Desk study on the potential impact LIFE Welsh Raised Bogs project actions on known and potential Archaeological features at Cors Fochno SAC.

Following the discovery of important archaeological features during excavations on the southern fringes of the Cors Fochno SAC in 2002 to 2005 by Lampeter University, most notably a medieval trackway, Iron age or Roman industrial site, and a Bronze age wooden object, Cadw (a Welsh government historic environment service) funded the Dyfed Archaeological Trust to conduct the 'Wetland Margins Survey: Cors Fochno' between 2008-2009 to assess the archaeological potential of this site and to inform it's future management.

This project was community inclusive and encouraged active participation, working with Natural Resources Wales (formerly known as the Countryside Council for Wales) as the majority landowner of Cors Fochno, as well as Llancynfelyn Community Council and other surrounding smaller landowners, primarily farmsteads. Several sites on or around Cors Fochno were identified as worthy of investigation but only three were, these being Bryn Sant, Tân yr Allt and Ynys Capel. Bryn Sant (a rock outcrop north of the bog) yielded no results and Tân yr Allt was found to have two west-east directional trackways (suspected to be 20th century and built for transporting a steam-powered peat cutter) but are away from the project area on modified land. However, Ynys Capel is known to have many important features discovered in 2003-2005, also on modified land, and so a considerable radius from here is scored as a high archaeological potential area, and this in closer proximity to some of the WRB project actions.

This survey conducted a relatively thorough investigation over three weeks, utilising an array of assessment methodologies, including: a preliminary desk-based assessment (documentary research including analysing aerial photographs; assessment of the known resource; validating and enhancing the existing HER records and digital mapping), trial trenching (peat stripping), auger surveys, topographical surveys, geophysical surveys, and walk-over surveys.

The findings have been compiled to produce an understanding of the archaeological resource of Cors Fochno and the surrounding area of Northern Ceredigion, and has been effectively mapped and catalogued using Mapinfo GIS and presented in the form of a survey report, the basis of which the conclusions of this assessment by WRB have been made. Records were also created and archived with the regional Historic Environment Record (HER).

Archaeological Potential Assessment of Cors Fochno

The archaeological potential of Cors Fochno was assessed in the Wetland Margin Survey (2009) on what features had already been discovered on site in combination with knowledge about how the bog (or similar sites elsewhere) was used by people. The area was split into three categories of low, medium, and high archaeological potential, as in, their potential to hold archaeological remains that have not yet been found, see figure 1. The archaeological potential regions in figure 1 are overlain by polylines showing LIFE WRB project actions, such as bunding, peat dams and bund reprofiling. Completed actions are identified in black, all other colours are actions due to commence from late summer 2021 onwards. Potential archaeology features identified in the preliminary desk study ate also shown as the yellow cross hatch polygons.

Archaeology potential



Figure 1. Archaeological potential regions, potential archaeological features identified using aerial photographs, archaeological investigation areas and the excavation site in relation to completed project actions (in black) and project actions due the be completed post summer 2021.

The majority of the Cors Fochno SAC is of medium potential (orange), with an area of low risk (green) in the centre. This is effectively covering the area of the bog dome, and due to the nature of ombrotrophic hydrology systems of raised bogs, it's therefore the wettest. Although waterlogged conditions are good for preserving submerged features, these areas of thick peat deposits indicate they may have always been too wet for human activity, but there is also potential for Mesolithic and Palaeolithic features to exist. This could mean it is a high potential area for paleoenvironmental remains given the deeper layers of peat. Most of the project actions are occurring away or on the periphery of this area.

Medium potential was defined as areas where archaeological sites, features and deposits related to wetland use may survive, but there is currently very little information about them or are deemed relatively minor sites. As can be seen in figure 1, the majority of the project actions are occurring within the medium risk zone. Detailed descriptions of each area can be found in the report.

There are areas of High potential on the bog which include areas where project actions have been completed or are due to be 2021-2022, see figure 1. High archaeology potential areas are defined as those where good archaeology is known or is strongly suspected.

Potential features identified

Figure 1 shows a map of Cors Fochno with multiple features overlain, detailing the location of completed and proposed works in relation to known archaeological sites, suspected archaeological features (as identified from aerial images), the study investigation areas, and the graded zones of archaeological potential. Although the majority of our project's actions will not encroach on the sensitive areas, or those that have already have did not arise concerns guidance will need to be sought from Dyfed Archaeological Trust in relation to HER for future works such as the Gelli (*Western mini bog bunding 2021* on southeast side of bog) and Pant-y-Dwn bunds given their position in the high potential zones and proximity or overlap with potential features.

