1 sigma = square root of (sample std. dev.^2 + curve std. dev.^2)

** 2 sigma = 2 x square root of (sample std. dev.^2 + curve std. dev.^2)

where ^2 = quantity squared.

[] = calibrated range impinges on end of calibration data set

0* represents a "negative" age BP

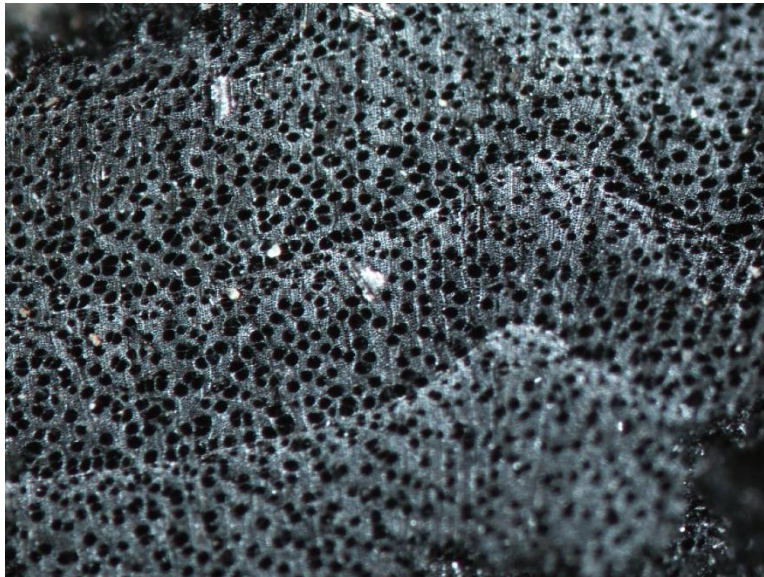
1955* or 1960* denote influence of nuclear testing C-14

NOTE: Cal ages and ranges are rounded to the nearest year which may be too precise in many instances. Users are advised to round results to the nearest 10 yr for samples with standard deviation in the radiocarbon age greater than 50 yr.

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Appendix 2
Wood Analysis Report
Lorna O'Donnell

Wood report
Portrane
(17E0377)



For: RedArc Consulting

Author- Dr Lorna O'Donnell

Date –30/5/19

Contents

- 1 Introduction
- 2 Methodology
- 3 Results
- 4 Discussion
- 5 Summary
- 6 Recommendations for storage and retention

Illustrations

Figures

- Figure 1 Total wood results
- Figure 2 Diameters of wood from S55, S56, S57
- Figure 3 Ring counts of wood from S55, S56, S57

Plates

- Plate 1 Flat facet with stepped facet junction

Tables

- Table 1 Wood identifications from Portrane

Summary

A wicker lined *fulacht fiadh* trough was excavated at Portrane, Co. Dublin, dating to the Middle Bronze Age. 56 wooden pieces were analysed. Four native Irish wood taxa were identified; primarily hazel with some alder, oak and pomaceous fruitwood. It is likely that the hazel represents coppiced material. One facet or axe mark remains on a hazel piece, indicating that axes of at least 1.5cm in width were used to chop the wood. It is likely that hazel woods grew close to the site and were utilized to line the *fulacht fiadh*.

1 Introduction

This report discusses wood analysis from Portrane, Co. Dublin. The site composed a burnt mound with associated stake-holes, post-holes, pits and a sub-circular slot trench (Tobin 2017). 56 pieces of wood were examined and concentrates on a wicker lined trough, F13. Radiocarbon dates have demonstrated that the site dates to the Middle Bronze Age.

2 Methodology

Samples one cell thick was taken from each wood sample with a razor blade from the transverse, radial and tangential planes of the wood. Analysis of thin sections was completed under a transmitted light microscope, at magnifications of 10x, 20x and 40x. Each taxon or species will have anatomical characteristics that are particular to them and these are identified by comparing their relevant characteristics to keys (Hather 2000 and Schweingruber 1978) and a reference collection supplied by the National Botanical Gardens of Ireland, Glasnevin. Nomenclature follows Schweingruber (1978). A sub-sample of 20 pieces was identified from wattle samples 55 and 56. Worked wood follows O’Sullivan (1996).

3 Results

56 individual pieces of wood were identified from Portrane. Results are dominated by hazel (*Corylus avellana*). Six pieces of alder (*Alnus* spp.), one oak, (*Quercus* sp.) and one pomaceous fruitwood (Maloideae) piece were also recorded (Figure 1).

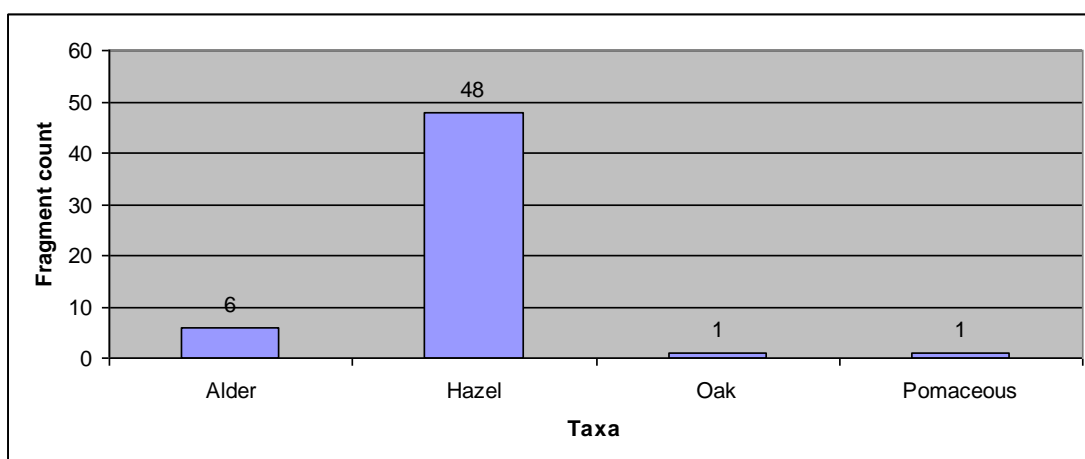


Figure 1 Total wood results

Contextually, all of the wood is derived from F95, the circular wattle structure which lines the possible Trough, F13. Three wattle samples and ten individual wood pieces were identified from here. F95 was a well preserved, woven wattle structure with ten visible uprights on the western half of the structure, starting in the south and following the edge to the north (Tobin 2017).

The ten separate elements will be described individually and the wattle discussed in bulk. The ten elements are a mixture of fragments, roundwoods and planks. S20 from Fill 34 is a degraded alder fragment, measuring 12cm by 2.5cm by 1cm and has 14 annual rings. S41, Element 5 is from Fill 58. This is an alder roundwood, measuring 44cm in length and 4cm in diameter. It has 45 annual rings and is quite

degraded also. S46 is a radially split hazel piece, measuring 6cm in length and 2cm in radius. It has 6 annual rings remaining. S49, Element 10 is a degraded hazel fragment. It is 20cm in length and 4cm in diameter. It is too degraded to count the annual rings. Sample 52, Element 11 is a roundwood made from pomaceous fruitwood. It is 6cm in length and 1cm in diameter. It has 6 annual rings remaining (Table 1).

Two alder planks were examined from Portrane, these are S58 and S59. They measure 34cm by 12cm by 2cm and 38cm by 12cm by 1.5cm respectively. S58 is a 25 year old half split while S59 is a radially split 35 year old.

From Fill 38, an alder roundwood which is 34cm in length and 5cm in diameter with 20 annual rings remaining was recorded. From Fill 58, a radially split oak fragment was analysed, which is 35cm in length, 8cm in width and 3cm in depth. It has 15 annual rings remaining (Table 1).

One worked end was noted from Fill 36. This is a half split chisel ended hazel piece, 10.2cm in length and 2.9cm in diameter. It has a flat facet with stepped facet junctions, measuring 1.5cm in width and 2cm in length. It was cut at an angle of 15° (Plate 1).



Plate 1 Flat facet with stepped facet junction

Three bulk wattle samples were examined, S55, S56 and S57. 20 hazel roundwoods were identified from S55. They are all tightly grouped in age and diameter, ranging only from 0.3cm to 1.2cm in diameter and from 2-6 annual rings. A fragment of hazel from S55 has been dated to the Middle Bronze Age (UBA 40620 3520+-27, calibrated at 2 sigma to 1922-1758BC). From S56, 20 hazel roundwoods were identified. They range in diameter from 0.2cm to 1cm and in ring count from 2-6 annual rings (Figures 2 and 3, Table 1).

