

Offa's Dyke Journal



Volume 3

Edited by Howard Williams and Liam Delaney

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 frontiers and borderlands focusing on the Anglo-Welsh border. 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 frontiers and borderlands from elsewhere in Britain, Europe and beyond. 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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Rethinking Wat's Dyke: A Monument's Flow in a Hydraulic Frontier Zone

Howard Williams

Britain's second-longest early medieval monument – Wat's Dyke – was 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. Wat's Dyke was not only created to monitor and control mobility over land, but specifically did so through its careful and strategic placement by linking, blocking and overlooking a range of watercourses and wetlands. By creating simplified comparative topographical maps of the key fluvial intersections and interactions of Wat's Dyke for the first time, this article shows how the monument should not be understood as a discrete human-made entity, but as part of a landscape of flow over land and water, manipulating and managing anthropogenic and natural elements. Understanding Wat's Dyke as part of a hydraulic frontier zone not only enhances appreciation of its integrated military, territorial, socio-economic and ideological functionality and significance, most likely the construction of the middle Anglo-Saxon kingdom of Mercia, it also theorises Wat's Dyke as built to constitute and maintain control both across and along its line, and operating on multiple scales. Wat's Dyke was built to manage localised, middle-range as well as long-distance mobilities via land and water through western Britain and beyond.

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

Introduction

Wat's Dyke is a c. 62–64km-long linear earthwork comprising a bank and ditch. Often over-shadowed in archaeological discussions by its longer and better-known neighbour Offa's Dyke, the monument is heavily damaged in many sections of its length. Yet, fieldwork has demonstrated it was originally a near-continuous structure built along the edge of the Welsh uplands. It runs from the Dee estuary at Basingwerk (Flintshire) in the north (SJ 195 775) to the Morda Brook at Lower Morton south of Maesbury (Shropshire) in the south (SJ 305 233) (Fox 1955; Hill and Worthington 2003: 163; Malim and Hayes 2008; Belford 2019; Worthington Hill 2019; Malim 2020a).¹ Its date and relationship with Offa's Dyke remain foci for ongoing debate (Fitzpatrick-Matthews

¹ The Offa's Dyke Project by David Hill and Margaret Worthington made a strong case for the Dyke's continuous nature and charting it further south than hitherto recognised (see Hill and Worthington 2003: 163; Worthington Hill 2019; Hill 2020). Subsequent investigations have supported the monument's presence at historic gaps (see Malim and Hayes 2008), including most recently through the fieldwork by Clwyd-Powys Archaeological Trust (Belford 2019). However, inevitably it remains impossible to demonstrate on current evidence that the Dyke was continuous along the tops of steep scarps overlooking many of the watercourses under discussion in this article. It remains possible that the scarp itself, together with palisades and other obstructions, provided sufficient barriers in some situations.

2020; Ray 2020; Malim 2021). Multiple stages of construction are possible, and its initiation during the fifth–seventh centuries AD remains a possibility (Malim 2020a). Yet, its final form finds closer parallels and a viable historical context as a frontier work of the Anglo-Saxon kingdom of Mercia during the eighth or early ninth centuries AD (Malim and Hayes 2008; Malim 2020a, 2021).

Yet, how did Wat's Dyke operate as a landscape monument within a broader west Mercian frontier zone? By examining its topography in locales where it remains a prominent earthwork and in those stretches where its placement can be inferred by survey, I argue that this early medieval linear earthwork can be reinterpreted as an integral element of a hydraulic frontier zone for Mercia in which the manipulation and control of water was key. This is revealed in the monument's careful placement in relation to, and utilisation of, a range of different watercourses and wetlands, as well as estuarine and maritime environments.

The argument presented in this article is inspired by Ray and Bapty's (2016) investigation of Offa's Dyke's landscape context. I recognise their arguments have implications for understanding Wat's Dyke's precise placement and function at specific locales, but also prompts a broader consideration of the monument's landscape context on a regional scale in relation to routes of movement over land and water. Furthermore, I also identify an additional, new, macro-scale maritime context for Wat's Dyke of Mercian frontier interaction beyond Wales. I refer to that as Mercia's 'Irish Sea zone', extending across western Britain and Ireland (see also Griffiths 2010; Swallow 2016).

Wat's Dyke is thus reconsidered in relation to concepts of 'flow': both pertaining to observing, controlling and curtailing movement over land and also the manipulation of movement in and over water, perhaps even incorporating explicit hydraulic components (see Edgeworth 2011). Significantly, I argue that this flow, perhaps augmenting longer-term traditions of landscape utilisation from prehistory and the Roman period (cf. Malim 2020a), was both overland and across and along watercourses and wetlands. Moreover, the mobilities being manipulated by Wat's Dyke were biaxial. In other words, this early medieval linear earthwork not only observed and controlled transverse movement as usually understood. In addition, the line of the monument itself connected and controlled movement between the watersheds of the Severn and the Dee. The idea of a 'hydraulic frontier zone' is thus evoked to conceptualise the monument as 'powered by'/'driven by' its interactions with water.

Background: introducing Wat's Dyke

Running along the western edge of the Midlands plain, Wat's Dyke is a west-facing bank-and-ditch with occasional hints of counterscarp bank and eastern ditch (Figures 1 and 2;

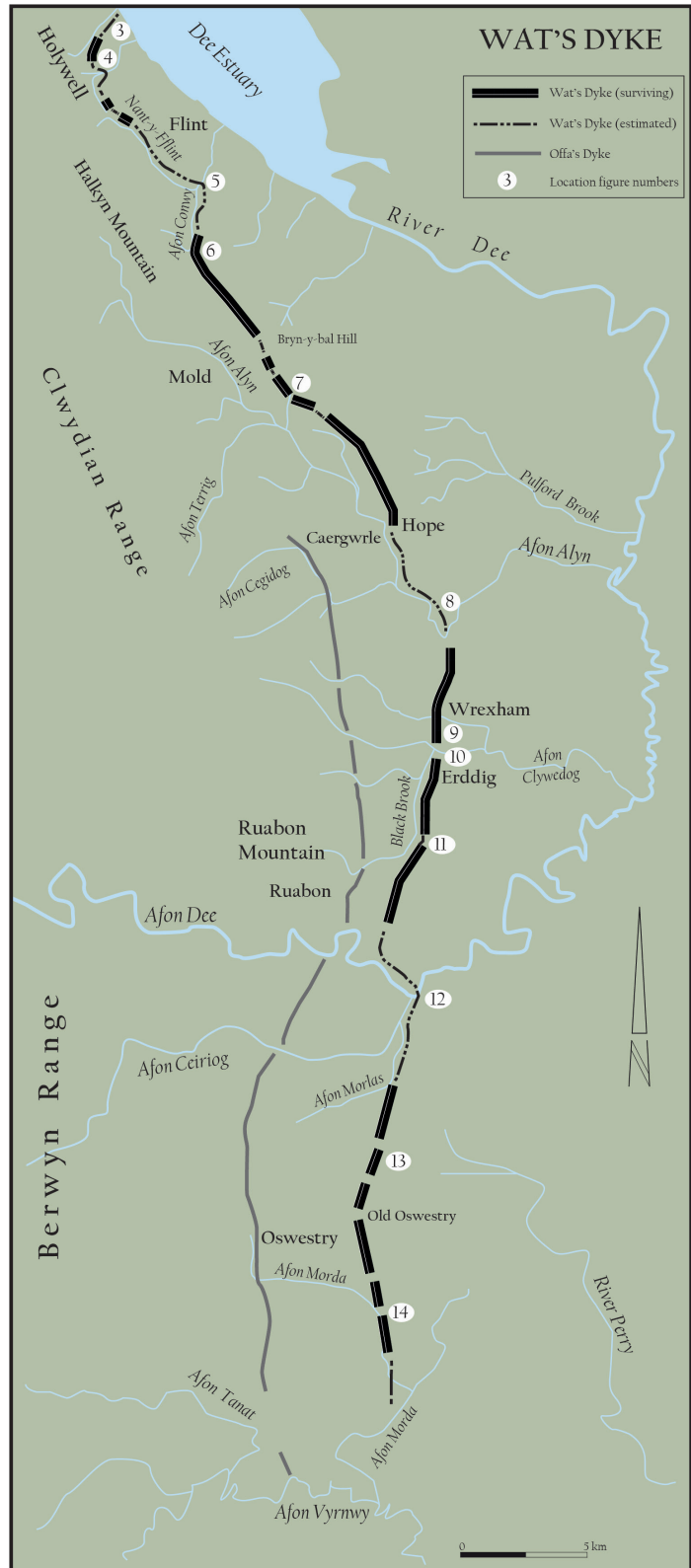


Figure 1: Sir Cyril Fox’s 1932 map of Wat’s Dyke redrawn and revised in response to David Hill and Margaret Worthington Hill’s fieldwork (Hill 1991, 2020; Worthington 1997; Worthington Hill 2019). The numbers indicate the figure numbers for the 12 locations discussed in depth in this article (Figures 3–14) (after Fox 1955: figure 117)



Figure 2: Wat's Dyke at Soughton Farm, Flintshire. 2a (above): looking north along the bank with the ditch to the left (west), SJ 236 677. 2b (below): looking south along the bank with the ditch to the right (west), SJ 237 677 (near point 6 on Figure 1, see also Figure 6), Photographs: Howard Williams, 2019



Fox 1955: 258).² The monument has been far more heavily damaged than Offa’s Dyke and it has received only one systematic published survey, by Sir Cyril Fox (1934, 1955: 258). Subsequently, a host of small-scale archaeological surveys and over 70 excavations have taken place (Worthington 1997; Worthington Hill 2020), however nearly all have been partial, inconclusive and/or have to date reached only interim publication (Hill 1991; Worthington 1997; Hannaford 1999; Malim 2007; Worthington Hill 2019; Hill 2020; Malim 2020a; but see Belford 2019). There has not been a systematic modern survey of Wat’s Dyke and only a single large-scale, open-area excavation of the monument using modern methods and techniques has reached publication: Gobowen, Shropshire (Malim and Hayes 2008).

Unsurprisingly, it is fair to say Wat’s Dyke remains a neglected and relatively poorly understood monument (Edwards *et al.* 2017: 25). Still, excavations have confirmed through scientific dating techniques (radiocarbon dating and Optically Stimulated Luminescence dating, OSL) that Wat’s Dyke was unquestionably built in one or more stages during the Early Middle Ages. While it remains possible it began life as smaller sections of earlier earthworks, it has been postulated that Wat’s Dyke took on its final form and significance *after* the late eighth-century construction of Offa’s Dyke during the early ninth century (Malim and Hayes 2008; Malim 2020a; Malim 2021).³

Fox’s survey and subsequent excavations have been able to show that the monument was carefully and consistently surveyed and constructed. It was installed along a straight trajectory across open country. Where encountering dramatic topography, it utilised breaks of slope on valley sides and the tops of steep valley slopes (Fox 1955: 261–267; Malim and Hayes 2008: 175).

