

**ECONOMIC AND SOCIAL RESEARCH COUNCIL
END OF AWARD REPORT**



For awards ending on or after 1 November 2009

This End of Award Report should be completed and submitted using the **grant reference** as the email subject, to **reportsofficer@esrc.ac.uk** on or before the due date.

The final instalment of the grant will not be paid until an End of Award Report is completed in full and accepted by ESRC.

Grant holders whose End of Award Report is overdue or incomplete will not be eligible for further ESRC funding until the Report is accepted. ESRC reserves the right to recover a sum of the expenditure incurred on the grant if the End of Award Report is overdue. (Please see Section 5 of the ESRC Research Funding Guide for details.)

Please refer to the Guidance notes when completing this End of Award Report.

Grant Reference	RES-000-22-2693		
Grant Title	London and the Tidal Thames 1250-1550: Marine Flooding, Embankment and Economic Change		
Grant Start Date	01/03/2008	Total Amount	£103,410.34
Grant End Date	28/02/2010	Expended:	
Grant holding Institution	University of London		
Grant Holder	Dr. James Galloway		
Grant Holder's Contact Details	Address	Email	
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Co-Investigators (as per project application):		Institution	

1. NON-TECHNICAL SUMMARY

Please provide below a project summary written in non-technical language. The summary may be used by ESRC to publicise your work and should explain the aims and findings of the project. *[Max 250 words]*

The project investigated changes in the human and natural environments of the marshlands bordering the tidal river Thames and the Thames Estuary between 1250 and 1550. At the beginning of this period the marshlands had largely been drained and protected by banks or walls, so that they could be used for arable and pastoral farming. During the three centuries studied, however, many of these reclaimed marshes were flooded by the sea or by freshwater inundation. The causes were partly natural and partly human. Major flooding events may have become more common, and clusters of North Sea storm surges occurred, in which winds and tides combined to thrust large quantities of sea-water into the Thames Estuary, overwhelming flood defences. At the same time, declining population after c.1300, and associated agricultural recession, meant that it was no longer so profitable to defend the marshes against the sea. As a result, especially after the 1370s, many marshes flooded, and attempts to recover them were given up. Among the areas most affected were parts of the Barking, East Ham and Dagenham marshes, the Isle of Dogs, Erith and Lesnes marshes and the marshes around the mouth of the river Medway. In these and other locations fishing, fowling and the cutting of reeds and rushes replaced farming as the main sources of employment and income. Londoners complained about some of the effects of flooding, but may have benefited from the 'retreat' from the down-river marshes, which reduced the flood risk to Southwark, Bermondsey and other vulnerable suburbs.

2. PROJECT OVERVIEW

a) Objectives

Please state the aims and objectives of your project as outlined in your proposal to the ESRC. [*Max 200 words*]

The research aimed to contribute to the economic and environmental history of the tidal river Thames and the Thames Estuary during the later middle ages (c.1250-1550). Specifically, it sought to explore the impact of storm surges originating in the North Sea upon the lands bordering the Thames, including the city of London and its suburbs, and to assess the short- and long-term human response to these extreme events. The main objectives were:

1. To extend the known chronology of storm surges and marine flooding in the Thames area through an investigation of the period 1450-1550, and to refine and revise the provisional chronology for the period 1250-1450 through the examination of a greater range of manuscript data sources.
2. To investigate the changing impact of marine flooding upon the metropolitan area over the period 1250-1550.
3. To devise measures to help quantify the extent of late medieval retrenchment and land-use change in the marshlands bordering the Thames Estuary and tidal river.
4. To assess the role of London and Londoners in shaping responses to the flood threat and specific flooding events between the mid thirteenth and mid sixteenth centuries.

b) Project Changes

Please describe any changes made to the original aims and objectives, and confirm that these were agreed with the ESRC. Please also detail any changes to the grant holder's institutional affiliation, project staffing or funding. [Max 200 words]

There were no changes to the original aims and objectives.

