

Offa's Dyke Journal



A Journal for Linear Monuments,
Frontiers & Borderlands Research

Volume 5

Edited by Howard Williams

Aims and Scope

Offa's Dyke Journal is a peer-reviewed venue for the publication of high-quality research on the archaeology, history and heritage of linear monuments, frontiers and borderlands. The editors invite submissions that explore dimensions of Offa's Dyke, Wat's Dyke and the 'short dykes' of western Britain, including their life-histories and landscape contexts. *ODJ* will also consider comparative studies on the material culture and monumentality of land divisions, boundaries, frontiers and borderlands from elsewhere in Britain, Europe and beyond from prehistory to the present day. We accept:

1. Notes and Reviews of up to 3,000 words
2. Interim reports on fieldwork of up to 5,000 words
3. Original discussions, syntheses and analyses of up to 10,000 words

ODJ is published by JAS Arqueología, and is supported by the University of Chester and the Offa's Dyke Association. The journal is open access, free to authors and readers: <http://revistas.jasarqueologia.es/index.php/odjournal/>. Print copies of the journal are available for purchase from Archaeopress with a discount available for members of the Offa's Dyke Association: <https://www.archaeopress.com/>

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Front cover: Reconstruction of the Olger Dyke at Gårdeby Mark (Jørgen Andersen, Museum Sønderjylland, Arkæologi Haderslev). Cover and logo design by Howard Williams and Liam Delaney.

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University of
Chester

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Rethinking Offa's Dyke as a Hydraulic Frontier Work

Howard Williams

Building upon a fresh interpretation of Wat's Dyke as a component of an early medieval hydraulic frontier zone rather than primarily serving as a symbol of power, a fixed territorial border or a military stop-line (Williams 2021), here, I refine and apply this approach to its longer and better-known neighbour: Offa's Dyke. This linear earthwork's placement, alignments and landscape context are evaluated afresh using a simple but original comparative mapping methodology. First, on the local level, I show that Offa's Dyke was carefully and strategically positioned to connect, overlook and block a range of watercourses and wetlands at key transverse and parallel crossing points, thus observing and choreographing mobility on multiple axes. Second, I address the regional scale, showing how Offa's Dyke interacted with, and controlled, biaxial movement through and between water catchments parallel and transverse to the monument's principal alignments. Both these arguments inform how the Dyke might have operated on the supra-regional scale, 'from sea to sea' and also 'across the sea', by controlling the estuarine and maritime zones of the Dee Estuary in the north and the Wye/Severn confluence to the south. Integrating military, territorial, socio-economic and ideological functionality and significance, Offa's Dyke, like its shorter neighbour Wat's Dyke (in an as-yet uncertain relationship), configured mobilities over land and water via its hydraulic dimensions and interactions. Together, the monuments can be reconsidered as elements of a multi-functional hydraulic frontier zone constructed by one or more rulers of the middle Anglo-Saxon kingdom of Mercia and operative both in times of peace and conflict.

Keywords: Offa's Dyke, Wat's Dyke, assembly place, coast, hydraulics, water, wetland

Introduction

This article proposes that interpretations of the functions and significances of Offa's Dyke have been altogether too 'dry'. Considering the monument's *flow*, incorporating both overland and wetland mobilities, I here propose a more 'fluid' understanding of Offa's Dyke's placement, alignments and landscape contexts. As a means of surveilling, manipulating and choreographing the movement of people, animals and things, Offa's Dyke was built as more than a 'border'. Instead, as a component of a hydraulic frontier zone for the middle Anglo-Saxon kingdom of Mercia, Offa's Dyke orchestrated *flow* in the early medieval landscape (see also Edgeworth 2011; Chadwick 2016; Bell and Leary 2020). As such, the monument was a multi-functional installation which controlled travel (including raiding and trading) both across and along its line as much as it sought to provide surveillance and military domination of Mercia's western frontier against both Welsh communities and kingdoms and a wider set of neighbouring polities and territories across western Britain and beyond.

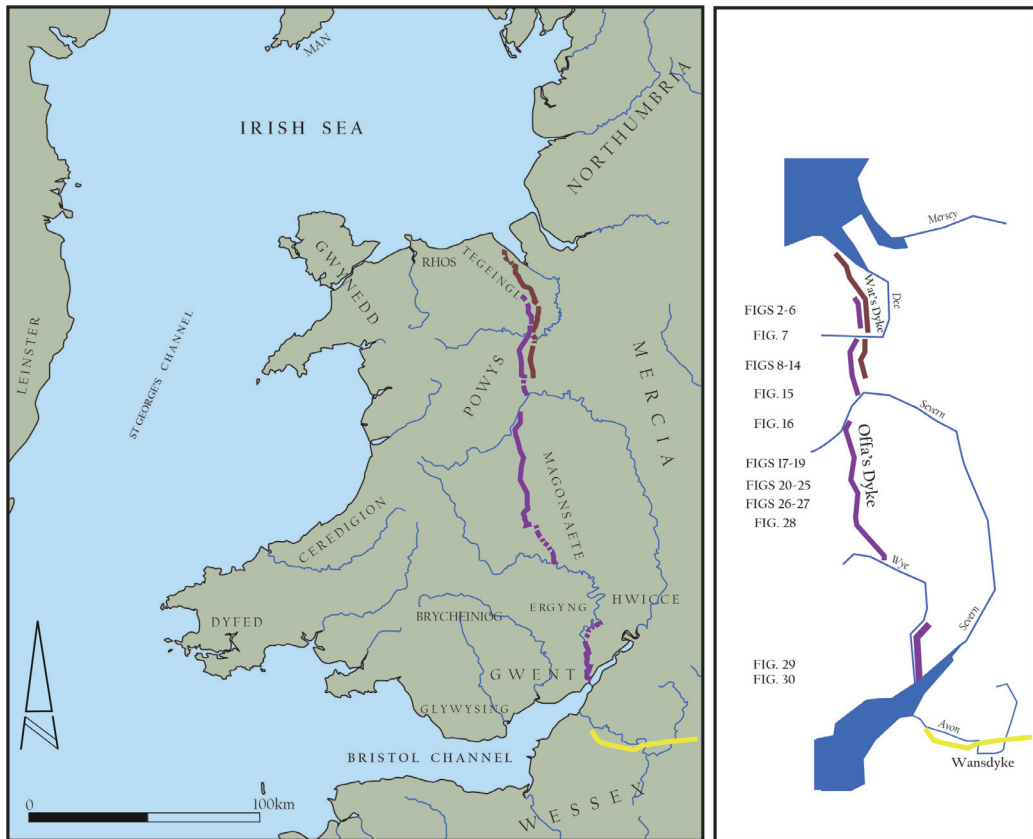


Figure 1: Offa's Dyke, Wat's Dyke and Wansdyke in relation to the political geography of eighth-/early ninth-century Britain (left) with a schematic of their relationships with principal watercourses and estuaries (right)

Background: placing Offa's Dyke

Despite a detailed survey and description of its surviving course by Fox (1955) and summaries of its topographical behaviours informed by further fieldwork by Noble (1983) and by Hill and Worthington (2003; see also Tyler 2001; Squatriti 2002, 2004; Wileman 2003; Malim 2007; Bell 2012; Grigg 2018; Hill 2020; Malim 2020), Offa's Dyke's placement and landscape context have only recently received sustained systematic mapping and critical evaluation. Notable recent work includes the book-length detailed and careful evaluation of Ray and Bapty (2016), which addressed Offa's Dyke's long-distance stances in relation to major uplands, valleys and rivers, as well as its more localised strategic placement and alignment in relation to hills and hillsides, valleys and watercourses (see also now Ray *et al.* 2021; Ray 2022; Figure 1). Building on Ray and Bapty's many insights, Belford (2017), Murrieta-Flores and Williams (2017), Humphreys (2021) and Delaney (2021) have presented original – additional and significant – insights into the monument's placement in relation to specific stretches, views and topography, and thus the monument's impact on movement through the landscape. However, there remains a persistent accidental bias against the

study of Offa's Dyke's many significant interactions with courses and bodies of water and wetland, arising in large part from the circumstance that the monument has survived far better in upland areas away from valleys and plains. Indeed, Offa's Dyke is most commonly considered by archaeologists and the public at large to be an upland phenomenon, visualised and discussed almost exclusively where it skirts hills, crosses ridges and overlooks lower ground, thus away from standing and flowing water. As a result, to date, there has been no systematic comparison and analysis of how Offa's Dyke interacted with water courses and wetlands in its placement, alignments and broader landscape contexts. I contend this has resulted in a sustained and consistent underrepresentation of Offa's Dyke's hydraulic dimensions: both how it surveils and manipulates the *flow* water, but also how it served to control *flow* over land: thus manipulating both mobilities along and across watercourses, wetlands and estuaries. Furthermore, rather than presenting a dichotomy between dryland and waterborne communications, the argument here is that the linear earthwork concerned the control and surveillance of *flow* over land and water.

Some existing studies have presented general statements regarding this topic, with a few specifically proposing how Offa's Dyke affected hydrology and might have instituted hydraulics. Notably, it has been suggested that specific watercourses might have been redirected by the Dyke's placement (Squatriti 2004: 42; Ray and Bapty 2016: 136; reviewed in Williams 2021). Delaney (2021) considered the monument crossing the Herefordshire plain in new detail using Lidar, illustrating how the monument connected and blocked watercourses. Ray *et al.* (2021: 59–60) addressed how the Camlad crossing of Offa's Dyke might have included a bridge: a crucial potential target for future field-based investigations. Finally, the possibility that Offa's Dyke stretched to the Irish Sea has been proposed afresh based on field observations, thus opening up new potential significances for considering the monument's maritime and riverine dimensions (Ray 2020; Ray *et al.* 2021: 63–73). In addition, a previous study has argued that Wat's Dyke – dated to the early medieval period like its longer neighbour – was part of a Mercian 'hydraulic frontier zone' (Williams 2021).

Considering Offa's Dyke's riverine and other low-lying watery associations, and thus building on four critical research questions posed by Keith Ray (2017), I will explore variability in relationships of Offa's Dyke to major and minor river-valleys (Ray's questions 15 and 16) and minor watercourses (Ray's question 17) and how this might relate to other landscape features in such situations (Ray's question 74) (in addition to tackling other questions in Ray's list, notably 1, 2, 5, 7, 9, 11, 12, 13, 14 and 20). By addressing these four valuable and legitimate lines of enquiry, I add a key further and wider query: is it possible to consider Offa's Dyke as a 'hydraulic frontier work' in terms of its precise localised behaviour and within a broader landscape context (Figure 1; see also Williams 2021)?

Method

I proceeded by creating a comparable series of twenty-nine maps of selected key points of interaction between Offa's Dyke with a range of rivers, streams, wetlands and estuaries

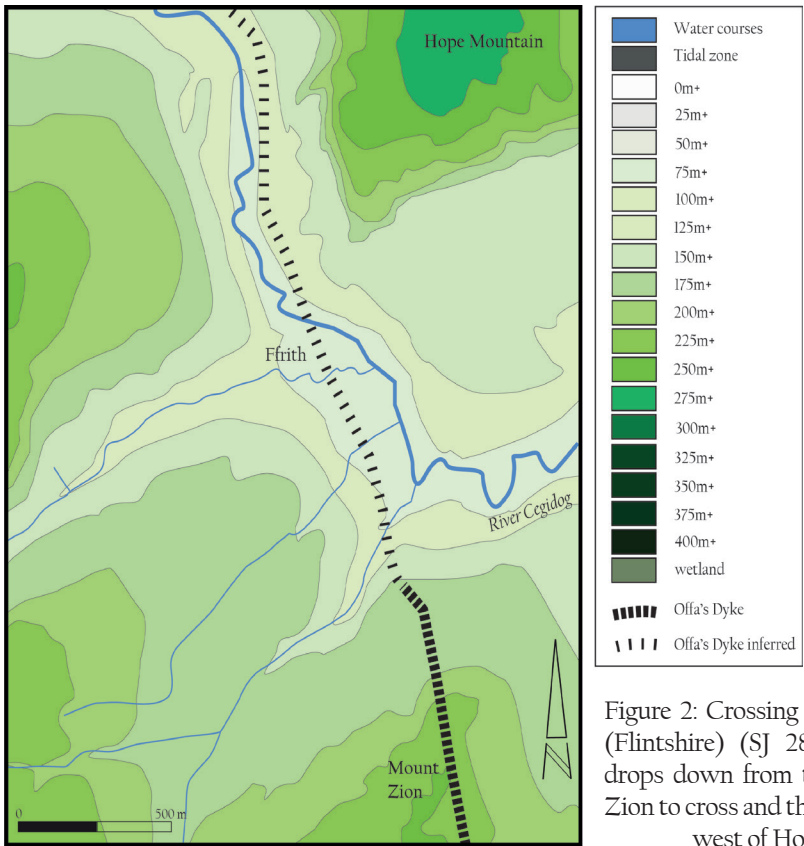


Figure 2: Crossing the Cegidog at Ffrith (Flintshire) (SJ 284 553), Offa's Dyke drops down from the heights of Mount Zion to cross and then follow the Cegidog west of Hope Mountain.

