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**RIVER TRANSPORT 1189 – 1600**

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DOCTOR OF PHILOSOPHY

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AUGUST 2010

**UNIVERSITY OF SUSSEX****DOUGLAS JOHN MORRIS CAFFYN. DOCTOR OF PHILOSOPHY****RIVER TRANSPORT 1189 - 1600****SUMMARY**

The purpose of this thesis is to establish the extent of river transportation in the period 1189 - 1600. Investigation is made as to which rivers were physically usable, which were legally usable and the comparative cost of land and river transport. The evidence of historic use is examined and these records are compared with the recent limits of use of the rivers. Hence an estimate is made as to which sections of rivers were probably used during that period.

The principles of fluvial geomorphology have been used to estimate past channel changes. The legal records have been studied and analysed. Considerable evidence of the use of rivers has been found which materially increases the lengths of rivers for which there are records of historic use.

It is concluded that:-

1. all rivers which were physically usable were legally usable,
2. there is a high probability that each section of a river which is now physically usable was usable by small boats in the period 1189-1600,
3. on the balance of probabilities each section of a river which is now physically usable was used during that period.

Finally the implication of this research for the present day law relating to public access on rivers is considered.

**Certificate relating to Work submitted elsewhere for Examination**

D.J.M. Caffyn. River Transport 1189 – 1600.

I hereby declare that this thesis has not been and will not be, submitted in whole or in part to another University for the award of any other degree.

However this thesis includes at Appendix D a list of Rivers made navigable by Act of Parliament. This is a corrected and reworded version of Appendix A of a Dissertation for the Degree of Master of Laws by Research at Kent Law School, the University of Kent, submitted in August 2004.

Appendix E includes a summary of the statutes for removing weirs and other obstructions from rivers. This material was also formed part of Section 2.6 of the above mentioned thesis.

..... D.J.M. Caffyn.

..... Date.

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## **Referencing Style**

In general the Harvard style has been used but due to the large number of footnotes it has been augmented as follows:

There are three texts which have been quoted so frequently that they are considered to be standard texts on their topics. Footnotes have not been entered because they are self-indexing.

Edwards. J.F. Edwards, 'The Transport System of Medieval England and Wales.' Unpublished PhD thesis. University of Salford. 1987.

*BCU Guide.* The British Canoe Union, *The Guide to the Waterways of the British Isles*. Weybridge: British Canoe Union. (1<sup>st</sup> Edition 1936.) 1980.

*Hydrological data UK.*

Centre of Hydrology and Ecology, British Geological Survey.  
*Hydrological Data UK. Hydrometric Register and Statistics 1996-2000*. Wallingford: Centre for Ecology and Hydrology. 2003.

In the footnotes the most frequently quoted references have been abbreviated:-

Blair 2007. John Blair, Editor, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007.

PROME The Parliamentary Rolls of Medieval England. 1272 – 1504.  
(CD Version 2005.)

TNA The National Archives.

## **Abbreviation**

For the purpose of comparing historic use with present day use the comparator used throughout the thesis is:

RLU.                Recent limit of use as given in the *BCU Guide*, first published 1936, but amended to exclude sections of rivers where the river has numerous rapids with fairly high irregular waves, eddies and whirlpools.

## **Units**

In accordance with the normal British practice distances are measured in miles. All other quantities are measured in metric units except where another author's work is quoted where the original units are retained.

**List of Notations****Chapter 2.3**

Runoff	R
Precipitation	P
Evapotranspiration.	E
Time	subscript a and b
Fractional increase in precipitation	x
Fractional evopotranspiration	y

Discharge	Q
Depth	D
Width	W
Velocity	V
Uppercase at Oxford. Lowercase at winter limit point.	
Subscript s for summer, w for winter, m for mean.	

Hydraulic radius of the river	
(Cross section area / wetted perimeter.)	r

**Chapter 2.4**

Width	w
Depth	d
Area of cross section of a channel	A
Slope of the channel	S
Velocity	v
Discharge	Q
Length of section	l
Height difference	h
Wetted perimeter of the channel	p
Hydraulic radius	
(Cross section area / wetted perimeter)	r
Manning resistance factor	n

## **Acknowledgements**

*In principio creavit Deus cælum et terram.*

(Genesis 1.1)

*Then the angel showed me the river of the water of life, clear as crystal.*

(Revelation 22.1)

First, I thank and praise the Lord God for the creation of the earth and all that is in it and especially the rivers and that they are ‘very good’. I hope that through this work more people may be enabled to enjoy what he has created.

Second, I thank my supervisors, Professor Short who accepted a student with no qualification in Geography or History to study Historical Geography and to Professor Allison, who besides being Pro-Vice-Chancellor, was willing to spend so much of his time and energy supervising one with no qualification in Geomorphology. I am very grateful to both for their enthusiasm and their advice.

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I remain grateful to Mr James Edwards for the loan of a copy of his thesis, *The Transport System of Medieval England and Wales – A Geographical Synthesis*, presented for the degree of Doctor of Philosophy at the University of Salford in 1987. It has been an essential text for locating the records in the Court Rolls of the historic use of rivers.

I also thank the organisations which have given permission for the reproduction of copyright material in the printed copies of this thesis.

Last but not least I thank my wife, Kay, for her support, for accepting very many books into our house and for removing some, if not all, the grammatical and spelling mistakes in this work.



## **Part 1 Introduction**

### **Chapter 1.1 Aim and Previous Research**

#### **1.1.1 Aim**

The aim of this thesis is to investigate which sections of non-tidal rivers in England could be used physically and used legally and which were used for the transport of goods and people in the period 1189-1600. The thesis seeks to provide a holistic and interdisciplinary approach to the use of rivers during this period.

This topic was chosen because of the author's interest in the law relating to access to rivers. In 1973 the Select Committee of the House of Lords on Sport and Leisure stated that, 'The legal question of rights of way over water must be settled. A number of different legal interpretations of this right of way have been referred to in evidence and it is time for these to be resolved.'<sup>1</sup> It is considered that this is the first attempt to resolve this legal question from first principles.

Those who have written about the law regarding access on rivers have assumed that (1) historically all rivers were private, (2) there was historically little use of the rivers and (3) that the law relating to the use of rivers was equivalent to that for roads. The third assumption was rejected by the House of Lords in 1991.<sup>2</sup> The first two assumptions together with the historic physical usability of the rivers form the subject of this thesis.

The three topics studied are interrelated. Each can only be fully understood with knowledge of the other two. For example, evidence of use helps the understanding of the historic siltation of rivers (Chapter 2.6), knowledge of the multi-channel form of rivers explains why some rivers were not used by barges (Chapter 2.5), examples of use may indicate that the law permitted use and the early case law regarding ownership of land shows that rivers often migrated.

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<sup>1</sup> Second Report from the Select Committee of the House of Lords on Sport and Leisure. 1973. HL 193, lxxiii.

<sup>2</sup> *A-G ex rel Yorkshire Derwent Trust Ltd v Brotherton* [1992] AC 425.

Some previous attempts to estimate the extent to which the rivers were used in this period have relied on ‘historic records of use’, mostly written. Whilst it has been well understood that evidence of the physical usability of a river did not imply that the river was actually used, it has, perhaps, been less well recognised, until recently, that absence of a ‘historic record of use’ does not imply that the river was not used.<sup>3</sup>

The historic upper limit of physical usability is investigated first as sections of river upstream of this point were not used. Rivers which could not legally be used would also, in general, not have been used, so the legal right to use the rivers, as understood at that time, is investigated second. Thirdly, records of use, and non-use, are investigated and analysed in order to estimate the extent to which rivers were in fact used. This approach does not always produce proof of use. It can result in a consideration of the probability of a section of a river having been used. Each part of the study includes references to a collection of ‘historic records of use’ larger than any which has previously been available. These are listed in Appendix A. Finally the interrelationships between these three apparently disparate topics are considered and the implications for the extent of the current legal right of access on rivers are stated.

### **1.1.2 Previous Research**

No literature has been found concerning the physical form of rivers during the period 1189-1600 nor concerning whether they were public or private.

Much has been written about the use of rivers. Some of these works were reliable, some possibly not. In c.1180 Roger de Hoveden wrote of ‘the lesser rivers which carry vessels with the things that are necessary to boroughs and cities.’<sup>4</sup> In 1586 Harrison in his contemporary description of Britain wrote that he had hoped to describe the ‘depth of chanell (for burden)’<sup>5</sup> of all the rivers. This seems to imply that all rivers might be used to a greater or lesser extent. In 1622 Callis spoke of ‘those

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<sup>3</sup> For example the maps showing areas more than 15 miles from a navigable river in T.S. Willan, *River Navigation in England. 1600-1750*. London: Frank Cass & Co. Ltd. 1964.

<sup>4</sup> *The Annals of Roger de Hoveden. Volume 1 Part 2. A.D. 1155 to 1180*. Translator Henry T. Riley, Felinfach: Llanerch Publishers. Facsimile reprint 1996, 547.

<sup>5</sup> Raphael Holinshed, William Harrison and others, *The First and Second Volumes of the Chronicles*. 2<sup>nd</sup> Edition. London: J. Johnson *et al.* 1807, 78.

people who have free and customary passage on rivers, as a liberty and inheritance,’ and of ‘poor Boatmen which come thereon with their Boats accidentally, by the general Custome of the realm’.<sup>6</sup>

In the 17<sup>th</sup> and 18<sup>th</sup> centuries many rivers were modified to enable their use by barges and the memory of the use of the rivers by smaller boats was mostly lost. By the end of the 18<sup>th</sup> century a lawyer could say, without challenge, that ‘Few of our native rivers, besides the Thames and the Severn, were naturally navigable, but have been made so under different Acts of Parliament.’<sup>7</sup> This statement was repeated in the first book on the Law of Waters<sup>8</sup> and not contradicted in later books.<sup>9</sup> Even now the Angling Trust seems to consider it to be true.<sup>10</sup>

Two quotations have been found from early in the 20<sup>th</sup> century concerning the historic use of minor rivers. In 1913 Webb and Webb wrote that in the Middle Ages heavy materials were taken by water, going by small boats ‘up the most insignificant streams.’<sup>11</sup> In 1922 Day wrote ‘An outstanding characteristic of medieval water transport was the use of extremely small, even intermittent, streams for the carriage of goods. Every watercourse that could be used was brought into service, frequently with very minor man-made improvements in its course.’<sup>12</sup> No evidence was provided to support either statement.

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<sup>6</sup> Robert Callis, *The Reading of the Famous and Learned Robert Callis, Esq; Upon the Statute of 23 H. 8. cap. 5. of Sewers as was delivered by him at Gray’s Inn, in August, 1622.* 2<sup>nd</sup> Edition. London: Thomas Bassett. 1685, 137.

<sup>7</sup> *Ball v Herbert*, (1789) 3TR 253.

<sup>8</sup> Humphrey W Woolrych, *A Treatise on the Law of Waters and of Sewers.* London: Saunders and Benning. 1830.

<sup>9</sup> H.J.W. Coulson and Urquhart A. Forbes, *The law relating to Waters, Sea, Tidal and Inland.* 2<sup>nd</sup> Edition. London: Sweet and Maxwell, Limited. 1902.

A.S. Wisdom, *The Law of Rivers and Watercourses.* London: Shaw & Sons Ltd. 1962.

William Howarth, *Wisdom’s Law of Watercourses.* 5<sup>th</sup> Edition. Crayford: Shaw & Sons Limited. 1992.

<sup>10</sup> Angling Trust. ‘A Statement on Inland Navigation. Appendix 1.’ Released 12 May 2009. [www.anglingtrust.net](http://www.anglingtrust.net). Accessed 5.12.09

<sup>11</sup> Sidney and Beatrice Webb, *English Local Government: the Story of the King’s Highway.* London: Longmans, Green and Co. 1913, 8.

<sup>12</sup> Clive Day, *A History of Commerce.* New York, 1922, 56. Cited in Albert C. Leighton, *Transport & Communication in Early Medieval Europe AD 500-1100.* Newton Abbot: David & Charles. 1972, 125.

All other 19<sup>th</sup> and 20<sup>th</sup> century books about travel and transport which have been found were based on written records of historic use and obstructions to use.<sup>13</sup> Their evidence was collated by Edwards in 1987.<sup>14</sup> In 1993 Langdon wrote a shorter article based on the purveyance accounts for the period 1294-1348.<sup>15</sup> However in 2000 Holt wrote ‘Scholars have exaggerated the importance of water transport in the English economy; all too often assumptions of navigability depend on references to what can have been only occasional use.’<sup>16</sup> In 2007 Blair wrote that scholars had generally assumed that waterways and canals did not exist in late Anglo-Saxon and Anglo-Norman times.<sup>17</sup> However the articles in the book which he edited described the use of many canals and modified rivers during the period 950-1250. It also contained much useful information about the use of unmodified rivers at that time.<sup>18</sup>

Edwards knew his records were only partial yet some of those who have read his work have implied that they were a complete record of the rivers used. For example Jones compared Edwards’ list of general use with Langdon’s list of purveyance records. Since Edwards referred to use from 1066 to 1400, with most of the records from the 11<sup>th</sup> to the 13<sup>th</sup> century, and Langdon from 1290 to 1348 and since Edwards’

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<sup>13</sup> J.J. Jusserand, *English Wayfaring Life in the Middle Ages*. Translated from French by Lucy Toulmin Smith. (1<sup>st</sup> Edition 1889.) London: Methuen & Co Ltd. 1961.

Edwin A. Pratt, *A History of Inland Transport and Communication in England*. London: Kegan Paul, Trench, Trubner & Co., Ltd. 1912.

W.T. Jackman, *The Development of Transportation in Modern England*. (1<sup>st</sup> Edition 1916.) London: Frank Cass & Co. Ltd. 1966.

Joan Parkes, *Travel in England in the Seventeenth Century*. Oxford: Clarendon Press. 1924.

E.L. Guilford, *Travellers & Travelling in the Middle Ages*. London: The Sheldon Press. 1924.

L.F. Salzman, *English Trade in the Middle Ages*. Oxford: Clarendon Press. 1931.

A.M. Milne, *The Economics of Inland Transport*. London: Sir Isaac Pitman & Sons, Ltd. 1955.

T.S. Willan, *The Inland Trade*. Manchester: Manchester University Press. 1976.

J.A. Chartres, *Internal Trade in England 1500-1700*. The Economic Society. London: The Macmillan Press Ltd. 1977.

David Hey, *Packmen, Carriers and Packhorse Roads*. Leicester: Leicester University Press. 1980.

Norbert Ohler, (Trans. Caroline Hillier.) *The Medieval Traveller*. (1<sup>st</sup> Edition 1986.) Woodbridge: The Boydell Press. 1989.

