Plot Adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG.

February 2020 V 1.0

Archaeological Strip, Map & Sample
Project Code: A0273.1
Report no. 0277
Event PRN: 166775

æon archæology

Plot Adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG.

February 2021 v1.0

Report no. 0277 / Event PRN:166775

Archaeological Strip, Map and Sample

Aeon Archaeology
Obsidian Offices
Chantry Court
Chester
CH1 4QN

Written by: Josh Dean BA ACIfA

Checked by: Richard Cooke BA MA MCIfA

Project Code: A0273.1
Date: 08/02/2021
Client: Mr. Tom Gallagher
info@aeonarchaeology.co.uk

æon archæology

Plot Adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG.

February 2021 v1.0

æon archæology

REGISTERED ORGANISATION CIfA

Project Code: A0273.1
Date: 08/02/2021
Client: Mr. Tom Gallagher
info@aeonarchaeology.co.uk

Figures

Plates (1)

Plate 01: Pre excavation shot of plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the north - no scale

Plate 02: Pre excavation shot of plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the south - no scale

Plate 03: Post excavation shot of plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the south - 2x 1.00m scale

Plate 04: Post excavation shot of plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the north - 2x 1.00m scale

Plate 05: Site grid at the southern end of site covering lithic scatter, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the northeast - no scale

Plate 06: Working shot on site grid covering lithic scatter, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the northeast - no scale

Plate 07: Working shot on site grid covering lithic scatter, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the southeast - no scale

Plate 08: Example square within site grid covering lithic scatter, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the west - 0.50m

Plate 09: Post excavation shot of site grid at the southern end of site, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the northwest - 2x 1.00m scale

Plate 10: Post excavation shot of site grid at the southern end of site, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 2x 1.00m scale

Plate 11: Post hole [102] in plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 0.50m scale

Plate 12: Post hole [102] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 0.50m scale

Plate 13: Post hole [104] in plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the north - 0.50m scale

Plate 14: Post hole [104] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the north - 0.10m scale

Plate 15: Post hole [109] in plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the west - 0.50m scale

Plate 16: Post hole [109] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the west - 0.50m scale

Plate 17: Post hole [107] plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the northeast - 0.50m scale

Plate 18: Post hole [107] in section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the southwest- 0.10m scale

Plate 19: Modern intervention [101] in plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the southwest- 2x 1.00m scale

Plate 19b: Interpretation of [101] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 2.00m scale

Plate 20a: North facing section showing stratigraphy in area of lithic scatter, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the south- 1.00m scale

Plate 20b: Interpretation of north facing section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the south - 1.00m scale

Plate 21a: West facing section showing sand excavation cut [118], Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the west - 2.00m scale

Plate 21b: Interpretation of west facing section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the south - 1.00m scale

Plates (2)

Plate 22a: East facing section showing sand excavation cut [118], Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 1.00m scale

Plate 22b: Interpretation of east facing section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 1.00m scale

Contents

1.0 NON-TECHNICAL SUMMARY

Comisiynwyd Aeon Archaeology gan Mr Tom Gallagher i wneud gwaith cloddio archeolegol, "strip, map a'r sampl" cyn y gwaith daear yn gysylltiedig ag adeiladu annedd newydd ar lain gerllaw Castle Hill, Lôn Hylas, Rhuddlan, Sir Ddinbych LL18 5AG.

Y strip, map a'r sampl amlygodd am lefel Mesolithig glir (a oedd 0.87m islaw lefel y ddaear) a oedd yn meddiannu llwyfandir cul o fariannod tywod melyn naturiol tua 7.00m o led. Roedd y llwyfandir hwn wedi'i ffurfio'n artiffisial gan gloddio tywod canoloesol ac ôl-ganoloesol a oedd yn ymestyn 13.50m o ben gogleddol y safle (agosaf at Hylas Lane). Roedd pedwar man arall o gloddio modern ar y safle mae'n debyg fel rhan o echdynnu tywod.

Wedi'u lleoli ar lefel y tywod melyn, roedd tri thwll post bron crwn, neu bydewau, a oedd wedi'u torri'n syth i'r tywod – roedd dyddodion pob un o'r pyllau hyn yn dychwelyd dyddiadau carbon radio confensiynol rhwng 9220 – 9280 (BP +/- 30 mlynedd) . Mae ystod agos y dyddiadau hyn yn awgrymu'n obeithiol bod y nodweddion wedi'u cloddio o fewn rhan ganol cyfnod Mesolithig Prydain. Os mai tyllau pyst oedd y nodweddion, nid oeddent yn ymddangos fel pe baent yn ffurfio adeiledd ac efallai eu bod yn cynrychioli prennau unigol, a oedd o bosibl yn gysylltiedig â diben defnyddiol megis; cigydd neu fel corach i toriad gwynt. Ymhellach, yn yr ardal o amgylch y nodweddion hyn darganfuwyd 314 o arteffactau lithig unigol, sy'n dangos bod y safle wedi'i ddefnyddio ar gyfer cymynog fflint a chorsen yn ystod y cyfnod Mesolithig cynnar i ddiwedd y cyfnod.

Aeon Archaeology was commissioned by Mr Tom Gallagher to carry out an archaeological strip, map and sample excavation in advance of groundworks associated with the construction of a new dwelling on a plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG.

The strip, map & sample excavation exposed a distinct Mesolithic level (0.87m below ground level) which occupied a narrow plateau of yellow sand loess natural approximately 7.00m in width. This plateau had been artificially formed by medieval and post medieval sand extraction which extended 13.50m from the northern end of the site (closest to Hylas Lane). There were four other areas of modern intervention at the site probably as part of sand extraction.

Located on the yellow sand plateau there were three sub-rounded post holes/pits which had been excavated directly into the sand – the deposits of each of these post holes/pits returned conventional radio carbon dates between 9220 – 9280 (BP +/-30 years). The close range of these dates suggests with some certainty that the features were excavated within the middle part of the British Mesolithic period. If the cut features were post holes they did not appear to form a structure and may have represented standalone timbers possibly associated with a utilitarian purpose such as butchering or as a windbreak. Furthermore, in the area surrounding these features 314 individual lithic artefacts were recovered indicating that the site was utilised for flint and chert knapping during the early-late Mesolithic period.

2.0 INTRODUCTION

Aeon Archaeology was commissioned by Mr Tom Gallagher, hereafter the Client, to carry out an archaeological strip, map and sample excavation in advance of groundworks associated with the construction of a new dwelling on a plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG (centred on **NGR SJ 02558 77923** (figures 01-03).

Planning permission for the project was secured from Denbighshire Council on the 14th March 2018 with the following condition concerning archaeology being applied (**44/2018/0028**):

Condition 10

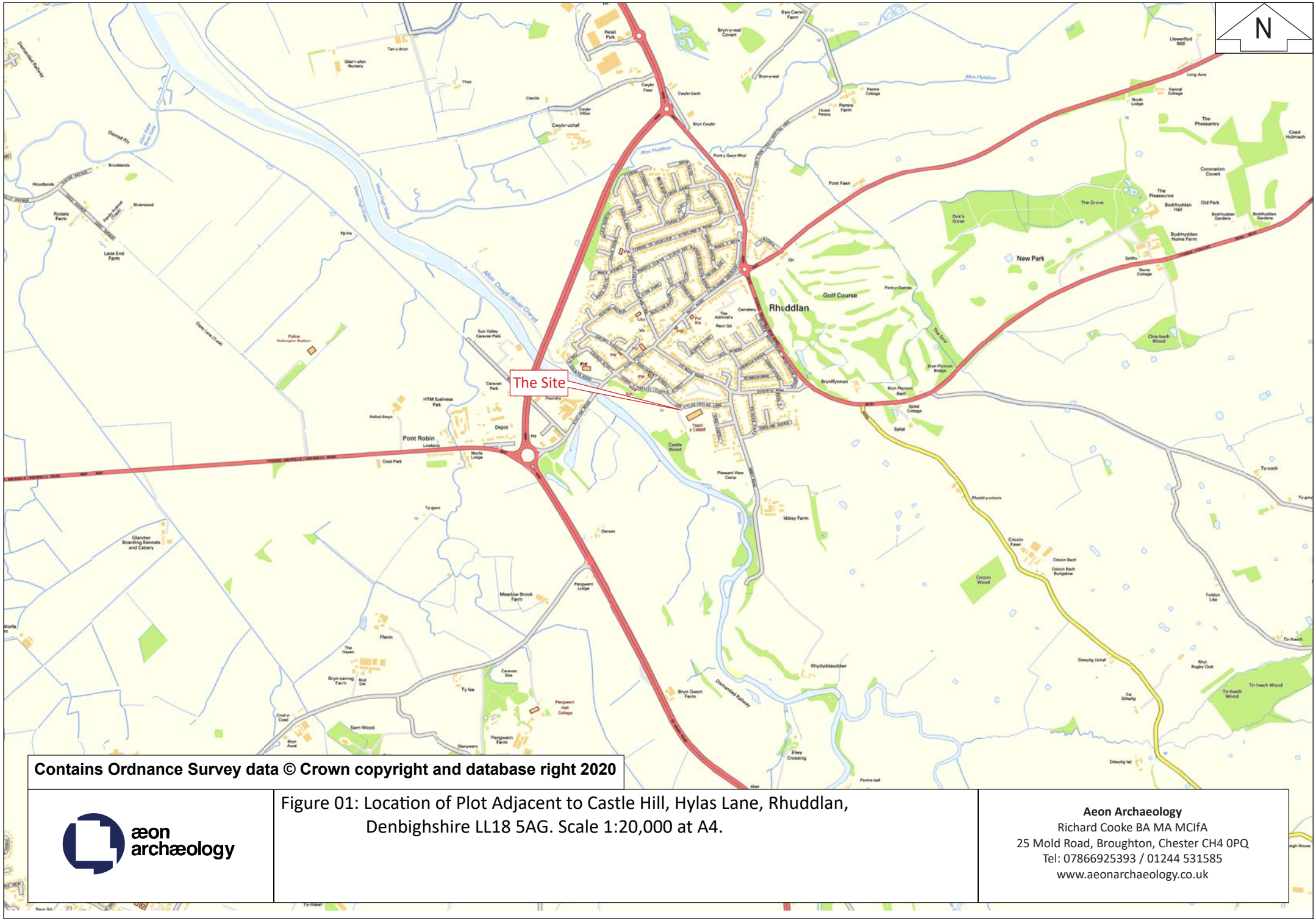
No development shall take place within the application area until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation, which has been submitted by the applicant and approved in writing by the Local Planning Authority. The archaeological programme of work will be undertaken and completed in accordance with the relevant Standards and Guidance laid down by the Chartered Institute for Archaeologists. A copy of the resulting report should be submitted to the Local Planning Authority and the Development Control Archaeologist, Clwyd Powys Archaeological Trust (41 Broad Street, Welshpool, Powys, SY21 7RR Email: markwalters@cpat.org.uk Tel: 01938 553670). After approval by the Local Planning Authority, a copy of the report and resulting archive should also be sent to the Historic Environment Record Officer, Clwyd-Powys Archaeological Trust for inclusion in the regional Historic Environment Record.

Reason: In the interest of preservation of archaeological remains

This report details the aims and objectives of the project and the methods by which they were to be met in order to meet the spirit and intent of condition 10 of planning application **44/2018/0028**.

The work adhered to the guidelines specified in Standard and Guidance for Archaeological Excavation (Chartered Institute for Archaeologists, 2020).

The archaeological strip, map and sample and this report were undertaken as event primary reference number **166775**.



Contains Ordnance Survey data © Crown copyright and database right 2020

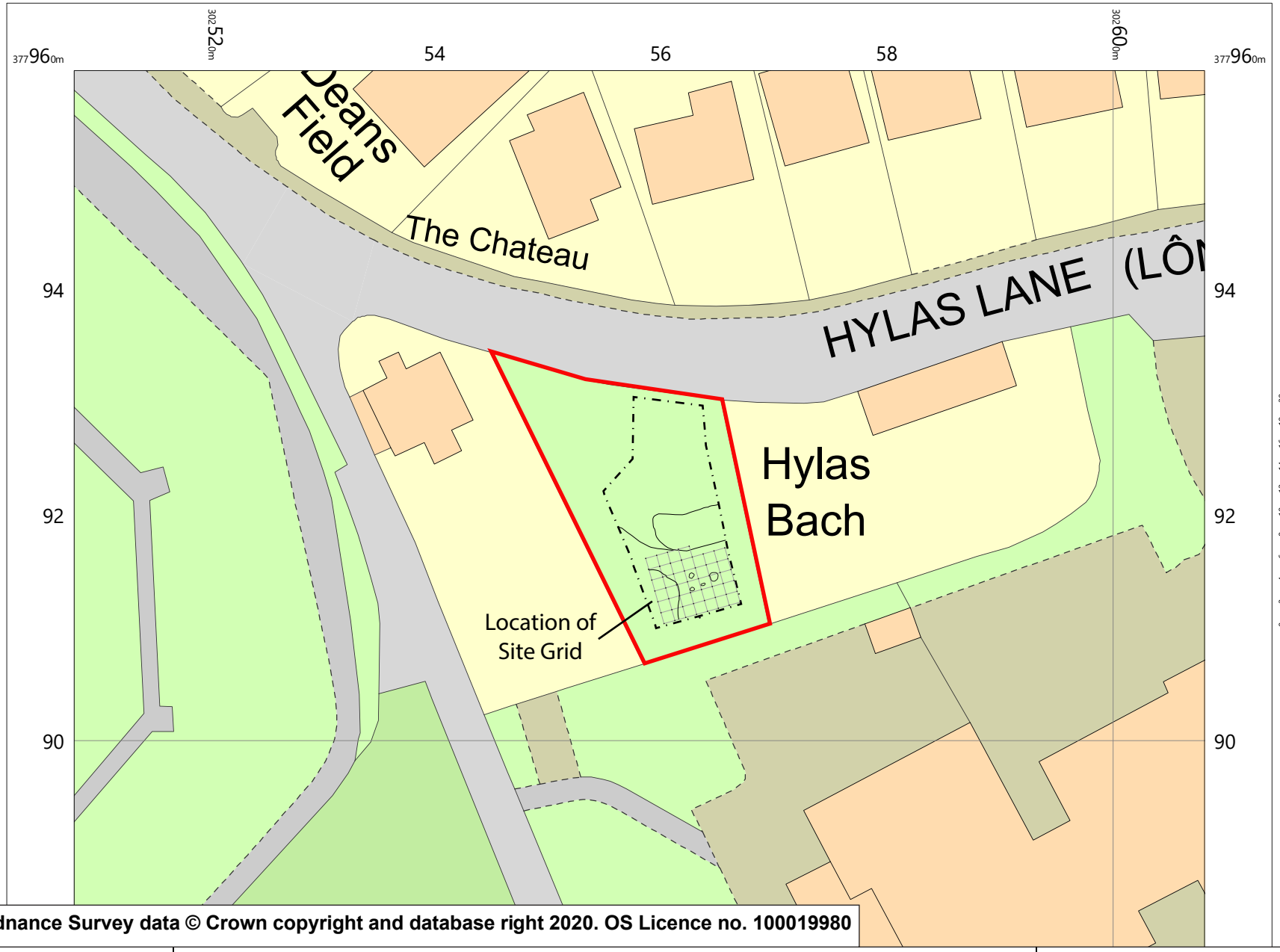
Figure 01: Location of Plot Adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG. Scale 1:20,000 at A4.

Aeon Archaeology
Richard Cooke BA MA MCIfA
25 Mold Road, Broughton, Chester CH4 0PQ
Tel: 07866925393 / 01244 531585
www.aeonarchaeology.co.uk

æon archæology

Figure 02: Location of Plot Adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG. Scale 1:5,000 at A4.

Aeon Archaeology
Richard Cooke BA MA MCIfA
25 Mold Road, Broughton, Chester CH4 0PQ
Tel: 07866925393 / 01244 531585
www.aeonarchaeology.co.uk



æon archæology

Figure 03: Location of archaeological features at Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG. Scale 1:500 at A4.

Aeon Archaeology
Richard Cooke BA MA MCIfA
25 Mold Road, Broughton, Chester CH4 0PQ
Tel: 07866925393 / 01244 531585
www.aeonarchaeology.co.uk

3.0 PROJECT AIMS

The aim of the strip, map & sample works was to characterise the known, or potential, archaeological remains uncovered during the groundworks associated with the construction of a new dwelling on a plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG the broad aims of the archaeological watching brief were to:

- To allow, within the resources available, the opportunity to gain information about and record the presence/absence, nature and date of archaeological remains on the Site affected by excavations and groundworks, the presence and nature of which could not be established with sufficient confidence in advance of works which may disturb them.

- To provide the facility to signal to the relevant authorities, before irreversible impact to remains that an archaeological and/or historic find has been made for which the resources allocated to the watching brief itself are inadequate to support their treatment to an adequate and satisfactory standard.

The detailed objectives of the archaeological watching brief were to:

- To observe and recover any artefacts of archaeological significance.

- To record the location, dimensions and nature of any deposits, features, structures or artefacts of archaeological significance.

- To recover samples of any deposits considered to have potential for analysis for palaeo-environmental data should the opportunity arise.

The management of this project has followed the procedures laid out in the standard professional guidance *Management of Research Projects in the Historic Environment Project Manager's Guide* (English Heritage 2006; rev 2015), and in the Chartered Institute for Archaeologists *Archaeological Watching Brief* (Chartered Institute for Archaeologists, 2014). Five stages are specified:

Phase 1: project planning
Phase 2: fieldwork
Phase 3: assessment of potential for analysis and revised project design
Phase 4: analysis and report preparation
Phase 5: dissemination

The current document reports on the phase 4 analysis and states the means to be used to disseminate the results. In this instance it was not necessary to prepare a revised project design as alluded to in Phase 3; as there was a paucity of evidence recovered in Phase 2 in terms of archaeological features and therefore did not warrant any alteration to the initial project design.

The site is to be set in its landscape context so that its full character and importance can be understood. All the information is to be presented in a report that will be held by the Clwyd-Powys Archaeological Trust (CPAT) Historic Environment Record (HER) and the National Monument

Record of the Royal Commission on the Ancient and Historic Monuments of Wales (RCAHMW) for long-term archiving so that it can be accessible to the public and future researchers. This phase of work also includes archiving the material and documentary records from the project.

4.0 METHODOLOGY – ARCHAEOLOGICAL WATCHING BRIEF

4.1 Archaeological Strip, Map and Sample

If archaeological deposits are identified they will be manually cleaned, excavated and recorded to determine extent, function, date and relationship to adjacent features.

Contingency provision will be made for the following:

- Additional excavation of up to 100% of any given feature should the excavated sample prove to be insufficient to provide information on the character and date of the feature.

- Expansion of excavation trench limits, to clarify the extent of features equivalent to an additional 20% of the core trench area.

The archaeological works will be surveyed with respect to the nearest Ordnance Survey datum point and with reference to the Ordnance Survey National Grid. The excavation area, deposits, features and structures within them will be accurately located on a site plan prepared at most appropriate and largest scale.

A written record of the trench content and all identified features will be completed via Aeon Archaeology pro-formas.

Any subsurface remains will be recorded photographically, with detailed notations, measured drawings, and a measured survey. The photographic record will be maintained using a digital SLR camera (Canon 600D) set to maximum resolution (72dpi) with photographs taken in RAW format and later converted to TIFF format for long-term storage and JPEG format for presentation and inclusion in the archive. Photographic identification boards will also be used.

The excavation area will be opened with a mechanical excavator fitted with a toothless ditching bucket.

The excavation area and spoil heaps will be routinely investigated through the use of a metal detector and any finds/artefacts collected and processed as outlined in section 11.0.

To prevent any potential health and safety risk to the public and staff the excavation area will require cordoning with orange mesh fencing secured with road pins or heras fencing if appropriate.

All excavations, where required, will be made safe before departure and Aeon Archaeology will leave the site in a safe and tidy condition. Aeon Archaeology has not been requested to re-lay turf/lawn surface nor reinstate hard standing surfaces as found.

The drawn record will comprise plans at scale 1:20 and sections at scale 1:10; propriety electronic hardware and software to prepare site drawings may be used as appropriate.

The photographic record will be maintained throughout using a digital SLR camera (Canon 600D) set to maximum resolution (72 dpi) and all archaeological features will be recorded photographically with photographs taken in RAW format and later converted to TIFF format for long-term storage and JPEG

format for presentation and inclusion in the archive. The standards for the digital archive will adhere to those set out in '*Guidelines for Digital Archaeological Archives'* (RCAHMW, 2015).

The archive produced will be held at Aeon Archaeology under the project code **A0273.1**.

4.2 Strip, Map and Sample report.

A report on the results of the excavation, in accordance with the recommendations in *Management of Research Projects in the Historic Environment Project Manager's Guide* (English Heritage 2006; 2015), and in the Chartered Institute for Archaeologists *Standard and Guidance for an archaeological excavation* (2020) will be required to be produced upon conclusion of the archaeological fieldwork. The report will be completed within a maximum of two months of completion of work on site and may include examination and quantification leading to the identification of function, form, date, method of manufacture, material/fabric type, source, parallels, attributes and condition of artefacts; of the exploitation of wild or domesticated resources; the reconstruction of environments; and the nature of human populations.