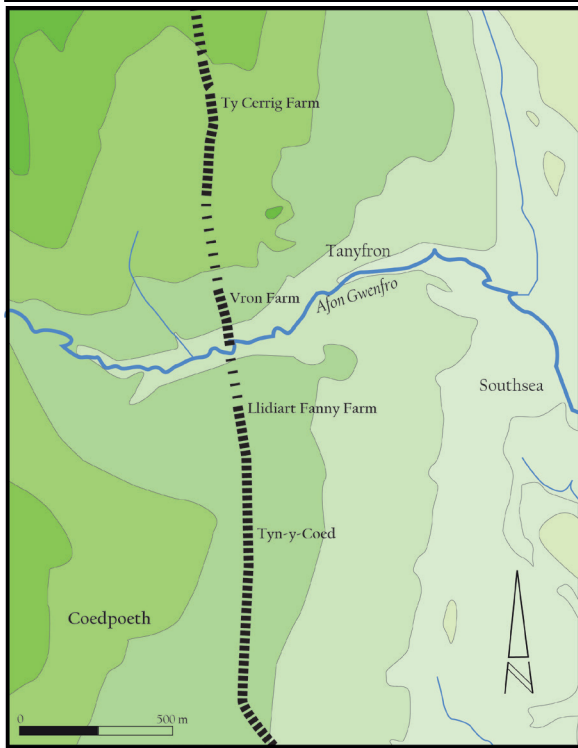


Figure 3: Crossing the Gwenvfro (Wrexham) (SJ 292 517) (for key, see Figure 2).

along the full length of the monument attributed to 'Offa's Dyke' from Flintshire in the north to Gloucestershire in the south (following the same methodology applied for analysing twelve select key stretches of Wat's Dyke: Williams 2021). I redrew OS Digimap resources in Adobe Illustrator (presented here in geographical order from north to south: Figures 2–30). This allows clear and direct comparative evaluations of how the Dyke operated in relation to the underlying topography and current watercourses.

The advantages of this mapping are manifold. The simple colour-coded maps denoting every 25m contours using a colour-gradient from white and grey (low-lying land) to very dark green (upland) render very clearly the dynamic interaction between the linear earthwork and the topography (Figure 2). The line of the Dyke itself is marked following the Ordnance Survey and Fox (1955) in which I denote its presence as either 'certain' or 'possible' (Figure 2). 'Certain' here refers to 'surviving' and 'inferred/projected with confidence', whilst 'possible' incorporates both 'traces' and 'uncertain but likely' stretches. This distinction is applied judiciously and consistently, but not in fine-grained detail given the many long-recognised challenges in using surface features to discern the presence and character of the earthwork (Belford 2019; cf. Malim and Hayes 2008). The result is a series of consistent maps to afford easy visual comparison along the monument's line although lacking the fine-grained analysis of earthwork survival attempted by Delaney (2021).

This method has its limitations. Details of vegetation and settlement patterns cannot be easily reconstructed. Likewise, fluctuations in hydrology, including those caused by medieval and post-medieval drainage and canalisation cannot be fully evaluated by this approach (see also Williams 2021). The method thus inevitably simplifies considerable complications and uncertainties regarding the linear earthworks and their landscapes, an issue revealed by the more detailed recording and nuanced mapping criteria drawing upon Lidar instituted by Delaney (2021). Furthermore, given the low frequencies and vagaries of discovery, I make no attempt to map any early medieval find-spots in relation to Offa's Dyke (see Clarke 2020; 2023; see also Clarke this volume). Also, I only occasionally mark prehistoric monuments, notably prominent hillforts proximal to the line of the Dyke.

I anticipate more detailed work will refine the general observations made here. Yet, this simple colour-coded contour mapping produced in ©Adobe Illustrator retains integrity since it: (a) clearly represents the topography of the landscape if details of vegetation cannot be readily inferred; (b) gives sufficient detail of the placement and alignment of the Dyke in relation to that topography; (c) allows a hitherto unavailable comparative evaluation of the Dyke's behaviour along different sections of the Anglo-Welsh borderlands; (d) allows direct comparison with the parallel exercise conducted for Wat's Dyke (see Williams 2021); (e) holds the potential for further comparative analyses with the topographical behaviours of other prehistoric, Roman and early medieval linear monuments.

The next layer of analysis takes us to the macro-scale. As for Wat's Dyke (Williams 2021), this article identifies an additional, new maritime context for Offa's Dyke through its links with

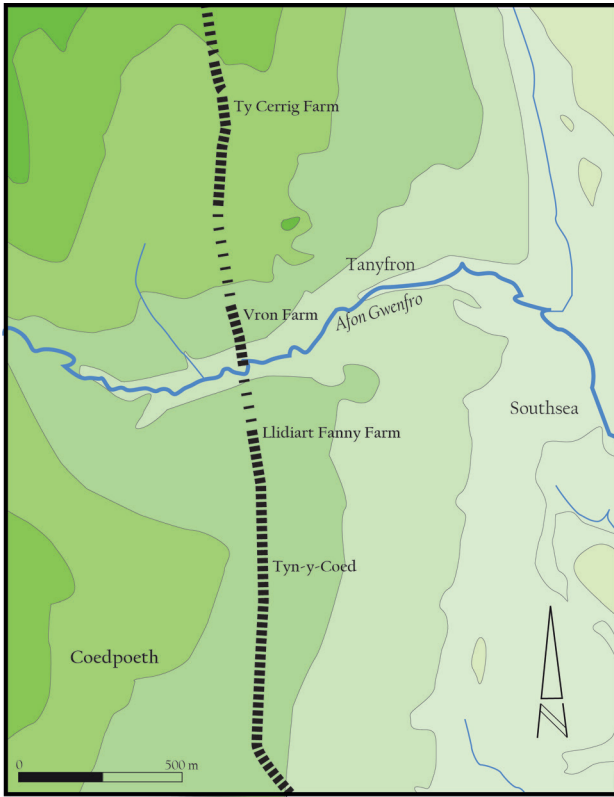


Figure 4: Adjusting its trajectory to make a perpendicular approach to the crossing of the Clywedog (SJ 297 494) and the streams around Cadwgan Hall (Wrexham) (SJ 298 488) (for key, see Figure 2)

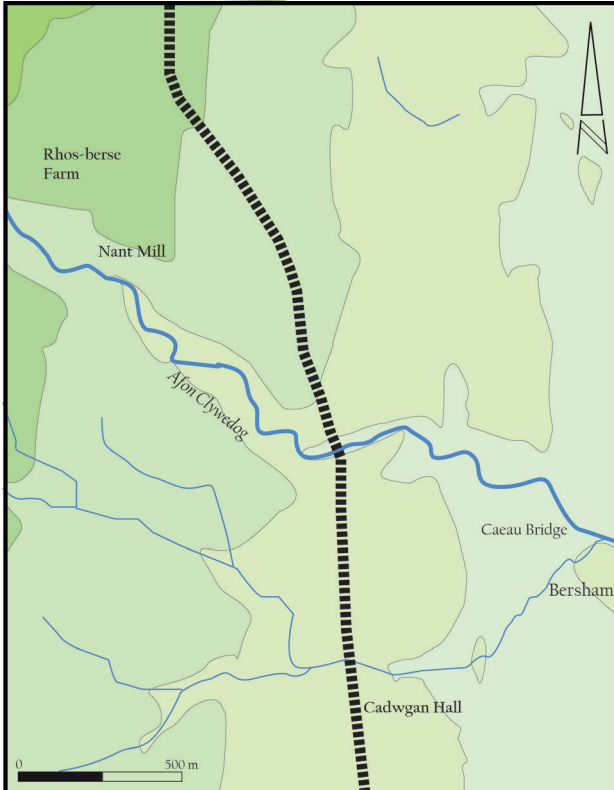


Figure 5: South of Cadwgan Hall (SJ 298 488) and at Pentrebychan (Wrexham) (SJ 299 477) (for key, see Figure 2)

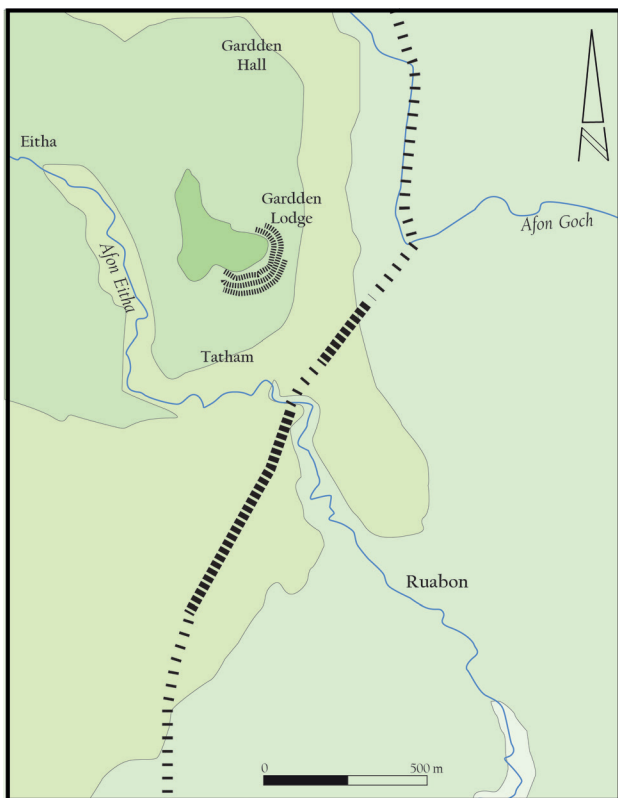


Figure 6: Crossing the Afon Goch (SJ 301 448) and Afon Eitha (SJ 298 443) in relation to Y Gardden hillfort (Wrexham) (for key, see Figure 2)



Figure 7: In relation to the Afon Dee, Offa's Dyke is postulated to descend to the river from the north following the eastern edge of a steep creek following a stream at Hopyard Wood (SJ 292 420) and joining the river from the south at steep river-cliffs opposite Ty Mawr Country Park (Wrexham) (SJ 283 410) (for key, see Figure 2)

