1412

New Ysgol Bro Aberffraw Primary School, Newborough, Anglesey

Evaluation Analysis Report MAP2: Phase 4





Ymddiriedolaeth Archaeolegol Gwynedd Gwynedd Archaeological Trust

Ysgol Bro, Aberffraw, Ynys Môn

Evaluation Analysis Report MAP2: Phase 4

Project No. G2467

Report No. 1412

Prepared for: Cyngor Sir Môn

December 2017

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Front Cover : Pre-excavation view of pits [1308] and [1309] in Trench 13 (photographic archive refrence G2467_080)

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NON-TECHNICAL SUMMARY

Gwynedd Archaeological Trust has been commissioned by Cyngor Sir Môn to complete a programme of archaeological assessment and evaluation at the proposed site of the New Ysgol Bro Aberffraw Primary School, Newborough, Ynys Môn.

The initial assessment suggested medieval and post-medieval activity would be present, as represented by existing and former field systems and a former house evident on a 1782 Lligwy estate map that once occupied the southwestern corner of the site. The evaluation, incorporating a geophysical survey and trial trenching, identified a more complex pattern of activity than initially assessed. The geophysical survey allowed the trenching to target apparent prehistoric and later activity, which subsequently appeared as distinct linear and sub-circular features, as well as remnants of the eighteenth century house. The post-excavation assessment and analysis of recovered ecofacts and artefacts confirmed that prehistoric and burnt stone were dated to the Late Neolithic/Early Bronze Age and the Late Bronze Age respectively and represented prehistoric activity across a broad timeframe, whilst charred grains from a ditch fill in Trench 19 was dated to the 13th century AD. When combined with the evidence for the eighteenth century house, the results present four distinct periods of settlement and agricultural activity which adds significantly to the archaeological record for Newborough.

These results suggest potential for the identification of similar activity during construction of the new school and the current archaeological mitigation stage, comprising targeted areas before and during construction and a site wide watching brief, will allow the different activities and periods to be further understood. The current results will be used to inform that programme and will be incorporated into the final archaeological reporting for the project as a whole.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been commissioned by Cyngor Sir Ynys Môn to complete the post-excavation analysis of selected ecofacts as part of a programme of archaeological works at Ysgol Bro Aberffraw, Newborough, Ynys Môn (NGR SH4247566010; Figure 01). This follows a programme of archaeological assessment, evaluation (trial trenching), and post-excavation assessment. The post-excavation analysis phase has been undertaken following the identification of possible prehistoric activity at the site and the recovery of associated ecofacts and artefacts which have already undergone post-excavation assessment according to *MAP2 Phase 3: Assessment of Potential for Analysis* (GAT Report 1383; McGuinness, 2017).

The post-excavation programme has been undertaken as a phased process in accordance with guidelines specified in *Management of Archaeological Projects – MAP2* (English Heritage, 1991), and relevant guidelines from *Management of Research Projects in the Historic Environment* (Historic England, 2015). Five project phases are specified in *MAP2* (English Heritage, 1991):

- MAP2 Phase 1: Project Planning
- MAP2 Phase 2: Fieldwork
- MAP2 Phase 3: Assessment of Potential for Analysis
- MAP2 Phase 4: Analysis and Report Preparation
- MAP2 Phase 5: Dissemination

The current report specifically relates to the analysis of recovered ecofacts for the production of a final report (MAP2 Phase 4). The proposed methodology and nominated specialists are noted in Sections 3.1 and 3.2. On completion of the report, dissemination will be undertaken as part of MAP2 Phase 5 which will be published within a journal summarising all the results, including the current archaeological mitigation during the construction phase.

Reference has been made to the following guidelines:

- Environmental Archaeology: A guide to the theory and practise of methods, from sampling and recovery to post-excavation (Campbell, Moffett and Straker 2011);
- Standard and Guidance for Archaeological Excavation (Chartered Institute for Archaeologists 2014);
- Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives (Chartered Institute for Archaeologists 2014);

- Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (Chartered Institute for Archaeologists 2014); and
- Guidelines for digital archives (Royal Commission on the Ancient and Historic Monuments of Wales 2015).

Gwynedd Archaeological Trust is certified to ISO 9001:2008 and ISO 14001:2004 (Cert. No. 74180/A/0001/UK/En) and is a Registered Organisation with the Chartered Institute for Archaeologists and a member of the Federation of Archaeological Managers and Employers (FAME).

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2 BACKGROUND

GAT undertook a geophysical survey and desk-based assessment for the site in May 2016 (GAT Report 1318) followed by a programme of archaeological trial trenching during July 2016 (Figure 2; Figure 3; GAT Report 1329). Twenty 30x2m trenches were excavated at the site and 23 archaeological features identified.

The majority of the archaeological features were linear cut features, including redundant field boundaries, linear banks, walls, ditch termini and a charcoal filled pit. The main archaeological features were:

- The remains of a drystone wall (0109) in Trench 01 that may be associated with a possible medieval building identified on historic mapping.
- The remains of a mortared stone wall (0905) in Trench 09 that may be associated with a possible medieval building identified on historic maps.
- Pit/terminus [1308], which was located at the eastern end of Trench 13 (trench centred on NGR SH4252566112; Figure 2). It was situated against the northern baulk of the trench and continued under it. The feature was sub-rounded in plan, at least 0.48m long and 0.73m wide, with gently sloping sides that broke gradually to an irregular base 0.11m deep. The pit was filled with (1304) angular, heat shattered stones up to 7cm long in a charcoal rich, firm dark grey sandy silt matrix. There was no evidence for burning in situ within the pit, the stones and charcoal appear to have been deposited within the pit after being burnt elsewhere. No finds were associated with the pit / terminus and it is of unknown date. Pit/terminus [1309], which was also located at the eastern of Trench 13. The feature was opposite to [1308], against the southern baulk of the trench and continuing under. The feature was sub-rounded in plan, at least 0.50m long and 0.78m wide, with steep irregular sides that broke gradually to an irregular base 0.18m deep. The pit was filled with (1305) angular, heat shattered stones and occasional flecks of charcoal in a firm dark mid greyish brown silty sand matrix. Fill (1305) contained considerably less charcoal than (1304) and the stones in it were larger, on average they were 9 to 10cm long but occasional examples were up to 20cm long. There was no evidence for burning in situ within the pit, the stones and charcoal appear to have been deposited within the pit after being burnt elsewhere No finds were associated with the pit / terminus and it is of unknown date.
- The cut of a deep straight linear ditch [1905] crossed the southern half of Trench 19 (centred on NGR SH 42526 659959; Figure 2) from north-east to south-west. The ditch was 1.17m wide and 0.51m deep with a blunted 'V' shaped profile. It was filled

with (1904) a soft, light greyish brown sandy clayey silt with occasional small flecks of charcoal and small stones up to 5 cm long and occasional large sub-angular cobbles up to 35cm long. A small chip of flint (SF002) was recovered from near the base of (1904) at the bottom of the ditch. Though its date remains unknown, the profile and depth of the ditch, the flint chip and the complete lack of post-medieval pottery from within it suggested an early, possibly prehistoric date.

Ecofact samples were collected from 14 of the archaeological features to enable the recovery of additional artefacts, and charred macroplant remains and charcoal for radiocarbon dating and paleo-environmental information.

Two artefacts were recovered during the evaluation: a 1916 One Penny coin from the topsoil in Trench 1 (SF001), and a small chip of flint (SF002) from the fill of the possibly prehistoric ditch in Trench 19. A further 15 artefacts or collections of artefacts were recovered from bulk samples which consisted mostly of flint fragments from Trenches 07, 01 and 04 (SF003 - SF009), heat cracked-stones from Trenches 13 and 01 (SF010-012), and possible burnt prehistoric ceramic fragments from Trench 13 (SF013 and SF14) and Trench 19 (SF014).

GAT subsequently completed the post-excavation assessment of the ecofacts and artefacts (MAP2 Phase 3; GAT Report 1383).

The ecofacts were assessed by AOC Archaeology. Twenty six cereal grains were recovered from contexts across the site; eight grains were identifiable to species level: three barley grains from ditch [0108]; one bread / club wheat from linear ditch [1905]; one wheat grain from linear ditch [0705]; and three oat grains, one from linear ditch [0705] and two from linear ditch [1905]. None of the cereals appeared to be deliberately deposited and were interpreted as the residue of domestic cooking and cleaning activities. Charcoal was identified in all samples assessed; five of which contained material which could be identified to species level. Rowan was the most numerous species followed by oak, alder and blackthorn. Almost all of the charcoal came from pits / ditch termini [1308] (77.1%) and [1309] (22.7%) in Trench 13. The number of species identified in the two pits indicated that the charcoal was a fuel residue dumped into the pit, along with quantities of burnt stones, after being burnt elsewhere. The macroplant and charcoal remains were therefore representative of domestic activities such as cooking, cleaning and preparing fires.

AOC Archaeology recommended the cereal grains in ditch [1905] and the non-oak wood charcoal from drystone wall (0109), pit [1308], pit [1309] and linear [1905] for radiocarbon dating.

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The lithic artefacts were assessed by George Smith and were identified as naturally occurring fragments of flint or chert gravel; no recommendations for further analysis were made. The burnt stone artefacts from pits [1308] and [1309] in Trench 13 were also assessed by George Smith and both contained quantities of stones that have been carefully selected and repeatedly heated in a fire causing discoloration. They had subsequently been subjected to rapid cooling, most likely by being exposed to cold water, the consequent thermal shock eventually causing them to crack. The stones were interpreted as remnants of prehistoric 'burnt mound' type activity in the vicinity of Trench 13. The stones appear to have been dumped in the pits along with the fuel residue identified in the ecofact assessment. The possible prehistoric ceramic artefacts from Trenches 13 and 19 were assessed by Frances Lynch: none of the artefacts were identified as pottery, but were identified as concreted mineral (iron and or manganese) deposits formed within features after they had filled.

No further specialist recommendations were made for artefacts.

3 METHODOLOGY

Three features were submitted for radiocarbon dating:

- the pit or ditch terminus [1308] filled with burnt stones (1304) in Trench 13, using two fragments of rowan wood charcoal as a dating source;
- the pit or ditch terminus [1309] filled with burnt stones (1305) in Trench 13, using two fragments of rowan wood charcoal as a dating source; and
- the possible prehistoric ditch [1905] / (1904) in Trench 19, using two oat caryopses as a dating source.

Context	Cut	Trench	Feature description	Potential RC dating	Details	Preferred dating
No.				source		material
(1304)	[1308]	13	Fill of pit filled with	Wood charcoal	Alder (<i>Alnus glutinosa</i> L.)	Rowan charcoal (x2)
			burnt stones		Oak (<i>Quercus</i> sp.)	
					Rowan (<i>Sorbus</i> sp.)	
(1305)	[1309]	13	Fill of pit filled with	Wood charcoal	Oak (<i>Quercus</i> sp.)	Rowan charcoal (x2)
			burnt stones		Rowan (<i>Sorbus</i> sp.)	
(1904)	[1905]	19	Fill of possible	Charred cereal	Bread / Club Wheat	Oat caryopses (x2)
			prehistoric ditch	grains	(Triticum	
					aestivum/compactum L.)	
					Cereal (Unknown)	
					Oat (<i>Avena</i> sp.)	
				Wood charcoal	Blackthorn (cf <i>Prunus</i>	
					spinosa L.)	

