

# Brynkir

*Dolbenmaen, Gwynedd*



Archaeological Building and Recording Investigation

Summer 2012

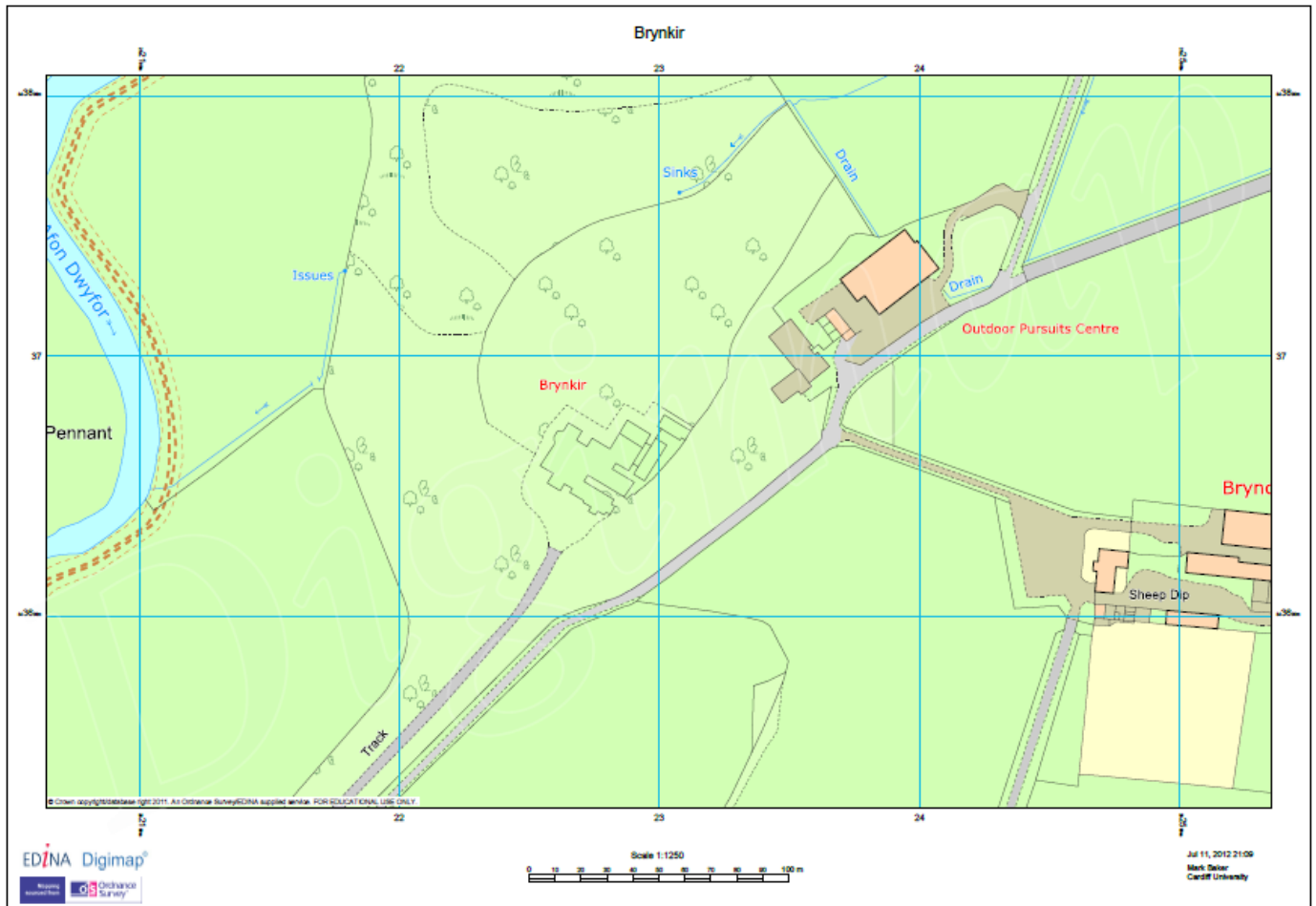
Undertaken by Mark Baker

PhD Archaeology

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Supported by:





The site of Plas Bryn kir (grid reference: SH 52466 43621) is located near the village of Garndolbenmaen, Gwynedd, North Wales at the head of Cwm Pennant/Pennant Valley, approximately just five miles north from the port and town of Porthmadog.

Bryn kir was suggested as a Unit System Property by Hemp and Gresham, but aside from a survey of the upper house by the Royal Commission in 1954, the site has been overlooked by archaeological analysis until the 2012 excavation. Plas Bryn kir, Garndolbenmaen, Gwynedd is the central case study for my PhD and is a representative example of mansion houses evolution in Wales. In terms of its archaeology the site is a palimpsest: the earliest evidence is that of a platform house of late-medieval date, however, this project focusses on the post-1500 domestic building phase of the upper and lower houses.<sup>1</sup> These were asset stripped c.1945 for their building materials (principally timbers and metals). Since then, there has been an absence of archaeological analysis, despite the site being suggested by Hemp and Gresham as being an example of a 'Unit System' property<sup>2</sup>. This project takes place between 19<sup>th</sup> July and 15<sup>th</sup> August and comprises of a non-invasive survey of the upper and lower houses at Bryn kir. It is entirely empirical, aiming to record the ground plan, elevations and chronology of the lower house, contrasting and comparing it with that of the upper house and Bryn kir Tower. A limited geophysical survey of the immediate area around the upper and lower houses will establish whether any structures survive beneath current ground surface level.