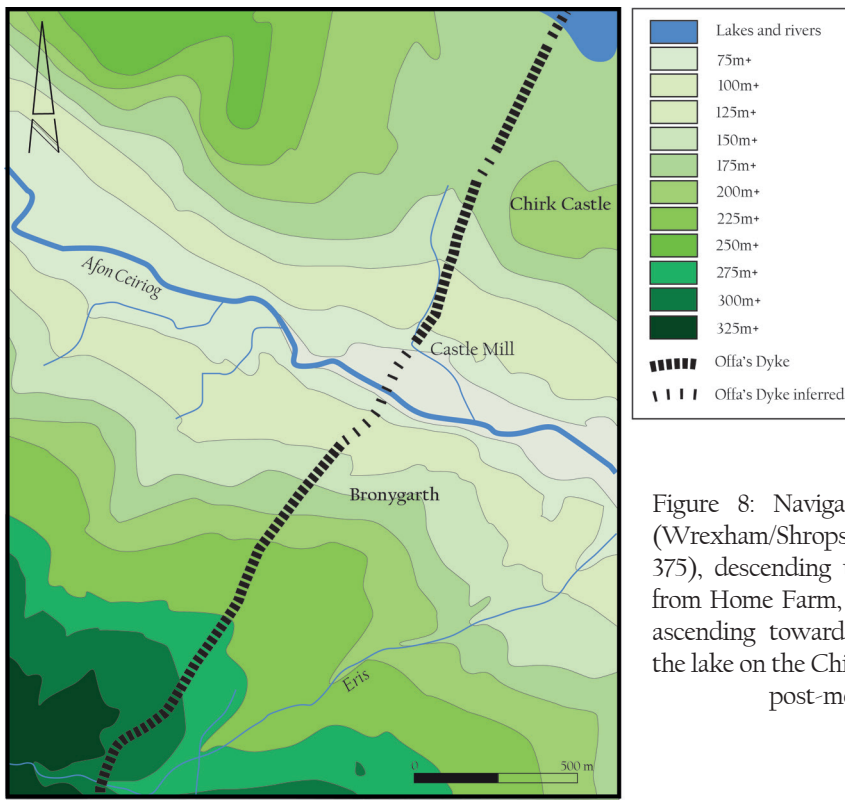


Figure 8: Navigating the Ceiriog (Wrexham/Shropshire) (SJ 264 375), descending utilising a combe from Home Farm, Chirk Castle and ascending towards the Eris. Note: the lake on the Chirk Castle estate is post-medieval

both the Bristol Channel and Irish Sea (see also Griffiths 2010; Swallow 2016). Considering Offa's Dyke's 'flow' – addressing its roles in observing, controlling and curtailing movement over land and also the manipulation of movement in and over water (see Edgeworth 2011) – helps us consider the biaxial mobilities of the linear earthwork on this grander perspective. The idea of a 'hydraulic frontier zone' is thus evoked to conceptualise this scale: regarding Offa's Dyke as monument built to control, curtail and surveil mobilities along and across its course through the early medieval landscape (Figure 1).

Following water courses and wetlands

For a significant fraction of the surviving line of Offa's Dyke, the monument followed river valleys. In doing so, the monument thus utilised the west-facing valley slopes as part of its defence, and allowed the valleys to be visually dominated, thus controlling movement across the Dyke and along its line simultaneously.

While the nature of the frontier remains obscure for where it follows the Wye for c. 32km between Byford south of Garnon's Hill and Lower Lydbrook (Delaney 2021: 97–99; Ray *et al.* 2021: 55–57), arguably the River Wye *became* Offa's Dyke (Delaney 2021: 99). The same applies to a shorter stretch where the Severn might have served as the monument for a stretch of c. 7.8km (Figures 15 and 16). A smaller section occurs along the Dee for c. 2km where Offa's Dyke joins on the southern bank at a dramatic river-cliff

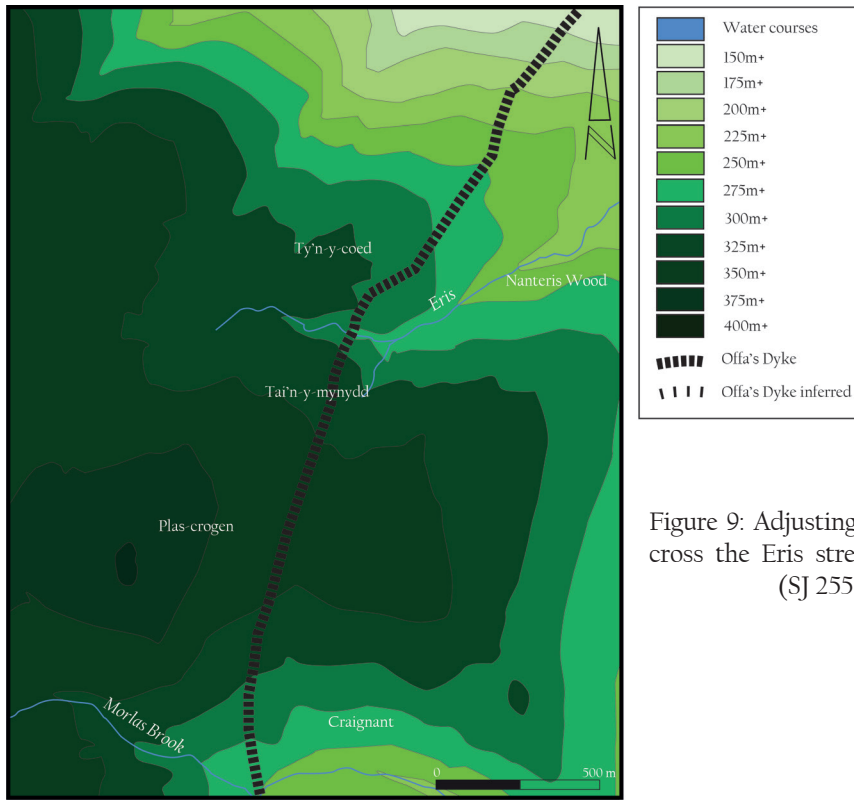


Figure 9: Adjusting its trajectory to cross the Eris stream (Shropshire) (SJ 255 363)

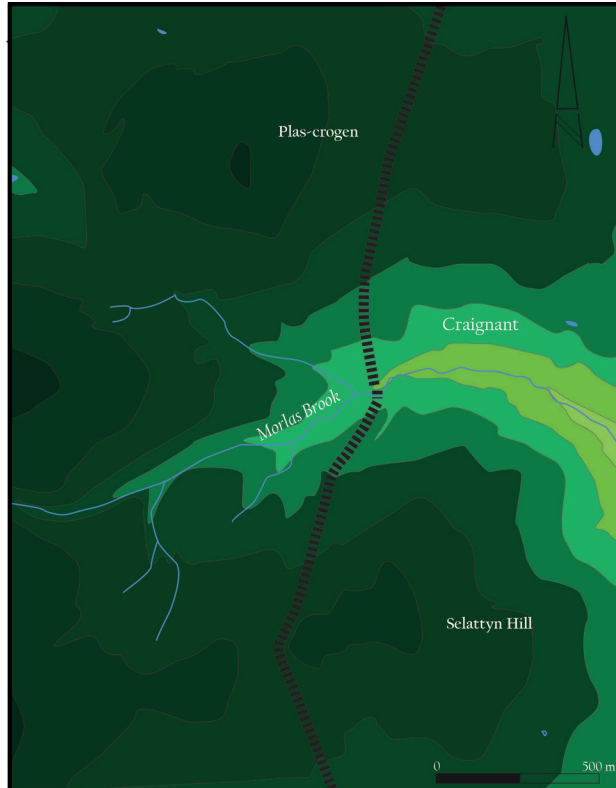


Figure 10: Crossing the Morlas Brook at Craignant (Wrexham/Shropshire) (SJ 252 349) to the east of its confluence with a series of subsidiary watercourses (SJ 252 349)

opposite Ty Mawr Country Park and then seemingly departs from the northern bank east of a stream in Hopyard Wood downstream (1.3km as the crow flies, but closer to 2.1km as the river winds) (Figure 7). A short stretch of the Vyrnwy, for up to c. 500m, might have also functioned in this regard (Figure 14).

There are other stretches where river valleys were utilised as part of the frontier but where the Dyke followed the tops of west-facing scarps overlooking them. The most sustained use of such a stance is along the lower Wye Valley from Lower Lydbrook south to Chepstow (with possible gaps: a distance of c. 25km as the crow flies; Figure 29). A further instance is where Offa’s Dyke climbs via Offa’s Pool southwards towards Upper Hem before dropping down to cross the Camlad (Figures 17 and 18; see also Ray *et al.* 2021: 58–60). A third stretch is where Offa’s Dyke overshadows the Morda from Oswestry Racecourse south to Tyn-y-coed (2.75km) (Figure 12). There is a further short stretch (c. 2km) where Offa’s Dyke runs parallel with the Afon Goch south of Johnstown (Wrexham) (Figure 6). The final stretch for consideration is where Offa’s Dyke was placed between Llanfynydd and Ffrith (around 1.47km as the crow flies) (Figure 2). In such situations, the Dyke not only commands views westwards over valleys, but would have served to control movement both along and across the rivers they contain.

Smaller, more localised uses of valley-side streams are a further example of the careful use of watercourses in planning the route of Offa’s Dyke. Here, steep valley-sides are utilised as part of the defences, as for the northern (south-facing) slopes of the valleys of the Clywedog (Figure 4), the Dee (Figure 7), the Ceiriog (Figure 8) and the Camlad (Figure 18), the southern (north-facing) slope of the Clun valley above Lower Spoad Farm (Figure 23), briefly along a stream below Offa’s Pool (Figure 17), and within the valley where the Cascob Brook joins the Lugg (Figure 27).

Put together, it can be argued that the rivers, banks, and slopes of these stretches operated in tandem with, or in replacement of, Offa’s Dyke. The use of steep slopes, the valley-sides, river banks and rivers themselves were complementary strategies by which the Dyke transformed itself into a monumentalised dimension of the natural topography. Not only would this positioning have facilitated the surveillance and control of movement along the river and its banks, and allowed the river to serve as part of the Dyke’s defensive capabilities, the placement of the Dyke in these locations allowed it to control riverine resources, including mills and fishing.

If Offa’s Dyke is taken to be up to 145km long (Ray and Bapty 2016: 1), then the 40km of surviving Dyke following watercourses amount to 27% of its line. This fraction doubles to c. 81km and 56% of its overall postulated line if watercourses where no Dyke survives are taken into consideration. In summary, it is evident that watercourses were crucial to the planning and installation of the monument and thus were integral to its likely multi-functional roles in controlling mobility and dominating the landscape.

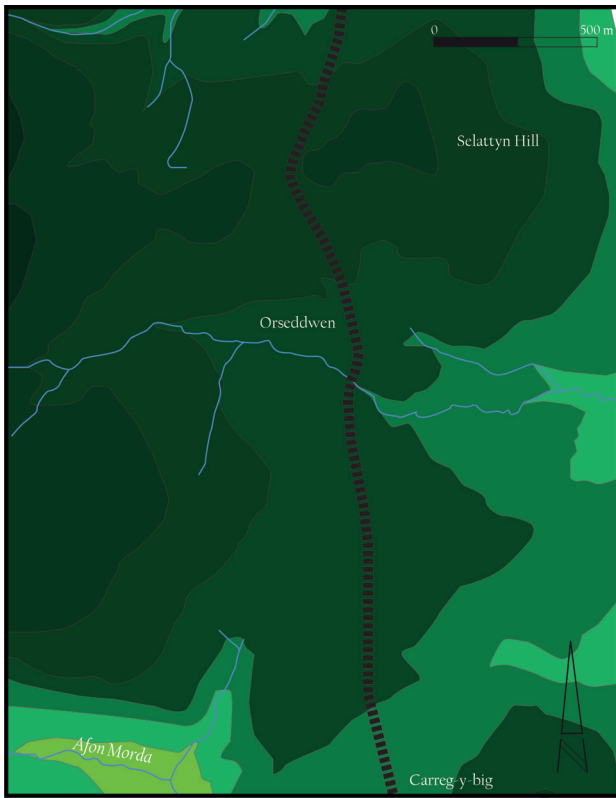


Figure 11: Adjusting its course to cross an unnamed tributary of the Morlas Brook at Orseddwen (Powys/Shropshire) (SJ 251 335) (for key, see Figure 10)

