

Governing flood risk in mid seventeenth-century England

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ABSTRACT

The paper explores how early modern people lived with and responded to extraordinary flood events at a time of environmental, social and political crisis. By focusing on a period when flood risk management 'failed' and houses, land and businesses sat under water for many months, the paper offers important insights into early modern expectations of what 'good' flood risk governance looked like, who was involved, and how this was negotiated and, on occasion, challenged. Using the records of the Commission of Sewers for the East Riding of Yorkshire, the paper reconstructs the causes, extent and impacts of disastrous flooding which affected Hull and Holderness in 1646 and 1647. It pays attention to the negotiations and conflicts that emerged prior to and in the aftermath of the floods, particularly as they relate to divergent readings of Sewers law and the more or less expansive geographical horizons within which flood risk management – and specifically the financial costs of flood protection – were situated by contemporaries. In doing so, we both offer lessons from the past for what we might do better in the future, and a crucial jumping off point to engage with contemporary communities around flood risk, coastal transition and inclusive resilience building for a climate changed future.

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Introduction

In the winter of 1646/47, the flood banks at Drypool near Kingston Upon Hull were breached in multiple places by North Sea storm surges and high tides. Sea water poured through the gaps, and homes, businesses and thousands of acres were inundated, causing financial losses to landowners and farmers across a wide area known as the Holderness Level, including those who did not ordinarily bear the financial burden of maintaining the Humber flood defences. This was a flood disaster very different to other Hull and Humber floods in its scale and impacts. Moreover, it came at a time of environmental, social and political crisis: Hull and the surrounding East Riding villages had been flooded at least four times in the preceding five years (in July 1642, September and October 1643, March 1646 and summer 1646), a period in which the region also experienced the considerable financial, political and practical disruptions of the Civil Wars and two Royalist sieges of the town. The detailed exploration provided here, underpinned by one of the best-preserved collections of Sewers papers for seventeenth-century England and set alongside work outlining how flood risk was (mostly) successfully managed in the region over hundreds of

years, offers important insights into how early modern people lived with and responded to extraordinary flood events.¹ Using the records of the Commissions of Sewers for the East Riding and other contemporaneous material, the article reconstructs the Holderness Level floods of 1646/47, examining divergences between stakeholders about who was financially responsible for providing and maintaining flood defences, the difficulties faced by the Commission in raising these monies, and the extraordinary legal measures they took in order to ensure the flood defences were repaired after the major flood. By focusing on a case study where flood risk management 'failed' and houses, land and businesses sat under water for many months, the article examines how stakeholders responded to major flood events and planned for the future, thereby elucidating early modern expectations of what 'good' flood risk governance looked like, who was involved, and how this was negotiated and, on occasion, challenged.

Water history is a booming topic. Yet social, cultural and environmental histories of European and North American rivers have

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¹ Briony McDonagh, Hannah Worthen, Stewart Mottram and Stormm Buxton-Hill, 'Living with water and flood in medieval and early modern Hull', *Environment and History* 30 (2024) 585–614.

typically told late modern stories of urbanisation, industrialization, and damming of rivers.² Notable exceptions comprise work on urban water engineering projects in medieval and early modern Central European towns and cities, including several studies of the Danube and its tributaries.³ These studies focus on channelization, mill leets, weirs and military defence works, and do not offer detailed explorations of riverine flooding, flood defences or flood risk management in premodern settings. Supposedly longue durée studies often briefly mention one or two late medieval or early modern flood events before focusing their discussion and analyses on later periods and topics.⁴ This is at least partially a reflection of available source materials, and perhaps also the archival and linguistic skillsets of those conducting these multi-period studies. As a result, exciting work to reconstruct the temporal and spatial distribution of flood events using a range of historical source materials – including court records, private correspondence, newspapers,

and flood marks on standing buildings – has typically identified far more modern than pre-modern flood events.⁵ One early modern flood event that has received some attention is the January 1607 Bristol Channel flood. This storm surge was reported in contemporary news pamphlets in dramatic fashion, one for example declaring that ‘many hundreds of people both men women and children were then quite devoured’.⁶ The records of the Gloucester Commission of Sewers have also been used to show the ways in which local governors responded to the widespread devastation and loss of life it caused.⁷ However, detailed work on the environmental and social history of early modern flood events is generally lacking.

The exception to this is work on the Low Countries where a body of research has emerged charting the development of water management, with a particular focus on the institutions, customs and social relationships which supported flood risk management.⁸ In medieval and early modern Northern Europe, societies built flood defences to protect coastal lands and it was increasingly institutions – local, regional or national – that were responsible for their maintenance.⁹ In practical terms, the creation and maintenance of flood and water management systems required functioning institutions and systems of governance to oversee them and this was, according to Soens and others, a crucial factor in the capacity of a society to withstand flood and other hazard events.¹⁰ The ‘dyke solidarity’ which characterized parts of the Danish, German and Dutch Polders is a good example of this – although these solidarities were always negotiated and at times contested. Thus Tielhof has traced how the increased need for flood defences in sixteenth- and seventeenth-century Netherlands – itself driven by society’s ‘declining tolerance of floods’ and a combination of environmental factors, including increased storminess in the North Sea – necessitated a change from local to regional systems of flood and water management.¹¹ On occasion, ‘forced solidarities’ were required where communities who lived geographically further from the coast needed to contribute economically to the upkeep of coastal defences. For example, a 1509 reform which tried to extend financial responsibility for flood protection in Zuid-Beveland met

² See Paula Schonach, ‘River Histories: A Thematic Review’, *Water History* 9 (2017) 233–257 for a useful overview; *Rivers in History, Perspectives on Waterways in Europe and North America*, ed. by Christof Mauch and Thomas Zeller (Pittsburgh: University of Pittsburgh Press, 2010); *Urban Rivers: Remaking Rivers, Cities, and Space in Europe and North America*, ed. by Stéphane Castonguay and Matthew Evenden (Pittsburgh: University of Pittsburgh Press, 2012); Dale H. Porter, *The Thames Embankment: Environment, Technology and Society in Victorian London*, (Ohio: University of Akron Press, 1998).

³ Raphael Longoni and Oliver Wetter, ‘Urban Stream Works in Central Europe 1200–1700: Municipal Administration, Hydraulic Engineering and Flood Reconstruction’, *Water History* 11 (2019) 31–57; Gudrun Pollack, Sylvia Gierlinger, Gertrud Haidvogel and Verena Winiwarter, ‘Using and Abusing a Torrential Urban River: The Wien River Before and During Industrialization’, *Water History* 8 (2016) 329–355; Gertrud Haidvogel, Marianna Guthy-Horvath, Sylvia Gierlinger, Severin Hohensinner and Christoph Sonnlechner, ‘Urban Land for a Growing City at the Banks of a Moving River: Vienna’s Spread into the Danube Island Unterer Werd from the Late 17th to the Beginning of the 20th Century’, *Water History* 5 (2013) 195–207; Severin Hohensinner, Bernhard Lager, Christoph Sonnlechner, Gertrud Haidvogel, Sylvia Gierlinger, Martin Schmid, Fridolin Krausmann and Verena Winiwarter, ‘Changes in Water and Land: The Reconstructed Viennese Riverscape from 1500 to the Present’, *Water History* 5 (2013) 145–172; Christian Rohr, ‘Man and Natural Disaster in the Late Middle Ages: The Earthquake in Carinthia and Northern Italy on 25 January 1348 and its Perception’, *Environment and History* 9 (2003) 127–149; G. Benito, R. Brázdil, J. Herget, and M. J. Machado, ‘Quantitative Historical Hydrology in Europe’, *Hydrology and Earth System Sciences* 19 (2015) 3517–3539; Roberta Magnusson and Paolo Squatriti, ‘The Technologies of Water in Medieval Italy’, in *Working with Water in Medieval Europe: Technology and Resource-Use*, ed. by Paolo Squatriti (Leiden: Brill, 2000), pp. 217–66. We also acknowledge the existence of a large body of German-language publishing on Central European river floods, which – regrettably – our own language capabilities mean we have not consulted here.

⁴ Rüdiger Glaser, Dirk Riemann, Johannes Schönbein, Mariano Barriendos, Rudolf Brázdil, Chiara Bertolin, Dario Camuffo, Mathias Deutsch, Petr Dobrovolný, Aryan van Engelen, Silvia Enzi, Monika Halíčková, Sebastian J. Koenig, Oldřich Kotyza, Danuta Limanówka, Jarmila Macková, Mirca Sghedoni, Brice Martin & Iso Himmelsbach, ‘The Variability of European Floods since AD 1500’, *Climate Change* 101 (2010) 235–256; Neil Macdonald, ‘Trends in Flood Seasonality of the River Ouse (Northern England) from Archive and Instrumental Sources since AD 1600’, *Climate Change* 110 (2012) 901–923; Hubert Lamb, *Historic Storms of the North Sea, British Isles and Northwest Europe* (Cambridge: Cambridge University Press, 1991); Charles E. P. Brookes and John Glasspoole, *British Floods and Droughts* (London: Ernest Benn, 1928). Also online databases of flood events which draw largely on the above sources: University of Southampton, ‘SurgeWatch’: <https://www.surgewatch.org/> and British Hydrological Society, ‘Chronology of British Hydrological Events’: <https://cbhe.hydrology.org.uk/all-events.php> (last accessed 17 April 2024).

⁵ Iso Himmelsbach, Rüdiger Glaser, Johannes Schönbein, Dirk Riemann and Brice Martin, ‘Reconstruction of Flood Events Based on Documentary Data and Transnational Flood Risk Analysis of the Upper Rhine and Its French and German Tributaries since AD 1480’, *Hydrology and Earth System Sciences* 19 (2015) 4149–64; András Vadas, ‘The “waters leave their beds frequently”: a Western-Hungarian Town and the Flooding of the Rába/Raab River in the Seventeenth Century (1600–1658)’, *Water History* 5 (2013) 267–286; briefly touching on evidence for an early modern flood event in the documentary and sedimentary records: Evan T Jones, Rose Hewlett and Anson W Mackay, ‘Weird Weather in Bristol during the Grindelwald Fluctuation (1560–1630 CE)’, *Weather* 76 (2021) 104–110. See also: Macdonald, ‘Trends in Flood Seasonality’, p. 910.

⁶ Anon. *God’s Warning to His People of England. By the Great Overflowing of the Waters or Floudes Lately hapned in South-Wales, and Many other Places* (London: Printed for W. Barely and J. Bayly, 1607).

⁷ Simon Haslett and Bernadine Wong, ‘Recalculation of Minimum Wave Heights from Coastal Boulder Deposits in the Bristol Channel and Severn Estuary, UK: Implications for Understanding the High-Magnitude Flood Event of AD 1607’, *Atlantic Geology* 57 (2021) 193–206; Kevin Horsburgh and Matt Horritt, ‘The Bristol Channel Floods of 1607 – Reconstruction and Analysis’, *Weather* 61 (2006) 272–277; Horsburgh and Horritt, ‘The Bristol Channel Floods of 1607’; Rose Hewlett, *The Gloucestershire Court of Sewers 1583–1642* (Bristol: Bristol and Gloucestershire Archaeological Society, 2020), pp. lxxviii–lxxvi.

