**CPAT Report No 1070**

# Llanymynech Quarry drum house renovation works

## ARCHAEOLOGICAL WATCHING BRIEF AND RECORDING



THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

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## ARCHAEOLOGICAL WATCHING BRIEF AND RECORDING

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Report for Friends of the Llanymynech Limeworks Heritage Area

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Cover photo: The quarry and main drum house, showing the chimney for the Hoffman kiln in the background (Photo CPAT 3186-0028)

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## 1 INTRODUCTION

1.1 The Contracts and Field Services Section of the Clwyd-Powys Archaeological Trust (CPAT) was originally approached in November 2009 by Lowri Jones of Powys County Council, on behalf of the Friends of the Llanymynech Limeworks Heritage Area (LLIMEYS), to conduct a watching brief in conjunction with the reconsolidation of two drum-houses at Llanymynech Quarry in Powys. A written scheme of investigation was prepared at the time, but this was not implemented until September 2010, when a revised quotation for the archaeological works was provided by CPAT and accepted by LLIMEYS.

1.2 The main objective of the watching brief was to monitor the reconsolidation works, with a view to recording any archaeological features that were identified. The proposed works comprised the repair of sections of both structures which had collapsed and the consolidation of the upper parts of the structures which had been affected, or were threatened, by vegetation growth.

1.3 Visits were undertaken to the works to monitor progress on the vegetation removal and reconsolidation. These were carried out on 22 October 2010 and 11 January 2011.

## 2 BRIEF HISTORICAL BACKGROUND TO THE QUARRY LOCALITY

2.1 Llanymynech Hill and its environs is an area of considerable archaeological and historical importance, due in large part to its mineral resources, which have been exploited over a very long period of time. An historical overview of this significant landscape was produced in a report compiled by CPAT (Jones, 2004) and is reproduced in part here to provide the reader with information that will allow a better understanding of the current work.

*Prehistory*

2.2 The most significant evidence of occupation on the hill is the Iron Age hillfort, whose ramparts enclose an area of 57ha, an area considerably in excess of any other fort of comparable date in Wales and making it one of the largest forts in Britain. It seems almost certain that the large extent is a result of the presence of the copper and lead minerals present within its boundaries, and evidence of metal working has been found in a number of small-scale excavations in the past. Direct evidence of settlement, in the form of traces of an Iron Age round house, was forthcoming from an excavation (Owen 1999) on the 13th green of the Golf Club which occupies a large part of the interior of the hillfort. It is likely that there were defences on the south side which were truncated or removed by later quarrying activity. The land to the west of Llanymynech, below the hill, also includes evidence of Bronze Age burial mounds and a series of prehistoric land divisions, known as pit alignments.

*Roman*

2.3 It has long been recognised that there was Roman activity on the hill, primarily due to the discovery of a hoard of Roman coins, dating to between 30 BC and 161 AD, in the ancient mine workings known as Llanymynech Ogof. Roman burials were also discovered in the mine, which suggests that although they were still open at the time, they had become disused, implying an early Roman or Iron Age origin for the workings. It seems highly unlikely that the resources of the hill would not have been exploited in the Iron Age or the early part of the Roman occupation of the area. A number of enclosures of either Iron Age or Romano-British date are known on the lower ground around the hill, probably representing dispersed farmsteads.

*Medieval*

2.4 It has been argued, and this seems reasonable from the known evidence, that the western defences of the hillfort were included in the line of Offa's Dyke, the large linear earthwork that was constructed as a boundary between Wales and the kingdom of Mercia in the late 8th century. It is unknown whether there was any mining or quarrying activity in this period, but it seems reasonable to expect some small-scale activity.

*Post-medieval*

2.5 The writer is aware of evidence pointing towards exploitation of lead, and perhaps silver, ores from the area near Carreghofa on the south-west side of the hill in the Elizabethan period, but it is unknown how successful this enterprise was. Until the middle of the 18th century, the hill was an unenclosed common, this being depicted on a map of the Bridgeman Estate dated 1766, but evidence survives which suggests that limestone from the hill was already being used at that time for lime production by the estate, and the stone perhaps also fulfilled a local need for building materials. Fairly soon afterwards, the mineral deposits and limestone of which the hill is formed came to be of greater value with the construction of the Montgomery Canal, which reached Llanymynech in the late 18th century. This probably provided the impetus for the excavation of a number of large-scale quarry workings, the limestone being taken and burnt to provide lime for use as both agricultural fertiliser and as mortar in the building industry, also as a flux in the smelting of iron ore.