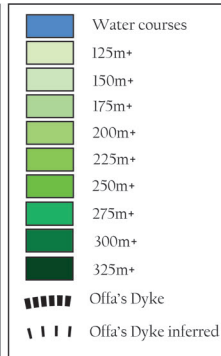
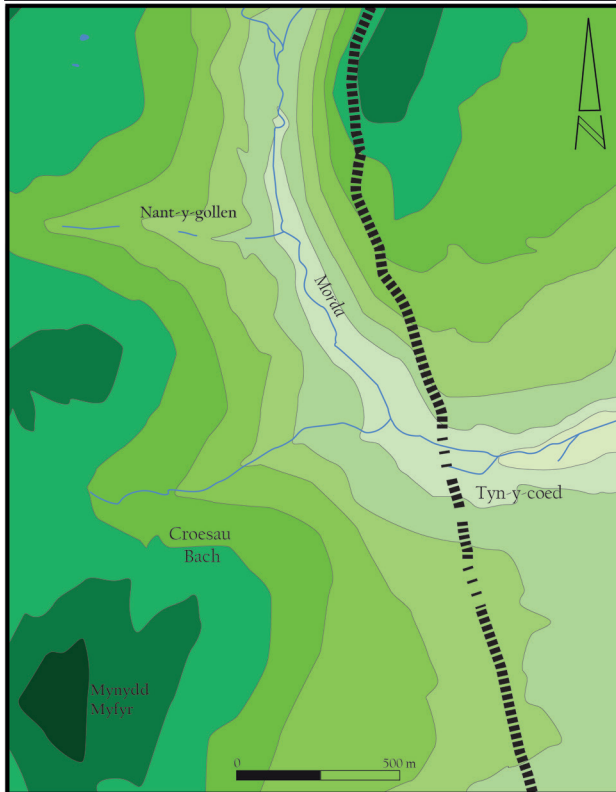


Figure 12: Dropping off the Craig Forda ridge from the north, Offa's Dyke crosses the valley of the Morda at Tyn-y-coed (Shropshire) (SJ 256 282) before rising up the valley side towards Pentre-shannel

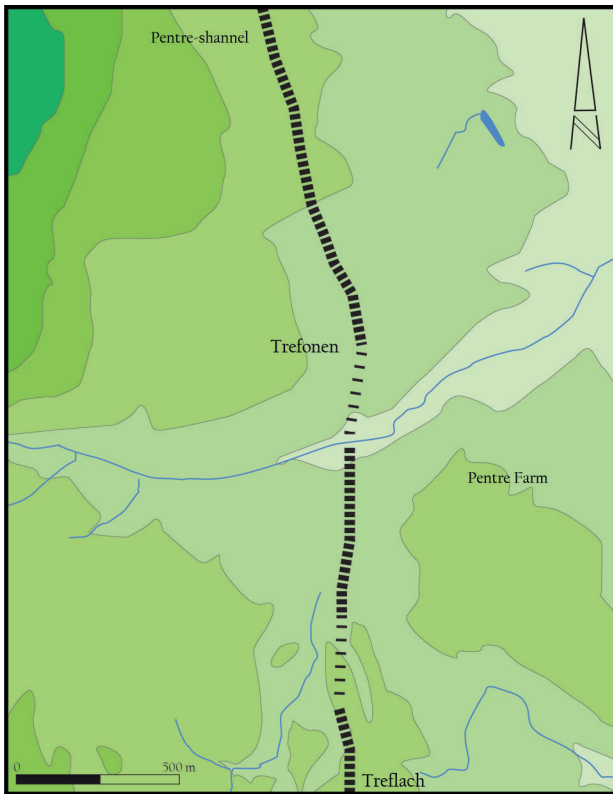


Figure 13: Crossing the unnamed tributary of the Morda south of Trefonen (Shropshire) (SJ 259 265) (for key, see Figure 12)

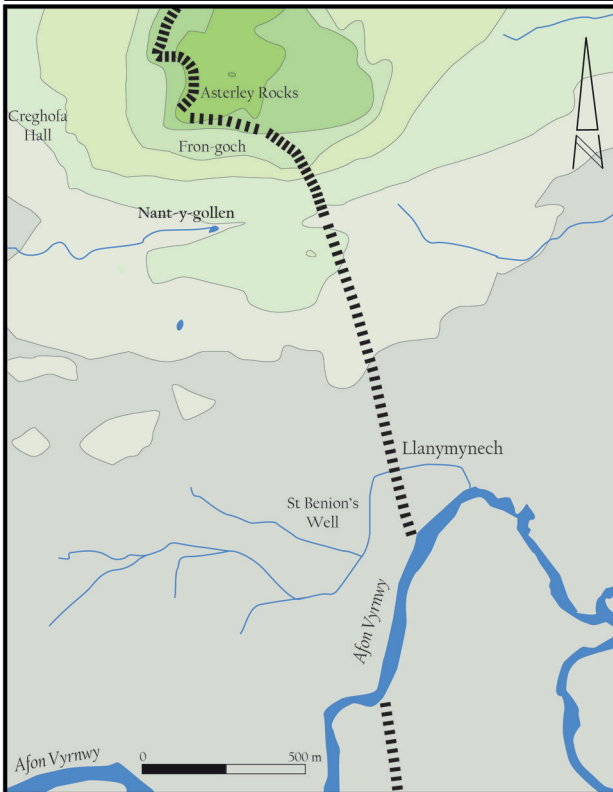


Figure 14: Approaching the Afon Vyrnwy near Llanymynech (Powys/ Shropshire), Offa's Dyke likely hit the river (SJ 268 204) and utilised the river bank as part of its course for c. 500m to the south (SJ 267 199)

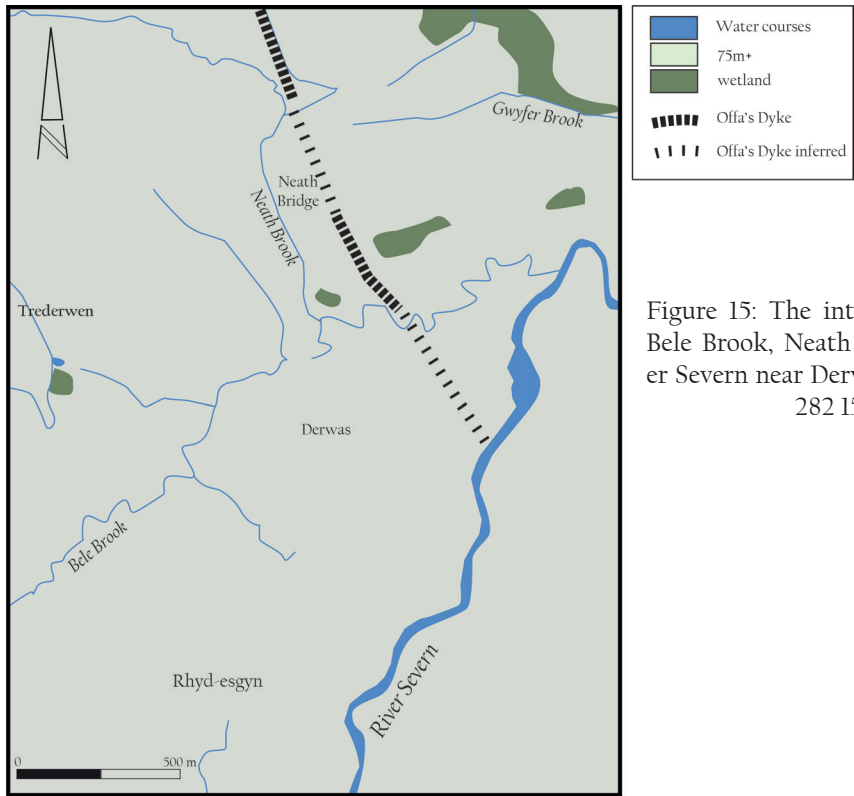


Figure 15: The intersection of the Bele Brook, Neath Brook and River Severn near Derwas (Powys) (SJ 282 155)

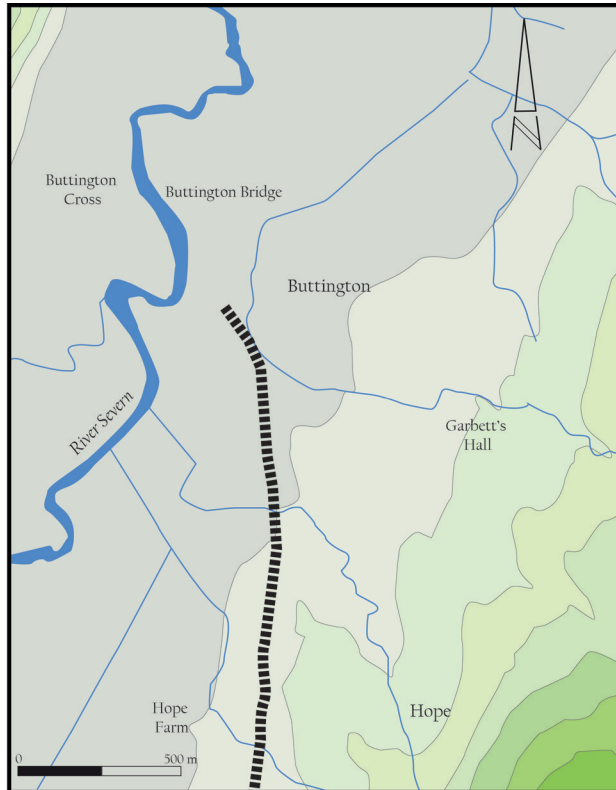


Figure 16: From the River Severn at Buttington (Powys) (SJ 247 087) Offa's Dyke heads southwards gradually rising up from the valley

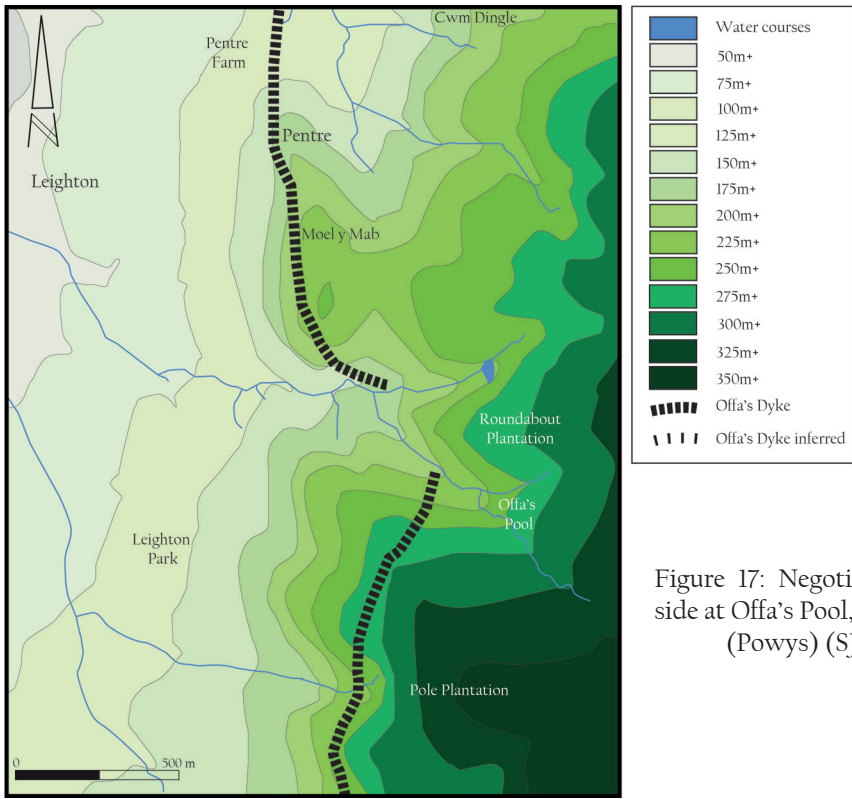


Figure 17: Negotiating the valley side at Offa's Pool, Leighton House (Powys) (SJ 252 048)

