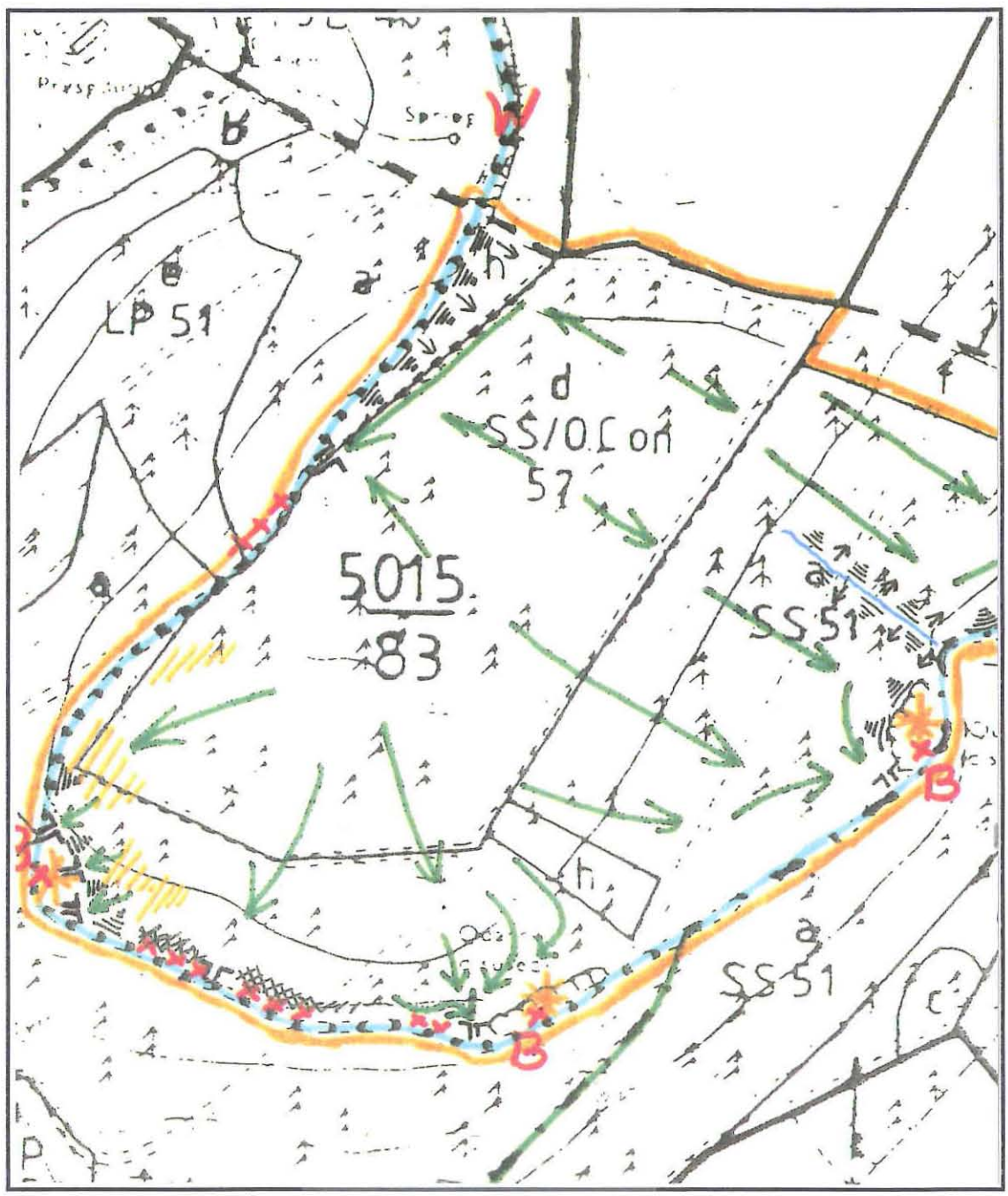
The Clwyd-Powys Archaeological Trust

Forest Enterprise Harvesting: an archaeological evaluation



CPAT Report 198

Forest Enterprise Harvesting: an archaeological evaluation

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Section 1: Introduction

Analysis of archaeological records in Wales show that the extent of archaeological remains in forestry is unknown. This is a legacy of extensive tree planting in the post-war period before the creation of regional sites and monuments records and before systematic archaeological survey. As a first step to improving this situation Forest Enterprise (Wales) commissioned the Clwyd-Powys Archaeological Trust (CPAT) to carry out an archaeological survey in six forests within Newtown and South East Wales Districts. Whilst the methods adopted for the survey were successful in identifying a wide range of archaeological remains and increasing the number of known sites fivefold it was appreciated that certain types of site were less likely to be identified. Additionally there were difficulties in locating mapped sites in unthinned forest. The resources available were also not sufficient to visit all sites identified during the survey to report on their condition.

Unknown or unlocated archaeological sites are particularly vulnerable to damage by heavy machinery or falling trees during harvesting operations. Without some system of pre-felling survey and reporting the first time they are located may also be the moment of their destruction. The extent of the harvesting programme in Wales creates a significant threat to archaeology. Within the Newtown District the expected area of forest to be clear felled in 1996/97 is about 350 hectares which will rise to about 500 hectares per year by the year 2000. In the South East Wales District the 1996/97 area of clear felling is about 250 hectares. Across the whole of Wales the amount of clear felling in 1996/97 is c2500 hectares with an additional c3200 hectares of thinning.

The location of archaeological remains and their incorporation into the coupe management form and the forest design plan and is critical if they are to be protected during harvesting, ground preparation and restocking. Improved awareness of the importance and vulnerability of archaeological remains will be improved by inclusion of comment on these aspects in the Forest Enterprise *Harvesting Manual* and on courses run by Forest Enterprise and Forest Authority.

In 1996 Forest Enterprise (Wales) commissioned CPAT to undertake an evaluation of harvesting methods and their effect on archaeological remains. The main aims of the evaluation were:-

- To improve awareness amongst Forest Enterprise staff and contractors of the survival of archaeological remains on Forest Enterprise land.
- To test a range of methods for identifying archaeological remains during harvesting and to evaluate their effectiveness.
- To make recommendations for establishing a system of identification, reporting and management of archaeological remains.

The area chosen for the evaluation was that covered by the *Forest Enterprise Archaeological Survey* carried out by CPAT during 1996: the forests of Coed Sarnau, Radnor, Mynydd Du, Hay, Taf Fechan and Talybont. The harvesting evaluation was commenced during the latter part of the survey period, in May/June 1996 and was completed in September 1996. The specific compartments chosen for study were largely dictated by Forest Enterprise's harvesting programme.

Section 2: Methodology and results

The original proposal (Appendix 1) suggested six different approaches for identifying archaeological sites during harvesting. In summary these were as follows:-

Method 1: Recording of archaeology by tariffing gang accompanied by an archaeologist.

Method 2: Recording of archaeology by tariffing gang not accompanied by an archaeologist.

Method 3: Field survey by archaeologists prior to felling.

Method 4: Reporting of archaeology by Forest Enterprise industrial workers engaged in harvesting.

Method 5: Reporting of archaeology by contractors (direct production and standing sales).

Method 6: Field survey by archaeologists after clear felling.

The proposed methods were modified in response to the working practices and timetabling of harvesting in the survey areas and in response to the results of the earlier archaeological survey carried out by CPAT.

The principle modifications were as follows.

Methods 2 and 3 were considered together. This modification was made because there were only a small number of coupes being marked in the duration of the study. Both methods were covered by studying the same areas.

Methods 4 and 6 were considered together as both could be assessed using the same area. There were no other appropriate areas being felled by Forest Enterprise staff during the duration of the project.

Method 5 mainly covered direct production contractors. Forest Enterprise officers, particularly in Newtown District, considered the training of standing sales contractor impractical due to financial and time constraints and the number of personnel involved.

Method 1: Recording of archaeology by tariffing gang accompanied by an archaeologist.

The method was designed to assess the ability of the tariffing gang to identify and report on archaeology seen during normal working practice. During marking the tariffing gang should cover the whole of the ground within the felling coupe and thus be in a good position to identify archaeological remains. The two tariffing gangs operating in the survey area were composed of Forest Enterprise staff rather than contractors.

A basic level of training was given to the Newtown District tariffing team at a meeting in the Coed Sarnau forest office on 5th June 1996. After the meeting the teams were taken on a brief tour of nearby sites including former field systems and a standing stone and shown how such sites were depicted on the archaeological survey maps. A similar level of training was provided to the tariffing team operating in the South East Wales Distict during a meeting in Taf Fechan on 29th May 1996. Although maps were not available from the archaeological survey the tariffing gang were requested to report any archaeological remains to their supervising forest officer and forms were provided for this purpose.

During the subsequent three months the South East Wales Distict tariffing gang, who were working in Taf Fechan and Mynydd Du, were not accompanied by an archaeologist and

comments on their working practice is discussed under method 2. The Newtown District tariffing gang, who were marking in Radnor Forest, were accompanied by an archaeologist between 13th and 16th August 1996 with the following results.

Radnor Forest Coupe 600402
Location and forest management
Radnor compartment 6003, subcompartment f, Norway Spruce planted in 1949. Last thinned 1989.
Radnor Compartment 6004, subcompartment b, Norway Spruce planted in 1949. Last thinned 1989.
Radnor compartment 6005, subcompartment b, Grand Fir planted in 1958. Last thinned 1991.
Radnor compartment 6005, subcompartment a, Western Hemlock planted in 1958. Last thinned 1991.
Marked for thinning 13-14/8/96.

Methodology and results
There was little undergrowth in the coupe apart from patches of bracken and bramble in 6003f. Previous thinning ensured that lines of sight in the coupe were good and any surviving archaeology should therefore have been visible.

The archaeological survey indicated that the few archaeological sites in the coupe included a field boundary (PRN 21297) and an old quarry (PRN 21329). The coupe is on sloping ground on either side of a stream valley and within, what is assumed to have been, the medieval Radnor Forest the influence of which suppressed any early enclosure. During tariffing a number of new sites were located and recorded.

A series of pre-forestry drainage ditches (PRN 21662), probably excavated when the fields were being improved for agriculture in the post-medieval or modern period, were identified by the tariffing gang in compartment 6005b. The features were known to one member of the gang from previous work in the area and was reported to the archaeologist before marking commenced.

On the east of compartment 6005 the Forest Enterprise fence was located inside the legal boundary and followed the line of a field boundary which had been planted with crab apple and is probably of eighteenth or nineteenth century date (PRN 21683).

The only archaeological site identified in 6003f or 6004b, apart from the boundary on the edge of the forest (PRN 21297) which lay outside the Forest Enterprise fence, was a former trackway now used as a Forest Enterprise ride (PRN 21521).

Radnor Forest Coupe 600502/10
Location and forest management
Radnor Compartment 6046, subcompartment c, Grand Fir planted in 1967. Last thinned 1991.
Marked for thinning 16/8/96.

Methodology and results
There was no undergrowth in the coupe and the sight lines were good so any surviving archaeology should have been visible. The archaeological survey showed that the coupe was part of Forest Wood, a former managed woodland (PRN 21788). A number of former rides pass through the coupe.