Full analysis of the results of the project, including: dating and interpretation of excavated features; pottery and other finds analysis; analysis of industrial residues by an appropriate specialist or specialists; analysis of samples for environmental data (including pollen, plant macrofossils and beetles) by an appropriate specialist or specialists; radiocarbon dating; discussion of the results in their local, regional and national context, including relating the excavated features and paleoenvironmental data to evidence from nearby sites, and discussion of the results in their local, regional and national context may be required.

The scope of post-excavation assessment will subject to a specification for approval by the CPAT Development Control Archaeologist, upon the conclusion of the fieldwork project and preliminary report.

4.2.2 Post-excavation Report

Following completion of the stages outlined above, a report will be produced that will include:

- A non-technical summary.
- A table of contents.
- An introduction with acknowledgements, including a list of all those involved in the project and the location and description of the site.
- A statement of the project aims.
- An account of the project methodology undertaken, with an assessment of the same to include a statement on preservation bias and the means of data collection and sampling strategies.
- A factual summary of the history, development and use of the site.
- A statement setting out the nature, quantity and condition of the material archive (artefacts and ecofacts) including commentary on any bias observed due to collection and sampling strategies and commentary on long-term storage requirements.
- A statement setting out the nature and quantity of the documentary archive (notes, photographs, drawings, digital data).

- A general site plan indicating the position and size of the areas subject to watching brief and the locations of archaeological deposits identified and recorded during the works.
- Plans and sections at appropriate scales, augmented with appropriate photographs. All plans and sections will be related to the Ordnance Survey datum levels and to the National Grid.
- Other maps, plans, drawings, stratigraphic matrices and photographs as appropriate.
- Summary assessment reports on the artefact, bio-archaeological, dating and other assessments/analyses.
- A discussion of the location, extent, date, nature, condition, quality and significance of any archaeological deposits and finds identified during the project.
- A discussion of any research implications arising from the archaeological work.
- Notes on consultations with conservators and the nominated archive repository related to the immediate and long-term conservation and storage requirements for the data held in the site archive and recommendations of retention/discard of artefacts and ecofacts.
- A bibliography of sources consulted.
- Appendices to the report will include artefact catalogues, reports on assessments/analyses and an index to the project archive and a statement on its location/proposed repository.
- In addition the post-excavation report will summarise and draw together the findings of all of the phases of work.

Illustrations will include plans of the location of the study area and archaeological sites. Historical maps, when appropriate and if copyright permissions allow, will be included. Photographs of relevant sites and of the study area where appropriate will be included.

A draft copy of the report will be sent to the CPAT Development Control Archaeologist (DCA) and to the client for comment and approval prior to production of the final report.

5.0 ACHAEOLOGICAL BACKGROUND

The CPAT DCA (Mr Mark Walters) made the following consultee comments regarding the planning application:

The development plot lies within the medieval historic core of Rhuddlan as defined in the Denbighshire Historic settlements Survey 2013-2014 (see http://www.cpat.org.uk/ycom/denbigh/denbigh.htm) The plot may be within the Saxon burh of Cledemutha mentioned in 921 AD although the boundaries of this settlement are not clearly defined in this area of the town. The later Norman borough, founded c. 1073, lies to the south east beyond Ysgol y Castell and this is a scheduled monument (SAM Fl 129).

The plot lies just beyond the eastern extent of the Edwardian planned town layout founded in 1278-79. The scheduled castle and its outer defences (SAM Fl004) are located only 26 metres to the west. Excavation within the adjacent Castle Hill plot, immediately to the west of the application site, in 1970 (H. Quinnell and M. Blockley, CBA Research Report 95, Excavations at Rhuddlan, 1994, p.93) covered an area of just 1 x 2.60m and extended to 2.95m in depth without reaching natural. The stratigraphy was interpreted as the fill of a large ditch, probably of medieval date. Sherds of medieval and post medieval pottery were located in the upper fills. There is some debate as to whether this east-west oriented ditch marks the northern extent of the 'Town Ditch' which is thought to represent the defensive circuit of the 10th century AD Saxon burh of Cledemutha. If projected east this ditch would extend through the frontage of the application area.

To the south of the development area excavations in 1970 at Site E, Ysgol Y Castell , Lon Hylas (see ref. in 4.3 above pp.57-71) encountered multi-period archaeology dating from the Late Mesolithic through to the Post-Medieval periods and included the defensive ditch circuit of the Norman Borough defences.

The proposed development will have a significant impact on the sub-surface archaeology within this plot.

Information held within the Clwyd-Powys Historic Environment Record indicated that the proposed new extension lay within the medieval historic core of the town of Rhuddlan and immediately adjacent to the boundary of the Scheduled Monument of Rhuddlan Castle. The potential for any sub-surface archaeology here was unknown, but evaluation work and excavation to the west at *Hillview* had recently located medieval and post-medieval pits with associated ditched boundaries. Similar archaeology was anticipated at *Castle Hill* with some potential for additional prehistoric and later archaeology similar to the deposits found to the south at Castle Hill and on the former Abbey Nurseries site (*email correspondence from Mark Walters to Denbighshire planning authority*).

According to the Mesolithic Research and Conservation Framework (Milner et al. 2013) the British Mesolithic period is currently recognised as spanning the period 11,600 to 6000 cal BP (9600 - 4000 cal BC) and it is this phase in human history which directly follows the Palaeolithic epoch. The Mesolithic era roughly covers the first half of the Holocene (the current Geological epoch) and is now recognised by several cultural and environmental events including rapid climate change at the beginning of the period, significant changes in lithic technology and, in the 7th millennium cal BC - a cold event, a tsunami and eventually the breaching of the landscape (*Doggerland*) which joined Britain to the rest of Europe (Blinkhorn & Milner 2013).

The Historic Environment Record (HER) maintained by the Clwyd & Powys Archaeological Trust (CPAT) and Gwynedd Archaeological Trust (GAT) returns 94 individual entries associated with the Mesolithic period in North Wales (including the counties of Conwy, Denbighshire, Gwynedd & Flintshire). Within those entries approximately 30 are presented as occupation sites characterised as such by the presence of flint scatters, cut pit features or the presence of shell middens. The remainder of the entries represent individual findspots of worked lithic materials such as blades & scrapers, knives or other tools.

Flintshire & Denbighshire

From the east of the region in Flintshire there is a single site at Gop Hill (*PRN 57570*) just east of Dyserth over the county boundary where 7 flint and chert microliths were recovered (Silvester & Owen 2002). However, 10 individual suspected Mesolithic find spots have also been identified across the county predominantly north and west of Mold. Further west into Denbighshire there are locations with much denser levels of Mesolithic activity at Prestatyn and Rhuddlan. The Prestatyn area has returned a large number of chert and flint artefacts over the years as recorded in CBA Mesolithic survey (*PRN 101418*), there is a suspected site/camp at Nant Hall (*PRN 101933*) or in the general vicinity of Nant Hall Road (*PRN 17395*) where a large number of worked flint implements were recovered from a field near the hall (Thomas 1992) and also from a shell midden encountered during a CPAT trial excavation (Bell et al. 2007, Thomas 1992). Another site is recorded as Bryn Newydd, Prestatyn - a Mesolithic working floor was excavated in 1925 where several thousand flakes and a small number of non-lithic objects were collected. The material has since been assessed and dated, to around 10,200 cal BP (8200 cal BC) the site now lies under the Bryn Newydd housing estate, although the precise locations as given in the CPAT HER are in a garden or gardens at the rear of a house (Hankinson & Silvester 2008). Excavations at the Melyd Avenue (*PRN 58449*) site recovered 122 flint and chert finds from excavations between 1980 and 1985 (Blockley 1989), however apart from a single microlith none of the material was clearly dated (Owen & Silvester 2002). The evidence for Melyd Avenue is admittedly sparse but does allude that Mesolithic activity may have continued to the west of the Nant Hall and Bryn Newydd sites. The importance/ density of Mesolithic activity at Rhuddlan in Denbighshire is addressed below in full – although it appears to be the most consistently productive site for Mesolithic archaeology in all of North Wales to date.

There have been a number of excavations on the north eastern shores of Llyn Brenig, Denbighshire which has uncovered Mesolithic activity overlain by a later Bronze Age funerary landscape. including two occupation sites, four funerary barrows and a ring cairn which appears to have disturbed Mesolithic levels during their construction. The *Brenig 45, Boncyn Arian round barrow* (*PRN 57579*) (the mound of silver) is situated on a level promontory on the eastern side of the lake. The mound is 16m diameter and 1.8m high covering a central burial area surrounded by three stake circles which in turn were encompassed by a low, poorly built wall of spaced uprights and dry masonry incorporating what appeared to be a blocked entrance. Encircling the wall was a further, irregular, stake circle. Surrounding the mound was a palisade whose southern arc included a small standing stone erected prior to the cutting of the palisade trench. The mound was then capped with clay. The excavation produced seven cremated burials and over 300 flints from the mound at its vicinity. The mound had been disturbed in the top during the 19th century. It is recorded that in c1859 an urn containing cremated bone was discovered here. A secondary cremation was found during excavation in 1973. (Lynch 1993, pp. 65-76). A small area to the east of *Brenig 45*, was excavated in 1974, *Brenig 53, Mesolithic occupation site* (*PRN 100641*). A group of intercutting bowl-shaped pits, the largest and latest measured 1.5 by 1m and 0.5m deep was discovered along with a group of stones displaying

signs of deliberate setting. Mesolithic flints were found in the pits and others were recovered from an area alongside which the pits were interpreted as fire pits or hearths. Further excavations in 1975 revealed more pits and hollows containing flints and fragments of hazel nuts, a posthole and over 30 stake holes, undated, but some were found in groups beside other features and in rows (Lynch 1993).

Located northeast upslope of Brenig 45 and 53 a small structure was uncovered at the site known as *Brenig 48, Hafod y Nant Criafolen settlement* (*PRN 57582*) and consisted of a small circular structure which survived as postholes approximately 4m in diameter centred upon the remains of a hearth. Located approximately 60m to the south of Brenig 45 and 53 is *Brenig 44, ring cairn* (*PRN 57578*) where 446 pieces of Mesolithic flints were overlain by a Bronze Age ring cairn which was excavated as part of the Brenig Valley Project. This discovery combined with the other sites possibly attests to concentrated Mesolithic activity in the area. The three other Bronze Age barrows which included Mesolithic lithic finds were located; to the 485m to the southwest - *Brenig 41, Cefn Brenig barrow A* (*PRN 57589*) where a flint was recovered during excavation, 1km to the southeast *Brenig 8, Waen Ddafad round barrow* (*PRN 57584*) where 28 pieces of flint and chert were recovered and it was assumed that some might represent residual Mesolithic lithics and 1km to the northeast is *Brenig 47, Bwlch Du barrow*, (*PRN 57581*) where two flint flakes from the relict ground surface beneath mound were found.

To the west of the town of Denbigh in a field located to the north of Whitchurch Road is the Tandderwen cropmark complex, consisting of a network of ring-ditches and square-plan ditches. This complex represents a small bronze age cemetery, dated to between about 3660 to 3400 cal BP (2nd millenium BC) and an early medieval inhumation cemetery, with associated dates of about 510 AD and 860 AD. Mesolithic activity is represented predominantly by lithic waste found in the form of worked local cherts encountered during field walking (Brassil et al. 1991). Furthermore three Cave sites are also associated with Mesolithic activity in Denbighshire; *Plas Heaton Cave, Mesolithic finds* (*PRN 100570*) near Henllan, where one unworked blade or flake thought to be of Mesolithic date was recovered (Owen & Silvester 2002). *Lynx Cave (Bryn Alyn Cave 1), Mesolithic activity* (*PRN 100949)* A small tunnel cave was excavated by J. D. Blore in 1965. One possible microlith uncovered was suggested to be Mesolithic. Also an assemblage of animal bones was also suggested as dating from 5000 to 8000 cal BP (3000-6000 BC). Some human bone was also purportedly recovered and was also suggested to be Mesolithic in date. Llanarmon Cave (*PRN 100895*) has produced evidence which is heavily suggested to represent the end of the Pleistocene and the beginning of the Holocene including phases in the Mesolithic, Neolithic and Bronze Age; following the excavations conducted by Rob Dinnis (of the British Museum) and John Boulton (of Devon Speleological Society) in 2012, 2013 and 2016 it is hoped the cave might yet provide important information on the changes to Britain's fauna at the end of the Ice Age. A flint cutting tool was first identified by Rob and Ros Mannix and a metatarsal of wild horse or deer was also found, additional stone cutting tools were found in following excavations. Although the stone cutting tools are merely small worked flint bladelets of no more than an inch across.

In addition 24 individual suspected Mesolithic find spots have also been identified across the county.

Rhuddlan

The area that has returned the greatest number/density of sites in Denbighshire and incidentally North Wales is Rhuddlan. The current town is situated on the brow of a hill overlooking the River Clwyd where Edward I's stone-built castle dominates the landscape. However, it would seem that the site has

seen continuous activity since the early prehistoric period following the Younger Dryas (12,900 to 11,700 cal BP or 10,900 to 9700 cal BC), which is a term used to describe what was a return to glacial conditions following a temporary climactic warming event near the end of the last Ice Age. The site at Rhuddlan has been given two distinct phase designations by CPAT; the *Rhuddlan Mesolithic Site* (*PRN 57767*) and the later *Rhuddlan Bronze Age Settlement* (*PRN 38845*). During the late 1960's and early 1970's there were a series of archaeological excavations conducted at Rhuddlan by Henrietta Quinell and Marion R. Blockley with lithic analysis by Peter Berridge. The work comprised of five seasons of excavation, mostly on the fluvioglacial sand ridge above the river Clwyd which revealed a complex sequence of multi-period activity dating from the Mesolithic onward. According to the work conducted by Quinell & Blockley the Mesolithic occupation is believed to have dated from approximately 9000 cal BP (7th millennium BC) and produced rich evidence of a chert working industry, some possible structural features, and a series of incised decorated pebbles which have only been found on three other sites across the whole of Britain (Milner et al. 2016).

The following quote is reproduced from (Milner et al. 2016) section 6.2 *Overview of (Mesolithic) art in Britain*:

'*Although far from ubiquitous, decorative artwork is (sparsely) distributed throughout the archaeological record of the British Mesolithic'*.

The general findings of these excavations presented Rhuddlan as a major centre of early prehistoric occupation and flint and chert manufacture. The *Rhuddlan, Nursery Field* (*PRN 101956*) excavations took place in 1969-1970 and revealed concentrated evidence of widespread Mesolithic activity in the form of pits associated with flint scatters and the chert industry. A radio carbon date of 8739 BP +/-30 was obtained. A total of 502 individual lithic finds were found with the following tool types present: microlith, scraper, notched pieces, Microdenticulates and Arrowheads (Owen & Silvester 2002). The decorated Mesolithic pebbles were found at both Gwindy Street (Site D) and Ysgol Y Castell sites E, M, T, & V).

Catalogue of sites and finds Rhuddlan; Quinell & Blockley excavations (1969-1975)

Rhuddlan, Gwindy Street (Site D) (*PRN 81662*) Flint and chert finds from excavations by Quinnell in 1971 and 1972. Total 38. Tool types present : scraper, fabricator, and utilised/retouched pieces (CPAT 2002).

Rhuddlan, Ysgol Y Castell (Site E) (*PRN 81666*) Flint and chert finds from excavations by Quinnell in 1970. Total 8408. Tool types present: microlith, scraper, awl, notched pieces, ground pieces,axe sharpening flake Microdenticulates and utilised/retouched pieces (CPAT 2002)

Rhuddlan Castle Hill (Site K) (*PRN 81661*) Flint and chert finds from excavations by Quinnell in 1970. Total 21. Tool types present : 2 utilised/retouched pieces (CPAT 2002).

Rhuddlan, Ysgol Y Castell (Site M) (*PRN 81667*) Flint and chert finds from excavations by Quinnell in 1971. Total 2637. Tool types present : microlith, scraper,awl, notched piece, ground piece, Microdenticulates and utilised/retouched pieces (CPAT 2002).

Rhuddlan, Bryn Teg (Site S) (*PRN 57739*) Flint and chert finds from excavations by Quinnell in 1972. Total 105. Tool types present : microlith, scraper,awl, Microdenticulates and utilised/retouched pieces (CPAT 2002).

Rhuddlan, Ysgol Y Castell (Site T) (*PRN 81668*) Flint and chert finds from excavations by Quinnell in 1973. Total 1351. Tool types present : microlith, scraper,awl, notched pieces, fabricator, Microdenticulates and utilised/retouched pieces (CPAT 2002).

Rhuddlan, Ysgol Y Castell (Site V) (*PRN 81669*) Flint and chert finds from excavations by Quinnell in 1973. Total 268. Tool types present : microlith, scraper, notched pieces, and utilised/retouched pieces (CPAT 2002).

Further instances of archaeological field work have taken place at Rhuddlan since the landmark study of the early 70's. During the *Rhuddlan, Hendre* (*PRN 102571*) excavation in 1978 two Mesolithic working sites were found; one for flint and one for chert. Numerous hazelnut shells and small quantities of charcoal and seeds were also recovered. (CPAT 2002, Messham et al. 1979, Owen & Silvester 2002). Although no formal record of the archaeological work is available of the *Rhuddlan, Bypass, Mesolithic Activity* (*PRN 35030*) an excavation was undertaken during construction which identified scatters of flint and chert flakes in a context of brown clay which also contained gravel with occasional charcoal flecks and rounded stones. Timbers were noted during the excavation in the upper grey clay of a borrow pit nearby as were hazel nuts and snail shells. The largest timber was 3.66m long and one was reputed to have a pointed end but it is unclear if it was manmade (Grenter 1996). Further work was conducted at *Rhuddlan, Abbey Nurseries* (*PRN 128197*) where an archaeological evaluation carried out in 2005 by *Cambrian Archaeological Projects* revealed evidence of later Mesolithic - early Neolithic occupation, including over 30 lithic finds, and several pits, which may be contemporary with the lithics. Compacted clay flooring and a hearth, both of which may be later in date were also uncovered during the work. As the Scheduled Ancient Monument consent did not permit excavation of any of the features encountered, it was not possible to ascertain their true nature and date (Evans & Smith 2005).

Conwy

The Mesolithic sites of the county of Conwy can be characterised as consisting in the main of cave sites, however there is an instance of a hilltop flint scatter near Dolwyddelan and another within the shallows of Llyn Aled reservoir northwest of Llyn Brenig in Denbighshire. The *Brasgyll Caves* (*PRN 19309)* were initially explored in 1871 by Mrs William Wynn and Col. S Mainwaring who found evidence of occupation there probably of Neolithic date although some of the lithics appear Mesolithic in origin. Their finds included flint arrowheads, a core and some flakes, as well as charcoal and bones of horse, ox, goat and frog. The cave system was explored in 1946 by J Hwel Owen who found red deer, ox, sheep, horse and pig bones as well as human bones from at least 6 individuals. As part of the *Brasgyll Caves* network; (Nant y Graig Cave B) (*PRN 101424*) it seems to be a site of significant potential, where archaeological material might survive undisturbed and in-situ (Hankinson 2015). The *Llyn Aled Isaf flint scatter* (*PRN 101313*) is a probable Mesolithic flint scatter originally found in 1974 when the lake level was low. In 1989, similar conditions allowed the systematic survey of an area 50m x 50m in the same area as the earlier finds and over 300 flints were recovered. Furthermore, areas of burning, postholes and charcoal deposits have been noted on the eastern side of the lake (Brassil 1989). To the western side of the reservoir Bronze Age flints have been recovered together in association with small low cairns which were 1m diameter approx.

Near Llandudno there is a site known as *Snail Cave, Great Orme* (PRN 58505) where a small evaluation excavation was carried out on deposits within a low rock shelter on the east side of the Great Orme. Several worked flints had previously been collected from the surface as well as a pierced shell bead of a type known from other Upper Palaeolithic, Mesolithic and Neolithic sites in Wales. The excavation revealed the presence of occupation deposits from the surface down to a depth of 0.70m above a stony scree. The lower levels produced an assemblage of waste flint and retouched points of Later Mesolithic type. Charcoal, including nutshell, marine shells and bone fragments occurred at all levels (Smith 2011, 2015).

The *Rock Shelter, Lloches yr Afr* (*PRN 5031*) was also discovered near Llandudno in 1973. Six distinct stratigraphic layers were identified. The finds produced included many bones with some split and blackened by fire. Only one group of bones was found in the lowest strata, these seem to have been broken by the chewing of hyena (Davies, 1973) The first occupation was by a hyena which left behind the bones in a periglacial rock-fall deposit, possibly of horse. Subsequently, wind-blown deposits were laid down and the first sign of human occupation appears, during the Mesolithic period, starting soon after 10,000 cal BP (8000 cal BC). Flint and food remains were found including a vertebra of fish and animal bones also abound. A concentration of white quartz pebbles were present as was a stake hole situated to one side of a hearth.

A *Hilltop Flint Scatter, Ty'n y Ddol* (*PRN 965*) was also found near Dolwyddelan, Conwy. This scatter had both Mesolithic and Neolithic worked flints - which were found on a hilltop immediately south of the quarry at Ty'n y ddol (Owen & Silvester 2002). In addition to these sites, 5 other individual suspected Mesolithic find spots have also been identified across the county.