Antoni Maczak, (Trans. Ursula Phillips.) *Travels in Early Modern Europe*. (1<sup>st</sup> Edition 1980.) Cambridge: Polity Press. 1995.

<sup>14</sup> J.F. Edwards, ‘The Transport System of Medieval England and Wales.’ Unpub. PhD thesis, Univ. of Salford. 1987.

<sup>15</sup> John Langdon, ‘Inland water transport in medieval England.’ *Journal of Historical Geography*, Vol. 19, (1993).

<sup>16</sup> R. Holt, ‘Medieval England’s Water-Related Technologies.’ In P. Squatriti, Ed, *Working with Water in Medieval Europe: Technology and Resource-Use*. Leiden, 2000, 55-6.

<sup>17</sup> Blair, 2007, back cover.

<sup>18</sup> John Blair, ‘Introduction.’ In Blair, 2007, 1.

list was the longer, Jones deduced that the use of rivers had declined from one period to the other.<sup>19</sup> This does not seem to be a valid deduction from the available data.

Most people who have written about the use of rivers have concentrated on the use of the larger rivers. Hindle and Edwards wrote that the minor drainage channels were not the concern of their study.<sup>20</sup> Langdon doubted whether rivers whose use was limited by season and which could only be used downstream could be considered navigable in the practical sense.<sup>21</sup> This thesis is about all and any use of the rivers, the movement of goods from field, marsh, mere or woodland to farmstead, from farm to market, and by the traders from the markets to ports or cities, transport for trade and the recreational use of the rivers.

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<sup>19</sup> Evan T. Jones, 'River Navigation in Medieval England.' *Journal of Historical Geography*. Vol. 26. (2000), 60-82.

<sup>20</sup> James Frederick Edwards and Brian Paul Hindle, 'The transportation system of medieval England and Wales.' *Journal of Historical Geography*. Vol. 17, (1991), 126.

<sup>21</sup> John Langdon, 'Inland water transport in medieval England.' *Journal of Historical Geography*, Vol. 19, (1993), 6.

## **Chapter 1.2 Boundaries, Dates and Definitions**

### **1.2.1 Boundaries**

The movement of goods may be divided into land carriage, river traffic and the coasting trade.<sup>22</sup> The coasting trade goes up the rivers to the first town, the first bridge or the tidal limit which are often at the same location. Thus it seems logical for the river traffic to be considered as going downstream to this place. The present tidal limit, as shown on Ordnance Survey maps, is used as the datum in this thesis. This is not necessarily the historic tidal limit as there may have been a change in the relative height of the sea and land, changes in the river geometry, a change in river discharge, and/or the construction of a weir or sluice which stops or reduces the flow of the tide. The tidal limits at other dates are, in general, not known. Other authors have used other limits. The construction and use of canals is outside the scope of the thesis except to the extent that they provide evidence of the use of the rivers to which they were connected.

### **1.2.2 Dates**

The starting date for the thesis is the start of legal memory, 3<sup>rd</sup> September 1189.<sup>23</sup> Edward I 'created by default a fictional time by which matters of ownership, possession and usage were (and are) theoretically judged.'<sup>24</sup> However evidence that a river was physically usable at an earlier date is presumptive evidence that it was usable at this date, so earlier records are used as appropriate. The closing date, 1600, is determined by the introduction of pound locks, the use of which transformed the work of modifying rivers so that they could be used by barges. The work carried out when modifying rivers and their later use are outside the scope of this thesis. No claim is made that the rivers in 1189 were in their natural state. In Roman times the Itchin at Winchester was further west than it is now, at Cirencester the Churn was

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<sup>22</sup> eg. T.S. Willan, *The Inland Trade*. Manchester: Manchester University Press. 1976.

<sup>23</sup> (1281) 3 Edward I c. 39.

<sup>24</sup> Anthony Musson, *Medieval Law in Context*. Manchester: Manchester University Press. 2001, 24.

canalised before the Roman defences were created and at Chichester the Lavant seems to have been diverted by the Romans.<sup>25</sup>

### 1.2.3 Definitions

Wormald wrote ‘Like most historians – and unlike most lawyers – I abhor definitions.’<sup>26</sup> If he was correct this thesis is not written by a historian. Hill wrote that ‘The navigable river pattern is fairly simple to reconstruct but it can lead to endless argument. What is navigable now may not have been so a millennium ago, and there is a problem in supplying an acceptable definition of “navigable”.’<sup>27</sup>

The definitions that are given here only describe how the words are used in this thesis. They are not meant to imply that other people have misused the English language. Perceptions have changed, for example, Dugdale, citing from *Lingula Brevium de term Pasch of 24 Charles I*, wrote of ‘large boats laden with xx quarters’<sup>28</sup> whereas Langdon in 2007 referred to ‘very tiny boats carrying 12.5 quarters’.<sup>29</sup>

In this thesis the word ‘vessel’ is used for all craft. Vessels are subdivided into boats, barges, ships and rafts. ‘Boats’ had a minimum size of about 5 m long, 1 m wide and a draught of 0.2 m and they carried a load of 1 tonne or more. They could be manhandled past obstructions easily. They were normally propelled by paddle, oar, quant, pole or towed by one man. In the literature they may be referred to as a boat, cobble, wherry, rowing boat, logboat, skiff, punt, canoe, *navicula*, *batella*, *scafula*, etc. The use of coracles is not considered.

‘Barges’ had a minimum size of about 10 m long, 2 m wide and a draught of 1 m and they carried a load of 20 tonnes or more. This corresponds well with the minimum

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<sup>25</sup> John Wachter, *The Towns of Roman Britain*. London: Routledge. 1995, 291, 320, 264.

<sup>26</sup> Patrick Wormald, ‘Lawyers and the State: the Varieties of Legal History.’ *Selden Society Lecture*. 2001, 5.

<sup>27</sup> David Hill, *An Atlas of Anglo-Saxon England*. Toronto: University of Toronto Press. 1981, 11.

<sup>28</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 143.

<sup>29</sup> John Langdon, ‘The Efficiency of Inland Water Transport in Medieval England.’ In Blair, 2007, 125.

depth of canals today which is about 2ft 6in.<sup>30</sup> A barge could only be taken past an obstruction with difficulty. They might have been towed by horses, sailed or allowed to drift down a river controlled by oars or sweeps. They may be referred to as a barge, shout, keel, trow, catch, bote, *batella*, *balingera*, *navicula*, etc.

Prior wrote that 'On the Thames the word 'barge' was reserved for a large boat of about 70 or more tons. Smaller craft were 'boats'.'<sup>31</sup> Some authors appear not to appreciate the size of these barges. Langdon listed the loads carried on some rivers in c.1400. His list includes the Thames from Henley to London 40 tonnes, Thele - Lea 38 tonnes, Lincoln - Witham 20 tonnes, Beccles - Waveney 25 tonnes, Oxford 15 tonnes, Cambridge 14 tonnes.<sup>32</sup> The largest barges were about the size of the largest lorries in England today. A barge carried as much as 500 pack animals<sup>33</sup> and a small boat as much as ten packhorses or one cart.<sup>34</sup>

'Ships' were used at sea. They normally had a fixed mast and so could not pass a fixed bridge. They were round bottomed or had a keel, whereas the boats and barges were normally flat bottomed. Ships might have carried a load of one tonne or more. They were normally propelled by sails or drifted with the tide upstream or down. In harbour they might have been towed by men on the shore or by rowing boats. They are referred to as a ship, *batella*, *navis*, *farcosta*, etc.

The differentiation between ships and boats is ancient. In 1290 it was held that the Prior of Durham had ships where only boats should be unloading on the Tyne away from Newcastle although both might use the water.<sup>35</sup> Barley wrote that

Local trade apart, it is almost impossible to make a distinction between inland, coastal and sea-going traffic, because there was so little difference between the vessels employed. There is a distinction between ship (*navis*) and boat

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<sup>30</sup> Eg. Birmingham Canal Navigations. See Jane Cumberlidge, *Inland Waterways of Great Britain*. St Ives: Imray Laurie Norie & Wilson Ltd. 1998, 57.

<sup>31</sup> Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 105.

<sup>32</sup> Assuming 6 quarters to a tonne and multiplying the load by 1.5 to give the gross weight. John Langdon, 'The Efficiency of Inland Water Transport in Medieval England.' In Blair, 2007, 130.

<sup>33</sup> Clive Day, *A History of Commerce*. 2<sup>nd</sup> Edition. New York: Longmans, Green and Co. 1922, 56.

<sup>34</sup> Pack horses carried about 0.1 tonne. D.M. Palliser, *The Age of Elizabeth*. 2<sup>nd</sup> Edition. London: Longman. 1992, 314.

<sup>35</sup> James Guthrie, (The late), *The River Tyne*. London: Longmans and Co. 1880, 29-30.



(navicula), and obviously the boat could penetrate further inland; but the medieval ship was so small that it could reach places like Doncaster and Bawtry. The surprising thing is not that the ship went so far up the rivers, but that it ever dared to venture out of them.<sup>36</sup>

The word navigable is derived from *navis* and has normally referred to the passage of barges. Between 1514 and 1827 Acts were passed for making 73 rivers ‘navigable’, that is usable by barges.<sup>37</sup> Evidence has been found that at least 64 of the 66 rivers on which work was carried out were previously used by boats. So the words ‘navigable’ and ‘navigation’ are not employed in this thesis except when quoting other authors. Instead rivers are referred to as being ‘used’ or ‘being usable’ meaning ‘passable by a boat of gross weight of one tonne’. This may be physically usable or legally usable. Normally the context makes the meaning clear, if not it is stated explicitly. A river may have been usable although boats or rafts only travelled in one direction. A river is considered to have been usable even though it was usable only between obstructions. In some texts, mostly legal, the word ‘navigable’ meant tidal.<sup>38</sup>

A river is considered to have been usable even if it could not be used throughout the year. In Scots Law it has been stated that there can not be a public right of navigation on a river which could only be used when it was in spate. In one case decided under Scots law<sup>39</sup> it was held that there was a public right of navigation on a river which was navigable for four months in a year. Hall found that the mean daily discharge of a river was exceeded for about 30% of the year.<sup>40</sup> Thus, except where otherwise stated, a river is considered to have been physically usable if it could be used when the river discharge was greater than the mean discharge. Authors may not agree as to which rivers were usable, and which were not, because they were using different

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<sup>36</sup> M.W. Barley, ‘Lincolnshire Rivers in the Middle Ages.’ *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, Vol. 1, (1938), 19.

<sup>37</sup> See Appendix D.

<sup>38</sup> eg. Henry Schultes, *An Essay on Aquatic Rights*. London: W. Clarke and Sons. 1811.  
Water Resources Act 1991 c 57, Part V, s. 115 (9).

See John M. Gould, *A Treatise on the Law of Waters*. Chicago: Callaghan and Company. 1891, 103.

<sup>39</sup> *Colquhoun’s Trustees v Orr Ewing and Co* (1877) 4<sup>th</sup> Series SC, 344.

<sup>40</sup> D.G. Hall, ‘The assessment of water resources in Devon, England, using limited hydrometric data.’ Cited in R.C. Ward, ‘River systems and river regimes.’ In John Lewin, Ed, *British Rivers*. London: George Allen & Unwin. 1981, 20.

vessels, travelling at different stages of the river, had different levels of skill in handling a vessel or were willing to accept different amounts of damage to their craft.

A 'sporting section of a river' where there are numerous rapids with fairly high, irregular waves, broken water, eddies and whirlpools and with the course not easily recognised is not considered to be a usable section of a river<sup>41</sup> although it would normally be possible to float timber down the river.

In this thesis the words 'used historically' imply no more than that a boat went up or down the river. If it is known that a load was carried on a river from A to B on a certain date X then this implies that the section of the river was used in X AD, in the X<sup>th</sup> century and in the period 1189-1600. It is considered unsatisfactory to write that the river was often, or seldom, used without defining 'often' and 'seldom'.

The 'form' of a river refers to the width, depth and whether the river is divided, braided or anastomosed. A river with a pool and riffle form is one where the riffle is braided at half mean discharge. A single channel river which does not have a pool and riffle form is referred to as 'uniform'. 'Stage' is the level of the water in the river. Weirs were used to raise the level of the water in a river or to direct the flow. Dams were used to store the water. Where a river was modified by the installation of weirs so that it formed a series of falls at weirs and ponds between the weirs the river is described as 'canalised'.

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<sup>41</sup> British Canoe Union Grade 3 river.

### **Chapter 1.3 Organisation of the thesis**

The set of all sections of rivers which were used at any given period of history is bounded and finite, but that does not mean that it is knowable. In Part 2 of the thesis physical usability is considered because rivers which were not physically usable could not be used. No previous work has been found on this subject. The causes of change are considered together with the reasons for the historic variation in the usability of rivers.

Since historic small boats are likely to have been usable on rivers with the same form and discharge as present day canvas and lathe canoes there is a brief study of the conditions for usability for these boats in terms of gradient, discharge and bed material. In the following three chapters the main factors which have affected usability are considered, change in discharge, anthropogenic modification of the river form and changing channel patterns. It is shown that each of these would have had a significant effect on the length of river which was usable. The approach in Chapter 2.6 is different. The records of historic use are employed to establish the reasons why some rivers became impassable while others remained passable. This is followed in Chapter 2.7 by a consideration as to which rivers could be used to their source.

Part 3 of the thesis may be considered to be rather more radical. First it is shown that the traditional model of the formation of highways used by lawyers is incorrect. It is then shown that simple trespass was not an offence before 1600 and that people were free to pass over unenclosed land providing they did no damage. This implies that there was a public right to use all the physically navigable rivers.

Part 4 starts with consideration of the importance of the use of rivers in terms of the amount of goods transported and the proportion carried on rivers together with general evidence of the importance as indicated by the construction of canals, the location of wealth and the relative cost of land and river transport. The evidence of historic use which is available now is then reviewed for both archaeological and written evidence. This evidence is then summarised by regions and the apparent evidence for observer bias considered. The records of use of five particularly relevant sections of rivers are considered together with the extent of the anthropogenic

obstruction of rivers by bridges, fords and weirs. Likely actual use is then summarised.

In Part 5 the evidence from the three preceding sections is reviewed with the conclusion that (1) there is a high probability that each section of river which is now physically usable was usable by small boats, both physically and legally, in the period 1189-1600 and that (2) on the balance of probabilities each section of river which is now physically usable was used during that period.

In Chapter 5.2 the present day legal implication of the previous work is stated and in Chapter 5.3 suggestions are made for future research.

Appendix A is a list of the records which have been found of the use of rivers. Where there are a large number of records for a particular section they are not listed but a reference is given as to where some can be found. The appendix includes material from both primary and secondary sources. It is listed, in general, without comment as to its reliability. The analysis of this material forms the basis of this thesis.

Appendices B to N provide additional data or substantiate points made in the thesis where a longer exposition in the text would not be justified.

