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Mapping Historic Floodplain Meadows along the River Wye

Fjordr ref: 16700

Introduction

This brief report accompanies a shapefile – *Wye_FPM.shp* – that is the principal output of the project *Mapping Historic Floodplain meadows along the River Wye*, prepared by Fjordr Ltd. for the Floodplain Meadows Partnership.

The methodology is based on that developed by Fjordr Ltd. for the Historic Extent of Floodplain Meadows: Dorset Stour and Thames Tributaries project, set out in the following report¹:

Firth, E. and Firth, A., March 2022, Historic Extent of Floodplain Meadows: Dorset Stour and Thames Tributaries. Unpublished report by Fjordr Ltd. for the Floodplain Meadows Partnership.

Methodology

The shapefile comprises a single layer containing polygons each representing a floodplain meadow (FPM) as spatial information with attributes.

The shapefile covers a study area comprising part of the catchment of the River Wye. The selected stretch covers the main channel of the Wye from Builth Wells to Llangurig. For the purposes of collating data, the study area was defined by a 1km buffer along the River Wye as mapped on the OS Open Rivers product. The study did not include minor tributaries. Figure 1 shows the study area and the communities it covers.

https://www.floodplainmeadows.org.uk/sites/www.floodplainmeadows.org.uk/files/Historic%20Extent%20of%20Floodplain%20Meadows%20-%20Stour%20and%20Thames%20-%20Fjordr%201303022%20Final.pdf.

¹ Available online at

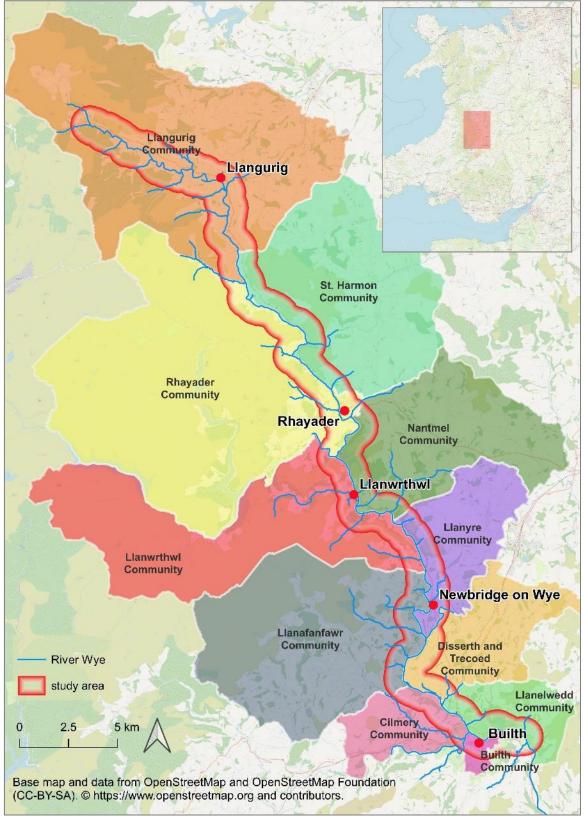


Figure 1: Study area and the parishes along the Wye

Floodplain meadows have been identified, mapped and recorded based on the interpretation of multiple sources relating to the historic environment, including the following:

 Historic Ordnance Survey 25 inch maps available in the project GIS via a WMS link to Edina Digimap provided by the Floodplain Meadows Partnership under the Open University's licence. Generally, the earliest edition, Epoch 1 (publishing date range 1854 to 1901), was the most used.

- Ordnance Surveyors' Drawings made between 1780s and 1840 in preparation for
 the first edition of one-inch OS. The following drawings were available online: Builth
 (1820), Baulit (1817), Llandrindod (1817), Cardiganshire (1820) and Hafod,
 Llanidloes (1820). The drawings were accessed via the British Library Georeferencer
 page http://britishlibrary.georeferencer.com/start. At the time of the project, the WMS
 links was unavailable and could not be used in the project GIS following a cyberattack at the British Library website which meant some services, including map links
 were unavailable.
- Tithe maps dating from c.1840 were accessed from either The Genealogist website https://www.thegenealogist.co.uk/tithe/ where the tithe map and its apportionment records can be viewed for a subscription; or from The National Library of Wales https://places.library.wales which enables the tithe to be accessed via a mapviewer for free. Local record offices also hold copies of the tithe maps, though this study has only used online sources.
- Google Satellite imagery available online using Google Earth.
- Lidar available from DatamapWelsh Government DataMap Wales via a WMS link at https://datamap.gov.wales/maps/lidar-viewer/.

