# Cnwc W/12/2042

# Tir Gofal Farm Visit Historic Environment Report Call Out



A section of the historic boundary bank which lines the driveway to Cnwc farm

Report No. 2004/21

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#### CAMBRIA ARCHAEOLOGY

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Cnwc Farm Tir Gofal Farm Visit Historic Environment Report Call Out

#### By

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# Introduction

A farm visit was undertaken at the request of the Countryside Council for Wales to address specific management issues on this farm. The aim of this report is to make an assessment of these issues in order to provide management recommendations. This report is not intended to assess the structural condition or stability of any given site.

The Call Out Report responds to management concerns regarding specific sites, it does not provide management advice for all known sites on the farm, for these recommendations please refer to the Historic Environment Report 1 (He1).

# **General Description of Farm**

Cnwc Farm lies approximately 2.5 kilometres to the southeast of Llanybydder, in Carmarthenshire, centred on National Grid Reference SN54864321. It was visited by Cambria Archaeology on the 2<sup>nd</sup> February 2004.

The farm holding occupies just under 25 hectares of land on a southwest facing slope above the Afon Wernnant. The farmstead is positioned centrally within the holding and is accessed by a long drive which leaves the public road at Alderbrook, to the south, before climbing the slope, first serving Tanyrallt farm and then lastly Cnwc. The current farmstead of Cnwc is uninhabited but is undergoing extensive restoration works before the owner moves in. The cow shed to the south has also recently been restored by the owner.

# **Restoration Works**

Current works being undertaken on the farm include restoration of boundary banks around the farmyard and the access driveway to the farmstead. The boundary banks appear to survive in varying states of preservation. In some places where the banks survive in good condition, they demonstrate a distinctive local style of stone facing; with the stonework set vertically on edge and built in layers or courses.

Some of the new work to stone-faced earth banks has been constructed in a different style to that seen elsewhere on the farm and a call out visit was requested by the Tir Gofal Project Officer in order to assess how further works should proceed.

# Existing stone-faced earth banks

A particularly good stretch of stone-faced earth bank is visible at the lower end and northern side of the driveway up to the farmstead. Here the bank appears to survive intact (plate 1). There are at least four courses, or layers, of stonework, set on end and battered inwards towards the top of the bank. Tree stumps line the top of the bank, presumably the relic remains of a hedgerow which had grown out into mature trees, indeed some mature trees still survive in places. It is uncertain whether these stumps are alive and will throw out new shoots or if they have died.



*Plate 1 – a stretch of stone faced earth bank at the lower end of the driveway which survives in good condition.* 

# Management Recommendations

Where the stone-faced earth banks survive in a stable condition it is preferable that they are left undisturbed. The northern and lower end of the trackway appears to retain a solid section of bank and it would seem unnecessarily destructive to rebuild this section of bank when it appears to be in a secure condition. In addition, it is understood that a fence will be erected along the northern side of the bank, which will provide a stockproof barrier.

If the stumps which line the top of the bank begin to regrow it is recommended that they should be trimmed regularly to prevent them from becoming large, unwieldy trees. Also if they are kept alive but in check then the roots should be maintained in a fairly stable state – if they are allowed to grow very large then the roots will expand and may dislodge stonework, conversely if they are killed off then the roots will die and rot causing cavities within the bank.

# Poorly preserved stone-faced earth banks

Some sections of the northern bank of the driveway have become eroded; it appears that as the bank has become less stockproof sheep have been climbing over the bank and dislodging the stonework (Plate 2). However, in many places the much of the bank still survives and some of the stone-facing is retained.

# Management Recommendations

Where the stone-faced earth bank survives almost intact but with areas of facing lost then these pockets should be repaired and patched with stonework of a similar style to that which is existing. There are guidelines issued by the British Trust for Conservation Volunteers (appended to this report) which give detailed advice on the repair/reconstruction and building of stone-faced earth

banks. These indicate that repair is preferable to wholesale rebuild, because the compaction within the earth bank which is achieved over centuries is almost impossible to replicate in a new construction. In repairing existing banks it is advised that the banks should be disturbed as little as possible in order to retain that compaction.



Plate 2 – some sections along the driveway have become eroded and pockets of stone-facing have been lost.

# Degraded earth banks

In some sections the banks have become very badly eroded and the height of the banks is much reduced. Here there is little or no stonework left facing the banks (Plate 3). There are also a number of large trees stumps with extensive root systems emerging from the bank. The owner thought that these stumps where probably dead.