⁸ Bas van Bavel, Daniel Curtis, and Tim Soens, ‘Economic Inequality and Institutional Adaptation In Response To Flood Hazards: A Historical Analysis’, *Ecology and Society* 23 (2018) 30; Zhenchang Zhu, Vincent Vuik, Paul J. Visser, Tim Soens, Bregje van Wesenbeeck, Johan van de Koppel, Sebastiaan N. Jonkman, Stijn Temmerman and Tjeerd J. Bouma, ‘Historic Storms and the Hidden Value Of Coastal Wetlands For Nature-Based Flood Defence’, *Nature Sustainability* 3 (2020) 853–862.

⁹ Bas van Bavel, Daniel Curtis, Jessica Dijkman, Matthew Hannaford, Maïka De Keyser, Eline Van Onacker, and Tim Soens, *Disasters and History: The Vulnerability and Resilience of Past Societies* (Cambridge: Cambridge University Press, 2020), chapters 4 & 5.

¹⁰ Tim Soens, ‘Flood Security in the Medieval and Early Modern North Sea Area: A Question of Entitlement?’, *Environment and History* 19 (2013) 209–232; van Bavel et al., *Disasters and History*; Bas van Bavel, Daniel Curtis, and Tim Soens, ‘Economic Inequality and Institutional Adaptation In Response To Flood Hazards: A Historical Analysis’, *Ecology and Society* 23 (2018); Tim Soens, ‘Floods and Money: Funding Drainage and Flood Control in Coastal Flanders from the Thirteenth to the Sixteenth Centuries’, *Continuity and Change* 26 (2011) 333–365.

¹¹ Milja Van Tielhof, ‘Forced Solidarity: Maintenance of Coastal Defences Along the North Sea Coast in the Early Modern Period’, *Environment and History* 21 (2015) 319–350 (pp. 319–20).

with fierce resistance from those living further away from the shore. Reluctance was not just political: these were communities which were often themselves recovering from flood and so lacked the financial resources to pay more.

In contrast to European colleagues, historians of medieval and early modern England have 'paid relatively scant attention to water management'.¹² Notable exceptions include work by Jones and Kilby on managing riverine flood risk in early medieval England, by Brown and by Galloway on specific medieval storm events, and by Morgan and by McDonagh and others on the institutions managing water and mitigating flood risk in early modern England.¹³ Flooding was not always undesirable of course – winter flooding brought sediments to low-lying pastures and meadows, for example – but high magnitude events that inundated homes, fields and warehousing were perceived as problematic, and both river and tidal flood risk actively managed. Thus Morgan's work on the Commissions in Lincolnshire and Gloucestershire points towards 'a communal, or associational imperative in flood-prone coastal areas', McDonagh and others identify the existence of a 'living with water mentality' in medieval and early modern Hull, and Bankoff has argued that the need for communities living alongside the North Sea to learn to live with the danger of flood and storm surge led to the development of 'risk societies' in those areas.¹⁴ However, this research has not yet fully considered episodes where this imperative to work communally went wrong, or when flood risk governance failed. Our article argues that local and national concerns intersected in flood risk management, with an emphasis on what happened when consensus on financial responsibility for flood defences broke down. It will show that a wide range of stakeholders – from the gentlemen who served as commissioners, to the jurors and surveyors who managed flood defences, and the landowners and taxpayers who paid for them – participated in early modern flood risk management and governance. It will also demonstrate how, despite the significance of this broad participation in the governance of flood risk, long term change in flood risk management and financing was not achieved.

The article is organized into five sections: the first outlines the sources we utilize – including extensive archival material and the Commission of Sewers records – and the norms of flood risk management in early modern England. The second examines the Holderness Level floods of 1646/47, using this material to reconstruct the causes, extent and impacts of the floods. The third section explores the ongoing negotiations and emerging conflicts between

a range of local and national actors occurring both prior to and in the aftermath of the floods, especially as they related to the enormous sums required to repair the flood defences. We pay particular attention to divergences between the inhabitants of Drypool, the people living in the Holderness Level, and the Commission of Sewers as to their respective readings of Sewers law and relatedly, the more or less expansive geographical horizons within which flood risk management was situated by them. The fourth section explores the extraordinary legal and financial measures taken by the Commission as they attempted to ensure the Drypool flood defences were repaired in the wake of the flood, and the eventual resolution to this particular affair. The brief period when financial responsibility for repairing the Drypool flood defences was shared by the Level sheds particular light on the expected norms of flood risk governance in the period, the role of local people and knowledges, and what happened when those norms were contested and challenged in the face of extraordinary flood events. The final section offers some concluding comments. Set alongside other studies of European flood risk management, we highlight the significance of our example for understandings of pre-modern flood risk management and governance, within the English, British and wider European contexts.

Commissions of Sewers and their records

Our article draws on the mid seventeenth-century records of the East Riding and Hull Commissions of Sewers (including minutes, orders, correspondence and petitions), along with Hull's civic records – most notably, the orders of the town's Corporation, known locally as the Bench Books – and other contemporaneous material produced in the House of Commons and central equity courts.¹⁵ The considerable size of the archive relating directly to the Hull and East Riding floods of the 1640s, when ordinarily flood events are rarely mentioned in contemporary records, demonstrates the significant nature of these floods for contemporaries, and justifies our close focus on the place and period in question.¹⁶ Flood risk management in Hull and the surrounding region was especially complex: there were three separate Commissions of Sewers, whose jurisdictions were further complicated by the region's administrative geography.¹⁷ Our archive was generated as a result of a series of negotiations between, and legal actions brought by, multiple stakeholders who bore responsibility for flood protection, and specifically repairs to flood banks, in the wake of disastrous flooding in Hull and Holderness in the winter of 1646/47. The surviving records of the Commissions of Sewers, and the range of other actors and institutions that interacted with them, thus offer us important insights into flood risk governance: that is, 'the actor networks, rules, resources, discourses and multi-level coordination mechanisms'

¹² John E. Morgan, 'Funding and Organising Flood Defence in Eastern England, c.1570–1700', in *Gestione dell'acqua in Europa (XII–XVIII Sec.)*: *Water Management in Europe (12th–18th Centuries)*, ed. by G. Nigro (Firenze: Firenze University Press, 2018), pp. 413–31 (p. 413).

¹³ Richard Jones and Susan Kilby, 'Mitigating Riverine Flood Risk in Medieval England', in *Waiting for the End of the World? New Perspectives on Natural Disasters in Medieval Europe*, ed. by C.M. Gerrard, P. Forlin and P.J. Brown (London: Routledge, 2020), pp. 165–82; Peter J. Brown, 'Tide and Trauma: Tangible and Intangible Impacts of the Storms of 1287 and 1288', in Gerrard et al., *Waiting for the End of the World?* pp. 183–200; Peter J. Brown, *Metrological Disasters in Medieval Britain (AD1000–1500)* (Berlin: De Gruyter, 2023); J.A. Galloway 'Storm Flooding, Coastal Defence and Land Use around the Thames Estuary and Tidal River c.1250–1450', *Journal of Medieval History* 32 (2009) 171–88; John E. Morgan, 'The Micro-Politics of Water Management in Early Modern England: Regulation and Representation in Commission of Sewers', *Environment and History* 23 (2017) 409–30; David Crouch and Briony McDonagh, 'Turf Wars: Conflict and Cooperation in The Management Of Wallingfen (East Yorkshire), 1281–1781', *The Agricultural History Review* 64 (2016) 133–56; McDonagh et al., 'Living With Water'. See too: Christopher Dyer, 'Recovering from Catastrophe: How Medieval Society in England Coped with Disasters', in Gerrard et al., *Waiting for the End of the World?* pp. 218–38, who briefly discussed the Severn Estuary flood of 1483 (pp. 222–7).

¹⁴ Greg Bankoff, 'The 'English Lowlands and the North Sea Basin System: A History of Shared Risk', *Environment and History* 19 (2013), 3–37 (pp. 30, 34).

¹⁵ All references to the East Riding Commission of Sewers' records are described herein by archival finding reference and date. Further details on these records can be found by searching the East Riding of Yorkshire Archives' catalogue for CSR series: <https://calmview.eastriding.gov.uk/CalmView/Record.aspx?src=CalmView.Catalog&id=zCSR>.

¹⁶ McDonagh et al., 'Living with Water', pp. 591–592.

¹⁷ The Commission of Sewers for the East Parts of the East Riding of Yorkshire executed oversight of flood protection in Drypool and the Holderness townships, while a separate Commission operated west of the Yorkshire Wolds. The borough of Hull was ill-defined geographically, but it is clear that a third Commission – the Commission of Sewers for Hull and County – oversaw flood risk management for the area within the walls and for the neighbouring precincts. Note, the County of Hull was created in 1440, when it included the area in the town walls and the extramural precinct of Myton. Further districts were added to the County in 1447 (R. B. Pugh, *A History of the County of York: East Riding: Vol I: The City of Kingston Upon Hull* [hereafter VCH ER I] (London: Institute of Historical Research, 1968) p. 29), but seemingly did not fall within the borough.

through which flood risk management operated in early modern England.¹⁸

Commissions of Sewers were statutory bodies whose powers were drawn from the Crown and were enshrined in a 1532 General Act Concerning Commissions of Sewers. The Commissions' powers to levy taxation for flood defences meant they played a key role in the oversight of flood risk management in early modern England. They had judicial, executive and legislative powers similar to the Justices of the Peace and the courts that they held were analogous to local Quarter Sessions, although their jurisdiction was limited to matters concerning navigation, land drainage and flood protection.¹⁹ As Morgan has noted, the Commissions shared common features, and to a lesser extent terminologies, with other water management institutions across the North Sea basin, including Flemish *wateringen* and Rijnland *hoogheemraden*.²⁰ Commissioners were local, typically non-specialist, men of standing, acting in unsalaried positions. In the East Riding, as elsewhere, they were drawn from the middling sort: 20 out of the 23 who sat at Commissions between 1646 and 1647 held ranks of Gentleman and above. They were supported by local water managers, known as 'dikereeves' in Lincolnshire and 'expenditors' or 'expenditors of works' in the East Riding and other English North Sea counties including Essex and Kent.²¹ The Commissions' powers included the ability to collect taxation for the purposes of flood defences, and the Statute allowed them to distrain the goods, and ultimately imprison, those who failed to pay.²² On occasion, the discretionary powers of Commissions of Sewers might be extended to include what we might call flood incident management: for example, during the 1607 Bristol Channel flood, the Gloucestershire Commission ordered the making of 'gouts' (read: channels) to release the trapped water back to the sea, while dikereeves in seventeenth-century Lincolnshire cut banks and opened sluices to move floodwaters around the drainage network.²³

Commissions of Sewers operated alongside a range of national and local actors – including manorial courts, parish officers, landowners and tenants – who held obligations and responsibilities for flood protection. In this sense, coastal and other flood-prone areas operated under a system of water management that was nationally constructed but locally negotiated. Financial and organisational responsibility for maintaining flood banks, cleansing ditches and repairing sluices typically fell to local landholders. According to the 1532 Statute, properties had to either derive direct benefit, or avoid damage, if they were to be taxed for flood protection works. The

decision on this fell to a jury of 'honest and lawful' men who were called to give their verdicts at the Court of Record.²⁴ In practice, this meant that financial responsibility for flood protection generally fell to landowners and tenants whose lands lay adjacent to the defences or those living in close proximity to flood hazards.²⁵ For example, according to the 1500 *Levy Book of the Sea* which organized payment for flood defences in Lincolnshire, it was those households which lay 'within the danger of the sea rage' which should contribute towards the financial upkeep of sea defences.²⁶ However, when calamity struck and extraordinary inundation occurred, a broader tax base was required. Thus, Commissions often claimed extraordinary powers to tax more widely across a region. This legal power was controversial. Morgan found that the 'most contentious disputes' the Courts of Sewers faced concerned upkeep to sea walls, largely due to the possibility of a ruinous financial obligation in the event of a breach.²⁷ Sir Edward Coke's judgment in the *Case of the Isle of Ely* found that the Commissioners had over-exerted their authority to tax beyond the conventional geographical boundaries.²⁸ Thus, the actual power granted to the Commissions to raise finances for flood defence within and beyond prescribed spatial areas was challenged in the courts, debated by legal professionals and – as will be seen in this paper – frequently reworked by ordinary people who engaged with local sewers governance.