The site has both local and national significance. From a local perspective it is a large, domestic site that fits into a pattern of post-Medieval houses in North West Wales whose architectural similarities are reflected through inter-familial relationships.<sup>3</sup> Nationally, this provides a corpus of buildings which are in terms of planning and family provision identifiably Welsh in character, and unique to the region. This form of arrangement was termed the 'Unit System' in an attempt to describe a form of Welsh gentry house whose components consisted of independent

<sup>1</sup> Colin A. Gresham, 'Platform Houses in North-West Wales', *Archaeologia Cambrensis* 53 (1954), 48 (pp.18-53).

<sup>2</sup> Ibid.

<sup>3</sup> Colin A. Gresham, *Eifionydd: A Study in Landownership from the Medieval Period to the Present Day* (Cardiff: University of Wales Press, 1973).

houses built in close proximity to each other, yet structurally separate. For instance, at Gwydir, Llanrwst, the solar tower and hall range stand at corners to each other, yet had no direct access, until an awkward addition subsequently resolved this issue. It appears, according to documentary evidence, which two generations of the Wynn family lived on site simultaneously, yet autonomously. Various theories have been put forward as to why Welsh gentry families built in such a fashion, and it appears that it was a response not only to traditional forms of partible inheritance, but also changes to familial relationships in early-modern Wales. It is important to note that the last noted case of 'Unit System' existence was recorded in the late-nineteenth century near to Criccieth, Gwynedd.

If Brynkir can be proved to be 'Unit System', it will be comparable to nearby Clennau<sup>4</sup> and Parc<sup>5</sup> thus establishing the mansion complex as an important marker in Welsh architectural history.<sup>6</sup> The site also offers unique opportunities for investigating aspects of traditional architecture, in particular, the association between the two mansion houses. Detailed study of these has the potential to shed important light on building design and construction, as well as on the provision made for partible inheritance and the spatial aspects of social organisation.

The objective of the project therefore is to create an archaeological building investigation and recording (ABIR) to establish the character, history, dating, form and archaeological development of Brynkir and its setting, including buried components. In brief:

- Brynkir appears to be a Unit System house, composed of at least four separate buildings, which are awkwardly connected at corners or are entirely separate from adjacent structures.<sup>7</sup>
- Royal Commission of Ancient and Historical Monuments in Wales only recorded the late-medieval upper house, which had become by the eighteenth century a secondary dwelling.
- No historic images showing the lower house survives.
- No architectural plans or drawings survive recording the layout of the buildings.
- Enigmatic references to a Regency villa being added onto an earlier house by members of the Huddart family and in building receipts held at Bangor University.
- A member of the Greaves family who owned Brynkir prior to asset stripping in 1945 recalled during an interview a building called the 'Tudor' house behind the Regency villa.

In particular the project aims to address the following specific questions:

- 1) Was William Huddart correct when he stated that Sir Joseph Huddart (1767-1841) had built the Regency villa onto the side of an earlier house?
- 2) Is there any evidence of traditional building techniques and planning at Brynkir? Particularly evidence of the Unit System.
- 3) Did Huddart employ a professional architect to design the Regency villa? Where did the fine ashlar stone come from?

## Methodology

Between July and August 2012, a programme of archaeological building investigation and recording was undertaken to determine, as far as is reasonably possible, the nature of the archaeological resource associated with the upper and lower houses at Brynkir. It drew on existing records (both archaeological and historical sources) and previous fieldwork undertaken by the Royal Commission and Mark Baker. It was implemented using appropriate methods and practices which satisfied the stated aims of the project, and complied with the Code of conduct, Code of approved practice for the regulation of contractual arrangements in archaeology, and other relevant bylaws of the Institute for

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<sup>4</sup> RCAHMW, *An Inventory of the Ancient Monuments in Caernarvonshire: Volume II, Central*, (London: H.M.S.O, 1960)

<sup>5</sup> W. J. Hemp and Colin A. Gresham, 'Park, Llanfrothen, and the Unit System', *Archaeologia Cambrensis* 97 (1942), 98-112.

<sup>6</sup> Peter Smith, *Houses of the Welsh Countryside: A Study in Historical Geography* (London: H.M.S.O., 1976; revised 1988).

<sup>7</sup> Richard Suggett, 'The Unit System Revisited: Dual Domestic Planning and the Development Cycle of the Family', *Vernacular Architecture*, 38 (2007), 19-34.

Archaeologists. The programme resulted in the production of drawings, an ordered accessible archive and this report.

The definition of archaeological building investigation and recording (ABIR) is a programme of work intended to establish the character, history, dating, form and archaeological development of Brynkir and its setting, including buried components, with its first year taking place in 2012.

All archaeological record drawings were prepared to a suitable scale, using techniques appropriate to the site and to the aims of the project. The requirements for dimensional accuracy were set out in the project design, including the level of detail, eg individual stones, brick courses, or outlines of major features.

Standing structures survey is non-invasive and requires much thought and consideration. Attention to detail is essential for successful understanding of archaeological chronology as subtleties may not be evident at first. Basic surveying skills enable an interaction with a site that is not attainable by using computerised methods alone. A building's stratigraphical context can be either horizontal or vertical, or in some cases diagonal. Drawings are a selective and interpretive process which provides far more insightful analysis than pure photographic recording. However, margin for error is always evident during recording and both approaches should be integrated to afford better understanding. We need to achieve a balanced approach to the meaning of the structures, rather than over emphasis on the structures themselves: the argument of forms versus function.

### **Relative Chronology of Building**

Identification of a construction sequence will inform a relative chronology by materials and techniques used and the physical relationship between elements. For example the fundamental contrast between random rubble stonework and ashlar, or surface finishes such as stucco or cement render. In some cases an absolute chronology can be discerned by using date stone evidence, dendrochronology, and documentary evidence. This can often be corroborated by maps, plans and images.

### **Mortar**

Mortar analysis, either by sight, physical or chemical composition, is a useful tool for division of walls into possible phases. Colour is often an initial indicator, followed by actual composition i.e. whether they include sand, pebbles or other materials. Mortar should always be photographed in situ before sampling.