Table 1: Features with material for radiocarbon dating

The samples were analysed at the SUERC Accelerator Mass Spectrometry (AMS) Laboratory using its 5 MV and 250kV National Electrostatic Corporation AMS systems.

4 RESULTS

The charred material was calibrated at SUERC's laboratory following the age ranges determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4). The radiocarbon date (¹⁴C) is quoted in conventional years BP, before 1950 AD. The results as follows:

Lab No	Context No	Context Description	Material/ species	Radiocarbon Age (BP)	δ ¹³ C (‰)	Calibrated date (95.4% probability)
SUERC- 74767	1304	Burnt stone and charcoal rich fill of pit/terminus [1308]	Wood charcoal: Alder (<i>Alnus glutinosa</i> L.)	2921 ± 28	- 26.5	cal BC 1211 - 1023
SUERC- 74766	1304	Burnt stone and charcoal rich fill of pit/terminus [1308]	Wood charcoal: Rowan (<i>Sorbus</i> sp.)	2866 ± 29	- 24.7	cal BC 1123 (88.2%) 969 cal BC 963 (7.2%) 932
SUERC- 74768	1305	Burnt stone fill of pit /terminus [1309]	Wood charcoal: Rowan (<i>Sorbus</i> sp.) x2	3877 ± 29	- 26.2	cal BC 2466 (93.5%) 2285 cal BC 2248 (1.9%) 2235
SUERC- 74769	1904	Fill of linear [1905]	Charred cereal grains: Oat caryopsis (<i>Avena</i> sp.)	811 ± 29	- 25.2	cal AD 1170 - 1269
SUERC- 74773	1904	Fill of linear [1905]	Charred cereal grains: Bread/Club Wheat caryopsis (<i>Triticum</i> <i>aestivum/compactum</i> L.	777 ± 28	- 21.7	cal AD 1215 - 1280

4.2 Trench 13; Calibrated date: Alder (*Alnus glutinosa* L.) – SUERC 74767

The results taken from the alder (SUERC 74767), sample <06>, context (1304), calibrated on SUERCs AMS facility gives date at Radiocarbon Age BP of 2921 \pm 28, at a 95.4% probability calibrated date to be within the Late Bronze Age 1211-1023 cal BC.



4.3 Trench 13; Calibrated date: Rowan (Sorbus sp.) – SUERC 74766

The results taken from the rowan roundwood (SUERC 74766), sample <06>, context (1304), calibrated on SUERCs AMS facility gives date at Radiocarbon Age BP of 2866 \pm 29, at a 95.4% probability calibrated date to be within the Late Bronze Age 1123 - 932 cal BC.



4.4 Trench 13; Calibrated date: Rowan x2 (Sorbus sp.) – SUERC 74768

The results taken from the two pieces of rowan (SUERC 74769), sample <07>, context (1305), calibrated on SUERCs AMS facility gives date at Radiocarbon Age BP of 3877 ± 29 , at a 95.4% probability calibrated date to be within cusp of Late Neolithic and Early Bronze Age 2466 - 2235 cal BC.



4.5 Trench 19; Calibrated date: Oat caryopsis (*Avena* sp.) – SUERC 74769

The results taken from the oat caryopsis (SUERC 74769), sample <14>, context (1904), calibrated on SUERCs AMS facility gives date at Radiocarbon Age BP of 811 \pm 29, at a 95.4% probability calibrated date to be within the Medieval 1170 - 1269 cal AD.



4.6 Trench 19; Calibrated date: Bread/Club Wheat Caryopsis (Triticum aestivum/compactum L.) – SUERC 74773

The results taken from the oat caryopsis (SUERC 74773), sample <14>, context (1904), calibrated on SUERCs AMS facility gives date at Radiocarbon Age BP of 777 \pm 28, at a 95.4% probability calibrated date to be within the Medieval period 1215 - 1280 cal AD.



5 CONCLUSION & INTERPRETATION

The post-excavation assessment and analysis results from the programme of archaeological evaluation at the New Ysgol Bro site in Newborough have identified four distinct periods of activity within a relatively small area and, combined with the later structural activity, as represented by the house on the 1782 Lligwy estate map, suggest potential for further activity to be present.

Whilst in close proximity, the two pits in Trench 13 were from the Late Neolithic/Early Bronze Age and the Late Bronze Age respectively and represented prehistoric activity across a broad timeframe. The activity from both features was similar, in reflecting disposal of domestic fuel debris and burnt stone, and this may indicate the proximity of burnt mounds or earth ovens. This is a significant addition to the known prehistoric activity within Newborough, with previous activity, from the Mesolithic to Bronze Age, recorded at Newborough Warren, to the southeast of Newborough (GAT Report 1318: 13).

The 13th century AD dates from charred grains within a ditch in Trench 19 suggest agricultural activity with the area, with the feature a possible remnant of a medieval field system. The calibrated date range appears to relate to pre-Edwardian activity associated with Rhosyr and would be one of the few examples of activity associated with the *maerdref* rather than the establishment of Newborough. This would add significantly to the existing knowledge for this period in the area, as represented by the agricultural and industrial activity near Church Street, identified in 2013 (GAT Report 1318: 15).

The current results are informative in terms of the periods and activities represented on the site but they are currently limited in scope due to the targeted nature of the evaluation trenches. The subsequent mitigation stage, comprising targeted mitigation areas before and during construction and the site wide watching brief during construction (GAT forthcoming), will allow the different activities and periods to be further understood. The current results will be used to inform the mitigation programme and will be incorporated into the final archaeological reporting for the project as a whole.