The form of each floodplain meadow record is intentionally simple, comprising a single layer in a flat-file format, so that it can be readily included within third-party workspaces/GIS projects.

Individual polygons have been mapped directly from georeferenced historic sources. In some cases, there may be inaccuracies in mapping from these early sources due to the methods used in historic surveys not being as accurate as in later maps. Georeferencing can also be problematic for old maps, which may not align with their modern counterparts. Where field boundaries or rivers on earlier maps are recognisable on later maps, corrections can be made accordingly, and the most appropriate boundary for a floodplain meadow will have been mapped in the GIS.

The following attributes are recorded for each floodplain meadow in the shapefile attribute table:

ID_HistFPM Identifying number for each FPM.

FPM_name Defined by the area where the FPM is located, limited to 254

characters or specific name if one recorded on a source.

County County in which FPM is located.

Parish Parish FPM is within. This is the modern parish the floodplain meadow

is in. This may differ to the historic parish, which will be named in the tithe map field. In Wales, communities are the lowest tier of local government, equating to parishes, hence community names are

recorded in this field.

River Name of the river on which the FPM is located.

ModLanduse Modern land use as seen on the most recent satellite imagery. **FPMNotes** Description of the FPM – limited to 254 characters so necessarily

concise.

Lammas Reference to Lammas in sources. Yes/No field.

Funnel Does FPM have a characteristic funnel shaped entrance? Yes/No

field.

Doles Reference to doles, either in descriptions or visible on map sources

such as tithe maps. Yes/No field.

Drove Drove or lanes which connects a settlement to a meadow, often via a

funnel shaped entrance to the meadow. Yes/No field.

Common Reference to Common in sources. Yes/No field. **Drainage** Reference to drainage in sources. Yes/No field.

Placenames Reference to specific placenames associated with FPM in sources

such as ham, mead, common, lots, allotments, doles.

Domesday Whether there is a Domesday settlement with recorded acreage

associated with the settlement in this parish. Obtained from Open Domesday². The Domesday survey did not encompass Wales, so

recorded as n/a for this project.

Tithe_Ref National Archives tithe apportionment or tithe map reference. The

original Welsh parish name may differ to its modern community name

recorded under the Parish field.

OS_Map_Ref

OtherMap

Historic OS Map reference.

OSSurvey_Ref Historic OS Survey Drawing reference.

Any other historic map sources, such as estate maps, which reference

the FPM.

Rep_link Report or other reference material where the FPM is identified and if

available, the link to the report or reference material.

Confidence Confidence level in the identification of the FPM, with 1 being low and

5 being high. Confidence reflects the amount of information available about the FPM. A high confidence is assigned to an FPM when there are multiple sources and a high number of criteria about the meadow can be recorded. For example, a meadow that appears on several maps, has a funnel shaped entrance, doles mapped on the tithe map and named as a common in the tithe apportionment records. A low confidence meadow might be an FPM where only the boundaries within the floodplain indicate the presence of a meadow but there is no

other evidence available.

Compileby Name of person who created the record.

Compiledate Date record created.

Notes on Welsh Terminology

The tithe apportionment for the parishes were written in a mixture of English and Welsh, with field names often recorded in Welsh. The English terms relating to meadows or which suggest meadow locations – as identified in other floodplain meadow studies -- differ to the terms used in Welsh. For this study, the following terms were found to be associated with plots that were frequently (although not exclusively) recorded with meadows:

| Welsh term | English translation | |
|---------------------------------|----------------------------------|--|
| gwaun n.f. (gweunydd) | moor, meadow, heath | |
| gweirglodd n.f. (gweirgloddiau) | meadow, hay meadow, water meadow | |

² https://opendomesday.org.