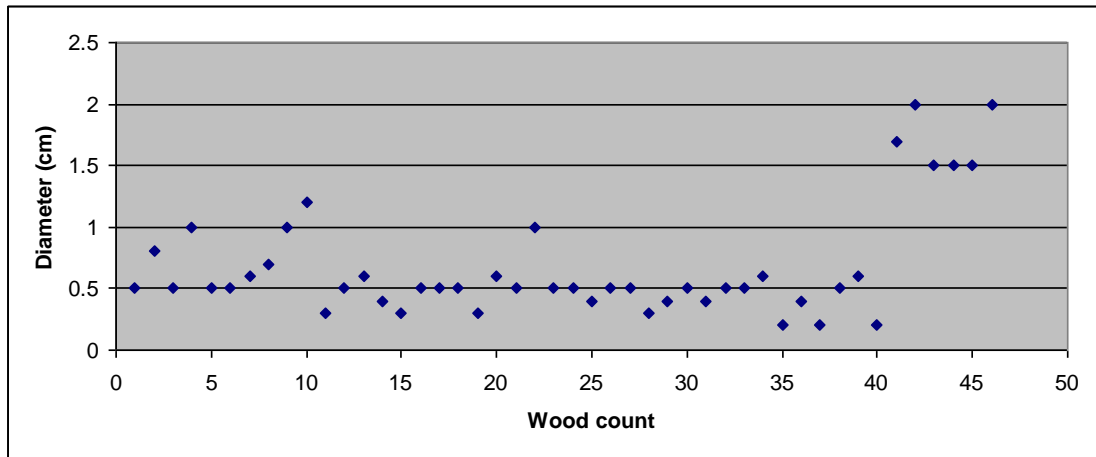


Figure 2 Diameters of wattle from S55, S56 and S57

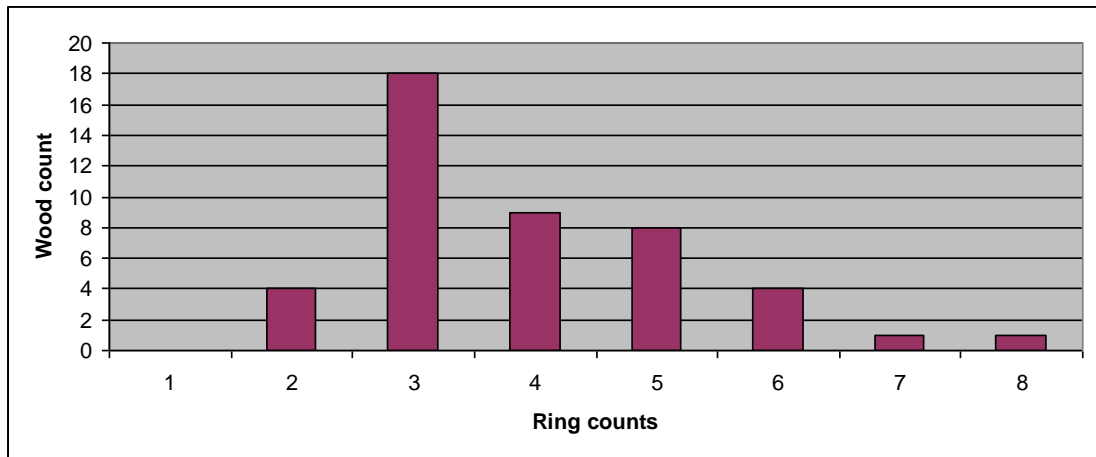


Figure 3 Ring counts from S55, S56 and S57

Six wattle uprights were examined from S57. These are the 6th to 11th uprights, clockwise from the East. Five were identified as hazel and one as alder. Diameters range from 1.7cm to 2cm and ring counts range from 6-10. The diameters of the wattle uprights from S57 are wider than those of S55 and S56 and are clustered in the right hand corner of Figure 3.

4 Discussion

Radiocarbon dating has shown that the site dates to the Middle Bronze Age. Wood has often been used to line Bronze Age *fulacht fiadh* troughs (Grogan *et al* 2007) including hazel, alder and oak, but wicker is not as commonly used. At Muckerstown, Co. Meath, two deep pits or wells were excavated dating to the Middle Bronze Age. It included an assemblage of wooden artifacts comprised of bundles of willow twigs tied with hazel withies (Moore 2006). While Muckerstown is not directly comparable given it does not represent burnt mound evidence, it does show the use wood in a Middle Bronze Age a pit complex. Hazel was often selected for wicker in the prehistoric and indeed historic period as it is flexible, easy to manage and grows prolifically in Ireland (Stuijts 2005). The wood remains from Portrane are very uniform in size and ring counts (Figures 2 and 3), suggesting it is derived from hazel coppice. Hazel will coppice naturally or through management. Managed hazel coppice dating to the Bronze Age has been noted at Lisheen, Co. Tipperary (Stuijts 2005). Whether the hazel from Portrane is from a managed or more natural hazel coppice is impossible to

say. One tool mark facet was noted from Portrane, indicating that axes of at least 1.5cm in width were used to cut the wood (Plate 1). This is comparable to other recorded Middle Bronze Age facets (O'Sullivan 1996, O'Neill 2005).

Wood results indicate that it is likely hazel forest grew close to the site which could have been easily utilized for the wicker. Hazel thrives in both woodlands and hedges. Its ability to produce multiple stems gives hazel its characteristic dense appearance (Linford 2009, 189). The presence of alder is indicative of wetland areas around the site, which are common given the nature of burnt mound sites. Alder is a wetland tree; it can often be seen growing alongside rivers, lakes, on marshes or in fens. It can form alder carr when its roots are in water. It is able to survive on these wet sites (which generally lack the nitrates needed for growth) as its roots have nodules which contain nitrogen fixing bacteria that extract nitrogen from the air (Lipscombe and Stokes 2008, 134).

The Maloideae group, a sub family of the Rosaceae includes crab apple, wild pear, rowan/whitebeam and hawthorn. It is extremely difficult to separate these through wood anatomy. Crab apple (*Malus sylvestris*) tends to be found on woodland edges (Hickie 2002, 55). Wild pear (*Pyrus pyraeaster*) is mostly found as an isolated tree (Stuijts 2005). Rowan (*Sorbus aucuparia*) is a tough colonizer which can tolerate peaty soils and exposed conditions. It needs plenty of light to thrive (Hickie 2002, 65). Whitebeam (*Sorbus aria*) grows up to 20m high and has a preference for limestone soils (Orme and Coles 1985, 11). Hawthorn (*Crataegus monogyna*) can thrive in all but the most acid of soils (Gale and Cutler 2000). As wild pear is not a native Irish species, it is likely that the charcoal represents other types encompassed in the Maloideae group. The oak present is most likely pedunculate (*Quercus robur*) or sessile oak (*Quercus petraea*), both are native species. The pedunculate oak prefers more wet, heavier clays than the sessile oak (Beckett 1979, 40-41). Plant remains from Portrane indicate that marginal land existed around the site, with seeds such as brambles, elderberries, raspberries and blackberries identified (Johnston 2018).

5 Summary

56 wood samples were identified from a wicker lined burnt mound trough at Portrane, Co. Dublin. The majority of the pieces represent hazel, wicker wattle. It is likely that the hazel represents coppiced material, whether it is natural or managed coppice is difficult to say. Pomaceous fruitwood, alder and oak were also identified. One facet remains on a hazel piece, indicating that axes of at least 1.5cm in width were used to chop the wood. Two half split and two radial split pieces were noted from the assemblage. It is likely that hazel woods grew close to the site and were utilized to line the trough.

6 Recommendations for storage and retention

The timbers have been recorded in detail on timber sheets and dated. They have also been dated, planned, photographed, taxa identified and analysed and carpentry techniques have also been described. It is my specialist opinion that this material has been recorded sufficiently and may be disposed of.

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Table 1 Wood identifications from Portrane

Sample	Element	Fill	Cut	Type	Length (cm)	Diam (cm)	Width (cm)	Depth (cm)	Identification	Ring counts	Bark?	Preservation	Toolmarks	Split	Notes
20		34	13	Fragment	12		2.5	1	<i>Alnus glutinosa</i> Gaertn.; A. <i>incana</i> DC	14	No	Fragile			
41	5	58	13	Roundwood	44	4			<i>Alnus glutinosa</i> Gaertn.; A. <i>incana</i> DC	45	Yes	Degraded			
46			13	Radial split	6	2 (radius)			<i>Alnus glutinosa</i> Gaertn.; A. <i>incana</i> DC	6	No	Good			Side E of 13
49	10			Fragment	20	4			<i>Alnus glutinosa</i> Gaertn.; A. <i>incana</i> DC	Can't count	No	Mushy			
52	11		13	Roundwood	6	1			Maloideae C. Weber	6	No	Good			
55				Wattle	10	0.3			<i>Alnus glutinosa</i> Gaertn.; A. <i>incana</i> DC	3	Yes	Good			
55				Wattle	7	0.3			<i>Alnus glutinosa</i> Gaertn.; A. <i>incana</i> DC	6	Yes	Good			
55				Wattle	4	0.3			<i>Alnus glutinosa</i> Gaertn.; A. <i>incana</i> DC	4	Yes	Good			
55				Wattle	8	0.4			<i>Alnus glutinosa</i> Gaertn.; A. <i>incana</i> DC	4	Yes	Good			
55				Wattle	10	0.5			<i>Alnus glutinosa</i> Gaertn.; A.	3	Yes	Good			

Sample	Element	Fill	Cut	Type	Length (cm)	Diam (cm)	Width (cm)	Depth (cm)	Identification	Ring counts	Bark?	Preservation	Toolmarks	Split	Notes
									<i>incana</i> DC						
55				Wattle	15	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>incana</i> DC A.	4	Yes	Good			
55				Wattle	7	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>incana</i> DC A.	3	Yes	Good			
55				Wattle	7	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>incana</i> DC A.	4	Yes	Good			
55				Wattle	8	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>incana</i> DC A.	3	Yes	Good			
55				Wattle	10	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>incana</i> DC A.	3	Yes	Good			
55				Wattle	8	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>incana</i> DC A.	2	Yes	Good			
55				Wattle	15	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>incana</i> DC A.	5	Yes	Good			
55				Wattle	6	0.6			<i>Alnus glutinosa</i> Gaertn.; <i>incana</i> DC A.	5	Yes	Good			
55				Wattle	10	0.6			<i>Alnus glutinosa</i> Gaertn.; <i>incana</i> DC A.	3	Yes	Good			

Sample	Element	Fill	Cut	Type	Length (cm)	Diam (cm)	Width (cm)	Depth (cm)	Identification	Ring counts	Bark?	Preservation	Toolmarks	Split	Notes
55				Wattle	13	0.6			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
55				Wattle	4	0.7			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	2	Yes	Good			
55				Wattle	14	0.8			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	5	Yes	Good			
55				Wattle	12	1			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
55				Wattle	6	1			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	6	Yes	Good			
55				Wattle	5	1.2			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
56				Wattle	4	0.2			<i>Corylus avellana</i> L.	3	Yes	Good			
56				Wattle	5	0.2			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
56				Wattle	7	0.3			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	4	Yes	Good			
56				Wattle	3	0.4			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			

Sample	Element	Fill	Cut	Type	Length (cm)	Diam (cm)	Width (cm)	Depth (cm)	Identification	Ring counts	Bark?	Preservation	Toolmarks	Split	Notes
56				Wattle	4	0.4			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
56				Wattle	5	0.4			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	4	Yes	Good			
56				Wattle	7	0.4			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	6	Yes	Good			
56				Wattle	6	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
56				Wattle	6.5	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
56				Wattle	6	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	2	Yes	Good			
56				Wattle	6	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
56				Wattle	5	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	4	Yes	Good			
56				Wattle	5	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
56				Wattle	5	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	2	Yes	Good			

Sample	Element	Fill	Cut	Type	Length (cm)	Diam (cm)	Width (cm)	Depth (cm)	Identification	Ring counts	Bark?	Preservation	Toolmarks	Split	Notes
56				Wattle	5	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	5	Yes	Good			
56				Wattle	5	0.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	5	Yes	Good			
56				Wattle	5	0.6			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	3	Yes	Good			
56				Wattle	6	0.6			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	4	Yes	Good			
56				Wattle	5	1			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	4	Yes	Good			
56				Wattle	6	0.2			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	5	Yes	Good			
57				Wattle	24	2			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	10	Yes	Good			8th upright from E, clockwise
57				Wattle	20	1.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	5	No	Good			7th upright from E, clockwise
57				Wattle	30	1.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	8	No	Good			9th upright from E, clockwise
57				Wattle	18	1.5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	5	No	Good			10th upright from E, clockwise