The former management of the wood was reflected by the survival of oak and hazel coppice stools, particularly along the line of a steep rocky outcrop where conifers had been less intensively planted. Two charcoal burning sites (PRN 21707 and PRN 21786), which lie close to one of the former rides, were identified during tariffing. The rides identified during the

earlier survey were visible on the ground (PRN 21787, 21789 and 21877), one of which (PRN 21787) was deeply sunken and braided where it went up an incline.

The sites were recognised by the gang as being of archaeological importance, although all were initially identified by the archaeologist.

Conclusions
The earlier archaeological survey suggested that none of the coupes studied were particularly archaeologically sensitive, a fact borne out by the field survey which revealed few sites of archaeological interest. The observations on the ability of the tariffing gang to report on the archaeology recognised in the forest was therefore hampered by the relative lack of archaeology. The time spent wih the gang was however useful in assessing their awareness of archaeology in general, and their keeness to make notes or report on features noticed during the course of their work.

The tariffing gang covered approximately 3ha a day. Because of the lack of archaeology and the good sight lines in the coupes the archaeologist could cover the ground more rapidly. Therefore instead of following the gang around the area and commenting on sites located by them the archaeologist generally went ahead of the gang locating sites, then commented on them when the team passed them.

It was felt that the gang had a good appreciation of some types of archaeological site, although this varied from person to person. Ditches, banks or former sunken trackways were recognised during the survey and discussions during training and marking indicated that prehistoric features such as standing stones or cairns would be identifiable if of substantial size. Other features which were less readily recognisable during the survey were smaller sites such as charcoal burning platforms.

Whilst many sites were recognised by the gang their willingness or ability to report them is not consistent. The main reason for sub-standard reporting appears to be due to time constraints: as the gangs are paid on a piece rate any lost time may effect their income. It was also partly because it was unclear exactly how to report on the features and in how much detail. The tariffers already carry with them various Forest Enterprise forms and extra pieces of paper, such as maps showing the archaeology and a sheet for comments, were possibly unwelcome. The maps produced during the earlier survey were not easily interpretable by the team, although given time and familiarisation this should improve. The integration of the archaeological data into the Forest Enterprise stock maps should overcome this problem.

Method 2: Recording of archaeology by tariffing gang not accompanied by an archaeologist.
Method 3: Field survey by archaeologists prior to felling.

Method 2 was designed to test the ability of the tariffing teams to identify and record archaeology recognised during normal working practice. It differed from method 1 because the markers were not accompanied by an archaeologist, rather they were asked to record archaeological sites during marking which were checked by an archaeologist at a later date.

Training was given to the Newtown and South East Wales Districts teams as outlined in method 1.

The following areas were marked during the period of the evaluation:-

Radnor Forest Coupe 600705
Location and forest management
Radnor Forest compartment 6089, subcompartment f, Douglas Fir planted in 1949. Last thinned 1986.
Marked for thinning July 1996. Surveyed by archaeologist 27/9/96.

Methodology and results
There was little or no undergrowth and previous thinning meant that sight lines were good. Any surviving archaeology should therefore have been visible.

The archaeological survey showed that the coupe lay within an area of former managed woodland. The coupe boundary lies on the former woodland boundary on the southern and eastern sides.

The maps produced for the archaeological survey were not used by the tariffing gang as they were not available at the time. A map was subsequently given to the harvesting officer and was annotated by him from his own observations. A number of sites were commented on, namely the woodland boundary which consisted partly of a low bank (PRN 21879) and partly a stone wall (PRN 21796), and a small track (PRN 21834) which led to a rock outcrop which showed evidence of being quarried (PRN 21878). The presence of hardwood stumps, possibly representing former coppice stools was also noted throughout the coupe.

The subsequent field survey by archaeologists (method 3) indicated that the account of the surviving archaeology provided by Forest Enterprise staff was generally accurate.There was a great deal of evidence relating to the coupe's former use as a managed deciduous woodland including surviving coppice stools and a slight charcoal burning platform (PRN 21880) on the northern edge of the coupe, not noted by Forest Enterprise. The evidence of quarrying was slight as most of the stone faces appeared to be natural, although at one point five holes had been machine drilled into the exposed outcrop, presumably to facilitate quarrying of some sort. The woodland boundary consisted of a low bank with hawthorn hedge on the southern and eastern edges of the coupe, while on the western side there were the remains of a stone wall. Environmental indicators of ancient woodland were also present including Dog's Mercury and a number of large wood ant nests. These are of marginal archaeological interest, but they show that the wood has been in existence for a long period of time and has probably formed an important and well-used element of the landscape for a number of centuries.

Mynydd Du Compartment 7031/7032:
Location and forest management
Compartment 7031, subcompartment d, Grand Fir planted in 1972.
Compartment 7032, subcompartment e, Grand Fir and Norway Spruce planted in 1968.
Compartment 7032, subcompartment b, Japanese Larch planted in 1944. Last thinned in 1991.
Marked for thinning 1996. Survey by archaeologists 28/8/96

Methodology and results
Within the conifer crop there was little undergrowth and the sight lines were good, so any surviving archaeology should have been visible. Outside the conifer crop there was a great deal of undergrowth including bramble, bracken and nettles.

The archaeological survey showed that the area was part of a former agricultural landscape. A number of field boundaries passed through the coupe associated with Llwyn-celyn (PRN 21058), a farmstead which also lay within the compartment.

The tariffing gang was not provided with maps of the known archaeology as these were not available at the time of marking. No features were reported by the gang (method 2).

During the field survey (method 3) archaeologists located Llwyn-celyn farmstead which was previously mapped but not visited as part of the archaeological survey. The farmstead survives as a substantial ruin (PRN 21058) and includes several buildings and a well preserved bread oven. It lies within the coupe but outside the conifer crop. At the time of the survey it was heavily overgrown with nettles, bramble and bracken, but was still clearly visible.

The associated field boundaries survive in good condition as hedged banks or stone walls. The boundary between the enclosed land and common land (PRN 21854) formed the western edge of the tariffed area and was a substantial stone wall surviving to c.1.5m high in places. The hedges were mainly hazel with some holly and hawthorn lying on banks up to 1m high. Two substantial ash pollards also survived on the hedge lines.

Mynydd Du Coupe B03000:
Location and forest management
Compartment 7102, subcompartment a, Western Hemlock planted 1942; subcompartment b, Lawson's Cypress planted 1943; subcompartment g, Sitka Spruce planted 1949; Compartment 7102 subcompartment a, Douglas Fir planted 1950; subcompartment b, Japanese Larch planted 1969. Last thinned 1982
Marked for felling 1996. Surveyed by archaeologists 28/8/96.

Mynydd Du Compartment 7102:
Subcompartment a, Western Hemlock planted 1942; subcompartment d Douglas Fir planted 1942. Last thinned 1982.
Marked for thinning 1996. Surveyed by archaeologists 28/8/96.

Methodology and results
There was little undergrowth in the coupe and the sight lines were good, so any surviving archaeology should have been clearly visible.

The archaeological survey showed that the coupe was part of a former agricultural landscape with a number of field boundaries and trackways. The northern part was deciduous woodland in 1905. A small structure (PRN 21492) lay on the edge of the coupe.

The tariffing gang was not provided with maps of the known archaeology as these were not available at the time of marking. No features were reported by the gang (method 2).

The field survey by archaeologists (method 3) showed that the field boundaries identified during the archaeological survey largely survived as banks with hawthorn or hazel hedges. The structure identified on the 1905 map was not identified but its actual position probably lay just outside the coupe in an area of dense new conifer growth and regeneration. One former track (PRN 21871) was visible as a holloway.

Mynydd Du Coupe B04000:
Location and forest management
Compartment 7302 sub compartment a, Japanese Larch 1954
Marked 1996. Surveyed by archaeologists 30/08/96.

Methodology and results
There was a great deal of undergrowth in the coupe consisting of nettles, bramble and bracken. This is assumed to be because the species was larch which has a less dense canopy than many other conifers and is deciduous. Movement in the coupe was therefore very restricted and some smaller archaeological sites may have been hidden. The sight lines through the coupe were however reasonably good, so any substantial sites should have been visible.

The archaeological survey showed that the coupe lay in a former conifer plantation which may have been replanted deciduous woodland. No structures were recorded but former boundaries ran through the coupe.

The tariffing gang was not provided with maps of the known archaeology as these were not available at the time of marking. No features were reported by the gang (method 2).

The field survey by archaeologists (method 3) was hampered by the difficulty experienced in penetrating the dense ground cover. The sight lines through the coupe were however good enough to enable visibility from the edge of the coupe. The southern boundary was a former

field boundary bank (PRN 21874) while the western edge was a substantial stone wall (PRN 21873). Both had hawthorn hedges. Although it was difficult to see features running through the coupe it appeared that the boundaries did not survive in good condition, the only evidence of their former location being the occasional broad-leaved tree.

Conclusions
There were variations in how the survey was carried out between the two districts. The recording in the South East Wales District was carried out without the maps created as part of the archaeological survey, while in the Newtown District the recording was done by the harvesting officer after the area had been marked using the maps provided. The areas surveyed also differed dramatically in the amount of archaeology likely to survive. In the South East Wales District the marked areas were largely former agricultural land with a number of former field boundaries while the Newtown District coupe was former deciduous woodland .

The lack of reported archaeology in Mynydd Du coupe B03000 and compartments 7031/7032 and 7102 was surprising as the house site, banks, walls and hedgerows are all easily visible. The gang was asked verbally by the harvesting officer whether any archaeology had been recognised and it was reported to CPAT by the harvesting manager that none had been found. Consultation with the harvesting manager of South East Wales District indicates that the lack of reporting was almost certainly due to reasons unrelated to archaeology.

There was less archaeology in Radnor Coupe 600705, but the sites reported were located and described accurately. The charcoal burning site (PRN 21806) was not identified, but this was very difficult to see.

Method 4: Reporting of archaeology by Forest Enterprise industrial workers engaged in harvesting.
Method 6: Field survey by archaeologists after clear felling.

Method 4 was intended to test the ability of the Forest Enterprise industrial workers to identify and record archaeology during clear felling. The coupe was subsequently surveyed by archaeologists (method 6) to examine any sites identified, to check whether any had been missed and to ascertain the visibility of sites in a clear felled area.

The amount of time available for training the industrial workers was limited as they work on a piece rate system. Felling had already commenced in the coupe and the training was done in the field on 15th May 1996. They were asked whether they had noticed any archaeology in previous working in the coupe and asked to report any banks, ditches, significant piles of rocks or any other archaeological remains. Maps from the archaeological survey were not available.

The only coupe being felled by Forest Enterprise industrial staff in the survey area was in Coed Sarnau.

Coed Sarnau Coupe 50302
Location and forest management
Compartment 5015, subcompartment a, Sitka Spruce planted in 1951; subcompartment d, Sitka Spruce and other conifers planted in 1957.
Clear Fell by JS Harvester and Forwarder. Mechanised Shortwood Working. May to September 1996.
Surveyed by archaeologists 17/09/96

Methodology and results
The coupe is in an upland area and consists of a plateau running from the northern edge to the centre. The ground falls away from the plateau to the south and east. The archaeological survey identified three quarries, two of which are modern and have been re-used by Forest Enterprise (PRN 22717, 22718) while the other was recorded on the 1905 OS map (PRN

21544). A pond (PRN 21542) is marked on the 1905 OS map on the plateau in the centre of the compartment and a former conifer shelter belt runs across the north of the compartment.