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| Welsh term | English translation | |
|---|--|--|
| gwerni/gwernydd | associated with alder, alder grove, swamp or meadow, swamp or | |
| | grove | |
| cae | field/enclosed piece of land | |
| Cae-mwar | big field | |
| dol dôl n.f. [dôl] (dolydd dolau doliau) | Welsh for a meadow, river meadow | |
| • Ddol | Meadow, low lying place by the river Meadow or pasture, water meadow | |
| Dol fawr or Dolfor | fawr – big, big meadow | |
| Dol fach | fach little, little meadow | |
| • Dolfronog | Welsh: Hilly, undulating, field. Mr. Richard Morgan (personal communication) writes "Probably dôl + brwynog, ie. Dolfrwynog, Dolfrwnog, 'water-meadow abounding in rushes'. The Welsh w was often a wider sound than English 'oo', more like 'oe' in 'toe'". https://www.library.wales/fileadmin/docs_gwefan/new_structure/cat_alogues/specialist_catalogues/nlw_journal/cgr_erth_XXXVI_rhif4_2_017_3.pdf page 23 | |
| Dol bont fach | bont is bridge, fach is small | |
| Dol y grove | ??meadow by the grove | |
| Dol ddwnog | ??ddwnog drowsy | |
| Dol y drainllwyn | ??drainllwyn hawthorn | |
| Dolfryn | possibly a type of catchwork water meadow? | |
| Ddol Fadog | Welsh: Loosely, "Field on the bank". Mr. Richard Morgan (personal communication) writes "dôl qualifies bryn, Dolfryn: 'hill at a watermeadow, hill possessing a watermeadow'". https://www.library.wales/fileadmin/docs_gwefan/new_st_ructure/catalogues/specialist_catalogues/nlw_journal/cgr_erth_XX_XVI_rhif4_2017_3.pdf page 29 Maddogs Meadow | |
| 5 Buol Ludog | https://www.library.wales/fileadmin/docs_gwefan/new_structure/cat_alogues/specialist_catalogues/nlw_journal/cgr_erth_XXXVI_rhif4_2_017_3.pdf page 29 | |
| Dol ucha | upper meadow, <i>ucha</i> - higher | |
| Dol ganol | middle meadow, ganol middle | |
| Dol ochor draw'r afon | meadow on the other side of the river | |
| Dol Dderwen | oak meadow | |
| Dol ochor | side meadow | |
| tir comin | common land | |
| comin | common ground | |
| rhos | moor, heath, plain (rhosydd) | |
| clas-dir | glebe land | |
| clas | tract of land appropriated chiefly to church or abbey land | |
| medd | mead | |
| maes | open field | |
| pentref or pentre | village or hamlet | |
| quillet | English and Welsh term, for a strip of land which with others like it formed a large field. Not exclusive to meadows. | |
| tyddyn/ty'n | farmstead | |
| slang | strip of common ground (Slater 2013) | |
| uchaf | upper | |
| isaf | lower | |

| Welsh term | English translation |
|------------|--|
| wern | Gwern derives from the Welsh for alder tree grown in Wales for the production of clogs. Used also where ground is marshy |
| ystrad | valley or vale, river meadow, holm |

On the basis that the term/name *Dol* is Welsh for meadow; plots noted on the tithe apportionment with the prefix "*Dol*"/"*Ddol*" and situated within the modern floodplain were assumed to be former floodplain meadows, irrespective of whether their cultivation type recorded in the tithe was arable, pasture or meadow. Plots with meadow related fieldnames or meadow cultivation that lay outside of the floodplain were not mapped.

Many of the floodplain meadows were located close to named settlements or farmsteads. Generally, unless there was a modern name in the near vicinity to the floodplain meadow, either the farm name recorded on the tithe or the closest farmstead name appearing on the OS 25 Inch Epoch 1 maps was used for the FPM name.