Was there a standard mortar recipe? Compare with the stables.

At the tower, the mix used for the lower three floors (date stone 1821) was a very hard reddish-brown mix, smeared liberally well past the narrow stone joints and then scored with a line to show the joint. Bob Bennett of the Lime Centre analysed a sample of the mortar, and found a 1 part lime to 5 parts aggregate mix, with no evidence of cement. And yet what was making the mortar so hard? Had Parker's Roman Cement been used (as Madocks had on Tremadog church spire some years earlier) or was there some natural pozzalanic ingredient in the sand? The upper levels (date stone 1859) had been pointed with a softer lime mortar which contained local sand.

## Geology



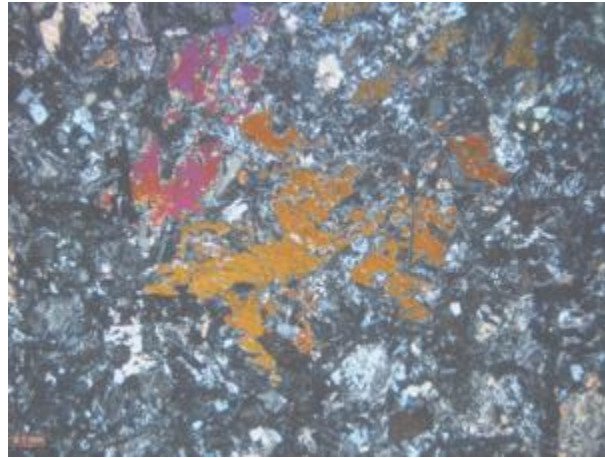
The geology of Gwynedd is comprised of hard igneous rocks, such as granite and dolerite, in the mountainous areas with slates and sedimentary mudstones also abundant. Both houses used mudstone from the quarry at Bryn Brain, an exposed area within Brynkir's park and dolerite extracted from Craig Gyfyng, an outcrop located to the north west of Brynkir, in the centre of Cwm Pennant/Pennant Valley. Slate roofing typical of post medieval wales (Hilling 1976) was used, all were primary construction materials. The materials used in the development of both houses on site have been affected by what was locally available. It is only later into the late Victorian phase of building at the lower house that brick and other stones would have required sourcing from further afield start to be used in the building work. 1930 sale catalogue states that the green dolerite found at Graig Gyfyng was used for the building of Brynkir.<sup>8</sup> It also states that the stone was able to be used for building purposes, particularly dressed stonework and set-making.



Two samples of dolerite were collected and submitted to the Geology Department of the National Museum of Wales: sample one (E004829) from a piece of ashlar found in the bow window of the drawing room, and sample two (E013015), from the quarry site, Craig Gyfyng. The samples both contained a primary mineralogy dominated by

<sup>8</sup> 1930 Sale Catalogue p.13.

clinopyroxene and plagioclase feldspar with an ophitic texture (fig. 1 & 2). This primary mineralogy is overprinted by a secondary metamorphic mineralogy, resulting from greenschist metamorphism, after the sample had solidified. The nature of this metamorphic mineralogy is slightly different in the two samples. Such variations can occur over a relatively small distance, such as across one outcrop, or even between samples collected within the same quarry. Both samples were compared to the specimens contained in the National Museum's collection, but no exact match was found.



On the basis of the petrological data above, it is not possible to say categorically that the two samples were derived from the same locality, however this is highly probable, and if not the exact same locality then from the same rock type at a nearby locality. This therefore suggests that the stone used in the building of Brynkir (E004829) is likely to be local to Craig Gyfyng where the second sample (E013015) was collected. More detailed sampling in the area may help build up a clearer picture and help pin point a more precise source for the stone.

### **Upper House**

The upper house is an earlier structure, most of which is only represented by ground level elevations. However two gable ends of this structure stand preserved: the north-east facing gable end and in the west range the west-facing gable end, which also formed the end-wall for the Great Hall house. The first stage of inhabitation for the upper house structure is widely accepted to have been in the early 16th century. The first half of the project's duration was strictly engaged with this part of the site.

### **Siting**

The house was set into the gentle slope of a hillside, running parallel to the valley, so that the gable ends were facing the prevailing winds which come from Cwm Pennant or from the sea. Due to the topography, the site slopes in two directions, down towards the valley floor and to the beginning of the valley itself. It was noted from historic photographs, when the site had been clear felled, that the upper house would have had strategic views over great distances, yet it was sheltered enough by the rising hills behind to be afforded the necessary protection from the elements.

## Excavation



The excavation of three 1m squares test pits down to the geological surface was to characterise the site stratigraphy and occupation layers of the site. These went on to become trenches A, B, C, D, E and were used to establish the stratigraphy of the site around the upper house. By revealing the vertical profile, occupation layers were identified beneath a layer of humus and demolition material, recording the depth of deposits and the complexity of contexts. All excavation was carried out by hand with shovels and trowels. Through excavation, more detail could be added to the Royal Commission's 1950s site plan of the Upper House, as well as providing datable evidence to establish occupation and potentially construction phases of the building.



A total of five trenches were excavated at the Upper House, each were placed at strategic positions for understanding the structure's form and function and to enable a building chronology to be created. According to the Royal Commission's volume on Caernarfonshire, the Upper House began as a sixteenth century hall-house, and then an additional seventeenth century two-storey wing was added at a right angle. Five trenches were put in around the building: A, 3m x 1m, dissected the interior and exterior of the great hall; B, 1m x 1m, which was on the external corner of the hall, where the stone platform of the building was wholly exposed; C, 2m x 3m, in the interior of the original 16<sup>th</sup> century hall interior by the cellar entrance; D, 1m x 2m, was over the main entrance of the seventeenth century house; E, 1m x 3m, was over the rear wall of the hall which had been demolished to foundation level.