6 SOURCES CONSULTED

- Campbell, G., Moffett, L. and Straker, V. Environmental Archaeology: A guide to the theory and practise of methods, from sampling and recovery to post-excavation (2nd edition). (Historic England, 2011).
- 2. English Heritage, 1991, Management of Archaeological Projects
- Evans, R. 2016. New Ysgol Bro Aberffraw PrimarySchool, Newborough, Anglesey Archaeological Assessment and Geophysical Survey: Phase 1 Field Evaluation. GAT Report 1318.
- 4. Historic England 2015. Management of Research Projects in the Historic Environment
- 5. Standard and Guidance for Archaeological Excavation (Chartered Institute for Archaeologists, 1995, rev. 2001, 2008 and 2014).
- 6. Standard and Guidance for Archaeological Watching Brief (Chartered Institute for Archaeologists, 1995, rev. 2001, 2008 and 2014).
- 7. Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives (Chartered Institute for Archaeologists, 2009 and 2014).
- 8. Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (Chartered Institute for Archaeologists, 2008 and 2014).







Plate 01: Pre-ex of pits / ditch termini [1308] and [1309], viewed from the west-northwest (scale: 1x1m; archive image: G2467_080).



Plate 02: South-southwest facing section through [1308] and (1304) (scale: 1x0.5m; archive image: G2467_084).



Plate 03: North-northeast facing section through [1309] and (1305) post-ex (scale: 1x0.5m; archive image: G2467_088).



Plate 04: Linear [1905] pre-excavation, viewed from the southeast (scale: 1x1m; archive image: G2467_124).



Plate 05: Northeast facing section through linear [1905] (scale: 1x1m; archive image: G2467_131).

APPENDIX I

Approved Project Design

NEW YSGOL BRO ABERFFRAW PRIMARY SCHOOL, NEWBOROUGH, ANGLESEY (G2467)

PROJECT DESIGN FOR ANALYSIS AND REPORT PREPARATION: MAP2 PHASE 4

Prepared for

Cyngor Sir Ynys Môn

June 2017

Ymddiriedolaeth Archaeolegol Gwynedd

Gwynedd Archaeological Trust

NEW YSGOL BRO ABERFFRAW PRIMARY SCHOOL, NEWBOROUGH, ANGLESEY

PROJECT DESIGN FOR ANALYSIS AND REPORT PREPARATION: MAP2 PHASE 4

Prepared for Cyngor Sir Ynys Môn, June 2017

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All GAT staff should sign their copy to confirm the project design is read and understood and retain a copy of the specification for the duration of their involvement in this phase. On completion, the specification should be retained with the project archive:

Name

Signature

Date

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been commissioned by Cyngor Sir Ynys Môn to complete a post-excavation *MAP2 Phase 4: Analysis and Report Preparation* for a archaeological works undertaken at the site of the proposed Ysgol Bro Aberffraw, Newborough, Ynys Môn (NGR SH4247566010; Figure 1). This follows a programme of archaeological assessment, evaluation (trial trenching), mitigation and post-excavation assessment. The post-excavation *Analysis and Report Preparation* phase is to be undertaken following the identification of possible prehistoric activity at the site and the recovery of associated ecofacts and artefacts which have already undergone post-excavation assessment according to *MAP2 Phase 3: Assessment of Potential for Analysis* (GAT Report 1383; McGuinness, 2017).

The post-excavation programme has been undertaken as a phased process in accordance with guidelines specified in *Management of Archaeological Projects – MAP2* (English Heritage, 1991), and relevant guidelines from *Management of Research Projects in the Historic Environment* (Historic England, 2015). Five project phases are specified in *MAP2* (English Heritage, 1991):

- MAP2 Phase 1: Project Planning
- MAP2 Phase 2: Fieldwork
- MAP2 Phase 3: Assessment of Potential for Analysis
- MAP2 Phase 4: Analysis and Report Preparation
- MAP2 Phase 5: Dissemination

The current design specifically relates to the analysis of recovered ecofacts and the production of a final report (MAP2 Phase 4). The proposed methodology and nominated specialists are noted in Sections 3.1. On completion of the report, dissemination will be undertaken as part of MAP2 Phase 5.

Reference has been made to the following guidelines:

- Campbell, G., Moffett, L. and Straker, V., 2011. *Environmental Archaeology: A guide* to the theory and practise of methods, from sampling and recovery to post-excavation (2nd edition). Historic England.
- Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives (Chartered Institute for Archaeologists, 2014).
- Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (Chartered Institute for Archaeologists, 2014).

 Royal Commission for Ancient and Historic Monumnets Wales Guidelines for Digital Archives Version 1

NB. All phases of this project are being monitored by the Gwynedd Archaeological Planning Services (GAPS). The content of this and any future project designs and reporting must be approved by GAPS.

2 ARCHAEOLOGICAL RESULTS

GAT undertook a geophysical survey and desk-based assessment for the site in May 2016 (GAT Report 1318; Evans, Hopewell and McGuinness, 2016) followed by a programme of archaeological trial trenching during July 2016 (Figure 2; Figure 3; GAT Report 1329; McGuinness, 2016). Twenty 30x2m trenches were excavated at the site and 23 archaeological features identified.