Results

Summary

A total of 82 floodplain meadows was identified from the tithe maps and apportionments, which were mapped and recorded in the shapefile *Wye_FPM.shp*. The criteria and placenames recorded for floodplain meadows are summarised in Table 1 and Table 2:

| Criteria | Yes | No | Possible |
|----------|-----|-----|----------|
| Lammas | 0 | 82 | |
| Common | 4 | 78 | |
| Funnel | 15 | 61 | 6 |
| Doles | 3 | 76 | 3 |
| Droves | 23 | 54 | 5 |
| Drainage | 16 | 59 | 7 |
| Domesday | n/a | n/a | n/a |

Table 1: Summary count of meadows withing each criterion

| Placename | Count of FPMs |
|--------------|---------------|
| ddol | 9 |
| dol | 42 |
| dole | 8 |
| Dole, dol | 1 |
| quillet | 1 |
| quillet, dol | 1 |
| no | 20 |
| Total | 82 |

Table 2: Summary count of floodplain meadows where Welsh meadow-related terms were found in the tithe

Distribution

Figure 2 illustrates the distribution of floodplain meadows identified along the course of the Wye. The distribution of meadows tends to centre around the settlements and dispersed farmsteads, reflecting similar patterns to that seen on other rivers. There are stretches of the Wye where no floodplain meadows were recorded. Between Llangurig and Rhayader the modern floodplain is restricted due to the topography: in areas such as this, floodplain meadows are more dispersed, and their area tends to be narrower compared to meadows where the floodplain is wider.

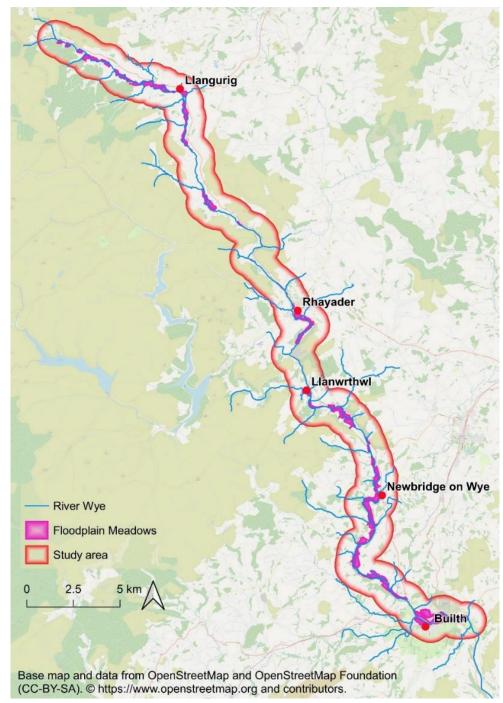


Figure 2: Distribution of floodplain meadows along the River Wye

At Dolberthog Wood between Rhayader and Llanwrthwl Bridge, there is limited potential for survival of meadows as the floodplain has been lost due to the construction of the 19th century Cambrian Railway. The railway runs parallel to the Wye along this stretch and takes up much of the already narrow floodplain. Prior to its construction, these areas would have been cultivated as meadows. At Llanwrthwl, *FPM 5047 Floodplain meadow at Hodrid Farm and Carreg y noole Farm*, meadow plots are recorded on the tithe as part of several farms (Table 3).

| Arable | Meadow |
|-----------------|----------------|
| 875 Upper Dole | 874 The Rhos |
| 879 Middle Dole | 877 Pwllandwon |
| 889 Corner Dole | 888 Cae Gorse |
| 892 Big Dole | 887 Erw Vawr |

| 893 Dole Garn | 896 Cae Gorse |
|---------------|----------------|
| | 899 The Meadow |
| | 864 The Park |

Table 3: FPM 5047 – indications of former floodplain meadow from tithe map

All the arable and most of the meadow plots lie within the floodplain and have meadow related names. The railway dissects this former floodplain meadow, and its construction – by creating an embankment – has resulted in some meadow plots no longer being within the floodplain.

It seems that in some places the floodplain may have been insufficient or unsuitable for meadows, giving rise to meadows being situated on the slopes rising out of the floodplain or on the terraces above it. Meadows outside the floodplain were observed on the tithe map but not recorded in the FPM layer. By way of example, at Llangurig, *FPM 5017 Floodplain meadow at Glas cwm Farm* is adjacent to meadow plots that were situated on a slope rising 7m above the modern floodplain.