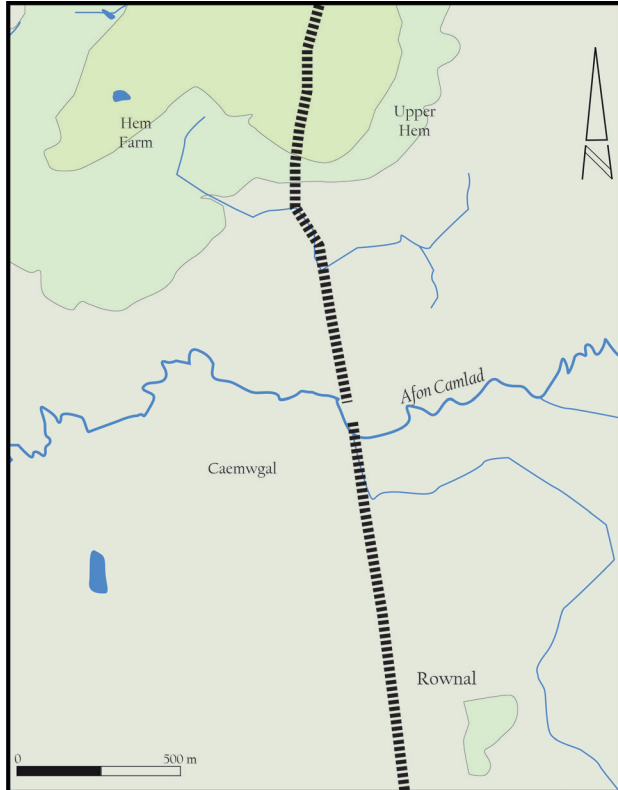


Figure 18: Adjusting its direction at Upper Hem, Offa's Dyke descends into the valley of the Afon Camlad (Powys) (SO 231 992)



Figure 19: Passing over the Afon Caebitra at Brompton Hall (SO 251 930) and a tributary (SO 252 928) (Shropshire and Powys)

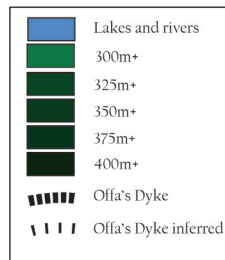
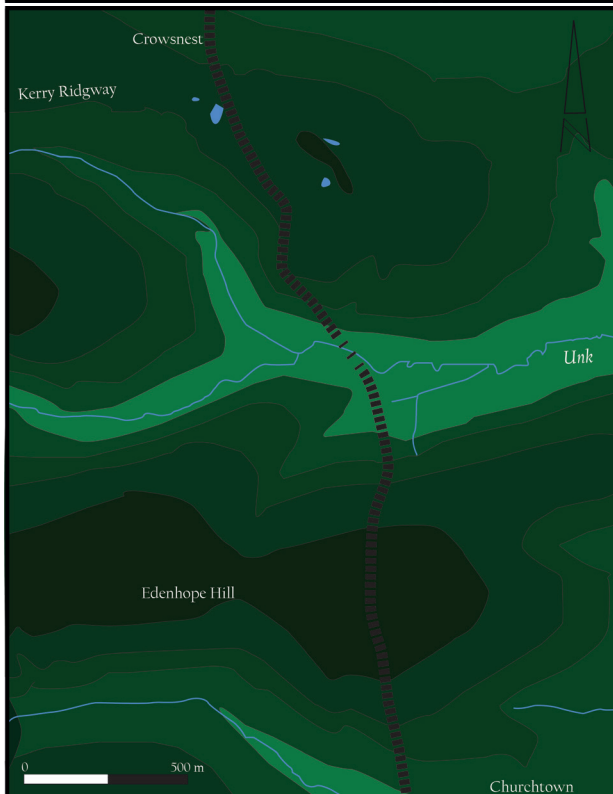


Figure 20: Crossing the Unk in the Clun Forest just east of its confluence with a tributary (SO 261 888) and rising up to Edenhope Hill (Shropshire)

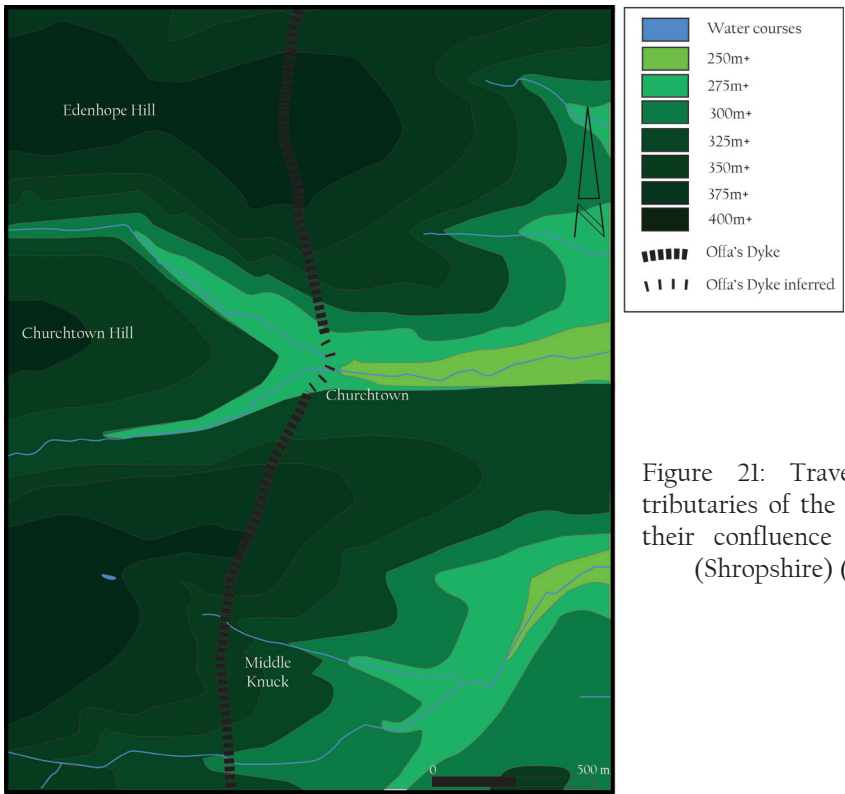


Figure 21: Traversing unnamed tributaries of the Unk just east of their confluence at Churchtown (Shropshire) (SO 263 873)

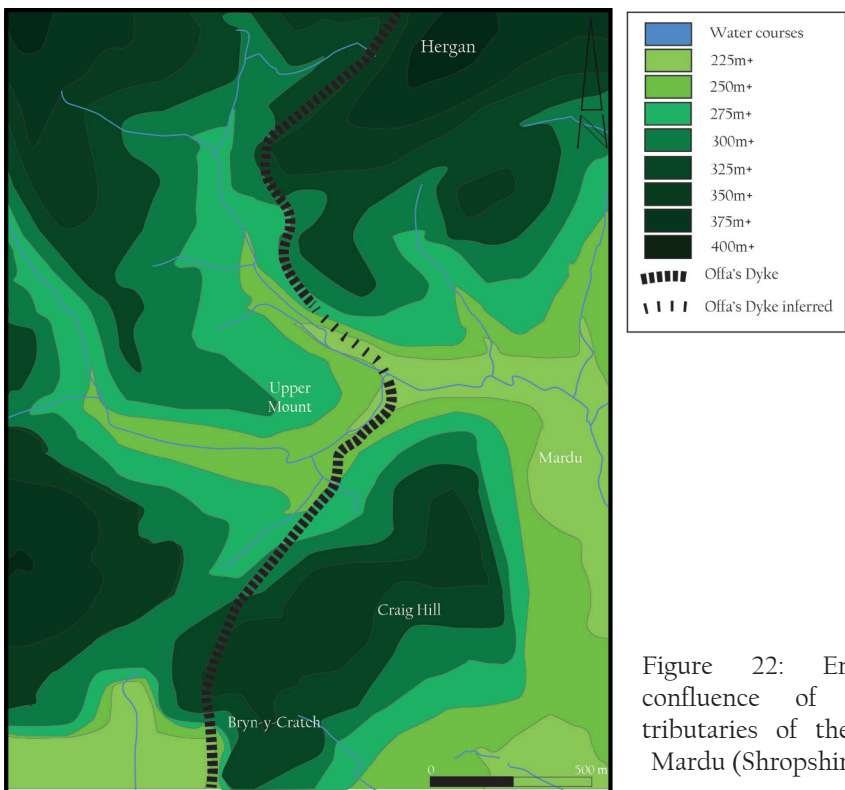


Figure 22: Enwrapping the confluence of two unnamed tributaries of the Clun west of Mardru (Shropshire) (SO 260 842)

Watercourse avoidance

The integration of watercourses in the planning and placement of Offa's Dyke recognised their significance for pre-existing and/or established principal routes of movement but also their potential as weak points in the frontier work where the earthwork had to traverse them. Thus, when not following watercourses and overlooking them, Offa's Dyke often sought to avoid crossing watercourses altogether. There are many examples where the alignment of the earthwork sought to position itself, where possible, above spring lines and upon watersheds. A fascinating example includes the much-discussed situation at Hergan in the Clun Forest where the Dyke weaves between west- and east-flowing streams along the watershed via one tight angle turn and a second more modest readjustment of alignment (Ray and Bapty 2016: 45, 237; Figure 22). Furthermore, the Dyke avoids west-flowing streams south of Treflach (Figure 13) and Porth-y-waen (both Shropshire), Nantcribba (Powys), Llanfair Hill (Figure 24), Cwm-sanaham Hill (both Shropshire) (Figure 25), Hawthorn Hill and between Pen Offa and Evenjobb Hill (Powys). In doing so, while crossing watercourses could not be avoided entirely, the comparative mapping shows multiple instances where the monument's surveyors carefully and precisely negotiated its course between springheads and streams.

Crossing and blocking watercourses

More often than not, Offa's Dyke was compelled to traverse valleys and their watercourses flowing out of the Welsh uplands in order to pursue its overarching course. Multiple commentators have observed how Offa's Dyke behaved in contrasting fashions when negotiating such traverses. For major watercourses, more attention and care in the surveying of the monument has been proposed, whilst minor streams required fewer adjustments to the monument's alignment (Ray and Bapty 2016: 147–148, 151–156). However, this comparative investigation shows more variability than hitherto recognised. Certainly, there are numerous instances where the dykes ran straight across (and thus perpendicular to) smaller watercourses without seemingly adjusting its course. However, upon closer inspection, we can see that this often takes place where a subtle but significant adjustment of course took place on higher ground in order to cross watercourses at precise locations which afford not only a near-perpendicular crossing, but also at places which afford strategic advantages in terms of visibility, crossings and mobility impedance. We can infer that careful surveying took place and precise alignment of the monument was ensured, where possible, to fit specific criteria, even for the smallest of watercourses. Based on this comparative mapping, preferred behaviours included intersecting water:

- just east of confluences of multiple watercourses to minimise the number of required intersections;
- at points where the line of the Dyke can run as close to perpendicular to the watercourse as possible;

- downstream of restricted valleys where the Dyke would struggle to traverse easily and at the perpendicular;
- routeway intersections which operated both to defend and control north-south traffic and control pre-existing fords and/or newly constructed bridges.

These factors apply to where the Dyke crosses the Gwenfro (Figure 3), Clywedog (Figure 4), the unnamed streams near Cadwgan Hall (Figures 4 and 5), Pentrebychan Brook and Aberderfyn (Figure 5), and the Afon Eitha (Figure 6) (all in Wrexham); the Eris (Figure 9) and by the brook at Orseddwen (Figure 11), Trefonen (Figure 13) (all in Shropshire), multiple unnamed streams south of Buttington (Figure 16) and Brompton Hall (Figure 19) (both in Powys). In addition to those places already postulated as potential gates through Offa’s Dyke situated away from water courses (see Ray and Bapty 2016: 228–232), such watery locations were also potential gateways through the monument. Equally, these positions might have served to control north–south traffic at fording places across the watercourse as well as affording optimal positions for surveillance and the impedance of west–east traffic.