In Appendix O, 'Roads – An invisible feature in the landscape?' it is claimed that roads between towns in the period 1189-1600 had a surface which was no better, but often worse, than that found on pasture or unimproved land.

Appendix P shows that although the conclusion reached in Part 3, that there was a public right of passage over rivers during the period 1189-1600, may be considered radical, similar rights over other types of land also existed.

Maps are printed in Appendix Q and the material from below the illustrations is repeated in Appendix R because the illustrations are not included in the electronic edition of the thesis.

## **Part 2 The Physical Usability of Rivers**

### **Chapter 2.1 Introduction**

#### **2.1.1 Historic change**

The principal question considered in Part 2 is ‘Which sections of the rivers could be used physically by boats or barges in the period 1189–1600?’ It will be shown that the limit between usable and unusable sections of the rivers moved from day to day and year to year and was in a different place for each type of boat or barge and that some rivers could be used to their source. It is also shown that usability has been reduced on most rivers which have not been canalised.

Some historians have tended to think that rivers have not changed their usability since medieval times, except for the construction of weirs and fish traps and rivers ‘silting up’.<sup>1</sup> Thus Brent assumed that in 1540-1640 the navigable limit of the Ouse was at Barcombe Mills, the present tidal limit.<sup>2</sup> Other historians have made generalised comments about changes to rivers such as ‘during the Roman era springs were more plentiful and nearer the surface, while the rivers were more rapid and larger in volume, and, running in shallower beds’.<sup>3</sup> Brown, a physical geographer, wrote that ‘The majority of *lowland* floodplains in Britain show remarkably little *channel* change during the Roman and Medieval periods.’<sup>4</sup> It would be a mistake to think that there have been few changes since then, for recently it has been appreciated that ‘many smaller streams were navigable in the early middle ages’.<sup>5</sup> Indeed Macklin and Lewin suggest that rivers ‘adjust their size and shape more frequently, and more rapidly, than is generally appreciated’.<sup>6</sup>

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<sup>1</sup> eg. The Thames. Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982.

<sup>2</sup> Colin Brent, ‘Employment, Land Tenure and Population in East Sussex, 1540-1640.’ Unpub. PhD thesis, Univ. of Sussex, 1973, 162.

<sup>3</sup> Urquhart A. Forbes and W.H.R. Ashford, *Our Waterways*. London: John Murray. 1906, 18.

<sup>4</sup> A.G. Brown, ‘Floodplain Palaeoenvironments.’ In Malcolm G. Anderson, Des E. Walling and Paul D. Bates, Eds. *Floodplain Processes*. Chichester: John Wiley & Sons. 1996, 125.

<sup>5</sup> James Bond, ‘Canal Construction in the Early Middle Ages: An Introductory Review.’ In Blair, 2007, 182.

<sup>6</sup> Mark G. Macklin and John Lewin, ‘Channel, Floodplain and Drainage Basin Response to Environmental Change.’ In Colin R. Thorne, Richard D. Hey and Malcolm D Newson, Eds. *Applied Fluvial Geomorphology for River Engineering and Management*. Chichester: John Wiley & Sons. 1997, 39.

According to Money's description of the Second Battle of Newbury some soldiers were drowned crossing the Lambourn.<sup>7</sup> Money did not state his sources. The river now has a depth of about 0.5 m and so this seems to indicate that in 1644 the river was deeper than it is now. But whether this was for only a short period of time or all the year is at present unknown. A detailed examination of the historical physical usability of rivers is now justified both for variation within the period 1189-1600 and between 1600 and the present. Passable rivers may have been used. Impassable rivers were not.

It is only since the flooding of 1947 and 1953 that priority has been given to keeping rivers within their banks. Writing in 1937 Bates described a river of his childhood.

In winter, occasionally in summer, ... It was as though the Nene had been turned into the Rhine. Water would be pouring down, everywhere, throughout the whole width of the valley, three feet deep, rising, perhaps to five feet deep, submerging hedges, lapping up against the roadways, beating and flopping in sudden wind-caught waves above the arches of bridges. It was a great wild wateriness.<sup>8</sup>

It is anachronistic to think of rivers flowing exclusively within their channels but difficult to measure the effect of out-of-channel flow or its historic extent.<sup>9</sup>

Modern cartographers, at large scales, portray rivers as a line. Lawyers define a river as 'a running stream pent in on either side with walls and banks'.<sup>10</sup> Yet during the medieval period rivers were shown on maps as bands. This may be a difference of convention, perception or represent an actual difference between medieval rivers and

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<sup>7</sup> Walter Money, *A History of Newbury*. (1<sup>st</sup> Edition 1905.) Newbury: Newbury Bookshop and Maidenhead: Thames Valley Press. 1972, 54.

<sup>8</sup> H.E. Bates, *Down the River*. (1<sup>st</sup> Edition 1937.) London: Victor Gollancz Ltd. 1987, 50-51

<sup>9</sup> G.E. Petts, 'Sustaining the Ecological integrity of large floodplain rivers.' In Malcolm G. Anderson, Des E. Walling and Paul D. Bates, Eds. *Floodplain Processes*. Chichester: John Wiley & Sons. 1996, 544.

<sup>10</sup> William Howarth, *Wisdom's Law of Watercourses*. 5<sup>th</sup> Edition. Crayford: Shaw & Sons Limited. 1992, 3.

those of today. The source of the Thames is now shown on Ordnance Survey maps as being half a mile from the nearest river.<sup>11</sup>

It is not only the changes to the present rivers which need to be studied. Some lost rivers were also used for transport. The lost rivers of London have been well studied<sup>12</sup> and Appendix A includes records of the use of these. There has been no similar study of the lost rivers of the remainder of the country. The river Sherbourne now flows under Coventry but is of a size which could have been used by small boats.<sup>13</sup>

Some factors which change, like precipitation, are cyclic. Others, like channel shortening, are unidirectional. Some factors, again like precipitation, have varied throughout the period 1189-2010. Others, like reservoir construction, have occurred during specific periods.

Establishing which rivers were usable at a given time requires knowledge as to which boats were using the rivers at that time. It seems likely that the first boats which were used were small. The average size of the load carrying vessels increased with time and the rivers were modified to accommodate them. Now rivers are often used by small recreational vessels as well as barges.<sup>14</sup> Unless otherwise qualified, 'usable' in this Part refers to usable by boats as defined in Section 1.2.3 'Usable by barges' is a difficult concept to measure for if a barge carrying 20 tonnes is just unable to use a river at a certain point then part of its load may be unloaded so that it can pass.

No description of the form of rivers during the period 1189-1600 nor any statement about their usability has been found. Geomorphologists have studied the channels. Pursglove described historic rivers but his study only started at 1600.<sup>15</sup> Russell and Burton entitled their books *Rivers*<sup>16</sup> and *The Changing River*.<sup>17</sup> But they wrote not about the rivers but their valleys, the towns, villages, architecture, bridges and mills. Many similar books have been written about individual rivers.

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<sup>11</sup> Grid Reference 3980 1995.

<sup>12</sup> Nicholas Barton, *The Lost Rivers of London*. London: Phoenix House Ltd. 1962.

<sup>13</sup> <http://www.lightingthedarkness.co.uk/Sherbourne.htm>. Accessed 02/12/2006.

<sup>14</sup> Peter W. Downs, Kenneth J. Gregory, *River Channel Management*. London: Arnold. 2004, 26

<sup>15</sup> Jeremy Purseglove, *Taming the Flood*. Oxford: Oxford University Press. 1988.

<sup>16</sup> Ronald Russell, *Rivers*. London: Book Club Associates. 1979.

<sup>17</sup> Anthony Burton, *The Changing River*. London: Victor Gollancz Ltd. 1982.

Some authors have treated the words ‘river’ and ‘channel’ as being synonymous. Here the word ‘river’ is used exclusively to refer to the water. The study of river channels has been hindered by the failure to agree on definitions of the factors being measured, for example the key concept of bankfull discharge has been defined in at least fourteen different ways.<sup>18</sup>

Some of the causes of change in usability are shown in Table 1.

**Table 1 Causes of change in usability**

**Allogenic**

Climate. Precipitation total.  
Precipitation distribution.  
Temperature.

**Anthropogenic**

Land Use. Woodland - Pasture - Arable.  
Urbanization.  
Mining. Sediment injection.  
Field drainage.  
Arterial drainage.  
Floodplain drainage.  
Channel modification.  
Vegetation/In-channel wood removal.  
Weirs.  
Reservoirs.  
Abstraction/inter-basin transfers.

**Autogenic**

Adjustment of inherited characteristics.  
Response to short/medium term changes.  
Cyclic. eg. Incision, widening, aggradation.  
Effect of tributaries.

**Secondary Effects**

Change discharge.  
Change seasonality of discharge.  
Change sediment supply.  
Change sediment calibre.  
Change channel width.  
Change channel depth.  
Change channel shape.  
Change bed material.  
Change roughness/vegetation.  
Change sinuosity.  
Change gradient.  
Change pattern .  
Change floodplain level.

**Assumed constant**

Valley slope.  
Bank material.

<sup>18</sup> See Artur Radecki-Pawlik, ‘Bankfull discharge in mountain streams: Theory and Practice.’ *Earth Surface Processes and Landforms*. Vol. 27, (2002), 115.



### 2.1.2 Qualities required for a river to be physically usable

For a canal or a canalised river, the depth of the water determines whether a vessel of a certain size may pass. However when considering rivers from 1189-1600 no measurements of depth have been found which are relevant for usability. In naturally flowing rivers depth often varies along the length of a river and usability depends on other factors, like bed material. There are two approaches to establishing which rivers were usable: experimental and variational.

First some other approaches are shown to be inappropriate. Because many of the largest rivers were modified between 1600 and 1830 under powers given in 'Navigation Acts' and most other rivers have been modified to provide protection from floods and for faster drainage, retrodiction from present form is not possible.

While empirical equations are available for establishing the likely form of straight, smooth, wide, canals with steady flow and sediment supply in sandy beds<sup>19</sup> the many site-specific studies of changes in river form have produced few general models or theories valid for river form<sup>20</sup> and none for historic forms of rivers.<sup>21</sup> Even estimates of past discharge from geomorphic evidence have an unacceptable chance of error<sup>22</sup> and would provide evidence of flood discharges, not mean discharge.<sup>23</sup>

It has been shown that modelling river behaviour over a time span of 10 to 10,000 years is at present not possible due to chaotic behaviour in the self-organisation of the

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<sup>19</sup> T. Blench, *Regime Behaviour of Canals and Rivers*. London: Butterworths Scientific Publications. 1957, 16, 24.

<sup>20</sup> L. Allan James, W. Andrew Marcus, 'Preface, The 2006 Binghamton Geomorphology Symposium on The Human Role in Changing Fluvial Systems.' *Geomorphology*. Vol. 79, (2006), 144.

<sup>21</sup> S.A. Schumm, 'Geomorphic Thresholds and Complex Response of Drainage Systems.' In Marie Morisawa, *Fluvial Geomorphology*. London: George Allen & Unwin. 1981.

George A. Griffiths, 'Extremal Hypothesis for River Regime: An Illusion of Progress.' *Water Resources Research*. Vol. 20, (1984) 113-118.

A.G. Brown and T.A. Quine, 'Fluvial Processes and Environmental Change: An Overview.' In A.G. Brown and T.A. Quine, *Fluvial Processes and Environmental Change*. Chichester: John Wiley & Sons. 1999, 20.

Stuart N. Lane and Keith S. Richards, 'Linking River Channel Form and Process: Time, Space and Causality Revisited.' *Earth Surface Processes and Landforms*. Vol. 22, (1997), 249-260.

<sup>22</sup> Robert B. Jacobson, James E. O'Connor and Takashi Oguchi, 'Surficial Geologic Tools in Fluvial Geomorphology'. In G. Mathias Kondolf and Herve Piegay, Eds. *Tools in Fluvial Geomorphology*. Chichester: Wiley. 2003, 29.

<sup>23</sup> Geraldene Wharton, 'The Channel-geometry Method: Guidelines and Applications.' *Earth Surface Processes and Landforms*. Vol. 20, (1995), 649-660.

river and the complex response to external forcing.<sup>24</sup> Thus in studies of the Trent it has been shown that ‘the same degree of morphological and sedimentary response is not necessarily associated with floods of similar magnitude, i.e. there is no constant relationship between event magnitude and landform change.’<sup>25</sup>

Palaeochannels seldom establish the usability of historic rivers. If the section was static there is no palaeochannel. If movement was by migration no distinct palaeochannel remains. Where avulsion has occurred in a multi-channel river that channel does not define the usability of the river. In a single-channel river it is likely that the palaeochannel will have been reworked since 1600.<sup>26</sup> Thus normally the only palaeochannels which can be examined usefully are those caused by an anthropogenic realignment of the course of the river. Most physical evidence from quays, wharves and jetties has been either washed away or buried.<sup>27</sup>

Even if all climatic and other factors affecting a river were constant the river would still be changing because it is recovering from the most recent glacial phase<sup>28</sup> and because of the nature of dynamic equilibrium.<sup>29</sup>

While alluvial records can give some information about the form of channels, they provide little information about rivers. Floodbasin coring gives little information even about the style of channels.<sup>30</sup> Floodplain surface sediments vary with the frequency, magnitude and sediment loading of overbank events. They are disturbed by renewed scour and bioturbation. While increased alluviation indicates the

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<sup>24</sup> A.P. Nicholas, T.A. Quine, ‘Crossing the divide: Representation of channels and processes in reduced-complexity river models at reach and landscape scales.’ *Geomorphology*. Vol. 90, (2007), 335.

<sup>25</sup> A.G. Brown *et al.* ‘Late Holocene channel changes of the Middle Trent: channel response to a thousand-year flood record.’ *Geomorphology*. Vol. 39, (2001), 69 – 82.

<sup>26</sup> A.G. Brown, ‘Time, space and causality in floodplain palaeoecology.’ In Andy J. Howard, M.G. Macklin and D.G. Passmore, Eds. *Alluvial Archaeology in Europe*. Lisse: Swets & Zeitlinger B.V. 2003, 15-24.

<sup>27</sup> T.W. Potter, ‘Valleys and Settlement: Some New Evidence.’ *World Archaeology*. Vol. 8, (1976), 207-219.

<sup>28</sup> K.J. Gregory, ‘An introduction to the fluvial geomorphology of Britain.’ In K.J. Gregory, Ed. *Fluvial Geomorphology of Great Britain*. Joint Nature Conservation Committee. London: Chapman & Hall. 1997, 8.

<sup>29</sup> David Knighton, *Fluvial Forms and Processes*. London: Edward Arnold (Publishers) Ltd. 1984, 139.