Gwynedd

Conversely to Conwy and Denbighshire the Mesolithic sites in Gwynedd do not appear as caves but rather as flint scatters or as deposits with coastal situated pits. The *Flint Working Site, Trwyn y Penrhyn* (*PRN 3294*) was a probable Mesolithic flint working site on Trwyn y Penrhyn, Aberdaron which was discovered in 1974 when 8 worked flint flakes, one microlith, 16 cores and 2 pebbles were found. Earlier that year a quantity of flint was also found to be scattered over the site but very little appeared to be worked (Chitty 1974). Another *Flint Working Site, Pencilan Head* (*PRN 4000*) was surmised to exist after the donation of the The Hartley Collection to the National Museum of Wales, which includes about 70 flints from Pencilan Head, Llanengan. There is a microlithic component consisting of two obliquely blunted points and two microblades within this assemblage (Owen & Silvester 2002).

The *Hearth, Site of, East of Glan Morfa Bach* (*PRN 31138*) Llannor, where three hearths were uncovered and which appeared to have been the remains of campfires built on an open shingle beach. These were then buried by a deposit of clay that probably formed after changes in sea-level that created a lagoonal environment along this part of the coast. These lagoons developed into marsh, which was drained and used for pasture during the post-medieval period. Samples were taken for paleoenvironmental processing and radiocarbon dating. A flint flake was recovered from the spoil heap. Furthermore, the depth of the hearth, under a considerable amount of silt suggested the feature may have an early post-glacial date, possibly Mesolithic (Berks & Roberts 2005). The excavation of a *Shell Midden, Garreg Hylldrem Rockshelter, Llanfrothen* (*PRN 55789)* revealed evidence for human activity from the Early Mesolithic to the Early Bronze Age, primarily consisting of midden deposits.

In 2013 during work on the Porthmadog bypass the *Y Bryn lithic scatter, Porthmadog* (*PRN 33604*) was uncovered and a single microlith and 2 blades were found on the western part of the scheme. These seemed to be separate from the larger lithic scatter on the hill (PRN 33595) and could indicate transitory Mesolithic activity in the area (Parry 2013) possibly representing a seasonal camp or work site.

Two *Pits at Penrhosgarnedd* (*PRN 59788*) southwestern Bangor, were located in the southern part of an evaluation trench by *Oxford Archaeology North*. The largest of which contained heat affected material and charcoal and the smaller charcoal from oak and Scots Pine. The charcoal was dated by radiocarbon dating to between 9063 to 8826 cal BP (7063 to 6826 cal BC), indicating that the pit was used in the Mesolithic period (Bradley 2013).

At *Pentwmath, Llandygai* (*PRN 70047*) Bangor, an ovoid pit was located within a possible ditched enclosure. This pit did not produce any artefactual evidence however radiocarbon dating has shown that its infill contained charcoal dating between 6670 to 6500 cal BP (4720 to 4550 cal BC) towards the end of the Mesolithic period. The function of the pit remains unclear, perhaps it was a refuse pit or associated with a temporary camp. It is not clear whether this is an isolated feature or part of a larger area of Mesolithic activity (Cooke, 2016).

Another *Flint Scatter, Ynys Enlli* (*PRN 39569*), Bardsey Island, was found underneath the topsoil of a natural sub-oval mound. There were 7 pieces of struck flint and one piece of knapped stone recovered. The assemblage suggests that Later Mesolithic activity prevailed in this area, although not all the pieces may be of the same date (Kenney 2014). In addition 24 other individual suspected Mesolithic find spots have also been identified across the county mainly on the Llyn Peninsula but also in south Gwynedd.

6.0 DIGITAL DATA MANAGEMENT PLAN

6.1 Type of study

Archaeological strip, map and sample excavation on a plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG (centred on **NGR SJ 02558 77923).**

6.2 Types of data

Photographs, photograph register, context sheets, context registers, drawing sheet registers, environmental samples register, finds register, scaled drawings.

6.3 Format and scale of the data

Photographs taken in *RAW* format and later converted to *TIF* format for long term archiving and *JPEG* format for use in the digital report, converted using *Adobe Photoshop*. All photographs renamed using *AF5* freeware with the prefix (*project code_frame number*) and a photographic metadata created using Microsoft Excel (*.xlsx*) or Access (*.accdb*).

All written registers, pro-formas, and scaled drawings scanned as *.PDF* files.

6.4 Methodologies for data collection / generation

Digital data will be collected / generated in line with recommendations made in the Chartered Institute for Archaeologists (CIfA) *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives* (2014. Rev 2020). Sections 3.3.1 and 3.3.3 are relevant:

> *3.3.1 Project specifications, research designs or similar documents should include a project specific Selection Strategy and a Data Management Plan.*
>
> *3.3.3 Project designs or schedules of works etc should outline the methodology used in recording all information, in order to demonstrate that all aspects of archive creation will ensure consistency; for instance in terminologies and the application of codes in digital data sets, highlighting relevant data standards where appropriate*

6.5 Data quality and standards

Consistency and quality of data collection / generation shall be controlled and documented through the use of standardised procedure as outlined in the WSI. This will include the use of standardised data capture file formats, digital proformas, data entry validation, peer review, and use of controlled vocabularies.

6.6 Managing, storing and curating data.

All digital data will be organised into Aeon Archaeology proformae project file systems and backed up to the cloud using *Digital River's Crashplan* with additional copies made to external physical hard drive.

6.7 Metadata standards and data documentation

Digital metadata created using Microsoft Excel (*.xlsx*) or Access (*.accdb*) of all photographic plates.

Paper metadata created from Aeon Archaeology proformas for contexts, artefacts, environmental samples, watching brief day sheets, trench sheets, and basic record sheets and then scanned to create digital .PDF copies.

6.8 Data preservation strategy and standards

Long term data storage will be through the submission of digital (.PDF) reports to the regional Historic Environment Record (HER); submission of the scanned (.PDF) archive, photographic plates (.TIF), and metadata (*.xlsx*) (*.accdb)* to the RCAHMW; and retention of copies of all digital files at Aeon Archaeology on physical external hard drive and uploaded to the Cloud.

6.9 Suitability for sharing

All digital data will be placed within the public realm (through the channels in 6.8) except for where project confidentiality restricts the sharing of data. All data sets will be selected / discriminated by the Senior Archaeologist at Aeon Archaeology and written permission will be sought from all project specific Clients prior to the sharing of data.

6.10 Discovery by potential users of the research data

Potential users of the generated digital data (outside of the organisation) will be able to source the data and identify whether it could be suitable for their research purposes through access granted via the RCAHMW website. Requests can also be made for data through the regional HER's and directly to Aeon Archaeology (info@aeonarchaeology.co.uk).

6.11 Governance of access

The decision to supply research data to potential new users will be via the associated website request (RCAHMW, HER) or via the Senior Archaeologist when made directly to Aeon Archaeology.

6.12 The study team's exclusive use of the data

Aeon Archaeology's requirement is for timely data sharing, with the understanding that a limited, defined period of exclusive use of data for primary research is reasonable according to the nature and value of the data, and that this restriction on sharing should be based on simple, clear principles. This time period is expected to be six months from completion of the project however Aeon Archaeology reserves the right to extend this period without notice if primary data research dictates.

6.13 Restrictions or delays to sharing, with planned actions to limit such restrictions

Restriction to data sharing may be due to participant confidentiality or consent agreements. Strategies to limit restrictions will include data being anonymised or aggregated; gaining participant consent for data sharing; and gaining copyright permissions. For prospective studies, consent procedures will include provision for data sharing to maximise the value of the data for wider research use, while providing adequate safeguards for participants.

6.14 Regulation of responsibilities of users

External users of the data will be bound by data sharing agreements provided by the relevant organisation or directly through Aeon Archaeology.

6.15 Responsibilities

Responsibility for study-wide data management, metadata creation, data security and quality assurance of data will be through the Senior Archaeologist (Richard Cooke BA MA MCIfA) at Aeon Archaeology when concerning data generation and early/mid-term storage. Upon deposition with digital depositories the study-wide data management, metadata creation, data security and quality assurance of data will be the responsibility of the specific organisations' themselves.

6.16 Organisational policies on data sharing and data security

The following Aeon Archaeology policies are relevant:

- Aeon Archaeology Archive Deposition Policy 2019
- Aeon Archaeology Quality Assurance Policy 2019
- Aeon Archaeology Conflict of Interest Policy 2019
- Aeon Archaeology Outreach Policy 2019
- Aeon Archaeology Digital Management Plan 2020

7.0 QUANTIFICATION OF RESULTS

7.1 The Documentary Archive

The following documentary records were created during the archaeological watching brief:

Site record sheets	2
Finds record sheets	24
Context Sheets	20
Digital photographs	78

7.2 Artefacts

A total of 314 individual lithic finds were recovered from the Castle Hill, Hylas Lane site. See Section 8.0 for a detailed specialist analysis of lithic finds analysis by I. P. Brooks

7.2.1 Ceramic Analysis

This section will summarise the pottery sherds recovered from the works undertaken at Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG. The ceramic evidence recovered from the site was representative of an assemblage associated with four distinct contexts; (114), (116), (117) & (120).

The pottery was quantified by sherd count, weight, and maximum number of vessels (MNV), according to ware names commonly in use by archaeological ceramic specialists across the North West and West Midlands regions. Codes shown thus: (STRSB) relate to the identification system used for medieval and post-medieval ceramics used by The Museum of London Archaeology (MOLA).

The watching brief produced a total of 9 sherds of post-medieval pottery, 3 fragments of ceramic pipe stem and a stamped wire cut engineering brick. The pottery sherds and the pipe stem fragments had a combined weight of 48g. The ceramic sherds represented 7 individual vessels. The pottery has a solitary example from the late 14th century, however most of the fragments date to late 19th/early 20th century. The pottery was in good condition overall although fragmented. The pottery is in a stable condition and requires no long-term storage requirements.

Medieval Pottery

A single sherd of *miscellaneous unsourced medieval white ware* (MISC WW) weighing 6g was recovered from the context (116) representing 1 MNV. Medieval white wares were produced in many localised industries throughout Britain and this example is not recorded in the MOLA database currently – however this is most likely an example of a locally produced ware. White wares, were made from the so-called Coal Measure clays which were produced in the West Midlands during the 14$_{th}$ and 15$_{th}$ centuries; these white wares were perhaps introduced as early as the later decades of the 13$_{th}$ century (Davey & Harrison 1977). This sherd may have been manufactured from a kiln in the West Midlands, probably in Staffordshire or Warwickshire.

Post Medieval Pottery

Wares and Forms

Annular ware – 1785 - 1820

Two sherds of *Annular ware* (ANNUL) weighing 9g were recovered from the context (114) representing 1 MNV. The examples found at Castle Hill were White/Brown variations of Banded Annular ware probably from a bowl or plate. Annular ware is a wheel thrown earthenware, popular between 1790 and 1820 (production began 1985). Its exterior decoration is characterized by horizontal bands of various widths and colours. Earth tones were seen on early annular ware. Later, there was a shift towards varying shades of brown, green, orange, tan, grey and blue-green. Designs were pressed or rolled on to the vessel, or were cut into the vessel by engine turning. (Van Rensselaer, 1966)

Bone China 1794-1900

Two sherds of *bone china* (BONE) weighing 2g were recovered from the context (114) representing 2 MNV. These examples were too small to be considered diagnostic of a particular vessel. The modern product of bone china was developed by the Staffordshire potter Josiah Spode in the early 1790s. Spode included kaolin, so his formula, sometimes called "Staffordshire bone-porcelain", was effectively hard-paste porcelain, but stronger, and versions were adopted by all the major English factories by around 1815.

Staffordshire/ North-western Blackware - Mid-to-late 18th century.

Two sherds of *blackware* (STBL) weighing 32g were recovered from the contexts (114) & (116) respectively representing 2 MNV. The sherds are most likely examples from the kilns at Buckley, the glossy, metallic black lead glaze visible on the interior face of this example was introduced to the manufacturing process in the *mid-to-late 18th century (*Cresswell & Davey 1989*)*. This may be an example of Pancheon Ware - a name used on many pottery forms. These include pancheons (vessels) used in the dairy industry but also had a domestic use and were to be found in the pantry probably in order to prove bread (Brears 1971).

Modern Glass

A single piece of modern glass weighing <1g was recovered from the context (120). This was recovered only after extensive search and offers the only relative date for this context. The fragment of glass was less than the size of a thumbnail and was of such a quality as to suggest that it could only have been produced with modern techniques perhaps during the middle of the 20th century.

7.3 Environmental Samples

A total of 3 environmental samples were taken by Aeon Archaeology in order to be processed by double floatation by CR Archaeology before being submitted for radiocarbon dating. See Section 9.0 for analysis of the environmental samples by radio carbon dating by Beta Analytic.

8.0 SPECIALIST ANALYSIS

By *I.P. Brooks* of *Engineering Archaeological Services Ltd*, based at Glanypwll Workshops, Glanypwll, Blaenau Ffestiniog LL41 3NW,

Plot Adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire LL18 5AG. Lithic Analysis (LA)

I.P. Brooks

A total of 314 stone artefacts have been recovered during the course of the excavation at Castle Hill, Hylas Lane, Rhuddlan. These were recovered during trowelling, with no sieving of the associated deposits. The artefacts were, however, plotted in three dimensions allowing the production of distribution plots to be made.

All artefacts were catalogued in detail. A macroscopic analysis was carried out on the assemblage based on typological class, raw material type, weight and size. The raw materials were defined as "Flint", "Chert" and "Other". It was decided not to further divide flint into a series of morphological types as the main source being exploited was a series of pebbles derived from a till or beach deposit. A note was made, however, of the condition of the cortex which allowed for the separation of a few artefacts which were from a primary (chalk) source. The chert was divided into one of four groups based on the colour and appearance. Once again, the condition of the cortex was recorded in order to separate the potential use of primary and secondary sources.

The flakes were divided into four groups: primary flakes with completely cortical dorsal surfaces, secondary with partly cortical dorsal surfaces, tertiary with uncorticated dorsal surfaces and broken flakes. Where possible the raw material colours are defined using the Geological Society of America's Rock-Color Chart (Goddard *et al* 1948). The assemblage also contained a few chips and chunks, the result of the poor nature of much of the raw materials being used, which tend to be small irregular fragments with minimal evidence for controlled knapping.

Blades having been defined as having a length to width ratio of equal to, or greater than, 2.5 and blade fragments as having parallel or near parallel sides suggesting they had been derived from blades. The decision to use 5:2 as the cut off point for the definition for blades was made, rather than 2:1, as this allows for the discrimination of "long flakes" with length to width ratios of between 2 and 2.5.

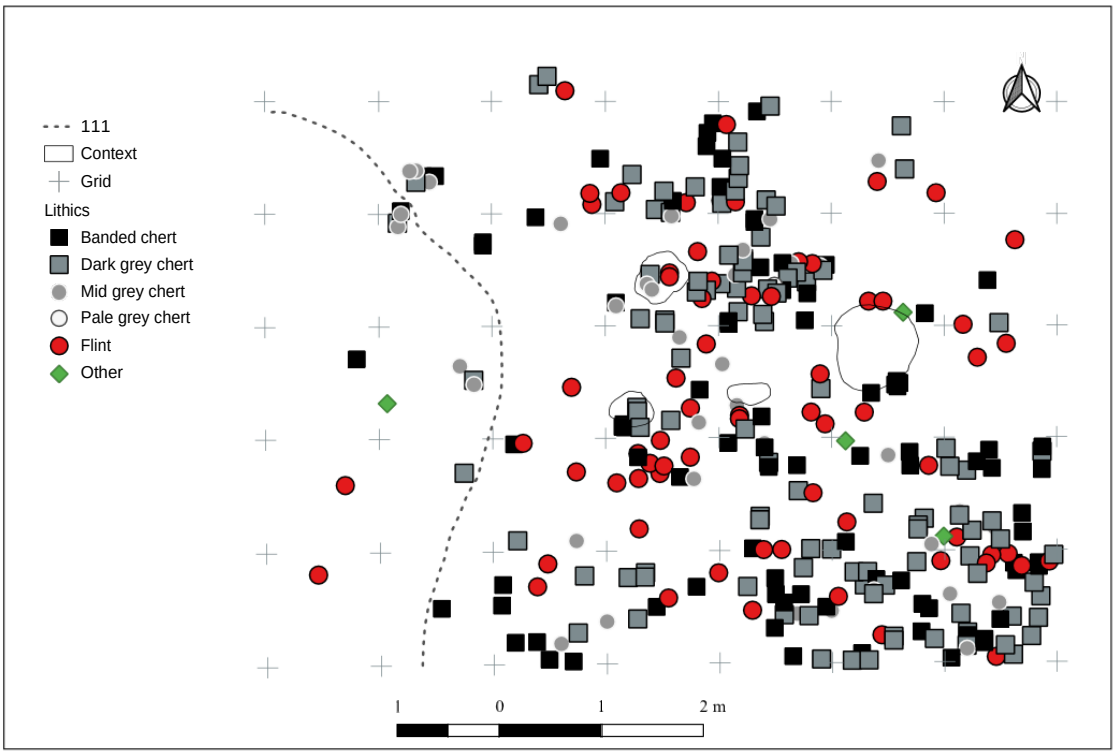
Raw Materials

The assemblage from Castle Hill is dominated by the use of cherts, of various types, which make up 77.1% of the assemblage (242 items). These cherts vary in colour from greyish black (N2 Goddard *et al* 1948) to light grey (N7) and have been divided into four broad classes for convenience. The groups used were "Pale Grey Chert" with cherts with colours between very light grey (N8,) and medium light grey (N6); Mid-Grey Chert varying between medium light grey (N6) and medium dark grey (N4); Dark- Grey Chert between dark grey (N3) and black (N1) colours and Banded Cherts with distinct bands of dark and pale chert. The darker coloured cherts dominated with Dark Grey Chert forming 35.4% of the total assemblage, Banded Chert 28.7% and Mid Grey Chert 12.7%. Where it survives the cortex on all of the chert is relatively fresh suggesting it was extracted directly from the parent limestone, or at least had not been within an erosive environment. All of the chert is thought to be Carboniferous in age and chert of a similar geological date is exposed along the North Wales coast, from the Vale of Clwyd (Berridge 1994, 95) to the Great Orme (Grundy Ridewood 2013) and across

the southern half of Anglesey (Campbell *et al* 2014, 121). Fine black chert predominates on eastern side of the outcrop, especially near Gronant and Trelogan (Healey 1982, 21) and Smith (2012, 132) suggests that banded cherts are exposed in the Trelogan area of north-east Wales. Only one artefact of Pale Grey Chert was recorded, however it has similar macroscopic properties to the chert recently recorded from a small prehistoric quarry above St Dyfnog's Well Llanrhaeadr (Brooks forthcoming A), possibly suggesting a source in the Vale of Clwyd.

There are a further 68 flint artefacts (21.7% of the assemblage) and four artefacts (1.3%) of uncertain lithologies. Both of these groups have worn, eroded external surfaces suggesting they have been extracted from derived deposits such as a till or gravel. It is likely that these are from the erosion of the Irish Sea Till which contains a low percentage of flint erratics (Mackintosh 1879).

The distribution of raw material types across the site is shown in Figure 1. Whilst the various chert types seem to be distributed across the excavation area. It could be argued that the distribution of flint contains at least two minor concentration, however the number of artefacts is relatively small making the possibility of concentrations speculative.

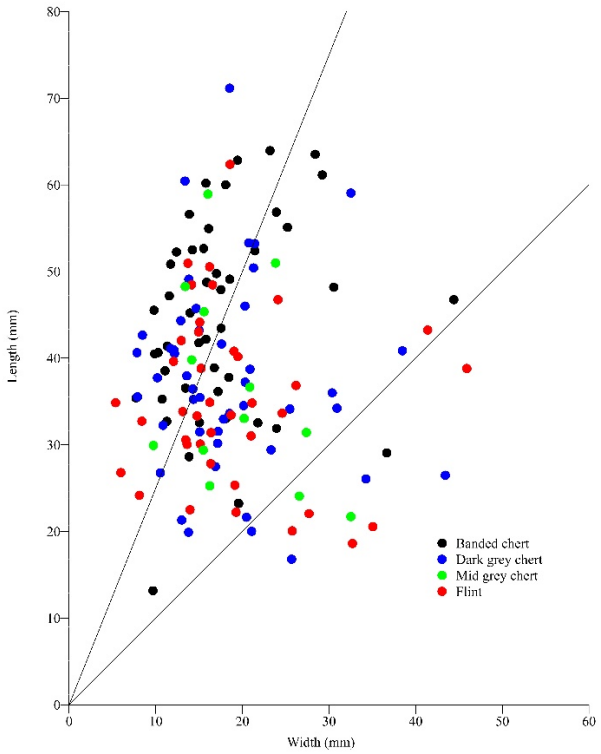


LA Figure 1: Distribution of raw materials across the site.