The Holderness Level floods of 1646/47

The Commissions of Sewers for the East Parts of the East Riding – referred to hereafter as the East Riding Commission – had long been concerned about the state of the flood banks at Drypool and the neighbouring hamlet of Southcoates which lay about a mile inland to the north-east.²⁹ Drypool lay at the southern extremity of the Holderness Level, a low-lying and marshy area of silt and peat lying east of the River Hull and stretching more than twenty miles north towards Driffeld (Fig. 1). Before the improvements of the later eighteenth century, the Holderness Level was drained by a myriad of streams, ditches and channels emptying into the River Hull and the Old Fleet, which today reaches the Humber Estuary close to Salt End. The villages of Sutton, Wawne and Tickton were located on islands of higher ground, but much of the Level was vulnerable to tidal ingresses, fluvial and pluvial flooding, and

¹⁸ Meghan Alexander, Sally Priest, and Hannelore Mees 'A Framework for Evaluating Flood Risk Governance' *Environmental Science & Policy*, 64 (2016) 38–47.

¹⁹ Beatrice Webb and Sidney Webb, *English Local Government: Statutory Authorities for Special Purposes* (London: Longmans, Green and Co., 1922), pp. 20–23. As Morgan, 'Funding and Organising Flood Defence', p. 417, and others have noted, the Commissions existed at least as early as the thirteenth century.

²⁰ Morgan, 'Funding and Organising Flood Defence', pp. 417–418.

²¹ See Morgan 'Funding and Organising Flood Defence', p. 418, who notes the existence of dikereeves in Lincolnshire, including those overseen by Commissions of Sewers and others acting as parish-appointed officers much like constables or overseers of the poor. On expenditors in the East Riding, see East Riding of Yorkshire Archives, Commission of Sewers (hereafter CSR) 14/21, 22 Oct 1646; CSR 14/25, 4 May 1647; in Essex, see Essex Record Office, D/Dms O17/1: Accounts of 'expenditors' of Rainham and Havering Levels, 1560–1567; in Kent, see A. E. B. Owen, 'Records of the Commissions of Sewers', *History* 52 (1967), 35–38 (p. 36). Crouch and McDonagh, 'Turf Wars', p. 142 notes that in Wallingfen, East Riding of Yorkshire, it was elected 'governors' who oversaw common rights and flood defences in the intercommoned wetland.

²² Webb and Webb, *English Local Government*, p. 22; Morgan, 'Funding and Organising Flood Defence', pp. 416–417.

²³ Rose Hewlett, *The Gloucestershire Court of Sewers 1583–1642* (Bristol: Bristol and Gloucestershire Archaeological Society, 2020) pp. lxxvi and 70–71; Morgan, 'Funding and Organising Flood Defence', p. 421.

²⁴ James Hanley, 'The Metropolitan Commissioners of Sewers and the Law, 1812–1847', *Urban History* 33 (2006) 350–368 (p. 353); 23 Hen. VIII, c. 5: 'A General Act Concerning Commissions of Sewers to be Directed in All Parts within this Realm', in *The Statutes of the Realm*, III ed. by J. Raithby, (London: Her Majesty's Stationery Office, 1810) pp. 368–372; Webb and Webb, *English Local Government*, p. 22; For more on the men called to be jurors, see Morgan, 'The Micro-Politics of Water Management', pp. 412–413 and 419–420.

²⁵ See for example Gloucestershire Record Office (hereafter GRO): D/272/10/3: 'The sea wall from Sheperdine to Littleton on Severn, 1676, naming owners and occupiers, type of tenancy and distance each had to repair'.

²⁶ A. E. B. Owen, 'The Levy book of the sea: The organization of the Lindsey Sea Defences in 1500', *Lincolnshire Architectural and Archaeological Society*, 9 (1961), 35–48.

²⁷ Morgan, 'The Micro-Politics of Water Management', p. 428; see also GRO: D/272/1/10, 1661–1663, ff. 23v–26r: dispute between Lords and Tenants over who was liable for the taxation to maintain the sea walls along the Severn.

²⁸ David Chan Smith, *Sir Edward Coke and the Reformation of the Laws* (Cambridge: Cambridge University Press, 2014): pp. 91–114; See also: John M. Collins, 'The Long Parliament and the Law of Necessity in Seventeenth-Century England', *Past and Present* 247 (2020), 3–35.

²⁹ Drypool and Southcoates were originally townships in Swine parish, but Drypool had acquired independence by the mid-seventeenth century. The hamlets were assessed together in the 1377 poll tax and 1524 lay subsidy, and Southcoates was later a township in Drypool (VCH ER I, p. 460).

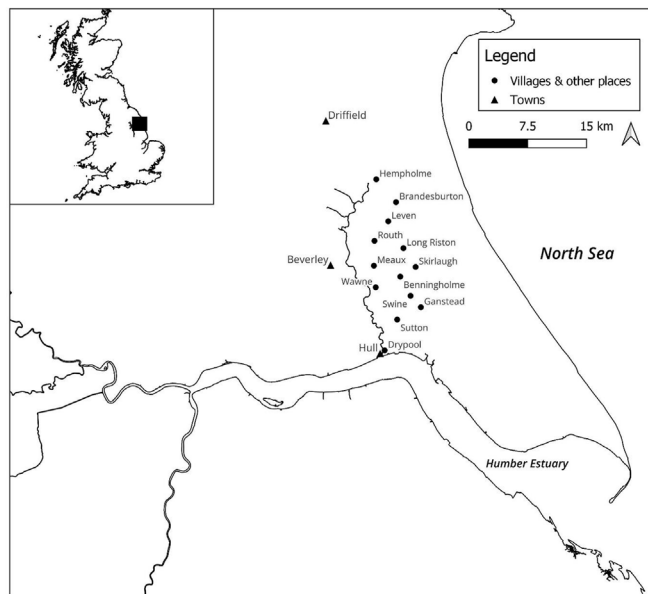


Fig. 1. Map of places mentioned in the text. With the modern course of the River Hull.

seasonal inundation.³⁰ There were flood banks along both the River Hull – the maintenance of which fell to the various townships along its course – and along the Humber Estuary. Lying on the eastern bank of the Hull where the river met the estuary, the landowners of Drypool – a small, agricultural hamlet of 14 households at the Hearth Tax of 1672 and roughly 1600 acres – were responsible for the upkeep of flood banks along the estuary coast.³¹ The latter were typically referred to in the records as the ‘Humber banks’, ‘sea banks’ or ‘sea dikes’ and were crucial in protecting the Level from the ingresses of tidal waters, whilst also themselves subject to erosion and damage by incoming tides and North Sea storms.³² The Wenceslaus Hollar map of c. 1640 shows one of the flood banks running eastwards from Hull Castle and to the south of the (now demolished) church of St Nicholas at Drypool (see Fig. 2), as well as the Henrician-period castle and blockhouses which lay in Drypool but were granted to the Corporation of Hull in 1552.³³ The flood defences consisted of a mix of earthen banks and wooden revetments known as hithes or lockerworks. A description of 1651 indicates that these were made up of wooden planks fixed to pilings, reinforced with cliff stones. Sometimes stones or oak planks were staked in front of the earthen banks in order ‘to defend them from the Rage of the Water of Humber’.³⁴

In October 1639, the Commission issued an order referring to the Drypool banks as ‘very ruinous & in great decay’. A single assessment of 84li was said to be insufficient for the repairs and a double tax of 168li was levied on the lands ‘usuallie charged with the repaires of the said banckes’.³⁵ Here and elsewhere, the

Commission only ever referred to the ‘Inhabitants of Drypool’ collectively in its orders, naming neither the individuals responsible nor the landholdings assessed – but eleven men signed (or added their mark to) a 1639 agreement to resist the tax, suggesting that the majority of inhabitants were considered liable by the Commission.³⁶ All that we know about their wealth is that their lands were judged to be worth 20s an acre and deemed to be of sufficient value to maintain the banks.³⁷ The sum levied was to be ‘wholly employed in the most necessarie way for the best & most durable repaires of the said breaches & ruines’.³⁸ This second levy was not successful in raising funds and five years later in the spring of 1646, the defences were still in poor repair. The commissioners were clearly aware that the damage to the revetments at Drypool left the surrounding countryside vulnerable to flooding. The Drypool inhabitants later reported that in late March that year:

‘there happened such hedious & mighty windes both by day & night, that they forced upp the waves, and broke & carried cleare away the most of the wood worke of the said banckes: and wholly ruinated the same’.³⁹

The inhabitants appear to be referring to a North Sea storm surge, which moved up the Humber, battering the flood defences at Drypool and most likely elsewhere along the estuary.

The precise extent of flooding in March 1646 is difficult to determine from the surviving documentary sources, but it probably stretched into neighbouring parishes. The incident was enough to spur the Commission of Sewers into further action. At the session held at Beverley on April 8, 1646, the Commission ordered a jury of local landowners to view the banks at Drypool and Southcoates, and report back to a special session arranged for the last day of April.⁴⁰ The jury reported back in May that the sea dikes and lockerwork were ‘very ruinous’ as a result of the neglect of the owners and farmers. Decays of the banks at Drypool were affecting the neighbouring parishes: Marfleet, to the east, and Sutton and Stoneferry, to the north, were said to be ‘Subiect to Surrounding, by the overflowing of Drypole Bankes & Sutcoot Bankes’.⁴¹ Major repairs were judged necessary, estimated to cost 630li for Drypool and 317li for Southcoates (totalling 947li), a significant increase on the sums levied in the 1639 assessment. Crucially, the jurors deemed that the Drypoolers had land of sufficient value to pay for them and should remain responsible for their upkeep. Consequently, the commissioners ordered that if the Drypoolers failed to pay their taxes ‘before Michaelmas day next’ (29th September), then the owners and occupiers of the lands totalling c. 193 acres would be given a fine (a ‘pain’) of 1000li.⁴²

Summer 1646 in Hull was wet and cool, as it was elsewhere in northern Europe. Volcanic eruptions in the later 1630s and 1640s contributed to cooling global temperatures as recorded in tree rings and ice cores, and the mid-1640s also marked the beginning

³⁰ June Sheppard, *The Draining of the Hull Valley*, pp. 1–8. We are indebted to the pioneering work on June Sheppard who – over several key publications – explored the longue durée history of the draining of the East Yorkshire marshlands. She does not comment in detail on the Drypool case, which – for example – receives only a page in her 1956 thesis.