*19th and 20th Centuries*

2.6 Much of the subsequent history of Llanymynech Hill involves the industrial exploitation of the limestone reserves and minerals, although the search for metalliferous minerals in this latter period seems to have been accompanied by relatively little in the way of success. This may have been a result of the scale of the early mining activities, and the removal of much of the easily accessible lead and copper ore.

2.7 The quarry workings in this period lie at a significantly higher elevation than the canal and the lime kilns which lie nearby, so it became necessary to construct a means of moving the rock cheaply and efficiently down the slope from the quarries to the kilns at the canalside. The method chosen utilised inclined planes, where empty wagons were pulled up the slope by a wire rope connected to a set of full wagons descending the slope. The system was controlled by a braked drum around which the rope was wrapped, and which could be controlled by a system of levers operated by someone at the top of the incline. The two drum houses which form the subject of this watching brief lie at the head of inclines feeding the limeworks next to the canal. A detailed description of the history of the locality, together with a survey of the incline routes and other industrial features is provided by Jones (2004).

## 3 RESULTS OF THE WATCHING BRIEF AND RECORDING

3.1 The first phase of the work was carried out on the south-western of the two drum houses (PRN 80175) and involved the stripping off of vegetation from the walls of the drum house and examination of the structure to determine what remedial works were required. A series of photographs were taken of the structure revealed at this time to provide a record of its condition, prior to the commencement of consolidation work, and measurements were taken to allow a plan to be created. The second visit examined the second drum house (PRN 80177), located around 100m to the north-east of the first, at the point when it had also been stripped of vegetation to provide a clear view of its surviving structure. Again, a series of photographs and measurements were taken to provide a record of the surviving structure prior to consolidation work starting. The two drum houses are depicted on Fig 1, at the top left of the image. An eastern drum house, sited close by some limekilns, is in England and has already been restored.