In the original application a laptop computer was requested. This was, however, provided by the University's network support services (a replacement battery not covered by the agreement was purchased from the grant). The savings from this and a reduction in costs of producing the working papers volume were diverted towards the costs of Dr Galloway presenting a paper on the project at the first World Congress of Environmental History (Copenhagen, August 2009).

c) Methodology

Please describe the methodology that you employed in the project. Please also note any ethical issues that arose during the course of the work, the effects of this and any action taken. [Max. 500 words]

The study was document-based, although the evidence of archaeology was also incorporated through a systematic search of published and unpublished reports of excavations and surveys carried out within the study area. The corpus of post-medieval maps was also examined for indications of coastline changes and the sites of breaches in sea- and river-walls.

The principal documentary sources used were:

1. Manuscript manorial accounts, farmers' accounts and related estate documents (thirteenth to sixteenth centuries) containing details of land-use and the maintenance of sea and river-defences at a sample of manors which included areas of marshland adjoining the Thames Estuary and tidal river.
2. Printed records of the English central government, c.1250-1550. These sources provide much detail on the incidence of flooding and on responses to the flood threat, including the issuing of commissions *de walliis et fossatis* (commissions of sewers).
3. Printed sources for the governance of London, thirteenth to sixteenth centuries, including *Calendars of Letter Books*, *Plea and Memoranda Rolls*, *Liber Albus* and *Liber Custumarum*, and unpublished fifteenth- and early sixteenth-century Journals and Repertories.
4. Lay subsidy returns (National Archives, PRO class E179) and printed editions of the 1334 and 1524 lay subsidies.

Quantifiable data on coastal- and river-defence expenditure and land-use in estuarine and river-side marshes within a study area extending from the environs of London eastwards to Whitstable in Kent and Foulness in Essex were collected from manuscript sources and entered into Excel spreadsheets. These data have been used to generate time-series, illustrating both crisis episodes, associated with abnormal expenditure on defences and the loss of livestock by drowning, and long-term shifts in land-use indicated by the highly detailed agricultural information contained in manorial accounts and associated estate documentation. Correlation

of time-series and comparison with data from the Low Countries has been used to distinguish widespread, surge-related flooding from localised events. Information on land values, labour costs and commodity prices was used to model the changing economic viability of reclaimed marshlands over the course of the later middle ages. Data on taxable wealth in the early fourteenth and early sixteenth centuries and associated information on tax remissions was entered into spreadsheets and analysed to help identify those areas most affected by long-term flooding and retrenchment. The more qualitative data from printed and manuscript sources has been entered into appropriate text-analysis software for easy organisation and retrieval. These data on events, policies and institutions are used to contextualise and interpret the quantitative data. The spatial impact of some individual storm surges is reconstructed from analysis of the full range of quantitative and qualitative sources. Mapinfo software has been used to map aspects of the data.

d) Project Findings

Please summarise the findings of the project, referring where appropriate to outputs recorded on *ESRC Society Today*. Any future research plans should also be identified. *[Max 500 words]*

Analysis of quantitative and qualitative sources has permitted the identification of key episodes in the history of the tidal Thames and Thames Estuary between the mid thirteenth and mid sixteenth centuries. The most serious and wide-ranging episodes of surge-related flooding affecting the Thames-side lands occurred in the 1280s, 1323-4, 1334, the mid 1370s, 1404, 1421, c.1450, 1477 and 1530, although many other less severe or more localised floods have been identified. Before the Black Death of 1349, most flood damage sustained by the reclaimed marshlands bordering the Thames was remedied fairly rapidly. Afterwards, and in particular from the mid 1370s onwards, more protracted flooding of extensive areas became common; in some cases reclaimed lands reverted to inter-tidal conditions for periods of a century or more. This was true of lands in the Barking and East Ham area flooded in the 1370s, and of many of the marshes around the mouth of the river Medway, devastated by storm surges c.1400. Economic conditions did not favour sustained recovery of 'drowned marshes' until the sixteenth century, when institutional disruption, associated with the dissolution of the monasteries, provoked further episodes of flooding, as at Lesnes in NW Kent.