Sample	Element	Fill	Cut	Type	Length (cm)	Diam (cm)	Width (cm)	Depth (cm)	Identification	Ring counts	Bark?	Preservation	Toolmarks	Split	Notes
57				Wattle	20	1.7			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	7		Good			6th upright from E
57				Wattle	17	2			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	6	no	Good			11th upright from E, clockwise
58				Plank	34		12	2	<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	25	No	Good		Half split	
59	13			Plank	38		12	1.5	<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	35	No	Good		Radial	
		38	13	Roundwood	34	5			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	20	No	Good			
		36	13	Chisel end	10.2	2.9			<i>Alnus glutinosa</i> Gaertn.; <i>A. incana</i> DC	12	Yes	Good	Flat facet 15mm w x 20mm L	Half split	
	4	58	13	Fragment	35		8	3	<i>Quercus petraea</i> Liebl; <i>Q. robur</i> L.	15	No	Good		Radial	

Appendix 3
Sample Assessment
Penny Johnston

Analysis of Plant Remains

**Portrane, Co. Dublin
17E0377**

**By Penny Johnston
10 August 2018**



Executive Summary

This report details findings from the archaeobotanical analysis of samples from a site excavated in Portrane, Co. Dublin (17E0377). The site comprised a burnt mound with associated stake-holes, post-holes, pits and a sub-circular slot trench. The only sample that contained seeds was from the fill of the trough. The seeds were preserved by waterlogging, and they were identified as mostly derived from plants of marginal land, including brambles and elder.

Introduction

Excavations of a burnt mound site at Portrane, Co. Dublin (17E0377) were conducted by Red Tobin for Redarc Consulting Ltd. The excavated site comprised a burnt spread, pits, a possible well and trough, a channel, and a small sub-circular slot trench (possibly indicative of a structure) as well as a stakehole cluster and postholes. A total of 16 samples were analysed from the site. This report describes the results of processing and archaeobotanical analysis of the samples.

Methodology

The samples were taken as bulk soil on site, ranging in size from 0.5 litres (usually from stake-holes) to 15 litres (see Table 1).

Table 1: Sieving record from Portrane, Co. Dublin (17E0377)

Context	Sample	Vol. (litres)	Processing method
8	1	2	Flotation
8	6	0.5	Flotation
38	11	15	Flotation
49	19	2	Flotation
8	21	8	Flotation
63	26	3	Flotation
91	51	5	Wet-sieving
94	62	13	Flotation
72 (6)	66	0.5	Flotation
72 (10)	69	0.5	Flotation
73 (3)	72	0.5	Flotation
73 (4)	73	0.5	Flotation
74 (?)	86/88	0.5	Flotation
74 (25)	100	0.5	Flotation
74 (35)	108	0.5	Flotation
74 (36)	109	0.5	Flotation
Total volume sieved		52.5	

The environmental material in these samples was preserved by both charring (which converted unstable organic material into inert carbon) and by waterlogging or anoxic preservation (where extended periods of water saturation prevented exposure to oxygen and hence inhibited the work of the usual micro-organisms that cause decay). Bulk samples taken for environmental analysis are processed differently according to the preservation type present, with carbonised samples being processed by flotation and waterlogged samples being processed by wet-sieving. These samples were processed depending on the type of preservation present (see Table 1).²

The carbonised samples from Portrane were processed by bucket flotation in order to extract charred plant remains. The samples were soaked in clean buckets and agitated in order to release the carbonised plant remains from clay and to allow them to float to the top of the water. This floating material (“flot”) was then poured off and retained in geological sieves (smallest mesh size 250µm).³ Retents (the non-floating residues) were collected in sieve meshes measuring 1mm. The flots and retents were then dried in paper-lined drying trays and, once dried, were stored in sealed plastic bags before sorting. The flots were sorted under magnification (see below) and the retents were sorted by eye.

The waterlogged samples from Portrane were processed by wet-sieving in order to collect any waterlogged seeds that were present. This method mimics the anaerobic conditions of the archaeological deposits that the plant remains were preserved in. The sample was soaked in water, agitated and disaggregated before pouring the entire sample through a series of geological sieves (in this case, mesh sizes 1mm and 250 microns were used). The material from the sieves was then collected in containers (glass jars) and water was added to prevent decay (see Maier et al., 2009).⁴

A low-powered binocular microscope (magnification x4.8 to x56) was used to sort and identify the processed samples. Identification was carried out in consultation with the online version of the *Digital Seed Atlas for the Netherlands* (Cappers et al., 2006).⁵ Nomenclature and taxonomic order generally follows Stace (1996) although the brambles are simply referred to as either *Rubus fruticosus* (for blackberry) and *Rubus idaeus* (for raspberry). Brambles are part of a large, complex group with many species and sub-species that are difficult to distinguish even with the entire plant (see Stace, 1996, p.330), let alone with just the seeds. As a result, these seeds are often grouped together simply as *Rubus* species (or “*Rubus* spp.”) because classification is often uncertain.

Results

The results of sorting are presented in Table 2, at the end of this report. This table gives a subjective indication of the amount of charcoal present as well as charred and uncharred seeds. There is also a column where uncharred (probably modern) seeds present in the samples are recorded (as a taxa list, they are not quantified). The presence of artefacts in the retents is also noted.

There were no charred seeds in the samples from this site (see sorting details presented in Table 2). The absence of charred seeds is quite usual from deposits associated with burnt mounds (e.g. see Johnston, 2007, p.70 and Dillon and Tierney, 2011, p.196). This indicates that the burning that

² In Table 2, under the heading “Anoxic preservation?” waterlogged samples have been noted with a “Y” for yes.

³ A step-by-step description of this methodology can be consulted at <https://sites.google.com/site/archaeobotany/buckets2> (last accessed 8 August 2018).

⁴ A description of this methodology is outlined briefly at http://archaeobotany.dept.shef.ac.uk/wiki/index.php/Waterlogged_-_Recovery (last accessed 8 August 2018).

⁵ See also <http://dzn.eldoc.ub.rug.nl/> (last accessed 8 August 2018).

was carried out at these sites was not associated with processing crops and seeds and that, in general, seeds were not used as fuel unless they were accidentally incorporated into a fire.

In the samples from Portrane there was one sample (C91, S51) where waterlogged seeds were quite plentiful. This was taken from the trough fill. Identifications are presented in Table 3, at the end of the report. The results show that seeds from plants of marginal ground, such as brambles, were common. This could suggest a surrounding environment of land periodically cleared and re-colonised, or on the marginal boundary between two different habitats. The identification of waterlogged seeds from elderberries, raspberries/blackberries and other edibles (sloe/cherry and hazelnut) may suggest collected food remains. Alternatively, these were not present in large quantities and may simply reflect wild food growing in the vicinity, accidentally incorporated into the archaeological deposits and preserved by waterlogging. This suite of plant remains is similar to other waterlogged plant remains found in burnt mound sites; blackberry drupes were also found at a burnt mound sites in Monreagh 3, where it was interpreted as material that was accidentally deposited by birds or other animals (O’Carroll and Cobain, 2012, p. 72). Waterlogged remains from blackberries, and seeds from the *Rubus* species in general, were also found in deposits from burnt mound sites at Curraheen in Co. Cork; Monk (2013, p. 362) sees this as highlighting the location of these site types, which may have been located close to woodland margins.⁶

Recommendations for storage and retention

The samples from Portrane (17E0377) currently comprises 16 dry flots (some samples had multiple bags) and 1 processed waterlogged sample. All of the dry flots have been sorted for plant remains material in their entirety and there is no reason for these to be stored for the future, other than for the purposes of charcoal identification.

The waterlogged sample (C91, S51) is currently stored in waterlogged conditions in glass jars and in dark and cool conditions. This will only be viable in the short term as it cannot be guaranteed that the material will not dry out unless it is stored in a proper cool storage facility. Although it would be preferable if these could be held in the long term, cold storage is not available for samples in the National Museum of Ireland and it is unlikely that it will be possible to store these for the long term. In order to retain some material for future reference, the single tube (22 mm diameter x 50 mm length) of identified and extracted waterlogged plant material should be stored and retained. This is recommended for purposes of verification. This material comprises a single tube and it therefore does not take up a large amount of storage space. The tube contains waterlogged seeds which require occasional curation: it will require checking approximately once a year to ensure that the liquid (currently water) does not evaporate. The tube is sealed so the water should not evaporate quickly.

Penny Johnston
10 August 2018

⁶ Comparative plant remains datasets from burnt mound sites in Dublin are rare. There are four burnt mounds/*fulachta fiadh* sites listed in the TII Digital Heritage Collection for the county; Newtown Site 1 (03E1450), Ward Lower Site 7 (03E1356), Woodpark Site 10 (01E1157) and Coldwinters Site 5 (01E1062). Of these, there are no environmental sample reports for Woodpark and Coldwinters, and the samples from Ward Lower and Newtown did not contain any seeds.

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Table 2: Sorted samples, Portrane, Co. Dublin (17E0377)

Sample	Context	Charred seeds	Other seeds	Charcoal	C14?	Anoxic preservation?	Comment/description
1	8	AB	AB	O	Y	N	Modern uncharred <i>Chenopodium album</i> seeds present.
6	8	AB	AB	R	Y	N	Modern seeds (<i>Ranunculus</i>) plentiful.
11	38	AB	AB	R	Y	N	Struck flint present.
19	49	AB	AB	AB	N	Y	A clay sample with small wood fragments preserved (now dried out). Stored dry.
21	8	AB	AB	O	N	N	
26	63	AB	AB	F	Y	N	
51	91	AB	F	O	Y	Y	Waterlogged sample with frequent archaeological seeds (uncharred), with <i>Rubus</i> being the most plentiful. Currently stored as waterlogged material.
62	94	AB	AB	O	Y	Y?	Possibly some organic preservation. Some uncharred wood and uncharred seeds present, though now dried out. Taxa present included <i>Ranunculus</i> , <i>Rubus</i> and <i>Sambucus</i> . Possible struck flint present. Stored dry.
66	72 (6)	AB	AB	R-O	N	N	
69	72 (10)	AB	AB	R	N	N	
72	73 (3)	AB	AB	R	N	N	
73	73 (4)	AB	AB	O	N	N	
86/88	74 (?)	AB	AB	R	Y	N	
100	74 (25)	AB	AB	O	N	N	
108	74 (35)	AB	AB	O	Y	N	
109	74 (36)	AB	AB	R	N	N	

Charcoal and plant remains recorded using DAFOR 5-point scale of abundance: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare. In addition, AB=Absent, Y=Yes and N=No.