³¹ VCH ER I, p. 460.

³² The National Archives (hereafter TNA), E 134/2Jas1/Mich17 and E 134/11Chas1/Mich47.

³³ VCH ER I, p. 117.

³⁴ As, for example, when worked stopped for the winter in November 1651 on as-yet-unfinished defences: Hull History Centre, Bench Book (hereafter HHC BB), 1650–1664, C BRB/4, 42(34).

³⁵ CSR 14/9, 22 October 1639. This document does not name those lands, the landowners, nor their acreage.

³⁶ CSR 20/65, 22 October 1639, which is the only document in the whole CSR bundle which contains the names of the Drypool landowners. A later document identifies Drypool landholdings totalling 193a 2r 36p as rated for the tax (CSR/20/66, 1 May 1646). This indicates that while the majority of landowners were liable, it was primarily land close to or on the banks that was rated, as was usual under the Statute. This is not surprising, given that two near-contemporary maps both show the village clustered behind the flood bank, no doubt laid out on the raised levee next to the river.

³⁷ CSR/20/66, 1 May 1646 and CSR/14/21, 22 Oct 1646 state that the Lordships are deemed of sufficient value to maintain the banks, but they have failed to do so.

³⁸ CSR 14/9, 22 October 1639.

³⁹ CSR 12/1, 22 October 1646.

⁴⁰ CSR 6/1, 8 April 1646.

⁴¹ CSR 20/66, 1 May 1646.

⁴² CSR 14/20, 22 May 1646.



Fig. 2. Wenceslaus Hollar's map of Hull, with Drypool village in the top left of the map. Courtesy of University of Toronto. Wenceslaus Hollar Digital Collection.

of the Maunder Minimum, a period of reduced sunspot activity.⁴³ Unusual weather patterns are evidenced too in documentary sources for Eastern England. The diary of Ralph Josselin – writing

from Earls Colne in Essex – describes autumn 1646 as ‘a merveyllous wet season, winter coming on very early’ and crops spoiled in the fields.⁴⁴ Severe thunderstorms and hail were recorded in eastern England in late May 1646 and Hull experienced flooding in July 1646 which seemed to have resulted from excess rain in the catchment that was ineffectively carried away by the decayed ditches.⁴⁵ The Bench Books recorded that a significant portion of the town wall had collapsed in November 1646, which was attributed to ‘excessive raine that hath falne for a long time’.⁴⁶ The particularly wet summer and autumn of 1646 no doubt also contributed to worsening flooding in winter 1646/47, as the already-very-wet ground was further soaked by tidal ingresses.⁴⁷

⁴³ See: Dagomar Degroot, ‘Climate change and society in the 15th to 18th centuries’, *WIREs Climate Change* 2018; 9:e518; Markus Stoffel, Christophe Corona, Francis Ludlow, Michael Sigl, Heli Huhtamaa, Emmanuel Garnier, Samuli Helama, Sébastien Guillet, Arlene Crampsie, Katrin Kleemann, Chantal Camenisch, Joseph McConnell, and Chaoshao Gao, ‘Climatic, weather, and socio-economic conditions corresponding to the mid-17th-century eruption cluster’, *Climate of the Past* 18.5 (2022), 1083–1108.

⁴⁴ E. Hockliffe (ed.), *The Diary of the Reverend Ralph Josselin, 1616–1683* (London: Camden Third Series XV, 1908) pp. 35 and 37.

⁴⁵ Paul R. Brow, G. Terence Meaden and Michael W. Rowe, ‘Tornadoes in Great Britain and Ireland to 1960: Part I: Years AD 1054–1800’, *International Journal of Meteorology* 37 (2012) 145–54; *Signes from Heaven: or severall Apparitions seene and heard in the Ayre...* (London: T. Forcey, 1646) refers to tornadoes at Thetford; Edmund Calumy, *An Account of the Ministers, Lecturers, Masters and Fellows of Colleges and School Masters who were Ejected or Silenced After the Restoration in 1660* (London: J. Lawrence, 1713), Vol II, p. 115 refers to 31st May being a “violent hot day” in Swaffham, Norfolk.

⁴⁶ BB, C BRB/3 368v, 12 Nov 1646.

⁴⁷ London clergyman Francis Roberts preached a sermon in December 1646 in which he bemoaned that ‘the heavens have now for divers moneths together so sadly mourned upon the Land’. In: Francis Roberts, *A broken Spirit, Gods Sacrifices* (London: Printed for George Calvert, 1647).

The East Riding Commission were still struggling to enforce repairs at Drypool in autumn 1646. On 22nd October that year, the court sessions at Beverley again ordered that repairs be made to the flood banks. The Commission asserted that while the Drypool inhabitants had 'constantly without the memory of man till of late yeares' repaired the flood banks, the situation was now perilous. Thus:

'the Bankes lockered works and jetties ... still continue verie ruinous, so as the damage susteyned by the inlett of salt waters therein is not onelie of great losse to the inhabitants there, but spreading itself into the adiacent level growes verie terrible to their neighbours by renderinge the ways impassable; overflowing great quantities of ground and threatening irreparable ruines to the Countrie if timely provision prevent not'.⁴⁸

The Commission once again ordered that the Drypool inhabitants were of ability and worth to undertake the necessary repairs without the assistance of those elsewhere in the region. They noted that despite previous actions by the Commission, the inhabitants 'have hitherto delayed and neglected to observe any order or doe any worke tending to the preservation of the said Bankes'. They were said to 'still continue obstinate' and evade the Commission's orders and charges, 'some by deserting their habitacions others by concealing or conveying away their goods'. A tax of between 3li 6s 8d and 5li an acre was therefore levied, collectors and surveyors appointed, and special session of the Court of Sewers ordered for October 30, 1646.⁴⁹ These were huge sums: flood protection works in east Lincolnshire in the early 1680s cost a similar amount (1000li), but were levied across 7700 acres at 6s an acre for frontage properties, while those at Margate in Kent in the early seventeenth century cost 2000 li, but were to be paid over 25 years.⁵⁰ At the late October session, four of the collector-surveyors were ordered to view the banks and arrange for repairs to those parts which were 'most visiblie dangerous ... so that no further damage come unto the Countrie'. They were to labour until such time as the repairs be finished.⁵¹

Yet little in the way of maintenance or improvement to the flood banks seems to have been undertaken and, in the winter of 1646/47, the inevitable happened – the banks at Drypool were breached in multiple places and twenty townships and parishes in the Holderness Level were flooded. The Commission's records do not record a date for the storm surge or surges which breached the flood defences, but they likely included the storm recorded as hitting the Norfolk and Lincolnshire coasts in November 1646.⁵² An order by the Commission in April 1647 described 'those great calamities of waters now raging in this Levell' and attributed the flooding to winds and storms 'this last winter' which had 'borne downe a greate part of the Banckes belonging to the Lordships of Drypoole & Sudcoates'.⁵³ A July 1647 account recalled how 'the raige of Humber' had broken down 'the Jettyes and other workes', while a later account of 1649 described how the Drypool banks 'in diuers and sundry places' were,

| Place ⁵⁴ | Acres | Assessment |
|--------------------------------------|-------|----------------------|
| Sutton | 602 | 90.6.0 |
| Wawne | 326 | 48.18.0 |
| Meaux | 98 | 14.14.0 |
| Benningholme | 140 | 21.0.0 |
| Faireholme | 40 | 6.0.0 |
| Swine | 468 | 74.0.0 ⁵⁵ |
| Arnold Rowton & North Skirlaugh | 164 | 24.0.0 |
| [Long] Riston | 108 | 16.4.0 |
| Ganstead | 20 | 18.0.0 |
| Routh | 200 | 30.0.0 |
| Leven town | 122 | 18.6.0 |
| Leven Manor | 1000 | 150.0.0 |
| Brandesburton cum Burshill | 400 | 60.0.0 |
| Hollythorne | 40 | 12.0.0 |
| Hempholme | 60 | 9.0.0 |
| High Barwick | 12 | 16.0.0 |
| Wawne Benningham Grange & Faireholme | 300 | 30.0.0 |

Fig. 3. Places named in ERYA CSR/14/23 as 'subject to the ouer floweing by the said breaches' and thus liable for a tax of 3s per acre for the repair of the banks.^{54,55}

'ouerthrowne by the violence of the riuier Humber through an hideous Tempest ... by reason whereof many hundred acres of fruitful ground adjacent to the sayd Bankes were surrounded by the sayd riuier coming into them'.⁵⁶

The extent and impacts of the flooding were considerable. The April 1647 account recorded the parishes and acreages subject to 'the ouer floweing by the said breaches', together totalling more than 4000 acres (see Fig. 3).⁵⁷ Seventeen townships are named and the flooding was said to extend as far north as Hempholme, 14 miles as the crow flies north of Drypool. There are significant acreages flooded in the southern townships in the Level, particularly at Wawne, Sutton and Benningholme, where in the latter two places the lands assessed amounted to more than 10% of the township. Large parts of Leven were also flooded (over 1100 acres amounting to 30% of the parish), plus smaller acreages elsewhere. Another account listed flooded lands in Drypool, Southcoates,

⁴⁸ CSR 14/21, 22 Oct 1646.

⁴⁹ CSR 14/21 specifies 'of everie acre of the groundes there lyinge within the Amescroft iijli vjs viijd and of every acre of all the rest of the grounds inclosed there vli'. CSR 19/2, 30 July 1647, repeats the details of the assessment.

⁵⁰ Morgan, 'Funding and Organising Flood Defence', pp. 425 and 428.

⁵¹ CSR 14/21, 22 Oct 1646, dorset.

⁵² 'House of Commons Journal Volume 4: 17 November 1646', in *Journal of the House of Commons: Volume 4, 1644–1646* (London: His Majesty's Stationary Office, 1802) pp. 723–724.

⁵³ CSR 14/23, 20 Apr 1647.

⁵⁴ Spelling modernised where there is a corresponding modern place name.

⁵⁵ *Sic*. The scribe appears to have miscalculated either the acreage or the sum owed within several places in the document.

⁵⁶ CSR 19/2, 30 July 1647 and CSR 14/34, 25 Jan 1649.

⁵⁷ CSR/14/23, 20 April 1647. Except at Leven, the acreages assessed represent no more than 15% of each parish or township, supporting our conclusion that only the lands flooded were assessed.