No archaeological sites were reported by the harvesting team (method 4).

A field survey by archaeologists (method 6) was carried out on 17th September 1996, by which time felling had been completed on the sloping ground in the southern and eastern part of the coupe. It had not reached the former pond identified during the earlier survey. The former conifer belt shown on the 1905 map lay on part of the northern boundary and survived as a low bank. Many of the European Larch trees planted to provide the shelter still survive and are used by Forest Enterprise as a nature conservation area. The bank had been scuffed in places by falling trees during felling which had also damaged some of the branches of the European larch.

The former quarry shown on the 1905 map could not be located, but as the 1905 map shows it lying close to the position of the quarry still used by Forest Enterprise it is likely that it is the same site.

Conclusions
The lack of sites reported by the harvesting team reflects the scarcity and nature of the archaeology in the coupe, although the features associated with the former shelter belt were probably worthy of note.

The brash lines left after felling made it difficult to cover the ground quickly and would have obscured smaller sites and details of larger sites. Where lying timber has been removed features should be more visible, but details could be lost beneath the brash. Definite identification of sites would therefore have been difficult and confusion may also occur with features caused by ground disturbance by heavy machinery during harvesting.

Method 5: Reporting of archaeology by contractors (direct production and standing sales).

Method 5 was designed to test the ability of contractors to recognise archaeology during harvesting and their willingness to report sites located.

As indicated above it did not prove practical to include standing sales contractors within the training carried out as part of this evaluation.

Methodology and results
Brief training was given to two groups of direct production contractors operating in South East Wales District on 9th July 1996. These were Tim Beerenbrock (Coity) and Idris Illingsworth (Mynydd Du). The Forest Enterprise harvesting officers were also made aware of the evaluation and they informally asked contractors who had not been trained by archaeologists to report any archaeology.

No sites were reported by either of the contractors who underwent training.

One site (PRN 21842) was reported and marked off by the Forest Enterprise harvesting officer in Mynydd Du compartment 7303 where felling was being carried out by chainsaw with skidder extraction by a standing sales harvesting team. The site was a substantial farm complex with two distinct elements and had not been recorded during the archaeological survey. Subsequent examination of the site by the project archaeologist confirmed that the description and location of the site provided by the harvesting officer was accurate, although the extent of the site was slightly larger than the marked area. Felling had not been carried out over the site and appropriate precautions were taken to avoid damage.

Conclusions

No sites were reported directly by any contractors, although the areas where the trained gangs were working were not particularly archaeologically sensitive. Certain observations can however be made on the ability of the contractors to identify sites and their willingness to report on them.

The visibility of sites during felling depends to a large extent on the method of felling employed. Small scale felling or thinning carried out by chainsaw does not produce a great deal of surface brash so sites are more likely to be seen than on a mechanised clear fell site where deep brash mats may be laid and where the harvester is operating from a large machine.

Sites not recognised until felling are the most likely to cause costly delays to the contractor, so this may cause an unwillingness to report archaeology. Sites are also most vulnerable to damage at this stage so ideally the sites should have been recognised earlier and mitigation strategies established well before the felling stage.

The only site recorded during felling operations was identified by the harvesting officer. This illustrates the importance of recording features during monitoring of harvesting contracts by Forest Enterprise staff.

Section 3: Conclusions

The evaluation has examined the effectiveness of a range of methods for identifying archaeology during harvesting with the aim of developing working practices which will minimise potential damage to archaeology on Forest Enterprise land.

The evaluation has identified the following possibilities and problems:-

Reporting by tariffing gangs (methods 1 and 2)
The examination of the working methods of the tariffing gangs suggests that given a basic level of training tariffing gangs should have the ability to identify more obvious archaeological sites although it is accepted that greater difficulty may be encountered in identifying slight earthworks. Training in the field must be repeated at regular intervals to ensure an acceptable level of reporting. It is not considered necessary for an archaeologist to accompany the tariffing gang during marking although periodic fields visits will be necessary for training and reporting.

It is essential that where an archaeological survey has been carried out that this information is made available to the forest officers and the tariffing gang preferably by incorporation into the Forest Enterprise coupe management form and GIS to enable Forest Enterprise staff to check the location and condition of sites and to plan the harvesting to prevent damage to archaeological sites. It is appreciated that there will be a time lag before maps can be generated from the proposed Forest Enterprise GIS. In the interim copies of the maps produced as part of the *Archaeological Survey* should be made available and the tariffing gang and forest officers should be made familiar with their layout and conventions.

At the suggestion of one of the forest officers a form was provided for the purposes of recording archaeology noted during harvesting. This was intended as a supplement to the maps generated from the *Archaeological Survey*. None of these forms were fully completed and their continued use is not recommended. A copy of a recording form used during this evaluation is appended (Appendix 2) as is an example of a marked-up survey map (Appendix 3).

Where an archaeological survey has not been carried out this system of reporting archaeology will be less effective as it is anticipated that only the more obvious archaeological features eg. walls, buildings, larger earthworks, etc will be identified.

In both cases it is essential that the task of identifying archaeological remains forms part of the normal working practice of the tariffing gang and is not seen as an "optional extra". Consideration may have to be given to the cost of any extra time that will be required for this task.

The results of this evaluation indicate that the most effective way of obtaining archaeological information from the tariffing gang may be regular debriefing sessions by the harvesting officer who will record this information, possibly by anotating maps, and ensure that data is passed to the relevant forest officer for incorporation into the coupe management form and GIS. It is understood that debriefing, for the purposes of tariffing analysis, is already carried out in some Forest Districts. It is appreciated that the identification of archaeological remains during tariffing may be hampered by the need for the gang to concentrate on the forestry task in hand. It is considered therefore that the location of archaeological sites would be best done during the pre-tarriffing assessment. De-briefing could take place after the coupe has been walked. This does not preclude the reporting of archaeological sites that are identified during tariffing: it would be useful if they were notified to the harvesting officer during a post-tarriffing de-briefing session.

A clear system of reporting, preferably utilising the coupe management form, must be put in place. The minimum level of archaeological information that will be acceptable will be the site location and broad type (eg. earthwork, building, wall). It will be desirable if comment is made on condition. It is suggested that the coupe management form be adapted to enable more precise recording in the section entitled "Conservation". It is recommended that the

PRN (primary record number) of each site is entered against the scheduled or unscheduled site box and that the four lines that follow should read: Building/structure; wall/bank; ride/trackway; cairn/barrow/standing stone. Guidance will have to be given to forest officers on the use of this terminology. It must be clear who is responsible for completing the coupe management form and eventually incorporating the data into the Forest Enterprise GIS. A consultation procedure must be agreed between Forest Enterprise and the Archaeological Trusts for the reporting of archaeological sites and the provision of archaeological management advice.

It is considered that the tariffing system could be utilised to obtain information on archaeological sites during harvesting although successful reporting will depend upon training of the tariffing gang and forest officers and the development of a reporting system which is integrated into normal working practice of Forest Enterpise. An agreed consultation process must be agreed between Forest Enterprise and the Archaeological Trusts. Although the utilisation of the tariffing system has good potential to locate and identify archaeology the tariffing system covers only about 40% of the clear fell and thinning programme throughout Wales.

Field survey by archaeologists prior to felling (method 3)
This evaluation of field survey by archaeologists indicates that the method is efficient in locating, identifying and reporting on the condition of archaeology. It is however very much more efficient in areas which have already been the subject of an archaeological survey as it is possible to actively look for recorded sites during systematic survey of the forest. The use of maps derived from the survey makes the location of sites and landscape features considerably easier than would otherwise be possible, partly because an historical background has already been established allowing the nature and positioning of sites to be more easily understood and predicted.

Difficulties encountered using this method included the obscuring of features by dense undergrowth, low branches and closely spaced trees. Prior knowledge of past forest management, particularly whether areas have previously been brashed or thinned, would be useful in assessing the likely archaeological return. Knowledge of the tree species is also important in predicting the level of undergrowth.

Although archaeologists are more likely to locate and identify accurately a greater range of sites than tariffing gangs or forest officers it is unlikely that the significant costs that this method will incurr can be offset by the greater amount of data retrieved. The cost of putting two archaeologists in the field for a day is in the region of £300 plus travel costs at prices current in September 1996.

Field survey by archaeologists after felling (methods 6)
Field survey after felling is an unsatisfactory method of working owing to the difficulties of locating sites due to brash laying on the ground making this method slow and ineffective. Brash on the ground is a significant problem in the case of slight earthworks. Another disadvantage of this method is the likelihood that at this stage in the harvesting process previously unlocated sites will have already been damaged.

The difficulties encountered using this method and the likelihood that damage will have already been done to archaeological sites during felling makes this method unattractive. Additionally the costs incurred will be high in comparison with methods which utilise the normal working practices of Forest Enterprise staff. The archaeological costs of this method will be high for a relatively low return owing to the difficulties of working in mature forest which have often not been thinnned.

Reporting of archaeology during harvesting by contractors and industrial workers (methods 4 and 5)

The evaluation indicates that this method is not particularly successful. The main factors for this lack of success included the difficulty of conveying sufficient information to contractors/workers in the short time available, lack of motivation on the part of contractors/workers coupled with their worries over lost time/money. Another disadvantage of this method is that archaeological sites discovered during felling are likely to be damaged before any action can be taken to exclude them from the felling area or to modify the felling methods. Difficulties may also be experienced in arranging a visit by an archaeologist at short notice.

Although it is desirable that contractors should be made more aware of archaeology in the forests, perhaps at Forest Enterprise contractors meetings, it will always be best that archaeological constraints are included in the contract and clearly marked on the ground. It is hoped that the identification of archaeological sites during felling will be the exception rather than the rule.

Reporting of archaeology by forest officers

Although this evaluation did not formally set out to include an analysis of the methods by which forest officers might report archaeology during harvesting and forest management the methods by which this could be achieved have been examined.

During the evaluation of method 2 it became clear that in addition to debriefing the tariffing gang the harvesting officer could provide useful information based on his/her own observations. Archaeological sites could be located during sample plotting and whilst the forest officer walks the coupe before tariffing and/or the preparation of a felling contract. In areas where an archaeological survey has been carried out maps of the known archaeological sites should be supplied. Although the total ground area of the coupe will not be covered archaeological sites could be noted at this stage in the harvesting process. Additional opportunities for locating archaeological remains exist when the coupe is walked before ground preparation and restocking although it is accepted that at this stage damage may have already occurred to previously unlocated sites. A clearly set out recording and reporting system, preferably utilising the coupe management form as discussed above, will be required.

If forest officers are to be in a position to locate, identify and comment on the condition of archaeological sites it is essential that they receive the correct level of training. During the last six months training has been provided by CPAT for forest officers on various occasions. Experience indicates that the most successful method for improving these skills is the practical field day which incorporates visits to archaeological sites with discussion on best management practice. Forest Enterprise should consider commissioning a regular series of such field days. It would be desirable that attendance is extended to wildlife and conservation rangers who are actively involved in forest management.

It is considered that the reporting of archaeological sites by forest officers during normal forest management is critical in ensuring that archaeology is not damaged during harvesting, ground preparation, restocking and any other activities, such as road building, which may cause damage through ground disturbance. The routine reporting of archaeological remains noted during coupe management would be of particular importance in areas that are not tariffed.