<sup>30</sup> J. Lewin, M.G. Macklin and E. Johnstone, ‘Interpreting alluvial archives: sedimentological factors in the British Holocene fluvial record.’ *Quaternary Science Reviews*, Vol. 24, (2005), 1874.

occurrence of overbank events it does not show whether the flooding was due to high discharge or low capacity of the channel. Absence of an alluvial record should not be taken as evidence of the absence of overbank events, as there may have been little sediment in the flood waters or the sediment may have been reworked. Channel enlargement and flood protection have caused the decline in the number of alluvial units since 1200.<sup>31</sup> Rivers, in general, are now impounded and excluded from their floodplains.<sup>32</sup> Relationships between fluvial deposits and channel form for present channels may not apply to palaeochannels since the amount of armouring and the pattern of sediment accumulation may have been different.<sup>33</sup>

Throughout this Part of the thesis where consideration is given to a change due to one external factor it is assumed that other independent external factors remained constant. The question as to which variables are independent and which dependent depends on the timescale and possibly the magnitude of the change being considered.<sup>34</sup> In all calculations change in valley slope is ignored as it is considered that there was no significant change in the period 1189-1600. Also, except when otherwise stated, it is assumed that the bed and banks are not formed of bedrock which would control the channel morphology.<sup>35</sup> While the exact forms of historic rivers can not be established, it is possible to study the factors which have modified the rivers and to consider how these may have caused changes to the limits of usability.<sup>36</sup>

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<sup>31</sup> John Lewin and Mark G. Macklin, 'Preservation potential for Late Quaternary river alluvium.' *Journal of Quaternary Science*. Vol. 18, (2003), 117.

<sup>32</sup> Brown *et al.* in preparation. Cited in A.G. Brown, 'Geoarchaeology, the four dimensional (4D) fluvial matrix and climatic causality.' *Geomorphology*. Vol. 101, (2008), 279.

<sup>33</sup> K.J. Gregory, 'Introduction.' In K.J. Gregory, Ed. *Background to Palaeohydrology*. Chichester: John Wiley & Sons. 1983, 18-19.

<sup>34</sup> John Lewin, 'Available and appropriate timescales in geomorphology.' In R.A. Cullingford, D.A. Davidson and J. Lewin, Eds. *Timescales in Geomorphology*. Chichester: John Wiley & Sons. 1980, 3-12.

<sup>35</sup> Stanley A. Schumm, *The Fluvial System*. London: John Wiley & Sons. 1977, 153.

<sup>36</sup> L. Allen James, W. Andrew Marcus, 'The human role in changing fluvial systems: Retrospect, inventory and prospect.' *Geomorphology*. Vol. 79, (2006), 160.

Stanley A. Schumm, *To Interpret the Earth. Ten ways to be wrong*. Cambridge: Cambridge University Press. 1991, 78.

## **Chapter 2.2 Conditions for present use**

An initial question is which sections of a natural river are now usable by a canvas and lathe canoe at mean discharge in winter? It is considered that historic logboats and other wooden boats would have been usable on similar rivers. The furthest place upstream at which a boat can be used is called the Recent Limit of Usability (RLU) and, for the purposes of this study, these have been taken from the *BCU Guide*.

Rivers which were found on inspection to have obviously been modified are not considered because their usability depends on the nature of the modification and not on the natural state of the river. It is not claimed that the other rivers are in their 'natural' state. It is thought that they are closer to it.

In a divided river usability depends on the form of the largest channel. No natural river has been found where present use is limited because it is divided. The Middlesex Colne which is divided for much of its length is not considered as it has been greatly modified. There are at present no rivers which are braided and usable.

Experience shows that for a given section of a natural river in England it is always the stage of the river which controls whether it is usable or not.<sup>37</sup> On all natural rivers the width is always sufficient where the depth is adequate. For many rivers, and in particular for pool and riffle rivers, depth is variable along the river. A short shallow obstruction may not make a river unusable while a long shallow section of the same depth may well be unusable because the flow of water provides a cushion over the short obstruction. At present no mathematical relationship has been found between depth and usability although on rivers with a gravel, silt, sand or clay bed-material a depth of 0.5 m or greater is normally adequate.

As discharge increases in a given channel at some stage the river becomes usable. Thus it is the form of the channel at the RLU which has been investigated here. Gradient adequately describes the longitudinal aspect of a channel. When inspecting the rivers it became clear that the bed material is also relevant when considering the depth required for usability.

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<sup>37</sup> Personal experience of author.

When all other factors are constant, if the width of a river is increased the depth will be reduced so it seems likely that greater discharge is required for usability on a wide river compared with a narrow one.

Discharge, gradient and bed material at the RLU were recorded and have been plotted on a Graph 1 (page 21A) which shows that:

1. The discharge required for usability increases with gradient.
2. The discharge required for usability increases with the size of the bed material.

It is known that the location of RLUs are only approximate because the *BCU Guide* dates from 1936, the discharge data refer to 1996-2000; the *BCU Guide* only refers to places which were accessible by public transport; the *BCU Guide* does not state accurately the stage of the river when the report was written; the reports are not complete as sections which were considered private, uninteresting or which did not provide a satisfactory day's paddling were omitted; weirs may make a river usable which would not be usable in their absence; abstraction has increased since 1936; some rivers which were described as usable in 1936 are not usable now, like the Rhee at Guilden Morden.

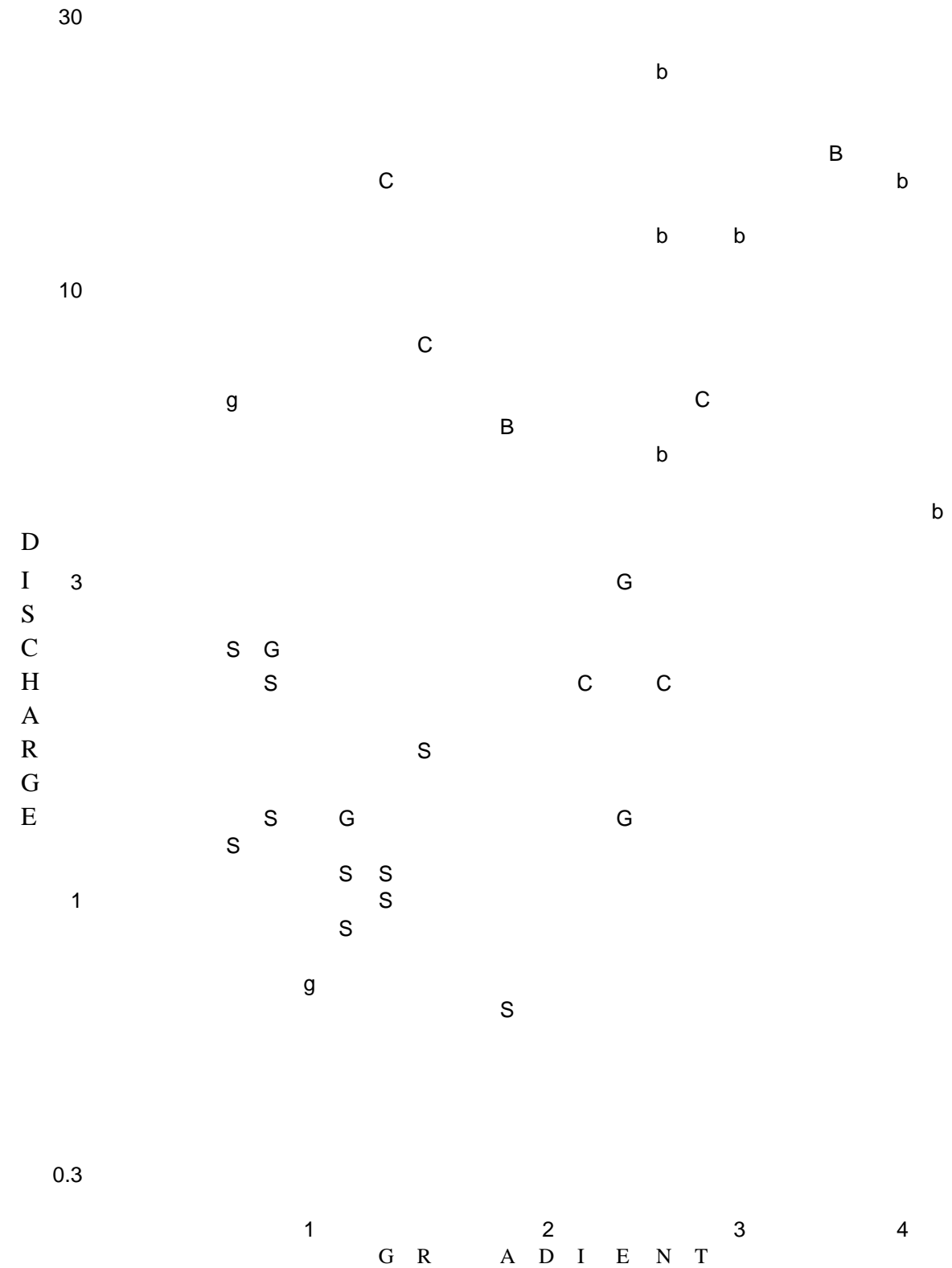
It is considered that the gradient and bed material are likely to vary by only an insignificant amount between the assumed RLU and the actual RLU.

In Table 2 the following abbreviations are used:

P&R = Pool and riffle.  
 B = Boulder  
 C = Cobble  
 G = Gravel  
 S = Silt, Sand and/or Clay.

**Table 2. RLUs ordered by bed material**

			<b>Discharge <math>\text{m}^3 \text{s}^{-1}</math></b>	<b>Gradient <math>\text{m km}^{-1}</math></b>	<b>Form</b>	<b>Material</b>	<b>Symbol</b>
NW 6	Lune	Sedburgh	17	3.6	P&R	B	B
Se 13	Monnow	Pontrilas	6	1.9	P&R	B	B
NE 4	Wear	Wolsingham	4	4.3	P&R	B&C	b
NE 5	Tees	Whorlton Falls	14	4	P&R	B&C	b
Y 11	Wharfe	Bolton Abbey	14	2.5	P&R	B&C	b
Y 14	Nidd	Ripley	5.0	2.5	P&R	B&C	b
Y 15	Swale	Catterick	13	3	P&R	B&C	b
NW12	Cumberland Derwent	Cockermouth	22	2.5	P&R	B&C	b
Y 7	Aire	Coniston Cold	2.1	2.1	P&R	C	C
Y 10	Rye	Helmsley	2.2	2.5	P&R	C	C
Y 16	Ure	Wensley	15	1.4	P&R	C	C
Tr 9	Derbyshire Derwent	Hathersage Bridge	5	2.7	P&R	C	C
NW 5	Ribble	Settle	7	1.7	P&R	C	C
Tr 14	Penk	Penkridge	2.3	0.9	Uniform	G	G
E 17	Pant / Blackwater	Kelvedon	1.2	1.2	Uniform	G	G
SE 22	Salisbury Avon	Scales Bridge	1.5	1.2	Uniform	G	G
SW 2	Dorset Frome	Dorchester	3.0	2.4	Uniform	G	G
Th 15	Wey	Farnham	0.7	1	Uniform	G&S	g
Se 2	Warwickshire Avon	Ashow	5.6	0.6	Uniform	G&S	g
F 1	Welland	Duddington	2.0	0.9	Uniform	S	S
F 4	Great Ouse	Buckingham	2.5	0.8	Uniform	S	S
F 11	Cam	Audley End	0.6	1.9	Uniform	S	S
F 16	Tove	Towcester	1	1.3	Uniform	S	S
E 15	Suffolk Stour	Stoke by Clare	1.2	1.1	Uniform	S	S
E 18	Chelmer	Little Waltham	0.9	1.1	Uniform	S	S
Th 14	Mole	Horley	1.3	0.8	Uniform	S	S
SE 6	Eastern Rother	Etchingham	1.5	1.6	Uniform	S	S
Se 9	Tern	Stoke upon Tern	1.3	0.6	Uniform	S	S
Se 10	Perry	Wykey	1.2	1.4	Uniform	S	S



Graph 1

B	Boulders	b	Boulders and cobbles	C	Cobbles
G	Gravel	S	Silt, Sand and/or Clay		

## **Chapter 2.3 Discharge and Usability**

### **2.3.1 Introduction**

Details of discharge alone do not allow the calculation of the amount of water in a river. One may know the variable inflow to, and the variable outflow from, a tank but this does not provide information about the volume of water in the tank. Similarly the fact that a river used to be wider does not mean that it used to be shallower.

Discharge increases and decreases due to variation in precipitation on annual and multi-annual scales and changes in abstraction. For any river channel, if all other factors are fixed, an increase in discharge increases the depth which, in turn, improves usability. There are two relevant elements of discharge: the volume and the distribution through the year. Discharge is composed of two elements, runoff and baseflow. In the short term changes in groundwater storage can be ignored and baseflow considered to be constant. But in the medium and long term, changes in groundwater storage can have a significant effect on discharge.<sup>38</sup> The calculated annual naturalised discharge is found by eliminating the effect of ground and surface water abstraction.<sup>39</sup>

For those wishing to use a river for transport on a regular basis, variability of discharge is a disadvantage. For those wishing to use a river only on an irregular basis, variability may be an advantage in that there will be more days when the river is deep. Deep fast flowing water is normally an advantage when travelling downstream. It may be a disadvantage when travelling upstream. One wet year is unlikely to persuade people to build a boat. However it might extend their use to a previously unusable section of a river.

There are relatively few historic records of the usability of rivers being affected by drought. In 1632 Taylor reported that there were five barges aground downstream of

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<sup>38</sup> R.C. Ward, *Principles of Hydrology*. London: McGraw-Hill Publishing Company Limited. 1967, 264-271.

<sup>39</sup> *Hydrological Data UK*, 8.



Staines.<sup>40</sup> In 1641 he excused his slow progress from London to Goring between 20<sup>th</sup> and 22<sup>nd</sup> July by stating that due to the great drought he was forced to ‘wade, and leade or hale the boate divers times’.<sup>41</sup> In that month in London it was recorded that 26<sup>th</sup> May to 8<sup>th</sup> June was a ‘hot spell’ and 14<sup>th</sup> July to 1<sup>st</sup> August a ‘dry spell’.<sup>42</sup>

The only record of the number of days a year that a river could be used which has been found is contained in Green’s summary of Telford’s ‘Survey of the Severn’ which relates to the end of the 18<sup>th</sup> century at Coalport where during a ten year period there was insufficient water for navigation by 20 ton barges on average for 146 days a year. In the worst year, 1796, the river was unusable for 234 days.<sup>43</sup>

While there are many comments by contemporaries that rivers were small or large, swift flowing or slow, only one report has been found which indicates that the discharge of a river has changed. Camden recorded that the Trin, a river downstream of Bristol, ‘is now dwindled into a little brook.’<sup>44</sup> He gives no reason for the change.