All five trenches had two layers above the undisturbed archaeology: a layer of topsoil of up to 30 cm in place, which covered a layer of demolition and collapse material that was up to 1m in depth. Within the later were found large pieces of fallen masonry and roofing slate, which due to its compact nature, meant that removal took longer. However, some interesting finds were found in the rubble layers which probably related to the dwellings use as a 'romantic ivy-clad ruin' garden feature in the 19<sup>th</sup> century according to the 1899 sales catalogue such as a perfectly preserved clay pipe was found with all the decorations and manufacturers mark intact, which allowed us to date it to 1860-1900, and a wide range of domestic glass and pottery finds. In the deposition levels, bottle stamps with the 'Brynker' family name intact on them were also found



Trench F, 1m x 2m, the only one opened in 2012 at the Lower House, was placed beneath the air vent of the drawing room's north east windows.



## Recording

The cleaning of overgrowth from the elevations preceded the measuring, planning and photographing of this structure.



## Upper House Development

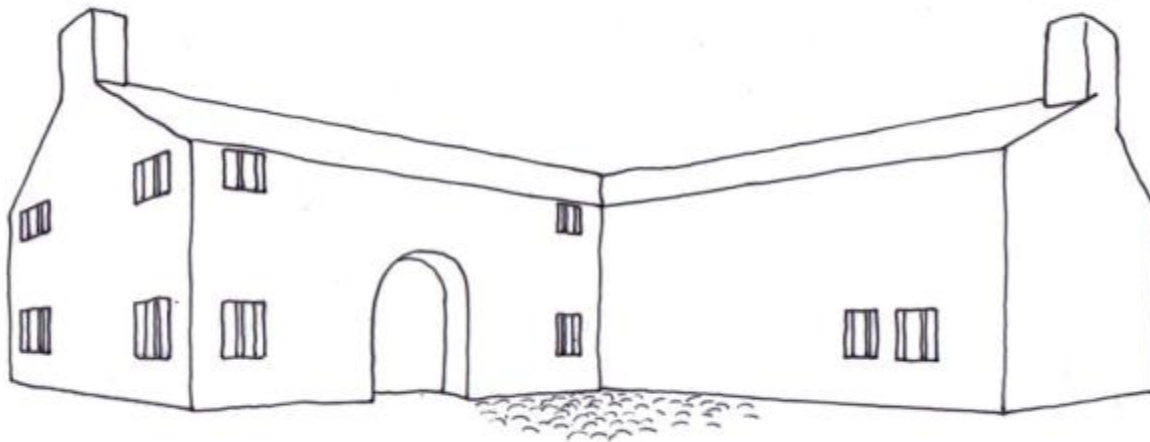


### Phase 1

A plinth of at least three courses, with shaped corners was constructed to create a platform onto which the hall was erected. This was graduated and the stones which were above ground level, and visible support the argument that the front elevations, overlooking the gardens, were originally rendered. Medieval Welsh poetry refers to the houses of the areas looking like lanterns in the hillsides. The earliest sections of the upper house are constructed out of dolerite boulders, most probably gathered from post-glacial scatter and roughly hewn to shape. There appeared to be very little evidence of tooling marks and it is likely that stones were chosen specifically due to their dimensions; larger boulders on the lower courses, decreasing in size as the wall height increases.

At roughly 2 metres from ground height, a ledge was observed internally, onto which a wooden roof or floor may have been supported. It was noted that all of the phase 1 building material stopped at this level.

There was little evidence, if any, of external render on the rear elevations



## Phase 2

At right angles to the hall house was constructed a large two-storey building with central doorway; parlour to the left and dining room to the right. On the garden gable-end, four small windows survive in their original size, and overlook the terrace gardens. The building of the 'Snowdonia Type' house is likely to have taken place during the last quarter of the sixteenth century.

The walls are constructed out of mudstone, identified by the Geology Department, National Museum of Wales, as being from the quarry site in Bryn Brain. The mudstone used cleaves naturally when quarried into rectangular blocks, easily moveable and usable for constructing walls of great height. Diagonal tooling marks were visible on all of the external mudstone. These marks may be part of the finishing process post-quarrying, or were used to create a surface onto which render/limewash could adhere to. Some dolerite boulders were included in this building phase, but none were as large as those found in phase 1. Most appear to have been chosen specifically for their size, possibly being split. However, the markings found may be glacial marks, but it is likely that these were made more defined so that render could adhere more securely.

It may have been at this point that the second storey of the late-medieval hall was added. If the hall had originally had a cruck-frame roof, then it is likely this was enclosed within the later phase, as the collapse of the building to the late-medieval stonework may indicate that when the building was asset-stripped, the roof was removed in its entirety.

## Phase 3

At some point after the Snowdonia house had been built, a rear stair-tower was added onto the north-east exterior wall, positioned directly opposite the main door. The expansion of fireplaces in the parlour and dining room may also date from this period as the arching is similar to stonework found in the tower. In the 1662 the Hearth Tax records Ellis Brynker, gent, as listed under Llanfihangel-y-Pennant parish as having three hearths. This probably ties in with the three ground floor hearths in the upper house. This raises the question whether hearths sharing a chimney stack were taxed separately. This seems improbable as it would be unlikely that there were no upstairs fireplaces at Brynker in 1662, which supported by the alternative name of 'chimney tax'. The tax was introduced had been introduced the same year in order to cover the deficit in supporting the recently restored monarchy.



#### Phase 4

The staircase-tower was reconfigured and the entry blocked, indicating that it may have been an open-well stair, which was either filled in or was replaced with a dog-leg to fit into the altered space. Unfortunately, due to collapse, there is no evidence of window openings.

Windows added or enlarged to take casements, which appear to have been glazed with diamond paned glass.