The majority of the archaeological features appear to be linear cut features, probably field boundaries and are of unknown date. Other discoveries included linear banks, walls, ditch termini and a charcoal filled pit. Walls that may be the remains of a possible medieval building represented on historic maps (GAT Report 1318; Evans, Hopewell and McGuinness, 2016) were identified in the south-western corner of Field 1. Five archaeological features are of particular interest:

- 1. the remains of a drystone wall (0109) in Trench 01 that may be associated with a possible medieval building identified on historic maps;
- 2. the remains of a mortared stone wall (0905) in Trench 09 that may be associated with a possible medieval building identified on historic maps;
- 3. a possible pit or ditch terminus [1308] filled with burnt stones (1304) in Trench 13;
- 4. a possible pit or ditch terminus [1309] filled with burnt stones (1305) in Trench 13; and
- 5. a possible prehistoric ditch [1905] / (1904) in Trench 19.

Bulk samples were collected from 14 of the archaeological features to enable the recovery of additional artefacts, and charred macroplant remains and charcoal for radiocarbon dating and paleo-environmental information.

Two artefacts were recovered during the excavation, a 1916 One Penny coin from the topsoil in Trench 1 (SF001), and a small chip of flint (SF002) from the fill of the possibly prehistoric ditch in Trench 19. A further 15 artefacts or collections of artefacts were recovered from bulk samples which consisted mostly of flint fragments from Trenches 07, 01 and 04 (SF003 - SF009), heat cracked-stones from Trenches 13 and 01 (SF010-012), and possible burnt prehistoric ceramic fragments from Trench 13 (SF013 and SF14) and Trench 19 (SF014).

2.1 Archaeological evaluation features

The characteristics of the archaeological features of particular interest are outlined below. For a full account of all archaeological features identified during the trial trenching evaluation see GAT Report 1329 (McGuinness, 2016).

2.1.1 Drystone wall (0109)

The remains of a straight linear drystone wall (0109) ran north-northwest by south-southeast across the southern end of Trench 01 (trench centred on NGR SH 42470 65907; Figure 2). The wall is situated in the area of the possible location of the building and enclosure depicted on historic maps identified during the desk-based assessment. The wall was 0.80m wide and constructed from unbonded sub-angular blocks of stone up to 35cm long. Unfortunately the machine had truncated the remains of the wall within the trench though the survival of its construction cut [0105] and edging stones from its lower course meant that its outline in plan was clearly visible. Two courses (and its full surviving height of 0.29m) could however clearly be seen in the baulk sections of the trench. No finds were associated with wall (0109) and it is of unknown date.

2.1.2 Mortared wall (0905)

The remains of wall (0905) were approximately 'L' shaped and located in the southern end of Trench 09 (trench centred on NGR SH 42451 65899; Figure 2) It ran across the trench from south-west to north-east with what appears to be a north-south orientated return which ran northwards for 2.1m from its north east end. Like (0109) above, it is also situated in the area of the possible location of the building and enclosure depicted on historic maps identified during the desk-based assessment. It was approximately 1m wide, and its depth was not established. At its highest surviving points, it lay around 0.25m below the level of the current ground surface. The wall appeared to be uncoursed, but was also heavily disturbed and damaged. It was constructed from subangular blocks of schist, up to 60cm long, 50cm wide and 20cm deep. Many of the stones had traces of mortar adhering to them. No evidence for in situ facing stones was encountred and the surviving parts of the wall may represent the remains of foundations. The traces of a construction cut [0904] for the wall, cut into the natural ground surface (0903) and backfilled with a dark orangey brown clayey sandy silt (0907), were visible in plan on its northwestern and western sides. The wall and its cut were cleaned but not excavated. No finds were associated with the wall and it is of unknown date.

2.1.3 Pit or ditch terminus [1308]

Pit / terminus [1308] was located at the eastern end of Trench 13 (trench centred on NGR SH 42525 66112; Figure 3). It was situated against the northern baulk of the trench and

continued under it. The feature was sub-rounded in plan, at least 0.48m long and 0.73m wide, with gently sloping sides that broke gradually to an irregular base 0.11m deep. The pit was filled with (1304) angular, heat shattered stones up to 7cm long in a charcoal rich, firm dark grey sandy silt matrix. There was no evidence for burning in situ within the pit, the stones and charcoal appear to have been deposited within the pit after being burnt elsewhere. No finds were associated with the pit / terminus and it is of unknown date.

2.1.4 Pit or ditch terminus [1309]

Pit / terminus [1309] was also located at the eastern of Trench 13 (trench centred on NGR SH 42525 66112; Figure 3). It lay opposite [1308] against the southern baulk of the trench and also continued under it. The feature was sub-rounded in plan, at least 0.50m long and 0.78m wide, with steep irregular sides that broke gradually to an irregular base 0.18m deep. The pit was filled with (1305) angular, heat shattered stones and occasional flecks of charcoal in a firm dark mid greyish brown silty sand matrix. Fill (1305) contained considerably less charcoal than (1304) and the stones in it were larger, on average they were between 9 to 10cm long but occasional examples were up to 20cm long. There was no evidence for burning in situ within the pit, the stones and charcoal appear to have been deposited within the pit after being burnt elsewhere No finds were associated with the pit / terminus and it is of unknown date.

2.1.5 Possible prehistoric ditch [1905]

The cut of a deep straight linear ditch [1905] crossed the southern half of Trench 19 (centred on NGR SH 42526 659959; Figure 3) from north-east to south-west (Figure 4). The ditch was 1.17m wide and 0.51m deep with a blunted 'V' shaped profile. It was filled with (1904) a soft, light greyish brown sandy clayey silt with occasional small flecks of charcoal and small stones up to 5 cm long and occasional large sub-angular cobbles up to 35cm long. A small chip of flint (SF002) was recovered from near the base of (1904) at the bottom of the ditch. Though its date remains unknown, the profile and depth of the ditch, the flint chip and the complete lack of post-medieval pottery from within it suggested an early, possibly prehstoric date.