### **2.3.2 Records of variation in discharge**

Few discharge gauges have been in use for more than 40 years so while their records can be used to estimate the recent ratio of winter-summer discharge and the inter-annual variation there are no records for the period 1189-1600.

The average variability of discharge within a year may be assessed by the ratio of the 10 percentile discharge (the discharge which was exceeded for 10 per cent of the period of measurement) and the 95 percentile discharge (the discharge which was exceeded for 95 per cent of the period of measurement). The calculated ratio is

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<sup>40</sup> John Taylor, ‘Taylor on Thame Isis.’ In John Taylor, *Works of John Taylor Water Poet not included in the Folio Volume of 1630*. Spenser Society. Vol. 7, 1870. Reprint New York: Burt Franklin. 1967. 25.

<sup>41</sup> John Taylor, *John Taylor’s last Voyage*. London: John Taylor. 1641. Contained in *Works of John Taylor. Second Collection*. The Spenser Society Vol. 14, 1873. Reprint New York: Burt Franklin. 1967, 11-12.

<sup>42</sup> Sir Humphrey Mildmay, ‘Diary of Sir Humphrey Mildmay. 1633-1651.’ B.L. Harleian, MS 954. Cited in P.D. Jones, A.E.G. Ogilvie, and T.M.L. Wigley, *Riverflow Data for the United Kingdom: Reconstructed Data Back to 1844 and Historical Data Back to 1556*. Norwich: Climatic Research Unit, University of East Anglia. 1984, 135.

<sup>43</sup> Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 17.

<sup>44</sup> William Camden, *Camden’s Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 248.

referred to as the winter-summer variation. The inter-annual variation may be assessed by the ratio of the maximum annual runoff to the minimum annual runoff. This ratio depends on the period used for the records. This is referred to as the year-year ratio.

Table 3 shows the effect of selecting different periods for measuring discharge. It shows that, as expected, the year-to-year ratio increases with the period of measurement. It is by no means clear why the winter-summer ratio is so much greater on the Tyne, Great Ouse and Bristol Avon for the longer period of measurement. Possibly, as shown by the naturalised figures for the Thames, the difference is due to the effect of abstraction rather than varying precipitation.

Table 4 shows the ratios for the downstream gauges on usable rivers in Kent, Sussex and Hampshire. The winter-summer ratio can be highly variable for rivers within one region. The ratio depends on the geology of the catchment. It also shows that rivers with a high winter-summer ratio have an above average year-year ratio. Table 5 shows the ratios for a selection of other rivers.

**Table 3 Variable average discharge over different periods**

Column 3 is the catchment area in sq. km. and column 4 the period of record.

‘n’ means that the records have been naturalised. All the data are taken from *Hydrological Data UK 1996-2000*.

		km <sup>2</sup>		<u>10 percntl</u> <u>95 percntl</u>	<u>Max. runoff</u> <u>Min. runoff</u>
Tyne	Bywell	2175	1956-2000	17	2.6
	Riding Mill	2174	1989-2000	10	1.7
Great Ouse	Bedford	1460	1933-2000	27	7.8
	Roxton	1660	1972-2000	14	4.5
Thames	Eynsham	1616	1951-2000n	17	6.0
	Farmoor	1608	1992-2000	55	3.6
Thames	Days Weir	3444	1938-2000n	20	5.0
	Sutton Courtenay	3414	1973-2000n	20	2.5
Bristol Avon	Bath St James	1595	1939-2000	19	2.7
	Bath untrasonic	3414	1976-2000	11	1.3

**Table 4 Discharge Ratios of South East Region Rivers**

		<b><u>10 percentile</u></b> <b><u>95 percentile</u></b>	<b><u>Maximum runoff</u></b> <b><u>Minimum runoff</u></b>
Medway	Teston	20	4
Kentish Stour	Horton	6	3
Eastern Rother	Udiam	30	7
Combe Haven	Crowhurst	30	6
Nunningham Stream	Tiley Bridge	40	9
Ash Bourne	Hammer Wood Bridge	10	7
Cuckmere	Sherman Bridge	50	10
Ouse	Barcombe Mills	30	5
Arun	Pallingham Quay	30	6
Western Rother	Hardham	6	3
Itchen	Riverside Park	3	2
Test	Broadlands	3	2

**Table 5 River Discharge Ratios**

		<b><u>10 percentile</u></b> <b><u>95 percentile</u></b>	<b><u>Maximum runoff</u></b> <b><u>Minimum runoff</u></b>
Wear	Chester le Street	10	3
Tees	Low Moor	10	3
Yorkshire Ouse	Skelton	20	3
Tame	Lea Marston	3	2
Trent	Shardlow	7	3
Nene	Orton	20	6
Cam	Bottisham	8	8
Little Ouse	Abbey Heath	7	3
Suffolk Stour	Stratford St Mary	10	7
Thames	Kingston	10	4
Dart	Austins Bridge	20	2
Torridge	Torrington	40	2
Perry	Yeaton	9	3
Warwickshire Avon	Bredon	10	3
Severn	Haw Bridge	10	2
Dee	Chester Weir	20	2
Ribble	Samlesbury	20	2
Lune	Halton	30	2
Cumberland Derwent	Camerton	20	3
Eden	Sheepmount	10	3

### 2.3.3 The relationship between Precipitation and Discharge

In the short term river discharge depends on the difference between precipitation and evapotranspiration, assuming that there is no change in groundwater storage and thereby baseflow.<sup>45</sup> Mean annual precipitation varies between 550 mm in parts of eastern England to 2,500 mm in the Lake District.

Mean potential annual evapotranspiration varies from over 550 mm in the Thames valley and some South Coast areas to between 400 and 450 mm on the Pennines. Actual evapotranspiration varies from over 500 mm in a belt reaching from Bristol to Norwich with a branch to Brighton, to under 400 mm in East Yorkshire, the North East and South Lancashire.<sup>46</sup> Studies of the relationship between climate and discharge have shown that the change in the rate of evapotranspiration has not been significant during the last millennium.<sup>47</sup>

In the period 1750-1990 the decadal average winter precipitation in England and Wales varied from 160 mm to 300 mm. The mean winter precipitation was about 230 mm.<sup>48</sup> Thus in 'wet' decades the rainfall was 30% greater than the average. In a period when accurate records are available it is known that 'over most of the UK average annual runoff in the period 1979-1988 was over 20% higher than in the period 1969-1978.'<sup>49</sup> So it seems reasonable to assume long term variations of annual precipitation of 30% above and below the mean.

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<sup>45</sup> As in D.B. Burgess and E.J. Smith, 'The effects of groundwater development: the case of the Southern Lincolnshire Limestone Aquifer.' In G.E. Hollis, Ed. *Man's Impact on the Hydrological Cycle of the United Kingdom*. Norwich: Geo Abstracts Ltd. 1979, 47.

<sup>46</sup> R.C. Ward, 'River systems and river regimes.' In John Lewin, Ed. *British Rivers*. London: George Allen & Unwin. 1981, 17.

<sup>47</sup> Jurg Luterbacher *et al* 'European Seasonal and Annual Temperature Variability, Trends and Extremes Since 1500.' *Science*, Vol. 303, 5 March 2004, 1499-1503.

N.W. Arnell, R.P.C. Brown and N.S. Reynard, 'Impact of Climatic Variability and Change on River Flow Regimes in the UK.' Wallingford: Institute of Hydrology. Report No. 107. 1990, 32.

R.S. Bradley, *et al*. 'The Climate of the Last Millennium.' In Keith Alverson, Raymond S. Bradley and Thomas S. Pederson, Eds. *Paleoclimate, global change, and the future*. London: Springer. 2003, 118.

C. Pfister, *et al*. 'Winter Air temperature variations in western Europe during the Early and High Middle Ages (AD 750-1300).' *The Holocene*. Vol. 8.5. (1998), 535-552.

<sup>48</sup> Mike Hulme and Elaine Barrow, *Climates of the British Isles*. London: Routledge. 1997, 186, 206.

<sup>49</sup> N.W. Arnell, R.P.C. Brown and N.S. Reynold, 'Impact of Climatic Variability and Change on River Flow Regimes in the UK.' Institute of Hydrology. Report No. 107. 1990, 61.

If evapotranspiration is considered to be constant and the change in ground storage and inter-basin percolation are ignored, the relationship between the change in precipitation and change in runoff can be expressed as follows.

If at a given time a:  $R_a$  is the runoff,  $P_a$  precipitation,  $E$  evapotranspiration,

$$R_a = P_a - E$$

At a later time b:  $R_b = P_b - E$

If  $x$  is the fractional increase in precipitation  $P_b = (1 + x) P_a$

$$\text{and } E = y \cdot P_a$$

where  $y$  is the original fractional evapotranspiration

$$R_b / R_a = (1 - y + x) / (1 - y) \quad (\text{Eq. 1})$$

Thus for  $x = -0.3, y = 0.5, R_b / R_a = 0.4$

$$x = -0.3, y = 0.7, R_b / R_a = 0$$

The 1988-92 drought, the most severe of the 20<sup>th</sup> century, confirms this calculation. The period was the warmest five year period in the 332 year Central England Temperature series and evaporation rates were above average. The effects of the drought varied across the country. In the area east of the line joining Maidstone - Oxford - Hull the discharge in the period September 1990 to August 1992 was less than 50% of the long-term average. On the Heachem (Norfolk) and Waithe Beck (Lincolnshire) average discharges were 20-30% of long term values. In eastern and southern England in late-1990 there were lengthy stretches of dried-up river bed. In Cumbria for the same period the discharge was in excess of the long term average.<sup>50</sup> No report was prepared to show how the drought affected river usability.

Variation in annual discharge due to snowmelt has had an effect on channel form and the distribution of discharge through the year.<sup>51</sup> No records have been found where this effect has been measured nor has any discussion been found as to how this would have affected the usability of rivers.<sup>52</sup>

<sup>50</sup> T.J. Marsh *et al*, *The 1988-92 Drought*. Wallingford: Institute of Hydrology. 1994, 3, 35-41.

<sup>51</sup> David Archer, *Land of Singing Waters*. Stockfield: The Spredden Press. 1992, 6.

<sup>52</sup> Leszek Starkel, 'The Role of Extreme (Catastrophic) Meteorological events in Contemporary Evolution of Slopes.' In Edward Derbyshire, Ed. *Geomorphology and Climate*. London: John Wiley & Sons. 1976, 228.

### 2.3.4 Discharge and Usability

When considering the difference between the summer and winter limit of use a convenient example is provided by Langdon who considered that the Thames was used by barges to Oxford in the period 1294-1348 at all times of year and during all years.<sup>53</sup> He was interested in the economic movement of goods, not the geomorphology of the rivers, so his limit point was an urban area rather than the physical limit of navigation. However this does not materially affect the following calculations.

The notation used is  $Q$  = discharge,  $D$  = depth,  $W$  = width,  $V$  = velocity, upper case for Oxford, lower case for the winter limit point, subscript  $s$  for summer,  $w$  for winter,  $m$  for mean.

If the river channel was rectangular then

$$W_w = W_s \quad \text{and} \quad w_w = w_s$$

The standard discharge equation is:

$$q_w = w_w \times d_w \times v_w$$

Since the width of a river increases in the downstream direction:

$$w_w < W_w$$

Since the velocity of a river increases in a downstream direction:

$$v_w < V_w = V_s \times V_w/V_s$$

Since the same barges could reach to the winter limit point as could reach Oxford in summer

$$d_w = D_s$$

Hence: 
$$q_w < W_s \times D_s \times V_s \times V_w/V_s = Q_s \times V_w/V_s$$

There is no exact relationship between velocity, discharge, and depth in a rectangular channel but the widely accepted Manning formula assumes that  $v$  varies as  $r^{2/3}$ , where

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<sup>53</sup> John Langdon, 'The Efficiency of Inland Water Transport in Medieval England.' In Blair, 2007, 113.

$r$  is the hydraulic radius of the river.<sup>54</sup> (Note:-  $r = \text{Area}/\text{wetted perimeter}$ , for a rectangular cross-section  $r = w \cdot d / (w + 2d)$ )

If the width of a river is much greater than the depth then  $r$  is approximately proportional to  $d$  and so  $v$  varies as  $d^{2/3}$ .

Thus 
$$V_w/V_s = (D_w/D_s)^{2/3}$$

since 
$$\frac{Q_w}{Q_s} = \frac{W_w \times D_w \times V_w}{W_s \times D_s \times V_s}$$

and  $W$  is a constant

$$Q_w/Q_s = D_w/D_s \times (D_w/D_s)^{2/3} = (D_w/D_s)^{5/3}$$

hence 
$$D_w/D_s = (Q_w/Q_s)^{3/5}$$

thus 
$$V_w/V_s = (D_w/D_s)^{2/3} = \{(Q_w/Q_s)^{3/5}\}^{2/3} = (Q_w/Q_s)^{2/5}$$

but 
$$q_w < Q_s \times V_w/V_s = Q_s \times (Q_w/Q_s)^{2/5} = Q_w^{2/5} \times Q_s^{3/5}$$

If it is assumed that the ratio of the mean discharge to winter discharge at the limit point is the same as the ratio of the mean discharge to winter discharge at Oxford

$$q_m/q_w = Q_m/Q_w \quad \text{or} \quad q_m = q_w \times Q_m/Q_w$$

Thus 
$$q_m < Q_w^{2/5} \times Q_s^{3/5} \times Q_m / Q_w = Q_m \times Q_s^{3/5} / Q_w^{3/5} = Q_m \times (Q_s/Q_w)^{0.6}$$

From the data in *Hydrological Data UK 1996-2000* the mean discharge at Oxford is about  $28 \text{ m}^3 \text{ s}^{-1}$ , the 10 percentile is about  $63 \text{ m}^3 \text{ s}^{-1}$  and the 95 percentile  $3 \text{ m}^3 \text{ s}^{-1}$ .<sup>55</sup>

<sup>54</sup> Ven Te Chow, *Open-channel Hydraulics*. London: McGraw-Hill Book Company. 1973, 99.

<sup>55</sup> Taking the figures for the Thames at S. Courtenay minus the Ock at Abingdon gives the approximate flow immediately downstream of Oxford.

Thus  $q_m < 28 \times (3/63)^{0.6} = 28 \times 0.047^{0.6} = 28 \times 0.16 = 4.5$

The mean discharge at Buscot is  $9.17 \text{ m}^3 \text{ s}^{-1}$ . So the barges which used to go to Oxford in summer could, in the absence of weirs and flashlocks, have passed to well above Buscot, possibly as far as Lechlade in winter. Lechlade is about 33 miles upstream of Oxford.

However the width at Lechlade would have been expected to have been less than at Oxford. One could therefore use the downstream hydraulic equation

$$w = a Q^{1/2}$$

to revise the estimate of the winter limit point.<sup>56</sup> The revision would show that barges could have gone even further upstream than Lechlade. It also risks the accusation that the calculation implies greater accuracy in the conclusion than the data permits.