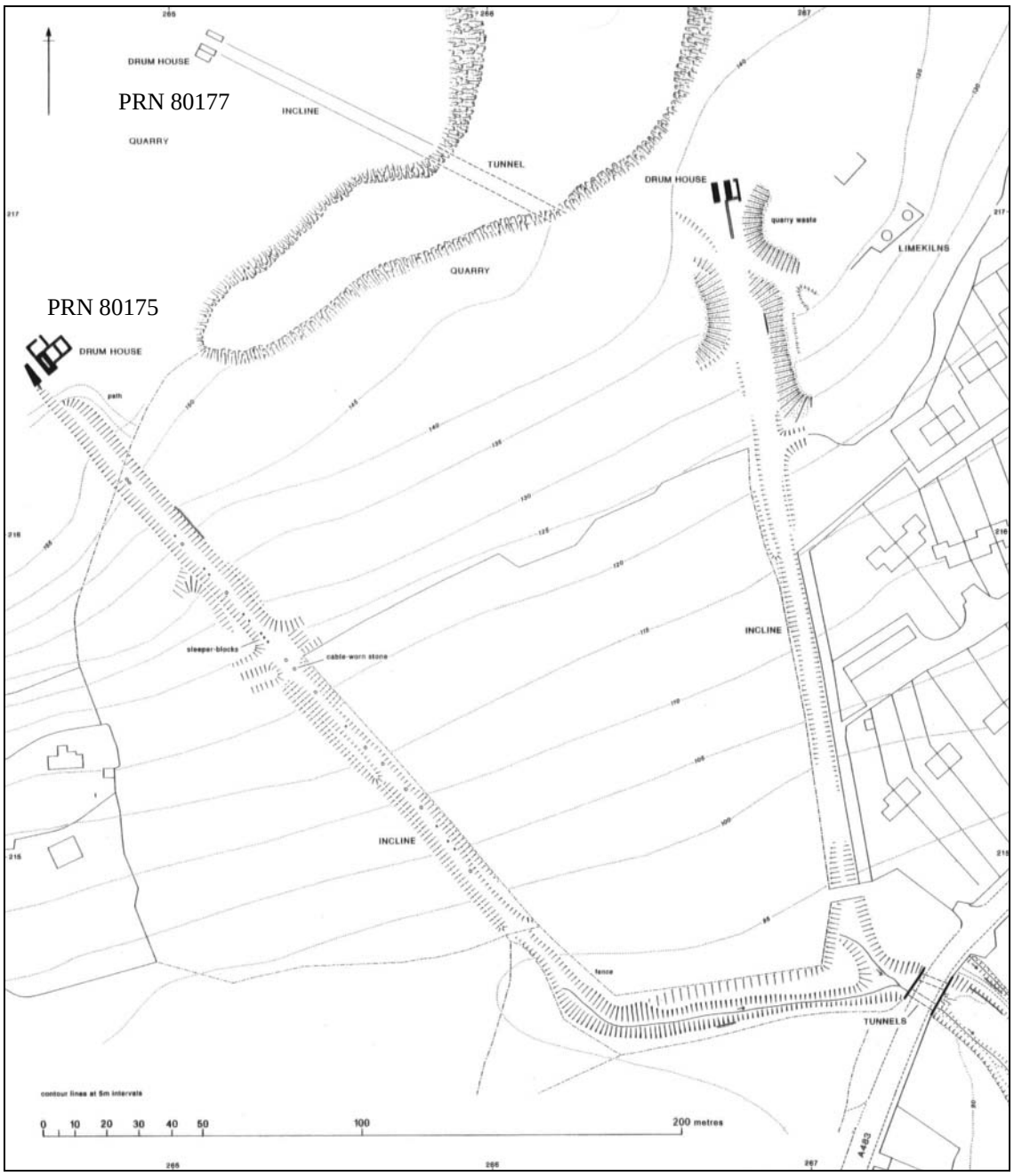



Fig. 1 Plan of the Llanymynech inclines and drum houses

3.2 *Drum house PRN 80175*

3.2.1 The south-west drum house comprises two stone-walled structures with a gap between them in which the drum would have operated on a horizontal axle. A number of areas of damage were noted in the north-east part, as a result of disturbance by intrusive vegetation and erosion by visitors (see Plate 1 on following page). This had led to a number of stones becoming dislodged and it was planned that these areas would be repaired with suitable materials to prevent further deterioration. The most significant damage was at the east corner of the north-east part, where the basal stones had become detached, leaving a gap in the wall. Some damage had also occurred in the north-east wall of this part, where stones had been displaced. Examination of this area revealed that it had formed the support of the drum axle and had

originally contained short timbers placed within the stone structure, perhaps to give it more resilience to shocks transmitted through the axle.



Plate 1 The south-west drum house (PRN 80175) from the east, showing the areas of damage at the east corner and in its north-east wall together with the opening for the brake control rods in its south-east wall (photo CPAT 3186-0014)

3.2.2 The south-west part of the structure is effectively a revetment wall and has little in the way of obvious interest, but the north-east part is rather more unusual, in that its interior is hollow (see Plate 2 on the following page). The hollow section is rectangular and denotes the presence of a braking mechanism that was separate from the main part of the drum, albeit mounted on the same axle. On the front of this part, there is an opening through which the brake control rods passed on their route to the head of the incline, where the operator stood to control the wagons on the incline when it was in use. The photograph above (Plate 1) also shows three tie-rods which were presumably inserted to add strength to the end of the structure owing to stresses from forces acting on the axle. The batter on the south-east side of the walling would have also added strength and stability to the structure in this regard.

3.2.3 In addition to the drum house itself, a number of rooms had been appended to the structure, on the north-east and north-west sides of its north-east part. These rooms probably provided shelter for the quarry workers and more specifically for the operator of the incline. It is possible that they may have also been used as cabins for the workers at mealtimes, and perhaps also a storage facility for their tools.