2.2 MAP2 Phase 3: Assessment of Potential for Analysis

GAT completed the post-excavation *MAP2 Phase 3: Assessment of Potential for Analysis* in June 2017 (GAT Report 1383; McGuinness, 2017).

Flots from 14 wet-sieved bulk samples taken from features within Trenches 01, 03, 04, 07, 13, 17, 18 and 19 were assessed by AOC Archaeology. Twenty six cereal grains were recovered from contexts across the site. Eight grains were identifiable to species level: three barley grains from ditch [0108]; one bread / club wheat from linear ditch [1905]; one wheat grain from linear ditch [0705]; and three oat grains, one from linear ditch [0705] and two from linear ditch [1905]. None of the cereals appear to be deliberately deposited and they most likely represent the residue of domestic cooking and cleaning activities. Only the cereal remains in [1905] were well enough preserved to be suitable for radiocarbon dating.

Charcoal was identified in all fourteen flots, five of which contained material which could be identified to species level. Rowan was the most numerous species followed by oak, alder and blackthorn. Almost all of the charcoal came from pits / ditch termini [1308] (77.1%) and [1309] (22.7%) in Trench 13. The number of species identified in the two pits indicates that the charcoal is a typical fuel residue, dumped into the pit along with quantities of burnt stones after being burnt elsewhere. Overall, the macroplant and charcoal remains are representative of domestic activities such as cooking, cleaning and preparing fires.

AOC recommended the cereal grains in ditch [1905] and the non-oak wood charcoal from drystone wall (0109), pit [1308], pit [1309] and linear [1905] for radiocarbon dating.

Possible lithic artefacts were assessed by George Smith: most were assessed to be naturally occurring fragmnents of flint or chert gravel. Two possible flint tools were identified, however neither are definitely humanly struck pieces, and they are not diagnostic of any particular activity, tool form or period. No further specialist recommendations were made for the lithic artefacts.

Burnt stone artefacts were also assessed by George Smith. Pits [1308] and [1309] in Trench 13 both contained quantities of stones that have been carefully selected and repeatedly heated in a fire causing discoloration. They had subsequently been subjected to rapid cooling, most likely by being exposed to cold water, the consequent thermal shock eventually causing them to crack. They are thought to result from 'burnt mound' type activity in the vicinity of Trench 13, most likely occurring within the second millennium BC but which could also possibly be from anywhere between the Late Neolithic through to the medieval periods. No further specialist recommendations were made for the burnt stone artefacts.

10

Possible prehistoric ceramic artefacts were assessed by Frances Lynch. None of the samples assessed contained prehistoric pottery. All three samples were assessed to be concreted mineral (iron and or manganese) deposits which have formed within features after they had filled. No further specialist recommendations were made for the possible prehistoric ceramic artefacts.

3 METHODOLOGY

3.1 Ecofact analysis

The aim of the ecofact analysis will be to obtain radiocarbon dates from adequately preserved macroplant material and non-oak wood charcoal fragments recovered from flots during the ecofact assessment. The four potentially datable features are shown in Table 1.

Though a single fragment of rowan charcoal has been recovered from (0109), the sandy silt soil matrix between the stones of a buried drystone wall in Trench 01, it is possibly residual, and additionally, the point at which it became incorporated into the wall is uncertain. It is therefore deemed not to be a reliable chronological indicator of its construction, use-life, or abandonment. In this instance it is not proposed to obtain a radiocarbon date for this feature.

Three features are therefore proposed for radiocarbon dating in order to determine whether they are prehistoric, with two dates to be obtained from each as recommended to avoid statistical errors:

- the pit or ditch terminus [1308] filled with burnt stones (1304) in Trench 13, using two fragments of rowan wood charcoal as a dating source;
- the pit or ditch terminus [1309] filled with burnt stones (1305) in Trench 13, using two fragments of rowan wood charcoal as a dating source; and
- the possible prehistoric ditch [1905] / (1904) in Trench 19, using two oat caryopses as a dating source.

Derek Hamilton at the SUERC Radiocarbon Dating Laboratory in East Kilbride has been contacted to advise on the radiocarbon dating. The samples will be analysed at the SUERC Accelerator Mass Spectrometry (AMS) Laboratory using its 5 MV and 250kV National Electrostatic Corporation AMS systems.

Context	Cut	Trench	Feature description	Potential RC dating	Details	Preferred dating
No.				source		material
(0109)	[0105]	01	Sandy silt matrix	Wood charcoal	Rowan (<i>Sorbus</i> sp.)	None
			between stones of			
			wall			
(1304)	[1308]	13	Fill of pit filled with	Wood charcoal	Alder (<i>Alnus glutinosa</i> L.)	Rowan charcoal (x2)
			burnt stones		Oak (<i>Quercus</i> sp.)	
					Rowan (<i>Sorbus</i> sp.)	
(1305)	[1309]	13	Fill of pit filled with	Wood charcoal	Oak (Quercus sp.)	Rowan charcoal (x2)
			burnt stones		Rowan (<i>Sorbus</i> sp.)	
(1904)	[1905]	19	Fill of possible	Charred cereal	Bread / Club Wheat	Oat caryopses (x2)
			prehistoric ditch	grains	(Triticum	
					aestivum/compactum L.)	
					Cereal (Unknown)	
					Oat (<i>Avena</i> sp.)	
				Wood charcoal	Blackthorn (cf <i>Prunus</i>	
					spinosa L.)	

Table 1 Features with material suitable for radiocarbon dating

3.2 Artefact analysis

Possible anthropogenic artefacts included: flint lithics from Trenches 01, 04, 07, 13 and 19; burnt stones recovered from Trenches 13 and 01; and burnt, possibly prehistoric, ceramic fragments from features in Trench 19 and Trench 13.