Marfleet, Bilton, Summergangs, Sutton Ings, Stoneferry, Sutton, and the Salts, thereby bringing the places known to have experienced flooding to more than twenty.⁵⁸ Floodwaters from the Drypool breaches no doubt also blocked the ditches draining the more northerly townships, causing what were usually called 'inland waters' to back up, thereby worsening problems in the Level – but in spring and summer 1647, the commissioners' primary concern was the ingress of waters through the Drypool breaches.⁵⁹

The impacts of the flooding on daily life in the Level were substantial. Work to repair the Humber flood banks was not yet underway in April 1647, some months after the initial incident, when the breaches were reported to have been 'largeing themselves euery fortnight by the vast inlets of salt water'.⁶⁰ The Commission recognized the ongoing risks, noting that 'a dayly growth of the ruines & a further spreadinge of the salt waters ouer other Lord-shippes & grounds within that Leville must inevitable ensue if timely prevention bee not had', and sought to arrange labourers, wagons and timber to start the repairs.⁶¹ Arable crops growing on the higher islands of ground were probably mostly unaffected – see below for a 1647 reference to corn growing in the northern townships, for example – but low-lying grazing grounds and meadows were inundated for many months. Floodwaters were said to sit on the ground for 6 months at Stoneferry, and perhaps longer still in other townships, the extent of the flooding no doubt expanding and shrinking depending on weather and tides.⁶² The inhabitants of Stoneferry, Southcoates and Marfleet were forced to live in the upper rooms of their houses, or else temporarily move their families and goods elsewhere. Roads were flooded and the waters too deep to traverse even by horse, so that people travelled to market only by boat.⁶³ The ingress of saltwater at high tides was said to have washed away 'much of the fruitful soile' and 'the rest soe muded & sanded' by the salt water as to be 'altogether uselesse' and barren.⁶⁴

Notably, the sense of urgency and language of impending ruin used by the 1640s Commission is distinct from much of the earlier and later material produced by local Commissions of Sewers, most of which describes flood events in more prosaic terms. The same is true of the Corporation of Hull's records which typically focus on water and flood risk management, and the costs thereof, but say little about flood events themselves.⁶⁵ This is indicative of just how unusual contemporaries considered the 1646/47 floods to be. In both its extent and impacts, this was a disaster distinct from earlier Hull and Humber floods. Crucially – and as the surviving documentation makes clear – the commissioners understood the scale of the task ahead of them in seeking to repair the flood banks after a series of major breaches. The Commission's attempts to ensure the banks were repaired and attribute financial responsibility are examined in the next two sections. These offer insights into how

flood risk governance was negotiated in early modern England, dike solidarities enforced, and the circumstances in which this failed.

The view from Drypool

Throughout the archival survivals of 1646/47, the Commission repeatedly and unequivocally stated that the disastrous winter floods were occasioned by decays in, and the failure of, the Drypool flood banks. They accused the inhabitants of Drypool of 'wilfull neglect' of the banks which they 'purposely permitted to ruine & decay'.⁶⁶ Moreover, the Commission was clear that the repairs were the Drypoolers' responsibility. They said this had been the case, in the legal and customary phraseology of the period, 'from tyme to tyme and at all tymes whereof the memory of man runneth not to the contrary'.⁶⁷ In other words, they asserted a conservative reading of Sewers law dependent on a geographically circumscribed notion of flood risk management in which financial responsibility for flood defences fell on those who lived closest to the banks.

In contrast, the inhabitants of Drypool presented a very different account of their responsibilities and faults. This is perhaps not surprising given the significant financial implications for them in an already challenging economic climate. During the 1630s, England had experienced social and economic unrest during the Personal Rule of Charles I, and Hull was impacted badly by plague in 1637/38.⁶⁸ In the 1640s, the town was hit by the financial costs of maintaining a garrison and repelling two sieges.⁶⁹ In the face of these challenging economic circumstances, the Drypool inhabitants constructed two surviving petitions that requested assistance from others in the Holderness Level towards maintaining the Humber banks. These petitions offer important insights into the norms of flood risk management and governance in early modern England. The first petition, dated 1638, was addressed to the Privy Council in London, seemingly because negotiations had broken down between the Drypoolers and landowners in the Level.⁷⁰ The Drypoolers claimed that the charge for maintaining the banks was often the whole yearly value of the lordship and asked for the Council's assistance in applying the costs to landowners in the Level. In this, they sought to by-pass the authority of the local Commission and convince the Privy Council to expand the geographical scale of flood risk responsibility beyond Drypool. Here they drew on contemporary debates and legal unease about the specific application of the Sewers Statute in times of extraordinary need.⁷¹ The Tudor and

⁶⁶ CSR 14/32, 26 Oct 1647.

⁶⁷ CSR 14/34, 25 Jan 1649. The same expectation applied to maritime defences more generally, an issue which had been raised in the national consciousness in the 1630s when Charles I attempted to raise money from non-coastal counties for Ship Money, a tax towards furnishing ships at times of war and previously only demanded of coastal towns and communities who would in principle derive the benefit from the tax (Henrik Langelüddecke, 'I Finde All Men & My Officers All Soe Unwilling': The Collection of Ship Money, 1635–1640' *Journal of British Studies* 46 (2007) 509–42).

⁶⁸ Kevin Sharpe, *The Personal Rule of Charles I* (New Haven: Yale University Press, 1992); Stewart Mottram, 'Deluge and Disease: Plague, the Poetry of Flooding, and the History of Health Inequalities in Andrew Marvell's Hull', *The Seventeenth Century* 38 (2023), 263–90; George Hadley, *A New and Complete History of the Town and County of Kingston-Upon-Hull* (T. Briggs, Hull, 1788–91), p. 200.

⁶⁹ Reckitt, *Charles the First*, p. 111; Andrew Hopper, *The Papers of the Hothams, Governors of Hull During the Civil War* (Cambridge: Cambridge University Press, 2011).

⁷⁰ TNA SP 16/399/29. A copy of this is also in Hull's civic archives: HHC, C BRL/277.

⁷¹ See also Herne, J. (1659). *Lent, 1638 the learned reading of John herne esq., late of the honourable society of lincolns-inne, upon the statute of 23 H. 8 cap. 3 concerning commissions of sewers.*

⁵⁸ CSR 20/71, 18 Oct 1647. It is unclear why Marfleet and Bilton were not included in the April 1647 assessment. Drypool had already been assessed and the other named places were areas within assessed parishes or townships.

⁵⁹ See: CSR 19/24, 19 Apr 1647, for draft orders which discuss a clog on the River Hull damaged by soldiers and therefore been unable to act as a "competent dreyn" to the Level and ease it of the floodwaters flowing through the Drypool breaches; CSR 10/1, Sept 1602, for a slightly earlier case where the East Riding Commission demonstrated a similarly sophisticated understanding of compound flood events.

⁶⁰ CSR 14/23, 20 Apr 1647; CSR 14/24, 19 Apr 1647.

⁶¹ CSR 14/23, 20 Apr 1647; CSR 19/1, 25 Apr 1647.

⁶² June Sheppard, *The Draining of the Marshlands of East Yorkshire*, PhD thesis, University of London (1956), p. 115, who cites a later Sewers case catalogued in the 1950s as Minutes E, Feb 1662.

⁶³ Sheppard, *Draining of the Hull Valley*, pp. 12–13.

⁶⁴ CSR 14/23, 20 Apr 1647.

⁶⁵ McDonagh et al., 'Living with Water', pp. 591–592.

Stuart Privy Council offered equitable remedies – that is, remedies not available at common law including under the Sewers Statute – hence the Drypoolers' choice to try to exploit existing legal uncertainties to petition the Council, the implication being that the local Commission were acting unjustly in imposing the whole costs of repairs on Drypool.

The Privy Council refused to intervene, however, and instead referred the matter back to the local Commission of Sewers.⁷² Thus, the Drypoolers' attempt to work around the common law and the local commission failed. The Commission were unsympathetic, and held to the norms of flood risk governance and the most conservative reading of the Statute, saying that they refused to do to the landowners in the Level the 'injustice' of imposing 'an unusuall burden' upon them, and instead applied the double tax of October 1639 to Drypool.⁷³ On the same day, the Drypool inhabitants signed an agreement between themselves undertaking to pursue further financial contributions from landowners in the Level.⁷⁴ The costs for this were to be 'taken out of the tax now alreadie layd': in other words, they planned to use the sums owed for maintaining the banks as a 'common purse' to fund legal cases. They signed their names with a promise that 'none of us shall fly away from this Order made', a commitment they seemingly honoured because – as we have seen – little in the way of repairs were undertaken in the years immediately preceding the 1646/47 floods.

Seven years later at the October 1646 session of the Sewers court, the Drypoolers submitted their second petition, this time addressed directly to the local Commission of Sewers.⁷⁵ They asked once again that the Commission 'add unto them such strong assistance of the adiacent Lordships & parishes to contribute in the premisses' so that 'the worke may be speedily done' and 'without which it cannot possibly be effected'. As in 1638, they made the point that the Drypool banks protected the wider Level, noting that breaches of the sea dike 'would be to the utter undoing of the whole Country adioning', the petition being submitted after the March 1646 storm surge hit Drypool and July 1646 floods impacted Hull, but before the major breaches of winter 1646/47.

This second petition for additional financial assistance made five key points, primarily focusing on refuting the Commission's claim that they had been neglectful in repairing the banks. Thus, the fifth and final clause argued that the March 1646 storm surge had been an act of God – 'a thing which came by the mighty power of God which noe power of man can withstand' – while the first clause referred to Drypool's particular geographical location on the river and estuary, and its resulting vulnerability. The inhabitants asserted that Drypool was 'but a screed of ground, adjoining upon the furious & unresistable arme of the sea called humber', its sea dike 'assaulted' by 'impetuous waves & surges' and therefore 'in great danger to be quite washed & carried away'.⁷⁶ The language of loss, impoverishment and victimhood

was standard across many types of petition and pleadings, but particular word choices are of interest here.⁷⁷ The language of violence – furious and irresistible seas, impetuous waves which assaulted the sea dike – was much used in relation to the Humber, including by the Corporation of Hull: for example, in a 1604 Exchequer case about pasture lands in Drypool 'worne and wasted by the violence of the Humber',⁷⁸ and in their 1622 petition referring to the 'violent rage' of the 'dangerous Ryver of Humber' which daily damaged the walls, banks and haven of Hull.⁷⁹ Some uses of the term violence/violent appear to refer specifically to the large tidal range in the Humber – for example, in a 1627 Bench Book entry about problems caused by the tides repeatedly grounding and re-floating a ship abandoned on the south shore of the Garrison⁸⁰ – but the idea of the Humber as 'violent' was generally a reference to its erosive capacity. This was a dynamic environment, a critical green-blue zone where the interface between land and sea was continually shifting. Reclaimed land was eroded in some places, and sediment deposited and new land made elsewhere in the estuary, over fairly rapid timescales.

That the Drypool shoreline was at the forefront of these processes was important to the second element of the petitioners' argument, which centred on the changing nature of flood hazards. The inhabitants did not dispute that they ought to maintain the flood banks, but claimed they had contributed their utmost to repairs, 'but the shore growing deep, & the tides swifter', they now needed additional financial support in order to protect the Level from tidal inundation. The implication was that changing physical processes in the Humber made it costlier to maintain the Drypool flood banks to a sufficient and safe level than had previously been the case. In other words, the Humber was dynamic and the situation having changed, more investment was now needed than the Drypool inhabitants could reasonably afford. The later sixteenth and early seventeenth centuries were a period of rapid morphological change in the Humber Estuary, most likely linked to the cooling climate and increased storminess in the North Sea. This was seen most obviously at the mouth of the Humber, where Ravenspurne – the forerunner to today's Spurn Point – had been lost by c. 1600 and a new spit formed by 1674, when Angell's Lighthouse

⁷² TNA SP 16/399/29; HHC, C BRL/277. They said this both endangered the Castle and could lead to the depopulation of Drypool, and asked that an order be issued 'for bringing in such part of the Level as by law is liable to the said reparations'.