There are a few areas of potential features identified on the west side labelled as 'natural?', three of which overlap the WP1 sub package 2 bunds and the WP6 bund. These are not confirmed features, suspected to be natural features, and within the archaeological potential medium risk zone

Areas of work requiring advice from Dyfi Archaeological Trust

Bunding completed in 2020 did not unearth evidence of archaeological remains, see figure 2. Excavator drivers were asked, and will continue to be asked, to stop works immediately and inform the contract manager if any remains or features were discovered. However, no archaeologists were present during the works and the excavator drivers are not formerly trained to recognise or identify archaeological features.

The actions of the WP1 Bund and the WP2 Tier 3 Bund repair (Figure 2) due to be completed in 2021 are not of significant concern. Works have already been carried out in the vicinity. The suggested possibility of a trackway (Figure 1, *Gwynfryn Linear*) that runs parallel to the NE end of WP1 and overlaps the completed 2020 bunding is not confirmed as access to the area during the survey was deemed impractical due to limited time available and safety concerns. It is suspected to be a trackway as a trackway was drawn crossing the bog in this area on some 19th century maps and is visible in 20th century aerial images. If it exists, it's thought it would be similar to the Medieval trackway but longer and better preserved. Discussions with the site manager has also presented idea that the ground marks could be the result of repeated mowing carried out in this area during the 1980's and 90's to create a firebreak, resulting in depressions on the bog surface where vehicles tracked across. Reviewing the aerial images that were provided by CCW, DAT and Royal Commission on the Ancient and Historical Monuments of Wales for the preliminary desk study showed that 19 out of 29 studied pre-dated 1980. Its unknown if the feature was visible in all images. Advice will be sought from the Dyfed Archaeological Trust.



Figure 2. High archaeological potential regions across Cors Fochno in relation to completed project actions (in black) and project actions due to be completed post summer 2021, including bunding at Gelli (pink), small section of WP2 Tier 3 bund repair (orange), and the NE end of the WP1 bund running along the periphery of the main bog dome (blue).

The Gelli bunding (named Western mini bog bunding) sits within the High Potential Zone and the confirmed Medieval trackway is suspected to end here close to the bund (see figure 1). The survey concluded that further investigations are needed at the northern end of the trackway, such as geophysical and topographical surveys to help reveal the true extent of the feature and to assess further target areas for trial trenching to discover more archaeological features. At the time of the survey, dense scrub prevented access to the trackway and inhibited further investigations. Walk-over surveys could be conducted to locate this feature but given the Molinia-dominated tussocky terrain, this may yield few results to the untrained eye. Advice will be sought from the Dyfed Archaeological Trust.

The southern margins of the bog, mainly on the hyper-modified peatland (now farmland) which is separated from the raised bog by the Pwll-du ditch, is considered to be an area of high archaeological potential (Figure 3) as it has historically been used by people given its convenient location to the resources derived from dry and wet land, evidenced by the discovery of the medieval trackway, Iron age lead smelting site and a Bronze age wooden object at Ynys Capel (see *trackway excavation area*, Figure 1). The high potential of the bog where the bund reprofiling is due to take place is due to its proximity to the discovered features, but no archaeological sites have been found there to date. Additional threats to any archaeological remains in this area are the continued drainage of the peat via the Pwll-du ditch and incursion of agricultural chemicals from the neighbouring farmland.

Despite being in the high-risk zone, the Pant-y-Dwn bund competed in 2018 (figure 3) found no archaeological sites, however the additional bund to be added may require further investigation given its position within the high potential zone. The preliminary desk study for the survey included the review of aerial photographs to find potential archaeological features (the *Aerial Photograph Identified Features* shapefile). As seen in Figure 1, a possible trackway has been highlighted through this compartment, but no excavations were undertaken. Reviewing recent aerial images, the visible 'lines' on the surface could've been created by ditches, peat cuttings or excavator routes which could be mistaken for archaeological trackways or features. Advice will be sought from the Dyfed Archaeological Trust.



Figure 3. Archaeological potential regions across Cors Fochno in relation to completed project actions (in black) and project actions due the be completed post summer 2021, including bunding at the Ynys Capel bund reprofiling (green), WP6 bund (purple), WP3 bund (red), WP1 bund (blue), and the Pant-y-Dwn bund (yellow)

HER in relation to project works

All the project actions have been assessed on their impact on archaeological features recorded in the HER with the Dyfi Archaeological Trust, as presented in Figure 4. Again, most of these features are not close to actions and are not at risk. The point labelled 'Railway Station' on the west bog adjacent to the WP1 sub package 2 bund is classed as 'Ynyslas' and 'Building' within the metadata and therefore is considered an error in the data set. These features vary on how they were identified, such as by documents, topography, earthwork, and as buildings.