3.2.1 Lithic artefact analysis

Only two of the lithic artefacts assessed were thought to be possibly anthropogenic in origin, the rest are naturally occurring pieces of flint or chert gravel (Table 2):

- a 10mm long angular fragment of flint recorded as part of SF006 from sample <02>, ditch fill (0407) in Trench 04; and
- a 5mm long flint flake fragment recorded as part of SF007 from sample <13>, ditch fill (0710) Trench 07.

Neither of these two artefacts however are definitely humanly struck pieces, and they are not diagnostic of any particular activity, tool form or period. The small quantity recovered suggests they too are almost certainly chance, natural broken pieces.

The artefacts determined to be naturally occurring flint gravel will be discarded. No specialist recommendations have been made for analysis of the possible lithic finds SF006 and SF007. It is not recommended that SF006 and SF007 are accessioned to a museum, but it is however recommended that they are accessioned to GAT as part of their in-house reference collection.

Find No.	Context	Description	Size	Assessment
	No.			
002	(1904)	1x flint chip, heavily patinated	16mm	natural gravel
003	(1304)	2x rock quartz	<10mm	natural gravel
		1x flint pebble fragment	<10mm	natural gravel
004	(1305)	1x heavily patinated flint fragment	<10mm	natural gravel

Find No.	Context	Description	Size	Assessment
	No.			
005	(1904)	1x struck flint flake with fresh flake face and	6mm	accidental fracture
		heavily patinated cortex. Broader than it is		from plough damage
		long.		
006	(0407)	5x sub rounded black chert	<10mm	natural gravel
		2x angular broken fragments black chert	<10mm	natural gravel
		1x coal fragment	<10mm	worm sorted intrusive
				possibly a humanly
		1x angular fragment of flint	10mm	struck flake frag
				may suggest human
		1x burnt flint fragment	<10mm	activity
007	(0710)	1x flint flake fragment	5mm	possible anthropogenic
				artefact
		1x glossy flint fragment	<10mm	natural gravel
008	(0110)	Numerous subangular fragments of limestone	-	natural gravel
		chert		
009	(0109)	Numerous subangular fragments of light grey	<10mm	natural gravel
		cnert		
		2x flint fragments	<10mm	natural gravel

Table 2 Lithic artefacts

3.2.2 Burnt stone analysis

Three samples of potentially burnt stones were assessed, one of which SF012 was assessed to be naturally occuring angular angular gravel (Table 3). Both SF010 and SF011 from the pits in Trench 13 consist of stones that have been deliberately selected and then repeatedly heated and rapidly cooled causing them to shatter. Both samples most likely result from prehistoric burnt mound activity.

The naturally occurring gravel SF012 will be discarded. No specialist recommendations have been made for analysis of the burnt stones SF010 and SF011 and it is not reccomended that they are accessioned to a museum. It is however recommended that SF010 and SF011 are accessioned to GAT as part of their in-house reference collection and for potential future research purposes.

Find No.	Context No.	Description	Size	Assessment
010	(1305)	Numerous reddened angular and subangular fragments of sandstone up to 100mm long. Derived from shattered non-local sub- rounded cobbles	up to 100mm	deliberately burnt stone
011	(1304)	Numerous subangular rock fragments, most sub-angular up to 90mm long. Mostly sandstone, some fine, some coarse. Also a few pieces of vein vein quartz	up to 90mm	deliberately burnt stone
012	(0110)	3x angular pieces of sandstone	up to 45mm	probably natural gravel
		3x sub-angular pieces of cream-coloured chert	up to 45mm	probably natural gravel

Table 3 Burnt stone artefacts

3.2.3 Possible prehistoric ceramics analysis

Three possible prehistoric ceramic collections were recovered from coarse residues following the wet-sieving of bulk samples: SF013; SF014; and SF015 (Table 4). None of the samples were assessed to contain prehistoric pottery. All three samples were assessed to be concreted mineral (iron and or manganese) deposits which have formed within pits [1308] and [1309] and ditch [1905] after they had filled.

No specialist recommendations have been made for further analysis of the possible prehistoric ceramic collections SF013, SF014, and SF015. It is not recommended that they are accessioned to a museum, however, it is recommended that SF013, SF014, and SF015 are accessioned to GAT as part of their in-house reference collection.

Find No.	Context	Description	Assessment
	No.		
013	(1304)	Small fragments of mineral concretion	Formed as a result of post-depositional processes
014	(1904)	Small fragments of mineral concretion	Formed as a result of post-depositional processes
015	(1305)	Small fragments of mineral concretion	Formed as a result of post-depositional processes

Table 4 Possible prehistoric ceramics

3.3 Reporting

Following completion of the analyses outlined above, a fully illustrated MAP2 Phase 4 report will be produced that will review and contextualise the results of the evaluation trenching programme including the ecofact and artefact assessment and analysis. The report will compare the results to other contemporary sites, both locally and at a regional scale. The report will incorporate the following elements:

- 1. Non-technical summary
- 2. Introduction
- 3. Background
- 4. Methodology (including specialist methodology)
- 5. Results
- 6. Conclusions
- 7. Sources Consulted
- 8. Figures
- 9. Plates
- 10. Appendix I Approved Project Design
- 11. Appendix II Ecofact Analysis Report (Radiocarbon Dating)

A full archive will also be prepared. A draft copy of the report will be sent to the regional curatorial archaeologist (GAPS) and to the client for review by **October 2017**. Once approved, a final report will be submitted to all parties as well as the Historic Environment Record; the archive will be sent to the *Royal Commission for Ancient and Historic Monuments Wales (RCAHMW)*.