It may have been at this time that the house was awkwardly divided, so that the hall was partitioned off from the rest of the building. It is likely that this is the evidence of the Unit System, noticed by Colin Gresham and referred to in his article on Parc, Llanfrothen in 1942.<sup>9</sup> Historic photographs of the Snowdonia House gable-end show that all of the sixteenth-century windows were in-filled and that the exterior was rendered. It is likely that the window seats were converted to cupboards either side of the parlour fireplace.



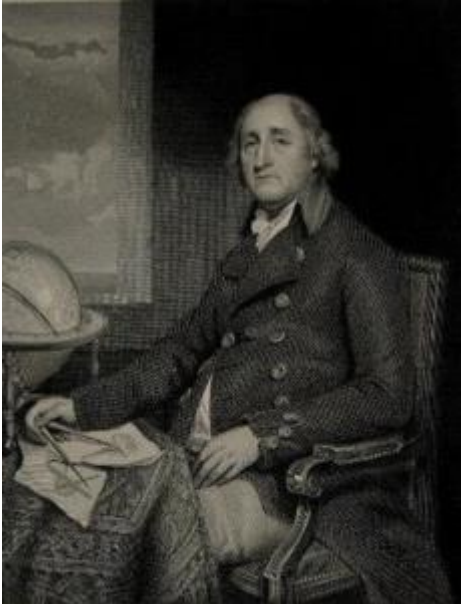
#### Phase 5

Many of the windows in hall-range were blocked up at both ground and first floor levels, indicating either a change of use or possibly response to Window tax. This tax was introduced in 1696, under William III, under the 'An Act for making good the Deficiencies of several Funds therein mentioned and for enlarging the Capital Stock of the Bank of

England and for raising the Publick Credit'.<sup>10</sup> Unfortunately, Window Taxation records do not survive for this area of Caernarfonshire. The tax was repealed in 1851. All of the windows blocked up were the large casement windows (as evidence by the lead and diamond-shaped glass discovered).

The main doorway was also altered so that it was made narrower. Under the lowest course of this infill, in an undisturbed context, was found a shard of Buckley slipware, dated c.1700. Between the late-seventeenth and late-eighteenth centuries, Buckley ware was very popular and characterised by large thrown storage vessels for household and dairy use along with press moulded baking dishes with bold slip decoration.<sup>11</sup>

### Lower House



A new house is first referred to in the surviving account book for Brynkir held in Bangor University Archive beginning in May 1812.<sup>12</sup> John Norton was responsible for overseeing the enterprise under the direction of Joseph Huddart. Monies appear to be paid retrospectively and were dependent on the receipt of an invoice, so in some case, work may have been carried out a month or more previously. What we can discern from the documents is that the house's construction was already well underway as lead, slates and slater's nails were purchased for the roof. This indicates that either Huddart had purchased an unfinished house, as he was to do at nearby Wern, or that the foundations were quickly cast and the walls rose at speed so that the building could be quickly made watertight with a roof. For instance, an invoice for July 18<sup>th</sup> 1812 refers to slating the new house totally 353 yards, 4 feet and inches in total, while the rendering or cementing the underside of the slates in place totalled 202 yards 0 feet and 10 inches. Intriguingly, it is recorded that 3 ½ days was spent stripping off old slates.<sup>13</sup> What could have taken the slaters such a long time to strip? An unfinished house?

Internally work was progressing with 29 feet of oak being purchased, presumably for flooring as both sawyers and carpenters were employed. Specialist woods such as mahogany were singled out, as well as laths, which were both purchased from a Robert Morris. Stucco is mentioned as well as window weights for sashes. Hair purchased for plastering the new house. A glazier was paid for installing panes of glass into the garret, probably above the main staircase. Labourers proved to be the most costly expense, totally £31 5 1 ½ for June. A slater was singled out for

<sup>10</sup> British History Online, Statutes of the Realm: volume 7: 1695-1701, 'William III, 1696-7: An Act for making good the Deficiencies of several Funds therein mentioned and for enlarging the Capital Stock of the Bank of England and for raising the Publick Credit. [Chapter XX. Rot. Parl. 8 & 9 Gul. III. p. 5. nu.1.], Statutes of the Realm: volume 7: 1695-1701 (1820), pp. 218-238. URL: <http://www.british-history.ac.uk/report.aspx?compid=46868> Date accessed: 12 April 2012]

<sup>11</sup> <http://www.ceramics-aberystwyth.com/buckley.html> [accessed 15.9.12]

<sup>12</sup> Bangor University General Collections MS 809-811

<sup>13</sup> Bangor University General Collections MS 809, no. 15.

repairing the roof of the old house, but which building does this refer to? The upper house or a structure already existing on the site of the lower.

Sandstone is noted, together with mention of 6 loads of stone being brought to the house. 60 yards of paving stone was paid for, together with stone masons whose own account was one of the most costly within the list totally £44 0 10 ½ for August alone, compared to carpenters who were paid £18 0 0. Veranda columns were turned, referring to their construction out of wood. Several entries note cement plasterers, does this represent those who carried out the stucco work? A stone cutter is also mentioned, did they use the plug and feather technique seen all over the site. More flags were purchased from Merionethshire by sea.

By November, locks and hinges were being bought, together with huge quantities of nails, bushels of hair for plastering. Thomas Davies the glazier was paid £57 5 8 and William Jones £61 13 0 for providing lime. Doors were purchased from Llystyn Gwyn.

### Chronology of Lower House

#### 1810s



Surveyors' drawing of 1816 show an L-shaped building for the lower house with a circular turning area in front.