Summary

This evaluation demonstrates that there is no one method which can be used to locate archaeological sites during harvesting. Some methods, such as post-felling field survey, are not recommended on the grounds of cost and ineffectivness. Others, including the reporting of archaeology by contractors, will not be particularly effective without considerable time expended in training. Any methods which seek to identify archaeology during or after felling have the disadvantage that it is highly likely that archaeological sites will be damaged before

preventative measures can be taken. Utilisation of the normal working methods of tarriffing gangs and harvesting officers offer the best possibility of locating and recording archaeological sites during harvesting. For the such methods to work successfully it is essential that Forest Enterprise staff receive sufficient training in the recognition of archaeological sites.

Whichever method (or combination of methods) is adopted by Forest Enterprise it is essential that a clear system of reporting is established. This must specify how, when and by whom the archaeological remains are to be located and recorded. It is essential that this process is embedded in normal forestry management to minimise costs and ensure that the collection of archaeological data is not seen as an "optional extra". It is recommended that Forest Enterprise utilise the coupe management form, as described above, to record archaeological sites located during harvesting.

Lines of communication must be established between industrial staff, forest officers, Forest Enterprise management and the relevant archaeological interests to ensure that archaeological data is passed to the correct person(s). A consultation procedure must be agreed between Forest Enterprise and the Archaeological Trusts to ensure that archaeological management advice can be provided to minimise damage to archaeological sites during harvesting. This must ensure that new archaeological data is passed speedily between the bodies involved and that such data is taken into consideration in the planning of harvesting or any other process which may damage archaeology. Procedures for the evaluation and, where necessary, the marking-off of sites must be agreed. The costs implications of any such procedures must be examined.

Acknowledgements

The Clwyd-Powys Archaeological Trust would like to acknowledge the assistance that its staff have received in the preparation of this report. In particular we wish to thank the tarriffing gangs and harvesting staff in the Forest Districts of Newtown and South East Wales and the felling contractors, Tim Beerenbrock and Idris Illingsworth. We are also grateful for comments on our proposals from Paul Sherrington, Colin Pearce, Peter Garson, Mike Sadler, Kim Burnham and David Killer.

Appendix 1: Project Proposal

Proposal for archaeological survey during harvesting on Forest Enterprise land

The coupe management form offers the possibility for Forest Enterprise to make allowance for various constraints during the harvesting processs. Although archaeological sites are identified on the constraints map the lack of data on sites within the forest makes it more difficult to manage the harvesting process to minimise damage to archaeological remains.

This proposal sets out a number of approaches to identifying archaeological sites at the pre-felling and post-felling stages of harvesting.

All areas selected for survey will fall within the pilot archaeological survey currently being carried out in Newtown and South East Districts. The survey, which will be carried out by the Clwyd Powys Archaeological Trust, will take place over a two month period.

1. Pre-felling survey with an archaeologist working with marking teams

This system assumes that a basic level of training of members of the marking team has already been carried out before the survey begins. This training involves giving the team a theoretical and practical idea of the types of archaeological sites that they may encounter.

A medium size coupe of about 20-25 hectares will be chosen for the survey. One archaeologist will accompany a team of markers for the duration of the marking out process during which time archaeological sites will be noted by the markers and checked by the archaeologist who will record and map their distribution.

Information from Forest Enterprise indicates that a team of three markers will cover about 3 hectares per day.

2. Pre-felling survey with reporting by marking teams

This system requires a slightly higher level of training of the members of the marking team before the survey begins. The training will be similar to (1) but a greater length of time will need to be spent with each team. A similar sized coupe, of about 20-25 hectares, will be chosen as in survey method (1).

The team will record any possible archaeological sites during marking by noting these on their FE maps. During the last couple of days of the marking an archaeologist will visit the team and, having assessed the sites marked on the maps, will inspect these and record their nature as thought appropriate.

3. Survey using archaeologists

A small area, of about 5 hectares, which lies within a felling coupe will be systematically walked by a team of archaeologists. Archaeological sites will be recorded and their distribution mapped. The terrain chosen will form part of the coupe chosen for survey method (2). The sites found will not be notified to Forest Enterprise staff until after survey (2) has been carried out. This will provide a direct comparison between the two methods.

4. Noting of sites during mechanised felling by FE staff

Training will be provided to operators of mechanised harvesters in the identification of archaeological sites and the procedures to be adopted when sites are discovered. Procedures must be devised to minimise damage to archaeological sites.

Operators of mechanised harvesters will be asked to note possible archaeological sites which will then be inspected and recorded by an archaeologist after the area has been clear felled. A similar sized area to survey methods (1) and (2) will be selected.

5. Harvesting by contractors

Where areas have been surveyed during the pre-felling stage harvesting contractors must be made aware of archaeological sites which should be respected during the felling process. Provision must be made for sites which may not have been detected prior to felling. Basic training in identifying possible archaeological sites will be given prior to felling. Contractors will be asked to note the presence of possible sites and respect them during felling. The coupe will be visited towards the end of the harvesting process by an archaeologist who will inspect and record any possible archaeological sites. Where sites are threatened by the harvesting process and the contractor is unsure how to proceed an archaeologist will visit to give advice. A coupe of similar size to survey methods (1), (2) and (4) will be chosen.

6. Post-felling survey

After felling part of two coupes will be selected for systematic survey by archaeologists. The first of these will be an area that has already been surveyed during the pre-felling and/or harvesting process, the other will be an area which has not been surveyed during the harvesting process. The survey of the first coupe will make it possible to check the effectiveness of the pre-felling and/or harvesting survey in this specific area.

Incorporation of new archaeological data within Forest Enterprise management plans

Sites identified during the pre-felling stage of harvesting will be notified to Forest Enterprise managers as soon as possible after the survey to allow data on their location and sensitivity to be incorporated within the management plans. This information will be supplied in the form of maps with a short description of each site together with management advice. Where necessary sites will be visited with the forest officer. The cost implication of site visits must however be taken into consideration.

Reporting

A gazeteer of archaeological sites discovered during harvesting will be supplied to Forest Enterprise together with maps showing their distribution. Recommendations for management will be supplied by site type or individual site as appropriate.

A comparison of the methods and results of each type of survey will be discussed and proposals put forward for the best methods to be adopted in the future. These will include recommendations for methods of identification of archaeological sites during harvesting, their incorporation within management plans, the provision of management advice and the setting up and operation of a response system by the Clwyd Powys Archaeological Trust to provide archaeological advice on an "as and when required" basis.

Costings will be provided.

Appendix 2: Sample recording form used during evaluation

Clwyd Powys Archaeological Trust
Forest Enterprise Harvesting Evaluation

Checklist for use in conjunction with CPAT maps

This checklist contains the basic information we need: please write your replies on the list or, if you find it easier, on the map supplied by CPAT.

Forest name: .....

Site name: .....

Location of mapped site correct? Y/N If no please mark correct location on map.

New site not on map. Please mark on map.

Site description correct? Y/N If no or new site give description (eg. house, wall, earthwork, etc)

.....

Condition (Ring any of the following as appropriate or give your own answer below)

Site destroyed or not located

Standing building Ruined building Foundations of building/structure

Field wall still standing Field wall partially damaged Field wall virtually destroyed

Height of building or field walls in metres (approximate) .....

Earthworks intact Earthworks damaged Hedgerow surviving

Site fully forested Site in partial clearing Site in cleared area Trees growing on walls

Damage by roots Damage by fallen trees Other damage .....

Anything else you want to say?

.....

.....

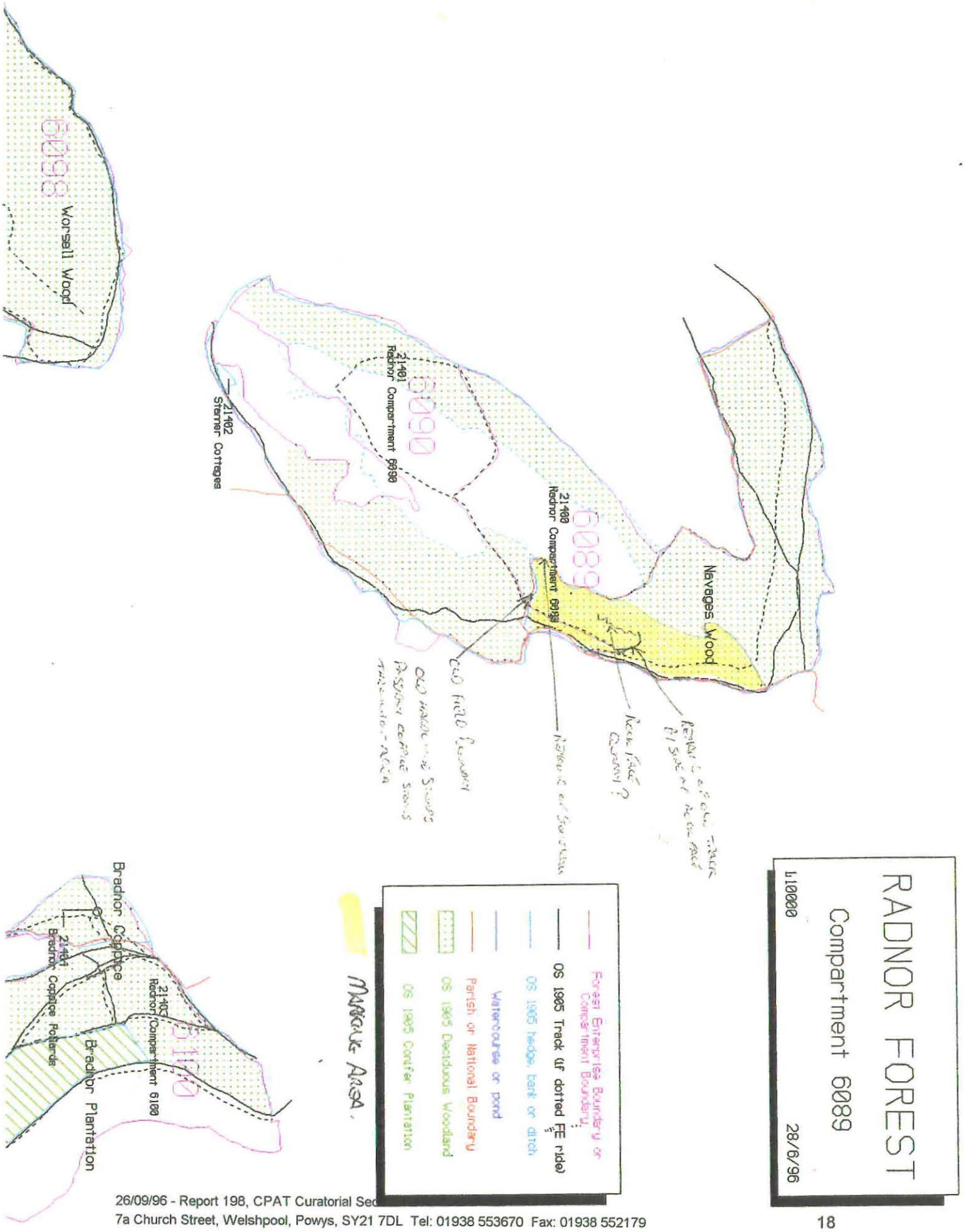
.....

Your name: .....

Date: .....

Thank you very much.