Table 3: Identified waterlogged plant remains, Portrane, Co. Dublin (17E0377)

Context	91
Sample	51
Mesh size	1 mm*
Sorted fraction	300 ml of 750 ml
Meadow/Creeping Buttercup (<i>Ranunculus acris/repens</i> L.)	18
Hazelnut shell fragments (<i>Corylus avellana</i> L.)	1
Indeterminate nut shell fragments	1
Stitchworts (<i>Stellaria</i> L. species)	2
Indeterminate seeds from the Cabbage family (Brassicaceae)	1
Raspberry/blackberry (<i>Rubus idaeus/fruticosus</i> L.)	42
Cherries: plum/sloe/cherry stones (<i>Prunus</i> L. species)	1
Indeterminate seeds from the mint family (Lamiaceae)	1
Elder (<i>Sambucus nigra</i> L.)	8
Yarrows (<i>Achillea</i> spp. L.)	1
Dock/Sedge seeds (Polygonaceae/Cyperaceae)	1
Possible pip (indeterminate species)	1

* There were no seeds from the 250 micron residue.

Appendix 4
Lithics Report
Killian Driscoll

LITHICS IRELAND CONSULTANCY, GALWAY

Lithics Report for Portrane Demesne Burnt Mound (17E0377), County Dublin

Killian Driscoll

18/10/2018

Contents

List of Tables	
List of Appendices	
Introduction.....	
Methods	
Raw Materials.....	
Condition	
Technology.....	
Spatial distribution	
Chronology	
Conclusion.....	
Recommendations for illustration.....	
Conservation	
References	
Tables	
Appendices.....	

List of Tables

Table 1 Artefact condition

Table 2 Flaked stone and ground stone tool artefacts by type and material

Table 3 Means (grams and mm). Complete cores

Table 4 Debitage by fragmentation and size range

Table 5 Retouched tools by type and material

List of Appendices

Appendix 1 Glossary of terms

Appendix 2 Summary attributes of artefacts

Introduction

This report presents the analysis of the lithic assemblage from the excavations at the site of the new National Forensic Mental Health Services Hospital at St Ita's Hospital, Portrane Demesne, Donabate, Co Dublin. Monitoring of topsoil stripping led to the excavation of a burnt mound (Tobin 2017). The lithic assemblage totalled 65 artefacts, along with 66 finds deemed to be natural, and a further 14 indeterminate pieces. The 65 artefacts include flaked stone tools – cores and flakes – formed on flint, and ground stone tools – anvils, hammerstones, and polishers – formed on sandstone, limestone, quartzite, and igneous rock. The flaked stone tool component is dominated by small to medium-sized flakes, with the retouched artefacts dominated by edge retouched flakes and scrapers. The majority of the lithics would appear to represent a Neolithic and Bronze Age assemblage.

Methods

The material was analysed macroscopically, using a standard technological descriptive system (Inizan *et al.* 1999), an Irish typological system (Woodman *et al.* 2006), and a quartz analytical system (Driscoll 2010, 2011). Debitage greater than 20mm GD (greatest dimension), and all cores and modified pieces were recorded fully. Debitage less than 20mm GD were recorded for material, burning, and fragmentation, and subdivided into $<20 \geq 10$ mm and <10 mm flakes or debris. The flakes were distinguished as produced from platform or bipolar technique where possible – if not, they were described as 'non-defined'. Due to differences of terminology used in differing lithic reports, Appendix 1 provides a glossary of terms used. The artefacts were recorded in an Access database, with a summary provided in Appendix 2, and full records in the accompanying Excel file.

Raw Materials

The lithic assemblage totalled 145 finds, of which 66 were deemed to be natural, with a further 14 indeterminate pieces. The remaining 65 artefacts include flaked stone tools formed on flint ($n = 57$), and ground stone tools formed on a quartzite ($n = 4$), sandstone ($n = 2$), limestone ($n = 4$), and an igneous rock ($n = 1$).

The majority of the flint appears to be derived from pebbles and small cobbles. Such flint is available in the glacial till and nearby beaches, while the remaining rock types may also be from the local geology (McConnell *et al.* 2001).

Condition

The material is in variable condition (Table 1), with the majority of the artefacts being patinated, and a small number are burnt. Over half have some degree of edge damage. While some of this edge damage may represent pre-depositional use and/or damage, it may imply a degree of post-depositional disturbance. The artefacts, however, do not appear to have a high level of fragmentation, which suggests a relative lack of post-depositional breakage.

Technology

The flaked stone tool component of the assemblage is dominated by small to medium-sized cores and flakes, with a significant proportion of bipolar artefacts. The relatively frequent occurrence of retouched lithics – along with the probable use of unretouched flakes and blades as tools (Driscoll et al. 2014) – suggests that alongside stone tool production, much of the prehistoric communities' lithic-focused activity in the area was stone tool use for a variety of tasks, with scrapers and edge retouched tools dominating.

Cores

Cores comprise 21% of the flaked stone tools, dominated by bipolar cores (Table 2); many of the cores are quite large cores, suggesting a lack of emphasis of raw material conservation. However, both of the platform cores are small examples, and are in fact smaller than many of the bipolar cores (Table 3).

Debitage

The debitage is dominated by small to medium-sized flake fragments (Table 4), with bipolar flakes accounting for almost a quarter of the flakes. Platform preparation is rare, and only seen on one of the flakes.

Modified artefacts

Modified artefacts comprise 12% (n = 7) of the flaked stone tools, dominated by retouched pieces and scrapers (Table 5).

The hollow scraper is a classic hollow scraper; it is formed on a laminar flake with deep, concave retouch on the lateral left side onto the distal edge. The concave scraper is a small scraper with concave retouch, and two other retouched edges possibly for a grip. The convex end scraper is a small scraper formed on a bipolar flake.

The edge retouched flake has marginal retouch along both edges and is retouched to a point on the distal end.

One of the retouched flakes is somewhat like a plano-convex knife, with a domed retouched distal end and retouch along entire lateral left edge and may possibly be a discarded roughout. The remaining retouched flake has lateral retouch along one edge, and may also be a roughout?

The strike-a-light is a retouched piece (i.e. not clearly a core or debitage) that is a bashed piece, with three heavily worked edges.

For the ground stone tools, there are 3 anvils, 3 hammerstones, and 2 polishers.

The anvils are cobbles of limestone, sandstone, and an igneous rock. The igneous anvil has a depression on one face and impact marks on other face from use as anvil, plus one end smoothed from use as abraded/polisher. The limestone is a cobble, with impact mark on one face. The sandstone is an anvil with impact depressions on both flat faces. These may relate to the bipolar knapping noted in the assemblage.

The assemblage contains 3 quartzite hammerstones, one of which may also have been used as an anvil, and another contained extensive areas of rubbing.

For the 2 polishers, one is a bashed sandstone piece, with one very smoothed face, and two removals possibly for finger rests for handling; while the other is a small quartzite cobble with numerous polished faces.

Spatial distribution

C1 Topsoil and C2 Natural subsoil

The topsoil contained the convex end scraper and C2 contained 1 flake.

C4 - basal fill C3 linear feature and C5 - upper fill of C3 linear feature

C4 contained 1 polisher, and C5 contained 2 flakes.

C6 - burnt spread over the whole site

C6 contained 1 anvil, 2 hammerstones, the strike-a-light, 4 cores, 1 retouched flake, the concave scraper, and 16 flakes.

C8 - fill of C7 curvilinear slot trench and C7

C7 and its fill contained the hollow scraper and 2 flakes.

C10- upper fill C9 EW linear, C15 Basal fill of C9 EW linear and C9

C9 and its fills contained 5 cores, 3 flakes, and 1 polisher.

C16 Orange/yellow clay layer above C15

C16 contained 3 cores.

C12- pyrolithic material forming fill of C13 Cut of large sub circular pit/trough and C13

C13 and its fill contained 2 anvils, 1 hammerstone, and 8 flakes.

C19- linear feature N of C9

C19 contained 3 flakes.

C33- yellow "natural" under C13/C15/C17

C33 contained the edge retouched flake.

C77- natural deposit in W part of the site

C77 contained 1 flake and 1 debris.

C106- Cut of small posthole.

C106 contained 1 flake.

Chronology

As with most lithic assemblages, the majority of the lithics from the excavation cannot be assigned to a particular time period. The direct percussion and bipolar knapping techniques were used throughout the later prehistoric period (Woodman *et al.* 2006), with bipolar

becoming more prevalent during the Bronze Age (O’Hare 2005) but seen from the Early Neolithic (Driscoll 2016). None of the retouched artefacts are particularly diagnostic to a time period, beyond a Middle Neolithic date for the hollow scraper, a Neolithic date for the concave scraper, and a probable Neolithic date for the convex end scraper. The lack of blades, however, and the significant proportion of bipolar artefacts, does suggest a Bronze Age date for some of the assemblage.

Conclusion

This report presents the analysis of the lithic assemblage from the excavations at the site of the new National Forensic Mental Health Services Hospital at St Ita’s Hospital, Portrane Demesne, Donabate, Co Dublin. Monitoring of topsoil stripping led to the excavation of a burnt mound. The lithic assemblage comprises 65 flaked stone and ground stone tools, of which none are particularly diagnostic in terms of chronology, except for the Middle Neolithic hollow scraper and Neolithic concave scraper. The lack of blades, and significant proportion of bipolar artefacts, suggests Bronze Age activity for part of the assemblage. A number of anvils in the assemblage may be related to the bipolar knapping activity. Related to this knapping are the hammerstones. The relatively frequent occurrence of retouched lithics – along with the probable use of unretouched flakes and blades as tools – suggests that alongside stone tool production, much of the prehistoric communities’ lithic-focused activity in the area was stone tool use for a variety of tasks, with scrapers and edge retouched tools dominating.