#### 1840s



Building



1890s



1930s



## Gardens

Ornamental terraces drop down from the site of the two houses towards the position of the lake and the river and the road leading to Cwm Pennant. From the date of the Upper House it is thought that these terraces might be late-sixteenth or early-seventeenth century in origin and relate to the terracing at nearby Parc, Llanfrothen. William Lewis Anwyl (ob. 1642), of Parc, was a prominent, wealthy, cultured and well-educated man with a strong sense of family, who had contacts in London and elsewhere who kept him supplied with books and information. He may have tried to create a garden based on Italian ideas on his rather unpromising steep, wet site. Despite the date of 1671 on the latest house, William Lewis may have built this too, as his will refers to a recently constructed house and a

cywydd (panegyric) on his death mentions his 'New House of immense construction' as well as gardens, orchards, parks and 'fair towers'.<sup>14</sup>

There are remains of fine trees planted in the 19<sup>th</sup> Century, e.g. a Monkey Puzzle; rhododendrons that have largely reverted to the *ponticum* stock that nearly all old rhododendrons were grafted on and bamboo. As the excavation progresses more interesting trees and shrubs may emerge from the undergrowth, as well as other garden features.

The circular carriage sweep had once been in front of the main entrance to the house (all overgrown now but you can see where the trees were planted in a circle). Originally the mansion must have sat beautifully in its park and meadowland facing the river and forming a pretty view in itself. Scrubby woodland now obscures the view from the house – the Drawing Room with its fine bay window would have afforded a lovely vista. The rivulet at the bottom of the terraces has been engineered and faced with picturesque rocks to form little cascades and there may have been a water garden here.

Looking at the Ordnance Survey maps of 1889, 1900 and 1915, one can see that the Regency mansion was indeed surrounded by both park and farmland, with at least two serpentine walks through pleasure grounds, a small lake (now silted-up), a large walled garden beside what was then the Home Farm, and an ornamental walk up to the banqueting tower. This was built to celebrate the coronation of King George IV in 1821 (begun in 1819 and now converted as a romantic holiday cottage) using labour in a scheme set up to provide work for ex-soldiers following the end of the Napoleonic Wars.

## **Appendix A**

Department of Geology, Amgueddfa Cymru – National Museum Wales

### **Petological Report: two rock samples collected by Mark Baker, Cardiff University**

#### **Source**

Sample Number 1: E004829

Plas Brynkir, Garndolbenmaen

OS Grid: SH 5227 4365

Thin section prepared from specimen collected from window sill – shattered top from west front bow.

Sample Number 2: E013015

Outcrop: Craig Gyfyng (west of Craig Issalt)

OS Grid: SH 5265 4511

#### **Mineralogy**

A sample from one of the specimens (E004829 – window opening from bow on west front, from shattered ashlar block) was examined by XRD (X-Ray Diffraction) analysis. This allowed for an accurate profile of the minerals present and their percentage within the sample to be built up.

#### **XRD Results:**

Albite (plagioclase feldspar) – 41%

Augite (clinopyroxene) – 17%

Epidote – 17%

Chlorite – 12%

Actinolite – 8%

Quartz – 5%

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<sup>14</sup> ICOMOS Park and Garden Register 'Parc'



The mineral content (assemblage) of the rock specimens is consistent with 'Green Schist Facies' alteration of a (basic igneous) dolerite type rock.

### **Rock type**

This rock can be classified as an altered dolerite or metadolerite. From the geological map (BGS 1:50,000 Sheet 119: Snowdon), sample E013015 is seen to intrude into mudstones / sandstones of the Nant Ffrancon Group, of Llanvirn age, Ordovician.

In hand specimen the metadolerite is blue-grey-green in colour with a brown weathered surface.

Rock samples in thin section:

A standard thin section (30µm) was prepared from each specimen and observed using a polarizing microscope (Leica Ortholux Pol). This allowed for high magnification identification of the minerals (shape, colour etc) and textures present within each rock. Distinct differences in the colour of minerals in cross-polarized light (known as birefringence) allows for very accurate mineral identification.

In thin section the following minerals were identified, and these finds confirm the data obtained by XRD:-

Albite (plagioclase feldspar) – large amount of elongate crystals in a random orientation.

Augite (clinopyroxene) – Yellow-brown to blue-purple birefringence, showing ophitic texture, this is where large crystals of augite enclose smaller crystals of albite.

Chlorite – yellow green colour in plane light, low birefringence colour (streaky looking – one good cleavage<sup>15</sup>).

Epidote – yellow green in colour, low birefringence colour, high relief (one good cleavage observed).

Actinolite – mass of acicular crystals.

Quartz – colourless in plane light, white to black in cross-polars.

### **Images**

Images of the two samples were recorded, representative images are presented here, and further images are available, if required.

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<sup>15</sup> Cleavage – The plane along which a mineral will break, controlled by the atomic structure of the mineral.