Knapping Debris

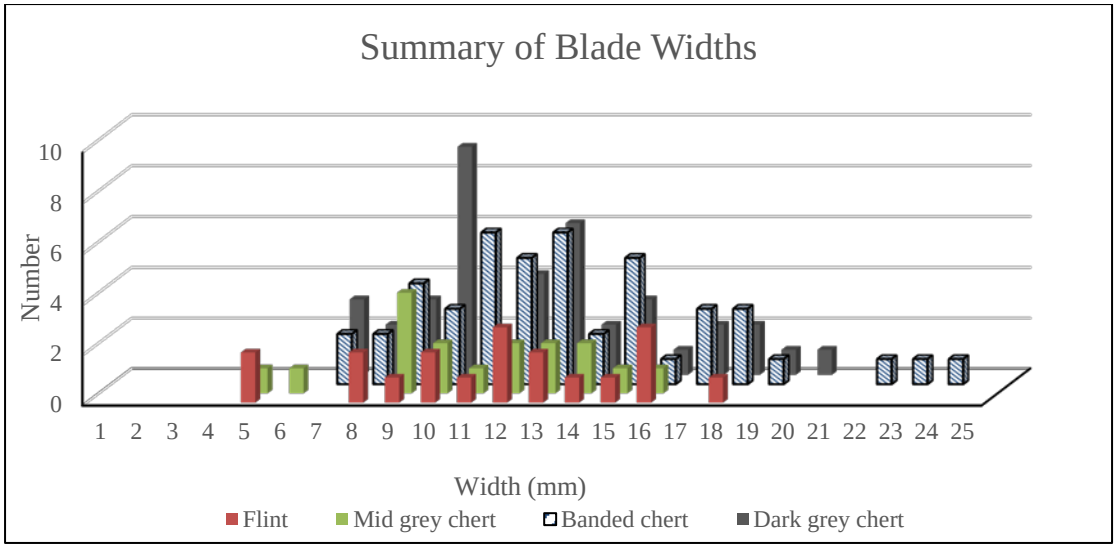
The majority of the assemblage is composed of knapping debris with a range of flakes, broken flakes, blades and blade fragments. The flakes varied in size between 5.4 – 45.9 mm in width and 13.2 – 71.2 mm in length with a general tendence for the larger artefacts to be of chert, particularly the Banded Chert (Figure 2). Although there is a full range of flakes from primary to tertiary flakes, it is noticeable that the majority of primary flakes are of flint with only two examples of chert. Similarly,

the secondary flakes and blades are underrepresented within the assemblage suggesting that a degree of preparation was being carried out off site before the raw materials were being imported.



LA Figure 2: Complete flake sizes

The assemblage is largely based on blades, or blade elements with complete and broken blades making up 38.9 % of the assemblage (Figure 2, Appendix 1). Of these the majority (103) are of chert whilst 19 are of flint. There appears to be some preference for the use of banded chert to produce blades with 46 blades, or blade segments, having been made on this raw material groups. The second preference is for the Dark Grey chert with 40 items. The blades vary in width between 5 and 25 mm with some suggestion for a preference between 11 and 14 mm (Figure 3). Whilst there is similarity between the various chert types the blade elements made of flint also includes two very narrow blades, only 5 mm wide which appear to be from a different knapping strategy.



LA Figure 3: Summary of blade width

There is also a range of cores, core debris and irregular worked lumps within the assemblage, which are summarised below:

Core Morphology	**Banded chert**	**Dark grey chert**	**Mid grey chert**	**Pale grey chert**	**Flint**	**TOTAL**
Single platform blade	3	2			3	8
Opposed platform blade	2		1		4	7
Multi-platform blade	1	2			1	4
Irregular blade		3				3
Blade core fragment					1	1
Keeled core		1				1
Single platform flake		1				1
Multi-platform flake		1				1
Core face rejuvenation	1	1				2
Core platform rejuvenation		1				1
Crested blade		1	1			2
	7	13	2	0	9	31

LA Table 1: Core summary

There is, however a disparity between the size of the majority of the blades within the assemblage and the size of the cores. The complete cores have an average weight of only 22.6 g with a consistency between the various raw materials types with the cores of banded chert having an average weight of 23.6 g, dark grey chert 22.6 g and flint 21.8 g. The format and size of these cores would suggest a Late Mesolithic component to the assemblage.

In addition to the formal cores there are a further 22 irregularly worked lumps. It is noticeable that only two of these are of flint and one is of banded chert. The remainder are of dark grey chert. This

may be related to the differential knapping qualities of these raw material types, however, it may also be related to the proximity of the source of the dark grey chert making it economic to transport unworked raw materials to the site, whereas the banded chert was reduced off site. The worked lumps of dark grey chert also suggest that bands in the region of 50 mm thick were being exploited as two of the blocks retain cortex on two, opposing surfaces.

Tools

There are relatively few formal tools with only two microliths, five scrapers and a single notch making up the whole of the knapped tool assemblage. The two microliths (Plate 1.1 and 1.2) are both obliquely blunted points made on blade segments. SF 22 (Plate 1.1) was made on the distal segment of a blade and has retouch on the distal left edge, whilst SF 47 (Plate 1.2) has limited retouch in the proximal left area of the blade to form the point. There is a further blade segment with an area of inverse retouch along the proximal right side which may also be a microlith (Plate 1.3). All of these artefacts are of a size which would suggest an Early Mesolithic component to the assemblage.

The five scrapers (Plates 1.4 - 1.8) are disparate in their form and raw material use. SF 18 (Plate 1.4) was made on the remains of a worked out, single platform corm of dark grey chert. The size of this artefact would suggest Late Mesolithic associations for this artefact. SF 130 (Plate 1.5) is a side scraper with a hollow working edge made on a tertiary flake of flint. The retouch runs for approximately 17 mm along the proximal left edge of the flake and is notable for the regular pattern of removals. SF 166 (Plate 1.6) may have been collected from elsewhere. It is the only tool to have been rolled and patinated, a feature which is not represented elsewhere within the assemblage. It has a series of steep, scaled, removals along one side of this irregular fragment of flint which have been smoothed through rolling. On the underside of this artefact there is a triangular area of polish/wear, 25 mm x 9 mm in size, which has worn through the patination revealing the original colour of the flint. SF 215 (Plate 1.7) is an end scraper on a fragment of a large core face rejuvenation flake of dark grey chert. There is limited retouch on the distal end of this blank to convert the rejuvenation flake from an opposed platform core. The size of this blank would suggest Early Mesolithic associations for this artefact. The final scraper (SF 228, Plate 1.8) is an end scraper on the distal end of a blade of dark grey chert.

The only other formal knapped tool is a notch (Plate 1.9) on the proximal section of a tertiary blade of flint. The notch is 13 mm wide and is on the distal left side of the blank. The location of this notch would suggest this is a working area and not an attempt to truncate the blade. Notched implements are common in, but not exclusive to the later Neolithic where they are often assumed to be spokeshaves (Bamford 1985, 74).

In addition to the formal knapped tool a further 92 (29.3%) artefacts have edge damage which may be through use (Table 2). This is an unusually high number of artefacts, however the relatively fresh nature of most of the assemblage would suggest that this is use wear rather than post-depositional damage.

	Banded chert	Dark grey chert	Mid grey chert	Flint	Total
Secondary blade	1	1		1	3
Tertiary blade	17	11	3	7	38
Broken blade	10	8	3	4	25
Primary flake				1	1
Secondary flake	2	1		1	4
Tertiary flake	10	5	1	3	19
Broken flake				2	2
Total	40	26	7	19	92

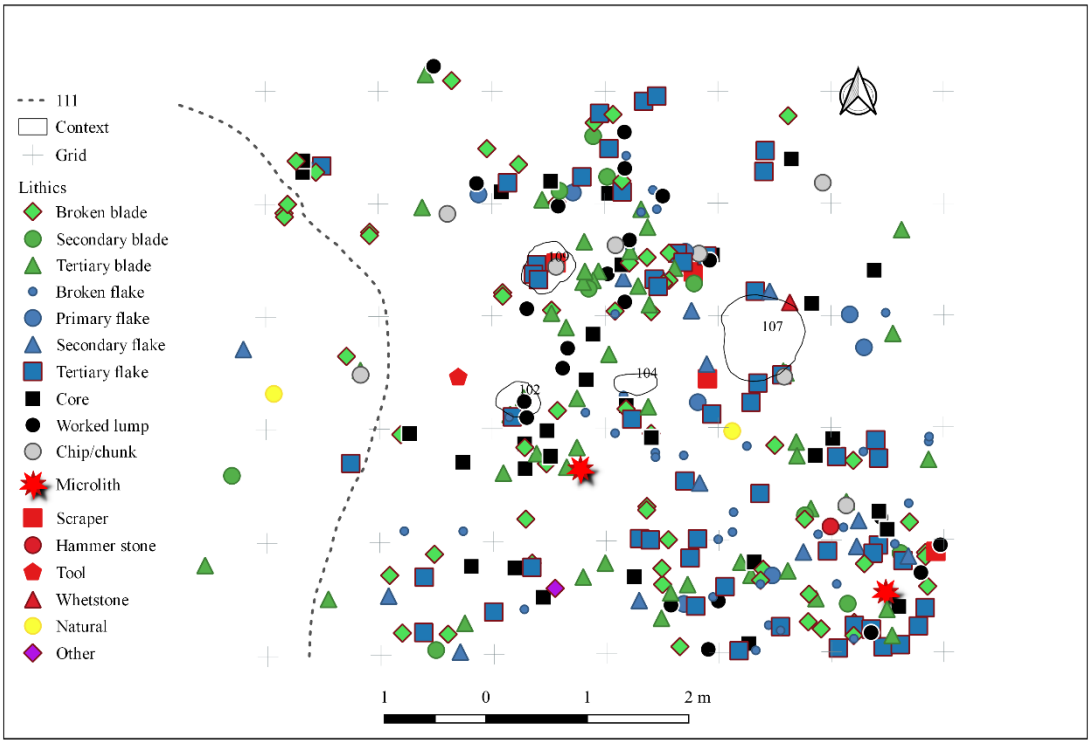
LA Table 2: Summary of artefacts with use damage

LA Plate 1: Knapped tools. 1: SF 22 obliquely blunted point, 2: SF 47 obliquely blunted point, 3: SF 78 mid tertiary blade with inverse retouch, 4: SF 18 multi-platform bladelet core reused as a scraper, 5: SF 130 hollow side scraper, 6: SF 166 Rolled and patinated scraper, 7: SF 215 end scraper, 8: SF 228 end scraper, 9: SF 159 notch.

In addition to the knapped tools there are a limited number of modified cobbles which were probably used. The clearest of the non-knapped tool is a columnar cobble (SF 267, Plate 2.1) which morphologically looks like a whetstone. Made on a cobble of fine, indurated, sandstone; this artefact has two, opposed, worn surfaces running the full length of the artefact. It has been broken at one end, but retains its naturally worn surface at the other end and on the two remaining sides. The form of this artefact would suggest a whetstone and it is therefore likely that it is post-Mesolithic in date and thus this artefact may be intrusive. SF139 (Plate 2.2) is a fragment of a water worn cobble of uncertain lithology with marked battering on one end. The size and morphology of this artefact suggest it is unlikely to have been for flint/chert knapping and was probably, more likely a pounder or maul rather than a hammerstone. There are also two other cobble fragments (SF 145 and 146) which have, at least one, worn/polished surfaces and have probably been used for grinding.

LA Plate 2: Non knapped tools. 1 SF 267, Possible whetstone. 2 SF 139, Hammerstone/maul

The distribution of artefacts types is shown in Figure 4. There does not appear to be a clear pattern within the distribution, however there is a slight suggestion of the flakes and flake debris tending to concentrate in the south eastern part of the distribution whilst the blades are more common in the norther sector. The distribution does, however, concentrate to the east of the boundary of Context 111. It could be argued that there is slight concentration in the south eastern corner of the distribution which includes one of the microliths (SF 22, Plate 1.1), a scraper (SF130, Plate 5), the hammerstone (SF139, Plate 2.2), a core reused as a scraper (SF 18, Plate 1.4), two other cores (SF 108 and 126) and three worked lumps (SF 107, 113 and 119), however this is somewhat speculative.



LA Figure 4: Distribution of artefact type

Discussion

The lithic assemblage from Castle Hill appears to be, largely, a mixed Mesolithic assemblage with both Early and Late Mesolithic components. The majority of the assemblage is likely to be Early Mesolithic in date, based on relatively large blades and particularly the use of chert as the main raw material type. There is some evidence for the selection of specific raw materials for particular artefact types. This is most marked with the use of the banded chert for the larger blades; however, it is uncertain whether this is a practical or ascetic choice. The microliths are clearly of Early Mesolithic types and it is likely that the scraper (SF 215, Plate 1.7) is of a similar date.

The argument for a Late Mesolithic phase of activity is largely based on the presence of a series of core and core debris of Late Mesolithic forms. The lack of other material which can be assigned to this period and the disparity between the blade sizes recorded and core sizes is of concern. There are some blades which are probably associated with the Late Mesolithic assemblage, but they are underrepresented. This may be explained by the lack of sieving undertaken on the site. For example, the sieved component of the assemblage from the multiperiod site of Llanfaethlu, on Anglesey, made up 51% of the total assemblage (Brooks forthcoming b). It would be expected that sieving would have recovered small, Late Mesolithic microliths together with the spalls and small fragments from knapping which are noticeable from their absence in the assemblage from Castle Hill.

Rhuddlan would appear to be a focus for Mesolithic activity. Major assemblages have been recorded from a series of archaeological interventions including the major excavations carried out between 1969 and 1973 (Quinnell *et al* 1994) and at Hendre (Manley and Healey 1982) in 1978. Indeed, the Castle Hill site can be regarded as an extension of Site E of Quinnell *et al* (1994) which was

immediately to the south. Site E contained over 8408 lithic artefacts (Berridge 1994, Table 10.1, 96), which was largely Early Mesolithic in nature (*ibid*, 95). There were, however, a limited number of Late Mesolithic microliths recovered as residual artefacts from the post-Mesolithic contexts on the site (*ibid* 109). The microliths from Site E, however, were dominated by obliquely blunted forms of Early Mesolithic types (*ibid* 107, 109) similar to those found at Castle Hill. Their density, however, was greater with a total of 127 microliths being found (*ibid* Table 10.9, 106) The assemblage at Site E was also dominated by the use of chert which makes up 90.4% of the total assemblage. This can be compared to 77.1% at Castle Hill, possibly suggesting the Castle Hill assemblage may be more mixed than that from Site E.

Some of the assemblage from Castle Hill is nearer to that recorded from the Late Mesolithic site of Hendre (Healey 1982, 34) some 200 m to the NE. This is particularly seen in the raw material use on the site where 87% of the assemblage was of chert and 13% was of flint. The assemblage at Hendre was 1182 artefacts and included 26 microliths of Late Mesolithic forms (*ibid* 35) together with a wide range of other tool types (ibid 24), however bulk sieving took place on the site which will have increased the recovery of small microliths.

Miles (1971-72, 3) suggests that the Bronze age phase at Site E contained quantities of pebbles used as grinders, polishing stones and hammerstones which she thought were being collected from the bed of the Clwyd. It would be tempting to relate the few cobbles within the assemblage from Castle Hill as part of the same phenomenon, particularly with finds SF 139, 145 and 146. These artefacts, however, are essentially undatable, being basic tool types, which could be produced at any time. Indeed, for example Mitchel (1881, 140) recorded the use of rounded stones, instead of irons, to smooth clothes in Shetland as late as the 1870's.

9.0 ENVIRONMENTAL SAMPLES

9.1 Bulk Soil Sample Wet-Sieving and Residue Sorting Methodology

By CR Archaeology

The soil samples were processed by double floatation to recover charcoal, charred plant remains and small finds of archaeological interest.

Washing and Sieving

In line with current Historic England guidelines the un-processed samples were individually placed in a floatation tank in a 501Jm nylon mesh and washed with circulating water, floating material was sieved from run-off and collected in a 2501Jm mesh (flot).

The residue remaining in the 501Jm mesh was passed through a 10mm sieve, to separate the coarse residue from the fine.

All residues and 'flots' were thoroughly air dried.

This process was then repeated with the fine residues to retrieve the optimum amount of charcoal and charred plants remains from the samples.

Sorting

The coarse residues were checked by eye for any archaeologically significant material. All recovered material was grouped by material or typology and stored in plastic finds bags marked with project, context and sample numbers. 100% of the coarse residues were checked.

The fine residues were checked for macroscopic artefacts and charred plant remains by eye and scanned with a powerful neodymium magnet for ferrous material related to metalworking. All recovered material was grouped by material or typology and stored in plastic finds bags marked with project, context and sample numbers.100% of the fine residues were checked.

9.2 Radiocarbon dating

By BETA Analytic

9.2.1 Methodology

Samples were received and cross-checked for accuracy between sample containers and documentation. They were logged into the system with bar coding for tracking of all chemical steps with regards to date, time and technician. This bar-coding is used in the event of an inquiry so we can track the movement of each sample through each chemical step. Pretreatment of the charcoal was as follows.

Each sample was first visually inspected for size and durability. They were then rinsed in de-ionized water and sieved to isolate the charcoal from adhering sediments and fibrous material. They were then gently crushed while wet to 1-2mm particles, sieved again and allowed to saturate in the de-

ionized water while heating to 70C. 1 N HCl was then applied at 70C for 2 hours. After rinsing to neutral, 1-2% alkali was then applied (50/50 wt NaOH) at 70C until no color change was observed. After rinsing to neutral, a final hot acid wash (0.5 HCl) was applied at 70 C for 30 minutes to ensure the alkali was neutralized and once again rinsed to neutral. During this process any remaining roots and organic debris were eliminated. The samples were then dried at 100C for 12-24 hours, weighed, microscopically examined for cleanliness, uniformity and where applicable appropriately sub-sampled for the measurements.

Each sample was then separately placed into a closed chemistry line which had been purged of any CO2 to a level below 10e-15 atoms (background levels). The line was filled with 100% oxygen and ignited at 900+C to combust the sample carbon to CO2. The CO2 was dried and introduced into a reaction vessel containing an aliquot of cobalt metal catalyst. Hydrogen was introduced such that when the cocktail was heated to 500C, the CO2 cracked to carbon (graphite). The graphite was pressed into a target for measurement in an accelerator mass spectrometer (AMS). The AMS was calibrated to provide an accurate ratio of the 14C/13C ratio between the sample graphite and a modern reference (NIST-4990C, Oxalic acid). Quality assurance samples were reacted simultaneously in the chemistry lab and measured simultaneously in the AMS. The analytical result was obtained as a fraction of the value of modern reference, corrected for isotopic fractionation using 13C/12C (d13C) and radiocarbon age calculated according to the conventions cited in Radiocarbon, Volume 19, Number 3, 1977. The QA samples were checked for accuracy and observed to fall within expectations for the laboratory to accept and report the sample results. Acceptance defined as being with 2 sigma of the known value, based on our total laboratory error known to be within 2 sigma.
Characteristics of the equipment.

Chemistry: Custom vacuum lines for collection and transfer of CO2 to produce graphite.

AMS: Highly customized 250Kev NEC single stage particle accelerators – 4 on-site

IRMS: Thermo Delta-Plus isotope ratio mass spectrometers – 4 on site.

Accuracy of final results: Routinely within 1 sigma of known reference value. Total laboratory known to be within 2 sigma of known reference value.

Precision: AMS +/- 0.001 – 0.004 fraction modern; d13C +/- 0.3 o/oo, and where applicable; d15N +/- 0.5 o/oo, d18O +/- 0.3 o/oo, dD +/- 2 o/oo.

9.2.2 Results of the Radiocarbon dating

Sample Data	Measured Radiocarbon Age	Isotopes Results o/oo	Conventional Radiocarbon Age(*)
Beta – 581473 SAMPLE: A0273.1 Sample 06. Context **(105)** ANALYSIS: AMS Standard Delivery ANALYSED MATERIAL: NUTSHELL MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : (79% - Cal BC 8492 to 8307 (Cal BP 10441 to 10256); (16.4% - Cal BC 8547 to 8506 (Cal BP 10496 to 10455)	9280 +/- 30 BP	d13C= -28.7	9220 +/- 30 BP
Beta - 581474 SAMPLE: A0273.1 Sample 02. Context **(103)** ANALYSIS: AMS-Standard delivery ANALYSED MATERIAL: Charred Material MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : (89.30% - Cal BC 8571 to 8342 (Cal BP 10520 to 10291); (6.10% - Cal BC 8616 to 8582 (Cal BP 10565 to 10531)	9270 +/- 30 BP	d13C= -25.7	9260 +/- 30 BP
Beta - 581475 SAMPLE: A0273.1 Sample 03. Context **(110)** ANALYSIS: AMS-Standard delivery ANALYSED MATERIAL: NUTSHELL MATERIAL/PRETREATMENT: (charred material): acid/alkali/acid	9250 +/- 30 BP	d13C= -23.2	9280 +/- 30 BP

2 SIGMA CALIBRATION : 90.50% - Cal BC 8625 to 8420 (Cal BP 10574 to 10369); (2.60% - Cal BC 8371 to 8354 (Cal BP 10320 to 10303) ; (2.20% - Cal BC 8407 to 8391 (Cal BP 10356 to 10340)			

10.0 RESULTS OF THE ARCHAEOLOGICAL WATCHING BRIEF

10.1 The deposits at Castle Hill, Hylas Lane, Rhuddlan (figures 1-7; plates 1-22b)

The site was located on Castle Hill, Hylas Lane approximately 44m east of the walls of Rhuddlan Castle. The plot intended for development was stripped using a tracked mechanical excavator and began at the southern end of the site. The soil reduction cut through 0.45m of soft, black grey, silt and clay topsoil (114) with occasional modern inclusions including, plastic, aluminium, slate and concrete. This was an imported topsoil covering the entire site which was shallower to the south tapering to a thicker deposit at the northern end near Hylas Lane. This topsoil lay above 0.72m of firm mid-red brown, silt-clay-sand, subsoil (115) characterised by frequent root activity, occasional small sub-rounded pebble inclusions and occasional post-mediaeval ceramic fragments. This deposit appeared to be a second imported soil. The contents and depth of the soil deposits in this area suggested that they had been built up successively over the last three hundred years.