# Management Recommendations

Where these large dead trees stumps predominate along the eroded sections of bank, and there appears to be no significant amount of stone-facing surviving it would be preferable to remove the dead root systems before resetting the stone-facing. This would prevent subsequent collapse of the banks when the roots rot and leave cavities. The new stone-facing should copy the original style of stones set vertically on edge.



Plate 3 – poorly preserved sections of stone-faced earth banks

# New work

Current restoration works have already seen the rebuilding of large sections of bank, particularly opposite the cow shed and on the south side of the trackway to the farmstead (Plate 4). The new works which have been undertaken have been carried out in a different style to that which appears to have been the norm on this farm. These new sections of bank have been built with stone laid horizontally.

# Management Recommendations

Ideally all new stone-facing work should have been carried out using vertically set stone which appears to be the tradition for this locality, however where banks which have been started with horizontally laid stone (along the southern side of the driveway to the farm) these sections should be completed and finished off in the same style.



Plate 4 – a section of newly rebuilt stone-faced earth bank on the south side of the farm driveway, built with horizontal courses

# The Pigsty

To the southwest of the farmyard are the ruined remains of a pigsty (plate 5) probably of late 19<sup>th</sup> century date. The building survives as a shell, and only the west wall, a gable end, survives to roof height. Much loose stone and debris lie within the building and around it obscuring its layout. However, two stone gate posts and a dividing wall survive, indicating the entrance to one of two yards on the eastern side of the building.



Plate 5 – the ruined remains of a pigsty lie to the east of the farmstead.

# Management Recommendations

There are various options to be considered for this building:

Ideally the building should be restored, much of the stonework survives where it has fallen and careful clearance and examination of the building would probably enable it to be rebuilt to its original form. It is acknowledged however, that this is uneconomic unless a suitable reuse for the building can be identified.

An alternative would be to remove the debris from around the building and consolidate the loose sections of walling which survive and retain it as a historic feature of the farmstead. This would also leave open the option for its reconstruction at a later date.

The ruin could be 'preserved by record'. The loose building debris around the pigsty should be removed to expose what remains of the ruin. The ruin should then be photographed extensively and a sketch plan made showing the angle at which the photographs were taken (see photographic guidelines for the recording of Traditional Buildings appended to this report). When the building has been recorded the rest of the ruin could then be removed and the site cleared to ground level.

It is important that a copy of the photographic record is deposited with Cambria Archaeology in order that it can be retained for future reference.

It is recognised that the first two options require a considerable investment from the owner (both financially and in terms of labour) which may not be possible at the present time. In addition the owner is also concerned about the safety of the ruin which occupies a prominent position in the farmstead complex and inhibits access for large vehicles to the new farm building which is being erected to the north of the farmyard. The last option therefore is perhaps the most practical in the present circumstances.

#### References

Ordnance Survey 1891 Carmarthenshire Sheet VII.SE Ordnance Survey 1906 Carmarthenshire Sheet VII.SE

Book:	Dry Stone Walling
Chapter:	8 Retaining walls and stone hedges
Section:	Cloddiau

Metadata: Details



Cloddiau is used here to refer to stone hedges which have the stonework set vertically on edge, and built in more or less even layers. As a method of construction it is particularly strong, as the stones wedge firmly together, as with the coping on a dry stone wall. However, cloddiau are quite different in structure from dry stone walls, as the stonework serves more as a protective skin to a relatively independent earth bank, rather than the face and hearting functioning as one structure, as in a dry stone wall. Cloddiau are much wider than standard dry stone walls.

#### **Procedure**

#### **Dismantling**

The basic process is similar to dismantling a <u>dry stone wall</u> (<u>Chapter 6</u>). However, it is best to disturb the earth bank as little as possible, only cutting the <u>face</u> back 100-150mm (4-6") more than the length of the building stones, to allow space for compacting the soil behind them. If both sides need repairing, it is best to dismantle and rebuild one <u>face</u> before dismantling the other. Much of the clawdd's strength is reliant on the solidity of the earth core, and it is likely that no amount of manual compaction can make up for hundreds of years of natural settlement.

The stone is set out either in lines or piles of similarly sized stone, accurately graded to facilitate building. The width of cloddiau means that throughstones are very rare. However 'bonders', stones more than three times as long as they are high, are sometimes used, and if found, these should be set aside.