Wat’s Dyke’s V-shaped ditch was cut to at least 2m deep in most places, perhaps even up to 4m in specific locales (Malim and Hayes 2008: 166–168, 177; Worthington Hill 2019: 64). The original scale and character of the earth-and-stone bank is difficult to determine with confidence, but it was at least 1.5–2m high in places, with a cobble stone core.

We can but speculate regarding its original appearance: the bank was perhaps revetted with stone or turf. A timber palisade may well have topped this revetment (Fox 1955: 253–259; Hill 1991, 2020; Malim and Hayes 2008: 166–168, 177; Worthington Hill 2019: 63; see also Ray and Bapty 2016: 183–184). The careful planting of thorn bushes and/or stakes in the ditch might have further enhanced its role as a formidable barrier (see Hill 1991, 2020).

An original berm has only been identified in one location: Mile Oak, Oswestry (Hannaford 1999; Malim and Hayes 2008: 177). As with Offa’s Dyke, a different mode of

² For an alternative reading of counterscarp banks, see a preliminary discussion by Williams (2016) for Big Wood, Erddig.

³ Fitzpatrick-Matthews (2020) queries the certainty of interpretation derived from the Gobowen OSL dates by Malim and Hayes (2008). See Malim (2021) for a response. New dates are eagerly awaited following excavations at Erddig (Wrexham) (see Belford 2019) and in the Greenfield Valley (Flintshire) by Clwyd-Powys Archaeological Trust.

construction was used in places where it overlooked steep valley sides (Worthington Hill 2019: 63; for Offa's Dyke builds, see Ray and Bapty 2016: 170–171).

Given our limited evidence, we can only speculate regarding the character and scale of the infrastructures originally associated with Wat's Dyke. These might have included bridges and causeways, gates, watchtowers, beacons, forts, routeways and settlements. We cannot discount such installations: no excavations have been conducted of a scale and quality to locate such dimensions had they been components of the Mercian frontier (cf. Ray and Bapty 2016: 228–251; Ray *et al.* 2021). Fox (1955: 261) identified at least two possible historic openings in Wat's Dyke, although it remains unclear whether these are original. We simply do not know how many gateways (if any) there were through the original monument and where they were situated.⁴

While Fox (1955) regarded Wat's Dyke as an intermittent or unfinished work, subsequent investigations lean towards the conclusion it was originally a near-continuous build running south between Basingwerk (Flintshire) on the Dee Estuary to join the Morda Brook near Maesbury (Shropshire) (Hill 1991, 2020; Hill and Worthington 2003; Worthington 1997; Malim and Hayes 2008: 147–149; Belford 2019; Worthington Hill 2019) (Figure 1). Excavations have revealed evidence for the possible re-cutting of the ditch even if there is no evidence that the bank was maintained or rebuilt (Malim and Hayes 2008: 169, 177). The scale and consistent character suggests it was a formidable obstacle that could have significantly impeded the movement of people and animals and was at least in part a military construction (Malim and Hayes 2008: 178; Grigg 2018). Whatever its original intended use, Wat's Dyke seems to have had some enduring influence on the Anglo-Welsh borderlands through the tenth, eleventh and twelfth centuries (Worthington 1997; Swallow 2016: 291–296; Worthington Hill 2019).

Wat's Dyke has received only sporadic broader scholarly attention. Recent work has considered its comparable morphology to Offa's Dyke, but also aspects of its placement that stand in contrast with its more westerly companion earthwork. Specifically, Wat's Dyke was built to join together a series of prehistoric fortifications, including Old Oswestry and Bryn Alyn hillforts and possibly other now-lost monuments such as a postulated prehistoric promontory fort later subsumed into the construction of the Anglo-Norman Erddig motte-and-bailey castle (Malim and Hayes 2008; Swallow 2016). The association with at least two wells dedicated to St Winifride, and the proximity to St Oswald's well might suggest that aspects of sacred geography might have factored in its placement too, although we cannot securely date the cults and dedications of these holy wells precisely (Fox 1955; Malim 2020a).

⁴ Fox (1955: 261) noted two demonstrably pre-modern gaps, one in Hope parish, Flintshire (between 7 and 8 on Figure 1), the other at Henlle Hall, Shropshire, (between 12 and 13 on Figure 1).

In all these regards, Wat’s Dyke’s lowland stance contrasts with Offa’s Dyke (Malim and Hayes 2008: 177; Ray and Bapty 2016: 23–25; Ray 2020). Furthermore, there have been new insights regarding its immediate landscape context, placement and viewsheds proposed which directly inform the study here because they reveal how the Dyke would have visually and materially dominated access to and along the Midlands plain (Murrieta-Flores and Williams 2017). Furthermore, Wat’s Dyke has been integrated into broader surveys and syntheses on early medieval linear earthworks and their potential military, territorial, socio-political, economic and symbolic functions and significances (Malim 2007; Bell 2012: 72–75; Grigg 2018: 38, 54–55, 64–83, 99). In addition, there has been recent attention to the heritage conservation, management and interpretation of the earthwork (Belford 2019; Swogger 2019; Williams 2020a; Swogger and Williams 2020, 2021). New work also sheds light on Wat’s Dyke’s broader significance in terms of public archaeology and heritage politics (McMillan-Sloan and Williams 2020; Williams 2020b).

Despite this attention, Wat’s Dyke has remained largely over-shadowed and neglected in favour of discussions of Offa’s Dyke (e.g. Hill and Worthington 2003: 161–163; Ray and Bapty 2016). Indeed, in broader surveys of the middle Anglo-Saxon kingdoms, the monument receives sparse attention and can get overlooked completely (e.g. Higham and Ryan 2013: 52–54; Hunt 2016: 76, 79d).

Rethinking Wat’s Dyke

Reconsidering Wat’s Dyke as a monument constructed to monitor and regulate mobilities, but specifically through careful placement in relation to movement over and along watercourses and other water features, we can entertain various scenarios and postures of deployment in relation to not only early medieval conflict but also in terms of long-distance communication routes and more localised quotidian routines of travel and resource exploitation. These might vary seasonally as streams and rivers rise and fall and wetlands expand and contract. Yet, by considering the linear earthwork as part of a ‘hydraulic’ frontier zone, integrated with both overland routes and routes along and across watercourses, I extend the suggestion of Sir Cyril Fox (1934; 1955: 252) that the southern end of Wat’s Dyke might constitute a canalised stream, a precursor perhaps to broader developments in later Anglo-Saxon hydraulic engineering (Blair 2007; Sayer 2009). Furthermore, I expand more explicitly on Tim Malim’s (2007) invaluable discussion of both Wat’s Dyke and Offa’s Dyke in relation to both land and water routes (see also now Malim 2020a and b). This approach encourages a more sustained evaluation of the relationship between linear earthworks and *flow* of water itself, but also how dykes configure *land flow* (Edgeworth 2011: 107–127; see also Fiocoprile 2021; Gibson 2021).

My approach regards linear monument as multi-functional. They cannot be considered as barriers built exclusively to impede and intercept armies and raiding parties. Equally they were not built merely primarily as a symbolic expression of territoriality or regal ideology and authority. Considering them to be ‘borderlines’ is also an anachronistic conception.

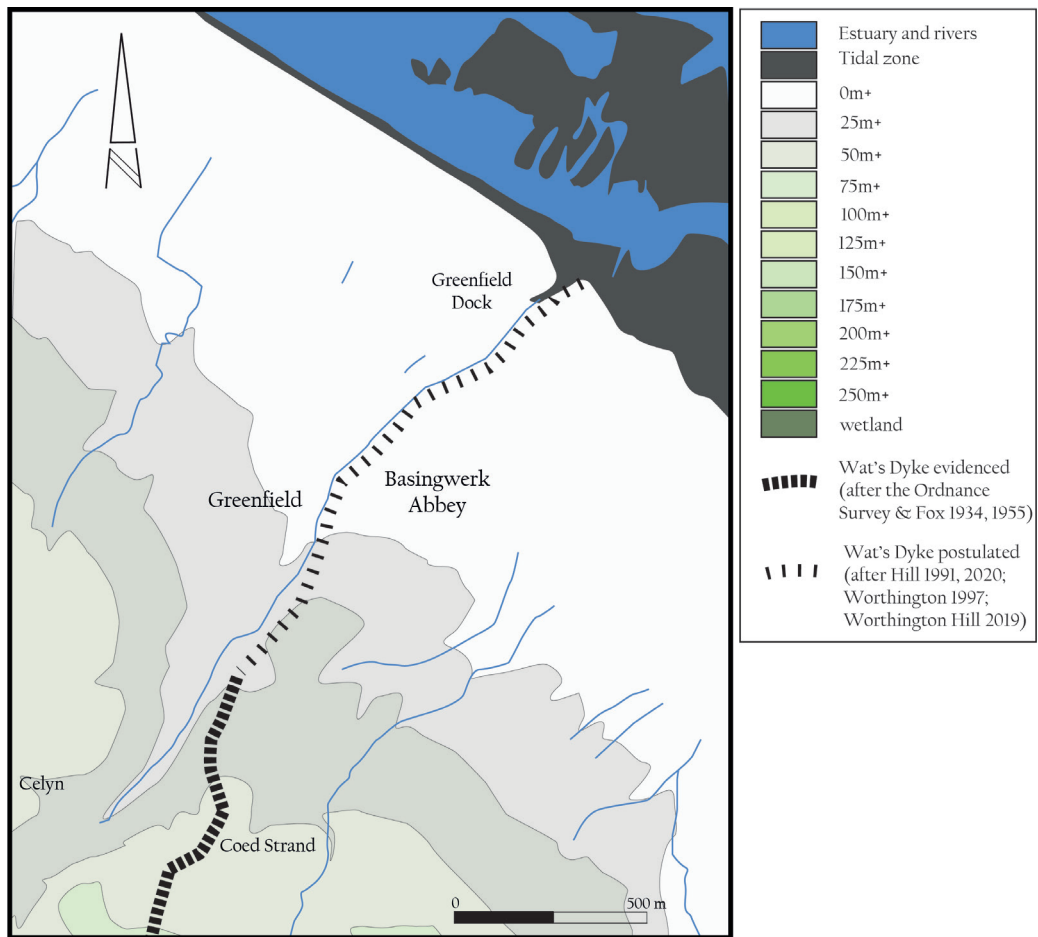
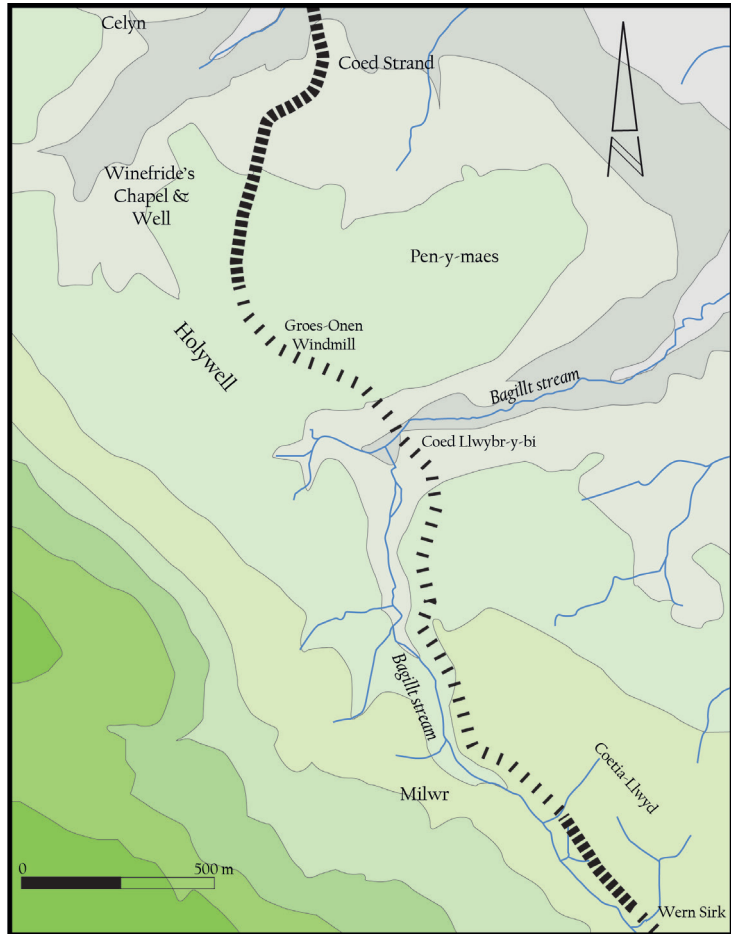