Underlying this subsoil at the southern end of the site was a defined orange sandy plateau; >9.70 meters long by >9.50m wide consisting of a very loose, light orange brown, sandy loess (106) with occasional subrounded small cobbles and abundant small angular/sub angular flint and chert flakes/blades/cores. Furthermore the deposit can be characterised as having occasional tree throws and abundant bioturbation. This deposit was no greater than 0.10m in depth and overlay a second sandy deposit (111).

This sandy deposit changed in its stone content from west to east and the orange sand (106) represented a windblown sand which masked the Mesolithic levels of (111) and (112). The orange sand contained worked lithics but the sandy deposits beneath were covered with both chert and flint debitage, blades and cores.

Towards the southern end of the site the sandy deposit below the loess (106) was a 0.17m deep, quite loose, mid-orange brown, stony sand (111) with very frequent (>70%) very small sub-rounded pebble inclusions. To the north and west end of the site the sand was 0.19m deep, soft, dark orange brown, sand (112) with very frequent bioturbation and root action. Beneath these deposits was a natural sand which was very soft and bright yellow (113) and was >0.40m in depth. However it was into the dark orange-brown sand (112) above that three pits/post holes had been excavated; [102], [104] & [109].

The southernmost pit/posthole [102] appeared ovoid in plan, it measured 0.37 m long by 0.31 m wide by 0.33 m in depth and was aligned east to west judging by the undercut of the feature to the west. The sides of the feature were steep to the north, east and south. This was the cut of a probable stake or posthole which appeared to incline eastward. The single fill of this post hole (103) consisted of a soft, dark black grey silt-sand, with occasional charcoal fleck inclusions - The fill of this posthole was subsequently dated to 9260 +\- 30 BP (7260 BC).

The eastern most pit/posthole [104] appeared ovoid in plan and measured 0.40 m long by 0.26 m wide by 0.37 m in depth and was orientated east to west. The sides of the cuts were vertical to the north and east and were undercut to the south and west - suggesting that it was inclined to the northeast. The single fill of this pit/posthole (105) was a soft, dark black grey silt-sand, with a hazelnut shell, and charcoal fleck inclusions as well as a fragment of worked chert - the fill of this pit/posthole was subsequently dated to 9220 +\- BP (7220 BC).

The northernmost pit/posthole [109] was circular in plan and measured 0.51 m long by 0.51 m wide by 0.45 m deep and was aligned northwest to southeast. The sides were steep to the east but more gradual to the north but were undercut to the south - suggesting that the inclination of any post would have been to the north-west. The single fill of this pit/post hole (110) was a very soft, mid red grey silt-sand, with occasional charcoal flex and very occasional chert and flint flakes - The fill of this pit/posthole was subsequently dated to 9280+/- 30 BP (7280 BC).

To the north of the orange sand plateau was a large linear cut [118] which was aligned northwest to southeast. This cut had a gradual slope to the south which became steeper towards the north and it measured >11.90m long by >10.10m wide and extended to a depth 3.00m. This represented a large sand extraction cut extending across the site and a significant slope had been formed across the site falling from south to north towards Hylas Lane where the lowest point of the site was (47.53m OD) - The sands (106), (111) and (112) appear to have been removed or extracted revealing yellow sand (113).

Just to the south of centre within the site boundary and emanating from its eastern section there was a large sub rounded cut [101] with very steep sides and a concave base. This measured >6.40m long by 4.06m wide by 1.05m deep and was aligned east to west. This had been cut into the yellow sand (113) and appears to have been vertically truncated and overlain by the subsoil (115). This cut had been backfilled with a single fill which was a quite firm, dark black and grey silt-clay (119) with frequent redbrick and slate fragments. This appeared to be a post-medieval ditch which had been backfilled with soil and coarse building material.

To the immediate north and down slope of the post-medieval ditch were two further modern interventions into the bright yellow sand (113) and a further modern invention near the western boundary of the site. These appeared as small pits which have been backfilled with red brick and slate fragments.

At the northern end of the site the stratigraphy was altered by the addition of a 0.45 m, hard/friable, mid-grey brown silt- sand (116) which appears to be a primary backfilling event of the sand extraction cut [118] this deposit had very occasional small sub rounded cobble inclusions, occasional weathered red brick fragments, occasional post-mediaeval pot fragments and frequent root action. Furthermore, this deposit underlay the imported subsoil (115). Beneath the hard, silt-sand (116) was a >0.80m deep, quite soft, mid-orange brown, fine sand (117) with occasional large subrounded pebble inclusions, rare animal bone and a single piece of *miscellaneous unsourced medieval white ware* (13th/15th Cen) which may represent a medieval level.

In the north-western corner the site stratigraphy once more differs in that beneath the topsoil (114) there appears to have been a secondary backfilling event into the sand extraction cut [118]. This deposit was greater than 1.15 m in depth, was a malleable or soft, mid-grey brown sand-clay-silt (120) with frequent sub-angular and sub-rounded small cobble inclusions and a single piece of clear glass. The presence of this deposit suggests that there have been multiple episodes of backfilling over time across the length of the sand extraction cut [118].

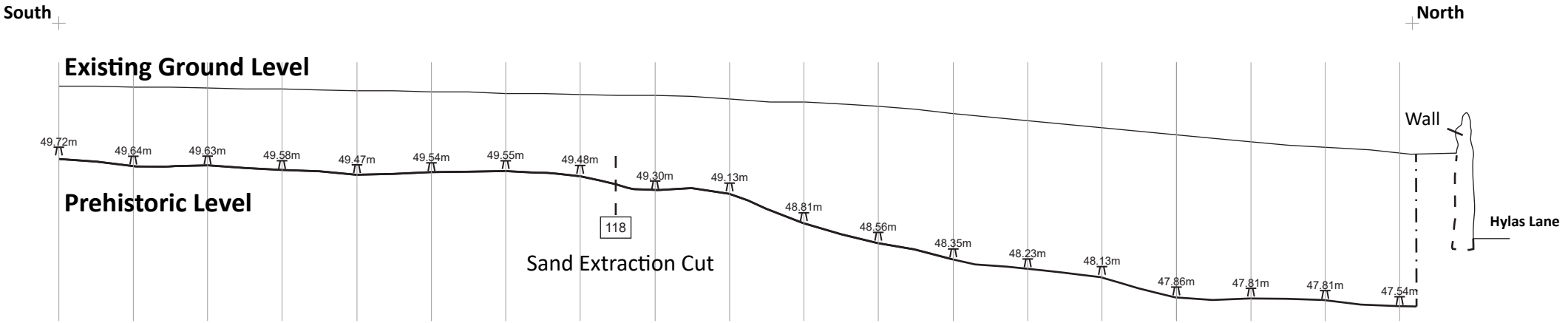


Figure 04: Profile of ground levels site at Castle Hill, Hylas Lane, Rhuddlan Denbighshire, LL18 5AG. Scale 1:75 at A4.

Aeon Archaeology
Richard Cooke BA MA MCIfA
Obsidian Offices, Chantry Court,
Chester CH1 4QN
Tel: 07866925393 / 01244 531585
www.aeonarchaeology.co.uk

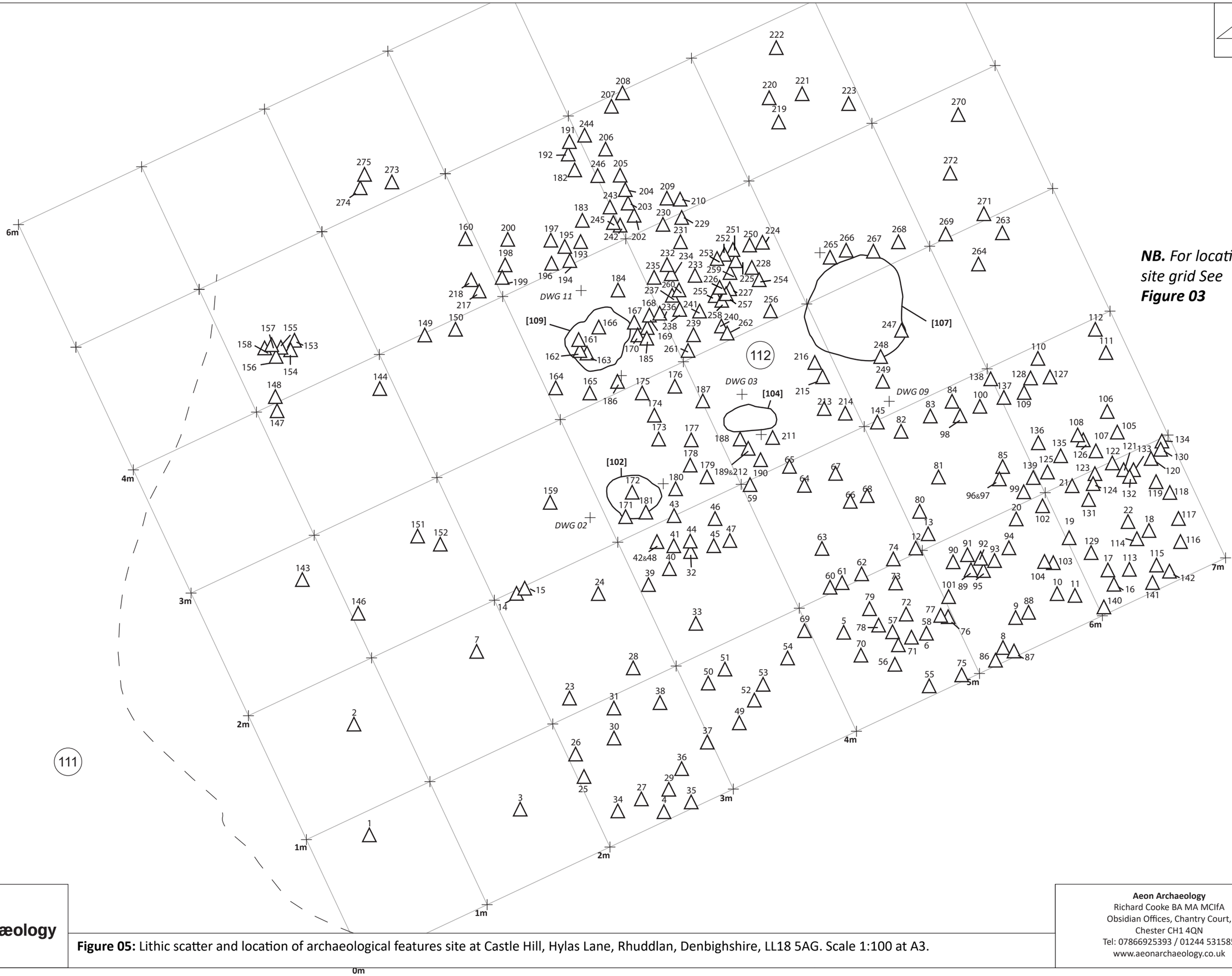


Figure 05: Lithic scatter and location of archaeological features site at Castle Hill, Hylas Lane, Rhuddlan, Denbighshire, LL18 5AG. Scale 1:100 at A3.

Aeon Archaeology
Richard Cooke BA MA MCIfA
Obsidian Offices, Chantry Court,
Chester CH1 4QN
Tel: 07866925393 / 01244 531585
www.aeonarchaeology.co.uk

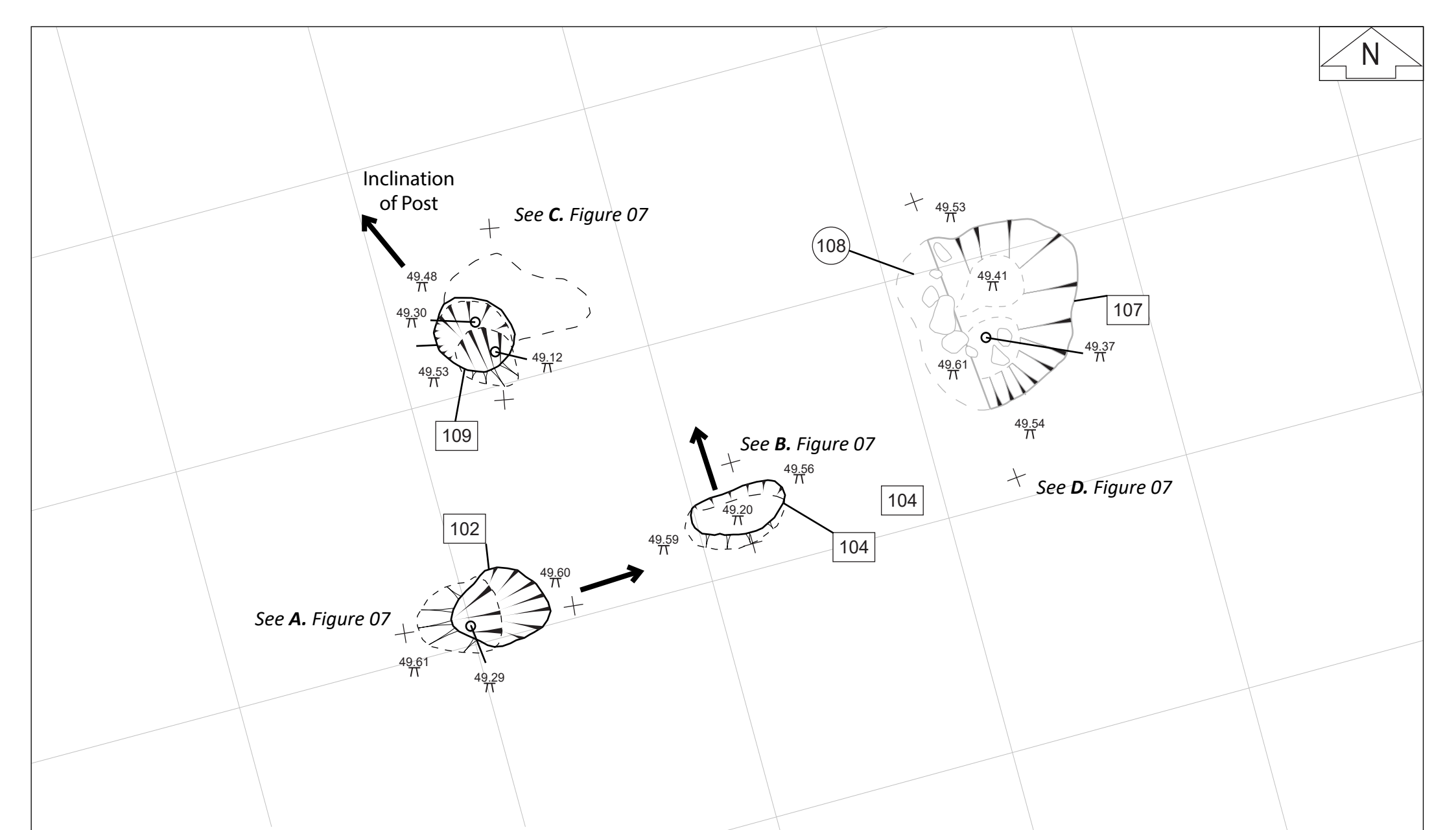
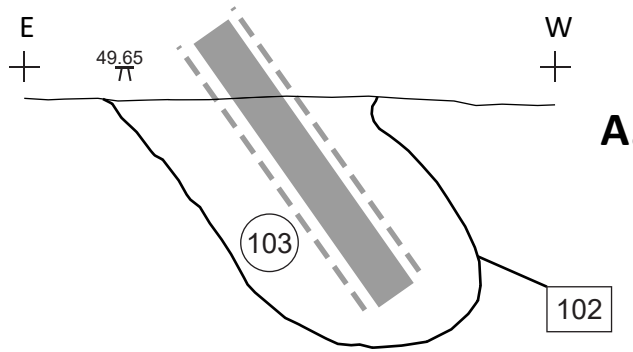
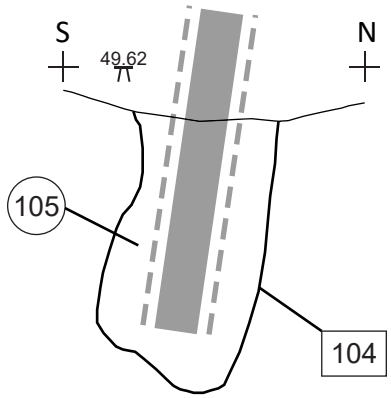


Figure 06: Plan showing post holes [102, [104], [109] and tree bole [107] Castle Hill, Hylas Lane, Rhuddlan Denbighshire, LL18 5AG. Scale 1:20 at A4.

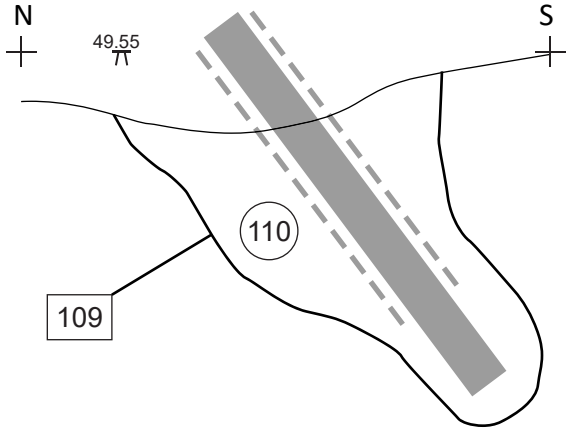
Aeon Archaeology
Richard Cooke BA MA MCIfA
Obsidian Offices, Chantry Court,
Chester CH1 4QN
Tel: 07866925393 / 01244 531585
www.aeonarchaeology.co.uk



A.



B.

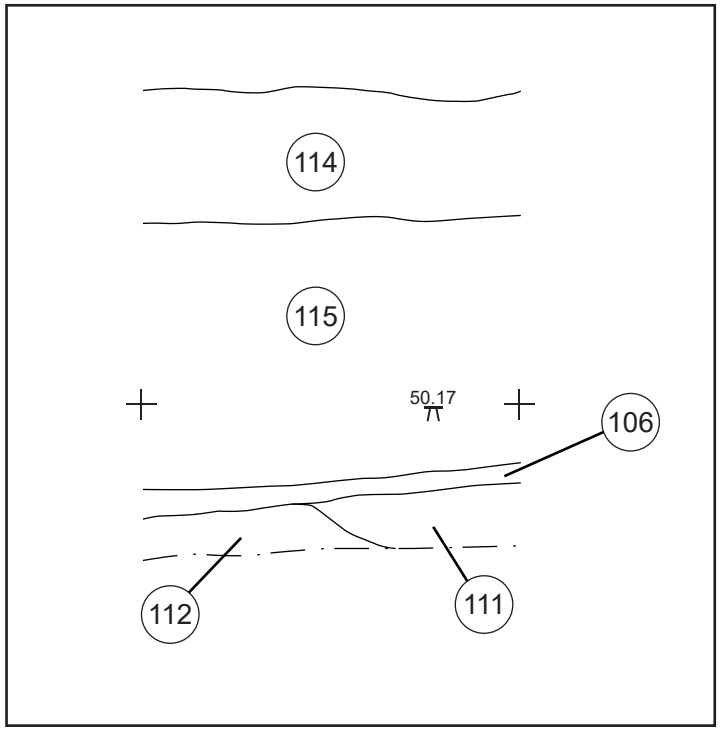


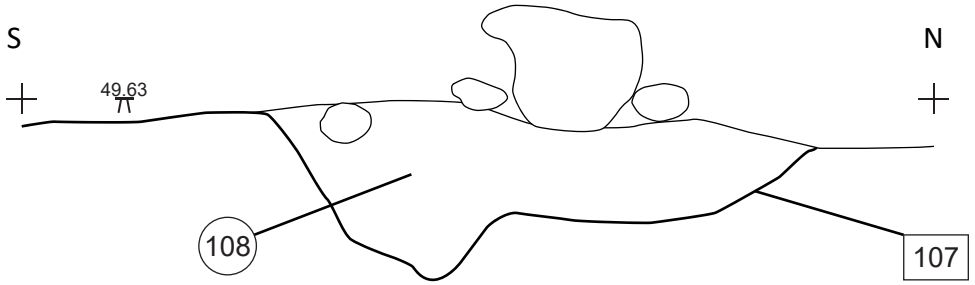
C.

NB. *The grey lines represent timber posts within the post holes and simulate the inclination of posts within Post Holes.*

See Figure 06. for simulated orientation of posts in Plan.

Representative Section at Northern end of site





D.

Figure 07: Archaeological sections (A. - D.) of post holes [102], [104], [109] and tree bole [107] , with representative section showing statigraphy of area when viewed from the north Castle Hill, Hylas Lane, Rhuddlan, Denbighshire, LL18 5AG. Scale 1:10 at A4.