A further identified placement strategy is where the intersections with watercourses involved a significant point of realignment shifting between blocking and following valleys. Again, these might have been at key ‘pinch points’ or constrictions in the landscape where fords might have readily existed. The key instances are the Cegidog (Flintshire) where the Dyke follows the river to the north but departs from its course southwards to rise up a steep slope to Brymbo (Figure 2), the Goch (Wrexham) which departs away from the valley to the south of the river crossing (Figure 6) and the Morda (Shropshire) which once more involves a southerly departure from the valley (Figure 12). In such instances, the crossing point over the river is close to the point of angle-turn. Such instances emphasise the importance of rivers in the surveying and building of Offa’s Dyke to funnel traffic towards these constrictions. This careful placing orchestrated transverse and lateral mobility through the landscape: both along and across the monument’s line.

In other cases, as Ray and Bapty (2016: 135–137) have noted, the Dyke shifts its alignment deliberately to bracket the stream in a concave arc on varying scales allowing visual oversight. This also afforded the impression of the Dyke was wrapping around and thus imposing for those approaching it along valley from the west. This is demonstrable where Offa’s Dyke crosses the Ceiriog at Bronygarth (Figure 8) and at Cragnant (Shropshire) crossing the Morlas Brook (Figure 10). Further south in the Clun Forest examples include Churchtown (Shropshire) (Figure 21) and west of Mardu Farm (Shropshire) (Figure 22), as well as a wider curve crossing the Clun itself near Bryndrinog (Shropshire) (Figure 23).

A further variant is when the arc is one-sided. Examples include the approach to the Camlad (Figure 18), the Dyke’s crossing of the Unk (Figure 20), the approach to the Redlake north of Llanfair Hill (Figure 24), the Teme at Knighton (Powys) (Figure 26), the Wylcwm Brook south of Knighton (Figure 26), at Gilfach Wood above the crossing of the Lugg (Powys) (Figure 27) and at Brockweir along the Wye (Figure 28).

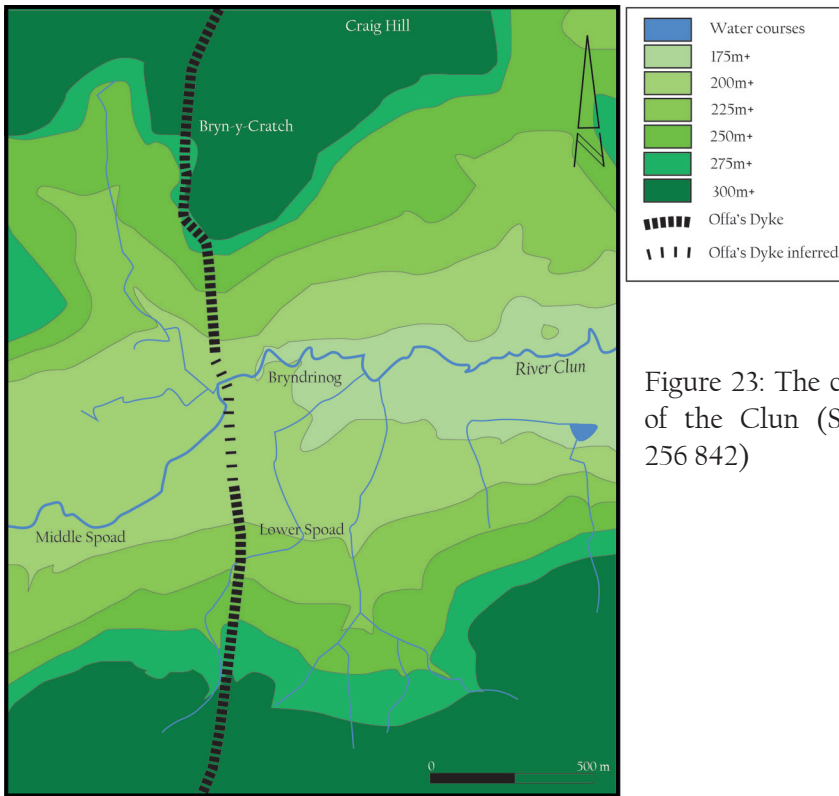


Figure 23: The concave crossing of the Clun (Shropshire) (SO 256 842)

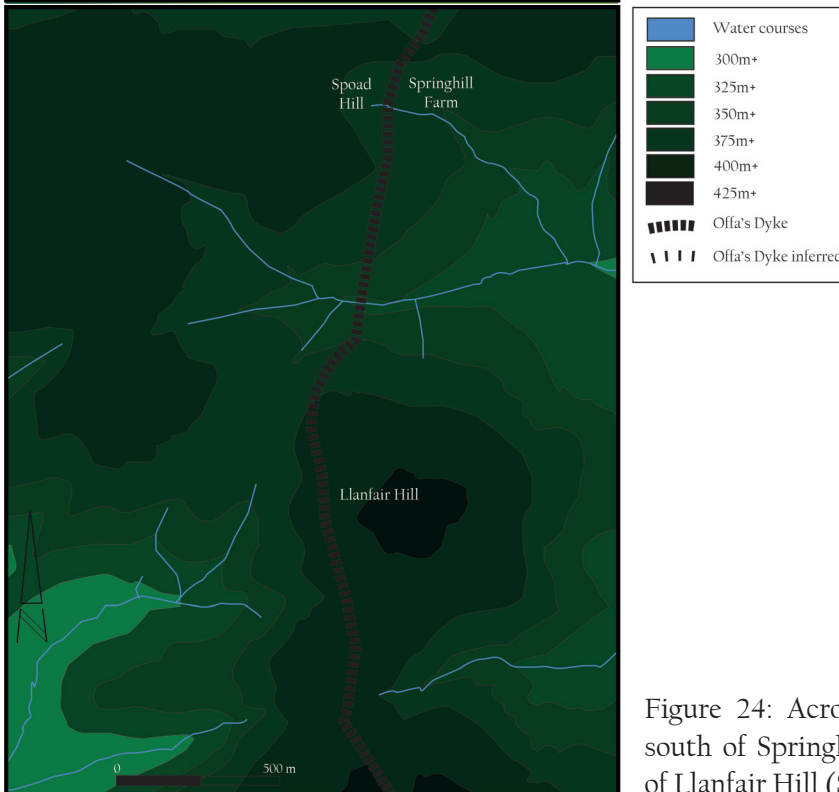


Figure 24: Across the Redlake south of Springhill Farm, north of Llanfair Hill (SO 253 800)

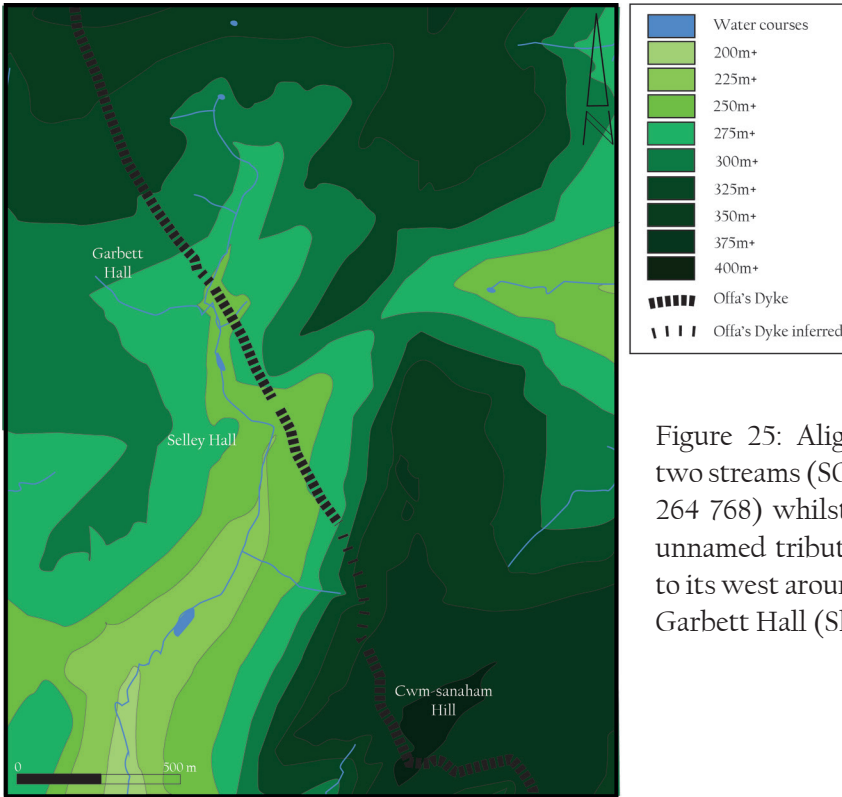


Figure 25: Aligned to traverse two streams (SO 265 769 and SO 264 768) whilst overlooking an unnamed tributary of the Teme to its west around Selley Hall and Garbett Hall (Shropshire)

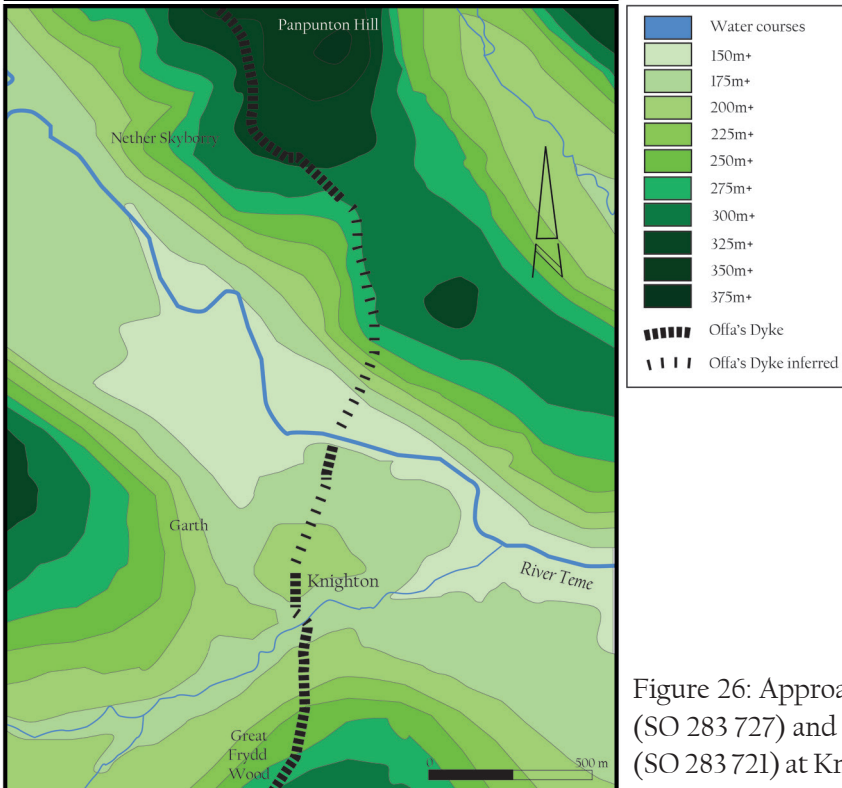


Figure 26: Approaching the Teme (SO 283 727) and Wylewm Brook (SO 283 721) at Knighton (Powys)

In all these instances, the Dyke adjusts to approach the stream or river and/or uses the watercourse as a point of adjustment. In doing so, the river and stream crossings are points of control at natural movement-constrictions and route convergence. We can imagine multiple land routes meeting from the west at such positions: key locations from where raids and other military expeditions might strike out westwards from. Such positions would also serve for people brought their livestock and trading goods in order to utilise gateways through the Dyke and where unwelcome and raiding groups might be observed and intercepted. Likewise, we can envisage people and animals moving along the line of the Dyke, patrols and traders alike, utilising these stream and river crossings as fords or bridges (see also Ray *et al.* 2021). Such components might have encouraged such places to serve as moots: locations for legal assembly (Pantos 2004).

Islands of assembly?