A similar calculation shows that if the wet-dry summer precipitation ratio was about 2.5<sup>57</sup> in wet summers the barges could have worked to about Eynsham which is eight miles upstream of Oxford.

This method can not be applied to all rivers. The Itchen is physically usable to New Alresford but its winter-summer discharge ratio is much less than that of the Thames and there is a confluence of three tributaries at New Alresford. It may well be that none of the tributaries would be usable even at high rates of discharge.

If it assumed that there is, and was, a limit point for the use of each river for each type of boat, even when the form of the channel remained constant the limit point moved from day to day, year to year and decade to decade purely due to the fact that the precipitation in England does not fall at a constant rate.

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<sup>56</sup> Nancy D. Gordon, *et al*, *Stream Hydrology. An Introduction for Ecologists*. 2<sup>nd</sup> Edition. Chichester: John Wiley & Sons. 2004, 181.

<sup>57</sup> The naturalised value at Sutton Courtenay.



### 2.3.5 Abstraction

It is extremely difficult to estimate the effect of abstraction either from groundwater or surface water on the usability of rivers. The effect of abstracting water from near the tidal limit of a river is much less than abstracting water from near a river's source. Surface abstraction in times of flood may have little effect. In time of drought it may cause a river to stop flowing. Abstraction can only be considered in connection with the return of the water to a river. Water abstracted for cooling may have little effect except on a very short reach of a river. Water abstracted for overhead irrigation is effectively lost.<sup>58</sup> In addition the mechanisms of groundwater-river exchange are poorly understood.<sup>59</sup> These uncertainties make it difficult to relate the change in usability of a river to the timing and amount of abstraction. Abstraction has local effect, normally on a single catchment area, so national averages do not show the effect of abstraction on the usability of rivers.

The estimated abstraction as a % of runoff in the period 1961-90 was:<sup>60</sup>

<u>Region</u>	<u>%</u>
North West	9
North East	13
Midland	21
Anglian	18
Thames	55
Southern	31
South West	14

As different percentages were taken from each river it seems that abstraction would have significantly reduced the usability of some rivers.

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<sup>58</sup> Prashant Vaze, Ed. *UK Environmental Accounts 1998*. London: The Stationery Office for Office for National Statistics. 1998, 86.

<sup>59</sup> T.R. Grapes, *et al.*, 'Dynamics of river-aquifer interactions along a chalk stream: the River Lambourn, UK.' *Hydrological Processes*. Vol. 19, (2005), 2036.

<sup>60</sup> Terry Marsh *et al.* 'River Flows.' In Mike Acreman, Ed. *The Hydrology of the UK*. London: Routledge. 2000, 110.

Since regional averages do not show the effect of abstraction on individual rivers one may consider rivers which are known to have been significantly affected.

1. Abstraction from the river Glen has caused a reduction in the dry weather discharge of 80%.<sup>61</sup>
2. In the past the river Wilbraham was used by boats. It is now unusable due to abstraction of the local ground water.<sup>62</sup>
3. The 2006 Ordnance Survey 1:50,000 map of Cambridgeshire shows a river 10 km long upstream of Fowlmere which drained an area of about 34 km<sup>2</sup>. There is now a Cambridge Water Company works at Fowlmere and after a month of heavy rain there was no flow of water in the channel. It seems that this was due to abstraction by the Cambridge Water Company.<sup>63</sup>
4. On the Waveney the depth of water was reduced by a metre in the 1960s due to abstraction making it unusable.<sup>64</sup>
5. Taunt observed that at the end of the 19<sup>th</sup> century in summer the source of the Thames moved a mile downstream due to abstraction of water but in winter the water was not needed and the original springs flowed again flooding the valley.<sup>65</sup>
6. The river Wye, a tributary of the Thames, once supported 29 water mills along its length, but a model simulation indicates that dry weather discharge has been reduced by approximately 80% as a result of abstractions and peak discharges are reduced by about 40 to 70%.<sup>66</sup>
7. The river Wylye in Wiltshire dried up for the first time in living memory in 1996.<sup>67</sup> In the same catchment area the Environment Agency are concerned about over-abstraction from the Piddle and Malmesbury Avon.<sup>68</sup>

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<sup>61</sup> D.B. Burgess and E.J. Smith, 'The effects of groundwater development: the case of the Southern Lincolnshire Limestone aquifer.' In G.E. Hollis, *Man's Impact on the Hydrological Cycle of the United Kingdom*. Norwich: Geo Abstracts. 1979, 39 – 53, 49.

<sup>62</sup> T.D. Hawkins, *The drainage of Wilbraham Fulbourn and Teversham Fens*. Little Wilbraham: Dr T. D. Hawkins. 1990, 8, 22.

<sup>63</sup> Personal observation by the present author. 15 December 2008.

<sup>64</sup> Sarah Fowler, 'Actions start to flow on water?' *ECOS* Vol. 18 (2). 1997, 20-26, 23.

<sup>65</sup> Henry W. Taunt, *A New Map of the River Thames*. 3<sup>rd</sup> Edition. Oxford: Henry W. Taunt & Co. c. 1878, 7.

<sup>66</sup> C.P. Mainstone, *Chalk Rivers nature conservation and management*. Produced on behalf of English Nature and the Environment Agency. (English Nature contract number FIN/8.16/97-8)

<sup>67</sup> Sarah Fowler, 'Actions start to flow on water?' *ECOS* Vol. 18 (2). 1997, 23.

<sup>68</sup> [http://www.swenvo.org.uk/environment/water\\_resources.asp](http://www.swenvo.org.uk/environment/water_resources.asp). Accessed 30/03/2006.

One locally important form of water abstraction is mining. Younger wrote that during the 18<sup>th</sup> and 19<sup>th</sup> centuries in the Wear catchment area the water-table of the Durham Coalfield was lowered by more than one hundred metres beneath an area in excess of 2,000 km<sup>2</sup> by combined pumping of 1.2 m<sup>3</sup> s<sup>-1</sup> from nine pumping stations. Some of the adits still operate as drainage channels and as some are several tens of kilometres long, it is difficult to establish the extent to which they reduce the natural baseflow.<sup>69</sup> It seems likely that discharge through old adits also affects other rivers.

Inter-basin transfers are a form of abstraction or enhancement. The first major anthropogenic inter-basin transfer involved the transfer of water from Wales to Liverpool in 1892. Since then more schemes have been developed. Invariably the delivery point is a city or town.<sup>70</sup> The effect of each scheme on river transport can only be determined on an individual basis. Thus on the Witham at Colsterworth summer flows were very heavily augmented by transfers from Rutland Water until June 1985, when the direct Rutland/Saltersford pipeline opened.<sup>71</sup>

Both drought and abstraction reduce the usability of rivers but it is not possible to measure their combined effect without a measure of usability. It would seem likely that their combined effect would be greater than the sum of the parts.

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<sup>69</sup> P.L. Younger, 'Possible environmental impact of the closure of two collieries in County Durham.' *Journal of the Institute of Water Environmental Management*. Vol. 7, 1993, 521-531. Cited in Brian Adams *et al*, 'Groundwater.' In Mike Acreman, Ed. *The Hydrology of the UK*. London: Routledge. 2000, 165.

<sup>70</sup> Angela Gurnell and Geoff Petts, 'Causes of catchment scale hydrological changes.' In Mike Acreman, Ed. *The Hydrology of the UK*. London: Routledge. 2000, 93.

<sup>71</sup> *Hydrological data UK.1996-2000*. p. 76.

### 2.3.6 Land use change

The amount of moisture lost due to evapotranspiration varies according to the nature of the ground cover. Several studies have shown that in general the change in the rate of evapotranspiration has not been significant during the last millennium.<sup>72</sup> Thus the difference between the runoff of the largely forested Severn catchment and the runoff of the predominantly grassland of the Wye catchment is approximately 15%<sup>73</sup> to 22%.<sup>74</sup> This is not significant. However for relatively small areas afforestation has the potential to significantly reduce discharge in the areas where evapotranspiration is high compared with precipitation. At Thetford in East Anglia groundwater recharge has been reduced by 50%, a potentially significant proportion.<sup>75</sup> It seems that medieval woods were relatively small and that medieval woodland, in general, did not have a closed canopy.<sup>76</sup> No catchment has been identified where forestry has caused a change to the usability of a river.

Urbanization is the land use change which has most affected the hydrology of an area<sup>77</sup> and is also the best documented.<sup>78</sup> The impermeable surface in cities varies from 10% to 80% and the factors affecting the hydrological balance have varying

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<sup>72</sup> Jurg Luterbacher *et al* 'European Seasonal and Annual Temperature Variability, Trends and Extremes Since 1500.' *Science*, Vol. 303, 5 March 2004, 1499-1503.

N.W. Arnell *et al*. 'Impact of Climatic Variability and Change on River Flow Regimes in the UK.' Wallingford: Institute of Hydrology. Report No. 107. 1990, 32.

R.S. Bradley, *et al*. 'The Climate of the Last Millennium.' In Keith Alverson, *et al.*, Eds. *Paleoclimate, global change, and the future*. London: Springer. 2003, 118.

C. Pfister, *et al*. 'Winter Air temperature variations in western Europe during the Early and High Middle Ages (AD 750-1300).' *The Holocene*. Vol. 8.5, (1998), 535-552.

<sup>73</sup> Mark Robinson *et al*, 'Land Use Change.' In Mike Acreman, Ed. *The Hydrology of the UK*. London: Routledge. 2000, 38.

<sup>74</sup> Ian R. Calder, 'Hydrologic effects of land-use change.' In David R. Maidment, *Handbook of Hydrology*. New York: McGraw-Hill. 1992, 13.20.

<sup>75</sup> Mark Robinson *et al*, 'Land Use Change.' In Mike Acreman, Ed. *The Hydrology of the UK*. London: Routledge. 2000, 41.

D.J. Mitchell, A.J. Gerrard, 'Morphological Responses and Sediment Patterns.' In K.J. Gregory, *et al.*, Eds. *Palaehydrology in Practice*. Chichester: John Wiley & Sons Ltd. 1987, 188.

<sup>76</sup> Oliver Rackham, *The History of the Countryside*. (1<sup>st</sup> Edition 1986.) London: Phoenix Press. 2000, 130.

<sup>77</sup> J.B. Leopold, 'Hydrology for urban land planning-a guidebook on the hydrologic effects of urban land use. U.S. Geol. Surv. Circ. 554. Cited in F.A. Branson *et al*. *Rangeland Hydrology*. Toronto: Kendall/Hunt Publishing Company. 1981, 244.

<sup>78</sup> C.C. Park, 'Man-induced Changes in Stream Channel Capacity.' In K.J. Gregory, *River Channel Changes*. Chichester: John Wiley & Sons. 1977, 124.

significance between cities and within cities.<sup>79</sup> The Bollin is now in places 50% wider, and so approximately 34% shallower, due to urbanization in Macclesfield.<sup>80</sup> Urban growth has also increased the speed of runoff making the flow more peaky.<sup>81</sup> However no place has been identified where the change in discharge due to urbanization has significantly changed the usability of a river in England.<sup>82</sup>

### **2.3.7 Groundwater Flow and Drainage**

It is said that ‘The unwritten rule of basic drainage, is to pass as much of one’s own water to one’s neighbour as possible and to reject any in return’<sup>83</sup> The technique of drainage is to provide an outlet for water lower than the previous outlet and a quicker route for the water to the outlet. In the west of England the principal upland areas are composed of impermeable rocks which promote a rapid river flow response to rainfall.<sup>84</sup> It would seem that the main change to drainage in these areas is that many of the marshes have been drained causing a faster runoff and shorter, higher discharge peaks compared with the ‘natural’ flow. The second major change has been the building of reservoirs. No study has been found which considered the combined effect of these two changes.

In southern and eastern England there are extensive areas where porous and fractured rocks are interleaved between beds of impermeable clays. In these areas groundwater is a major supply source and is a component in the discharge of many lowland rivers.<sup>85</sup> The speed of groundwater movement through permeable strata range from a few thousandths of an inch per day in some fine-grained pervious rocks to 18,000 feet

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<sup>79</sup> D.N. Lerner, ‘Too much or too little – recharge in urban areas.’ In J. Chilton, Ed. *Groundwater in the Urban Environment, Volume 1; Problems, Processes and Management*. Rotterdam: Balkema. 1997, 41-47.

<sup>80</sup> M.P. Mosley, ‘Channel Changes on the River Bollin, Cheshire, 1872-1973.’ *East Midlands Geographer*. (1975), 185-199.

<sup>81</sup> Peter W. Downs, Kenneth J. Gregory, *River Channel Management*. London: Arnold. 2004, 239.

D.E. Walling, ‘The hydrological impact of building activity: a study near Exeter.’ In G.E. Hollis, Ed. *Man’s Impact on the Hydrological Cycle in the United Kingdom*. Norwich: Geo Abstracts. 1979, 135.

K.J. Gregory, ‘Changing Drainage Basins.’ *The Geographical Journal*. Vol. 142, (1976), 237-247.

<sup>82</sup> R.I. Ferguson, ‘Channel form and channel changes.’ In John Lewin, Ed. *British Rivers*. London: George Allen & Unwin. 1981, 124.

<sup>83</sup> K.S.G. Hinde, ‘Meres and Mills in Willingham and Stretham.’ *Proceedings of the Cambridge Antiquarian Society*. Vol. LXVI. (1977), 165.

<sup>84</sup> R.C. Ward, ‘River Systems and river regimes.’ In John Lewin, Ed. *British Rivers*. London: George Allen & Unwin. 1981, 2.

<sup>85</sup> T.J. Marsh *et al*, *The 1988-92 Drought*. Wallingford: Institute of Hydrology. 1994, 5.

per day through fissured chalk in Hertfordshire.<sup>86</sup> This causes wide variation in the effect of precipitation in different areas on spring discharge and ephemeral streams.

There are no records of the water-table levels in the period 1189-1600 but there are indications that it was, in general, higher than now. Floodplains used to be flooded more often and for longer periods of time. There used to be artesian wells at Barrington in the valley of the Rhee in 1892 which no longer flow.<sup>87</sup> In 1586 it was reported that the Hans in Staffordshire was 'being swallowed up under the ground, breaketh up againe three miles off.'<sup>88</sup> It seems that now the upper section does not flow. No survey has been found of present or historic ephemeral streams. Where a river flows over clay it seems likely that the groundflow will be negligible. However where it flows through gravel, fractured limestone or chalk or unconsolidated course material the lowering of the watertable will reduce the river discharge.