Aeon Archaeology
Richard Cooke BA MA MCIfA
Obsidian Offices, Chantry Court,
Chester CH1 4QN
Tel: 07866925393 / 01244 531585
www.aeonarchaeology.co.uk

Plate 01: Pre excavation shot of plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the north - no scale

Plate 02: Pre excavation shot of plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the south - no scale

Plate 03: Post excavation shot of plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the south - 2x 1.00m scale

Plate 04: Post excavation shot of plot adjacent to Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the north - 2x 1.00m scale

Plate 05: Site grid at the southern end of site covering lithic scatter, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the northeast - no scale

Plate 06: Working shot on site grid covering lithic scatter, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the northeast - no scale

Plate 07: Working shot on site grid covering lithic scatter, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the southeast - no scale

Plate 08: Example square within site grid covering lithic scatter, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the west - 0.50m

Plate 09: Post excavation shot of site grid at the southern end of site, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the northwest - 2x 1.00m scale

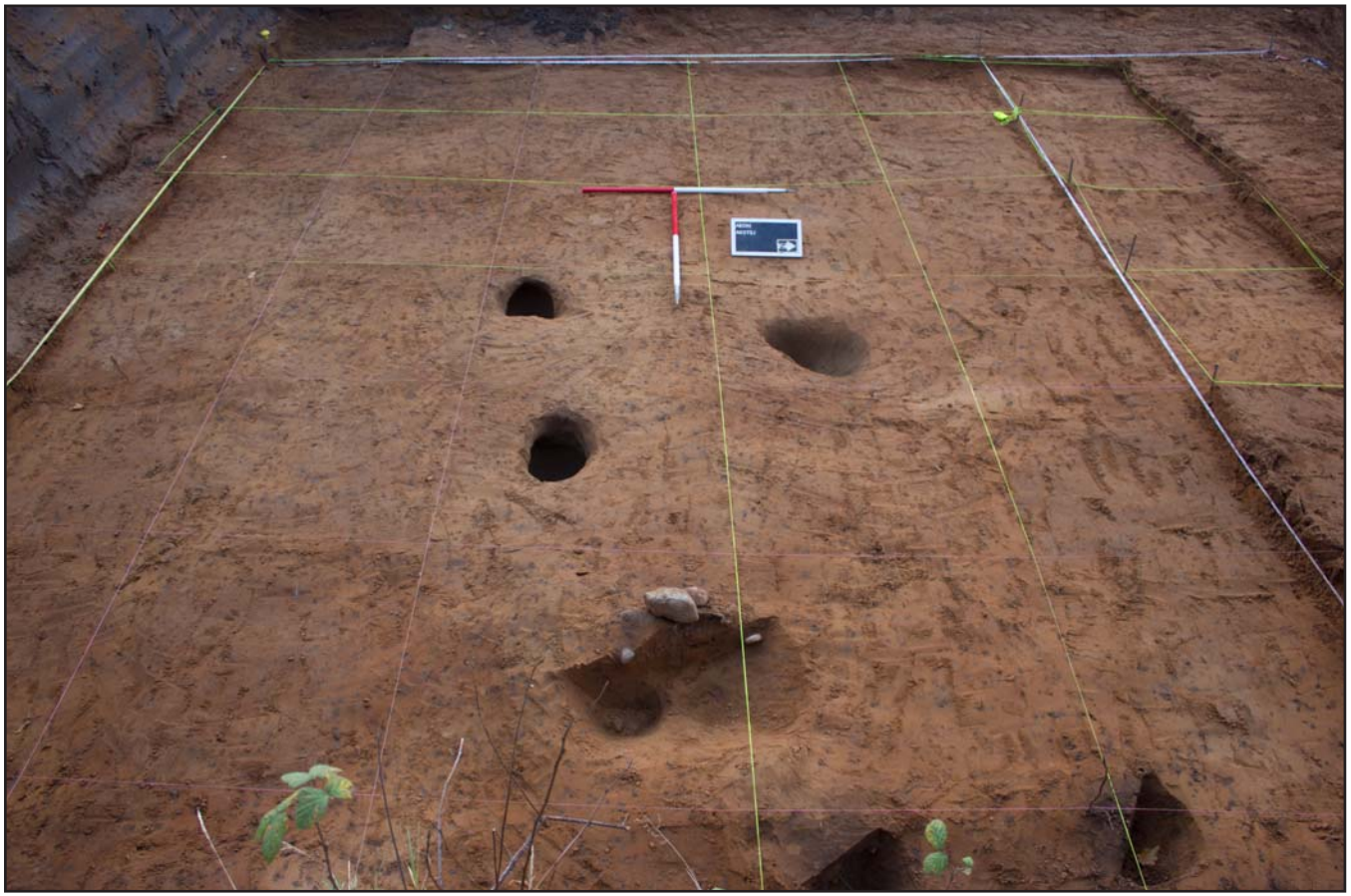


Plate 10: Post excavation shot of site grid at the southern end of site, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 2x 1.00m scale

Plate 11: Post hole [102] in plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 0.50m scale

Plate 12: Post hole [102] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 0.50m scale

Plate 13: Post hole [104] in plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the north - 0.50m scale

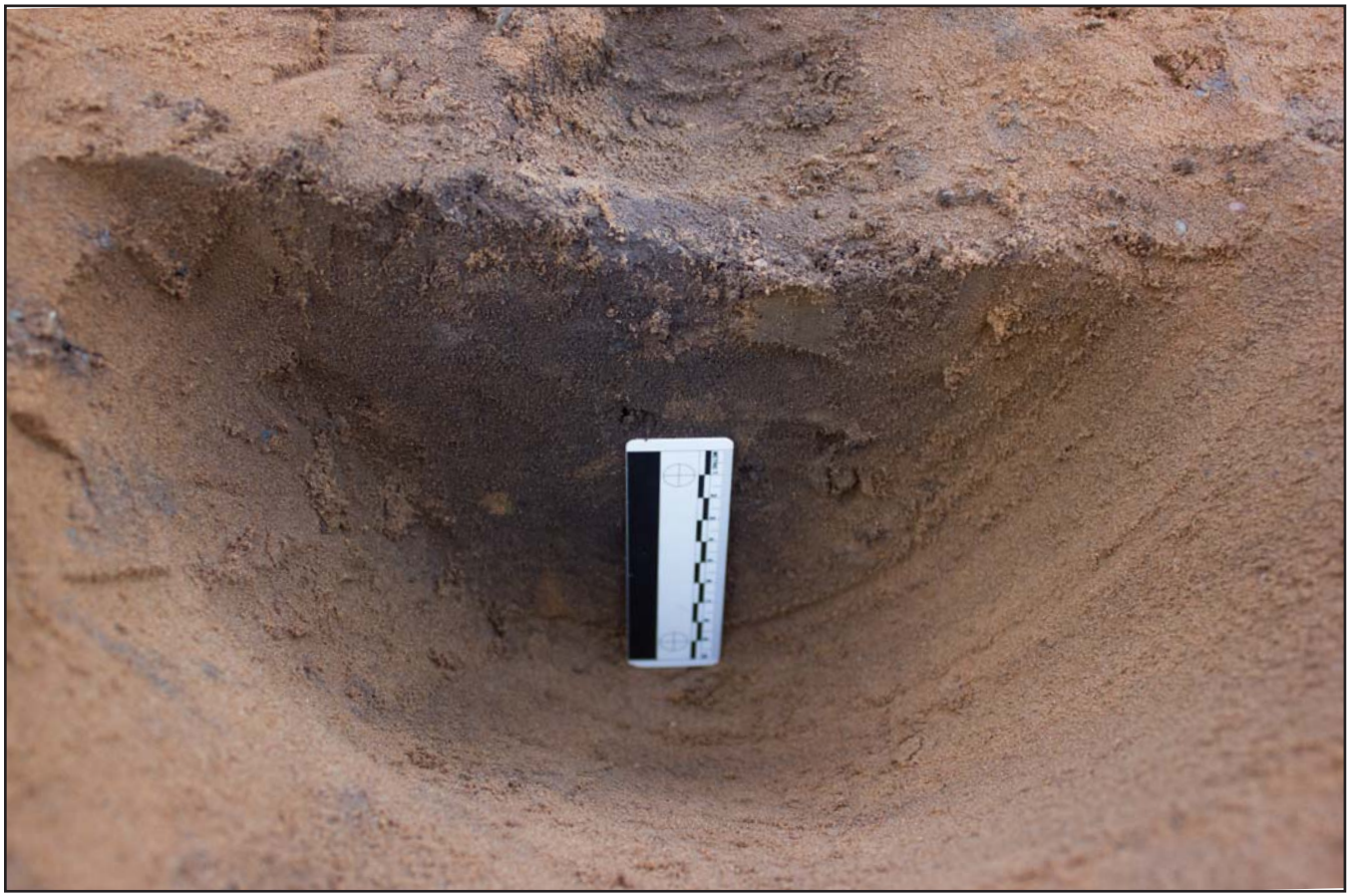


Plate 14: Post hole [104] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the north - 0.10m scale

Plate 15: Post hole [109] in plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the west - 0.50m scale

Plate 16: Post hole [109] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the west - 0.50m scale

Plate 17: Post hole [107] plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the northeast - 0.50m scale

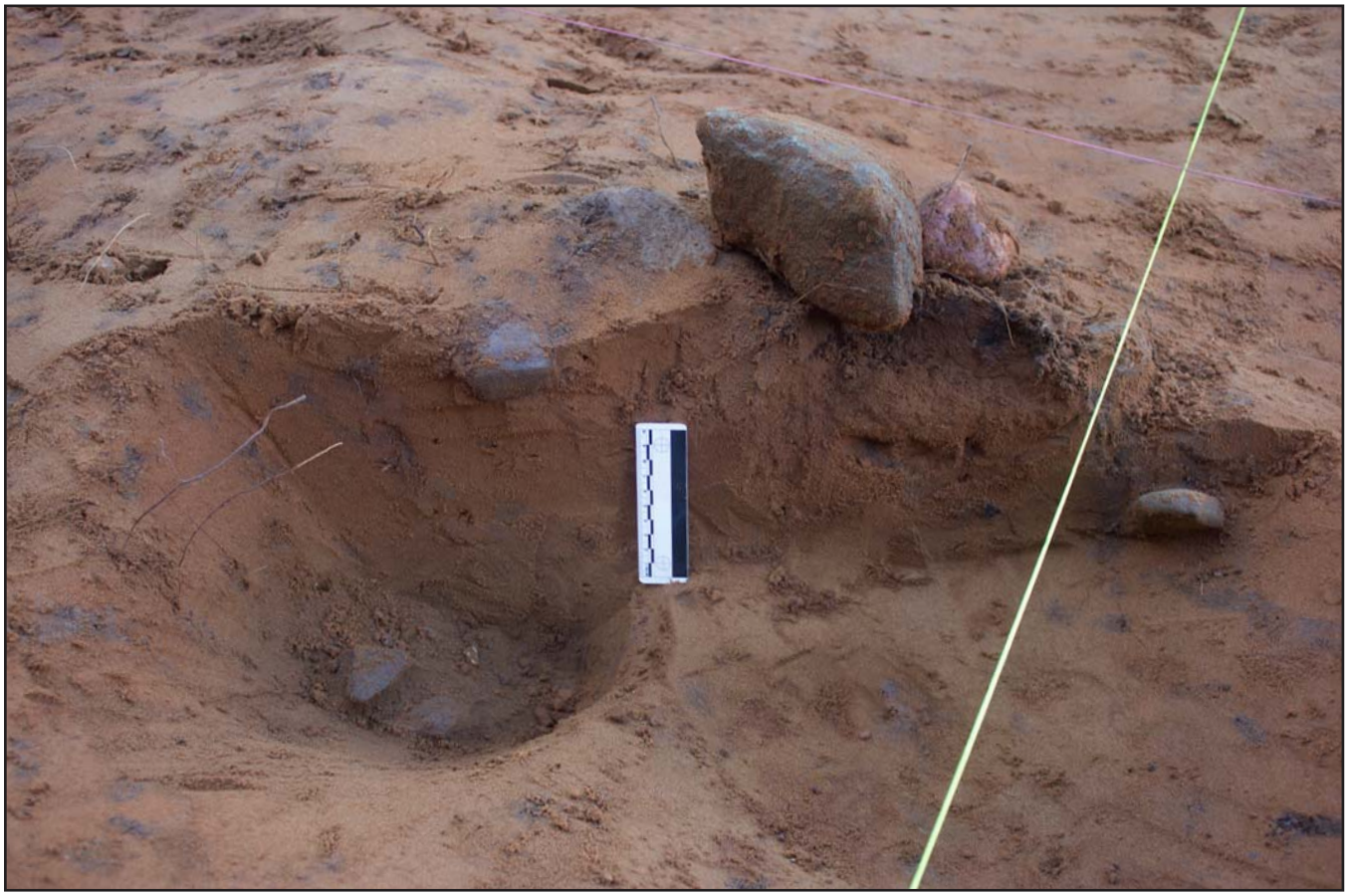


Plate 18: Post hole [107] in section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the southwest- 0.10m scale

Plate 19: Modern intervention [101] in plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the southwest- 2x 1.00m scale

Plate 19a: Modern intervention [101] in plan, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the southwest- 2x 1.00m scale

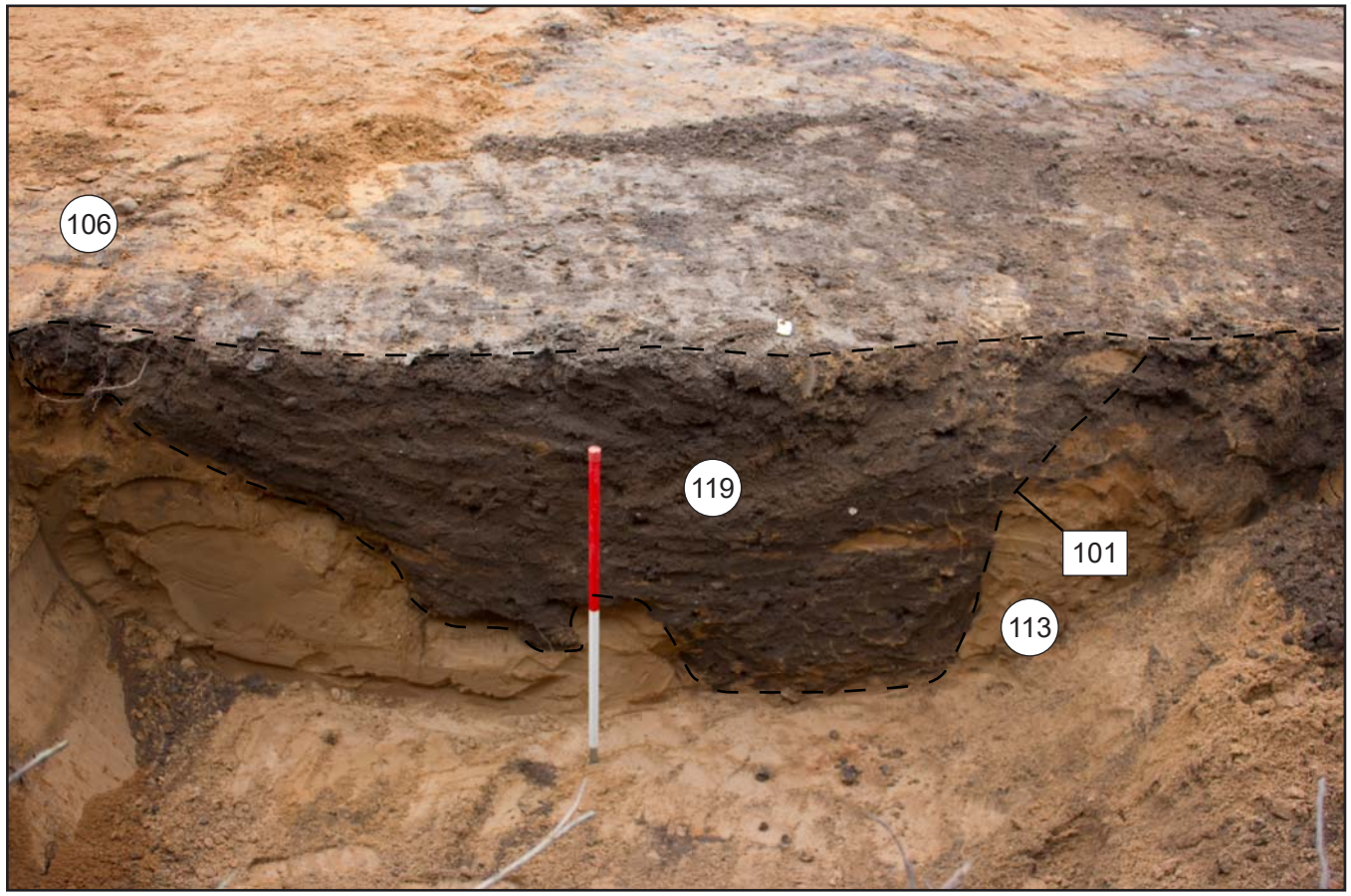


Plate 19b: Interpretation of [101] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 2.00m scale

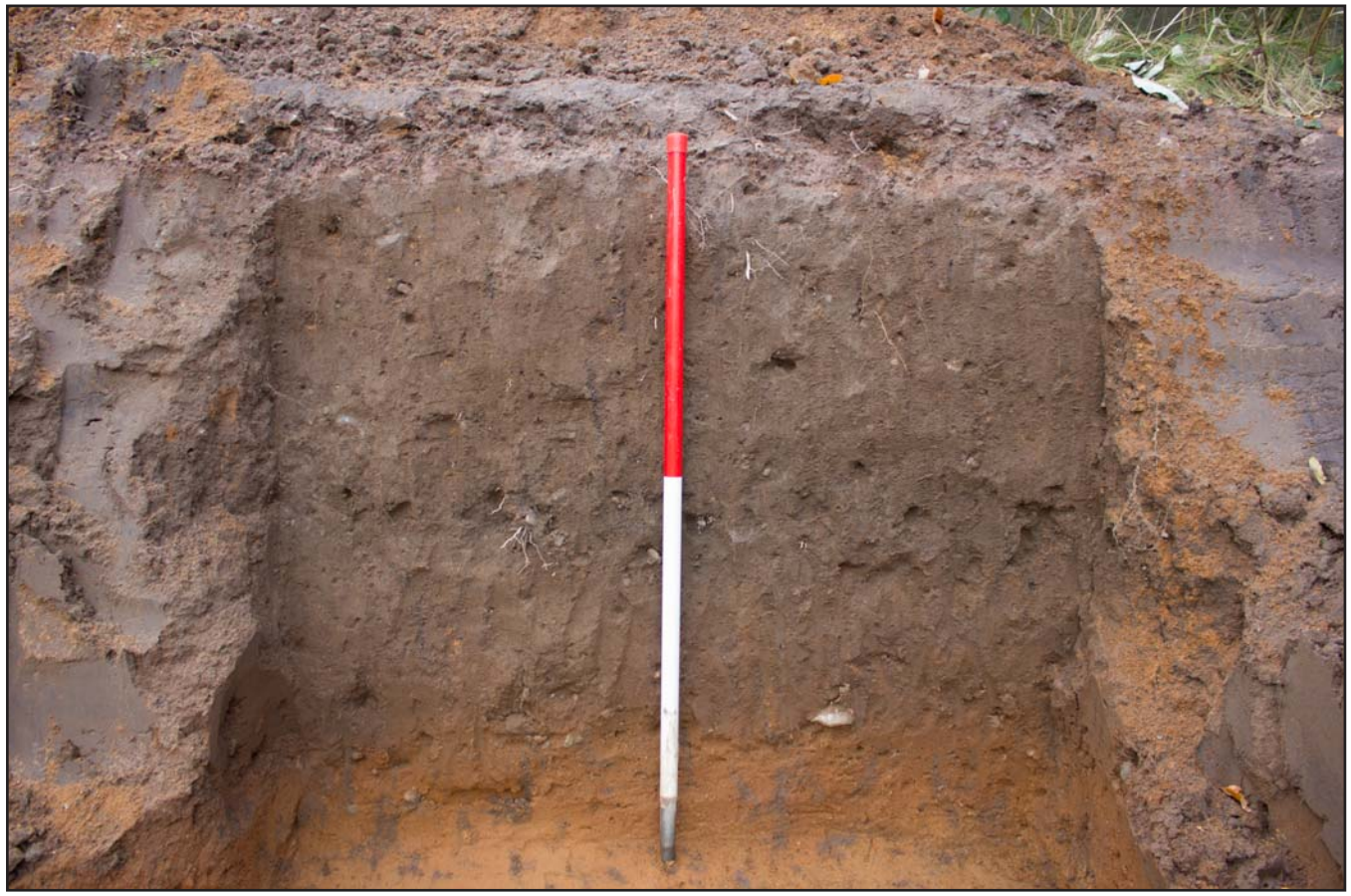


Plate 20a: Modern intervention [101] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 2.00m scale