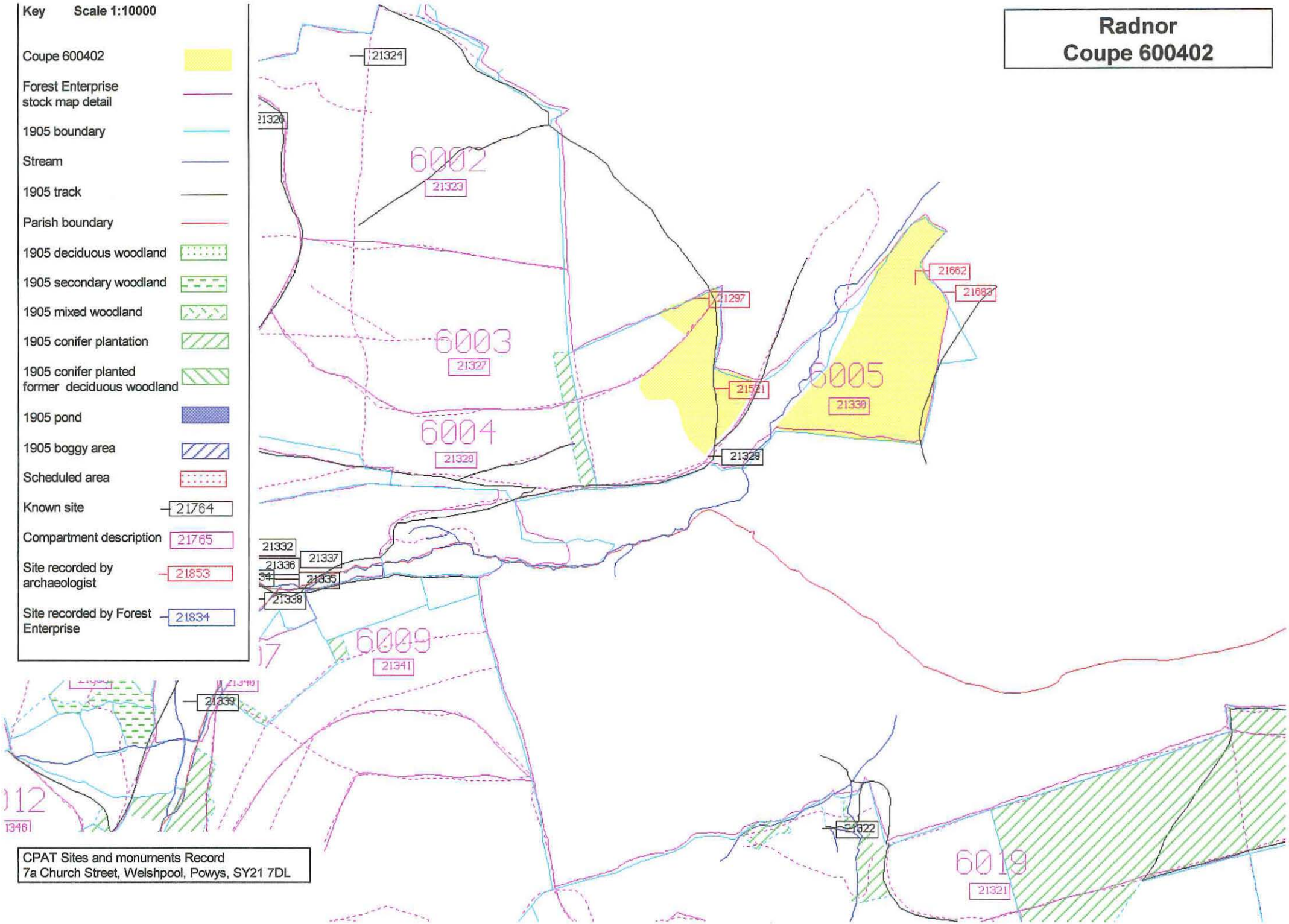
Appendix 3: Example of marked-up survey map



Radnor
Coupe 600402

Key Scale 1:10000

- Coupe 600402
- Forest Enterprise stock map detail
- 1905 boundary
- Stream
- 1905 track
- Parish boundary
- 1905 deciduous woodland
- 1905 secondary woodland
- 1905 mixed woodland
- 1905 conifer plantation
- 1905 conifer planted former deciduous woodland
- 1905 pond
- 1905 boggy area
- Scheduled area
- Known site 21764
- Compartment description 21765
- Site recorded by archaeologist 21853
- Site recorded by Forest Enterprise 21834



CPAT Sites and monuments Record
7a Church Street, Welshpool, Powys, SY21 7DL

PRN **21297** **Neuadd field boundary I** *Compartment:* 421/6003
Boundary Post-medieval *NGR:* SO20063675 *Coupe:* 600402

Straight field boundary, probably of 18th-19th century date. On Forest Enterprise legal boundary, but outside fence. The location of the site was recorded in the Forest Enterprise Archaeological Survey (Thomas, D & Earwood, C 1996).

Condition:
Eroded by stock and not maintained as a boundary. Earthwork element survives intact.
Management:
Lies outside FE fence.
Management Category: D
Visited: 13/08/96

PRN **21329** **Radnor compartment 6004 quarry** *Compartment:* 421/6004
Quarry Post medieval *NGR:* SO2009267202 *Coupe:* 600402

Old quarry. Recorded in the Forest Enterprise Archaeological Survey (Thomas, D & Earwood, C 1996).

Condition:
Not located.
Management:
Management Category: Not evaluated
Visited: 13/08/96

PRN **21521** **Neuadd trackway** *Compartment:* 421/6004
Trackway Post-medieval *NGR:* SO2010767347 *Coupe:* 600402

A former trackway now used as FE ride. The track is not deeply sunken.

Condition:
Minimal erosion as a result of FE use as a ride.
Management:
Maintain as FE ride.
Management Category: D
Visited: 13/08/96

PRN **21662** **Neuadd ditches** *Compartment:* 421/6005
Ditch Post-medieval *NGR:* SO2054867575 *Coupe:* 600402

Series of possible drainage ditches, probably pre-forestry and related to agricultural improvements when land was enclosed in the eighteenth or nineteenth century.

Condition:
Planted with conifers, but otherwise intact.
Management:
No management
Management Category: D
Visited: 14/08/96

PRN **21683** **Neuadd field boundary II** *Compartment:* 421/6005
Boundary Post-medieval *NGR:* SO2059667569 *Coupe:* 600402

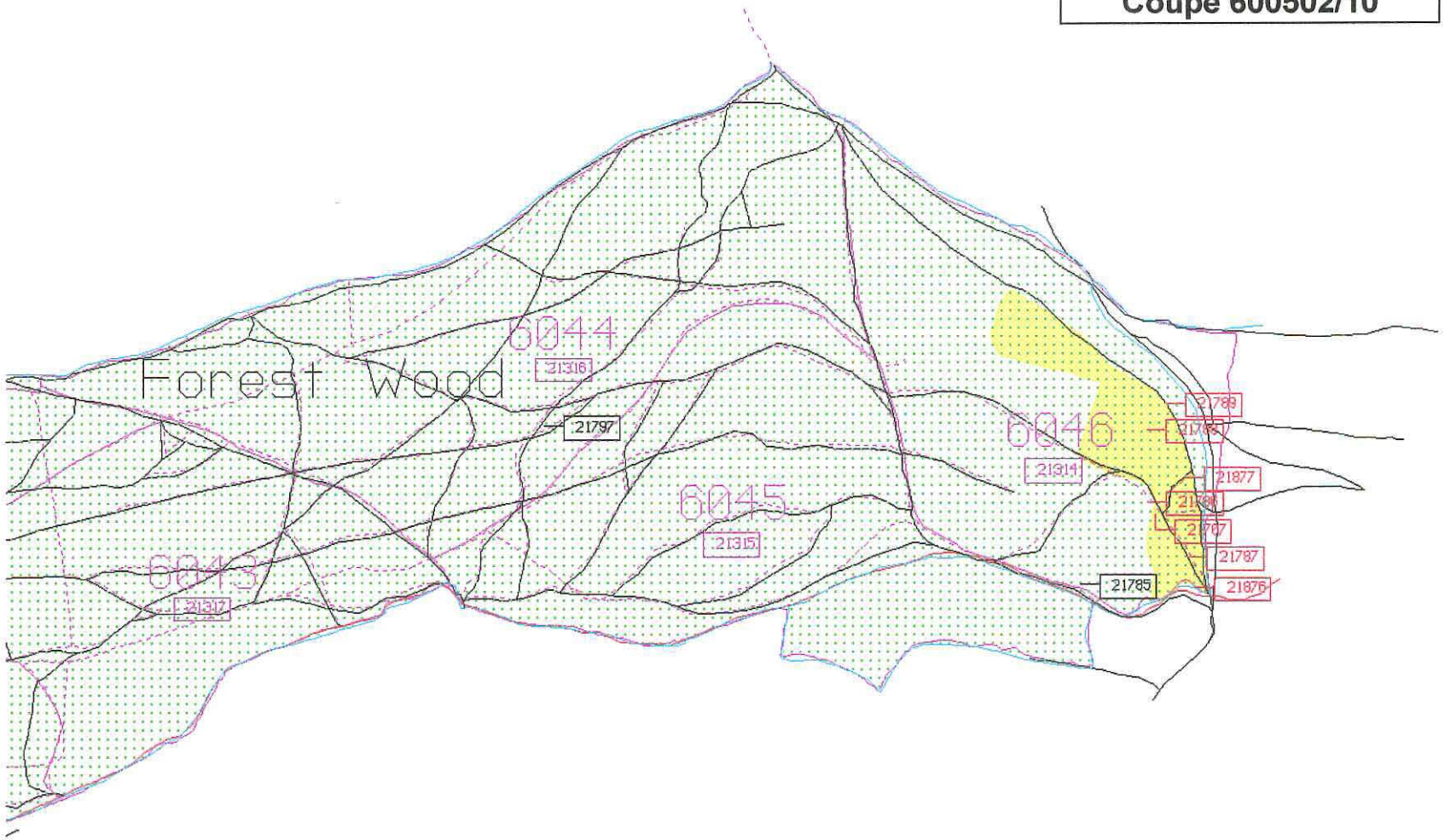
Former field boundary lying on FE legal boundary. FE fence inside the boundary. A low earthwork lined with crab apple trees.

Condition:
Not used as a boundary, some stock erosion.
Management:
Outside FE fence.
Management Category: D
Visited: 14/08/96

Radnor
Coupe 600502/10

Key Scale 1:10000

- Coupe 600502/10
- Forest Enterprise stock map detail
- 1905 boundary
- Stream
- 1905 track
- Parish boundary
- 1905 deciduous woodland
- 1905 secondary woodland
- 1905 mixed woodland
- 1905 conifer plantation
- 1905 conifer planted former deciduous woodland
- 1905 pond
- 1905 boggy area
- Scheduled area
- Known site 21764
- Compartment description 21765
- Site recorded by archaeologist 21853
- Site recorded by Forest Enterprise 21834



CPAT Sites and monuments Record
7a Church Street, Welshpool, Powys, SY21 7DL

PRN **21707** **Forest Wood charcoal burning site I** *Compartment:* 421/6046
Charcoal Burning Platform Post-medieval *NGR:* SO2439367184 *Coupe:* 600502/10

Small platform. Ground under pine needles covered with charcoal. Lies close to former ride through former deciduous woodland.