⁷³ HHC, C BRL/278; CSR 14/9, 22 Oct 1639.

⁷⁴ CSR 20/65, 22 Oct 1639.

⁷⁵ CSR 12/1, 22 Oct 1646, which is the source for all direct quotes from the petition used in the following paragraphs.

⁷⁶ The Oxford English Dictionary gives: area or piece of land; esp. a narrow strip of land. In later use *Scottish* and *English regional*.

⁷⁷ Much of the language used was, of course, borrowed from that used in equity court pleadings and other petitionary forms. Cordelia Beattie, 'I your Oratrice: Women's Petitions to the Late Medieval Court of Chancery', in *Women, Agency and the Law, 1300–1700*, ed. by Bronach Kane and Fiona Williamson (London: Pickering & Chatto, 2013), pp. 17–29; Derek Hirst, 'Making contact: Petitions and the English republic', *Journal of British Studies*, 45 (2006) 45–47; Hannah Worthen, 'Supplicants and Guardians: The Petitions of Royalist Widows during the Civil Wars and Interregnum, 1642–1660', *Women's History Review*, 26 (2016) 528–40.

⁷⁸ TNA, E 134/2Jas1/Mich17.

⁷⁹ BB, C BRB/3 55r. See too: BB C BRB/2, 243r of 1585/6, where the Corporation noted that buildings along the River Hull side provided 'a verie good defence against the rage of the water frowninge and beateinge upon the same'. Similar language was used in other documents about coastal erosion: see, for example, Morgan, 'Funding and Organising Flood Defence', p. 423 on the East Lincolnshire Commission creating a document "Levy Book of the Sea & Towns in Great Danger" in 1500 on order to levy taxes from the towns considered most in danger 'against the rage of the sea'; and [<https://www.british-history.ac.uk/petitions/house-of-lords/1640>] from the Isle of Wight in 1631.

⁸⁰ BB, C BRB/3 85v. Today, the tidal range is up to c. 7 m at Hull (UK Hydrographic Office data, available at <https://easytide.admiralty.co.uk/?PortID=0175>. Accessed 25 Apr 2024).

was constructed.⁸¹ A new island, later known as Sunk Island, first appeared in the lea of the spit about 1560 and was actively embanked and reclaimed from the mid seventeenth century onwards – again, good evidence of changing physical processes in the Humber.⁸² There is support for this view elsewhere in the Commission's records: for example, in the case of a 1602 flood where the Commission noted that the loss of Ravenspurne had increased flood risk as far north as Tickton in the mid River Hull, more than 45 miles by water from Spurn.⁸³ Efforts throughout the region to reclaim and drain the wetlands bordering the Humber increasingly constrained the estuary, reducing accommodation space and – most likely – increasing the tidal range. It makes sense that the Drypool inhabitants would have experienced this as the tides growing 'swifter' – and that they would rely on this as an argument for why investment from beyond the township was now required.

The Drypoolers' third and fourth points referred to specific grievances of the Civil War years. They claimed that the flood banks had been kept in 'reasonable good repaire' until the Civil Wars, when the soldiers quartered in the castle and blockhouses had:

'by day and night ... broke & cutt upp a great parte of the woodworke of the jetties & footbanke for fiering and other occasions, and ... carried away a great quantity of the tymber & planke provided in store for the said repaires'.

After the initial establishment of the garrison, when it was well financed by Parliament because of its military importance, the governor Sir John Hotham struggled to raise money for its upkeep and soldiers' pay.⁸⁴ The later town history suggests that there was considerable ill feeling about the garrison in the town and surrounding areas, and this circumstance may help to explain the tack taken by the Drypoolers as they sought to shift the blame from themselves.⁸⁵

Relatedly, the Drypool inhabitants complained that their meadows and grounds were 'quite spoyled' when the banks were cut and the sluices opened in July 1642 and September 1643 as part of attempts to protect the Parliamentarian-held town from Royalist sieges.⁸⁶ While effective in military terms, the floods negatively impacted agriculture in the surrounding areas. As a later historian put it, 'The roads were covered and the hay crop spoiled. The tillage lay too high for inundation, but all the grass lands would lie waste

for some times after the water was drained away'.⁸⁷ Damage to the crops and soil was further compounded by a third flood in October 1643, which occurred because the Corporation – admittedly operating in a town under siege – was slow to repair the breaches cut in September.⁸⁸ Parliament promised to pay for damages to any owners or farmers of lands 'impaired by this overflowing of the water', but according to town historian George Hadley, this was never paid.⁸⁹ Moreover, the men commanded by Lord Fairfax had 'eaten upp' their grounds and taken their goods – presumably here referring to livestock – 'by force & killed before their faces without any satisfaction' (read: compensation). They asserted that these events in 1642 and 1643 had left the people of Drypool 'utterly disabled to repaire the [sea banks] as formerly', even while they had nevertheless contributed what 'little they had ... to still keep out the waters from breaking in upon the Country'. In other words, they not been neglectful, but had faced extraordinary circumstances that had impacted on their ability to pay for maintenance and repairs.

In making these assertions, the Drypoolers sought to refute the Commission's claim that they had been neglectful, arguing that they were instead subject to a range of other forces beyond their control – the violent sea, the changing tides, godly acts of meteorology, and the depredations of the garrisoned soldiers. The Drypoolers evidently knew their law, for there was a robust basis in contemporary understandings of Sewers law for their arguments. In his 1622 lectures on the subject, the Lincolnshire lawyer Robert Callis listed nine cases in which the charge of repairs might 'of meer necessity' be laid upon a level rather than, as was usual, on the landowners previously rated for repairs. These exceptions included: where the properties obliged to repair the defences had been washed away; where the hazard from the sea was 'so apparent dangerous' that the whole country was 'in danger to be overflown', but the chargeable parties alone could not sufficiently repair the defences; and where the sea 'at Spring tides, or at extraordinary casual swelling Tides or Floods' had broken the defences without any default by those obliged to repair the banks, because – as Callis put it – 'things which happen extraordinary by the Sea or great waters, which neither policy of man could prevent, nor industry or force could resist, are counted irevitable and undefenceable'.⁹⁰ In addition, where a new bank was needed, all those who would benefit from the new defences could be charged, there being no existing 'Prescription, Custom or Tenure bound to do the same'.

Callis's lectures did not appear in print until 1647, but his lectures and written text reflected his experience as a commissioner in Lincolnshire and that of his peers in Yorkshire and elsewhere. Thus, contemporary debates about exactly how the 1532 Statute should be interpreted offered the Drypoolers the opportunity to argue for a geographically expansive reading of 'direct benefit' that included landowners in the Level. They understood that their own inability to pay, combined with the extraordinary and changing nature of flood risk in the Humber, provided the legal basis for their assertion that they should not be wholly liable for the costs of repairs. In discussing and arguing their case – via petitions and legal actions,

⁸¹ K. J. Allison, *A History of the County of York: East Riding: Vol V: Holderness: Southern Part* (London: Institute of Historical Research, 1984) [hereafter VCH ER V], pp. 67–68. The antiquary John Leland referred to 'Ravenspur' in 1538, but it was not included in Raphael Holinshed's *List of Ports and Creeks of 1587*: Thomas Sheppard, *The Lost Towns of the Yorkshire Coast* (A. Brown & Sons, 1912). The lawyer, Robert Callis, speaking in 1622, noted that 'as of late years parcel of the Spurnhead in Yorkshire, which before did adhere to the continent was torn therefrom by the Sea, and is now in the nature of Island' (Robert Callis, *The Reading of That Famous and Learned Gentleman, Robert Callis Esq Sergeant at Law, Upon the Statute of 23 H. 8. Cap. 5. of Sewers: As it was delivered by him at Grays-Inn, in August 1622* (London: William Leak, 1647), p. 21).

⁸² VCH ER V, p. 135.

⁸³ CSR 10/1, Sept 1602. We make no comment here on the accuracy – or otherwise – of the commissioners' view that flood risk in the mid Hull was impacted by morphological change at the mouth of the Humber.

⁸⁴ Hopper, *The Papers of the Hothams*, pp. 83 and 233. In 1643, Hotham wrote to John Lenthall urgently requesting Parliamentary funds because without it 'either I must billet upon the town or the soldier must not eat'.

⁸⁵ Hadley, *Hull*, p. 206 states that 'The Corporation strongly remonstrated against admitting the Garrison', arguing that the town was small but populous and that there were already 'scarce dwellings enough for the inhabitants', even without the population growth that would likely ensue from soldiers marrying (or not) local women.

⁸⁶ Basil N. Reckitt, *Charles the First and Hull* (Hull: Brown & Sons), pp. 58, 94; HHC, C BR/L/472, 14 July 1646, which notes that the banks were deliberately 'cut' by the defending Parliamentarian forces 'for saving the Town by overflowing the ground'.

⁸⁷ T. Blashill, Sutton-in-Holderness: The manor, the berewic, and the village (London: Elliot Stock, 1900), p. 174. Available at: https://archive.org/stream/suttoninholderne00blasiala/suttoninholderne00blasiala_djvu.txt.

⁸⁸ Hadley, *Hull*, pp. 187, 189 and 192. Hadley's marginal gives October 1644, but the events follow on from the Civil War siege and belong to October 1643.

⁸⁹ Parliament, *Two declarations of the Lords and Commons assembled in Parliament* (London: 1642); Hadley, *Hull*, p. 206. The Corporation also complained about floods in their 1645 petition, arguing that: 'Wee have beene much impouerished by our wasting & pulling downe of our howses, digging up our inclosure & fences, and by drowning our groundes with salt water of purpose to hinder the Enemys approaches' (BB, C BRB/3 331r, July 1645).

⁹⁰ Callis, *Sewers*, pp. 113–115.

in person at the Sewers court, and doubtless also in alehouses, streets and homes across Holderness – the Drypoolers sought to renegotiate the norms of flood risk management as practised in mid seventeenth-century England. Morgan has previously shown that water management was ‘deeply woven into the social fabrics of communities’ due to the role that some local people, deployed by Commissions as jurors, had to survey and report on the landscape.⁹¹ Here we have shown that small landholders and taxpayers like those at Drypool were also important actors in flood risk governance even if – as we shall see in the next section – their attempts to reshape legal and financial practices around flood risk management in the Holderness Level were ultimately unsuccessful.