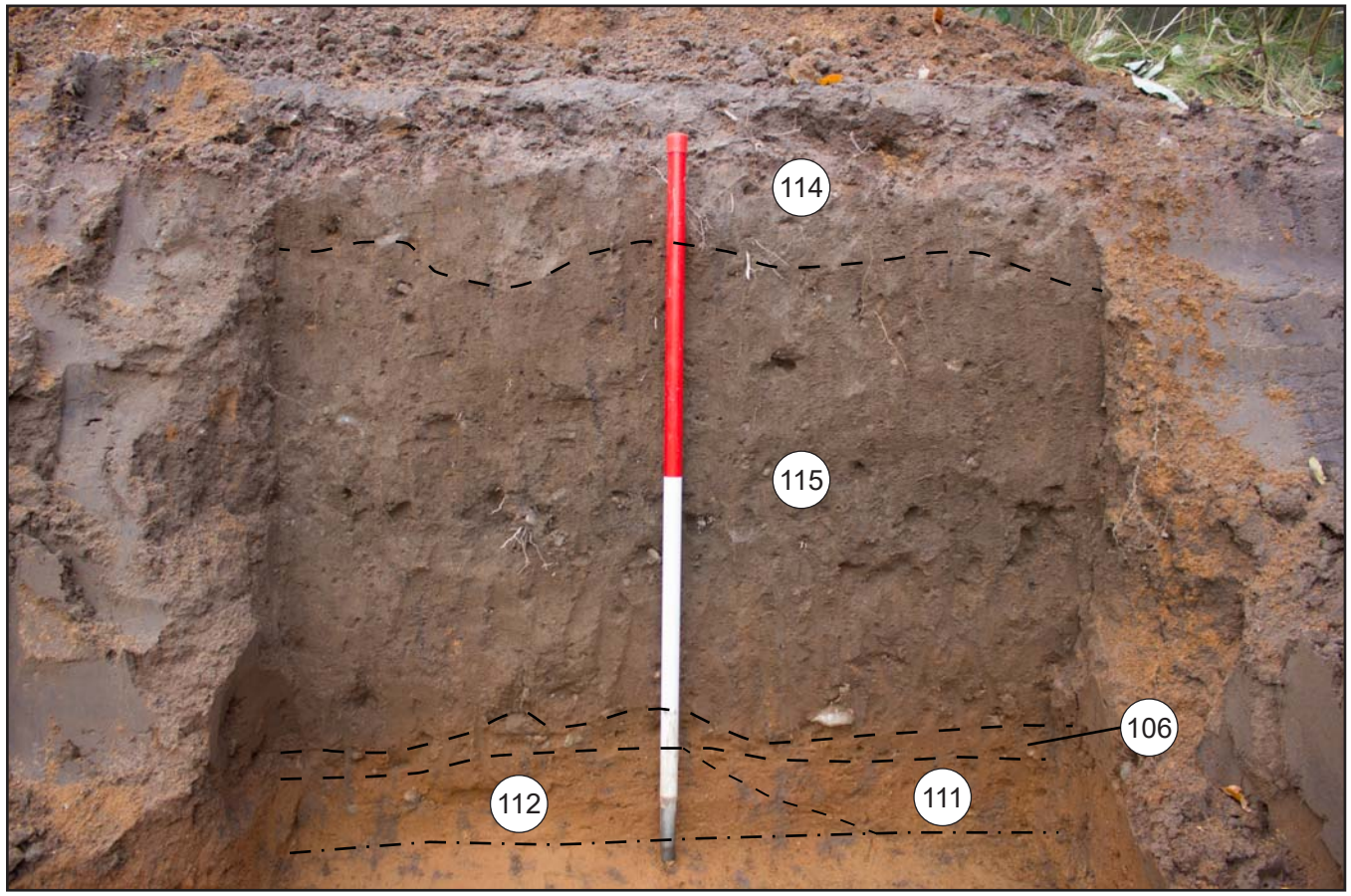


Plate 20b: Interpretation of [101] section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 2.00m scale

Plate 21a: West facing section showing sand excavation cut [118], Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the west - 2.00m scale

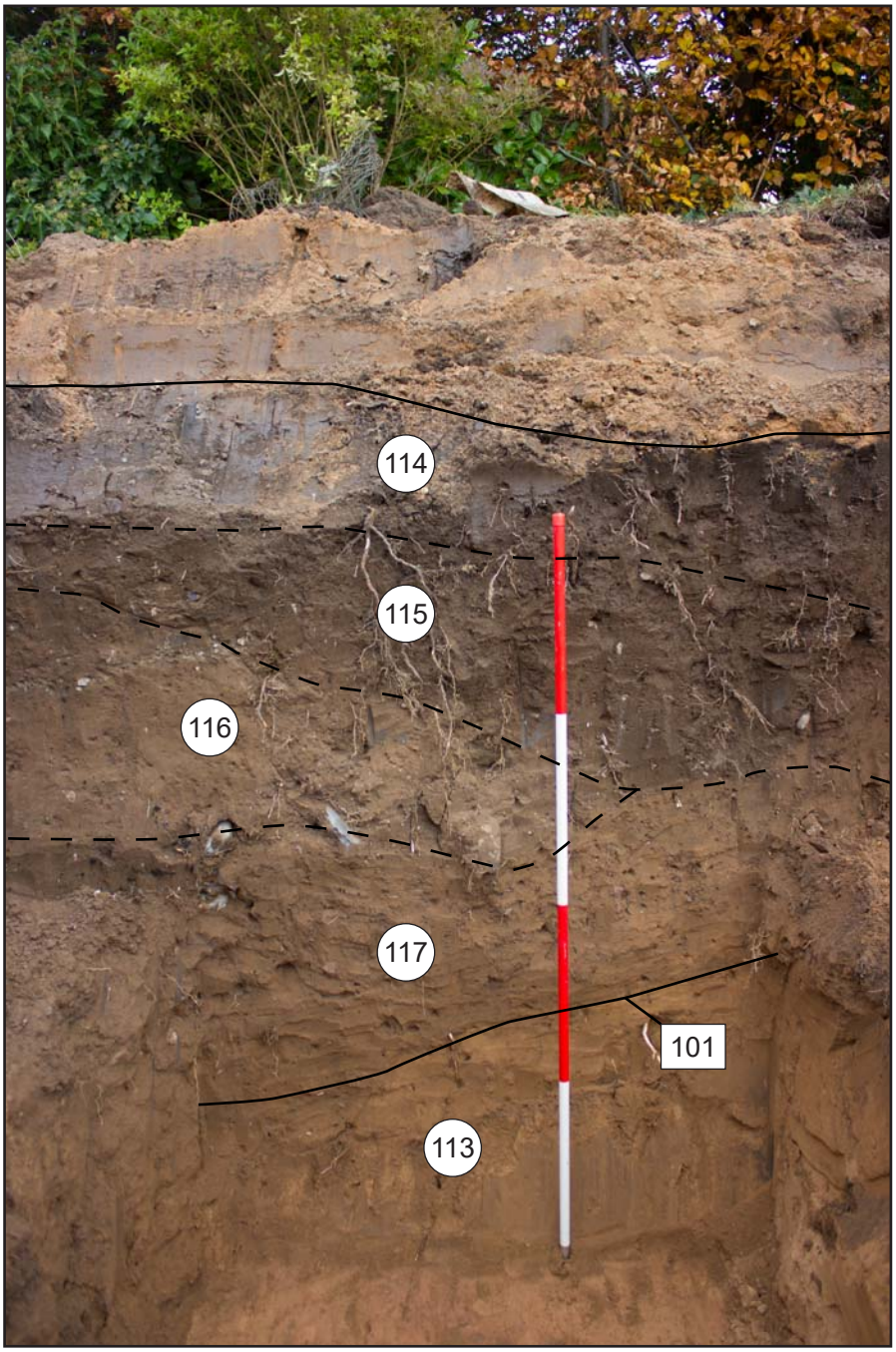


Plate 21b: Interpretation of west facing section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the south - 1.00m scale

Plate 22a: East facing section showing sand excavation cut [118], Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 1.00m scale

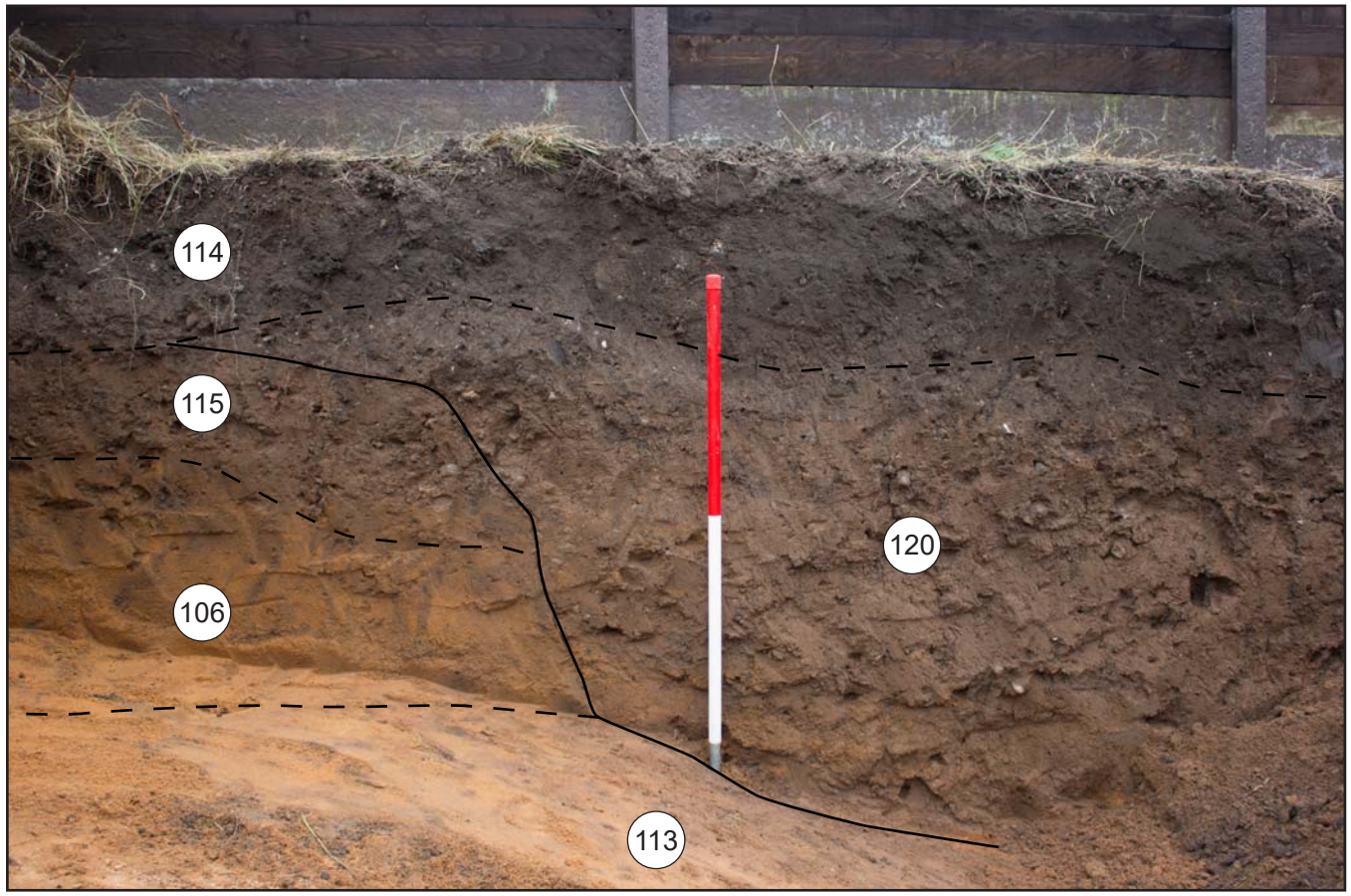


Plate 22b: Interpretation of east facing section, Castle Hill, Hylas Lane, Rhuddlan, Denbighshire - from the east - 1.00m scale

10.2 Discussions

Pits or Postholes

There remains some debate as to whether the features found at Castle Hill represent a Mesolithic pit group or whether they are a collection of postholes or stakeholes. There were no visible post pipes or packing stones within these features, however given the sandy geology into which they were cut it is possible that the definition of a post pipe might be bleached or washed out by successive water drainage events since the middle Mesolithic. In addition, there was also very little material recovered from the features that may have helped with their interpretation as pits – only single nutshells were found within the fills of [104] & [109].

The inclination at which these features were cut into the sand does suggest that they might be representative of staked timbers which could indicate these were postholes; if they are postholes then they form no discernible structure as they incline in different directions and more likely represent individual upright inclined posts. Given the close cluster of calibrated radiocarbon dates recovered from the fills of these features, it is tempting to suggest they were contemporaneous or at least closely sequential over a 60-year period:

[102] – (103) - 9260 +/- 30 BP
[104] – (105) - 9220 +/- 30 BP
[109] – (110) - 9280 +/- 30 BP

These upright, non-structural posts could have been used for a utilitarian purpose such as butchery or in the preparation of animal skins for drying with the use of lithic blades and scrapers. When considered alongside the lithic analysis (see Brooks 2021, *Section 8.0*) which suggests that the lithics showed minimal evidence of controlled knapping and that their condition indicated use-ware as opposed to post depositional damage, it is possible that this area was utilised as a Mesolithic work site comprising of one or more upright timbers surrounded by discarded worn lithic tools.

Regional & National Context

The traditional view of Mesolithic Britain is of nomadic groups of hunter gatherers roaming the landscape, this is now being replaced with a more complex picture of seasonal occupation or permanent/semi-permanent occupation (Milner et al 2016). The British environment following the Younger Dryas climactic event is believed to have been full of resources which could have been exploited by Mesolithic populations, however it is now believed that a rising population combined with increased technological proficiency eventually led to the local exhaustion of many of these resources (Schulting & Richards 2002). For instance the remains of a Mesolithic elk found caught in a bog at Poulton-le-Fylde in Lancashire shows that it had been wounded by hunters and escaped on three occasions, indicating a '*hit or miss'* hunting strategy being employed during the Mesolithic (Hallam et al 1973). The continuity of Mesolithic communities into Neolithic societies has been the subject of some debate with a few Neolithic monuments (Barrow and Cairns) appearing to overlie Mesolithic scatters particularly in North Wales (Lynch 1993) but little continuity can be demonstrated beyond that. Farming of crops and domestic animals was adopted in Britain around 4500 BC, at least partly because of the need for reliable food sources as hunting opportunities diminished.

As discussed in the Archaeological Background (*Section 5.0*) of this report there are a collection of Mesolithic sites which are distributed across the North Wales region and these are found in caves or rock shelters, coastal areas and on hill tops. The dates that were returned for Castle Hill place it within the middle of the Mesolithic period - with dates that span (9220-9280 +/- 30 cal BP) across the three excavated features: these are of a similar age to Wales' earliest known Mesolithic site at Nab Head, Pembrokeshire (9210 +/- 80 cal BP) (Hedges et al. 1989, 217). There are currently only three other published calibrated radiocarbon Mesolithic dates from the North Wales region:

Castle Hill, Hylas Lane	(9220-9280 cal BP)	(Cooke & Dean 2020)
Penrhosgarnedd, Bangor	(9000-8800 cal BP)	(Bradley 2013)
Nursery Field, Rhuddlan	(8739 +/-30 cal BP)	(Quinell 1969, CPAT 2002)
Pentwmpath, Llandegai	(6600-6500 cal BP)	(Cooke 2016)

There are some hypothetical earlier Mesolithic dates than those stated above which claim dates as early as 10,000 BP; *Morfa Beach* (*PRN 31138*) acquired dates from material in shell midden deposits as yet unpublished, and *Lloches y Afr Rock Shelter* (*PRN 5031*) excavated in 1973 claimed pre 9000 BP dates by analysing the animal bones discovered in the stratigraphic sequence. Furthermore, some Later Mesolithic dates have been offered for *Snail Cave, Great Orme* (PRN 58505) and the *Hilltop Flint Scatter, Ty'n y Ddol* (*PRN 965*) which are based on lithic analysis. However, these are not supported by calibrated radiocarbon dates.

The Mesolithic archaeology of North Wales is nationally significant and the finds at Rhuddlan are indicative of an important location to a community of people in early prehistoric Britain. When considered against some of Britain's other important Mesolithic sites, Rhuddlan is indicative as part of an island wide culture: at Aveline's Hole, the Mendip Hills, Somerset (10,200 – 10,400 BP) there is evidence for Britain's oldest human cemetery (Schulting 2005), at Star Carr, in Yorkshire, worked antler headdresses, pebbles with incised decoration (similar to Rhuddlan) were found as well as having the accolade of Britain's largest Mesolithic settlement (8700 - 9000 cal BC) (Conneller et al. 2012). Additionally, discoveries on the Island of Oronsay, in the Inner Hebrides indicate how the Mesolithic peoples spread to the furthest corners of the isles by 9000 cal BC before they transitioned into the more culturally recognisable Neolithic societies such as those evidenced at Skara Brae and the Ness of Brodgar on Orkney (Shulting & Richards 2002).

The Lithics of Site E, Ysgol y Castell & Castle Hill

Given the nature of the evidence recovered from Rhuddlan it appears to be an important site for Mesolithic activity which has been demonstrated by a series of excavations which have taken place there since the late 60's; 1969-74 (Quinnell et al 1994) and at Hendre (Manley and Healey 1982) in 1978. It has been suggested by the author of the lithics analysis section of this report, that the Castle Hill site can be regarded as an extension of *Ysgol y Castell, Site E* (*PRN 81666*) of Quinnell et al (1994). The location of Castle Hill within the context of the *Site E, Ysgol Y Castell* excavations places it directly to the north of those works.

The archaeological work at *Site E* returned over 8408 lithic artefacts (Brooks 2021, Section 8.0), which were largely Early Mesolithic in nature, comparative to the 341 recovered from Castle Hill which were similarly dated diagnostically as larger blades made of locally sourced Chert or Banded Chert. The lithics assemblage from Site E was dominated by the use of chert which makes up 90.4%

of the recovered total assemblage, compared to 77.1% at Castle Hill, suggesting that the Castle Hill assemblage may be slightly more mixed than that from Site E (ibid.).

The number of microliths recovered from Castle Hill is approximately 1% lower than the equivalent percentage returned from Site E, which may be explained by the methodology employed at Castle Hill. However the microliths recovered from Site E, were dominated by obliquely blunted forms of Early Mesolithic types (ibid.) similar to those microliths found at Castle Hill – suggesting that these data sets are broadly similar although with fewer microliths recovered from Castle Hill.

Stratigraphic Disparity

The stratigraphic nature of the deposits at *Site E* differ somewhat to those encountered during the excavation at Castle Hill to the north. The deposits in the soil sequence encountered by Quinell and Blockley during the 1970 excavations included a 0.30m-0.60m deep deposit of '*grey-brown sandy soil*' which was above the orange sands encountered by both excavations; the grey-brown sandy soil appeared to have been scarped or levelled to the east according to Quinell and was mostly undatable due to the amount of intrusion from the soils above – although it was surmised to have been '*Between the Roman period and the 11th century*'. Above this deposit a formally laid lane was encountered and this was considered to be circa 1280 AD given its stratigraphic position and the composition of its surface from crushed limestone chippings:

'The limestone and sandstone chippings forming the lane and yard surface were of the same stone types as those used in the Edwardian Castle.' (Quinell et al. 1994 pp. 67)

This lane had been overlaid with a deposit of silt which was surmised to have been 14^{th} – 15^{th} century in origin due to its position above the medieval lane and the ceramic recovered from the soil matrix. Above this layer was 0.30-0.60m of a grey humic sand which contained a mixture of medieval and post medieval ceramic sherds suggesting that it was formed between the 13^{th} -18^{th} centuries.

This accounted for approximately 0.90m of deposits which were absent from the excavations at Castle Hill. The uppermost soil at Castle Hill (114) was a soft, black-grey, topsoil measuring 0.20-0.28m in depth which had modern coarse building materials (CBM) such as red brick and slate fragments within its soil matrix as well as elements of modern concrete and aluminium. Beneath this was a 0.75-0.77m deposit of quite soft, heavily mixed, mid red-brown, clay-silt-sand (115) which had only occasional small sub-rounded pebble inclusions, occasional post medieval (16^{th}-19^{th} century) ceramic fragments and rare post medieval examples of CBM. This lower deposit beneath the topsoil had also been disturbed by a modern water pipe service which had crossed the entirety of the site from southeast to northwest and had been cut into the topsoil. The soil (115) appeared to have formed during the 16^{th}-18^{th} centuries but had been subject to multiple intrusions from the layers above throughout the 19^{th} and 20^{th} centuries.

The origin of the soil (115) may be explained by the sand extraction cut [118] as the previous soils may have been scarped by either medieval or post medieval works undertaken to extract the sand for building. Therefore, the mixed soil (115) may represent and imported deposit which accumulated during the 16^{th} – 18^{th} centuries. Furthermore, as the sand extraction cut [118] became deeper to the north of the site nearest Hylas Lane a primary backfilling event with medieval soil (117) took place to the northeast with a secondary backfilling event with soil (116) being deposited sometime later (no finds were collected from this deposit). Therefore the disparity between the archaeological sequences

may be explained by the mass extraction of sand which took place on Castle Hill to the north of Site E, before it was partially backfilled over a period spanning the 14th-18th centuries.

11.0 CONCLUSION AND RECOMMENDATIONS

The strip, map & sample excavation at Castle Hill, Hylas Lane, Rhuddlan, Denbighshire exposed a distinct Mesolithic level (0.87m below ground level) which occupied a narrow plateau of yellow sand loess natural approximately 7.00m in width. This plateau had been artificially formed by medieval and post medieval sand extraction which extended 13.50m from the northern end of the site (closest to Hylas Lane). There were four other areas of modern intervention at the site probably as part of sand extraction.