Plate 2 The south-west drum house (PRN 80175) from the west, showing the hollow interior of its north-east part, formerly occupied by the braking mechanism, and the overgrown traces of rooms appended to its north-east and north-west sides (photo CPAT 3186-0024)

3.2.4 Some repairs had been carried out to the south-west drum house when the site was revisited on 11 January 2011, particularly the replacement of a number of stones which had fallen out of the east corner of the structure. However, the consolidation work had not been completed at the time of the second visit as the prevailing winter conditions were unsuitable for the use of the lime mortar specified for the consolidation work. The work that had been completed was sympathetic to the original construction methods used.

3.3 *Drum house PRN 80177*

3.3.1 At the time of the second visit to the quarry on 11 January 2011, vegetation had been removed from the second drum house (PRN 80177), enabling it to be examined and recorded. This structure is rather more simple in construction than the first and seems to be significantly later in origin (see para 4.3). It consists of two parallel stone walls with vertical sides and has a room appended to its south-west side, again probably for the use of the incline operator. The remains of a softwood superstructure, which was held in place by the stone walls, survives and provided mountings for both the drum axle and the braking mechanism (see Plate 3, below).



Plate 3 The north-east drum house (PRN 80177) from the east-north-east, showing the timber superstructure with traces of the braking mechanism (photo CPAT 3186-0036)



Plate 4 The north-east drum house (PRN 80177) from the south-east, showing the top of the incline and the surrounding quarry workings (photo CPAT 3186-0036)

3.3.2 The incline which the north-eastern drum house served was significantly shorter than the one served by the other drum house and this would have greatly reduced the forces to which it was subjected when in operation. At its lower end, the incline (see Plate 4, above) passed through a rock-cut tunnel, at the exit of which wagons would have been taken on a short level route to a further drum house (visible on Fig.1) which lies within England, about 175m to the east-south-east.

3.4 While the watching brief was being carried out, the clearing of vegetation from the drum houses enabled the surviving structures to be more readily interpreted. The opportunity was therefore taken to measure the upstanding masonry, leading to a revision (see below) of the original plans provided at the commencement of the watching brief.