Recommendations for illustration

- | | | |
|----------------|-----------|----------------------|
| ● 17E0377:1:1 | Flint | Convex end scraper |
| ● 17E0377:6:3 | Flint | Multiplatform core |
| ● 17E0377:6:5 | Flint | Concave scraper |
| ● 17E0377:6:17 | Flint | Strike-a-light |
| ● 17E0377:6:20 | Flint | Retouched flake |
| ● 17E0377:7:1 | Flint | Hollow scraper |
| ● 17E0377:9:1 | Sandstone | Polisher |
| ● 17E0377:13:4 | Sandstone | Anvil |
| ● 17E0377:13:8 | Igneous | Anvil |
| ● 17E0377:33:1 | Flint | Edge retouched flake |

Conservation

None of the artefacts require specific conservation measures. The lithics should be bagged individually to avoid edge damage, and stored in a dry, stable environment.

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Tables

Condition	Count	Total %
Burnt	3	4.6%
Fresh	1	1.5%
Patinated	42	64.6%
Weathered	19	29.2%
Grand Total	65	100.0%

Table 1 Artefact condition

Artefact	Flint	Limestone	Quartzite	Sandstone	Igneous	Total
Dual, opposed core	1	-	-	-	-	1
Multiplatform core	1	-	-	-	-	1
Bipolar core	10	-	-	-	-	10
Platform flake	33	-	-	-	-	33
Bipolar flake	10	-	-	-	-	10
Debris	1	-	-	-	-	1
Anvil	-	1	-	1	1	3
Hammerstone	-	-	3	-	-	3
Polisher	-	-	1	1	-	2
Retouched piece	1	-	-	-	-	1
Total	57	1	4	2	1	65

Table 2 Flaked stone and ground stone tool artefacts by type and material

Core Type	Mean Weight	Mean Length	Mean Width	Mean Thickness
Bipolar (n = 10)	39.1	40.1	32.3	22.4
Platform (n = 2)	29.9	32.9	28.9	21.3
Total	37.6	38.9	31.7	22.2

Table 3 Means (grams and mm). Complete cores

Debitage type	Fragment	10-20 mm GD	> 20 mm GD	Total
Platform flake	Complete	1	10	11
	Fragment	6	16	22
Bipolar flake	Complete	-	2	2
	Fragment	3	5	8
Debris		1	-	1
Total		11	33	44

Table 4 Debitage by fragmentation and size range

Debitage type	Flint
Edge retouched	1
Retouched	2
Convex end scraper	1
Concave scraper	1
Hollow scraper	1

Table 5 Retouched tools by type and material

Appendices

Appendix 1 Glossary of terms

Term	Definition
Bipolar core	A bipolar core is a core derived from knapping with a bipolar technique, which involves an impactor striking the top of core which rests on an anvil, with flakes being initiated from both ends of the core. The force is therefore considered as compressive and the flake is initiated by wedging (Cotterell and Kamminga 1987, 685). A bipolar core generally contains evidence of impact marks from the impactor and the anvil
Bipolar flake	A bipolar flake is the result of a bipolar knapping technique. During the experimental knapping the quartz bipolar flakes were generally characterised by a rounded platform with the steep side on the ventral face of the flake, with the platform angle reversed compared with direct percussion platforms. The bipolar platforms can also fracture in a triangular fashion, leading to triangular-shaped platform fragments. The majority of the experimental bipolar flakes had feather terminations
Blade	A blade is often defined as a flake with a length/width ratio of 2:1 or greater (e.g. Inizan <i>et al.</i> 1999, 130; for an argument against this metrical definition see Sørensen 2006)
Core	A core is a piece of lithic raw material which is struck in order to remove flakes
Cortex	While chert and quartz do not form cortex in the same manner as flint, the term is used here as a shorthand for the exterior surface which become altered due to weathering, natural abrading, and so forth, with a distinction between this and bedding
Debitage	Debitage refers to all “removals resulting from the knapping of a core, <i>i.e.</i> to all flakes in the broader sense of the term: those resulting from preparation, potential tool blanks, and all waste products” (Inizan <i>et al.</i> 1999, 138). Therefore debitage also includes tool types formed on flakes or debris.
Debris	“[S]hapeless fragments whose mode of fracture cannot be identified, and which cannot be assigned to any category of objects” (Inizan <i>et al.</i> 1999, 138).
Direct percussion	Direct percussion is a technique whereby a core is struck at an angle of less than 90°, which removes debitage from the core. This distinguishes itself from bipolar percussion where the striking angle is around 90°. The cores and debitage resulting from direct percussion core are also called a platform cores and debitage
Flake	A flake is a removal from a core through knapping with characteristic attributes, which can be used as a tool in the form it was knapped or may be retouched or modified before use
Irregular flake	Flakes are divided into regular and irregular flakes. A regular flake has at least 10mm of an acute straight edge while irregular flakes do not
Modified type	The term modified type is used here to distinguish between retouched and non-retouched artefacts, and includes ‘types’ such as scrapers, projectiles and so forth which are generally seen as ‘tool types’ and forming a typology, as well as retouched flakes/blades/cores
Multiplatform core	A direct percussion/platform core with more than two striking platforms
Non-defined flake	A flake which cannot be assigned to a particular knapping technique, <i>i.e.</i> bipolar, platform, pressure flaking, retouching
Platform	Shorthand for striking platform: the area on a flake which received the strike during knapping
Platform core/debitage	Platform core/debitage is a shorthand phrase for direct percussion core/debitage
Radially split piece	These are pieces that are often shaped like a segment of an orange, and in quartz knapping can result from both bipolar and direct percussion (e.g. Knutsson 1988). However, in this analysis they are interpreted as evidence of bipolar knapping (see Driscoll 2011), and are predominantly related with pebble/cobble reduction
Regular flake	See Irregular flake

Retouch/pressure flake	This category is used to define flakes produced by either retouching of pressure flaking, without a further subdivision of the two techniques
Retouch/wear mark	The term retouch/wear mark is used in order to include both possible types of modification in the identification without differentiating them.
Single platform core	A direct percussion/platform core with one striking platform
Technique	“Physical actions – a deft flip of the hand, the use of a hard or soft hammer, the interposition of a punch – are all examples of techniques” (Inizan <i>et al.</i> 1999, 30). The techniques used in the experimental knapping were bipolar and soft and hard hammer direct percussion

Appendix 2 Summary attributes of artefacts

#	Material	Type	Debitage Sub Type	Modified Type	Weight	Max L	Max W	Max T	Fragment
1:1	Flint	Bipolar flake		Convex	3.41	28	20.2	5.3	Complete
2:1	Flint	Platform flake	<20mm						Fragment
3:1	Sandstone	Indeterminate							
4:1	Flint	Natural							
4:1	Quartzite	Polisher			269.78	73.7	58.6	47.5	Complete
5:1	Flint	Platform flake			5.36	30.6	19.8	6.5	Complete
5:1	Flint	Indeterminate							
5:2	Flint	Platform flake	<20mm						Fragment
5:3	Flint	Natural							
5:4	Flint	Natural							
6:1	Flint	Platform flake			7.86	35.3	25.5	9.2	Distal
6:1	Flint	Natural							
6:2	Flint	Platform flake			4.31	39.8	23.2	5.7	Proximal
6:3	Flint	Multiplatform core			46.03	37.7	34.7	25.3	Complete
6:4	Flint	Bipolar core			90.74	50.3	44.7	34.2	Complete
6:5	Flint	Platform flake		Concave scraper	2.64	23.5	16.8	8.3	Distal
6:7	Quartzite	Hammerstone			65.18	48.5	43.2	26	Fragment
6:8	Flint	Platform flake			5.74	32.7	22.5	8.3	Complete
6:9	Quartzite	Hammerstone			504	84.7	80	55	Fragment
6:10	Flint	Bipolar flake			5.09	23.5	23.4	8.4	Complete
6:11	Flint	Platform flake			6.04	25.6	23	9	Proximal
6:14	Flint	Platform flake			4.11	29.8	17.2	7.8	Mesial
6:15	Flint	Platform flake			17.39	18.7	30.4	30.2	Proximal
6:16	Flint	Indeterminate							
6:17	Flint	Retouched piece			7.92	30	22.1	13.6	Complete
6:20	Flint	Platform flake		Retouched	8.88	41.3	22.5	10	Complete
6:21	Flint	Natural							
6:25	Limestone	Anvil			355.73	77.5	67.6	50.8	Complete
6:26	Limestone	Natural							
6:12a	Flint	Bipolar core			10.4	32	19.8	14.6	Complete
6:12b	Flint	Bipolar flake			2.88	22.9	22.8	5.9	Distal
6:12c	Flint	Platform flake			2.5	21.8	19.7	6.4	Proximal
6:12d	Flint	Natural							
6:13a	Flint	Platform flake			14.09	46.2	30.8	8.8	Complete
6:13b	Flint	Indeterminate							
6:18a	Flint	Indeterminate							
6:18b	Flint	Indeterminate							
6:18c	Flint	Indeterminate							
6:18d	Flint	Indeterminate							
6:18e	Flint	Indeterminate							
6:18f	Flint	Indeterminate							
6:19a	Flint	Platform flake			8.13	32.8	32.9	9	Distal
6:19b	Flint	Platform flake			5.78	18.7	28.7	14.5	Proximal
6:22a	Flint	Platform flake			4.77	27.8	30.6	7.3	Proximal
6:22b	Flint	Natural							
6:22c	Flint	Natural							
6:22d	Flint	Natural							
6:23a	Flint	Platform flake			5.13	20.2	21.3	9.8	Proximal
6:23b	Flint	Bipolar flake	<20mm						Fragment
6:23c	Flint	Bipolar flake	<20mm						Fragment
6:23d	Flint	Indeterminate							