Figure 3: Wat's Dyke from Coed Strand to Basingwerk Abbey, Flintshire, SJ 195 775. The key also applies to Figures 4–14, in each case differentiating between Wat's Dyke 'evidenced', i.e. based on surviving earthworks recorded by the Ordnance Survey, Fox (1934, 1955) or subsequent fieldwork and those sections postulated but supported by largely unpublished fieldwork (see Hill 1991, 2020; Worthington 1997; Worthington Hill 2019; Hayes and Malim 2008)

In contrast to each of these contrasting stances, a topographical and specifically hydraulic investigation enhances our appreciation of how early medieval linear earthworks operated as components of broader zones of surveillance and controlling resources, trade and warfare. This is possible by focusing attention on both the localised landscapes around Wat's Dyke as well as longer-distance patterns of *flow*. In regards to the latter, I refer to its 'audience' as not only Mercian and Welsh, but encapsulating a range of British and Irish kingdoms and communities but also the western frontiers of Mercia's rival Anglo-Saxon kingdoms: Wessex and Northumbria (see also Swallow 2016).

To evaluate this hypothesis, I created (i) a new simplified set of topographical maps for 12 key stretches where Wat's Dyke is demonstrable from surviving earthworks and/or

Figure 4: Wat’s Dyke at the crossing of the Bagillt Stream at Coed Llwybr-y-bi, Flintshire, c. SJ 192 756 (for key, see Figure 3)



archaeological excavations, or else strongly suspected based on comparative analogy; (ii) a revised version of Malim’s (2007) regional map in order to show how Wat’s Dyke might have operated in relation to key land routes and watercourses; (iii) a map showing Wat’s Dyke in relation to the Irish Sea zone for the first time.

There are limitations to this approach. I do not attempt to evaluate the entire length of the extant monument as surveyed by Fox (1934; 1955), but to consider key points of interaction and intersection with watercourses in particular. Equally, given the relative sparsity of material cultures and identifiable early medieval sites of this borderland region (see Clarke 2020: 114–115), I do not attempt to systematically contextualise the earthwork in relation to the broader distribution of early medieval archaeology in the region: that would be for a wider investigation. An inevitable further challenge of this approach relates to preservation: Wat’s Dyke survives worst in lower-lying stretches where fluvial action as well as later agricultural, industrial and habitation has destroyed it. Still, this multi-scalar mapping exercise allows consideration of how the monument’s design and placement facilitated the observation and manipulation of biaxial flow of different scales of mobility in the early medieval landscape.

The broader implications for frontiers studies are worth identifying before we proceed. This investigation establishes the potential for future, fine-grained, fieldwork and analyses of Wat's Dyke's placement and landscape interactions (Belford 2019; see also Murrieta-Flores and Williams 2017) as well as the basis for future comparative work regarding the similarities and differences between Wat's Dyke and its longer sister-monument – Offa's Dyke – in comparable terms (see Ray and Bapty 2016; Ray 2017; Delaney 2021). In turn, this perspective provides groundwork for re-evaluating our broader understanding of early medieval linear earthworks' landscape affordances across the island of Britain and beyond, as well as prompting further consideration of linear features of other periods in 'hydraulic' terms during their design, construction, initial use and subsequent life-history (cf. Moore 2012, 2017; Symonds 2020; Fiocoprile 2021; Garland *et al.* 2021). I consider watercourses and wetlands as active components in how linear earthworks dominated and controlled mobility and resources in specific localities, over the middle-range and over long distances, not simply as convenient and 'obvious' frontier lines (cf. Breeze and Dobson 2000: 15–16; Breeze 2019: 92–117).⁵

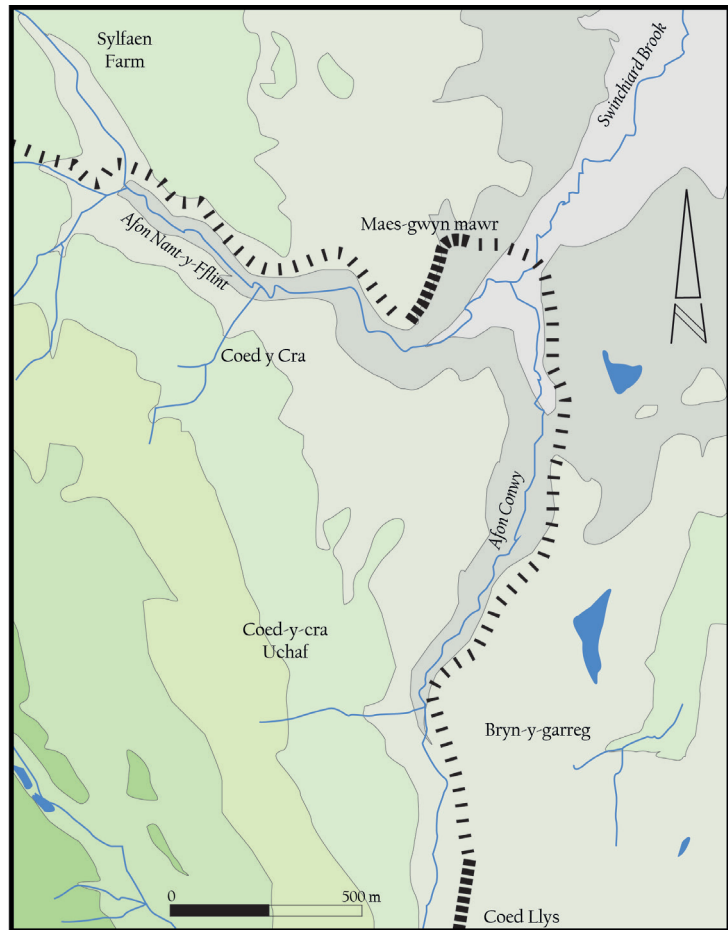
Following watercourses and wetlands

Wat's Dyke utilised watercourses comprehensively. Indeed, Sir Cyril Fox believed that Wat's Dyke was constructed with 'great skill' to utilise ravines in order to reduce the length of 'artificial frontier line' for around half its full extent (Fox 1955: 227, 271, 283). Notable instances of Wat's Dyke's demonstrable and postulated 'tactical' (Fox 1955: 260) use of valley-sides and steep valley slopes are (from north to south):

- the Greenfield valley to Coed Strand (Figure 3; Fox 1955: 228–229);
- from Coed llwybyr-y-bi at the crossing of the Bagillt stream along the Bagillt Stream and the Afon Nant-y-Fflint to the confluence with the Conwy (Figures 1, 4 and 5; Fox 1955: 229);
- the Conwy valley from the Swinchiard Brook south to Coed Llys and Coed Uchaf (Figures 1, 5 and 6) (Fox 1955: 230);
- The Black Brook, Padeswood Pool and associated marshes beside the Alyn at Padeswood (Figure 7; Fox 1955: 234–235);
- the River Alyn (Figures 1 and 8; Fox 1955: 237–238);
- the Clywedog north of Erddig (Figures 9 and 10; Fox 1955: 239–241);
- the Black Brook from Erddig south to Clwt Cottages (Figures 1, 10 and 11; Fox 1955: 241–243);
- the Afon Dee and the Afon Ceiriog at their confluence (Figure 12; Fox 1955: 245–246);
- the Morlas Brook where it joins the Ceiriog (not in one of the twelve sections selected for this study, but an integral part of the stance of Wat's Dyke postulated to follow the tops of scarps overlooking the Dee and Ceiriog: Figure 1; Fox 1955: 245–246);

⁵ For discussions of middle-range mobility, see Gibson 2021.

Figure 5: Wat’s Dyke at the confluence of the Afon Nant-y-Fflint and the Afon Conwy near Maes-gwyn mawr, Flintshire, c. SJ 233 712 (for key, see Figure 3)



- Afon Morda, from Pentre-coed southwards to Maesbury (Figures 1 and 14; Fox 1955: 251–253).