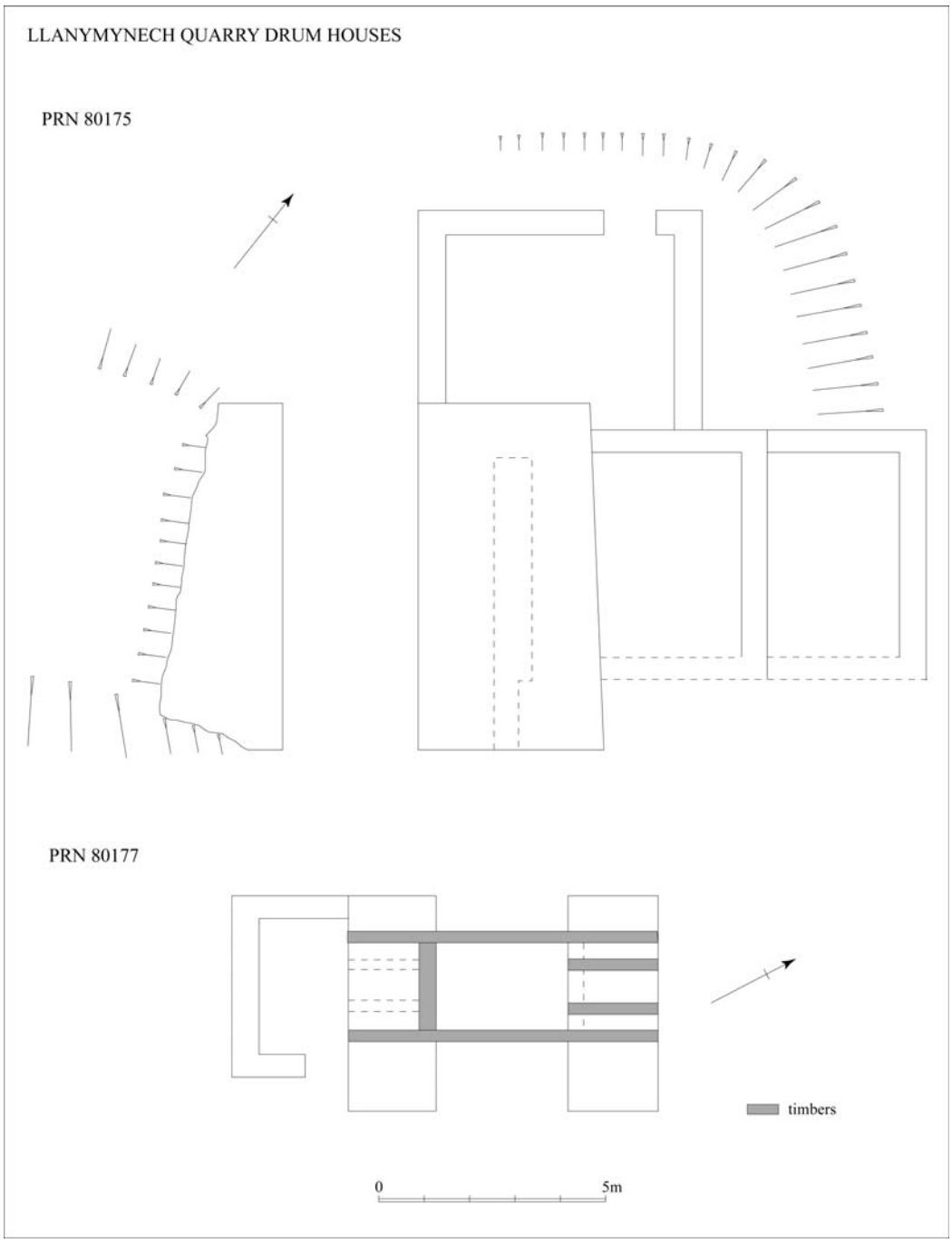



Fig. 2 Plans of the two drum houses utilising the revised measurements

## 4 CONCLUSIONS

4.1 The consolidation works have provided a good opportunity to examine and understand the two drum houses. In particular, the removal of their former cover of vegetation has enabled their structures to be photographed and accurately measured during the watching brief. A revised plan of the drum houses (Fig. 2) has been compiled from the measurements.

4.2 It became evident, once the structures could be properly viewed, that there were areas of significant damage to the south-west drum house (PRN 80175) which could, in time, have led to its collapse. This was less the case with the more recent drum house (PRN 80177), which is in relatively better condition. The threat to the earlier structure was all the more significant because of the possibility, discussed below, that it may be the earliest drum house constructed at the Llanymynech quarries. The methods used in the consolidation of the structures were sympathetic to their original construction and should ensure their long-term survival.

4.3 Re-examination of the cartographic sources provided some interesting information regarding the possible age of the two drum houses. The south-west (PRN 80175) is obviously the earlier and is well depicted on the first edition Ordnance Survey map of 1874 in its current form, with the appended rooms on the north-west and north-east sides of the north-east part. More significantly, perhaps, a drum house depicted on a plan of 1807 can be shown by careful measurement to be in the same position, so it seems reasonable to assume that this early 19th-century map provides the first representation of the drum house, and documentary sources suggest this was constructed in 1806 (Jones 2004, 6). The north-east drum house has well-constructed supporting walls for the drum axle, but its superstructure is rather more rudimentary. Its incline uses a tunnel through the limestone crag to the south-east which first appears on the second edition OS map of 1901, but the incline does not appear to have been built until later and the origin of the drum house is therefore probably from the early years of the 20th century.

## 5 SOURCES

*Written*

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*Cartographic*

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1766 Staffordshire County Record Office temp No D1287/M/703 - Plan of estates at Llanymynech and Llwyntidmon belonging to Sir Henry Bridgeman

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1874 First edition Ordnance Survey 1:2500 map - Montgomeryshire 11.1

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1901 Second edition Ordnance Survey 1:2500 map - Montgomeryshire 11.1

1901 Second edition Ordnance Survey 1:2500 map - Montgomeryshire 11.5