APPENDIX 4 – LITHICS REPORT

#	Material	Type	Debitage Sub Type	Modified Type	Weight	Max L	Max W	Max T	Fragment
6:23e	Flint	Indeterminate							
6:24a	Flint	Bipolar core			20.15	40	30.2	19.8	Complete
6:24b	Flint	Natural							
6:6a	Flint	Natural							
6:6b	Flint	Natural							
6:6c	Flint	Natural							
7:1	Flint	Platform flake		Hollow scraper	3	24.8	28.3	5.2	Distal
7:1	Sedimentary	Natural							
7:2	Flint	Platform flake	<20mm						Fragment
7:3	Flint	Natural							
8:1	Flint	Bipolar flake			1.34	27.3	14.8	3.7	Proximal
9:1	Flint	Natural							
9:1	Sandstone	Polisher			103.53	45.4	42.8	35.7	Complete
9:2	Flint	Platform flake			7.36	38.6	29.7	6.8	Proximal
9:3a	Flint	Natural							
9:3b	Flint	Dual opposed core			13.8	28.1	23.1	17.2	Complete
9:3c	Flint	Bipolar core			47.2	41.6	37.8	19.7	Complete
10:1	Flint	Bipolar core			31.74	34.1	32.2	24.1	Complete
11:1	Sandstone	Natural							
12:1	Flint	Bipolar flake			2.19	26.6	14.8	6.2	Proximal
12:1	Quartzite	Hammerstone			754	98.2	76.8	67	Complete
13:1	Flint	Bipolar flake			2.87	27.4	22.2	6.7	Proximal
13:1	Quartzite	Natural							
13:2	Flint	Bipolar flake	<20mm						Fragment
13:3	Flint	Platform flake			5.14	27.5	26.4	5.9	Complete
13:4	Sandstone	Anvil			518.5	107.2	76.3	42.1	Complete
13:6	Flint	Platform flake			2.15	18.7	23.8	5.7	Complete
13:8	Igneous	Anvil			593	119.1	70.5	45	Complete
13:9	Quartz	Natural							
13:5a	Flint	Natural							
13:5b	Flint	Natural							
13:5c	Flint	Natural							
13:7a	Flint	Platform flake			1.54	29.1	15.3	4	Complete
13:7b	Flint	Platform flake	<20mm						Fragment
13:7c	Flint	Platform flake	<20mm						Fragment
14:1	Flint	Platform flake		Retouched	12.04	32.7	22.3	15.9	Complete
15:1	Flint	Bipolar core			50.95	35.8	31.6	28.6	Complete
15:2	Flint	Platform flake			17.57	28.4	30.4	21.8	Complete
15:3	Flint	Bipolar core			17.51	37.3	29.8	19.7	Complete
15:4	Flint	Platform flake	<20mm						Complete
15:5	Flint	Natural							
15:6	Flint	Natural							
15:7	Flint	Natural							
15:8	Flint	Natural							
15:9	Flint	Natural							
15:10	Flint	Natural							
15:11	Flint	Natural							
15:12	Flint	Natural							
15:13	Flint	Natural							
15:14	Flint	Natural							
15:15	Flint	Natural							
15:16	Flint	Natural							
15:17	Flint	Natural							

APPENDIX 4 – LITHICS REPORT

#	Material	Type	Debitage Sub Type	Modified Type	Weight	Max L	Max W	Max T	Fragment
15:18	Flint	Natural							
15:19	Flint	Natural							
15:20	Flint	Natural							
15:21	Flint	Natural							
15:22	Flint	Natural							
15:23	Flint	Natural							
15:24	Flint	Natural							
15:25	Flint	Natural							
15:26	Flint	Natural							
15:27	Flint	Natural							
15:28	Flint	Natural							
15:29	Flint	Natural							
15:30	Flint	Natural							
15:31	Flint	Natural							
15:32	Flint	Natural							
15:33	Flint	Natural							
15:34	Flint	Natural							
15:35	Flint	Natural							
16:1	Flint	Bipolar core			61.06	45.7	37.8	26.3	Complete
16:2	Flint	Bipolar core			36.94	43.9	30.7	20.5	Complete
16:3	Flint	Bipolar core			24.05	39.8	28.5	16.2	Complete
16:4	Flint	Natural							
19:1	Flint	Platform flake			5.58	38.4	31.2	7.4	Complete
19:3	Flint	Indeterminate							
19:4	Flint	Platform flake			2.74	21.4	16.2	7.7	Proximal
19:2a	Flint	Bipolar flake			1.37	24.1	10.8	6.2	Proximal
19:2b	Flint	Natural							
25:1a	Flint	Natural							
25:1b	Flint	Natural							
25:1c	Flint	Natural							
25:1d	Flint	Natural							
33:1	Flint	Platform flake		Edge retouched	3.48	38.2	17.3	6.8	Proximal
42:1a	Flint	Natural							
42:1b	Flint	Natural							
42:1c	Flint	Natural							
42:1d	Flint	Natural							
42:1e	Flint	Natural							
43:1	Flint	Indeterminate							
77:1a	Flint	Platform flake	<20mm						Fragment
77:1b	Flint	Debris	<20mm						
106:1	Flint	Platform flake			2.06	25.1	15.7	5.3	Proximal

Appendix 5

Site Registers

FEATURE INDEX	
Number	Description
1	Topsoil
2	Natural subsoil
3	Cut of linear running E-W across the south of the site
4	Basal fill of c3 - orange/grey clay
5	Upper fill of c3 - orange/grey clay containing burnt stone
6	Burnt mound material covering most of the site
7	Cut of curvilinear in the south of site - possible structure
8	Dark grey silty clay fill of c7
9	Cut of E-W running linear parallel to and north of c3
10	Upper fill of c9
11	Cut of oval shaped pit orientated N-S and north of c3
12	Burnt mound material deposit within cut c32
13	Cut of large subcircular trough
14	Burnt mound material - uppermost deposit in c13
15	Basal fill of c9 - light brown clay
16	orange/yellow clay layer above c15 in c9
17	light grey silty clay with yellow mottling under c10 in c9
18	Recut within c9
19	Cut of linear running E-W parallel to and north of c9
20	Clay fill of c19
21	Cut of linear running NNE-SSW on the east side of the site
22	Fill of c21
23	Yellow clay lining in cut c11 under c12
24	Waterlogged black silty clay and burnt stone under c23
25	Yellow silty clay with burnt stone inclusions east of c32
26	cut of posthole in slot 1
27	fill of c26
28	Cut of keyhole shaped feature in slots 21 & 23
29	Burnt mound material fill of c28
30	grey/orange mottled fill of c21 in slot 4
31	mid grey silty clay fill of c21, under c30
32	circular cut of well under c11
33	yellow redeposited natural under c13, c15 and c17 (same as c25)
34	Fragmented timber remains under c14 in trough c13
35	mid grey clay with frequent charcoal against the sides of c13 (same as c57)
36	Burnt mound material under c34 in c13
37	large suboval cut of pit in slot 25
38	burnt mound material fill of c37
39	cut of stakehole within c32
40	fill of c39
41	Grey & light yellowish brown clay basal fill of c32
42	Cut of channel running N-S between c32 and c13
43	Fill of c42
44	Stakehole north of c32, cutting c43

FEATURE INDEX	
Number	Description
45	Stakehole east of c44, cutting c43
46	Deep and narrow cut of linear running E-W south of c9
47	Fill of c46
48	Pale grey and yellow clay fill of c53 (natural)
49	Clay lining of cut c13
50	Extended cut of c32 in Slot 11
51	Cut of possible posthole within curvilinear c7
52	Fill of c51
53	Cut of naturally occurring ancient watercourse
54	Cut of small posthole between slots 6 & 8
55	Grey sandy clay fill of c54
56	Fill of c13, over c94 and under c57
57	Mid grey gritty clay deposit in trough c13 - same as c35
58	Timber elements in trough c13
59	Stones near the base of c13
60	Stakehole within c51
61	Stakehole within northern arc of c7
62	Fill of c61
63	Black stone-less deposit in c28
64	small stakehole within northern arc of c7
65	Fill of c64
66	Stakehole south of c9
66.1	Shallow amorphous cut to west of trough c13 (overcut)
67	Fill of stakehole c66
67.1	Root activity initially suspected to be a stakehole
68	Stakehole south of c9
68.1	Fill of c66.1 - natural
69	Fill of stakehole c68
69.1	More roots pretending to be stakeholes
70	Stakehole
71	Fill of c71
72	Stakehole group within western arc of c7 (Area A)
72.1	Stakehole south of c9
73	Stakehole group within western arc of c7 (Area B)
73.1	Stakehole south of c9
74	Stakehole group within western arc of c7 (Area C)
75	Stakehole group within western arc of c7 (Area D)
76	Stakehole group outside western arc of c7 (Area E)
77	Natural depression at western extent of site
78	Fill of c77
79	Cut of posthole truncated by c3
80	Burnt mound material fill of c79
81	Cut of posthole close to c79
82	Fill of c81
83	Cut of linear running E-W at southern limit of excavation

FEATURE INDEX	
Number	Description
84	Fill of c83
85	Cut of linear extending from (but separate to) northern extent of c21
86	Fill of c85
87	Cut of furrow cutting c85
88	Fill of c87
89	Orange silty sand deposit in c85
90	Grey silty sand deposit in c85
91	Gravelly peat within the horizontal elements of the wattle structure c95
92	Metalled surface at north extent of site
93	Redeposited natural on the northern edge of c13
94	Grey gravelly clay basal deposit of c13
95	Post and wattle structure within c13
96	Stakehole outside the NE arc of c7
97	Fill of c96
98	Small posthole in SW quadrant under c6
99	Fill of c98
100	Small posthole in SW quadrant under c6 (E of 98)
101	Fill of c100
102	Small posthole in SW quadrant under c6 (E of 100)
103	Fill of c102
104	Small posthole in SW quadrant under c6 (E of 102)
105	Fill of c104
106	Cut of small posthole in Slot 19
107	Fill of c106
108	Stakehole in E wall of c13
109	Stakehole in E wall of c13
110	Stakehole NW of c37 (1 of 4)
111	Fill of c110
112	Stakehole NW of c37 (2 of 4)
113	Fill of c112
114	Stakehole NW of c37 (3 of 4)
115	Fill of c114
116	Stakehole NW of c37 (4 of 4)
117	Fill of c116
118	Stakehole NE of c37
119	Fill of c118

DRAWING REGISTER						
Drg. No.	Slot No.	Feature	Scale	Drawn by	Date	Comment
1A		3, 9, 19, 37, 11, 13, 85, 6	1:50	SR&JH	03.09.17	Pre-ex plan
1B			1:50	SR&JS	04.09.17	Pre-ex plan (western extent)
2.1	13	7,8,9,10,15,16,17,18,42,11,23,24,12,19,20,13,14	1:10	JS	14.08.17	E facing section of Slot 13
2.2	1	6, 9, 10, 19, 20,	1:10	IK	18.08.17	E facing section of Slot 1
3.1	8	6, 3, 4, 5, 21, 22, 83, 84,	1:10	ATS	14.08.17	W facing section of Slot 8
3.2	8	6, 3, 4, 5, 83, 84	1:10	ATS	14.08.17	E facing section of Slot 8
4.1	17	93, 13, 25, 6, 19, 20, 9, 10, 15, 16, 17, 18, 46	1:10	JS	15.08.17	W facing section of Slot 17
5.1	12	6, 3,4, 5, 83, 84	1:10	ATS	15.08.17	W facing section of Slot 12
5.2	12	83, 84, 6, 3, 4, 5,	1:10	ATS	15.08.17	E facing section of Slot 12
6.1	16	7,8,6,3, 4, 5, 83, 84	1:10	ATS	15.08.17	W facing section of Slot 16
6.2	16	83, 84, 6, 3, 4, 5,	1:10	ATS	16.08.17	E facing section of Slot 16
6.3	4	6, 3, 4, 5, 83, 84,	1:10	ATS	16.08.17	W facing section of Slot 4
7.1	1	26, 27	1:10	IK	16.08.17	S facing section of posthole
7.2	1	6, 19, 20, 9	1:10	IK	16.08.17	W facing section of Slot 1
7.3	1-18	6, 21, 22, 7, 8,	1:10	ATS	17.08.17	N&S facing sections of slots 1-18
7.4	20-26	6	1:10	ATS	17.08.17	N&S facing sections of slots 20-21