Condition:
Intact, though only slight remains.
Management:
No management
Management Category: D
Visited: 16/08/96

PRN **21786** **Forest Wood charcoal burning site II** *Compartment:* 421/6046
Charcoal burning platform Unknown *NGR:* SO2438167203 *Coupe:* 600502/10

Small charcoal burning platform close to former ride in former managed deciduous woodland. Ground beneath pine needles covered with charcoal.

Condition:
Intact though slight earthwork
Management:
No management
Management Category: D
Visited: 16/08/96

PRN **21787** **Forest Wood ride I** *Compartment:* 421/6046
Trackway Unknown *NGR:* SO2443367145 *Coupe:* 600502/10

Former ride in former managed deciduous woodland. Deeply sunken and braided where it goes up an incline (at SO 24336724), although generally it follows the contours.

Condition:
Intact and unplanted.
Management:
Do not restock. Avoid repeated use of heavy machinery.
Management Category: C
Visited: 16/08/96

PRN **21788** **Forest Wood** *Compartment:* 421/6046
Managed Woodland Unknown *NGR:* SO2438167313 *Coupe:* 600502/10

The part of Forest Wood (PRN 21797) in coupe 600502/10 visited as part of the Harvesting Survey. Former coppice stools surviving, particularly along the line of exposed rock where conifers have not been planted. Ancient Woodland indicators such as Dog's Mercury growing.

Condition:
Replanted with conifers.
Management:
Avoid damage to former coppice stools along exposed rock face.
Management Category: A
Visited: 16/08/96

PRN **21789** **Forest Wood ride II** *Compartment:* 421/6046
Trackway Unknown *NGR:* SO2442967323 *Coupe:* 600502/10

Former trackway running through former managed deciduous woodland. Not deeply sunken and now used as FE ride.

Condition:
Intact
Management:
Maintain as FE ride
Management Category: D
Visited: 16/08/96

PRN **21876** **Forest Wood boundary** *Compartment:* 421/6046
Boundary marker Unknown *NGR:* SO2445567072 *Coupe:* 600502/10

Edge of former managed woodland now FE legal boundary. Fence lies on boundary. Also parish boundary. A bank c 0.5m high with hawthorn hedge.

Condition:
Intact
Management:
Avoid restocking and do not run heavy machinery over it.
Management Category: C
Visited: 16/08/96

PRN **21877** **Forest Wood ride III** *Compartment:* 421/6046
Trackway Unknown *NGR:* SO2442567226 *Coupe:* 600502/10

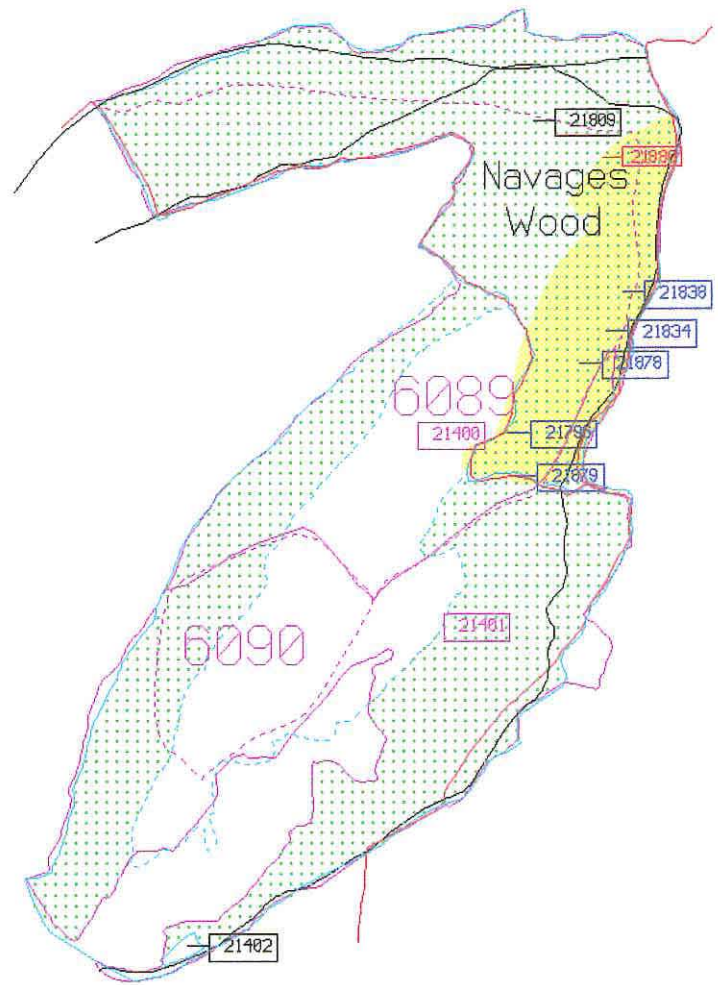
Former ride within former managed woodland. Not sunken. Leads towards two charcoal burning platforms (PRN 21707 and PRN 21786).

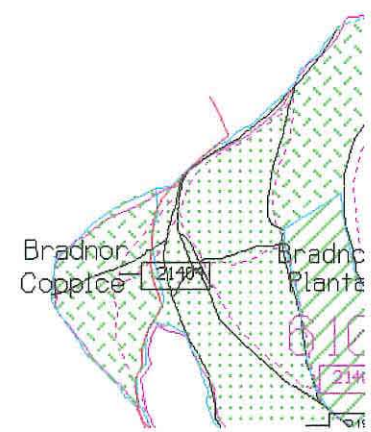
Condition:
Unplanted and used as foot access into wood.
Management:
No management
Management Category: D
Visited: 16/08/96

Radnor
Coupe 600705

Key **Scale 1:10000**

- Coupe 600705
- Forest Enterprise stock map detail
- 1905 boundary
- Stream
- 1905 track
- Parish boundary
- 1905 deciduous woodland
- 1905 secondary woodland
- 1905 mixed woodland
- 1905 conifer plantation
- 1905 conifer planted former deciduous woodland
- 1905 pond
- 1905 boggy area
- Scheduled area
- Known site — 21764
- Compartment description — 21765
- Site recorded by archaeologist — 21853
- Site recorded by Forest Enterprise — 21834





CPAT Sites and monuments Record
7a Church Street, Welshpool, Powys, SY21 7DL

PRN **21796** **Navages Wood boundary II** *Compartment:* 421/6089
Boundary Wall Medieval *NGR:* SO2669758976 *Coupe:* 600705

Former boundary of Navages Wood. A stone wall on the western side of coupe 600705 with a hawthorn hedge. Woodland plant species such as Dog's Mercury and Wood Anenome survive close to wall and hedge but not under conifer crop.

Condition:
Low remains of wall, c. 0.2-0.3m high.
Management:
Do not fell hardwoods on hedge. Avoid restocking and movement of heavy machinery over site.
Management Category: C
Visited: 27/08/96

PRN **21834** **Navages Wood quarry track** *Compartment:* 421/6089
Trackway Post-medieval *NGR:* SO2682659109 *Coupe:* 600705

Short track leading to quarry (PRN 21792).

Condition:
Survives as a slight earthwork, planted with conifers
Management:
No management
Management Category: D
Visited: 27/08/96

PRN **21838** **Navages Wood** *Compartment:* 421/6089
Managed Woodland Unknown *NGR:* SO2684859160 *Coupe:* 600705

The part of Navages Wood which lies in Coupe 600705. A number of coppice stools survive, particularly along the line of a rocky outcrop. Woodland plant species such as Dog's Mercury and Wood Anenome survive along the former woodland boundary but not under the conifer crop. A number of large wood ant nests are also present.

Condition:
Replanted with conifers.
Management:
Do not remove coppice stools and avoid damage to woodland boundary.
Management Category: A
Visited: 27/08/96

PRN **21878** **Navages Wood quarrying** *Compartment:* 421/6089
Quarry Post-medieval *NGR:* SO2679159068 *Coupe:* 600705

Exposed rock face in former deciduous woodland which shows some evidence of quarrying, including five machine drilled holes.

Condition:
Intact
Management:
No management
Management Category: D
Visited: 27/08/96

PRN **21879** **Navages Wood boundary I** *Compartment:* 421/6089
Boundary bank Medieval *NGR:* SO2670658919 *Coupe:* 600705

Former boundary of Navages Wood. A low bank with hazel hedge on southern and eastern edge of coupe 600705. Woodland plant species such as Dog's Mercury and Wood Anenome survive on the boundary but not under the conifer crop.

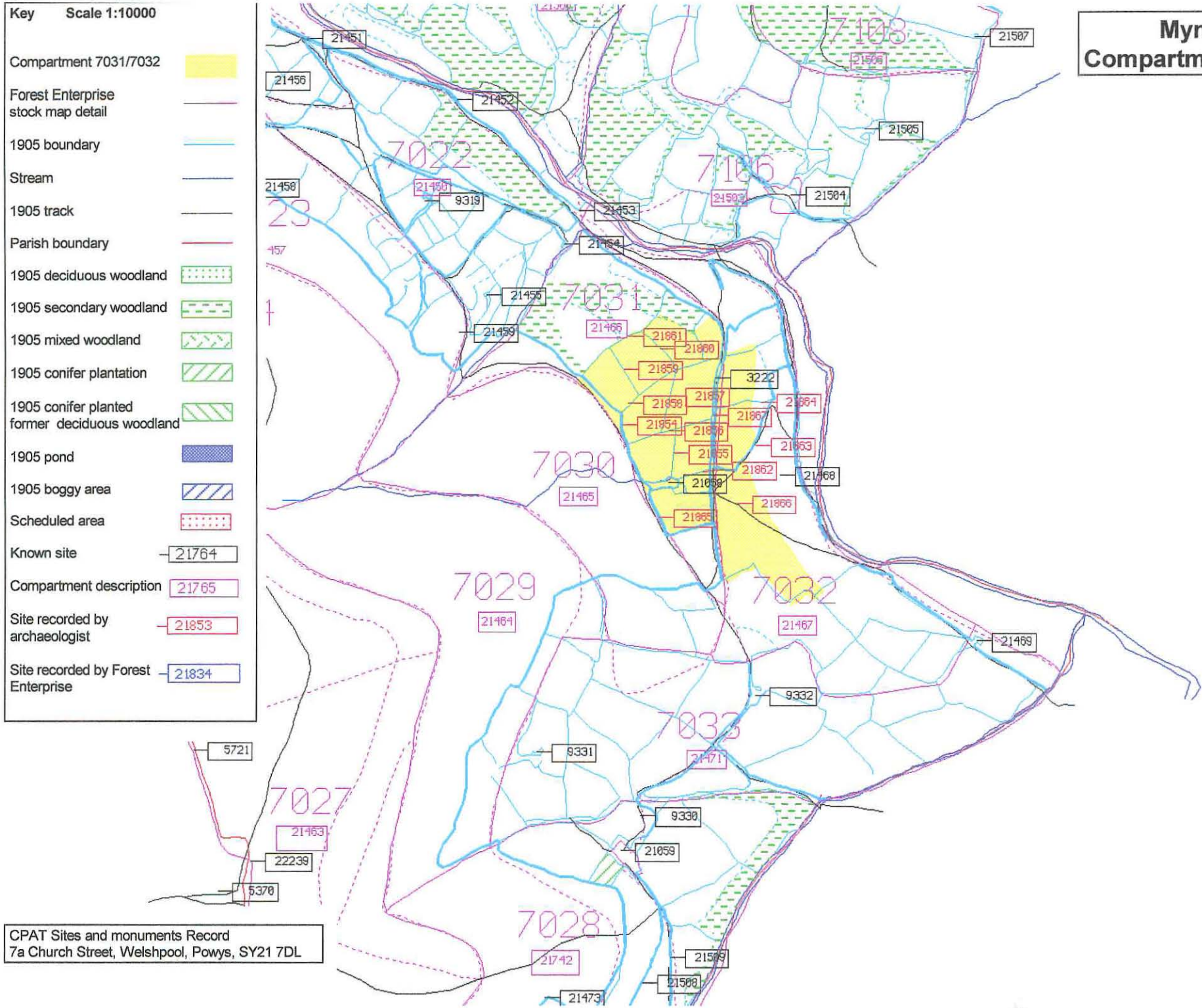
Condition:
Largely intact.
Management:
Avoid felling of hedgerow hardwoods. Avoid restocking and movement of heavy machinery.
Management Category: C
Visited: 27/08/96

PRN **21880** **Navages Wood charcoal burning site** *Compartment:* 421/6089
Charcoal Burning Platform Unknown *NGR:* SO2683259324 *Coupe:* 600705

A slight charcoal burning platform in a former deciduous woodland. Ground beneath pine needles covered with charcoal. Lies on margin of marked area in coupe 600705.