This reconstruction incorporates long stretches where the monument has not demonstrably survived and its former presence might be doubted. Still, in overall terms this identifies and confirms Fox’s (1934, 1955) evaluation of the careful placing of the monument in the landscape. Put together, these fluvial stretches of Wat’s Dyke constitute 32.3km of the estimated 64km length of the original monument (50.5%). While this evaluation takes an optimistic and maximal view on the original length of the monuments and much cannot be confirmed regarding their precise line and character, it is evident that, where possible, Wat’s Dyke utilised watercourses as integral dimensions of their courses. While bodies of water in this landscape were far from impassable barriers (see Hill 1991, 2020), few, if any, would have been navigable, and then only to coracles. By impeding the people and animals crossing them, but still allowing movement across (and possibly along, with the aid of a coracle) at certain points, the streams and rivers unquestionably marked critical routes of overland movement through the landscape. By taking these stances on the tops of slopes or significant breaks of slope on valley sides, Wat’s Dyke was situated to visually dominate, observe and

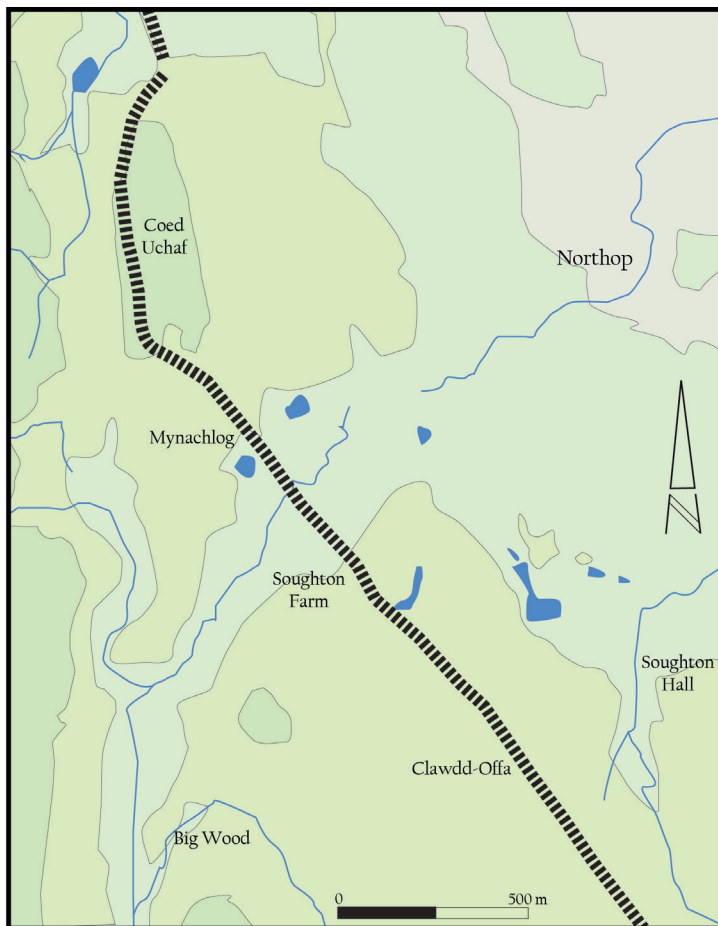


Figure 6 (left): Wat's Dyke near Mynachlog, Northop, Flintshire, SJ 234680 (for key, see Figure 3)

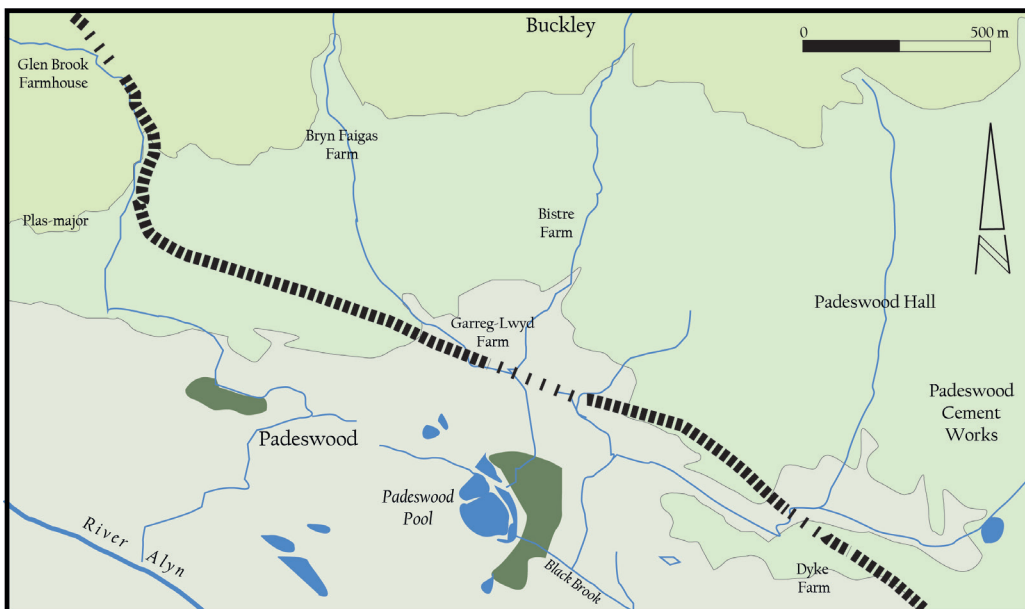
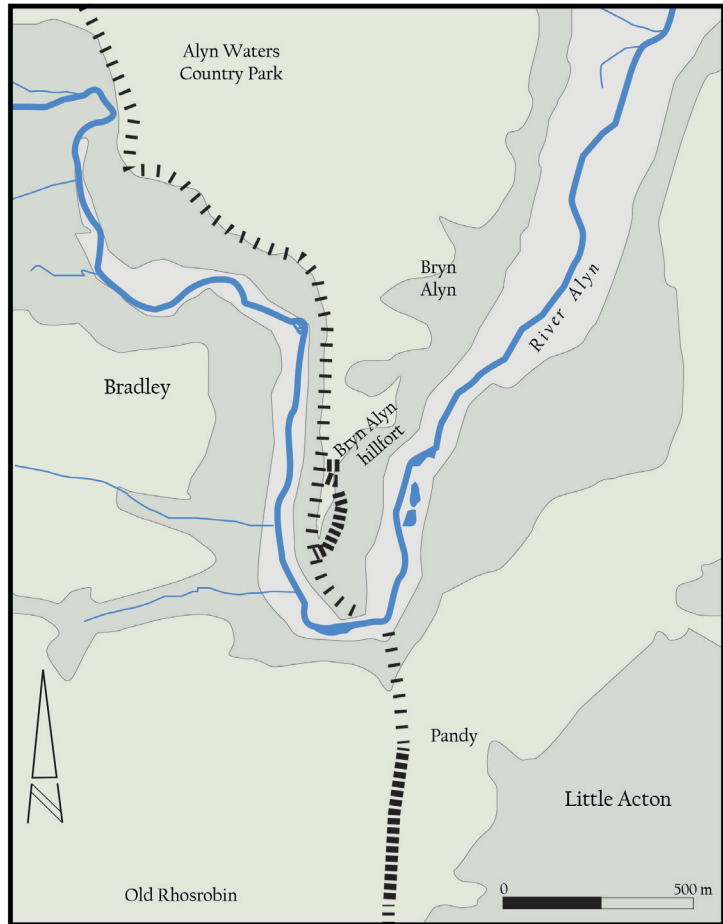


Figure 7 (below): Wat's Dyke around Garreg Lwyd Farm, Padeswood, Flintshire, SJ 274 624 (for key, see Figure 3)

Figure 8: Wat’s Dyke running along the eastern scarp about the River Alyn to Bryn Alyn hillfort, Wrexham, SJ 331 535, and then crossing the Alyn and running south up-slope through Pandy (for key, see Figure 3)



thus control movement both along and across these valleys. In this way the earthwork instigated biaxial control of the landscape by working in conjunction with the streams and rivers, and also by monumentalising the entire valley slopes overlooking watercourses.

The comparison with the far longer Offa’s Dyke is instructive: a monument constructed anywhere between 145km and 200km in length (see Ray 2020; Delaney 2021). The monument’s relationship with bodies of water awaits systematic future investigation, and for this study it is difficult to estimate precisely. Still, as a crude estimation, it seems a similar overall fraction to Offa’s Dyke overlooked valleys and ran parallel to watercourses: c. 40km of the c. 145km course where the monument survives (c. 27% of the monument’s length) (Ray and Bapty 2016: 1), although this proportion increases significantly if rivers like the Severn and Wye are postulated to have served as proxies to the frontier in a comparable fashion to that envisaged in the case of Wat’s Dyke (Ray and Bapty 2016: 145–146, 152–154). This also applies for Offa’s Dyke north of the crossing of the Vyrnwy where the two earthworks run broadly parallel to each other over long distances. No more than 8.5km of the c. 37km stretch of Offa’s Dyke between Llanymynech Rocks (on the Shropshire/Powys border) and Coed-talon Banks (near Treuddyn in Flintshire) follows a valley (in other words around 23% of

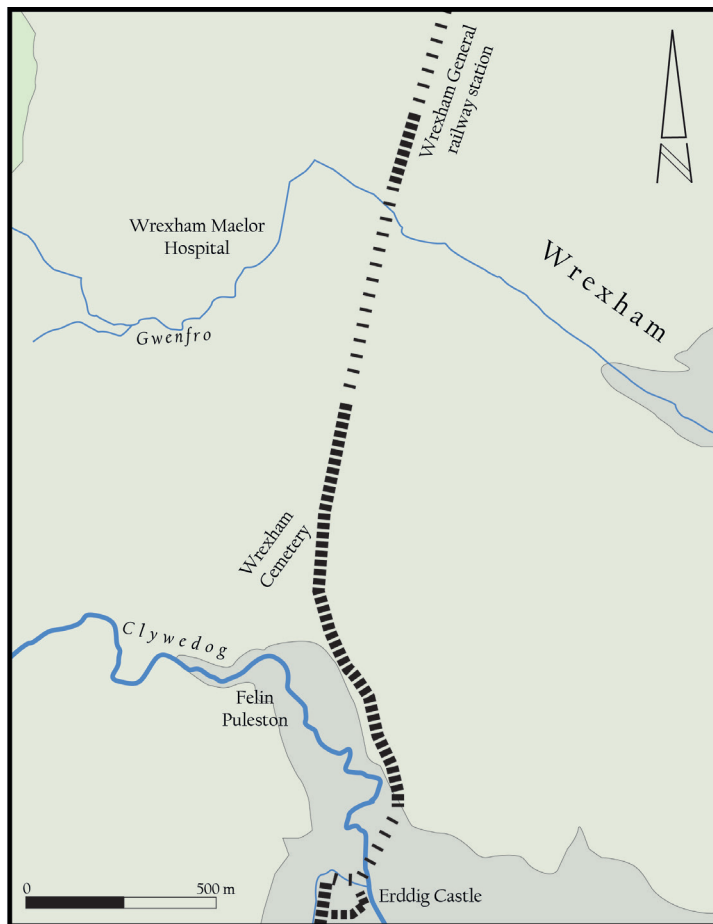


Figure 9: Wat's Dyke crossing the Gwenfro and joining the scarp overlooking the Clywedog before crossing the Clywedog to follow the Black Brook. Today the Dyke runs past Wrexham General Railway Station and Wrexham Cemetery SJ 327 495 (for key, see Figure 3)

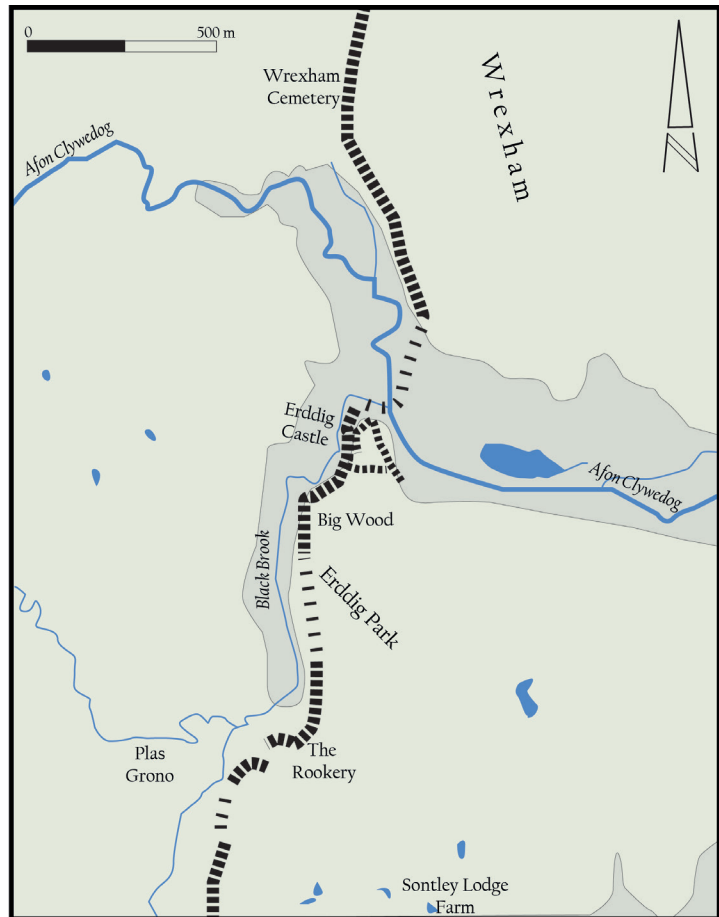
Offa's Dyke's northern stretch overlooks river valleys). Thus, by adopting a stance at the base of the Welsh hills, Wat's Dyke is far more efficient in utilising valleys than Offa's Dyke to its west (see also Murrieta-Flores and Williams 2017).