The lands subject to long-term flooding had formerly comprised highly-valued arable and pasture lands, many of them having strong links to the London market. The rise in labour costs and decline of prices for agrarian produce reduced their value in the aftermath of the Black Death. While some lands continued to be farmed, and their sea- and river-defences maintained, where flooding occurred, often as the direct result of a storm surge, it might no longer be economically viable to effect repairs. Landlords and tenants in such locations might rather choose to exploit newly developed fisheries on flooded marshes, or to harvest other semi-wild resources through fowling and the cutting of reeds or rushes.

Whereas c.1300 London's interest in the Thames-side lands had primarily been one of investment in profitable agricultural land, and marketing the produce thereof, the later middle ages saw concern expressed for the river's fisheries, as weirs and fish-traps set up on flooded marshland were perceived to cause damage to stocks through the indiscriminate trapping of fry. Attempts were made to extend the jurisdiction of the Mayor to flooded ground adjoining the Thames, in order to tackle this issue. At the same time, London's southern suburbs may have suffered less flooding than earlier, due to the 'retreat' from the marshlands down-river, which provided new storage capacity for floodwaters.

Further details of these findings can be read in the various outputs recorded on *ESRC Society Today*, summarised in several conference papers and treated at greater length in a paper published in the *Journal of Medieval History*. Several other outputs are in preparation, including a volume of working papers arising from a one-day conference held in October 2009. It is planned to continue and extend the research begun during the project as part of a broader environmental history of the Thames Estuary during the later middle ages.

e) Contributions to wider ESRC initiatives (eg Research Programmes or Networks)

If your project was part of a wider ESRC initiative, please describe your contributions to the initiative's objectives and activities and note any effect on your project resulting from participation. *[Max. 200 words]*

N/A

3. EARLY AND ANTICIPATED IMPACTS

a) Summary of Impacts to date

Please summarise any impacts of the project to date, referring where appropriate to associated outputs recorded on *ESRC Society Today*. This should include both scientific impacts (relevant to the academic community) and economic and societal impacts (relevant to broader society). The impact can be relevant to any organisation, community or individual. *[Max. 400 words]*

Scientific impacts include a contribution to the emergent field of medieval environmental history. Specifically, the research has pioneered systematic analysis of the impact of storm flooding and associated environmental changes upon a coastal and riparian wetland in the later middle ages. The connections between economic and environmental change have been brought out, and the conflicting interests of different social groups emphasised. The work has thus also contributed to the social and economic history of later medieval England. It has also impacted upon understanding of the occurrence and chronology of extreme weather events between 1250 and 1550. These academic impacts have been effected through the conference papers recorded on *ESRC Society Today* and the paper published in *Journal of Medieval History* in 2009. International impacts have been effected through participation in networks such as ESEH and ENFORMA, and through presentation of research results at the first World Congress of Environmental History (Copenhagen, August 2009) and the Landscape or Seascapes meeting in Ghent (April 2010).

Diffusion of the results of the research to a broader audience has been effected through summaries in general readership publications and an 'Exploring Environmental History' podcast (see *Society Today* outputs). Contacts were established with various statutory and voluntary bodies involved with coastal management, conservation and flood defence in the Thames area. Representatives of English Heritage and the Environment Agency attended the workshop 'London, the Thames and Water: new historical perspectives' organised in October 2009.

b) Anticipated/Potential Future Impacts

Please outline any anticipated or potential impacts (scientific or economic and societal) that you believe your project might have in future. *[Max. 200 words]*

It is anticipated that future outputs will be of a similar nature and variety to those outlined above. Further publications, including a volume of working papers arising from the October 2009 workshop, are in preparation. Input has been invited into the review of coastal landscape management being conducted by the University of Exeter, the RSPB and the Historic Environment Service of Essex County Council and coordinated by Professor Stephen Rippon (Exeter) under an AHRC Knowledge Transfer Fellowship grant.

You will be asked to complete an ESRC Impact Report 12 months after the end date of your award. The Impact Report will ask for details of any impacts that have arisen since the completion of the End of Award Report.