Condition:
Only a slight depression, planted with conifers.
Management:
No management
Management Category: D
Visited: 27/08/96

Mynydd Du
Compartment 7031/7032



CPAT Sites and monuments Record
7a Church Street, Welshpool, Powys, SY21 7DL

PRN **21058** **Llwyn-celyn House** *Compartment:* 411/1/7031
House Post medieval *NGR:* SO2685524571 *Coupe:*

A regional house with a chimney backing on the entry and an outside cross passage. Dated 1688. A surviving bread oven. Recorded in the Forest Enterprise Archaeological Survey (Thomas, D & Earwood, C 1996).

Condition:
Survives in ruins up to 2m high.
Management:
Remove any coniferous trees on site during harvesting. Do not restock.
Management Category: C
Visited: 29/05/96

PRN **21854** **Llwyn-celyn common wall** *Compartment:* 411/1/7031
Boundary wall Post-medieval *NGR:* SO2676224687 *Coupe:*

Substantial wall on former boundary between common and enclosed land. Probably of post-medieval construction, but probably a consolidation of earlier boundary.

Condition:
Wall survives largely intact, up to 1.5m high, though damaged in places.
Management:
Do not remove stone and avoid damage by heavy machinery. Do not restock.
Management Category: C
Visited: 28/08/96

PRN **21855** **Llwyn-celyn field boundary I** *Compartment:* 411/1/7031
Boundary bank Medieval *NGR:* SO2686624630 *Coupe:*

Former field boundary which survives as a bank with a hazel hedge. Probably medieval in date.

Condition:
Intact
Management:
Do not cut down hardwood trees and avoid use of heavy machinery on bank.
Management Category: C
Visited: 28/08/96

PRN **21856** **Llwyn-celyn field boundary II** *Compartment:* 411/1/7031
Boundary bank Medieval *NGR:* SO2685724675 *Coupe:*

Former field boundary bank with hazel hedge. Probably medieval in date.

Condition:
Intact
Management:
Do not fell hardwood trees and avoid use of heavy machinery over the site.
Management Category: C
Visited: 28/08/96

PRN **21857** **Llwyn-celyn field boundary III** *Compartment:* 411/1/7031
Boundary bank Medieval *NGR:* SO2686024743 *Coupe:*

Former field boundary bank with hazel hedge. Probably medieval in date.

Condition:
Intact
Management:
Do not fell hardwood trees. Avoid use of heavy machinery over site.
Management Category: C
Visited: 28/08/96

PRN **21858** **Llwyn-celyn field boundary IV** *Compartment:* 411/1/7031
Boundary Bank Medieval *NGR:* SO2683224770 *Coupe:*

Former field boundary bank with hazel hedge and a large ash pollard. Probably medieval in date.

Condition:
Intact
Management:
Do not fell hardwood trees and avoid use of heavy machinery on the site.
Management Category: C
Visited: 28/08/96

PRN **21860** **Llwyn-celyn field boundary VI** *Compartment:* 411/1/7031
Boundary bank Medieval *NGR:* SO2683824836 *Coupe:*

Former field boundary with hazel and holly hedge surviving. Probably medieval in date.

Condition:
Intact
Management:
Do not fell hardwood trees and avoid use of heavy machinery over site.
Management Category: C
Visited: 28/08/96

PRN **21861** **Llwyn-celyn field boundary VII** *Compartment:* 411/1/7031
Boundary Bank Medieval *NGR:* SO2677424861 *Coupe:*

Former field boundary with hazel hedge. Some parts show evidence of a stone wall. Probably medieval in date.

Condition:
Intact
Management:
Do not fell hardwood trees or remove stone. Avoid use of heavy machinery on site.
Management Category: C
Visited: 28/08/96

PRN **21862** **Llwyn-celyn field boundary VIII** *Compartment:* 411/1/7031
Boundary Bank Medieval *NGR:* SO2691124588 *Coupe:*

Former field boundary with hazel hedge. Probably medieval in date.

Condition:
Intact
Management:
Do not fell hardwoods and avoid use of heavy machinery over site.
Management Category: C
Visited: 28/08/96

PRN **21867** **Ffordd-las track wall** *Compartment:* 411/1/7031
Boundary wall Post-medieval *NGR:* SO2694524715 *Coupe:*

Wall running alongside former trackway now used as FE road. Wall probably constructed in the post-medieval period, but may be consolidation of earlier boundary.

Condition:
Intact
Management:
Do not remove stone. Avoid use of heavy machinery over site.
Management Category: C
Visited: 28/08/96

PRN **21863** **Llwyn-celyn trackway** *Compartment:* 411/1/7032
Trackway Medieval *NGR:* SO2703224645 *Coupe:*

Former trackway. A substantial bank with hazel hedge lies on the northwestern side. Probably medieval in date.

Condition:
Intact
Management:
Do not fell hardwood trees from northwestern side of track and avoid repeated use by heavy machinery
Management Category: C
Visited: 28/08/96

PRN **21864** **Llwyn-celyn field boundary IX** *Compartment:* 411/1/7032
Boundary bank Medieval *NGR:* SO2700324731 *Coupe:*

Former field boundary with hazel hedge. Probably medieval in date.

Condition:
Intact
Management:
Do not fell hardwood trees and avoid use of heavy machinery on site.
Management Category: C
Visited: 28/08/96

PRN **21865** **Llwyn-celyn common wall II** *Compartment:* 411/1/7032
Boundary wall Post-medieval *NGR:* SO2683524499 *Coupe:*

Former boundary between common and enclosed land. A substantial wall. Probably a post-medieval construction, possibly a consolidation of an earlier medieval boundary.

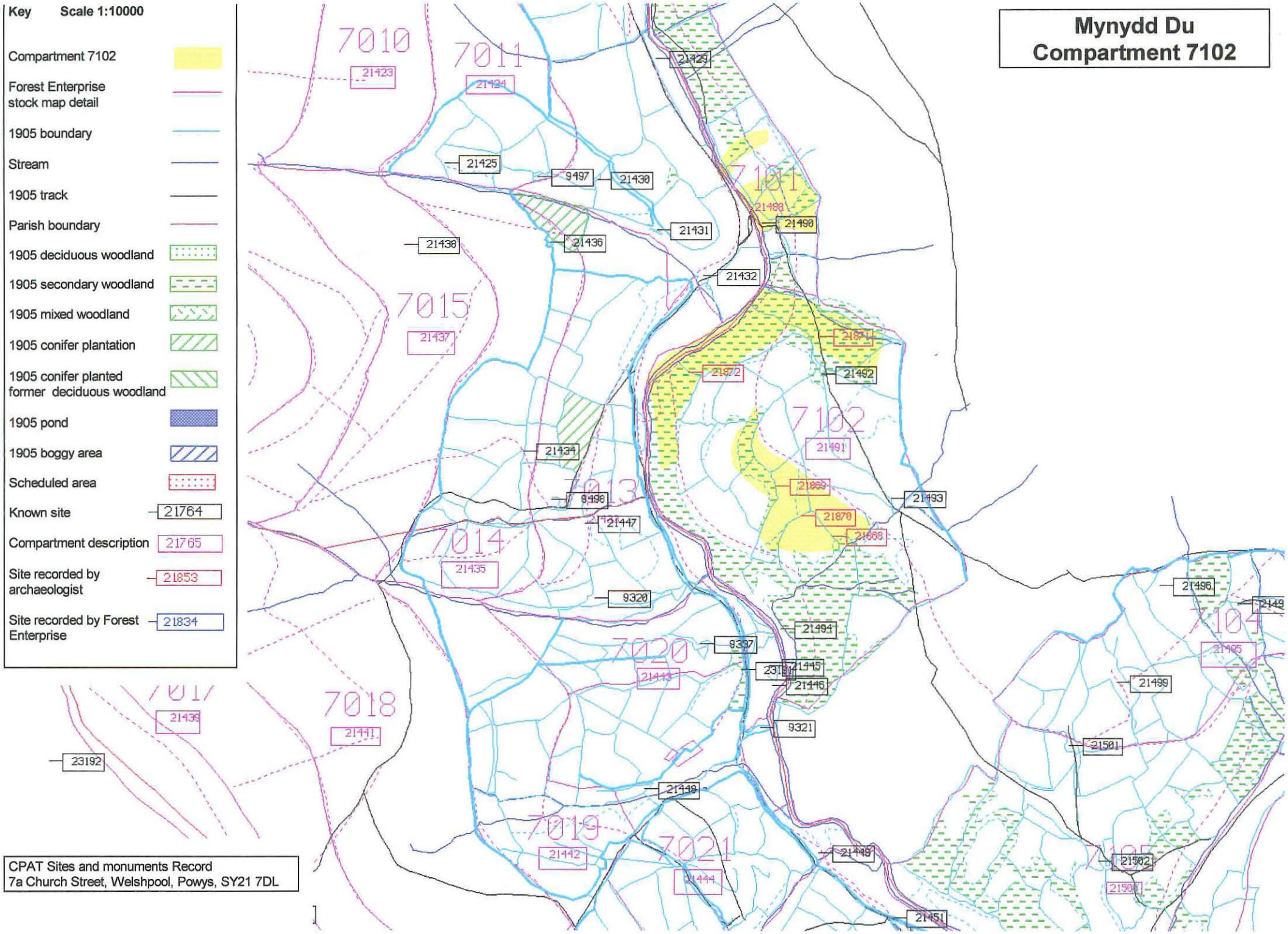
Condition:
Largely intact, surviving to c 1m high.
Management:
Avoid felling of associated hardwood trees and do not remove stone.
Management Category: C
Visited: 28/08/96

PRN **21866** **Llwyn celyn track II** *Compartment:* 411/1/7032
Trackway Medieval *NGR:* SO2699424528 *Coupe:*

A former trackway, still a right of way.