#### Batter

As with retaining walls, frames are not usually practical when rebuilding a clawdd, and line bars are used as described above (<u>Chapter 8</u>). If a new clawdd is being built, a frame can be used, and should be set up as explained for free standing walls (<u>Chapter 6</u>).

To increase their stability, cloddiau are not as steep-sided as dry stone walls. Put another way, cloddiau have a greater <u>batter</u> than dry stone walls, and the batter increases as the height of the clawdd increases, in order to maintain stability. Note, as in the diagram above, that a batter of 1:4 is 'greater', i.e. more sloping, than a batter of 1:6.



The diagram shows the minimum requirements for cloddiau. The standard clawdd has an minimum <u>batter</u> of 1:5, but may be more sloping, at 1:4. The high clawdd has a minimum batter of 1:4, but may be more sloping, at 1:3.

As cloddiau have a greater <u>batter</u> than dry stone walls, it can be difficult to maintain the batter and keep an even <u>face</u> to the stonework, without steps resulting. If the stones have rounded top corners this is less of a problem. With more regularly shaped stone you may need to tilt the stones slightly as shown in the diagram.



Another factor affecting <u>batter</u> is the length of stone available for building. If the building stone is not very long, that is, with a length less than twice as long as its height as laid in the wall, then a greater batter (about 1:4) is needed to maintain stability, even on a standard clawdd.

Medium stone, that is about twice length to height, can be used to build a standard clawdd at 1:5, or a high clawdd at 1:4. Unless the stones are very large, high clawdd should never be steeper than 1:5.

If the stone is long, or more than three times as long as it is high, then a smaller <u>batter</u> (about 1:6) is possible for a standard clawdd, which approaches the steepness of a <u>dry stone wall</u>.



#### **Footings**

Essentially the footings for a clawdd follow the same principles as for a free standing wall (<u>Chapter 6</u>), bearing in mind the following:

a When building a new clawdd, cut out the turf about 3-6" (75-150mm) deep, and keeping it turf side up, put it aside to re-use for the clawdd capping.

b Unless the stone is blocky, the footings should be set flat, even in a vertically coursed clawdd. If thin stones are set vertically in the footings the weight of the stone above will force them into the ground.

c Unless the footing stone is over about 10" (250mm) thick, it should be set below ground level.

d When repairing a clawdd, it is normal practice to 'trace' (<u>Chapter 6</u>) any <u>footing</u> stones which would otherwise require considerable excavation of the bank. Whilst tracing is to be generally avoided, it is preferable to disturbing a stable bank. It is important that any traced footings are completely buried so that they cannot slip out of the wall.

#### Layering and grading

The largest stones are used at the base of the wall, with subsequent layers diminishing with height. The stones within each layer are of roughly similar size, forming distinct 'courses'.

The key to coursing a clawdd is learning to use stones of somewhat varying size within a <u>course</u>, whilst retaining the identity of the <u>course</u>. Old cloddiau often have stones in the same course varying by about an inch, making a course that is gently undulating rather than absolutely even. However, adjacent stones must be as close in height as possible, avoiding the creation of steps, as building on top of any steps will be difficult.

The use of lines is crucial to coursing. They should be set to a height that accommodates the average size of the largest stones you have left, so each time you should move them up by a slightly smaller amount. Always set the line to fit the stones available, rather than setting the line to an arbitrary height and then trying to find stones to fit. The line is only a guide to the <u>course</u> and <u>batter</u>, and cannot be used to determine the exact size of stone. However, with experience stone selection becomes more accurate and the courses will become more even.

#### **Placing the stones**

Placing a building stone is similar to placing <u>coping</u> stone (<u>Chapter 6</u>). Once the height of the stone has been selected there are four major considerations for each stone:

a Always place the stone with its long axis into the wall. This rule is never broken.

b The stone should fit tightly with its neighbours, to the side and below, with no large holes or gaps in the <u>face</u>. Some small gaps are inevitable, but the fewer there are the stronger the wall.

c Contact must be stone to stone, with soil or turf no substitute for stone in the face of the clawdd.

d The stone must sit on a firm base, and make a good surface to build on.

Awkwardly shaped stones, particularly those with a triangular shape, will need trimming to provide good faces and surfaces.



When placing a stone, make a small ramp of soil inside the wall, just beyond the point the building stones will reach. Set a stone vertically on the foundation so that its top meets, or nearly meets, the string line.



You may need to use a small amount of soil from your ramp alongside stones with rounder bases to ensure they don't fall over.

Avoid getting too much soil on the previous <u>course</u>, as good stone to stone contact must be maintained, with the stone holding the earth, and not vice versa.