When drainage is considered at a more local scale the connection between field drainage and flooding has been a subject of debate for centuries.<sup>89</sup> It would appear that an Institute of Hydrology study has resolved the problem:

It was found that, ... the drainage of heavy clay soils (prone to prolonged surface saturation in their undrained state) generally results in a lowering of large and medium flow peaks. This is because their natural response is 'flashy' with limited soil water storage available, whereas when drained, surface saturation is largely eliminated.

On more permeable soils, less prone to surface saturation, the more usual effect of drainage is to improve the speed of subsurface discharges, tending to increase peak flows.<sup>90</sup>

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<sup>86</sup> R.C. Ward, *Principles of Hydrology*. London: McGraw-Hill Publishing Company Limited. 1967, 271.

<sup>87</sup> C.L. Forbes, 'Landforms and water in the Cam Valley above Barrington.' In Elsie M. Widdowson, Ed. *Cam or Rhee*. Barrington Local History and Conservation Society. c1973, 8.

<sup>88</sup> William Camden, *Britain*. Trans. Philemon Holland. London: Joyce Norton, and Richard Whitaker. 1637, 587.

<sup>89</sup> H.H. Nicholson, *The Principles of Field Drainage*. Cambridge: Cambridge University Press. 1946, 143.

<sup>90</sup> M. Robinson, *Impact of improved land drainage on river flows*. Institute of Hydrology Report 113. 1990, Unnumbered.

The earlier delivery of water to some rivers may have shortened the period of time for which the rivers are usable. It seems unlikely however that field and arterial drainage have significantly affected the usability of the rivers. Certainly the effect has not been quantified. However the drainage of marshes, ponds and lakes before discharge gauging was introduced could have had a material effect on the discharge of rivers.<sup>91</sup>

Of particular interest are the wetlands which it has been claimed used to occupy 20% to 30% of the land area of England.<sup>92</sup> This included not only the coastal marshes but also many inland valleys like the Humberhead marshes, the valley at Chippenham (Wiltshire) where a causeway 7 km long was built across wetlands<sup>93</sup> and the Sussex Ouse upstream of Ardingly Reservoir where the river used to vary in width from 6 feet to 200 yards.<sup>94</sup> The name Cuckmere refers to a lake or mere either 'of running water' or 'belonging to Cuca'.<sup>95</sup>

The amount of floodplain which existed in 1189 is unknown. In the Domesday Book the areas of marsh and meadow were recorded in such a way that it is impossible to calculate their total area.<sup>96</sup> In the 17<sup>th</sup> century a poet wrote:

They'll sow both beans and oats, where never man yet thought it,  
Where men did row in boats, ere undertakers bought it.<sup>97</sup>

Ecologists have noted the disappearance of the wildfowl and other flora and fauna,<sup>98</sup> archaeologists have noted the change in the preservation of artefacts buried in the

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<sup>91</sup> Nancy D. Gordon, *et al*, *Stream Hydrology. An Introduction for Ecologists*. 2<sup>nd</sup> Edition. Chichester: John Wiley & Sons. 2004, 67.

<sup>92</sup> A.G. Brown and C. Bradley, 'Past and Present Alluvial Wetland and the Eco-archaeological Resource: Implications from Research in East Midland Valleys, UK.' In Margaret Cox *et al.*, Eds. *Wetlands Archaeology and Nature Conservation*. London: HMSO. 1995, 190.

<sup>93</sup> Paul Hindle, *Medieval Roads and Tracks*. Princes Risborough: Shire Publications Ltd. 2002, 45.

<sup>94</sup> Edna & 'Mac' McCarthy, *Sussex River. Upstream, from Lewes to the Sources*. Seaford: Lindel Organisation Limited. 1979, 70.

<sup>95</sup> Victor Watts, Ed. *The Cambridge Dictionary of English Place-Names*. Cambridge: Cambridge University Press. 2004, 174.

<sup>96</sup> H.C. Darby, *Domesday England*. Cambridge: Cambridge University Press. 1986, 137, 142, 144.

<sup>97</sup> Cited in William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 391.

<sup>98</sup> Eg. A.G. Brown, *Alluvial geoarchaeology. Floodplain archaeology and environmental change*. Cambridge: Cambridge University Press. 1997.

wetlands,<sup>99</sup> but little notice seems to have been taken by historical geographers of the disappearance of boats.

When a river reaches bank-full stage, the excess water flows onto the floodplain and remains there until the water level falls when it returns to the river. For any given floodplain, understanding of drainage requires knowledge of the distribution and permeability of the alluvial sediments as well as their connectivity.<sup>100</sup> When the groundwater level falls some of the channels become dry.<sup>101</sup>

The effect of floodplain drainage is clear from the records of historic use. In East Sussex alone there has been the loss of the use of the Brede from Sedlescombe to Winchelsea, and on the Reading Sewer, Combe Haven, Ashbourne Stream, Nunningham Stream, Pevensey Haven, Middle Sewer, parts of the Cuckmere and Sussex Ouse. In the Fens, Lincolnshire Marshes and other areas boats were from 1189-1600 the normal or only mode of transport. This is no longer true.

In Bedfordshire in 1279 a man was drowned having fallen from a boat on the Ouzel at Eaton, Bedfordshire.<sup>102</sup> At the start of the 17<sup>th</sup> century Speed showed this section of river as being well established.<sup>103</sup> Now the marsh has been drained and there is only a ditch with the water normally less than six inches deep. In the Hull valley because of artificial drainage the water table is now in many places several metres lower than the depth at which it would naturally occur.<sup>104</sup>

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<sup>99</sup> Eg. Bryony Coles, 'Paradox and Protection: The Significance, Vulnerability and Preservation of Wetland Archaeology.' In Margaret Cox, *et al.*, Eds. *Wetlands Archaeology and Nature Conservation*. London: HMSO. 1994, 144-155.

<sup>100</sup> T.P. Burt and N.E. Haycock, 'Linking Hillslopes to Floodplains.' In Malcolm G. Anderson, *et al.* Eds. *Floodplain Processes*. Chichester: John Wiley & Sons. 1996, 470.

<sup>101</sup> A.G. Brown and T.A. Quine, 'Fluvial Processes and Environmental Change: An Overview.' In A.G. Brown and T.A. Quine, Eds. *Fluvial Processes and Environmental Change*. Chichester: John Wiley & Sons. 1999, 1-28, 15

<sup>102</sup> *Select Cases from the Coroners' Rolls, 1265-1413*. Editor Charles Gross. Selden Society, Vol. 9. (1895), 16.

<sup>103</sup> John Speed, *Theatre of the Empire of Great Britaine, Part II*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1953-4.

<sup>104</sup> Robert Van de Noort and Jon Etté, 'Introducing the survey of the Hull valley.' In Robert Van de Noort and Stephen Ellis, Eds. *Wetland Heritage of the Hull valley. An Archaeological Survey*. Hull: Humber Wetlands Project. Commissioned by English Heritage. 2000, 11.



### 2.3.8. Minimum discharge at mills.

One possible source of information about how the discharge of rivers has changed is the location of historic water-mills. Aubrey wrote in about 1670 that weaving moved from Castle Combe and that ‘The local tradition is that the dryness of the brook enforced this migration.’<sup>105</sup> The only list of sites of 14<sup>th</sup> century mills, which has been found, is for the Middle Wye catchment area. It appears that there is now no water supply at six of the thirty eight sites.<sup>106</sup> King wrote of the Sussex mills listed in Domesday Book ‘many of the mills seem to have been on the small tributary streams that discharge northward from the Chalk escarpment to join the major rivers.’<sup>107</sup> Now possibly only the stream at Plumpton has discharge adequate to operate a mill.

In Cambridgeshire there is adequate discharge for mills on the Cam, Rhee and Granta. In Domesday Book there are records of fourteen manors not located on these rivers which had mills. Of these there appears now to be no suitable river for a mill in Lolworth or Burwell. At Bottisham where there used to be four mills there is now no stream on which a mill could operate. On inspection of the parish it appeared that the water-table has been lowered by land drainage.<sup>108</sup> At Fowlmere there used to be one mill. Now even after heavy rain no water flows in the bed of the river.

Hawkins wrote of the former Great Wilbraham River and the extant Little Wilbraham River:

Not only did they provide power for watermills but also bathing and boating excursions, shoals of fish and abundant wildlife ... all occurred within living memory. Over the last 35 years or so discharge in Little Wilbraham River was first diminished then became intermittent due to licensed water abstraction and seepage through its bed and banks where it runs above the natural drainage

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<sup>105</sup> M.W. Beresford & J.K.S. St Joseph, *Medieval England*. 2<sup>nd</sup> Edition. Cambridge: Cambridge University Press. 1979, 269.

<sup>106</sup> See Appendix J. Watermills of the Middle Wye Valley and East Sussex.

<sup>107</sup> S.H. King, ‘Sussex.’ In H.C. Darby, Ed. *The Domesday Geography of South-East England*. Cambridge: Cambridge University Press. 1962, 461.

<sup>108</sup> By the present author November 2008.

level. For several years discharge ceased altogether when winter rainfall was low.<sup>109</sup>

The discharge at Hawk Mill is now not sufficient to operate the mill.

While the closure of mills is a very crude measure of discharge it appears that they indicate that there has been a significant reduction in discharge in some rivers.

### 2.3.9 Summary

At the start of this chapter it was stated that there are two elements of discharge which should be considered, the volume of water and its distribution through the year. It has been shown that the variation in discharge due to variation in precipitation had a significant effect on the length of river which was usable at both annual and longer timescales. There has been a significant local reduction in the usability of rivers due to abstraction and probably also due to increased groundwater flow.

The distribution of the discharge through the year has certainly changed. Reservoirs delay the movement of water downstream<sup>110</sup> and change the channel downstream in complex ways.<sup>111</sup> In some soils field drainage and in all soils arterial drainage accelerate the movement of water to the rivers. However, no way has been found of quantifying these effects. For a thousand years farmers, and for a not much shorter time drainage authorities, have sought to remove water from the land and direct it to the sea more quickly. If the process was not a continuous one from field to sea then someone in between was likely to find their land flooded. In general rivers now transport precipitation to the sea more quickly. This results in a more peaky flow and a lower volume of water in the rivers between high flows. This means, in general, that the rivers are usable for a shorter part of the year than previously.

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<sup>109</sup> T.D. Hawkins, *The drainage of Wilbraham Fulbourn and Teversham Fens*. 2<sup>nd</sup> Edition. Little Wilbraham: T.D. Hawkins. 2000, 52.

<sup>110</sup> Barbara Rumsby, Mark Macklin, 'Channel and Floodplain response to recent abrupt climate change: the Tyne Basin, Northern England.' *Earth Surface Processes and Landforms*. Vol. 14, (1989), 233-246.

<sup>111</sup> G.E. Petts & J.D. Pratts, 'Channel changes following reservoir construction on a lowland river.' *Catena*. Vol. 10, (1983), 77-85.

## **Chapter 2.4 Anthropogenic Modifications of River Form and Usability**

### **2.4.1 Introduction**

The following notation is used in this chapter:-

w = width	A = area of cross-section of a channel
d = depth	S = slope of the channel
v = velocity	Q = discharge
l = length of section	
h = height difference	
p = wetted perimeter of the channel	
r = hydraulic radius (cross-section area divided by wetted perimeter)	
n = the Manning resistance factor	

It is to be noted that all empirical hydrological equations are approximations. 'Depth' varies along a section of a river and may even vary at a fixed point with time under conditions of constant discharge.<sup>112</sup> 'Bankfull' is not a well defined term.<sup>113</sup> The ratio of the width to depth depends partly on 'bank strength' and vegetation. Huang and Nanson found that bank strength can produce a three-fold change in channel width, two-fold in depth and 1.6 in cross-section area.<sup>114</sup> Klein showed that rivers at first get deeper and later become wider than the above equations would imply.<sup>115</sup> Pickup and Rieger have shown that the channel form is a product of the whole series of discharges experienced by the channel rather than only the bankfull discharge.<sup>116</sup>

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<sup>112</sup> Mary Ann Madej, 'Temporal and spatial variability in Thalweg Profiles of a Gravel-bed River.' *Earth Surface Processes and Landforms*. Vol. 24, (1999), 1153-1169.

<sup>113</sup> Artur Radecki-Pawlik, 'Bankfull discharge in mountain streams: Theory and Practice.' *Earth Surface Processes and Landforms*. Vol. 27, (2002), 115-123.

<sup>114</sup> He Quing Huang and Gerald C. Nanson, 'The influence of bank strength on channel geometry: an integrated analysis of some observations.' *Earth Surface Processes and Landforms*. Vol. 23, (1998), 865-876.

<sup>115</sup> M. Klein, 'Drainage Area and the Variation of Channel Geometry Downstream.' *Earth Surface Processes and Landforms*. Vol. 6, (1981), 589-593.

<sup>116</sup> G. Pickup and W.A. Rieger, 'A conceptual model of the relationship between channel characteristics and discharge.' *Earth Surface Processes*. Vol. 4, (1979), 37-42.

During the period 1600 to 1830 more than 67 rivers were canalized under powers granted by parliament.<sup>117</sup> This involved straightening the channels, widening, dredging and the building of weirs and locks. There were three ways in which this was done. The canal could be built adjacent to the river and water from the river used to supply the canal as on the Trent and Mersey Canal. The river itself might be used as the route for the barges, the weirs being built across the river to maintain the depth, as on the Thames, Medway and Sussex Ouse. Otherwise the route of the barges might be along a combination of new cuts and the river channel as on the Wey and Arun canal. Where the river channel was used by the barges, if there was sediment in the water flowing into the canalized section, then normally the river would need dredging periodically. Many of the canalized rivers are no longer maintained for use by barges. The modifications have destroyed much of the evidence of the pre-existing channels and even where pre-canalization channels exist it is normally not possible to know if these sections were modified when canalization work was being carried out.

Other river channels have been dredged and widened for drainage purposes and vegetation has been cut. Changes in sediment supply to the rivers have caused aggradation and degradation. It seems that anthropogenic modification of river channels is the determinant factor in their present form.<sup>118</sup>

#### **2.4.2 Shortening a channel**

In 1586 Harrison wrote of the Thames:

For the more that this river is put by of hir right course, the more the water must of necessitie swell with the white waters which run downe from the land: because the passage cannot be so swift and readie in the winding as in the streight course.<sup>119</sup>

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<sup>117</sup> See Appendix D. A list of rivers made navigable by Act of Parliament.

<sup>118</sup> L.B. Leopold, 'Land use and sediment yield.' In W.L. Thomas Junior, Ed. *Man's Role in Changing the Face of the Earth*. Chigago: University of Chicago Press. 1956, 646.

<sup>119</sup> Raphaell Holinshed, William Harrison, and others, *Holinshed's Chronicles*. (1<sup>st</sup> Edition 1586.) London: J. Johnson; F.C. and J. Rivington, *et al.* 1807, 81.