Condition:
Intact
Management:
Maintain as right of way. Avoid use of heavy machenery on site.
Management Category: C
Visited: 28/08/96

Mynydd Du
Compartment 7102



PRN **21492** **Ffawydd structure** *Compartment:* 411/1/7102
Structure Post medieval *NGR:* SO2597326639 *Coupe:* B03000

Small structure marked on OS 1905 map. Likely to be a stock pen as it lies at the head of a double-walled trackway. Could not be located during harvesting survey as it lies in a dense area of regeneration outside the surveyed coupe. Recorded in the Forest Enterprise Archaeological Survey (Thomas, D & Earwood, C 1996).

Condition:
Unknown
Management:
Management Category: Not evaluated
Visited: 29/08/96

PRN **21868** **Ffawydd field boundary I** *Compartment:* 411/1/7102
Boundary Bank Medieval *NGR:* SO2595926330 *Coupe:* B03000

Former field bank. Remnants of former hardwood hedge. Probably medieval in date.

Condition:
Southern part intact. Destroyed to the north.
Management:
Do not fell hardwood trees and avoid use of heavy machinery on bank.
Management Category: C
Visited: 29/08/96

PRN **21869** **Ffawydd field boundary II** *Compartment:* 411/1/7102
Field Bank Medieval *NGR:* SO2587326397 *Coupe:* B03000

Former field boundary with remnants of hardwood hedge. Probably medieval in date.

Condition:
Line visible, but damaged.
Management:
Do not remove hardwood trees and avoid use of heavy machinery over site.
Management Category: C
Visited: 28/08/96

PRN **21870** **Ffawydd field boundary III** *Compartment:* 411/1/7102
Boundary Bank Medieval *NGR:* SO2592926330 *Coupe:* B03000

Former boundary bank with remnants of a hardwood hedge. Probably medieval in date.

Condition:
Largely intact
Management:
Do not remove hardwood tree and avoid use of heavy machinery on site.
Management Category: C
Visited: 28/08/96

PRN **21871** **Ffawydd trackway** *Compartment:* 411/1/7102
Trackway Medieval *NGR:* SO2596826719 *Coupe:* B03000

Former trackway which survives a slight holloway.

Condition:
Planted with conifers but largely intact.
Management:
No management
Management Category: D
Visited: 28/08/96

PRN **21872 Cefn-coed field boundary I** *Compartment:* 411/1/7102
Field Wall Medieval *NGR:* SO2568426643 *Coupe:* B03000

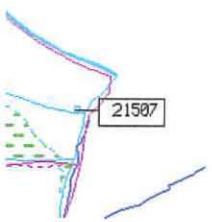
Former field boundary. Probably of medieval date.

Condition:
Survives to approximately 0.3m high.
Management:
Do not remove stone. Avoid use of heavy machinery over site.
Management Category: C
Visited: 29/08/96

Mynydd Du
Compartment 7301/7303

Key **Scale 1:10000**

- Compartment 7301/7303
- Forest Enterprise stock map detail
- 1905 boundary
- Stream
- 1905 track
- Parish boundary
- 1905 deciduous woodland
- 1905 secondary woodland
- 1905 mixed woodland
- 1905 conifer plantation
- 1905 conifer planted former deciduous woodland
- 1905 pond
- 1905 boggy area
- Scheduled area
- Known site — 21764
- Compartment description — 21765
- Site recorded by archaeologist — 21853
- Site recorded by Forest Enterprise — 21834



CPAT Sites and monuments Record
7a Church Street, Welshpool, Powys, SY21 7DL

PRN **21873** **Graig-ddu common boundary** *Compartment:* 411/1/7302
Boundary Bank Post-medieval *NGR:* SO2910826308 *Coupe:* B04000

Former boundary wall between common and enclosed land, likely to have been built in the post-medieval period. Evidence of an earlier bank on inside of wall, which is likely to be medieval.

Condition:
Substantially intact.
Management:
Do not fell hardwood trees. Do not remove stone. Avoid use of heavy machinery on site.
Management Category: C
Visited: 30/08/96

PRN **21874** **Graig-ddu field boundary I** *Compartment:* 411/1/7302
Boundary bank Medieval *NGR:* SO2911926083 *Coupe:* B04000

Former field boundary with hawthorn hedge, lying outside FE fence but on FE boundary. Probably originally medieval in date.

Condition:
Limited erosion by stock.
Management:
Management Category: C
Visited: 30/08/96

PRN **21875** **Graig-ddu field boundary II** *Compartment:* 411/1/7302
Boundary Bank Medieval *NGR:* SO2916426422 *Coupe:* B04000

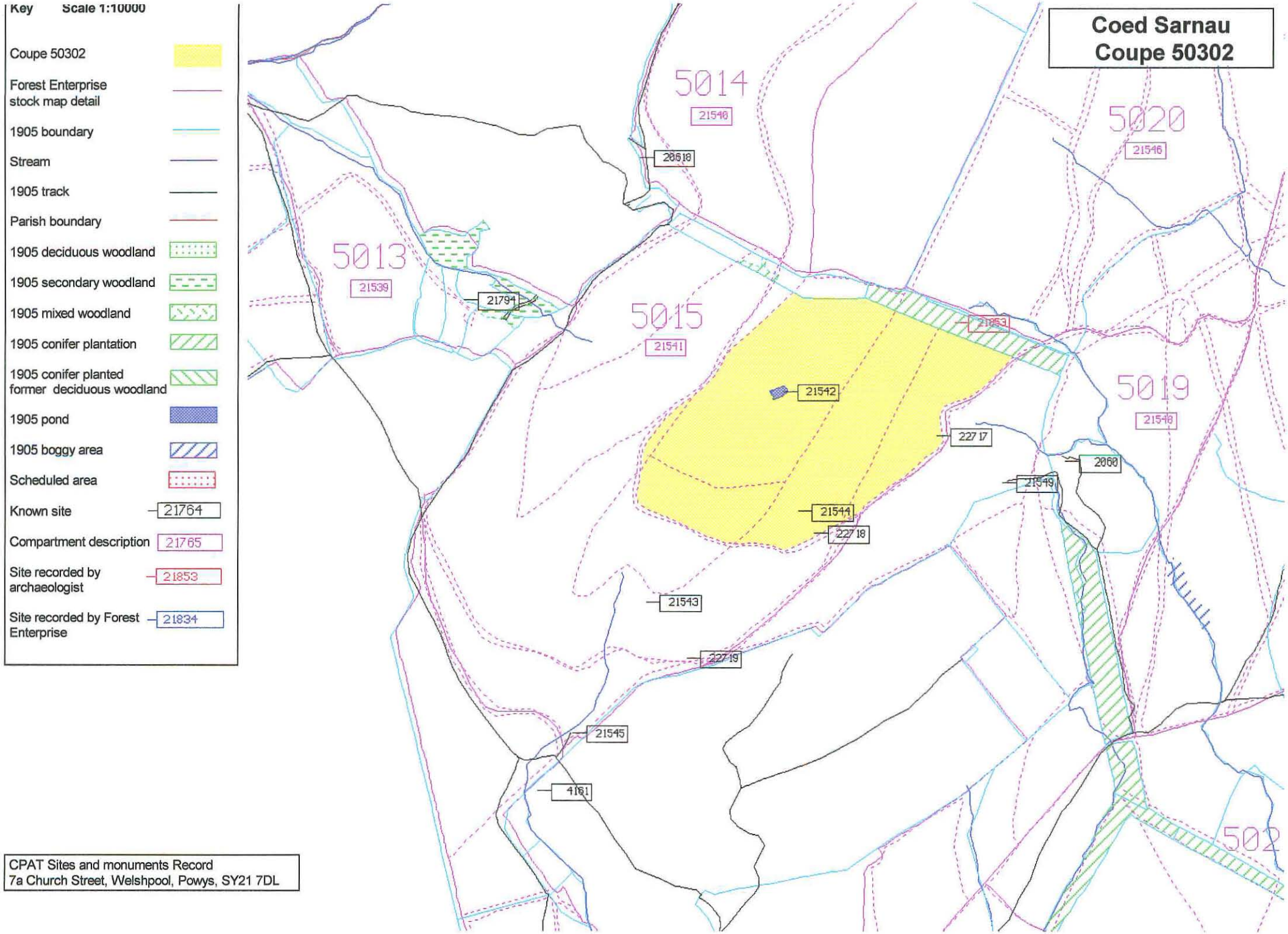
Former field boundary. Probably originally medieval in date.

Condition:
Largely destroyed. Occasional broadleaved trees are only evidence of former location.
Management:
Management Category: D
Visited: 30/08/96

PRN **21842 Tyle Ffardding building II** *Compartment:* 411/1/7303
House Post medieval *NGR:* SO2871325316 *Coupe:*

House not shown on 1905 map. Reported by FE. Consists of two seperate element. Lower down the hill is a small house with surviving stone built fireplace.

Condition:
Walls and fireplace still standing.
Management:
Trees growing on fabric of wall should be removed. Do not restock within marked area and do not run heavy machinery over site.
Management Category: C
Visited: 01/08/96



CPAT Sites and monuments Record
7a Church Street, Welshpool, Powys, SY21 7DL

PRN **21542** **Pistyll pond** *Compartment:* 421/5015
Pond Unknown *NGR:* SO0156177704 *Coupe:* 50302

Small pond shown on OS 1905 map. Recorded in the Forest Enterprise Archaeological Survey (Thomas, D & Earwood, C 1996).

Condition:
Survives as a boggy area in forest where conifers have failed.
Management:
Remove trees during harvesting and do not restock.
Management Category: D
Visited: 05/06/96

PRN **21544** **Pistyll quarry IV** *Compartment:* 421/5015
Quarry Post medieval *NGR:* SO0159377445 *Coupe:* 50302

Quarry shown on 1905 OS map. Field work could not locate site, but a modern quarry lies nearby and the site could be incorrectly located on the 1905 OS map.

Condition:
Unknown
Management:
Management Category: E
Visited: 17/09/96

PRN **21853** **Pistyll conifer shelter belt** *Compartment:* 421/5015
Plantation Modern *NGR:* SO0193077854 *Coupe:* 50302

Late 19th century conifer shelter belt. Boundary bank on southern side and wall on northern side inside former field boundary. Mature European Larch trees survive in plantation which is used as a conservation area.

Condition:
Largely intact although some damage to boundary bank and Larch trees caused during felling of adjacent coupe.
Management:
Avoid damage to boundary banks, walls and trees during ground preparation for restocking.
Management Category: C
Visited: 17/09/96

PRN **22717** **Pistyl Quarry I (dis)** *Compartment:* 421/5015
Quarry Modern *NGR:* SO0189277606 *Coupe:* 50302

Quarry shown on modern OS map. Re-used by FE. Recorded in the Forest Enterprise Archaeological Survey (Thomas, D & Earwood, C 1996).

Condition:
Current quarry is wholly modern.
Management:
No management
Management Category: D
Visited: 17/09/96

PRN **22718** **Pistyll Quarry II (Disused)** *Compartment:* 421/5015
Quarry Modern *NGR:* SO0162777398 *Coupe:* 50302

Quarry located on modern OS map. Still used by FE. Recorded in the Forest Enterprise Archaeological Survey (Thomas, D & Earwood, C 1996).

Condition:
Quarry re-used by FE
Management:
No management
Management Category: D
Visited: 17/09/96