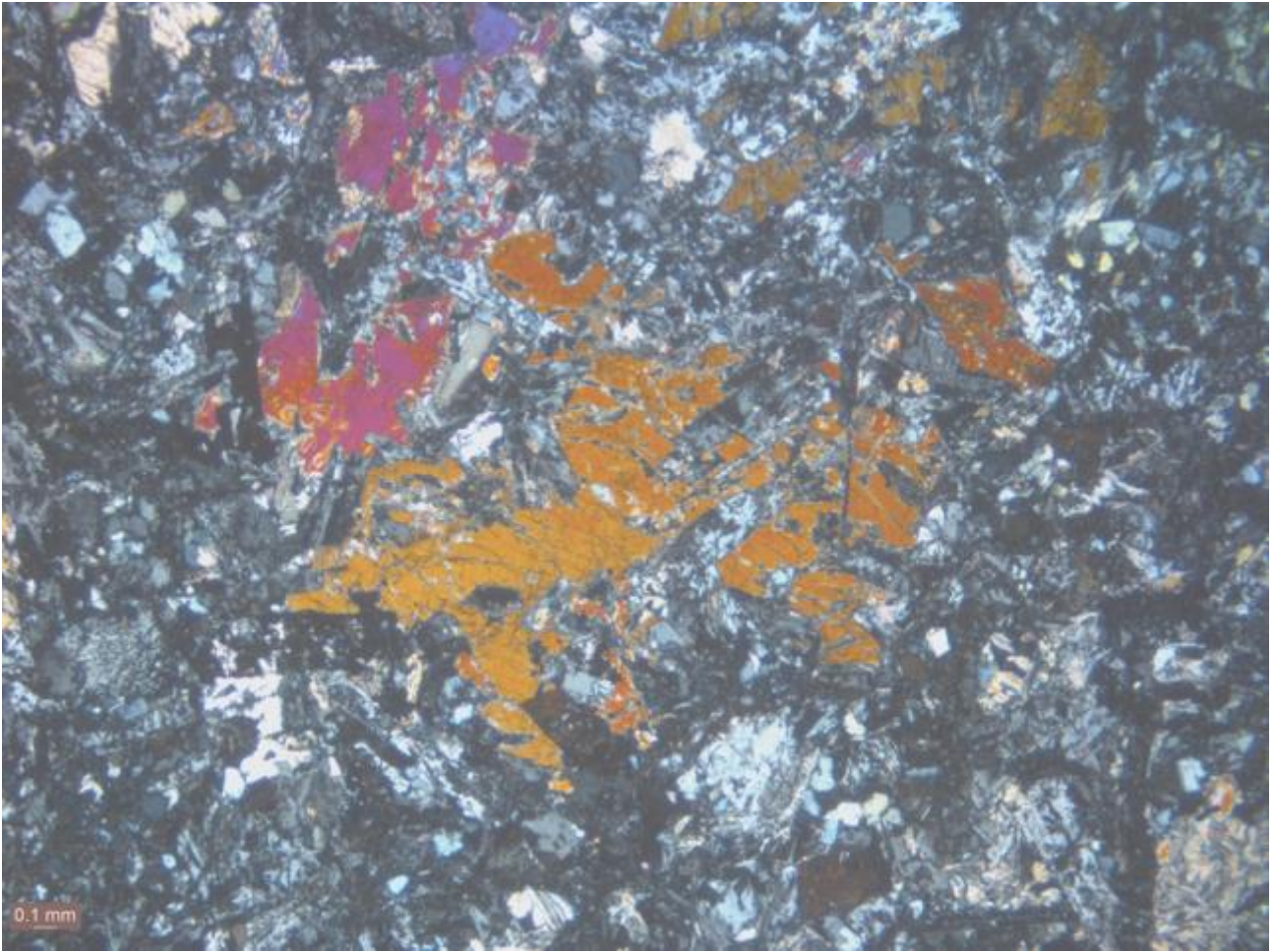
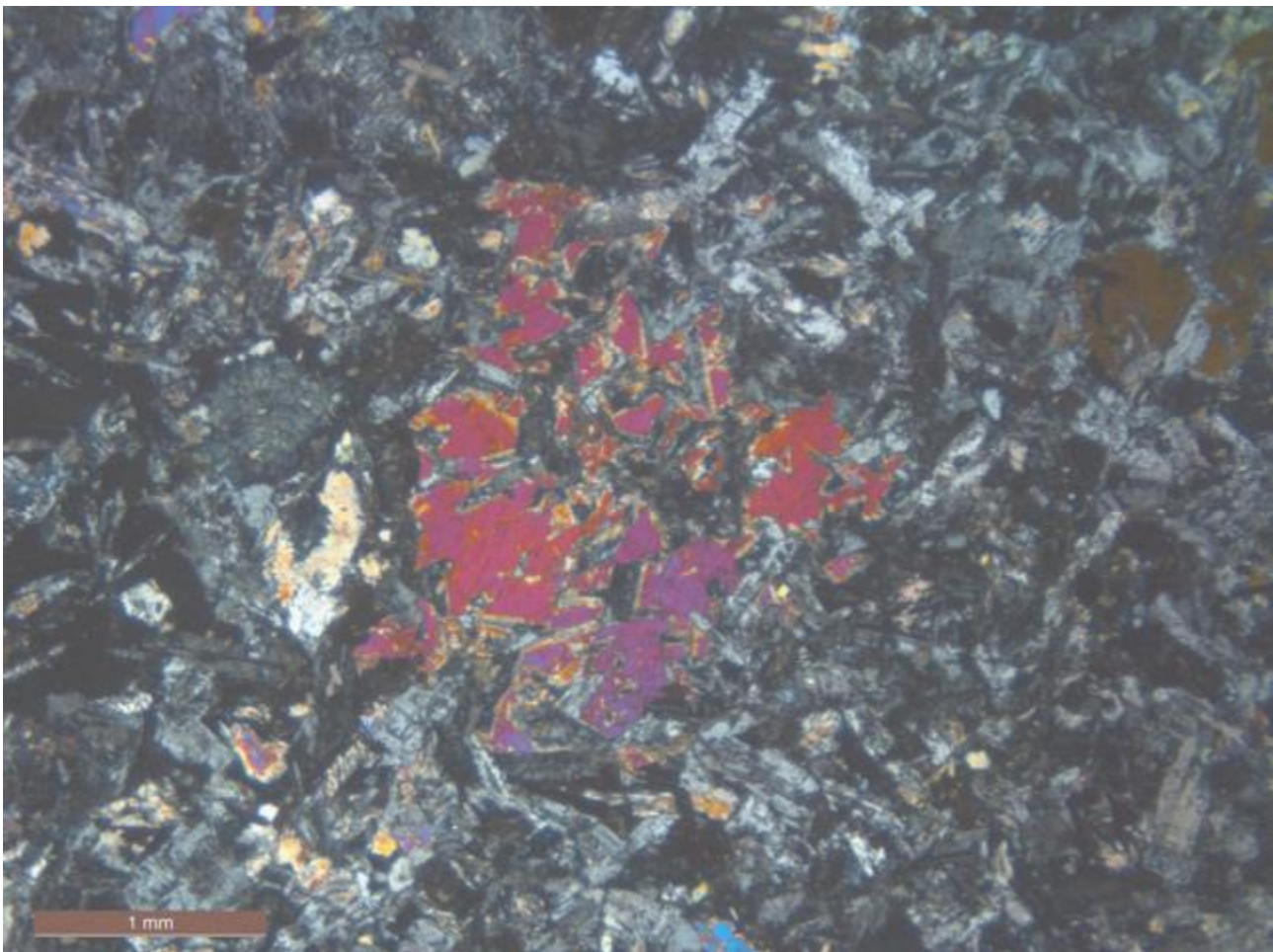