Financial responsibility and flood justice

As a consequence of the very widespread winter inundation 1646/47, the Commission set about attempts to raise finances for the repairs of the banks with increasing urgency from spring 1647. Whilst the financial responsibility for repairs was squarely put on the inhabitants of Drypool, raising the sums required proved extraordinarily tricky. The 947li tax imposed in spring 1646 remained unpaid in July 1647, when according to a letter from one of the commissioners, the Drypoolers not only failed to pay the levy but also went to the trouble of ‘remoueing the goods into Hull out of this County’ (i.e. the East Riding), presumably to avoid distraints by the Commission.⁹² This repeated the Commission’s complaint of October 1646, when they also asserted there had been underhand behaviour on the part of the Drypoolers to avoid paying for repairs.

Thus, the commissioners found themselves in a near impossible position. The levies owed by the Drypoolers remained unpaid and the breaches in the flood banks continued to let tidal waters in, flooding lands in the Holderness Level. Another winter would likely make the flooding worse and the job of undertaking the repairs yet more difficult. As a result, the Commission was ‘inforced to call in the Leuell’.⁹³ In an order dated April 20, 1647, the Commission recited how having found they had ‘noe visible meanes either to reparaire the present or resist & prevent future hazard’ to the Level, they now ordered the landowners in the Level to contribute to the costs of repairs. Seventeen townships were ordered to pay 3 shillings an acre towards repairs at Drypool. This decision seems to have been motivated primarily by financial urgency, but the commissioners – like the Drypoolers – knew their law. Hence, the recital carefully outlined the necessity of these measures in an attempt to establish the legitimacy of the decision. Thus they drew on legal knowledges that were, according to Morgan, becoming increasingly grounded in text (such as Callis’s) and precedent as the seventeenth century drew on.⁹⁴ The order also specified that this was to be ‘for the present onely & not as binding for the future’, a common legal framing based on the Commission’s resolve to ensure that this decision did not set a precedent.⁹⁵ This was, of course, a reversal of the Commission’s position in 1638 and 1646, when they considered it an ‘injustice’ to burden the landowners in the Level with the costs of repairs. The Drypoolers must have been

delighted by the decision, though the commissioners anticipated resistance from the newly taxed landowners in the Level: the collectors were empowered to apply a double levy to anyone refusing to pay, and to distrain and, if necessary, sell the goods and chattels of debtors ‘wheresoeuer they shall be found’.⁹⁶

Local collectors – most likely the parish constables, as was the norm also for Ship Money, rather than dikereeves as in Morgan’s study of Lincolnshire – were ordered to collect the sums owed.⁹⁷ As anticipated, they met fierce resistance in the townships, with the Commission’s repeated orders about collecting the money making clear that the constables were failing in their task.⁹⁸ Such was the scale of non-payment that in May, the Commission was forced to change tack. They issued a clarification that not only was the rate at 3s an acre ‘for this tyme onely’, but that all such monies paid out by the Level townships were to be repaid out of the lordship of Drypool ‘at the first opportunity’.⁹⁹ This additional order seemingly did little to reassure taxpayers and the sums levied in the Holderness Level remained unpaid.¹⁰⁰ As a consequence, in June 1647, the collectors themselves were fined for not laying the assessment.¹⁰¹ Then in July 1647, when the collectors failed to pay their own fines, the Commission took the unusual decision to jail the collectors, committing them to York Castle.¹⁰² This technically lay within their powers, but was by no means ordinary practice.¹⁰³ It was most likely also at this point that the Commission raised a warrant for the sheriff for a *posse comitatus*, an extraordinary force of able-bodied citizens, to assist with collecting the assessment – a decision which again speaks to the commissioners’ desperation and their willingness to pursue extraordinary solutions in order to raise the necessary funds.¹⁰⁴

The jailed men petitioned the Commission for mercy in early August 1647, arguing that ‘they did not wilfully offend nor intends to doe’, further emphasizing that, ‘It is verie preiudiciale your petitioners should be from home, especially hay harvest being in the height, and corne harvest come may first on’.¹⁰⁵ The jailed collectors were ultimately released after promising to lend their own money for the repairs and also having said ‘sorie for their forwardnesse and former obsitancie’.¹⁰⁶ In demanding that the collectors personally extend the money for repairs, the Commission was following practice elsewhere: as Morgan notes, exponditors and dikereeves were, on occasion, left significantly out of pocket by paying for repairs.¹⁰⁷ Attempts to survey the lands flooded (so as to impose the levy) also met with resistance: the constables were charged with the task in August 1647, but their verdicts were

⁹⁶ Ibid.

⁹⁷ Morgan, ‘Funding and Organising Flood Defence’, *passim*.

⁹⁸ CSR 14/28, 2 June 1647; CSR 14/27, 1 July 1647.

⁹⁹ CSR 14/26, 18 May 1647.

¹⁰⁰ CSR, 4/1, 8 June 1647 (part of a larger bundle).

¹⁰¹ CSR 20/69, 1 July 1647.

¹⁰² CSR 14/29, 1 July 1647.

¹⁰³ In 1614, William Hetley was committed to jail by the Commissioners of Sewers for Northamptonshire for failing to pay his taxes. However, he challenged the Commission of Sewers use of discretionary power in the Court of Kings Bench and the Commissioners were censured by the Lord Chief Justice for overreaching their authority: Clive Holmes, ‘Statutory Interpretation in the Early Seventeenth Century: The Courts, The Council, and the Commissioners of Sewers’, in *Law and Social Change in British History*, ed. by J.A. Guy and H.G. Beale (London: Royal Historical Society, 1984), pp. 107–117 (p. 115).

¹⁰⁴ CSR 19/2, 30 July 1647.

¹⁰⁵ CSR 12/2, 5 Aug 1647.

¹⁰⁶ CSR 14/29, c. Aug 1647.

¹⁰⁷ See Morgan, ‘Funding and Organising Flood Defence’, p. 428 on the case of James Smith, who was Exponditor of Works at Margate (Kent), and was bankrupt by paying out hundreds of pounds for flood defences that failed to stop a destructive flood. As Morgan notes, a number of Lincolnshire dikereeves were also left out of pocket by repairs.

⁹¹ Morgan, ‘The Micro-Politics of Water Management’, p. 423.

⁹² CSR 19/2, 30 July 1647. Note: the ERYA catalogue wrongly refers to this as a letter from ‘Christopher Bielby’, but the author is Christopher Ridley of Sutton.

⁹³ Ibid.

⁹⁴ Callis, *Sewers*, pp. 113–5; Morgan, ‘The Micro-Politics of Water Management’, pp. 426–429.

⁹⁵ CSR 14/23, 20 April 1647. Note the similar formulation used in Voorne in the southern Netherlands after a storm of 1509, when the neighbouring polders agreed to contribute to the costs of repairs ‘voor deze reyse, uit gratie en zonder prejuditie van dien’ [‘for this single time, as a favour, and with no consequences’] (Tielhof, ‘Forced Solidarity’, p. 328).

judged 'defective' in October because they did not contain the required details of the acreages to be assessed, and a new survey was ordered.¹⁰⁸

As a consequence of the repeated failure of efforts to raise taxes across the region, the commissioners eventually took matters into their own hands. They said that 'seeing the miserable condition of that part of the Countrey ... and destitute of the least hope of causing ... the said banks to be made sicure or others to bee cast & modelled a new', they decided to 'apply ourselves to a new remedie'.¹⁰⁹ That remedy was to abandon the old sea dike – presumably the embankment shown on Hollar's map (see Fig. 2) – and arrange for a new sea dike to be constructed. This was paid for by the commissioners themselves, who borrowed the money and secured the loans against bonds. By late October 1647, the new flood bank was 'at present happily bought to some perfection with the Expenses of 600li or thereabouts so as now the said level is dreyned & freed at present; & for the future secured'.¹¹⁰

The mid October 1647 verdict, whilst ultimately judged defective because of the missing acreages, does help us understand the legal manoeuvre by which this was achieved. The jury found that the southern townships – including Drypool, Southcoates, Marfleet and parts of Sutton, Stoneferry and Bilton – were 'overflowne by the Saltwater this last winter', but said that 'no other Townes or Lordships ... could have been hurt by the Runing of the Gymes' [read: water flowing through the breaches] if Gold Dike in Sutton had been adequately repaired.¹¹¹ The jury did not specify, but the decayed drain in Sutton was presumably inundated by tidal floodwaters and hence unable to carry away waters from further north. This reiterated the sophisticated understanding of compound flood events evidenced in the Commission's April 1647 draft orders, but went further in making a determination about the extent of the salt water flooding and using this as evidence for how the costs of flood risk management should be spatially distributed. The jury did not dispute that the northerly townships from Wawne to Hempholme had flooded at the time of breaches, but found that although formerly assessed for the repair of Drypool banks, they had not 'receyved any damage by the Salt Waters'. The clear implication was that the northern townships did not derive 'direct benefit' from the Humber banks, but only indirect benefit, hence – in the jury's view – they were not liable for their repair. This was a reversal of the jury's findings of April 1647 (as recorded in Fig. 3), and support for the Commission in its earlier refusal to extend the tax to the wider Level.¹¹² Thus the Drypoolers' attempt to force the Commission to expand the geographical scale of flood risk responsibility beyond the coastal townships failed. The sums borrowed by the commissioners to fund the new flood bank still needed to be repaid, and so the Commission reverted to its conservative 1639 and 1646 position – that is, rating the costs of the repairs primarily on the landowners of Drypool – and again levied an assessment of 584li 17s on them.¹¹³

When, once more, the Drypool landowners refused to pay their taxes, the Commission began to enact harsh punishments, specifically using their powers under the Statute to seize and sell property. The records contain evidence of at least two instances of land in

Drypool being sold in order to pay for the repairs. One of the landowners was Margaret Blaides, the widow of Joseph Blaides. Joseph had, in August 1647, written a letter to the Commission outlining his own commitment to the works. He argued that he had 'neuer bene bacword' in paying the assessments until they were 'Cutte tow [sic] seuerall years together': in other words, he paid the single assessment but balked at the double assessment. He said he had paid for the 'first works' for the new sea dike – i.e. the first assessment – as well as paid for two of his own men to work repairing the breaches. All this was done – he noted somewhat sourly – for 'fower acares of bad grownd'.¹¹⁴ Joseph died soon after, and the Commission ordered that Margaret's land be sold to raise money towards her 55li debt. The Blaides family ultimately manoeuvred to ensure that these lands stayed in the family, as the land was sold to her son William Blaides who also bought adjoining lands previously owned by another landowner who defaulted on his tax.¹¹⁵ Thus, the Drypool landowners were not without the means to resist the high tax burden placed on the lordship: by refusing to pay more than they deemed fair, by engaging in acts of petitioning, and then finally by using legal means to retain family properties.