Figure 4. Archaeological potential regions and Historical Environment Records (HER) from The Dyfi Archaeological Trust in relation to completed project actions (in black) and project actions due the be completed post summer 2021. HER features labelled by Type.

Assessment using Archwilio HER of Wales

No new HER records on the Cors Fochno SAC were discovered using the up to date Archwilio HER database. However, one HER record is on the South West of the Bog at Ynys Fergi Fields is for Brynhyfryd, a post medieval House (PRN 125750), see figure 5 below and record details found <u>here</u>. It's unclear if it is still a standing structure but site knowledge confirms that no such structure is present at that precise location. If remains of this structure do exist here it is far from the project actions and will not be damaged by excavators but may be affected by rewetting of the peat.



Figure 5. HER records found at Cors Fochno SAC using the Archwilio HER for Wales database. HER record at Ynys Fergi labelled.

Conclusions

Conclusions were made in the report on the biggest threats to archaeological remains on this site and the steps needed to mitigate them. Threats included continued drainage of the bog and surrounding farmland via the major Pwll Du drainage ditch and other minor field drains, resulting in peat shrinkage and subsidence, increasing water runoff from the central dome. Undesirable vegetation including scrub can colonise causing further degradation, and shrinkage can bring remains close to the surface, making them more vulnerable to damage and decay. The addition of chemicals, such as pesticides and fertilisers, to these areas from local intensive farming can also alter the chemical composition of the deposits. Organic remains survive in acidic anaerobic conditions, but as these become more alkaline, they are at threat to degradation.

Blocking ditches, installing bunds and peat dams to rewet the bog can also be detrimental if remains exist within the layers of peat excavated. Remains of inorganic features, such as iron, can deteriorate faster if dries then rewetted. These features can also be harder to access for further investigation in wetter conditions.

Other threats identified but are not causal of the project are salt-water inundation, settlement and industrial development, historical peat cutting, tourism, neglect, and climate change (and its associated periods of drought and increased probability of sea-level rise and saltwater inundation).

Recommendations for mitigations referred to CCW's active management of the bog to tackle the issues of drainage and water loss, neglect and climate change via the implementation of peat bunds, dams and sluices, the result of which is to retain water and preserve archaeological remains in those areas. Vegetation control of encroaching scrub and trees was also recommended, as was the continual monitoring of seasonal water table fluctuations to determine if archaeological remains were susceptible to drying. The proposal of the WRB Project was specifically designed to utilise these methods to address these issues, to bring Cors Fochno to a more favourable condition, improve ecosystem services, and contribute to the wider mitigation of climate change. These methods include low contour bunding, peat dams, scrub treatment and removal, Molinia mowing and rotational grazing, and potentially raising the water level the south west section of the Pwll Du drainage ditch using sluices. WRB has also been working on their own online history project as part of *People's Collection Wales*, asking local communities to send in their own photos and records of our sites including Cors Fochno, creating an accessible online archive of its history.

When done correctly, actions to improve the condition of the bog and rewet it could improve the preservation of archaeological remains; *Preservation of wetland sites for biological reasons will also benefit the preservation of organic archaeological remains and historic landscapes, and preserving areas of historic significance can deliver significant rewards for flora and fauna* (Van de Noort & Davies 1993). Other mitigations included pumping water onto confirmed remains, such as the medieval trackway; altering agricultural regimes to reduce draining and use natural methods of scrub control (ie conservation cattle grazing); conducting further archaeological work such as selective excavation for deteriorating inorganic remains or topographical surveys to record landscapes before submersion; working with the local community, landowners and stakeholders to ascertain the cultural heritage of the sites and to consider removing discovered remains to put on display in a controlled environment for future preservation; and to consider that statutory protection of archaeological sites doesn't always ensure archaeological survival in wetland sites.

This brief assessment has identified three areas of concern where WRB project actions are taking place near or overlapping areas of high archaeological potential or where archaeological features are suspected to exist. These works are all on the western to southern fringes of Cors Fochno, including the WP2 Tier 3 Bund Repair 2021 and LIFE Bunds Installation Completed, the Gelli bunding, and the Ynys Capel Bund reprofiling 2022. Advice will be sought from the Dyfi Archaeological Trust on best practice for the continuation of these works.

The Wetland Margin Survey 2009 can be shared via electronic copy. Further details and metadata of the Mapinfo GIS files used for this brief assessment and maps produced by WRB can be shared on request.

References

Archwilio Historic Environment Records for Wales Archwilio

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