Evidence for Common Meadows

The map evidence for meadows expressly referred to as commons was rare, so only four floodplain meadows could be identified as possible former common meadows:

- FPM 5004 Floodplain Meadow at Nanty Farm and Nanty Rees, Llangurig;
- FPM 5045 Dolcraiglyn Common, Nantmel;
- FPM 5055 Dole Bont Meadow at Upper Merry Hill/Hall/Hell, Newbridge, Llanyre;
- FPM 5078 Groe Common, Builth Wells.

All these meadows had some sort of reference to a common in the tithe except for *FPM 5004*. This meadow had evidence of quillets/doles recorded on the tithe map, implying it was managed in common.

At Builth Wells, *FPM 5078 Groe Common* is recorded in the tithe as plot 15 Common, with cultivation type recorded as meadow. This meadow is located north west of Builth Castle³, a medieval motte and bailey castle. It seems likely that this meadow dates back to the medieval period. Adjacent to this meadow is *FPM 5076 Floodplain Meadow off Park Road*, which may originally have been part of the common but by the early 19th century, the two meadows are shown separated by a leat. The 1820 OS Survey Drawing for Builth shows two large plots, of which the area of *FPM 5078* is stippled to represent a gravelled area: *gro* meaning gravel in Welsh (**Error! Reference source not found.**). Some twenty years later, the tithe map shows the leat between *FPM 5078* and *FPM 5076*, which has been enclosed into several smaller plots all of which are meadows (Figure 4). The same configuration of plots is shown on the OS 25 inch Epoch 1 1880 map (Figure 5).

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³ Builth Castle Scheduled Monument BR031 https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=3821



Figure 3: 1820 OS Survey Drawing Builth showing the Gro outlined in red. Historic FPMs and river polygons omitted for clarity.

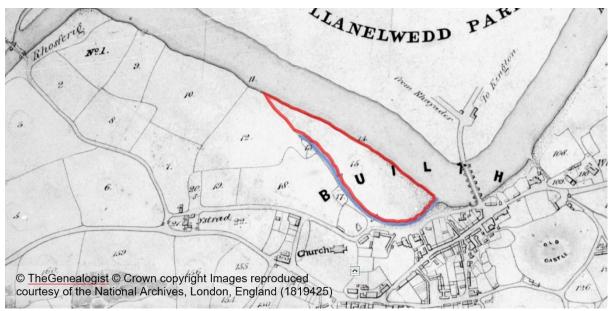


Figure 4: 1842 Tithe map of Builth (National Archives IR 30/45/10) showing location of Groe Common. Blue line shows the position of the leat, which is not shown on the 1820 OS Survey Drawing. Historic FPMs and river polygons omitted for clarity.

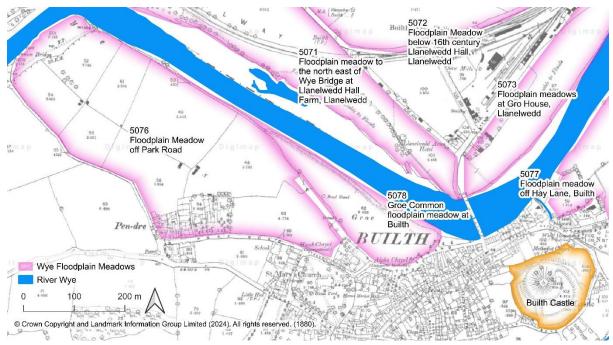


Figure 5: OS 25 inch Epoch 1 1880 map showing FPM 5076 and FPM 5078

Evidence for Doles

It is not clear if there is a Welsh equivalent term for the English *dole* or *lot*, i.e. the strips allocated as part of the common meadow system. Doles have been found mapped in the tithe in other floodplain meadow studies and are usually shown as thin strips whose boundaries are mapped as dashed or dotted lines rather than as solid lines. Plot numbers are usually recorded against each strip. Palmer and Owen (1910) note that the Welsh word *dộl* (which means meadow) although pronounced the same as the English *dole*, does not have the same meaning and that the term is referring to the meadow as a whole, not the individual strips or plots within it. They also discuss the use of the term *quillet*, used to describe a division or strip of land in the open field system, being more commonly associated with arable lands:

In many cases where the ancient arable area is divided into quillets there are also tracts of "gwairdir," or hayland, which are similarly divided. These tracts may be called "common meadows" and the strips which lie, or formerly lay, in them "doles" thus restricting for the most part the name "quillets" to the strips of arable land in the common fields.