By following and blocking watercourses, Offa's Dyke was placed to channel and surveil movement through the landscape, and control its resources. Yet there is a further tantalising dimension to the hydraulics of the monument that deserves of our attention. Having identified the broad pattern of behaviours in relation to water, a distinctive subset of relations can be discerned that prompt further discussion. There are five principal instances where Offa's Dyke behaves in a notably different way and these are all at potentially significant and strategic locations in the line of the monument. In such situations Offa's Dyke chooses *not* to align itself below the confluence of multiple streams, either by adapting its line in a concave arc, or else to approach perpendicularly to them. Instead, the Dyke cuts across multiple stream-lines, resulting in the creation of inter-fluvial 'islands' framed by two streams and the line of the dyke. While hydrologies have altered in the last twelve centuries since construction, and the modern stream lines might not reflect the precise routes of rivers in the late eighth century, these remain potentially significant divergences in the patterns of placement for the Dyke identified elsewhere along its course.

The five instances, from north to south are:

- The crossing of the valley of the Cegidog and the Nant Ffrith and a smaller unnamed stream (Figure 2).
- At the crossing of the Vyrnwy and the stream running from St Bennion's Well south of Llanymynech (Figure 14);
- At the crossing of the Neath Brook as Offa's Dyke approaches the Severn near Trederwen (Figure 15);
- The crossing of the Caebitra and a side stream at Brompton Hall (Powys) in the Vale of Montgomery (Figure 19);
- The crossing of the Riddings and Hindwell brooks between Herrock Hill and Burfa Bank (Powys) (Figure 27).

A sixth possible instance represents the inverse situation: the inter-fluvial island between the Wye and the Severn is created by Offa’s Dyke’s southern terminus and lies south/outside its defences (Figure 30).

It is important to reiterate that, at the time of writing, we have no archaeological evidence to verify the activities and significance of these valley-floor locations, as with other points where Offa’s Dyke crosses over valleys and thus watercourses. Yet the northernmost, at Ffrith, is beneath a modern village at a point where a Roman station had existed (Fox 1955: 40–44). If not incidental to other design factors (i.e. if not a compromise to satisfy longer distance trajectories for Offa’s Dyke), one scenario is that these constituted valley-floor assembly places and muster points at key nodes along the line of Offa’s Dyke. These locations were overlooked by higher ground and thus readily protected from surprise attack from all directions. Here, troops might gather, markets might take place, and animals might be grazed, akin to later prehistoric valley or marsh forts. At each case, the Dyke’s crossing of the valley coincides with historic fording points, suggesting that these locations were certainly strategic as points of movement both north–south along the line of the Dyke and west–east across its line.

It appears that the comparative mapping of Offa’s Dyke has identified strategic points of control, perhaps garrisoned, or for seasonal mustering. In this regard, we might consider them the late eighth-century Mercia’s equivalents of the Pillar of Eliseg, postulated as an assembly place and possible royal inauguration site for Mercia’s rivals in Powys (Murrieta-Flores and Williams 2017; cf. Pantos 2004). Each was situated in defensible, overlooked and protected locations where in times of peace the fordable watercourses offered refreshment for animals and people and livestock might be corralled easily and traded or exchanged before being driven eastwards into the Cheshire, Shropshire and Herefordshire plains. Conversely, in times of raiding, warriors might muster here before striking out westwards.

Notably, each of these five locations is situated at, or very close to, one of the major shifts in ‘stance’ of the Dyke on its route from Chepstow to Treuddyn, as identified by Ray and Bapty (2016: 128). This in itself might explain the break with tradition at these locations: the builders of the Dyke had bigger priorities in terms of long-distance trajectories that they were willing to depart from prioritising the control of watercourses. Perhaps elsewhere along the line, prehistoric hillforts were deployed in this fashion too (Belford 2017). Indeed, in some instances, we might envisage them operating in pairs: the Vyrnwy example is situated beneath a prominent Iron Age hillfort at Llanymynach (Figure 14), the Tredrwen example is overshadowed by the Breidden (Figure 15) and the Hindwell Brook lies beneath Burfa Bank (Figure 27).

Riverine stances and the sea: regional and supra-regional hydraulics

Building on Fox’s (1955) and Hill and Worthington’s (2003) works, Ray and Bapty (2016: 123–129) have already explored how Offa’s Dyke was planned and placed according

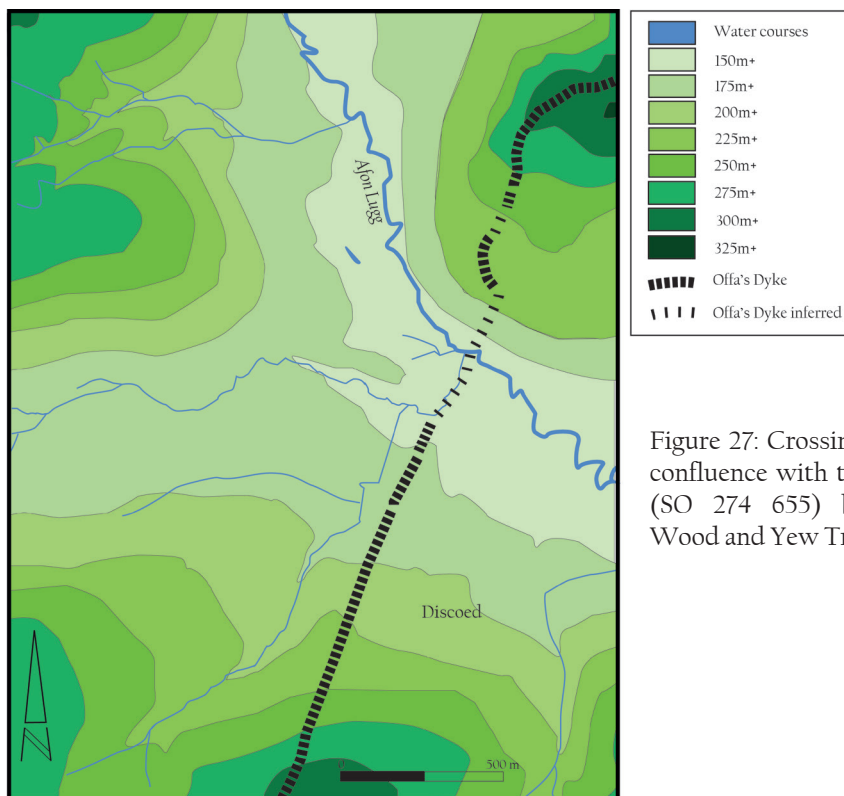


Figure 27: Crossing the Lugg at its confluence with the Cascob Brook (SO 274 655) between Gilfach Wood and Yew Tree Farm (Powys)

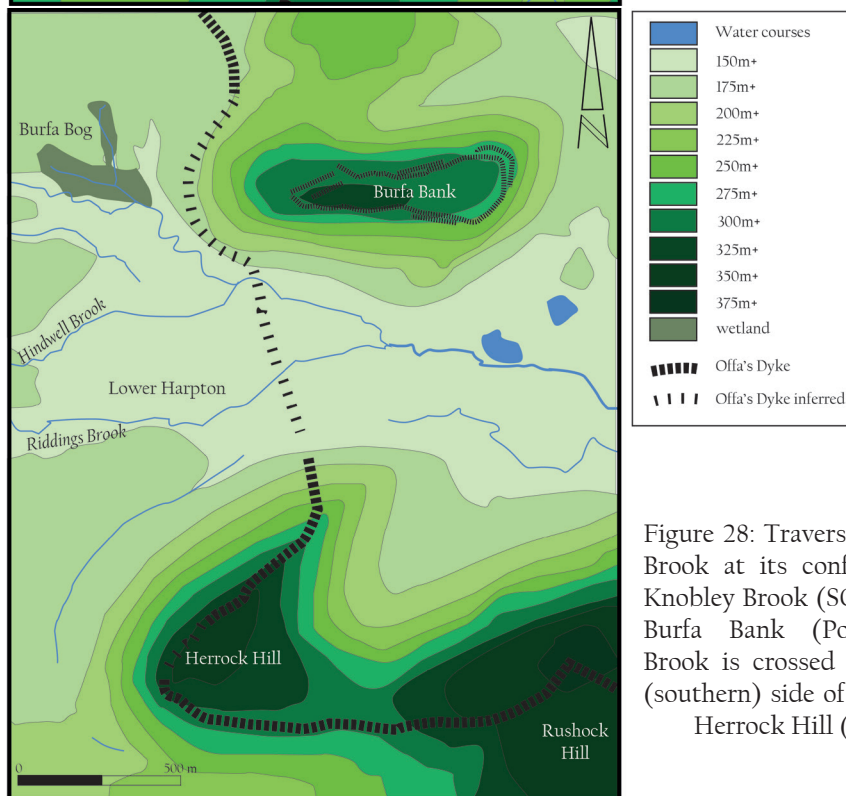


Figure 28: Traversing the Hindwell Brook at its confluence with the Knobley Brook (SO 279 607) below Burfa Bank (Powys). Riddings Brook is crossed on the opposing (southern) side of the valley below Herrock Hill (SO 280 604)

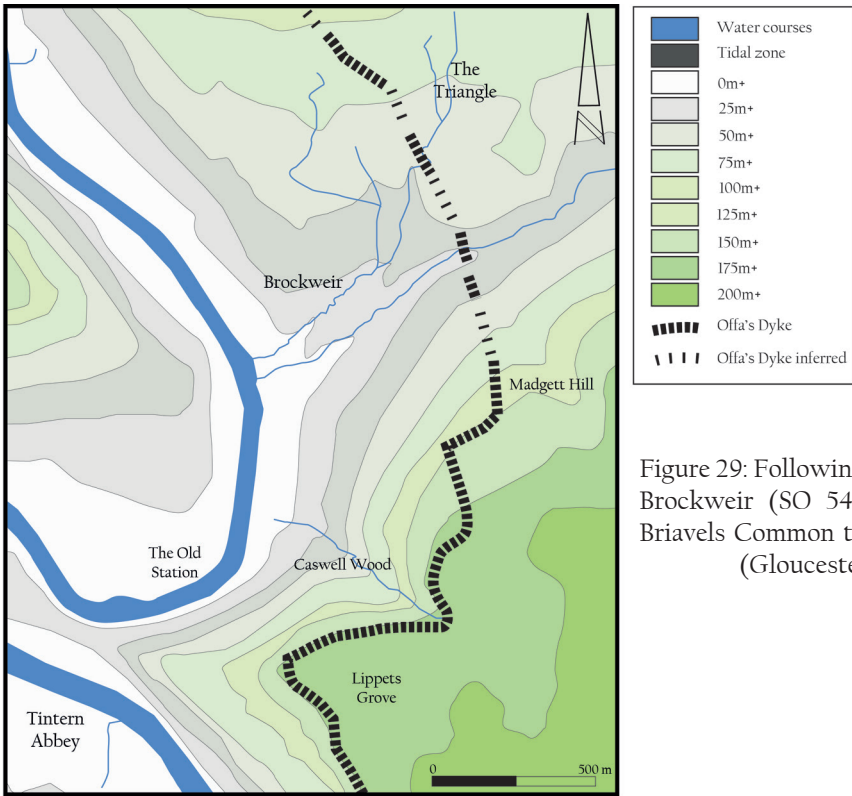


Figure 29: Following the Wye above Brockweir (SO 545 014) from St Briavels Common to Lippets Grove (Gloucestershire)