DRAWING REGISTER						
Drg. No.	Slot No.	Feature	Scale	Drawn by	Date	Comment
8.1	21	6, 19, 20, 9, 10	1:20	JH	16.08.17	W facing section of Slot 21
8.2	4	83, 84, 21, 31, 30, 3, 4, 5, 6	1:10	ATS	16.08.17	E facing section of Slot 4
8.3	21	9, 10, 6, 19, 20, 28, 29	1:10	JH	17.08.17	E facing section of Slot 21
9.1	13,15,17	9, 32, 39, 33, 25, 44, 45, 121, 13, 19	1:20	JS	22.08.17	Mid-ex plan of trough and well
10.1	20	6, 3, 5, 6, 83, 84,	1:10	ATS	18.08.17	W facing section of Slot 20
10.2	south	6, 9, 7, 8, 21, 22, 60, 3, 5, 81, 82, 54, 55, 83, 84	1:50	ATS	21.08.17	Mid-ex plan of south area
11.1	25	6, 37, 38	1:10	JH	21.08.17	E facing section of Slot 25 and pit c37
11.2	13,15,17	32, 33, 44, 25	1:10	JS	21.08.17	S facing section of well c32
12.1	25	37, 38, 6, 9, 10	1:10	JH	21.08.17	W facing section of Slot 25
12.2	9,10	7, 8	1:10	EF	22.08.17	NW facing section of curvilinear
12.3	9	6, 7, 8, 9, 10, 19, 20	1:20	SR	22.08.17	E facing section of Slot 9
12.4	16	7, 8	1:10	EF	22.08.17	SW facing section of curvilinear
12.5	12	7, 8	1:10	EF	22.08.17	E facing section of curvilinear
12.6	9	6, 19, 20, 9, 10, 46, 47	1:20	SR	23.08.17	W facing section of Slot 9
12.7	5	21, 22, 9, 10, 6, 19, 20	1:20	SR	23.08.17	E facing section of Slot 5
12.8	5	6, 19, 20, 9, 10, 46, 47	1:20	SR	23.08.17	W facing section of

DRAWING REGISTER						
Drg. No.	Slot No.	Feature	Scale	Drawn by	Date	Comment
						Slot 5
12.9	10	51, 52	1:10	EF	23.08.17	W facing section of posthole
12.10	6	54, 55	1:10	EF	24.08.17	W facing section of posthole
12.11	10,12	60, 61	1:10	EF	25.08.17	NW-SE running profile of stakeholes
13.1	11	6, 19, 20, 9, 10, 15, 16, 17, 46, 47, 7, 8	1:10	JS	22.08.17	E facing section of Slot 11
13.2	13,15	11, 42, 43, 50, 25	1:10	JS	22.08.17	N facing section of pit c11 and channel c42
13.3	west	48, 53	1:10	JH	27.08.17	NE facing section of ancient watercourse
13.4	21,23	28, 29, 63, 19, 20	1:20	JH	25.08.17	S facing section of keyhole-shaped pit
13.5	6	21, 30, 31	1:10	ATS	28.08.17	SE facing section of linear
13.6	9,7	21, 22, 31	1:10	ATS	29.08.17	S facing section of linear
14.1	9,13,15,17	46, 9, 11, 39, 32, 50, 42, 44, 45, 43	1:20	JS	25.08.17	Mid-ex plan of well c32 and pit c11
15.1	13,15	32, 43, 25, 43, 13, 49, 57, 56, 94, E1, E2	1:10	JS	24.08.17	E facing section of well, channel and trough
16.1	15	58 (E4, E5, E6, E12, E13)	1:20	JS	28.08.17	Mid-ex plan of trough
16.2	north	6	1:10	JH	29.08.17	S facing section of c6
17A	south	72.1, 64, 66, 68, 70, 7, 61 (72, 73, 74, 75, 76)	1:10	EF	29.08.17	Post-ex plan of stakehole cluster

DRAWING REGISTER						
Drg. No.	Slot No.	Feature	Scale	Drawn by	Date	Comment
17B	south	72.1, 64, 66, 68, 70, 7, 61 (72, 73, 74, 75, 76)	1:10	EF	30.08.17	Overlay of 17A showing groups and samples
18.1	north	92	1:10	IK	30.08.17	W facing section of metallated surface
18.2	10	72, 80,	1:10	JH	30.08.17	N facing section of posthole
18.3	north	85, 86,	1:10	ATS	30.08.17	S facing section of linear
18.4	north	85, 86	1:10	ATS	30.08.17	S facing section of linear
18.5	north	85, 86	1:10	ATS	30.08.17	S facing section of linear
18.6	10	81, 82	1:10	JH	30.08.17	N facing section of posthole
19.1	13, 15	95, 58 (E6, E7, E8, E9, E10, E12, E13), 94	1:20	JS	30.08.17	Mid-ex plan of timbers c58 & wattle c95
20.1	south	7, 3	1:50	EF	01.09.17	Post-ex plan of curvilinear
21.1	south	7, 3	1:20	EF	01.09.17	Post-ex plan of curvilinear
22.1	northeast	46,9,10,32,39,42,11,50,13,108,109,19,20,21,85,86,92	1:20	JS&IK	05.09.17	Post-ex plan of site
23.1	south	9,10,98,100,102,104,7,51,3,5,21,54,79,81,83,84	1:20	EF&ATS	05.09.17	Post-ex plan of site
24.1	northwest	9,10,106,66.1,19,20,28,110,112,114,116,118,37,53	1:20	SR&JH	05.09.17	Post-ex plan of site

SAMPLE INDEX			
Number	Description	Type	Initials & Date
1	Dark brown silty clay from slot #13: Context F7, Fill F8	2 X soil sample	?
2	C27: Fill of posthole F26	Bulk sample x 1	15.08.17 / IK
3	C27: Basal fill of posthole F26	Bulk Sample x 1	16.08.17 / IK
4	F13: Burnt bone frag in fill F14	Burnt bone frag	17.08.17 / SR
5	F32 (possible well?): Basal fill / F12	Soil sample	17.08.17 / JS
6	F8: Seed - possibly intrusive	Seeds	18.08.17 / AS
7	C.35 Grey clay with organic material in F13	Bulk soil x 1	21.08.17 / IK
8	C.36 Charcoal from basal fill F13	Charcoal x 1 small bag	21.08.17 / IK
9	C.41 Fill of F32	Medium bags x 3	22.08.17 / JS
10	C.40 Fill of posthole F39	Small bag x 1	22.08.17 / JS
11	C.38 Basal fill of F37	Soil sample	22.08.17 / JH
12	C.36 (in F13) Wood sample	Large bag x 1	22.08.17 / IK
13	C.5 in F3. Animal bone	Small bag x 1	23.08.17 / IK
14	C.12 in F11. Animal bone	Small bag x 1	23.08.17 / IK
15	C.6 in SW quadrant burnt mound - charcoal	Small bag x 1	23.08.17 / IK
16	C.34 in F13. Charcoal sample	Small bag x 1	23.08.17 / IK
17	C.34 in F13. Nut shells (hazel and oak)	Small bag x 1	23.08.17 / IK
18	C.34 in F13. Wood frags with cutmarks	Small bag x 1	23.08.17 / IK
19	C.49 in F13. Bulk sample; clay lining of F13 with organics	Large bag x 2	23.08.17 / IK
20	Wood frags with cutmarks	Large bag x 1	23.08.17 / IK
21	C.8 fill of curvilinear feature F7	Medium bags x 3	24.08.17 / EF
22	C.52, fill of posthole F51 (northern side F7)	Medium bags x 1	24.08.17 / EF
23	C.48, fill of F53	Small bag x 2	24.08.17 / JH
24	C.55, fill of F54	Medium bag x 1	24.08.17 / EF
25	C.62, fill of F61	Medium bag x 1	25.08.17 / EF
26	C.63, fill of F28	Medium bag x 1	25.08.17 / JH
27	C.65, fill of stakehole F64	Small bag x 1	28.08.17 / EF
28	C.67, fill of stakehole F66	Small bag x 1	28.08.17 / EF
29	C.69, fill of stakehole F68	Small bag x 1	28.08.17 / EF
30	C.71, fill of stakehole F70	Small bag x 1	28.08.17 / EF
31	C.73, fill of stakehole F72	Small bag x 1	28.08.17 / EF
32	C.72, fill of stakeholes F72 - 1	Small bag x 1	28.08.17 / AS
33	C.72, fill of stakeholes F72 - 2	Small bag x 1	28.08.17 / AS
34	C.72, fill of stakeholes F72 - 3	Small bag x1	28.08.17 / AS
35	C.72, fill of stakeholes F72 - 4	Small bag x 1	28.08.17 / AS
36	C.72, fill of stakeholes F72 - 5	Small bag x 1	28.08.17 / AS
37	Discarded		
38	F13: Wood sample E.3	Boxed with H2O	28.08.17 / IK
39	F13: Wood sample E.4 from C.58 (F13)	Boxed with H2O	28.08.17 / JS