It is still unclear which earthwork was built first and whether they were coterminous as active monuments (Ray 2020). Still, it is evident that Wat's Dyke achieved a relationship with its topography comparable to that established by Offa's Dyke along the Wye in particular, while the northern stretches of Offa's Dyke did not. This underpins Fox's determination that 'Wat's Dyke is, in its zone, a much more reasonable frontier against the Welsh than Offa's dyke, much easier to hold' (Fox 1955: 275; see also Malim and Hayes 2008: 177 who regard it as a 'tactical retreat' from the line of Offa's Dyke, postulating Wat's Dyke as later). In the context of this study, this contrast also articulates the enhanced significance of Wat's Dyke's watery interactions.

Crossing and blocking watercourses

The invaluable and detailed observations by Ray and Bapty (2016), affords us a more detailed appreciation of how Wat's Dyke's larger companion, Offa's Dyke, was placed in

Figure 10: Wat’s Dyke at Erddig Castle, Wrexham, SJ 327 486, before heading through Erddig Park along the top of the scarp overlooking the Black Brook to The Rookery (for key, see Figure 3)



relation to larger watercourses, seemingly in contrast to its treatment of smaller streams and brooks (Ray and Bapty 2016: 147–148, 151–156). For the largest rivers, Offa’s Dyke crosses on its route (Dee, Severn and Wye), the Dyke follows the river for significant stretches; perhaps the rivers *became* the monument (Ray and Bapty 2016: 129–131). For medium-sized rivers such as the Lugg and the Clun, the Dyke heads for specific crossing points, often adapting its course to overlook approaches with ‘oblique oversight’ and thus overlooking and ‘stopping up’ the valleys (Ray and Bapty 2016: 137–142). For the numerous smaller rivers and streams it crossed, Offa’s Dyke seemed to make little compromise to its longer-distance stance, crossing perpendicular to the watercourse (Ray and Bapty 2016: 136). However, impeded by the earthwork’s poor survival, this behaviour awaits detailed mapping and analysis in a systematic and comparative fashion for Wat’s Dyke. Still, the available evidence hints that Wat’s Dyke operated in a comparable fashion to the strategies of placement identified by Ray and Bapty for Offa’s Dyke. Wat’s Dyke was positioned to frame and dominate points where it crossed and blocked major watercourses and merging with marshes around the confluence of the Morda and Vyrnwy to its south and the Dee Estuary to the north. In this regard, it is important to differentiate between ‘major’ rivers in terms of the scale of the watercourse and ‘major’ channels in terms of their significance

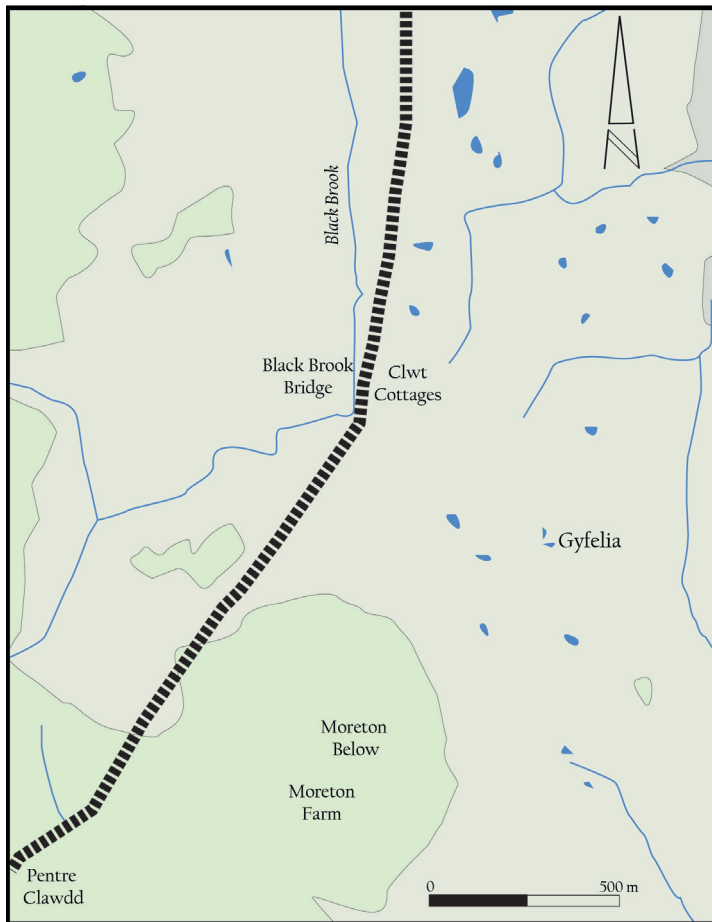


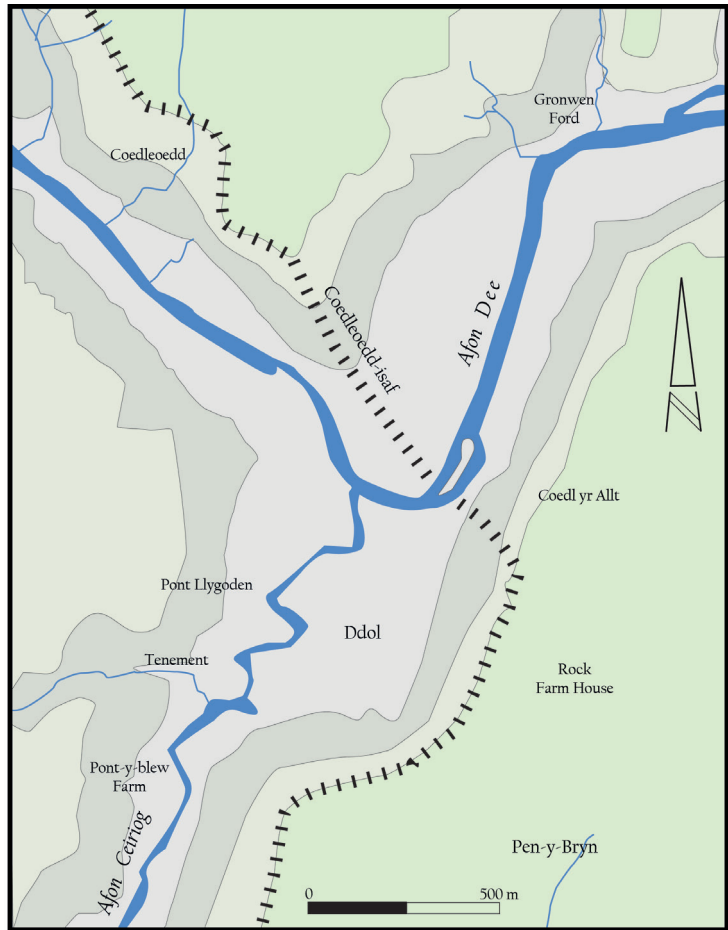
Figure 11: Wat's Dyke at Clwt Cottages, Wrexham, SJ 321 456, to the north set back from, but parallel to, the Black Brook, to the south departing the watercourse and running upslope to Pentre Clawdd (for key, see Figure 3)

as likely routes of movement through the landscape: I refer to the latter as crucial in landscape terms. With this distinction in mind, I would identify five critical locations where Wat's Dyke's course blocked major watercourses. From north to south these are:

- Groes-Onen windmill, Holywell overlooking the Bagillt stream (Figure 4; Fox 1955: 229);
- The confluence of the Afon Nant-y-Fflint and Afon Conwy to form the Swinchiard Brook (Figure 5; Fox 1955: 230);
- Bryn Alyn hillfort overlooking the River Alyn (Figure 8; Fox 1955: 238);
- The confluence of the Clywedog and Black Brook at Erddig Castle (Figure 10; Fox 1955: 241–242);
- The confluence of the Dee, Ceiriog and Morlas (part-included in Figure 12; Fox 1955: 245–246).

Two of these major blocking locations are asymmetrical in regard to where the Dyke joins the valley from one direction and then follows it in another (Bagillt and Bryn Alyn: for the latter, see also Swallow 2016: 311); in the other three cases there is more symmetry in that

Figure 12: Wat’s Dyke’s postulated course at the confluence of the Dee and Clwydog, c. SJ 319 394 (for key, see Figure 3)



the Dyke follows each waterway before crossing at or just below their confluence. Sadly, in each case, details of the course of the Dyke can only be postulated rather than fully charted on the ground: in the valleys themselves traces of the Dyke will have been long washed away by centuries of colluvial and fluvial action. Still, each location relates to a shift in the orientation of the river or stream course and in three cases, to confluences of significant watercourses. For Bryn Alyn, the prehistoric promontory fort may well have been not only utilised in the line of Wat’s Dyke, but served as a strategic lookout point and assembly/mustering place (see Swallow 2016: 310–311). In these locations, Wat’s Dyke traverses the high ground upon one or both sides of the valleys in order to dominate traffic both along and across its line. For the confluence of the Afon Nant-y-Fflint and Afon Conwy, it seems that Wat’s Dyke performs an ‘angle-turn’ (Ray and Bapty 2016: 234–240) and heads north-east before dropping down to block the Swinchiard Brook (although we cannot trace the detail of its line here) (see also Swallow 2016: 310).