Figure 1: E004892: Ophitic Texture in thin section (cross-polarized light)



*Figure 2: E013015: Ophitic texture in thin section (cross-polarized light)*

## Styles of Drawings

1. **Interpretative drawing:** basic outlines of features

Pros: quick, easy recording of elements; provides a sketch of the feature for use later elaboration

Cons: not always to scale; does not contain much information

2. **Schematic drawing:** inclusion of major features but some characteristics may be schematised.

Pros: symbolic representation of features for easy identification; allows for an over interpretation without being overloaded by detail.

Cons: some important features may be lost in the process

3. **Photographic representation:** accurate representation and illustration of all archaeological elements.

Pros: now widely adopted as a standard as it reveals subtle differences between contexts and feature;

Cons: despite the level of detail, this approach can cause confusion as the level of detail is too great.

## Requirements

Use the pro-forma to record features

No find/sample must leave the site without a label

For small areas also use the planning grid frame approach to record

Planning frame with 10 or 20 cm intervals for recording tests pits.

## Plan Preparation

Compass to establish magnetic north – this is essential for **all** ground plans.

## Scale

1:20, 1:50 or 1:100 depending on nature of drawing required

## Measurements

There are two approaches to hand-measured drawings: those drawn on site, and those drawn freehand on site with appropriate measurements noted, and drawn up accurately off-site.

Three people are to be the recording team: two at either end of the tape, and the third to record the measurement.

For ground-floor plans, measurements should be taken at window level. A base line 1.5m from ground level should be observed to include features such as window sills etc., thus creating a horizontal slice through the building.

Alternatively, a datum line can be set up with the aid of a level or theodolite, from which measurements can be taken.

Running (continuous) measurements for each wall for be taken, with features such as doors and windows recorded on the plan. Individual (cumulative) measurements result in cumulative errors and should be avoided.

Exterior measurements should be taken in an anti-clockwise direction so that the readings can be taken from the tape the right way up, which should be recorded at right angles to the wall on the plan as a progression around the wall is made, with directional arrows. 0 should mark the beginning of any new measurement.

Interiors should be recorded clockwise, with each room separately being recorded. A running measurement should be taken through as many rooms as possible (especially in the presence of enfilade).

At least two diagonals across rooms should be taken in case the main walls are not built at right angles.

Wall thicknesses should be taken at each door or window opening.

Elements such as plaster thickness, joinery and other details should be ignored in the ground plan. If such details are to be recorded, they should be done so separately and at a larger scale.

Take measurements at right angles from the grid lines

Always use metric when taking measurements. Imperial can be shown on the scale.

As Brynkir is mostly covered by vegetation, it will be difficult to use an EDM/Total Station; therefore much work will be carried out using traditional hand measuring techniques.

Whilst in the field always use drawing film as it is transparent (essential for overlays); matt double sided 2mm is good for drawing in all weathers, it is optional as to whether a millimetre grid is printed on it. Otherwise, plain film can be overlaid on graph paper, bearing in mind that the graph paper may expand and contract slightly.

### **Curved and irregular features (such as bay windows)**

A base line should be setup and offset measurements taken from this line to take the interior of the curve. Three other base lines should then be set up so that the exterior can be drawn.

### **Elevations**

An elevation or vertical section is drawing of a face of a building without perspective, with all elements shown as being flat.

One method of drawing an exterior elevation is to measure the position of main features from a horizontal course or plinth, such as ashlar.

A theodolite or ranging rod can be used to measure height.

### **Stone by stone recording**

A measuring grid is to be set up over the wall and will be recorded by eye.

Rectified photography can be used for and traced over either by hand or in Photoshop.

### **Sections**

Sections show the relationship between different parts of a building, and are due to their nature, more schematic and less accurate than plans and elevations.

A sectional drawing not only shows what is being cut through but also shows everything else beyond the sectional plane that is visible.

### **Details (doorways, plasterwork, arches etc.)**

For example, an elevation drawn at 1:20 would have such features drawn at 1:10.

These can be drawn with the aid of a grid laid out over the feature (as with elevations) or by taking copious measurements.

Profiles of mouldings should be made at full size using a template former.

### **Photographs**

All photographs must contain a ranging pole to provide a scale.

Avoid unnecessary distortion

Photogrammetry can be expensive but Photoshop can correct slight distortion

### **Post-excavation**

Use of Photoshop layers for the presentation of archaeological information

### **Finds Processing**

Anything that is likely to be harmed by washing should be left unwashed: e.g. all metal objects; carbonised material; fragile pieces of bone or pottery.

Two bowls of lukewarm clean water: one for washing and the other for rinsing.

Always handle with care, handling one artefact at a time.

Be careful not to mix groups of finds

Never put more than one group of finds in a box

Never leave finds unlabelled, especially whilst drying

Always ensure that labels are weighted down so that they are not disassociated from their artefact.

Always recycle bags when possible but discard damaged ones