The whole affair is a good example of what Tielhof has called 'scale mismatch' where the flood protection measures required were of a size or complexity beyond what local levies would support, hence wider areas were called in and 'forced solidarities' enacted.¹¹⁶ This approach is evidenced in England as well as the Low Countries, as – for example – in the levy book from coastal East Lincolnshire which listed towns not in immediate danger from 'the rage of the sea' but which, because they were in danger if the coastal banks failed, could be called upon to contribute financially from time to time at the discretion of the local Commission.¹¹⁷ The East Riding commissioners, like their Dutch and Lincolnshire counterparts, were clearly aware of the wider geographical horizons within which flood risk management needed to be situated, not least because changes to landforms and water management in one place could have impacts across the catchment. The commissioners' belief that the loss of Ravenspurne impacted flooding in the mid-Hull Valley in 1602 speaks to this, as does their response to repeated complaints about other watercourses in the East Riding. For example, landowners in Burton Pidsea complained about the 'insufficiency' of Keyingham Fleet to drain neighbouring townships in 1616, and again in 1647, when the same Commission of Sewers embroiled in the Drypool affair ordered local men at Keyingham to survey the Fleet for stoppages and inconveniences, it being the 'Common drayne for diverse grounds'.¹¹⁸

Yet while both the East Lincolnshire Commission and the Flanders communities studied by Tielhof had put in place guidance as to how incidents of 'scale mismatch' should be managed, the East Riding Commission had not. They therefore faced repeated difficulties in asserting their reading of Sewers law and collecting the taxes they had levied for repairs. Thus, the Drypool case shows us what happens when things go wrong. It speaks both to the importance that the Commission placed on collecting these taxes, but also to the considerable resistance they met in raising the funds for flood protection works. This was true in the township of Drypool – where, as we have seen, the inhabitants offered a complex justification for their refusal to pay – and in the other townships in the Level, where

¹⁰⁸ CSR 14/30, 31 Aug 1647; CSR 14/31, 18 Oct 1647; CSR 4/1, 26 Oct 1647.

¹⁰⁹ CSR 14/32, 26 Oct 1647.

¹¹⁰ Ibid.

¹¹¹ CSR 20/71, 18 Oct 1647. See too CSR 12/7, late seventeenth century, where the inhabitants of Sutton disputed their obligations to maintain Gold Dike as a public drain in the wake of a flood which left the road to Hull impassable.

¹¹² The late October 1647 verdict is referred to in CSR 4/1, but not copied there. The related order (CSR 14/32) makes clear that the costs were imposed on Drypool.

¹¹³ CSR 14/32, 26 October 1647, this was the same rate of assessment raised a year earlier (CSR 14/21, 22 October 1646). Note also the huge increase from the original pre-1639 tax burden for the Lordship of 84li (CSR 14/9).

¹¹⁴ CSR 19/3, 7 Aug 1647.

¹¹⁵ CSR 14/34 and 35, both 25 Jan 1649; CSR 20/3, 25 Jan 1648; CSR 20/73, 5 Jan 1649.

¹¹⁶ Tielhof, 'Forced Solidarity', 325.

¹¹⁷ Morgan, 'Funding and Organising Flood Defence', p. 423.

¹¹⁸ CSR 14/1, 28 Aug 1616; CSR 14/25, 4 May 1647. See June Sheppard, *The Draining of the Marshlands of South Holderness and the Vale of York*, on the later history of Keyingham drainage works. The later seventeenth-century case about Gold Dike in Sutton speaks to some of the same themes.

there was considerable opposition to what was perceived as an unusual and unjust demand that non-coastal townships contribute to the costs of repairing the Humber 'sea dikes'. The difficulties faced by the East Riding Commission in collecting the sums owed and rebuilding the flood defences indicate the ways the power of the Sewers Statute was shaped, as Morgan has also argued, by local will and custom. Sewers law was negotiated, just as were property law and common rights, not only through legal treatises and opinions, but also via party-to-party negotiations, informal agreements, court cases and the non-payment of levies.¹¹⁹

Conclusions

The detailed examination of the Holderness Level floods and their aftermath provided in this article offers important insights into how early modern people lived with and responded to extraordinary flooding at a time of environmental, social and political crisis. The article reconstructed the causes, extent and impacts of the winter 1646/47 Holderness floods, demonstrating how in its extent (20+ parishes and townships), duration (6+ months), impacts, and socio-legal ramifications, this was a flood disaster very different to other pre-modern flood events in the region. Thus, while the inhabitants of Hull and the Humber region lived more or less successfully with floods over hundreds of years, occasional and extraordinary flood events like this one caused significant losses and disruption including: damage to houses, goods and other property; agricultural losses resulting from lost animals, destruction of standing crops, and longer-term salt damage to farmland; and disruption to travel and access to markets. Perhaps most significantly, the 1646/47 floods and the ensuing arguments about who should pay for flood protection led to the production of the body of archival material used here to shed light on the extraordinary financial and legal measures taken by the East Riding Commission of Sewers as they attempted to repair, then later rebuild, the Humber flood banks.

In utilising a case study where flood risk management 'failed' and land and houses were flooded, we have explored early modern expectations of 'good' flood risk governance and the ways that this was negotiated and contested by a range of stakeholders in a geographically situated way. Thus, we have shown that histories of governing flood risk should be an important part of wider discussions about land management, property, and social negotiations in early modern England. Our article has underlined the role played by local actors in managing and governing flood risk in seventeenth-century England showing that, in addition to Commissioners of Sewers and dike-reeves, local landowners and taxpayers – including those from quite modest backgrounds – were key stakeholders shaping the norms of flood risk governance.¹²⁰ From legal cases and direct lobbying action in the form of letters and petitions to more passive forms of resistance such as the non-payment of taxes, the inhabitants of Drypool attempted to influence the implementation of the Sewers Statute in order to protect their land and livelihoods. The landowners in the Holderness Level did similarly, asserting a conservative reading of the Statute and a geographically circumscribed notion of 'direct benefit' which imposed the financial burden of flood risk management on those living closest to the flood banks. Both groups demonstrated their familiarity with Sewers law and its various readings, and the more and less expansive geographical horizons within which flood

risk management was situated in seventeenth-century England. In doing so, they exploited the inherent ambiguities within the Statute and revealed the ways in which the practical application of early modern law relied upon a series of negotiations between diverse participants at the local level that were enacted via a broad range of legal and other strategies involving actors and institutions in Hull, the East Riding, London and elsewhere.¹²¹

Our story of flood risk governance is ultimately one of continuity, not change; that is, of the East Riding Commission's failure to instigate a more geographically-expansive, shared or collective vision for flood risk management and responsibility, as they focused on reducing the county's fiscal burden at a time of social and economic, as well as environmental, crisis. While the commissioners themselves recognized the catchment-scale processes which shaped flood risk in the East Riding – as indicated by their discussions about the loss of Ravenspurge and their knowledge of compound flood events – they initially resisted a reading of Sewers law which applied this geographically-expansive understanding of flood risk to the question of financial responsibility for flood defences. Later, their attempt to impose 'forced solidarities' – of the kind Tielhof has described as operating in the early modern Netherlands – abjectly failed, with the result that the costs of rebuilding the Humber flood banks were primarily borne by the inhabitants of Drypool rather than those living in the Holderness Level. Thus, the orthodoxy about where and with whom financial responsibility for flood defences lay was ultimately maintained by the East Riding Commission. This was despite the best efforts of the Drypoolers, who clearly understood the Commission's decision as an injustice. And the fact that the waterlogged fields, blocked roads and flooded houses of winter 1646/47 strongly indicate that the Drypool banks had – until they breached – offered 'direct benefit' (read: flood protection) to at least part of the wider Level. Therefore, in contrast to Morgan's finding that 'moments of significant flooding were catalysts for institutional change', there was no major shift in flood risk governance or responsibility in the Humber region as a result of the 1646/47 floods.¹²² Future research might productively investigate wider histories of flood risk governance in the period before the major drainage works and agricultural changes of the later seventeenth and eighteenth centuries, but our results echo the work of van Bavel and others on historic European disasters which found that adaptation did not always occur as a result of the impacts of an environmental hazard. Instead, they found that adaptation typically only occurred where the 'vested interests' of the powerful were directly hit by disasters.¹²³

Discussions in the wake of the 1646/47 Hull and Holderness Level floods presented an opportunity – ultimately missed by the East Riding Commission – to change the financial model for flood protection and make choices with the potential to distribute the costs of flood protection more equitably. Questions about who pays for flood risk management and who gets a 'seat at the table' in flood and climate governance are all the more pressing today as we face an uncertain future in which coastal and estuarine communities – including those on the Humber Estuary and Holderness coast – will need to adapt and transition as climate risks increase and some of our existing engineered flood defences reach end-of-life. How we

¹¹⁹ On negotiating property law, see: Briony McDonagh, 'Making and breaking property: negotiating enclosure and common rights in sixteenth-century England', *History Workshop Journal* 76 (1) (2013) 32–56. On custom: Andy Wood, *The Memory of the People: Custom and Popular Senses of the Past in Early Modern England* (Cambridge: Cambridge University Press, 2013).

¹²⁰ On dike-reeves, see Morgan, 'Funding and Organising Flood Defence', pp. 417–421.

¹²¹ For more on local negotiations and popular political participation in early modern England see, for example: Steve Hindle, *On the Parish? The Micro-Politics of Poor Relief in Rural England, c.1550–1750* (Oxford: Oxford University Press, 2004).

¹²² Morgan, 'The Micro-Politics of Water Management', p. 417.

¹²³ van Bavel Curtis and Soens, 'Economic Inequality and Institutional Adaptation'. See too Daniel Curtis, 'Danger and displacement in the Dollard', *Environment and History* 22 (1) (2016): 103–35 who demonstrates that the 1509 floods in North-East Groningen increased smallholder dispossession and consolidated land into the hands of elite and absentee landowners, while also acting as a block to the emergence of agrarian capitalism.

work to ensure inclusive resilience building, support just adaptation, and minimize maladaptations that deepen existing – or generate new – vulnerabilities are the focus of government policy and of transdisciplinary enquiry and action in the UK and globally. One study of how our forebears managed and governed flood risk more than 350 years ago does not an adaptation pathway make. But our historical exploration of how flood risk governance was negotiated in a UK east coast estuary not only offers a lesson for what we might do better in the future, but also provides a crucial jumping off point to engage productively with non-academic communities – including with groups whose experiences and needs have not always been well-represented within conventional models of coastal management – around flood risk management and coastal transition, and, more importantly, in building resilience, action and community solidarities for a climate changed future.¹²⁴

Data availability

All associated data is included within the article (see footnotes for full references).

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¹²⁴ On arts and humanities-led approaches to building climate awareness and resilience, see Edward Brookes, Briony McDonagh, Corinna Wagner, Jenna Ashton, Alice Harvey-Fishenden, Alan Kennedy-Asser, Neil Macdonald and Kate Smith, 'Learning from arts and humanities approaches to building climate resilience in the UK', in *Quantifying Climate Risk and Building Resilience in the UK*, ed. by Suraje Dessai, Kate Lonsdale, Jason Lowe and Rachel Harcourt (London: Palgrave Macmillan, 2023), pp. 75–89. For specific examples of using early modern watery petitions to drive anticipatory flood resilience and climate action in the here-and-now, see: Hannah Worthen, Edward Brookes, Kate Smith, Gill Hughes, Stewart Mottram and Briony McDonagh, 'People Power and Water Politics', *History Workshop* Online (2024) <https://www.historyworkshop.org.uk/environment-animals/people-power-and-water-politics/>; Briony McDonagh, Edward Brookes, Kate Smith, Hannah Worthen, Tom J. Coulthard, Gill Hughes, Stewart Mottram, Amy Skinner and Jack Chamberlain, 'Learning histories, participatory methods and creative engagement for climate resilience', *Journal of Historical Geography* 82 (2023) 91–7.