At Court Wood north of its crossing to Erddig, Wat’s Dyke follows the top of the scarp overlooking the Clywedog before blocking its confluence with the Black Brook (Figure 10). Indeed, this can be seen as part of a more complex set of micro-stances adopted by

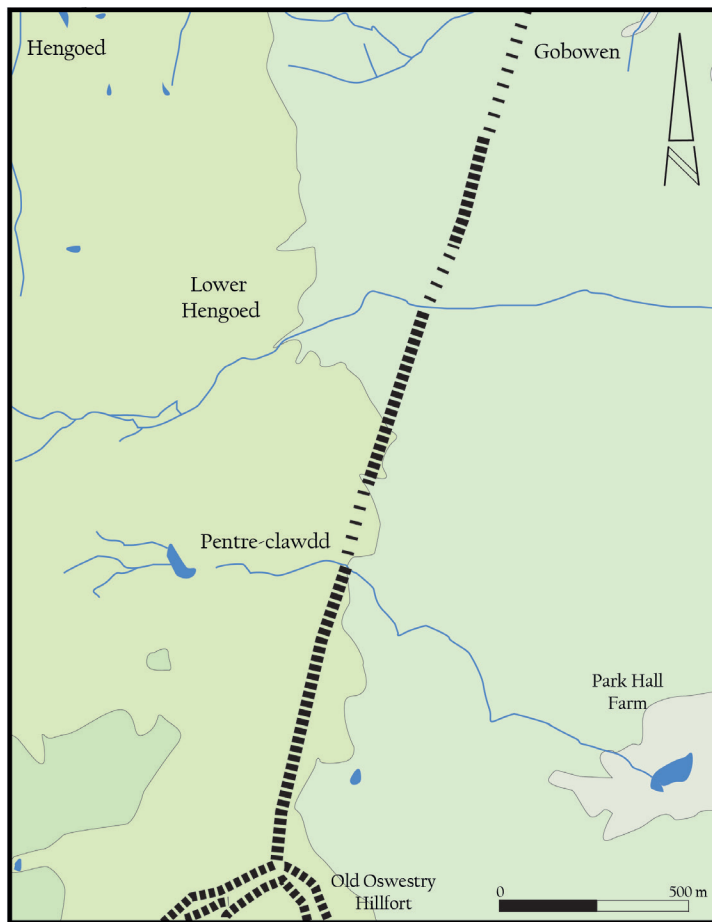
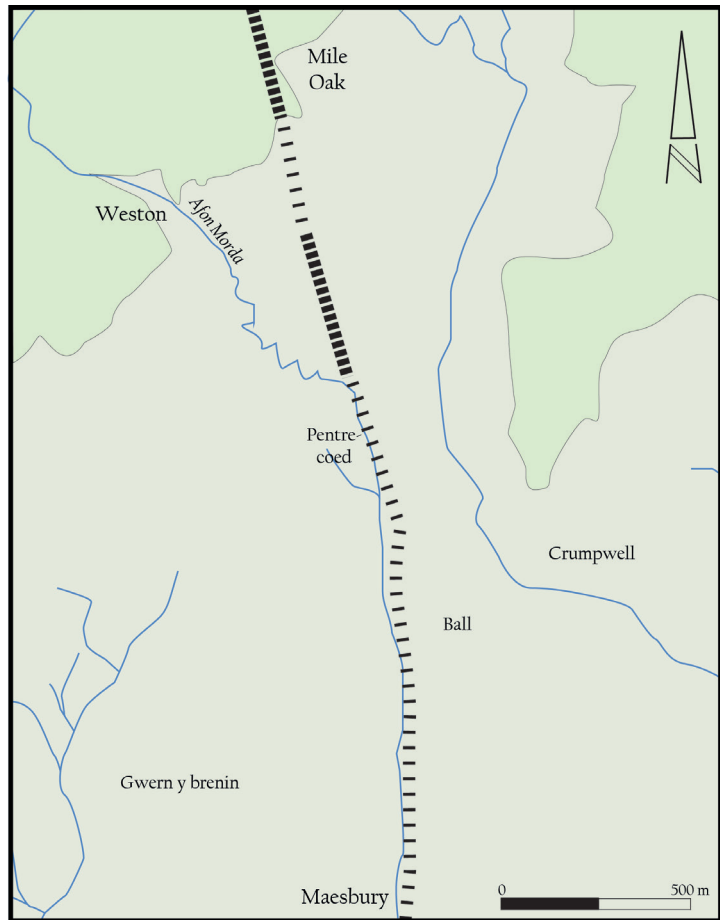


Figure 13: Wat's Dyke between Gobowen and Old Oswestry Hillfort at Pentre-clawdd Farm, SJ 298 320 (for key, see Figure 3)

Wat's Dyke to dominate not only the confluence of the Black Brook and the Clywedog, but also the confluence of the Glanyrafon Brook and Black Brook to the south at The Rookery (Figure 10). Clearly this relationship with the two confluences is significant since, to the south, Wat's Dyke behaves in a contrasting fashion, adopting a relatively straight alignment set back from the Black Brook as far as Clwt Cottages. Meanwhile, for the largest watercourses and confluences, the Morlas, Ceiriog and Dee, it is postulated that the Dyke followed the tops of the valley slopes facing west over the valleys of all three watercourses in succession (Figure 12; see Worthington Hill 2019: 66–68). In each instance, Wat's Dyke shifts its alignment to enhance its visual and physical domination of the confluences and watercourses, again controlling both movement biaxially: along and across its line.

One can imagine such situations as possible locations of complex installations to observe and control people and livestock traversing the valleys and wishing to cross the frontier at gateways, although inevitably no archaeological evidence remains of such features (cf. Ray and Bapty 2016: 244–250). The possibility that Bryn Alyn hillfort ramparts might be reused in this regard is a hypothesis worthy of further consideration, countering Fox's

Figure 14: Wat’s Dyke between Mile Oak and Maesbury at Pentre-coed, SJ 303 269 (for key, see Figure 3)



assertion that associations with prehistoric fortifications were merely coincidence. By the same token, Swallow (2016: 308, 310) has argued for a longer-term strategic role for the Nant-y-Fflint–Conwy confluence and the Glanyrafon–Black Brook/Black Brook–Clywedog confluences.

But what of smaller watercourses? Ray and Bapty (2016: 136–137) postulate that Offa’s Dyke tackled these with barely a deviation in its path. Yet, for Wat’s Dyke at least, there is striking evidence to counter this argument: the earthwork carefully adjusts its approach to even the smallest of streams. This is demonstrable at the Northop Brook between Mynachlog and Soughton Farm (Figure 6) and in the series of small streams that form the Black Brook and then join the Alyn at Padeswood (Figure 7). In the former case a perpendicular crossing of the stream is achieved that would have been compromised had the Dyke run further south-west. In the latter, the line of Wat’s Dyke is carefully aligned so as to minimise the number of valley-side streams it must negotiate. The long-distance alignment of Wat’s Dyke to cross the Gwenfro is a further example (Figure 9). The smaller streams at Gobowen, Lower Hengoed and Pentre-clawdd north of Old Oswestry hillfort further illustrate this stance: in each case had the Dyke been aligned

eastwards or westwards of its chosen course, its perpendicular crossing of the stream would have been compromised (Figure 13).

The careful long-distance adjustment of orientation at Clwt Cottages is an interesting instance that does not block a watercourse at all, but relates to these other strategies of careful interaction with streams and rivers. Namely, Wat's Dyke shifts its alignment at a very precise point here, facing off against the Black Brook's own shift in orientation at a small natural tump which, as with more dramatic locations, might have retained significance as a watch tower or fort (Figure 11). This low-lying and subtle use of topography complements the other instances and shows the overall care and attention to topography, and specifically to the location of watercourses.

Despite this similarity in overall placement to Offa's Dyke, the contrast between the two monuments north of the Vyrnwy is striking in terms of the number of watercourses blocked by each monument. Offa's Dyke crosses 12 streams and two rivers (the Dee and the Ceiriog), meaning that on average Offa's Dyke cuts across a watercourse every 2.6km where it survives in this northern set of alignments. In contrast, while Wat's Dyke cuts across large and small watercourses as outlined above, and a similar number of 10, this averages only one every 5.5km (Figure 1). Thus, Wat's Dyke not only works far more efficiently to follow river valleys and thus utilise watercourses and valley slopes as integral parts of its design, far fewer watercourses are crossed by the monument. These confluences and crossings were likely the principle bottlenecks for traffic, and thus their control was strategic in military, political and socio-economic terms, from grazing livestock (cf. Halkon 2013: 57) to visually staging oversight for surveillance, tactical advantage and intimidatory control (Moore 2012; Ray and Bapty 2016: 139–142).

The key finding is that Wat's Dyke crosses fewer watercourses, and asserts greater control over them, than Offa's Dyke achieves in this landscape. Having explored the localised hydraulics of Wat's Dyke along its course, we need to now shift the scale of our discussion to address Wat's Dyke's broader fluvial interactions.

Wat's Dyke from 'sea to sea'

The maritime links of Wat's Dyke have been repeatedly overlooked. Fox certainly noted the importance of Wat's Dyke in linking the southern shore of the Dee estuary to the Middle Severn via the marshes around the course of the Morda and Vyrnwy which served as natural boundaries, thus dividing the English Midlands from the hill country of North Wales (Fox 1955: 227, 261, 271). Fox regarded these natural defences as protecting 'the flanks' of the monument, but I would contend they are integral, rather than ancillary, to its function and significance as part of a hydraulic frontier zone (Figure 15). Specifically, Wat's Dyke impeded transverse movement but also connected and controlled lateral movement along and behind its line between the watersheds of the Severn and the Dee (cf. Bell 2012; Ray and Bapty 2016: 241–242; Grigg 2018; see also Halkon 2013: 54; Ladd and Mortimer 2017; Fioccaprile 2021).