The following dissemination will apply:

- 1. A digital report will be provided to GAPS (draft report then final report).
- 2. A paper report plus a digital report will be provided to the regional Historic Environment Record, Gwynedd Archaeological Trust; this will be submitted within six months of report completion (final report only).
- 3. A digital report and archive (including photographic and drawn) data will be provided to *RCAHMW* (final report only). Submission of digital information to the Royal Commission on the Ancient and Historical Monuments of Wales shall be undertaken in accordance with the *RCAHMW Guidelines for Digital Archives Version 1*. Digital information will include the photographic archive and associated metadata
- 4. A digital report(s) plus paper report(s) (if requested) will be provided to the client (draft report then final report).
- 5. It is proposed ultimately to publish a summary of the work in *Archaeology in Wales*, the journal for the Council of British Archaeology Wales. This will be undertaken as part of MAP2 Phase 5.The MAP2 Phase 5 dissemination process will be confirmed with GAPS and client via correspondence once the MAP2 Phase 4 report is approved.

4 SOURCES CONSULTED

Campbell, G., Moffett, L. and Straker, V. 2011, *Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation* (2nd edition)

Chartered Institute for Archaeologists, 2014, Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials

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Evans, R. Hopewell, D. and McGuinness, N. 2016, New Ysgol Bro Aberffraw Primary School, Newborough, Ynys Môn Archaeological Assessment and Geophysical Survey: Phase 1 Field Evaluation, GAT Report 1318

Historic England 2015. Management of Research Projects in the Historic Environment

McGuinness, N. 2016, New Ysgol Bro Aberffraw Primary School, Newborough, Ynys Môn Archaeological Assessment Phase 2: Trial Trenching, GAT Report 1329

McGuinness, N. 2017, New Ysgol Bro Aberffraw Primary School, Newborough, Anglesey, An Assessment of Potential for Analysis MAP2: Phase 3, GAT Report 1383

Figures







APPENDIX II

Radiocarbon Dating Report





RADIOCARBON DATING CERTIFICATE 11 September 2017

Laboratory Code	SUERC-74767 (GU44742)
Submitter	Bethan Jones
	Gwynedd Archaeological Trust
	Craig Beuno
	Garth Road
	Gwynedd
	LL57 2RT
Site Reference	G2467
Context Reference	1304
Sample Reference	6
Material	Wood charcoal : Alder
δ ¹³ C relative to VPDB	-26.5 ‰

Radiocarbon Age BP 2921 ± 28

N.B. The above ¹⁴C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon 58(1) pp.9-23*.

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

E Dunbar







The University of Edinburgh is a charitable body, registered in Scotland, with registration number SC005336



Calibrated date (calBC)

The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve.*

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60* † Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*



Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc



RADIOCARBON DATING CERTIFICATE 11 September 2017

Laboratory Code	SUERC-74766 (GU44741)
Submitter	Bethan Jones
	Gwynedd Archaeological Trust
	Craig Beuno
	Garth Road
	Gwynedd
	LL57 2RT
Site Reference	G2467
Context Reference	1304
Sample Reference	6
Material	Wood charcoal : Rowan
δ ¹³ C relative to VPDB	-24.7 ‰

Radiocarbon Age BP 2866 ± 29

N.B. The above 14C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) Radiocarbon 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

E Dunba

Checked and signed off by : P. Naysmith





Jasgow The University of Glasgow, charity number SC004401

The University of Edinburgh is a charitable body. registered in Scotland, with registration number SC005336



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve.[†]

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60* † Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*





RADIOCARBON DATING CERTIFICATE 11 September 2017

Laboratory Code	SUERC-74768 (GU44743)
Submitter	Bethan Jones
	Gwynedd Archaeological Trust
	Craig Beuno
	Garth Road
	Gwynedd
	LL57 2RT
Site Reference	G2467
Context Reference	1305
Sample Reference	7
Material	Wood charcoal : Rowan (x2)
δ ¹³ C relative to VPDB	-26.2 ‰

Radiocarbon Age BP 3877 ± 29

N.B. The above 14C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) Radiocarbon 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

E Dunba

Checked and signed off by : P_NaySmb





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Calibrated date (calBC)

The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve.[†]

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60* † Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*





RADIOCARBON DATING CERTIFICATE 11 September 2017

Laboratory Code	SUERC-74769 (GU44744)
Submitter	Bethan Jones
	Gwynedd Archaeological Trust
	Craig Beuno
	Garth Road
	Gwynedd
	LL57 2RT
Site Reference	G2467
Context Reference	1904
Sample Reference	14
Material	Charred cereal grains : Oat caryopsis
δ ¹³ C relative to VPDB	-25.2 ‰

Radiocarbon Age BP 811 ± 29

The above ¹⁴C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the N.B. calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) Radiocarbon 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

EDunto







The University of Edinburgh is a charitable body registered in Scotland, with registration number SC005336



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve.*

Please contact the laboratory if you wish to discuss this further.

Radiocarbon determination (BP)

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60* † Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*





RADIOCARBON DATING CERTIFICATE 11 September 2017

Laboratory Code	SUERC-74773 (GU44745)
Submitter	Bethan Jones
	Gwynedd Archaeological Trust
	Craig Beuno
	Garth Road
	Gwynedd
	LL57 2RT
Site Reference	G2467
Context Reference	1904
Sample Reference	14
Material	Charred cereal grains : Bread/Club Wheat Caryopsis
δ ¹³ C relative to VPDB	-21.7 ‰

Radiocarbon Age BP 777 ± 28

N.B. The above ¹⁴C age is guoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) Radiocarbon 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :

EDunbar

Checked and signed off by : P. Naysmb





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The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve.[†]

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon 51(1) pp.337-60* † Reimer et al. (2013) *Radiocarbon 55(4) pp.1869-87*





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