When learning, it is best to work sequentially along the <u>course</u>, placing one stone and then the next. Use stones of complementary shapes where possible, and keep the stones tight and vertical. It is tempting to slope a stone to get it to the right height, but this will create a weak point, and put out the pattern of coursing above.



With courses of vertically placed stones, some hedgers recommend putting a turf layer about 1" (25mm) thick on each <u>course</u>, tamping it down well between the stones. The

argument is that this makes a <u>bed</u> for the next <u>course</u> and ensures a quick growth of grass over the <u>face</u> to bind it. However, this technique is not generally recommended, as the outer edge of the turf layer can become eroded before any vegetation establishes, destabilising the <u>face</u>. Stone and turf faces are also more likely to settle unevenly, or more quickly, increasing the potential for collapse.

#### **Keystones**

Keystones are used about every 2' (600mm) to ensure a tight finish. These stones are slightly narrower at the base than at the top, and are forced down into the <u>course</u> to tighten the stones in the section to either side. The distance between keystones depends on the stone size and type, but they should be placed so every stone is 'squeezed' by its nearest keystone. If the keystone is too narrow, or the <u>gap</u> between keystones too wide, some stones will not be 'squeezed' as the keystone is forced in.



When learning, use the following sequence to place keystones:

1 Select a suitable keystone for the height of the course.

2 Place as normal in the sequence, but alongside a stone with a good flat side.

3 Choose another flat sided stone to place beyond the keystone, with the flat side to the keystone.

4 Remove the keystone, and move the single stone slightly into the gap left by the keystone.



5 Continue the course to the next keystone.

6 Force the first keystone down into the gap left for it, squeezing the building stones.

The keystone will be of little use if its immediate neighbours are not flat sided. In effect the keystone is one in a set of three, differing only from the other two in being slightly <u>wedge</u> shaped.

Initially this process will be a matter of trial and error, but with experience you will be able to choose the right stones to give a tight fit.

#### Wedging

Either sometime during this process, or at the end of each <u>course</u>, you need to firmly <u>wedge</u> the 'tails' of the stones, below and between.



A good supply of wedges is not always present when building a clawdd, and if you run out, you will have to use soil, firmly compacted into all nooks and crannies using the end of a hammer handle. Take care not to dislodge the building stones.

#### Fill

As each <u>course</u> is completed, the middle is filled. For a new clawdd, try and use soil with large granules, or a soil and <u>rubble</u> mix. Very fine soils are difficult to compact. When rebuilding, you should only have the <u>gap</u> between the <u>face</u> stones and the existing bank to fill. As necessary, dig a 'borrow pit' in suitable soil to provide the fill.

The most important aspect of filling is proper compaction, which should be done every 6" (150mm) of soil. You can compact the lower courses of fill by walking on it, and there are even stories of donkeys being used in the past for this task. Higher courses can be compacted with a 'tamper', or with the <u>head</u> of a lump-hammer, taking care not to displace any <u>face</u> stones. A bricklayer's hammer can be used in the same way for compacting small and awkward gaps. You can test for sufficient compaction by pushing your index finger into the fill. It should be difficult to push it down beyond the first joint.



Where <u>rubble</u> is incorporated in the fill, this should be placed in alternate layers with the soil, and never more than one stone deep before soil is added and compacted. Don't try and eke out the rubble to obtain an even distribution throughout the height of the wall, but use it in the lower layers, where there is the greatest weight to support. In some cloddiau the <u>rubble</u> is used more or less as a second skin, behind the <u>face</u> stones and essentially following the same principles for placement, but with less emphasis on coursing or keystones.

The weather plays an important role in compaction of fill. In wet weather it is impossible to compact the core without turning it into a muddy quagmire, and it's not advisable to work in anything above a light drizzle. In summer the soil can be so dry that it fails to bind well under compaction,

and if there is a water supply nearby, it's a good idea to dampen the layer using a watering can with a sprinkler head.

#### Subsequent courses and joints

The process described above is repeated for subsequent courses, with the height of each subsequent <u>course</u> diminishing. Construction should follow the 'waller's prayer' of '1 on 2 and 2 on 1', and running joints should be avoided. However, where a step has developed in the preceding layer, it is almost impossible to avoid a two-stone running joint. Choose stones which will finish at the same height, so the joint can be crossed in the next <u>course</u>. Make sure it does not develop into a three-stone joint.