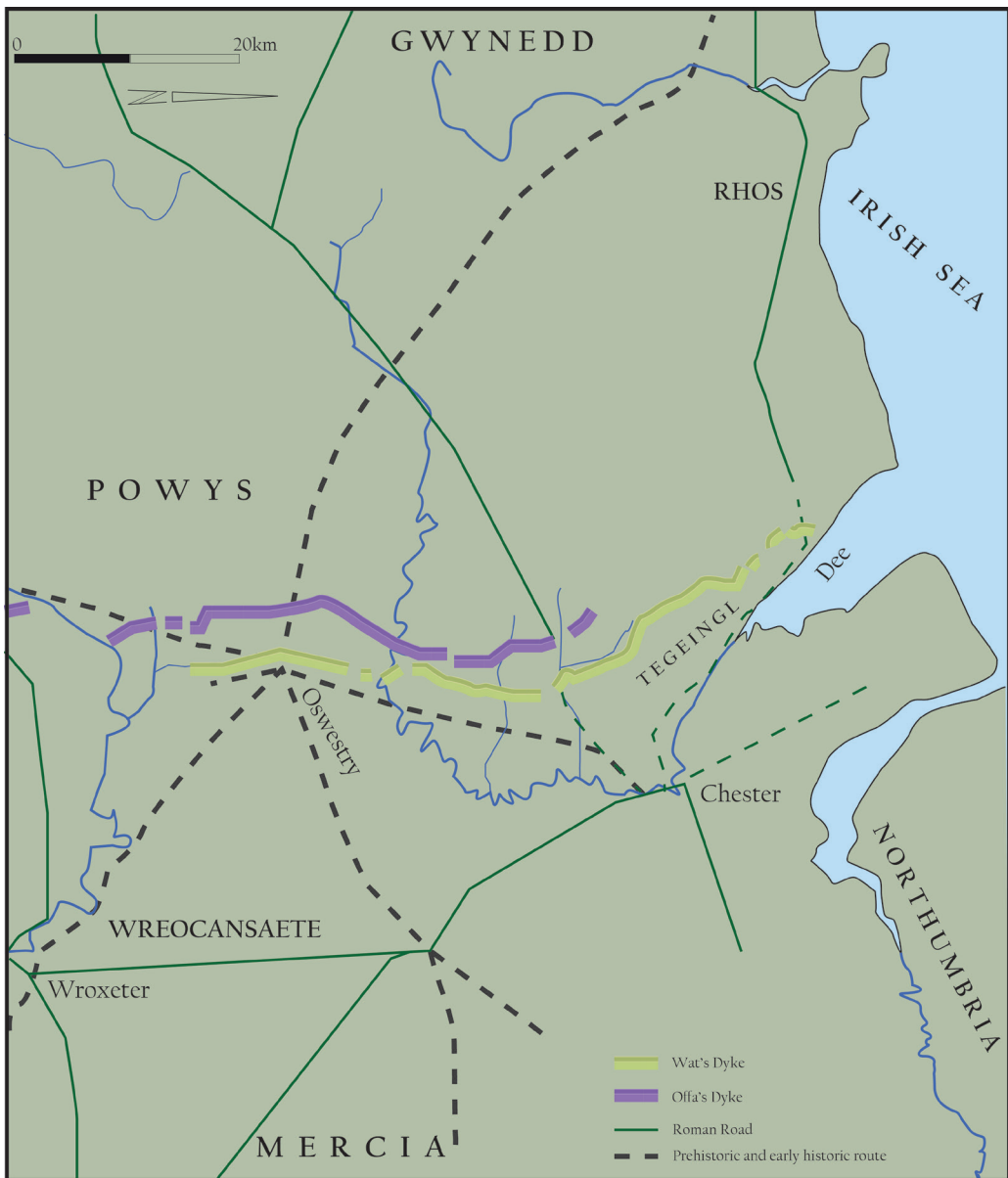


Figure 15: Wat's Dyke mapped alongside Offa's Dyke in a regional context, with Roman roads (adapted after Malim 2007, figure 18; Malim 2020a) and possible prehistoric and early historic routes (after Malim 2020c)

At Basingwerk, Wat's Dyke might have not only run down to the Dee Estuary but projected out into it, thus providing a mole or jetty to shelter and moor seafaring vessels as well as preventing unobserved circumvention of the frontier work within the tidal zone. Wat's Dyke can thus be postulated as a transshipment point for traded goods and travellers of all sorts, as well as a base for patrolling the Dee Estuary against seaborne raiders. While the nature of the 'fortification of the people of Basa' (Basingwerk) is

unclear, the idea that a Mercian elite residence or fortification was situated here at the northern end of Wat's Dyke has long been surmised (Fox 1955: 228–229).

Likewise, at the far southern end of Wat's Dyke, we have already encountered the arguments of Fox (1955: 251–253), later expanded by Worthington Hill (2019: 64), postulating that the monument might have extended south to Newbridge and even further south to Lower Morton as a canal extending through the marshland of the Morda and Vyrnwy confluences. Terminating in this watery environment, Wat's Dyke again not only controlled west–east movement but also facilitated communications and north–south transshipment between the Severn and Dee watersheds. Wharfs and other installations can only be speculated at such key nodes as at Basingwerk and Maesbrook (cf. Sayer 2009).

While the status and character of habitation in Chester before the tenth century remains unclear (Mason 2007: 57–72), both terminuses of Wat's Dyke might have worked in tandem to control traffic along the lower Dee river past the former legionary fortress where a possible Mercian minster church was established prior to the establishment of the burh in the early tenth century. Seen from these riverine perspective, Wat's Dyke was effectively a monument which dominated, blocked but also managed mobilities throughout the region (Figure 16).

Understanding Wat's Dyke's control of 'land flow' (see Edgeworth 2011) is also necessary. Malim (2007: 25) described Wat's Dyke as running 'along the edge of the Midland Plain... in straight sections between survey points connecting strongholds and important known places along the way...'. This very much follows Fox's evaluation, and Malim counted six or seven hillforts or strongpoints in its route (Malim 2020a: 145–146). In terms of communication routes, Malim (2007: 27) believed that prehistoric and Roman routeways would have been maintained with controlled access points through both linear earthworks, one example of which may have been Old Oswestry hillfort (Malim 2020c). He thus reasonably speculated that a network of military controlled routeways were connected to Wat's Dyke, less to keep the 'Welsh out of Mercia, but instead ... to control the Welsh coming into Mercia!' and thus it is as much about taxation of rich mineral resources and other commodities of the region as preventing Welsh raids. What Malim did not consider is the strategic significance of simultaneously guarding north–south routes over watersheds as controlling west–east movement across the line of the dyke. While in a recent study Malim suggested Wat's Dyke might have had an earlier (prehistoric) origin as a boundary, and considers the watercourses as part of the barrier role of the monument, he only briefly discusses ancient routeways in relation to the earthwork and not only in a transverse fashion but also between the Severn and Dee estuaries, with the strongholds as older points of convergence for these routes (Malim 2020a: 154, 156).

Bishop Asser, writing the biography of King Alfred of Wessex, defined Offa's Dyke as running from 'sea to sea'. For Offa's Dyke, debates continue to rage on the accuracy of

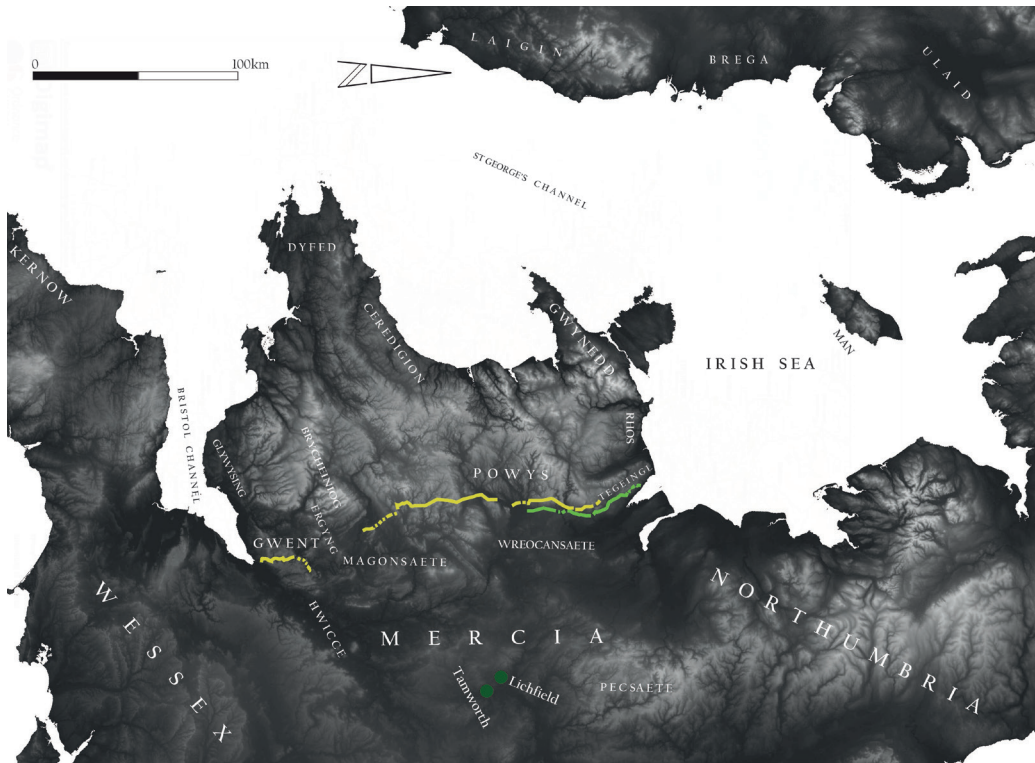


Figure 16: Wat's Dyke (green) and Offa's Dyke (yellow) set in a broader eighth/early ninth-century western British context showing their relationship with the Anglo-Saxon kingdom of Mercia. The map also shows some of Mercia's constituent western territories (Wreocansaete, Magonsaete and Hwicce), perhaps independent kingdoms in their own right to the early seventh century. Mercia's British (including Powys and Gwent) as well as Anglo-Saxon (Northumbria and Wessex) neighbours are represented, as well as a broader Irish Sea and Bristol Channel zone of interaction from Cornwall in the south, eastern Ireland to the west, and Man, Cumbria and south-west Scotland to the north

this statement (see also Ray 2020), yet for Wat's Dyke it was most certainly true in practical and conceptual terms. For while Wat's Dyke most certainly did not run 'from sea to sea' as a bank and ditch, when mapped in relation to Blair's (2007) 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 'hydraulic frontier' of 'flow' over land and water (see also Oksanen 2019). The entire construction of these monuments appears to be about connecting the sea and 'land flow' between two of the island of Britain's major water catchments: the Dee and the Severn.

David Griffiths (2009; see also Griffiths 2010: 16–20) is one of the rare commentators to look before the Viking Age at the Irish Sea zone and consider its beach markets in relation to more localised, as well as long-distance, maritime networks. Considering Wat's Dyke and Offa's Dyke in relation to these maritime, estuarine and riverine communications

provides a better understanding of the functions and significance of the monuments as to do with asserting and projecting Mercian power and authority, economic and religious influence not only over the Welsh but also in relation to Mercia's two great Anglo-Saxon rivals (Northumbria and Wessex) and their shared western British and Irish neighbours (Figure 16). In other words, Mercia's west-facing linear earthworks were less about relationships between 'England' and 'Wales' in the eighth and early ninth centuries, as between Mercia and the Irish Sea region more broadly (cf. Griffiths 2010: 20; Swallow 2016).

Discussion: linear earthworks and water

Previous work on linear earthworks has often recognised their careful topographical placing, exemplified most recently with Ray and Bapty's (2016) discussion of Offa's Dyke's long-distance stances in relation to major valleys and rivers, and localised strategic placement in relation to hills and valleys. Yet seldom have linear monuments been evaluated in any detail in terms of their relationship to wetlands, watercourses and watersheds. Notably, the distance and complex terrains negotiated by Britain's longest early medieval linear earthworks – Offa's Dyke and Wat's Dyke – has hindered more than cursory attention to their relationships with different wetlands, streams, rivers and estuaries, let alone the postulation of potential design features and placements intended to control and manage water.