Located on the yellow sand plateau there were three sub-rounded post holes/pits which had been excavated directly into the sand – the deposits of each of these post holes/pits returned conventional radio carbon dates between 9220 – 9280 (BP +/-30 years). The close range of these dates suggests with some certainty that the features were initially excavated within the middle part of the British Mesolithic period. Should the feature have once contained posts they could have been used for a utilitarian purpose possibly as an area for butchery or for the preparation of animal skins for drying. When considered alongside the lithic analysis (see Brooks 2021, *Section 8.0*) which suggests that the lithics showed minimal evidence of controlled knapping and that their condition indicated use ware as opposed to post depositional damage, it is possible that this area was utilised as a Mesolithic work site. Furthermore, this site effectively extends the *Site E, Ysgol y Castell* (*PRN 81666*) to the north, although only the Prehistoric levels were observed due to the large sand extraction which took place at the northern extent of the site, nearest Hylas Lane.

The Mesolithic archaeology found in North Wales is of national significance and the finds at Rhuddlan compound the perceived importance of this location in early prehistoric Britain. In addition, the identification of this site has allowed for an enhancement to the existing body of work already completed by Quinell & Blockley (1969-1970 excavations) and Messham, Manley & Healey (1979 & 1982 excavations) and serves to increase our understanding of the prehistoric landscape of Rhuddlan by better informing us of the complex socio-economic systems which were in place at the beginning of the 9th millennium BC.

12.0 SOURCES

Armour-Chelu, M., Bell, M., Brayshay, B., Britnell, W. J., Cameron, N., Caseldine, A. E., Dresser, P. Q., Fancourt, E., Gonzalez, S., Healey, E. (2007). *Shell middens and their environment at Prestatyn, north Wales*, CBA research report, 149, p.263.

Berks, T., Davidson, A., Roberts, J. & Smith, G. (2007) *Archaeological Excavation and Recording During the A497 Road Improvement Scheme, Gwynedd*. Gat report 625.

Blinkhorn, E. and Milner, N. (2013). *Mesolithic research and conservation framework 2013*. English Heritage.

Blockley, K. and Allen, D. (1989). *Prestatyn 1984-5: an iron age farmstead and Romano-British industrial settlement in North Wales,* (Vol. 210). BAR.

Bradley, J. (2013) *Land off Penrhos Road, Bangor, Gwynedd*: Archaeological Evaluation Report. Oxford Archaeology North.

Brassil, K. (1989), *Llyn Aled Isaf, Mynydd Hiraethog*, Archaeology in Wales : 29 : 46

Brassil, K.S., Owen, W.G., Britnell, W.J., Denne, P., Gibson, A.M., Green, H.S., Jenkins, D.A. and Wilkinson, J.L. (1991). Prehistoric and early medieval cemeteries at Tandderwen, near Denbigh, Clwyd. Archaeological journal, 148(1), pp.46-97.

British Geological Survey website. www.bgs.ac.uk.

British Ordnance survey maps; SJ07NE, SJ07NW, SJ07SE and SJ07SW.

Chitty, D. (1974) *Mesolithic Working Site, Trwyn Y Penrhyn*, Archaeology in Wales : Vol. 14 : p. 8

Clarke, V. (2001). Proposed Residential Development at Abbey Nurseries, off Hylas Road and Abbey Road, Rhuddlan, Denbighshire. An Archaeological Impact Assessment, Project no E471

Clwyd Powys Archaeological Trust (2002). CPAT Project Archive – lithics

Conneller, C., Milner, N., Taylor, B. and Taylor, M. (2012). Substantial settlement in the European Early Mesolithic: new research at Star Carr. Antiquity, 86 (334), pp.1004-1020.

Cooke, R. (2016) Land at Pentwmpath, Llandygai, Bangor, Gwynedd. Aeon Report 0098.

Davies, M. (1973). *Further Excavation, Lloches-yr-Afr, Archaeology in Wales* : Vol. 13 : p. 14-15

Davies, M. (1974). *Excavation, Lloches-yr-Afr*, Archaeology in Wales : Vol. 14 : p.9

Davies, J.L., Lynch, F. and Aldhouse-Green, S. (2000). Prehistoric Wales. Stroud: Sutton, pp.139-219.

English Heritage, (2006, rev 2015). Management of Research Projects in the Historic Environment (MORPHE).

Evans, P., Smith, C., & Blockley, K. (2006). Abbey Nurseries, Abbey Road, Rhuddlan, Denbighshire, Cambrian Archaeological Projects Ltd., CAP Report No: 369.

Grenter, S. (1996). Correpondence - Rhuddlan bypass, Mesolithic activity

Hallam, J.S., Edwards, B.J.N., Barnes, B. and Stuart, A.J. (1973) *The remains of a Late Glacial elk associated with barbed points from High Furlong, near Blackpool, Lancashire.* In Proceedings of the Prehistoric Society (Vol. 39, pp. 100-128). Cambridge University Press.

Hankinson, R. (2015). Caves of North East Wales, Archaeological Assessment, CPAT report no 1313

Hankinson, R., & Silvester, R. J. (2008). *Scheduling Enhancement Programme,* Vale of Clwyd, Project Report, CPAT report 948

Hedges, R.E.M., Housley, R.A., Law, I.A. and Bronk, C.R. (1989). Radiocarbon dates from the Oxford AMS system: Archaeometry datelist 9. *Archaeometry*, 31(2), pp.207-234.

Kenney, J. & Hopewell, D. (2015). *Ynys Enlli Survey and Evaluation 2014-2015*, Cadw report 1232.

Lynch, F. (1993). *Excavations in the Brenig Valley: A Mesolithic and Bronze Age Landscape in North Wales.* Cardiff: Cambrian Archaeological Association.

Manley, J. and Healey, E. (1982). Excavations at Hendre, Rhuddlan. The Mesolithic finds. *Archaeologia Cambrensis 131,* 18-48.

Messham, J.E., Manley, J.F. and Morgan, D. (1979). *Excavations at Hendre, Rhuddlan, 1978.* Flintshire Historical Society Journal Clwyd, 29, pp.113-140.

Milner, N., Bamforth, M., Beale, G., Carty, J., Chatzipanagis, K., Croft, S.C.K., Conneller, C., Elliott, B.J., Fitton, L.C., Knight, B. and Kröger, R. (2016). *A unique engraved shale pendant from the site of Star Carr: the oldest Mesolithic art in Britain.* Internet Archaeology. (Accessed 02-02-21)

National Library Scotland (2018), Map images, Historic maps; (Flintshire IV Bodelwyddan, Rhuddlan 1871), (Flintshire IV.NE (includes: Cwm; Diserth; Rhuddlan 1898), (Flintshire IV.NE includes: Cwm; Diserth; Rhuddlan 1909), (Flintshire IV.NE includes: Cwm; Diserth; Rhuddlan 1938) and (Flintshire IV.NE includes: Cwm; Diserth; Rhuddlan 1949).

Owen W., & Silvester, R. J. (2002). *Early Prehistoric Settlement in Mid and North-East Wales the Lithic Evidence*, Desktop Assessment, CPAT report 467

Parry, L. et al. (2013). *A487 Porthmadog, Minffordd and Tremadog Bypass*, GAT report 1065.

Quinnell, H., Blockley, M.R., Berridge, P. and Boone, G.C. (1994). *Excavations at Rhuddlan, Clwyd: 1969-73 Mesolithic to Medieval* (Vol. 95). Council for British Archaeology.

Robinson, G. (2013). *The Excavation of a Multi-period Rockshelter at Garreg Hylldrem, Llanfrothen, 2011-12*, Archaeology in Wales : Vol. 52 : p. 3-10

Schulting, R.J., (2005). *pursuing a rabbit in Burrington Combe': New research on the Early Mesolithic burial cave of Aveline's Hole*. Proceedings of the University of Bristol Spelaeological Society, 23(3), pp.171-265.

Schulting, R.J. and Richards, M.P., (2002). *The wet, the wild and the domesticated: the Mesolithic–Neolithic transition on the west coast of Scotland*. European Journal of Archaeology, 5(2), pp.147-189.

Smith, G. (2011). Snail Cave Rock Shelter, Great Orme, Llandudno, Conwy: Evaluation Excavation 2011 Preliminary Report.

Smith, G. & Walker, E. A. (2015). *Snail Cave rock shelter, North Wales: a new prehistoric site,* Archaeologia Cambrensis : Vol. 163 : P.99-132

The Chartered Institute for Archaeologists (2020) Standard and Guidance for Archaeological Excavation.

Thomas, D. (1992). Nant Hall Road, Prestatyn , Archaeology in Wales : 32 : 59

Lithic Analysis (LA) References

Bamford, H.M (1985). *Briar Hill Excavation 1974 – 1978.* Archaeological Monograph No.3 Northampton Development Corporation.

Berridge, P. (1994). The lithics. in Quinnell, H., Blockley, M.R. and Berridge, P. 1994 *Excavations at Rhuddlan, Clwyd 1969-73. Mesolithic to Medieval.* CBA Research Report 95

Brooks, I.P. (forthcoming A) Prehistoric. LLANRHAEADR-YNG-NGHINMEIRCH, St Dyfnog's Well SJ 07981 63347. *Archaeology in Wales 59.*

Brooks, I.P. (forthcoming B) Lithic Assemblage from Llanfaethlu. in Rees, C. and Jones, M. Excavations at Llanfaethlu.

Campbell, S., Wood, M. and Windley, B. (2014). *Footsteps through time. The rocks and landscape of Anglesey explained.* GeoMôn, Isle of Anglesey County Council.

Grundy Ridewood, M. (2013). The geology of the Great Orme, Llandudno. *http://geoscience.wales/pdfs/The_geology_of_the_Great_Orme_11th_July_2013.pdf*

Healey, E. (1982). The lithic artefact analysis. in Manley and Healey 1982.

Mackintosh, D. (1879). Results of a systematic survey in 1878, of the directions and limits of dispersion, mode of occurrence and relation to drift-deposits of erratic blocks or boulders of the west of England and east of Wales, including a revision of many years' previous observations. *The Quarterly Journal of the Geological Society of London 53*: 425-455.

Manley, J. and Healey, E. (1982). Excavations at Hendre, Rhuddlan. The Mesolithic finds. *Archaeologia Cambrensis 131*, 18-48.

Miles, H. 1971-72. Excavations at Rhuddlan, (1969-71): interim report. *Flintshire Historical Society Publication vol. 25.* 1-8.

Mitchel, A. (1881). *The Past in the Present. What is civilisation? Being ten of the Rhind Lectures on archæology delivered in 1876 and 1877.* Harper and Brothers, New York.

Smith, G. H. (2012). Flint and chert objects. in Cutler, R., Davidson, A and Hughes G. *A corridor through time. The archaeology of the A55 Anglesey Road Scheme*. Oxbow Books, Oxford 130 -138

APPENDIX I: SUMMARY OF ASSEMBLAGE FOR LITHIC ANALYSIS

	Primary Flakes	Secondary Flakes	Tertiary Flakes	Broken Flakes	Primary Blades	Secondary Blades	Tertiary Blades	Broken Blades	Scrapers	Microliths	Other tools	Worked Lumps	Cores and Core Debris	Chips/ Chunks	Other	Total
Banded Chert		3	18	14		6	20	20				1	7	1		90
Dark Grey Chert	1	4	22	12		2	17	21	2			15	13	2		111
Mid Grey Chert	1		7	6			5	12		2		3	2	2		40
Pale Grey Chert				1												1
Flint	7	5	14	4		2	11	6	2		1	3	9	3	1	68
Other											2				2	4
TOTAL	9	12	61	37	0	10	53	59	4	2	3	22	31	8	3	314

APPENDIX II: BETA ANALYTIC FULL RADIOCARBON DATING REPORT

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: d13C = -28.7 o/oo)

Laboratory number	**Beta-581473**
Conventional radiocarbon age	**9220 ± 30 BP**

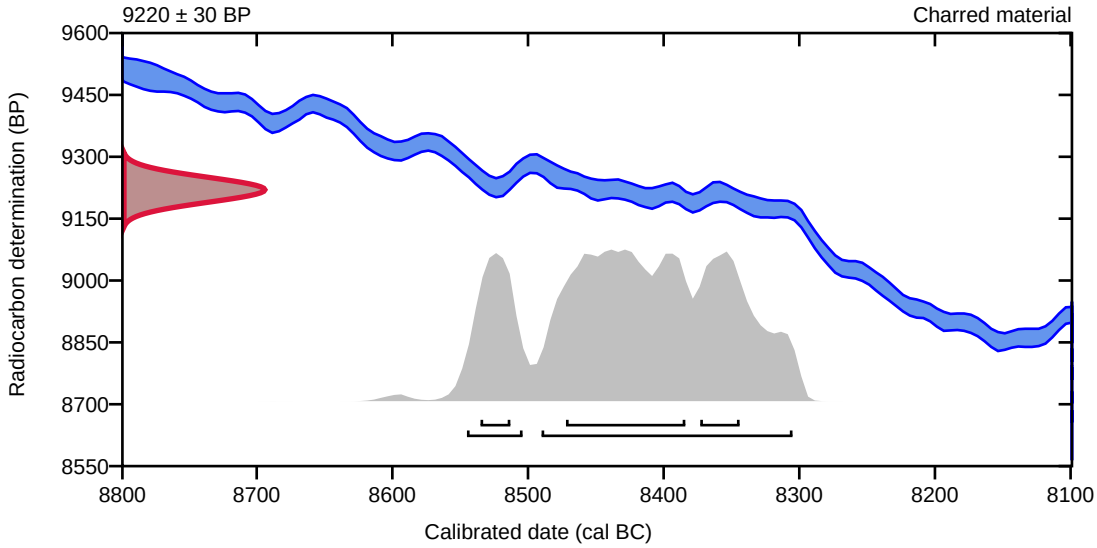
95.4% probability

(79%)	8492 - 8307 cal BC	(10441 - 10256 cal BP)
(16.4%)	8547 - 8506 cal BC	(10496 - 10455 cal BP)

68.2% probability

(43.7%)	8474 - 8386 cal BC	(10423 - 10335 cal BP)
(14%)	8375 - 8346 cal BC	(10324 - 10295 cal BP)
(10.5%)	8537 - 8515 cal BC	(10486 - 10464 cal BP)

01 (105)



Database used

INTCAL20

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL20

Reimer, et al., 2020, Radiocarbon 62(4):725-757.

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: d13C = -25.7 o/oo)

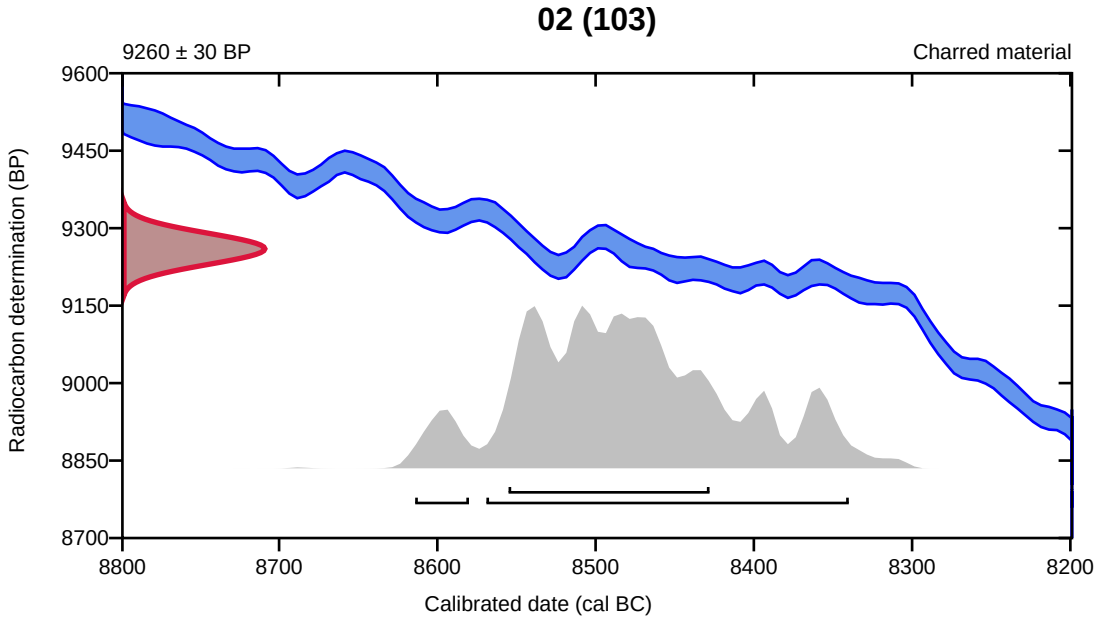
Laboratory number	**Beta-581474**
Conventional radiocarbon age	**9260 ± 30 BP**

95.4% probability

(89.3%)	8571 - 8342 cal BC	(10520 - 10291 cal BP)
(6.1%)	8616 - 8582 cal BC	(10565 - 10531 cal BP)

68.2% probability

(68.2%)	8557 - 8430 cal BC	(10506 - 10379 cal BP)



Database used

INTCAL20

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL20

Reimer, et al., 2020, Radiocarbon 62(4):725-757.

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: d13C = -23.2 o/oo)

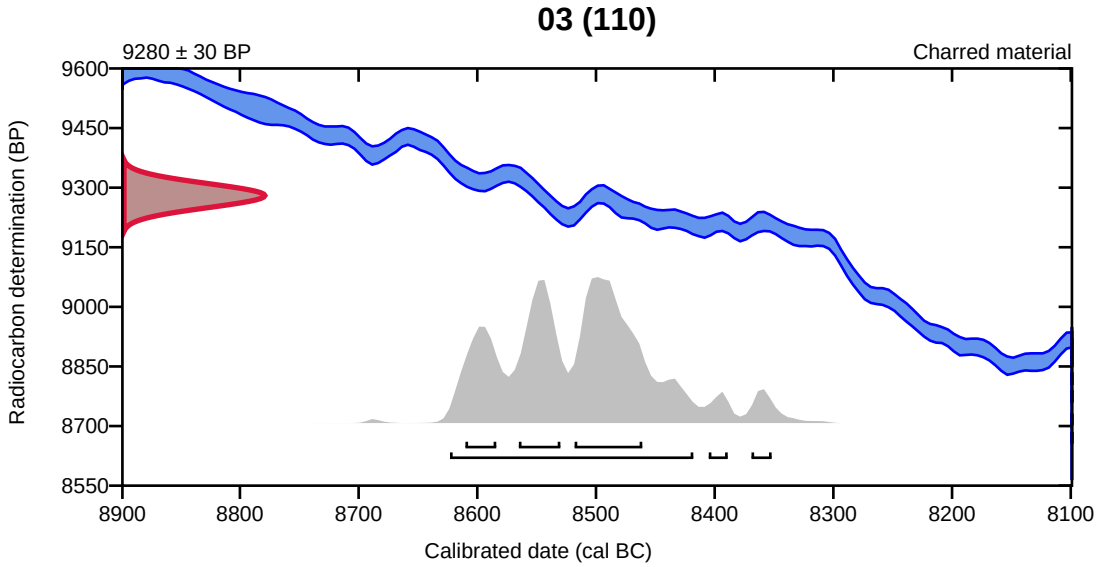
Laboratory number	**Beta-581475**
Conventional radiocarbon age	**9280 ± 30 BP**

95.4% probability

(90.5%)	8625 - 8420 cal BC	(10574 - 10369 cal BP)
(2.6%)	8371 - 8354 cal BC	(10320 - 10303 cal BP)
(2.2%)	8407 - 8391 cal BC	(10356 - 10340 cal BP)

68.2% probability

(35.1%)	8520 - 8463 cal BC	(10469 - 10412 cal BP)
(21.2%)	8567 - 8532 cal BC	(10516 - 10481 cal BP)
(11.9%)	8612 - 8586 cal BC	(10561 - 10535 cal BP)



Database used

INTCAL20

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL20

Reimer, et al., 2020, Radiocarbon 62(4):725-757.

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • Email: beta@radiocarbon.com

Beta Analytic Inc
4985 SW 74 Court
Miami, Florida 33155
Tel: 305-667-5167
Fax: 305-663-0964
info@betalabservices.com

ISO/IEC 17025:2005-Accredited Testing Laboratory

Quality Assurance Report

This report provides the results of reference materials used to validate radiocarbon analyses prior to reporting. Known-value reference materials were analyzed quasi-simultaneously with the unknowns. Results are reported as expected values vs measured values. Reported values are calculated relative to NIST SRM-4990B and corrected for isotopic fractionation. Results are reported using the direct analytical measure percent modern carbon (pMC) with one relative standard deviation. Agreement between expected and measured values is taken as being within 2 sigma agreement (error x 2) to account for total laboratory error.

Report Date: January 21, 2021
Submitter: Mr. Richard Cooke

QA MEASUREMENTS

Reference 1	
Expected Value:	0.42 +/- 0.04
Measured Value:	0.42 +/- 0.03 pMC
Agreement:	Accepted
Reference 2	
Expected Value:	96.69 +/- 0.50 pMC
Measured Value:	96.55 +/- 0.29 pMC
Agreement:	Accepted
Reference 3	
Expected Value:	129.41 +/- 0.06 pMC
Measured Value:	129.42 +/- 0.37 pMC
Agreement:	Accepted

COMMENT: All measurements passed acceptance tests.

Validation: Chris Patrick
Digital signature on file

Date: January 21, 2021


æon
archæology