Furthermore, they observed that in Flintshire, *loons* were recorded as quillets of meadow.

Silvester (in Comeau and Seaman, 2019, page 100) noted that the arable strips from open field systems could in fact have been meadows:

A diminutive group of strips survived into the nineteenth century because of their varied ownership; it is even possible that they functioned as meadows rather than arable.

Along the Wye at Llangurig, the term *quillet* was associated with two floodplain meadows. The first was *FPM 5004 Floodplain meadow at Nanty Farm and Nanty Rees*, which has a plot recorded on the tithe (Plot 2161: Quillet below Nanty) where the cultivation type is meadow. The second, *FPM 5026 Floodplain meadow at Tyn y Maes Farm*, is a floodplain meadow with a funnel shaped entrance, comprising a large single plot 1865 Rhos y Lletty du, with a smaller plot at its entrance (plot 2553) named in the tithe as Quillet. The cultivation type for both plots was meadow. The boundaries between the plots in both floodplain meadows are represented on the tithe maps using dotted lines, suggesting the plots are the

remnants of doles or allotments. The features of these meadows would suggest they could be earlier common meadows.

Evidence for funnels and droves

Funnel shaped entrances and their associated droves are the distinctive entrances that enable livestock to move on and off the floodplain meadows, found in landscapes from the Bronze Age (Oosthuizen, 2013, page 28) onwards. The distinctive funnel shaped entrances can persist in the landscape as the open fields are enclosed around them, but often enclosure results in a loss of these earlier forms.

A total of 15 meadows were identified with funnel shaped entrances associated with droves: eight meadows had droves associated with them but had no clear funnel shaped entrances; and six meadows possibly had funnel shaped entrances but the entrances were not entirely clear from the map evidence. At Llangurig, *FPM 5008 Floodplain meadow south of Llwyn-yr-hyddod*, there are two potential funnels (Figure 6).

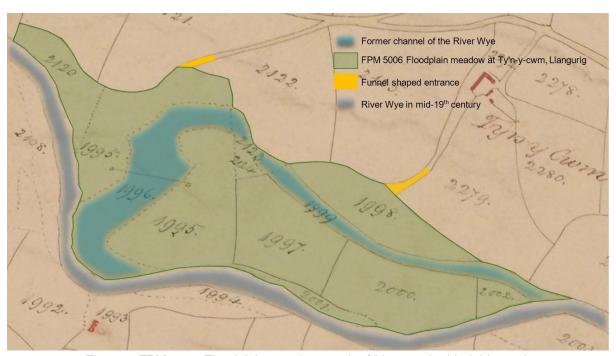


Figure 6 FPM 5008 Floodplain meadow south of Llwyn-yr-hyddod, Llangurig

River dynamics and floodplain meadows

FPM 5008 (Figure 6) also demonstrates how the course of the Wye has changed, as the tithe shows a former course of the Wye mapped as individual plots. Lidar and historic maps underline the dynamic character of the River Wye at Llangurig: The 1845 tithe map of Llangurig⁴ shows various channels of the Wye and a former mill leat, but by the time of the later OS 25 inch Epoch 2 maps, those channels no longer exist and are replaced by gravelled areas. The mill race has been straightened and canalised, and at some point it was filled in. These former routes of the Wye are visible both on aerial imagery (Google) and lidar and they would have impacted the longevity of meadows, which would have altered with the changing river. The width of the River Wye also varies on the historic mapping from

⁴ The parish of Llangurig in the County of Montgomery, accessed at https://places.library.wales/browse/52.404/-3.607/16.0?locationName=Llangurig%2C+Powys

that shown on the modern mapping and in some places, for example Builth/Llanelwedd, the river is much wider in the 19th century than it is in the 21st. There are also stretches of the River Wye where the river has been canalised, which would affect how the meadows along the floodplain functioned. Notable stretches where the river has been altered includes Builth/Llanelwedd, Llanwrthwl/Llanyre, and – as indicated above – at Llangurig.