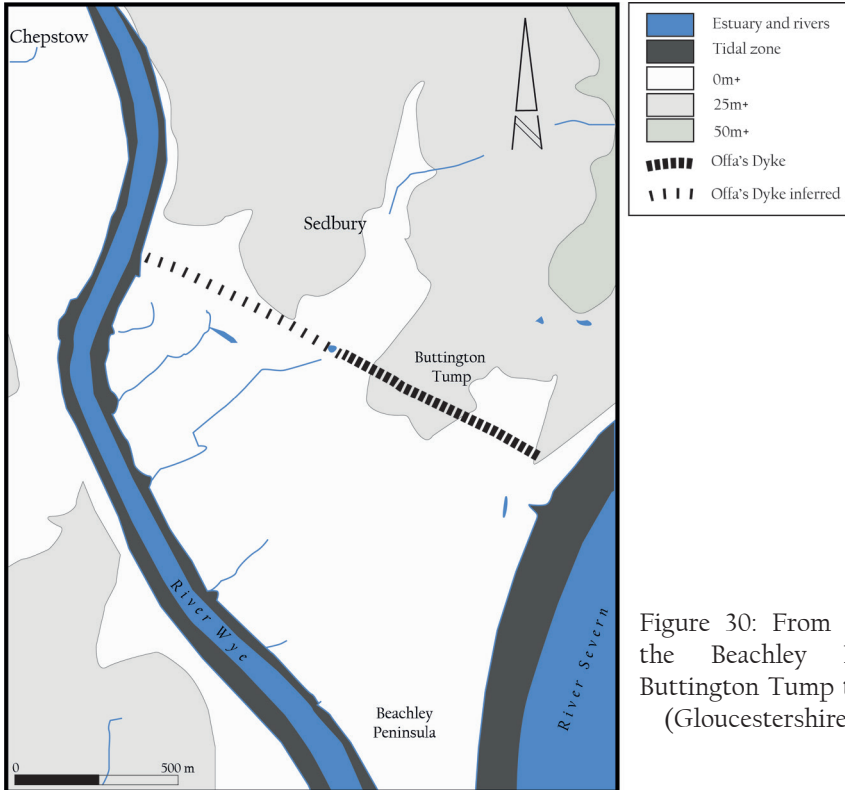


Figure 30: From the Wye across the Beachley Peninsula past Buttington Tump to Sedbury Cliffs (Gloucestershire) (SO 552 928)

to broader stances through the landscape linked to key river valleys on the threshold between upland and lowland Britain as well as postulated political boundaries between Mercia and Welsh rivals, notably Powys. Crucially, they identify the context of its building not only in relation to Wales, but of 'wresting control of north-central Britain from Northumbria and southern Britain from Wessex' (Ray and Bapty 2016: 125). Here, I wish to adapt Ray and Bapty's figure 4.3 to illustrate the Dyke's relationships with key major river valleys. This perspective is supported by more recent work on the monument, particularly its course south from Rushock Hill towards the Wye (notably Delaney 2021; Ray *et al.* 2021) and, in the north, Offa's Dyke's relationship with the Dee and Alyn (Figure 1). For while further fieldwork is needed to explore potential stretches of Offa's Dyke north of its traditionally ascribed terminus at Treuddyn (Ray *et al.* 2021: 63–73), from the stretches already confirmed from Ffrith north to Llanfynydd and Coed Talon (Figure 2), and particularly through its relationship here protecting the western slopes of Hope Mountain, it is possible to appreciate how the monument dominated the Flintshire valley and coast. Although associated with no demonstrably early medieval archaeology, Hope Mountain clearly possessed a huge strategic significance with its expansive views over both the Dee estuary and the Flintshire coastal plain approaching Chester.

Therefore, the choice of Offa's Dyke to encapsulate both the heights at Mount Zion above Brymbo south of the Cegidog, and then Hope Mountain itself, created a strategic zone which dominated and thus controlled movement into the Cheshire Plain from the west over land and water (Figures 1 and 2). Any hypothetical continuation of Offa's Dyke north, or extension of Mercian forts or stations in the coastal zone (currently unidentified and situated closer to the Dee estuary and Irish Sea) would have been in direct communication with their equivalents along Offa's Dyke via beacons. So even though much remains uncertain about Offa's Dyke's northern extent, its defence of Hope Mountain connected it to the control of lead resources on Halkyn Mountain, the Dee and the Wirral peninsula and the Mersey beyond. From above the northernmost currently confirmed and attested stretches of Offa's Dyke between Treuddyn and Llanfynydd, Hope Mountain secured vistas north to Moel-y-Gaer at Halkyn Mountain and thus onwards to the Irish Sea. Simultaneously, from Hope Mountain those surveilling the line of Offa's Dyke gained views north-east across the Dee and Mersey estuaries towards the territories of the middle Anglo-Saxon kingdom of Northumbria. In this position, Offa's Dyke not only presents itself towards, and seeks to control movement through the landscape between Mercia and neighbouring Welsh Kingdoms, it also faces north and north-east towards the rival Northumbrian kingdom.

A similar arrangement can be proposed to the south of Offa's Dyke across the Severn Estuary. As mentioned above, there has been debate regarding whether Buttington Tump is a part of Offa's Dyke. However, the decision to place a linear earthwork to cut off, and thus face off against the Beachley Peninsula can now be seen as part of an adapted strategy to that found elsewhere along the length of the monument. Here, the traverse between the Wye and the Severn created a further 'island' to those identified on the course of the monument discussed above, but this time the demarcated zone is

to the south of the monument beyond its ditch (Figure 30). More broadly, the entire length of Offa’s Dyke along the lower stretches of the Wye, from Tutshill north to Tiddenham Chase, can be understood as not only surveilling and controlling movement from the west, but also simultaneously from the south and east as well. In this regard, it is worth noting that not far east of the line of Offa’s Dyke where it looms over the Wye from Spital Meend Fort to the Devil’s Pulpit above Tintern (Ray *et al.* 2021: 38–44), one is afforded vistas from Tiddenham Chase south-east over the Severn. In other words, whilst guarding and controlling movement along and across the Wye, here at its southernmost end Offa’s Dyke also looked south and east towards the territories of the middle Anglo-Saxon kingdom of Wessex. This kingdom arguably constructed Wansdyke broadly contemporaneously with the building of Offa’s Dyke (and perhaps Offa’s Dyke or Wansdyke was inspiration for the other, whichever was constructed first) (Reynolds and Langlands 2006). It is worth pointing out that, while not intervisible and facing in different directions, Wansdyke and Offa’s Dyke are reflections of each other if the Severn Estuary is taken as a plane of symmetry. As such, it is legitimate to consider them ‘in dialogue’ with each other across this major communication artery of western Britain.

Hence, the terminal stretches of Offa’s Dyke west of Hope Mountain and down to the Wye’s confluence with the Severn are key to understanding how Offa’s Dyke visually dominated and physically impeded mobility in the early medieval landscape (Figure 1). The very fact that the only near-contemporary (late ninth-century) description of Offa’s Dyke, that of Bishop Asser writing the biography of King Alfred of Wessex, defines it as running from ‘sea to sea’ should have garnered more interest in the maritime and riverine associations of both Offa’s Dyke and Wat’s Dyke (Ray and Bapty 2016: 334). Whether ‘accurate’ or not, the rhetorical and spatial ‘reach’ of the monuments stretched out over sea lanes as well as protecting land and water routes to its east (see also Williams 2021; Ray 2022).

Whether the bank-and-ditch extended to the sea or not, it is essential to regard Offa’s Dyke (as with Wat’s Dyke: see Williams 2021) with regard to not only riverine and estuarine, but also maritime mobilities. Indeed, when Offa’s Dyke and Wat’s Dyke are mapped in relation to Blair’s map of historic watercourses, it becomes clear how they operated in relation to the Irish Sea, the Bristol Channel and movement between the Dee and Severn water catchments, controlling a corridor of land and water transportation (Blair 2007; see also Oksanen 2019). The entire construction of these monuments appears to be about connecting the sea and two of the Britain’s major water catchments: the Dee and the Severn (Figure 1). For while Wat’s Dyke certainly did not run ‘from sea to sea’, it did most assuredly end at the north at an impressive fortification, now lost, but enshrined in the place-name of Basingwerk (the ‘fortification of the people of Basa’). In this situation, Wat’s Dyke controlled coastal and waterborne traffic along and across the Dee estuary as far as Overton where it was historically navigable (Oksanen 2019). We can postulate that from around here, goods might be transhipped the c. 17km land route between Overton and Maesbury from when traffic could pass on the Morda, then the Vyrnwy and thus down the Severn.

Offa's Dyke and Wat's Dyke protected and controlled north–south land transport routes linking the Dee and Severn watersheds. Wat's Dyke achieved this by stretching only a fraction of the distance of its longer neighbour. Indeed, the postulated extension of Wat's Dyke as far south as Maesbrook would make sense in regards to protecting transportation *along* as well as *across* its line via land and water (Worthington Hill 2019). This arrangement is comparable to that entertained for understanding the water and land routes being controlled by the Danevirke: blocking north–south land communications and protecting maritime communications between the Baltic and North Sea along its line (cf. Tummuscheit and Witte 2019). It also leaves open the possibility of greater understanding of Mercian coastal forts and landing points were these to be discovered in the future. Likewise, both at its northern and southern extents, Offa's Dyke uses prominent landscape situations to visually control waterborne traffic as well as coastal land routes. The dual connections afforded by each terminus afforded communication nodes with rival Anglo-Saxon kingdoms as well as those polities in Wales.

Previous commentators have attempted to describe these landscape relationships in terms of one plane of movement: west to east. Yet in considering the four terminals of the two dykes, in each case we can understand them in relation to external relationships north and south across sea and estuary, as well as west to east along rivers. So, while there has been a tendency to focus on how the dykes block rivers, both Offa's Dyke and Wat's Dyke controlled and managed Wales and its rivers but also dominated coastal and estuarine traffic and north–south land routes to their east. Notably, Wat's Dyke achieves this relationship over a shorter distance, but in doing so loses its close interaction with West Saxon and south Walian territories. This would certainly make sense if Wat's Dyke were indeed considered a later, early ninth-century work, when Mercia's waning power and shifting relations meant it required closer attention upon its north-western frontier to counter new rivals in the form of Gwynedd (Malim and Hayes 2008; but see Fitzpatrick-Matthews 2020).

Conclusion

Building on recent insights into the placement and landscape context of Offa's Dyke and revealed by comparative mapping of the monument for the first time in relation to topography and watercourses, Offa's Dyke is here interpreted as manipulating and orchestrating the biaxial *flow* of goods, animals and people across and along watercourses from the Dee to the Severn and Wye and along the adjacent coastlines. This research has implications for not only understanding the Offa's Dyke where confirmed, but also in informing ongoing research attempting to identify its presence in as-yet-uncertain locations (Delaney 2021; Ray *et al.* 2021).

Notably, the monument's behaviour in relation to estuaries, wetlands, rivers and streams identified here is matched with the new Lidar analysis of Delaney in north Herefordshire (Delaney 2021: 88–90, 102). Whichever came first, and whether or not they were used together or else successively (see Ray 2021; Ray *et al.* 2021), Offa's Dyke and Wat's Dyke can thus both be considered as serving the political and economic aspirations of an early

medieval kingdom of Mercia to project and consolidate authority and influence not only over Welsh rivals, but also to curtail and control relations throughout western Britain and Ireland. Mercia’s relations with its Anglo-Saxon rivals in Wessex and Northumbria might have been as important in the choice to construct and maintain these linear earthworks as their immediate aspirations to control territory both immediately west and east of the line of each monument (see also Williams 2021).

Offa’s Dyke and Wat’s Dyke together could have successively or in combination articulated longer-term patterns of landscape utilisation (see Murrieta-Flores and Williams 2017; Malim 2020) and influenced the political and cultural geography of the Anglo-Welsh borderlands long after their active lives had ceased (Swallow 2016; Worthington Hill 2019). Together, they foreshadowed the complex defence-in-depth strategies of the West Saxon expansion and burh-building within the West Midlands and North West up to and within the tenth and early eleventh centuries (Griffiths 2010). By directing mobility, perhaps including multiple axes of movement and places of assembly and muster, tax and trade, Offa’s Dyke projected Mercia’s military, economic, political and ideological control, influence and prestige as a key component of a hydraulic frontier zone.

Acknowledgements

I am very appreciative of the helpful guidance of Keith Ray, Pauline Clarke and Siobhan Wordingham as well as the constructive input of two anonymous referees.

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