With the exception of implausible pseudoarchaeological theory that the entire length of Offa's Dyke and Wat's Dyke were prehistoric canals (critiqued by Fitzpatrick-Matthews 2020), the precise relationship of early medieval linear earthworks with watercourses and water management has received scant attention. One rare exception was Sir Cyril Fox's postulation that the southern end of Wat's Dyke was canalised as far as the River Morda (Fox 1955: 252–253). Later, Squatriti (2004) considered Offa's Dyke's environmental impact, its effect on the 'ecologies and economies' of its surroundings, including impact on the hydrology of smaller streams (Squatriti 2004: 42), enhancing cultivability through increasing run-off and lowering the water table, thus influencing existing land-use and creating new relationships with the land. Large-scale woodland clearance associated with the building of the dykes to ensure the kinds of visibility and surveillance envisaged by both Hill and Worthington (2003: 113–128) and Ray and Bapty (2016: 122–163) might have likewise affected the hydrology. Ray and Bapty go further, specifically suggesting that Offa's Dyke might have deliberately co-opted and re-routed watercourses; in the case of the Casob stream, it might have been realigned by the earthwork where Offa's Dyke crosses the Lugg, operating like a 'low dam' across the valley' (Ray and Bapty 2016: 136). Moreover, it has long been recognised that both Offa's Dyke and Wat's Dyke broadly delineated contrasting ecological zones between uplands and lowlands, intervening with long-term patterns of interconnectivity between them, including transhumance practices and moving upland products to lowland consumers – 'slicing through the symbiotic ties between lowland and upland economies ...' creating a

redefinition of how ‘local resources were allocated in the frontier zone’ (Squatriti 2004: 47; see also Malim 2007). Rivers and streams, marshes and fen, estuaries and the sea, could operate in relation to linear earthworks as zones of exploitation and habitation as well as both lines of communication along their banks and potentially as barriers to impede movement. In this regard, we must understand the effects and affects of linear earthworks also in terms of hydraulic power (mills) and resources (watering livestock, fishing etc.) (see also Sayer 2009).

Yet despite these observations, the precise and detailed relationship between dykes and watercourses has received limited attention. Partly this is because we have so few sections of these linear earthworks preserved in low-lying locations: the relationships with watercourses and wetlands are often lost to us due to over a millennium of fluvial action, not only erosion but the accumulation of colluvium and alluvium. Likewise, hardly any of the modern interventions into these monuments have explored their riparian and other low-lying associations, targeting instead the positions of dykes on higher ground. This is because the best-surviving sections of both Wat’s Dyke and Offa’s Dyke are in upland zones away from watercourses and wetlands, which has seduced archaeologists and the wider public into considering their hydraulic association as ancillary at best (cf. Halkon 2013: 52–59). Indeed, many shorter dykes survive across ridges, bisecting interfluvial spurs and valley-sides and thus seem to be, by nature, disconnected from water (Hankinson and Caseldine 2006). Together, these factors of preservation and later landscape transformation have hindered and discouraged close considerations of the hydraulic dimensions of the monuments. Equally, the very descriptive terms archaeologists use for these monuments prioritises their land-related dimensions, including ‘earthwork’, ‘boundary’ and ‘monument’ even if their end-points seem to relate to significant hydrological junctures, such as wetlands and interfluvials (e.g. Malim 2007). Such terms regard the banks and ditches in and of themselves without consideration of other features connected to them, thus their potential hydraulic dimensions and interactions are eschewed.

Therefore, while scholars vary in their emphasis upon the military, territorial, economic and ideological dimensions to these monuments (Fox 1955; Noble 1983; Hill 2000; Hill and Worthington 2003; Malim and Hayes 2008; Ray and Bapty 2016; Belford 2017; Grigg 2018), the modes of interaction are primarily seen as pertaining to land. Discussions thus focus on linear earthworks in terms of movement on foot or horseback, droving animals and moving goods and materials. Thus, linear earthworks are regarded as blocking, directing, controlling and surveilling *land*, with water either completely ignored or seen as incidental to land-related functions and significances. Hence, while almost all commentators have recognised the dykes as blocking and controlling watercourses as well as land routes (e.g. Hill and Worthington 2003; Malim 2007; Ray and Bapty 2016) there has been no systematic research focus upon *how* the dykes respond to water let alone their potential constructions, adaptations and transformations of watercourses. Notably, only four of the valuable and informed one hundred research questions posed

by Keith Ray building on the Ray and Bapty (2016) survey of Offa's Dyke explore the relationship of these monuments to water (nos 15, 16, 17 and 74) (Ray 2017):

15. How did the Dyke approach, and relate to, the major rivers it encountered (Ray and Bapty 2016: 126–131)?

16. Why does the Dyke approach more minor river-valleys in the various ways that it does – are there any clear recurrences in such approaches (Ray and Bapty 2016: 135–142)?

17. How did the Dyke negotiate immediate crossings of minor rivers (rather than the relevant whole valleys), physically (Ray and Bapty 2016: 135–137)?

74. Are there any other 'landscape features' related to the Dyke and contemporary with it, such as road systems, river-ports, trading places, markets, defended positions, settlements, and field boundaries (Ray and Bapty 2016: 226–34; 240–51)?

These legitimate and precise questions provide the immediate inspiration for this work, building on key observations regarding the interaction of the dykes with water made by Fox (1955), Noble (1983), Hill and Worthington (2003) and Ray and Bapty (2016). Yet these observations have only been posed for Offa's Dyke and, in contrast, Wat's Dyke's hydraulics have been largely ignored (but see Fox 1955; Malim and Hayes 2008). Many, like Squatriti (2004: 49) note how the dykes truncate ancient highways, but as recently as Murrieta-Flores and Williams (2017) detailed evaluation of the role of the dykes in relation to movement through the landscape, they were primarily focusing on movement over land. The significance of watercourses as conduits and barriers to movement, let alone their intersections and relationships with the dykes, are given limited attention, as are their other potential economic and industrial, territorial and military functions and significances. The potential extension of the management of these topographies with mills and bridges (see also Ray *et al.* 2021), watchtowers and beacons, as well as their exploitation for fishing and watering livestock, must remain speculative at present (but not fanciful) components for how these linear earthworks operated to intercept and direct mobility and resource exploitation beyond an exclusively military functionality.

This neglect of linear earthworks' watery interactions stands in contrast to the increasing body of research showing the centrality of hydraulic economies to middle Anglo-Saxon ecclesiastical landscapes and thegnly estates, and also to military communications and trading networks (Blair 2007). These extend from discussions of coastal and riverine landscapes to fenland, but such perspectives also affect upland landscapes. It also stands in contrast to the clear linkages evident between frontiers and river systems on the Continent (e.g. Hardt 2005) and biaxial relationships between north–south land routes and west–east estuarine and river dimensions in the complex history of the Danevirke: positioned to control north-south land routes along the Jutlandic peninsula, but also, at

least by the Viking Age, controlling significant trading routes between the North Sea and the Baltic (Dobat 2008; Tummuscheit and Witte 2019). Indeed, Continental evidence for canal-building as an element of communications and royal works is evidenced for AD 793 in Charlemagne’s failed canal-building project aimed at linking tributaries of the Danube and the Rhine (Blair 2007: 2; Squatriti 2002; Werther *et al.* 2020). Also, there is the Kanhave canal, now securely dated to the early eighth century, showing how canal-building was a feature of maritime communications (Crumlin-Pedersen 2010: 141; see also Bates *et al.* 2020). As a backdrop, the barriers used to control channels in fjords, whilst presenting no clear British parallel, do indicate the possibility that dykes might have been connected to a host of installations to control and oversee movement on and across water (Crumlin-Pedersen 2010: 125–143).

For Britain, the relationship of the Cambridgeshire Dykes with wetlands is well established, serving to block movement on dry land across their lines, but also facilitating/directing movement between upland grazing and the fens (Ladd and Mortimer 2017; Malim 2020b; see also Moore 2012; 2017; Fiocoprile 2021). Together with a growing awareness of the importance of studying mobility via overland movement in the Early Middle Ages (Langlands 2019) and more broadly over time (Bell and Leary 2020), a consideration of land *flow* as well as fluvial and other watery interactions provides new insights into how early medieval linear earthworks operated.

Conclusion

Wat’s Dyke was part of a hydraulic frontier zone, revealed by its localised interactions with ‘land flow’ as well as its placement in relation to water. In both regards, this conceptualisation of Mercia’s western frontier applies to the Dee Estuary, wetlands, rivers and streams as well as its broader role in traversing and controlling the Welsh ‘isthmus’ between the Dee and Severn water catchments, and thus seaborne trade and communications out to the Bristol Channel and the Irish Sea. It is applicable also to Offa’s Dyke.

For Wat’s Dyke, the earthwork was both a zone of interaction and a link between places (Fiocoprile 2021: 89). It orchestrated the biaxial flow of people, animals and things on multiple scales: local, middle-range and long-distance, both across and along this line. Wat’s Dyke thus served the political and economic aspirations of the early medieval kingdom of Mercia to project and consolidate its authority and influence not only against and over Welsh rivals, but also to curtail and control relations throughout western Britain and Ireland, as well as with the rival Anglo-Saxon kingdoms of Northumbria and Wessex. I contend that while its date and relationship with Offa’s Dyke remain open to debate, approaching Wat’s Dyke in terms of *flow*, enriches our understanding of its functions and significance as a frontier work and its landscape context.

Wat’s Dyke may have enshrined longer-term patterns of landscape utilisation (see Murrieta-Flores and Williams 2017; Malim 2020a) and subsequently influence the

political and cultural geography of the Anglo-Welsh borderlands down to the Norman Conquest and beyond (Swallow 2016; Worthington Hill 2019). Moreover, by constituting and perpetuating a hydraulic frontier zone for western Mercia, Wat's Dyke specifically foreshadowed the burgeoning evidence for trade and exchange throughout the Irish Sea and served as a monumental precursor to West Saxon expansion and burh-building within the West Midlands and North West in the tenth and early eleventh centuries (Griffiths 2010). Mercia's western frontiers in the eighth and early ninth centuries were, therefore, not only concerned with military control and territorial claims. Linear earthworks (Wat's Dyke and perhaps also Offa's Dyke: Ray and Bapty 2016) projected Mercia's military, economic, political and ideological control, influence and prestige so they might *flow* over a far broader geographical expanse via both land and water routes.

Acknowledgements

This article could not have been composed without ongoing dialogue and discussions in the field and via correspondence with Ray Bailey, Paul Belford, Pauline Clarke, Liam Delaney, Patrick Gleeson, James Green, David McGlade, Keith Ray, Peter Reavill, John G. Swogger and Rachel Swallow. I am grateful to the helpful guidance of two anonymous referees. Thanks to Liam Delaney, Pauline Clarke and Marion Shiner for constructive and detailed comments on a final draft of the text. All errors remain my responsibility.

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