Floodplain meadows recorded as arable

At Disserth, *FPM 5066 Floodplain meadow at Dolegored Farm*, the tithe plots suggest former meadows because the plot names are prefixed with Dol or Ddol. However, the tithe apportionment records the cultivation type as arable, not meadow. They may have been part of a meadow historically as the 1820 OS Survey Drawing for Builth shows this area as one large plot rather than smaller enclosed plots. Dolegored Farm appears to be an instance where meadows became enclosed into arable plots as the demand for agricultural land grew, whilst – as often the case – retaining their meadow-related names.

Floodplain meadows with historic sites

A total of ten floodplain meadows are located near archaeologically important sites. At *FPM 5057 at Penybont Farm*, Llysdinam, there is a prehistoric standing stone located in the middle of the meadow⁵. A prehistoric standing stone⁶ is situated in the churchyard between the two floodplain meadows at Llanwrthwl (*FPM 5079* and *FPM 5044*). Although not suggesting that these meadows were in existence in prehistory, the presence of these stones clearly demonstrates the length of time this landscape has been inhabited and used by communities.

At Disserth, two floodplain meadows: *FPM 5066 Floodplain Meadow at Dolegored Farm* and *FPM 5081 Floodplain meadow to the east of Flan-gwy*, were located close to a Roman fortlet⁷. Again, although the floodplain meadow need not date back to this time, the inhabitants of the fortlet may have used the floodplain for grazing their animals.

Five floodplain meadows were associated with medieval sites and it is likely that they were contemporary with the medieval open field systems that would have characterised these settlements:

- At Llanelwedd, FPM 5069 is located to the south of the medieval moated site of Cwrt Llechryd⁸. All the plots in this meadow recorded on the tithe record have dol-related plot names, and the OS Survey drawing shows a similar configuration of enclosed fields as those shown on the later OS 25 inch Epoch 1 map.
- At Builth Wells, there are two meadows (FPM 5078 and FPM 5078 discussed previously) to the north east of the Builth Castle⁹, a medieval motte and bailey castle.

⁵ Pen-y-bont Standing Stone: Scheduled Monument BR265 available at https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=861.

⁶ Standing Stone, Llanwrthwl Churchyard: Scheduled Monument BR419 available at http://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=1353.

⁷ Roman Fortlet (revealed by aerial photography), Disserth: Scheduled Monument RD137 available at https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=1963.

⁸ Cwrt Llechryd moated site: Scheduled Monument RD140 http://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=731.

⁹ Builth Castle: Scheduled Monument BR031 https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=3821.

- At St Harmon, FPM 5036 Floodplain meadow at Zorro Mill was located near the site of a medieval rabbit warren¹⁰.
- FPM 5038 lies adjacent to Rhayader Castle¹¹, extending to the north of the castle along the Wye. This floodplain meadow has two funnel shaped entrances, one directly adjacent to the north east of the castle, and the other off one of the lanes at Castle Road.

Conclusion

The sources used for this project suggests that much of the available floodplain along the Wye was being or had been used as meadow during the early 19th century, and that floodplain meadows were associated with early settlement along the Wye. Diagnostic features such as funnel shaped entrances and doles on tithe maps were not as prevalent as in previous studies of other catchments, but they are nonetheless present. Enclosure of land from the 16th century onwards was probably the cause for the loss of these entrances in the landscape, a pattern seen on other floodplains: enclosure of the common meadows along the Wye was at its height during the late 18th and early 19th century. The plots seen on the tithe are the result of these enclosures and have names which included the Welsh meadow placename *Dol* or *Ddol*. Some remained meadows, but others were no longer meadows by the time of the tithe map having become arable plots as the demand for arable land grew.

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¹⁰ Cefn Bychan Mound (Pillow Mound) at St Harmon: Scheduled Monument RD116 available at https://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=1955.

¹¹ Rhayader Castle: Scheduled Monument RD132 available at http://cadwpublic-api.azurewebsites.net/reports/sam/FullReport?lang=en&id=2610.

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