SAMPLE INDEX			
Number	Description	Type	Initials & Date
40	Fill of stakehole F69	Small bag x 1	28.08.17 / IK
41	F13: Wood sample E.5	Boxed with H2O	28.08.17 / SR
42	C.22, fill of F21	Medium bag x 1	29.08.17 / AS
43	F13: Wood sample E.6 (multiple pieces)	Boxed with H2O	30.08.17 / JS
44	F79 - fill	Medium bag x 1	30.08.17 / JH
45	F13: Wood sample E.7	Boxed with H2O	30.08.17 / JS
46	F13: Wood frags with cutmarks from C.36		30.08.17/SR+IK
47	F13: Wood sample E.8	Boxed with H2O	30.08.17 / JS
48	F13: Wood sample E.9 - timber upright in wattle structure	Boxed with H2O	30.08.17 / JS
49	F.13: Wood sample E.10 - timber upright in wattle structure	Boxed with H2O	30.08.17 / JS
50	F81 - fill of posthole	Medium bag x 1	30.08.17 / JH
51	C.91, material between the horizontal elements of wattle	Medium bag x 2	30.08.17 / JS
52	F13: Wood sample E.11 from base of 'trough'.	Boxed with H2O	30.08.17 / JS
53	F13: Wood frags from above and east of wattle structure	Bag x 1	30.08.17 / JS
54	C.86, fill of F85	Medium bag x 1	30.08.17 / AS
55	F13: South side of wattle structure	Boxed with H2O	31.08.17 / JS
56	F13: West side of wattle structure	Boxed with H2O	31.08.17 / JS
57	F13: North side of wattle structure	Boxed with H2O	31.08.17 / JS
58	F13: Wood sample E12, large timber frag from cut F13	Boxed with H2O	31.08.17 / JS
59	F13: Wood sample E13, large timber frag from cut F13	Boxed with H2O	31.08.17 / JS
60	F13: Wood sample E14, large timber frag from cut F13	Boxed with H2O	31.08.17 / JS
61	F13: Wood sample E15, 4th upright clockwise from east	Boxed with H2O	31.08.17 / JS
62	C.94, gravelly clay basal fill of F13	Bags x 3	01.09.17 / JS
63	Not used		
64	Not used		
65	Not used		
66	C.72 fill of stakehole F72 - 6	Small bag x 1	01.09.17 / AS
67	C.72 fill of stakehole F 72- 7	Small bag x 1	01.09.17 / AS
68	C.72 fill of stakehole F72 - 9	Small bag x 1	01.09.17 / AS
69	C.72 fill of stakehole F72 - 10	Small bag x 1	01.09.17 / AS
70	C.73, fill of stakehole F73 - 1	Small bag x 1	01.09.17 / AS
71	C.73, fill of stakehole F 73 - 2	Small bag x 1	01.09.17 / AS
72	C.73, fill of stakehole F73 - 3	Small bag x 1	01.09.17 / AS
73	C.73, fill of stakehole F73 - 4	Small bag x 1	01.09.17 / AS
74	C.73, fill of stakehole F73 - 5	Small bag x 1	01.09.17 / AS
75	C.73, fill of stakehole F73 - 6	Small bag x 1	01.09.17 / AS

SAMPLE INDEX			
Number	Description	Type	Initials & Date
76	C.73, fill of stakehole F73 - 7	Small bag x 1	01.09.17 / AS
77	C.73, fill of stakehole F73 - 8	Small bag x 1	01.09.17 / AS
78	C.73, fill of stakehole F73 - 9	Small bag x 1	01.09.17 / AS
79	C.73, fill of stakehole F73 - 10	Small bag x 1	01.09.17 / AS
80	C.74, fill of stakehole F74 - 1	Small bag x 1	01.09.17 / AS
81	C.74, fill of stakehole F74 - 2	Small bag x 1	01.09.17 / AS
82	C.74, fill of stakehole F74 - 3	Small bag x 1	01.09.17 / AS
83	C.74, fill of stakehole F74 - 4	Small bag x 1	01.09.17 / AS
84	C.74, fill of stakehole F74 - 5	Small bag x 1	01.09.17 / AS
85	C.74, fill of stakehole F74 - 7	Small bag x 1	01.09.17 / AS
86	C.74, fill of stakehole F74 - 8	Small bag x 1	01.09.17 / AS
87	C.74, fill of stakehole F74 - 9	Small bag x 1	01.09.17 / AS
88	C.74, fill of stakehole F74 - 10	Small bag x 1	01.09.17 / AS
89	C.74, fill of stakehole F74 - 11	Small bag x 1	01.09.17 / AS
90	C.74, fill of stakehole F74 - 12	Small bag x 1	01.09.17 / AS
91	C.74, fill of stakehole F74 - 13	Small bag x 1	01.09.17 / AS
92	C.74, fill of stakehole F74 - 14	Small bag x 1	01.09.17 / AS
93	C.74, fill of stakehole F74 - 15	Small bag x 1	01.09.17 / AS
94	C.74, fill of stakehole F74 - 16	Small bag X1	01.09.17 / AS
95	C.74, fill of stakehole F74 - 17	Small bag x 1	01.09.17 / AS
96	C.74, fill of stakehole F74 - 19	Small bag x 1	01.09.17 / AS
97	C.74, fill of stakehole F74 - 20	Small bag x 1	01.09.17 / AS
98	C.74, fill of stakehole F74 - 21	Small bag x 1	01.09.17 / AS
99	C.74, fill of stakehole F74 - 23	Small bag x1	01.09.17 / AS
100	C.74, fill of stakehole F74 - 25	Small bag x 1	01.09.17 / AS
101	C.74, fill of stakehole F74 - 26	Small bag x 1	01.09.17 / AS
102	C.74, fill of stakehole F74 - 27	Small bag x 1	01.09.17 / AS
103	C.74, fill of stakehole F74 - 28	Small bag x 1	01.09.17 / AS
104	C.74, fill of stakehole F74 - 31	Small bag x 1	01.09.17 / AS
105	C.74, fill of stakehole F74 - 32	Small bag x 1	01.09.17 / AS
106	C.74, fill of stakehole F74 - 33	Small bag x 1	01.09.17 / AS
107	C.74, fill of stakehole F74 - 34	Small bag x 1	01.09.17 / AS
108	C.74, fill of stakehole F74 - 35	Small bag x 1	01.09.17 / AS
109	C.74, fill of stakehole F74 - 36	Small bag x 1	01.09.17 / AS
110	C.75, fill of stakeholes F75 x12	Small bag x 1	01.09.17 / AS
111	C.76, fill of stakeholes F76 x 22	Small bag x 1	01.09.17 / AS
112	C.97, fill of stakehole F96	Small bag x 1	04.09.17 / SR
113	Burnt wood sample C.66	Wood	08.08.17 / SR
114	Shell frags from base of F13	Shell sample	08.08.17 / SR
115	C.94, basal fill of F13	Soil sample	08.08.17 / SR
116	C.56, fill of F13	Soil sample	08.08.17 / SR
117	C.34, nut casing (F13)	Nut shell	08.08.17 / SR
118	F13: shell frags from base	Sample	08.08.17 / SR

FINDS REGISTER					
Find No	Slot No.	Feature/Context	Found by	Date	Description
1		C.3/C.4	ATS	08.08.2017	Flint
2	5	C.6	ATS	10.08.2017	Flint (retouch?)
3		C.13	JS	10.08.2017	Flint flake
4	16	C.7/C.8	JS	10.08.2017	Flint (broken scraper)
5	5	C.6	IK	11.08.2017	Flint flake (retouch?)
6	5	C.6	IK	11.08.2017	Flint (core?)
7		Surface stray	IK	11.08.2017	Flint (convex scraper?)
8		C.9/C.17	JS	14.08.2017	Stone (poss. burnishing stone)
9	1	C.6	IK	14.08.2017	Quartz (worked?)
10	1	C.6	IK	14.08.2017	Flint (awl/borer)
11	15	C.19/C.20	SR	15.08.2017	Flint flake
12	26	C.6 (south west quadrant)	EF	15.08.2017	Flint X 3 (poss. natural?)
13	1	C.6	IK	15.08.2017	Quartz (worked / hammer stone?)
14	15	C.13/C.14	SR	16.08.2017	Flint flake
15	15	C.13	SR	17.08.2017	Flint flake (poss. Retouch?)
16		C.12/C.33	JS	17.08.2017	Flint flake
17		Surface stray	IK	17.08.2017	Flint
18		C.6/C.11	JS	17.08.2017	Flint flake
19	15	C.13/C.14	SR	17.08.2017	Stone (poss. Hammer stone?)
20	5	C.6	IK	18.08.2017	Stone (poss. Hammer stone?)
21	5	C.6	IK	18.08.2017	Flint
22	14	C.6	EF	18.08.2017	Flint (burnt?)
23		C.33	JS	18.08.2017	Flint (retouch / butt trimmed) Projectile?
24		C.13/C.14	SR	18.08.2017	Flint X 3 (poss. natural?)
25		C.43/C.42	JS	21.08.2017	Flint
26		C.13/C.36	IK	21.08.2017	Flint flake
27		C.25	JS	22.08.2017	Flint X 4 (poss. Natural)
28		C.7/C.8	EF	23.08.2017	Flint flake and ???
29	7	C.6	SR	23.08.2017	Flint X 4
30		C.5/C.52	EF	23.08.2017	Flint (poss. Natural?)
31	9	C.9/C.10	SR	24.08.2017	Flint flake
32		C.42/C.43	JS	24.08.2017	Flint X 5 (4 natural?)
33		Surface stray	IK	25.08.2017	Stone (whetstone frag?)
34	3	C.6	SR	25.08.2017	Flint X 2
35	19	C.19/C.20	SR	28.08.2017	Flint X 3
36		C.6	IK	28.08.2017	Flint (concave scraper?)
37	15	C.13/C.56	JS	28.08.2017	Flint X 3
38		C.13/C.56	JS	28.08.2017	Stone (poss. Hammer stone?)
39		C.6	IK	31.08.2017	Flint X 2 (inc. poss. Core?)
40		C.106/C.107	IK	04.08.2017	Flint flake
41	11	C.19/C.20	SR	04.08.2017	Flint
42		Surface stray	IK	04.08.2017	Flint (poss. awl/borer)
43	17	C.6			Flint X 5
44	9	C.6			Flint X 3
45		C.6	JH		Flint X 2 (inc. poss. Projectile point?)
46	21	C.9/C.10			Flint X 3

FINDS REGISTER					
Find No	Slot No.	Feature/Context	Found by	Date	Description
47	15	C.13/C.35	SR		Quartz pebble (poss. Hammer stone?)
48	24	C.6			Flint X 4
49	16	C.6			Flint X 5
50	13	C.6			Flint X 2
51	21				Pebble X 1
52	9	C.6			Stone (poss. Hammer stone?)
53		Surface stray			Pebble X 1 / Flint X 4
54		Surface stray			Stone X 2 / Flint X 2
55		Surface stray			Flint X 1
56		Surface stray			Stone X 3 (poss. Hammer stones?)
57		Surface stray			Flint X 36
58		C.77	IK		Flint X 2
59		Surface stray			Flint X 4