With experience, you can use a less sequential procedure for construction which allows for better coursing and crossing of joints. Use the line as a more accurate indication of height, placing the stones by best fit to the line, and positioning the larger stones in the dips left in the previous layer. This is easier to do randomly rather than sequentially. Eventually a number of clusters of stones will result, and you can jam a keystone into each gap to finish. It can be a far faster and more accurate method of coursing, but is not recommended for beginners. If you are not careful, you will end up with sections too long for keystones to squeeze sufficiently.

When leaving an unfinished clawdd overnight, make sure that its end slopes gradually enough that it won't slump even if it rains.

#### **Finishing and capping**

Various methods are used for the last <u>course</u> or layer of a clawdd. Frequently this is simply the last course of the smallest stone, but sometimes a course of larger, blockier stones is added for increased stability. A less formal variation is to finish with irregular <u>rubble</u> left over from the rest of the building process. Another variation is to use longer stone, projected from the wall every metre or so to discourage stock from rubbing against the top <u>course</u> or scrambling over the wall.



Whatever the method used for the last <u>course</u> of stone, turf will normally be added to completely cap the wall and give it a level finish. Consequently the last stone course does not need to have a regular top, as any irregularities will be disguised by the turf.

The process of turfing the top of a clawdd is similar to making a turf dome (<u>Chapter 8</u>), except generally only one layer of turf is used on top of a dome of soil. With new cloddiau an earth dome 12-18" (300-450mm) high is added on top of the last <u>course</u> to increase the height of the wall, and to allow for settlement of the earth core. When repairing cloddiau with a relatively stable core, settlement should not be a problem, but additional soil can be added to create a domed top if extra height is needed.

Place a line of turf on top of the last <u>course</u>, positioning each turf carefully so that the roots are not exposed at the edge, and tamping each one into place, butted closely up against its neighbour. If new turves are cut they should be cut to a diamond or trapezoid profile (<u>Chapter 8</u>) to ensure that they bind well together. Once the tops of both faces are turfed, continue by turfing the middle section of the domed top.

If you run out of turves and it's not possible to dig any more, it's acceptable to leave the rest of the top bare, as it will vegetate in time. However, you must ensure that the fragile edge of the dome is covered, to protect it from erosion.

Rule (1974) identifies a 'thatch' of three rows of turf used in certain exposed parts of the Lizard Peninsula. One row on each side is placed earth down, then a row on the back of it is placed earth upwards. More earth is packed on and a final double row is placed which overlaps the other rows by about two thirds their width. Finally an earth cover is put on to finish. This method promotes quick binding of the turf.



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# **Tir Gofal Traditional Buildings**

# **Guidelines for General Photographic Surveys of Buildings**

The purpose of the survey is to produce a photographic record of the building prior to any demolition, alterations or renovation being started, as well as recording any fixtures, fittings or features which come to light during the works. This survey may be the only record of the original form of the building available for future reference. The survey will then be referenced within the Regional Site and Monuments Record for Carmarthenshire, Pembrokeshire and Ceredigion (held and managed by Cambria Archaeology), and deposited with the National Monument Record in order that the information is publicly available for study and reference.

Photographs should be taken using 35mm format colour print film (preferably Kodak or Fuji). ASA 200 film is a good standard for most light conditions but ASA 400 should be used where light conditions are poor. 36 exposure film should be used in all cases and at least one whole film must be exposed. Alternatively, a digital camera may be used. Please contact Cambria Archaeology for further information on the quality of digital image required.

Photographs should be taken of all exterior and interior wall elevations which are affected by the proposed works together with photographs of the interior roof detail where this is altered. Features of particular interest (e.g. obvious differences in wall makeup, windows and doors whether blocked up or not, fireplaces, timber framing) should also be fully photographed. If available a scale, of noted measurement, should be placed within any detailed shots but this is not essential.

A plan of the building is also required to record the direction in which each of the photographs has been taken. Architectural drawings can be used where available or a sketch plan can be produced. Location reference numbers on the plans should be copied onto the backs of the prints together with brief descriptive details of the location. If using a digital camera this information should be used to name the photographs.

A copy of the survey should be provided to Cambria Archaeology, The Shire Hall, Carmarthen Street, Llandeilo, Carmarthenshire, SA19 6HU either directly or via the Countryside Council for Wales Tir Gofal Project Officer.

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# 2<sup>nd</sup> February 2004

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As part of our desire to provide a quality service we would welcome any comments you may have on the content or presentation of this report