The effect of shortening a channel may be expressed more prosaically: steeper slope; higher velocity; potential increase in sediment transport; degradation and possible headcutting; degradation in tributaries.<sup>120</sup>

If the effect of friction is ignored the effect of channel shortening on the depth of a river may be calculated approximately using the Chezy formula which is normally used for comparing the velocities of two rivers with similar characteristics.<sup>121</sup>

$$v = A \times S / p$$

In this calculation.

$$\frac{v_1}{v_2} = \frac{A_1 S_1 p_2}{A_2 S_2 p_1}$$

If a loop of a river is shortened, the length of the loop being 'l' and the height difference between the two ends of the loop being 'h', the new channel being cut to the same width as the original, then, if the width is considerably greater than the depth,

$$v = Q/wd, \quad S = h/l, \quad p = \text{approximately } w$$

$$\text{Hence } \frac{Q/wd_1}{Q/wd_2} = \frac{wd_1}{wd_2} \cdot \frac{h/l_1}{h/l_2} \cdot \frac{w}{w}$$

Which simplifies to  $d_2 / d_1 = (l_2 / l_1)^{1/2}$

Similarly since  $Q = w.d.v$

$$v_2/v_1 = (l_1/l_2)^{1/2}$$

Hence the depth of the river is reduced by the square root of the ratio of the original length of the section and the velocity is increased in the same ratio.<sup>122</sup>

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<sup>120</sup> Andrew Brookes, *Channelized Rivers*. Chichester: John Wiley & Sons. 1988, 86. After Simons D.B. & Senturk, F. *Sediment Transport Technology*. Water Resources Publication, Fort Collins. CO. (1977)

<sup>121</sup> Hsieh Wen Shen, *River Mechanics Volume I*. Fort Collins, The Author. 1971, 1-8.

The shortening of the river will result in a nick-point at the top of the new section. This nick-point may migrate upstream and the resulting surplus sediment deposited downstream of the section, possibly below a scour pool. The resulting channel form cannot be forecast exactly because the behaviour of a straightened stream depends on the erodibility of its bed and bank.<sup>123</sup> Degradation will be reduced where there is an outcrop of bedrock or where a coarse segregated or armoured bed develops. When the river reaches a stable state the gradient over the whole of the altered section will be greater than the original, the velocity of the river will be greater and the depth will be less.

After a survey of 46 sites where channelization works had been carried out Brookes concluded that there had been erosive adjustment downstream at most high stream power sites but not at the low stream power sites. The maximum increase in channel size was 153 per cent.<sup>124</sup> Estimates of the time taken for these changes range from a half life of 'the order of one to seven years'<sup>125</sup> to 'less than one hundred to a thousand years.'<sup>126</sup>

The above quotation from Harrison is the only reference which has been found to the shortening of the Thames and its tributaries in the middle of the 16<sup>th</sup> century. It may be no coincidence that the first reference to barges being grounded in the Thames occurred shortly after in 1641.<sup>127</sup>

The greatest change was the shortening of the Great Ouse from 30 miles to 21 miles by means of the Bedford Cut in 1637.<sup>128</sup> However there are few records of rivers

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<sup>122</sup> Ryckborst has obtained the same result by consideration of Enthalpy and Entropy. H. Ryckborst, 'Geomorphological changes after river-meander surgery.' *Geologie en Milieubouw*. Vol. 59(2), 1980, 121-128.

<sup>123</sup> Andrew Brookes, *Channelized Rivers*. Chichester: John Wiley & Sons. 1988, 95.

<sup>124</sup> Andrew Brookes, 'River channel adjustments downstream from channelization works in England and Wales.' *Earth Surface Processes and Landforms*, Vol. 12, (1987), 344.

<sup>125</sup> Martin W. Doyle and Jon M. Horbor, 'Modelling the effect of Form and Profile Adjustments on Channel Equilibrium Timescales.' *Earth Surface Processes and Landforms*. Vol. 28, 2003, 1271-1287.

<sup>126</sup> H. Ryckborst, 'Geomorphological changes after river-meander surgery.' *Geologie en Milieubouw*, Vol. 59(2), (1980), 127.

<sup>127</sup> John Taylor, *John Taylor's last Voyage*. London: John Taylor. 1641. Contained in *Works of John Taylor. Second Collection*. The Spencer Society 14. 1873. New York: Burt Franklin. 1967, 12.

<sup>128</sup> R.A. Butlin, 'The Role of the State in the initiation and development of land drainage schemes in England in the seventeenth century.' In Paola Sereno and Maria Luisa Sturani, Eds. *Rural Landscape between State and Local Communities in Europe Past and Present*. Proceedings of the 16<sup>th</sup> Session of

becoming less usable due to channel shortening. Normally the change was one of scale, not an absolute loss of use. Thus if a boat of 3 tons could use a river at a discharge of  $3 \text{ m}^3 \text{ s}^{-1}$  before shortening and required a discharge of  $4 \text{ m}^3 \text{ s}^{-1}$  after shortening the reduction in usability is unlikely to have been recorded. This is the type of change which might be expected to have occurred as a result of the channel shortening on the Thames near Shabbington<sup>129</sup> where the mean discharge now is  $2.74 \text{ m}^3 \text{ s}^{-1}$ . In c.1050 the Thames at Abingdon became usable for a longer period of the year when the channel was lengthened.<sup>130</sup>

In England the main effect of channel shortening was to increase the speed at which water was conveyed to the sea. This shortening has significantly reduced the volume of water in the rivers and it would seem their usability.

### 2.4.3 Widening a channel

When a river channel is widened, if the velocity remains constant, the river will become less deep. If the channel is then overfit, this may result in sediment being deposited causing a greater reduction in the depth. The overall effect of deepening and widening a channel depends on the variability of the discharge, the nature of the bed and banks and on the sediment supply. Thus Brookes observed that on the River Usk in Brecon after a comprehensive flood alleviation scheme between 5,000 and 8,000 tonnes of gravel are removed at least once per year from a section of a river channel 500 metres long.<sup>131</sup>

Nixon reported that the River Tame near Birmingham was enlarged to enable it to carry a greater flood discharge. Within 30 years in the absence of any maintenance the enlarged channel had been reduced to its original capacity. The enlarged channel would have been in equilibrium at the designed flood discharge. At normal discharge

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the Standing European Conference for the Study of the Rural Landscape. Torino: Edizioni dell'Orso. 1998, 125.

<sup>129</sup> Ed Rhodes, 'Identifying Human Modification of River Channels.' In Blair, 2007, 147.

<sup>130</sup> *Chronicon Monasterii de Abingdon*, Rolls Series 2, I, 480-1. Cited in R.H.C. Davis, 'The Ford, The River and The City.' *Oxoniensis*. Vol. 38. (1973), 263.

<sup>131</sup> Andrew Brookes, *Channelized Rivers*. Chichester: John Wiley & Sons. 1988, 110.

it was out of equilibrium and sediment was deposited which reduced the channel to its original capacity.<sup>132</sup>

It seems likely that channel widening may have affected the usability of some rivers in the medieval period. Where a river was used for the upstream transport of a considerable amount of goods, eg. stone, the bank would have been used for towing. This may well have resulted in the erosion of the bank, the material being deposited in the river. The resulting river would have been wider and so shallower.

Much has been written about the canalization of the Itchin.<sup>133</sup> Rather than the river being canalised it is considered here to be more likely that in the 11<sup>th</sup> and 12<sup>th</sup> centuries, during the construction of Winchester Cathedral and Castle, stone was transported up the river in boats towed from the bank. The transport of wine on the river continued at least until the middle of the 14<sup>th</sup> century. These would have caused erosion of the banks and destruction of the bank vegetation. The river would have become wider and shallower, so that the size of the boats which could be used would have been reduced. The bank material would have included silt and cobbles. The silt would have been removed by the flow of the water and the cobbles would have armoured the bed. This could have prevented the normal cycle of incision of the bed which might otherwise have occurred. In time the river would have become unusable by barges.

It is known that in the Kentish Stour the bed has been at different levels.<sup>134</sup> It is not known if other chalk streams have become wider and shallower due to the collapse of the banks as a result of erosion. However this is certainly a possibility with the Nadder. It would seem that widening a river channel will always result in a reduction in depth and so of usability.

In some towns channels have been made narrower, as at Lincoln, where Jones and Jones observed that land had reclaimed so that the medieval wharf is now 50 m from

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<sup>132</sup> Nixon, M. (1966). Flood regulation and river training. In *River Engineering and Water Conservation Works* (ed. R.B. Thorn). Butterworth, London, pp. 293-297. Cited in Andrew Brookes, *Channelized Rivers*. Chichester: John Wiley & Sons. 1988, 101.

<sup>133</sup> See Appendix A. Records of Historic Use.

<sup>134</sup> Frank Jenkins, 'Archaeological Notebook, Canterbury 1949-51.' *Archaeologia Cantiana*, Vol. 64, (1951), 68.



the river.<sup>135</sup> At Cambridge one bank is recorded as having moved 3.5 m.<sup>136</sup> These sections are too short to affect the overall usability of the rivers.

#### 2.4.4 Dredging

It is commonly thought that dredging makes a river deeper. In general this assumption is true for tidal rivers but false for non-tidal rivers in the absence of weirs. On a tidal river the surface level is at sea level. When the bed of the river is dredged the depth is increased.

Where a non-tidal river is not controlled by weirs dredging will, on average, reduce the depth of the river. The normal effect of dredging is to remove material from the bed of the river where it is most shallow, which is at the riffles. The water in the pools is then not held back by the riffle so the depth of the whole section of the river is reduced to little more than the depth of the original riffles. This is obvious in an ornamental garden where there is a series of pools and falls from one pool to the next. If the weirs are lowered the water in every pool is lowered and the pools become shallower. In addition in the reaches with pool and riffle sequences the water moves more slowly than in the uniform reaches.<sup>137</sup> In 1431 the Commons asked Henry VI to appoint commissioners with authority to remove the ‘shelps’ which had formed in the river Lea.<sup>138</sup> It is likely that after the work was carried out usability deteriorated. This fact has long been known<sup>139</sup> but also forgotten.

Where the level of the water in a section of a non-tidal river is set by the level of a down-stream weir, dredging a river will make the river deeper. Flow will also be slower. This may result in sediment being deposited upstream of the weir. Thus at Cambridge in 1630 blame was put on ‘the miller of y<sup>e</sup> King’s Mill for not scowring y<sup>e</sup>

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<sup>135</sup> M.J. Jones and R.H. Jones, ‘Lincoln.’ In Gustav Milne and Brian Hopley, Eds. *Waterfront Archaeology in Britain and Northern Europe*. CBA Research Report No. 41. 1981, 138.

<sup>136</sup> Paul Fairman and Joyce Pullinger, ‘Excavation at Riverside, Thompsons Lane, Cambridge.’ *Proceedings of the Cambridge Antiquarian Society*. Vol. LXXVI, (1987), 83.

<sup>137</sup> Malcolm Newson, *Hydrology and the River Environment*. Oxford: Clarendon Press. 1994, 55.

<sup>138</sup> Parliamentary Rolls of Medieval England. (CD version. 2005) Henry VI, 1431, para 43, iv – 381.

<sup>139</sup> Sir Clement Edmonds, ‘Report of 1618.’ In Samuel Wells, *The History of the Drainage of the Great Level of the Fens, called Bedford Level. Volume II*. London: The Author. 1830, 62-63.

Mr Atkyn, ‘Report of 1618.’ In Samuel Wells, *The History of the Drainage of the Great Level of the Fens, called Bedford Level. Volume II*. London: The Author. 1830, 87.

river against his little holt on y<sup>e</sup> side of shippe grene' which was upstream of his mill on the Cam.<sup>140</sup>

Channel changes may be only local. Thus the gravel-bedded River Swale at Catterick experienced valley–floor incision during the late Holocene with major phases of incision occurring during the cooler and wetter phase of the Little Ice Age whereas in the lower reaches of the river at Myton there has been relative stability and vertical aggradation.<sup>141</sup>

The change in the velocity of the water downstream of the weirs and bridges, both in speed and direction of flow will, for most bed materials, alter the shape of the river bed. This may result in shallower areas which vessels have difficulty in passing.

#### **2.4.5 Cutting in-stream vegetation**

The historic records from the Fens contain many references to land owners and tenants being responsible for the scouring of rivers. It is often not possible to distinguish cases where the scouring was to avoid flooding, to improve navigation or both.<sup>142</sup> Nor is it possible to know if scouring involved the removal of vegetation or sediment. DeWindt in his study of the manuscript rolls of the manorial court rolls of Ramsey records many cases of failures to properly clear the waterways, ditches, gutters and weirs which resulted in the inundation of the adjacent land and also prevented their use by boats. 'Between 1268 and 1591, there were nearly a thousand instances in the rolls dealing with the blockage, narrowing or otherwise impeding of the several watercourses of the town, and from the fifteenth century the matter was made the subject of byelaws.'<sup>143</sup>

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<sup>140</sup> Rev. Dr. Stokes, 'The Old Mills of Cambridge.' *Proceedings of the Cambridge Antiquarian Society*. Vol. XIV, (New Series VIII), 1909-1910, 201.

<sup>141</sup> M.P. Taylor *et al.* 'River sedimentation and fluvial response to Holocene environmental change in the Yorkshire Ouse Basin, northern England.' *The Holocene*. Vol. 10.2, (2000), 200.

<sup>142</sup> David Hall and John Coles, *Fenland Survey*. London: English Heritage. Archaeological Report 1. 1994, 137.

<sup>143</sup> *The Court Rolls of Ramsey, Hepmangrove and Bury, 1268-1600*. Editor Edwin Brezette DeWindt. Toronto: Pontifical Institute of Mediaeval Studies. 1990, 48-49.

Normally Manning's equation is used for the calculation of discharge.<sup>144</sup> Here it is used for the totally different purpose of establishing by how much the depth of a river is reduced when vegetation is removed from a river. As always care needs to be taken in assessing the conclusions reached from using an empirical equation in the reverse form to that for which it has been validated.

The Manning equation is<sup>145</sup>

$$Q = \frac{A r^{2/3} S^{1/2}}{n}$$

Assuming the channel cross-section is rectangular and the width considerably greater than the depth, approximately,

$$r = d$$

When the vegetation is cleared on a section of a river the discharge does not change

$$Q = \frac{A_1 r_1^{2/3} S^{1/2}}{n_1} = \frac{A_2 r_2^{2/3} S^{1/2}}{n_2}$$

substituting:  $\frac{w d_1 (d_1)^{2/3}}{n_1} = \frac{w d_2^2 (d_2)^{2/3}}{n_2}$

giving:  $d_2 / d_1 = (n_2 / n_1)^{3/5}$

The value of 'n' is taken to be 0.04 for a clean winding stream with some pools and shoals and 0.07 when there is considerable vegetation<sup>146</sup> although higher values have been found by other authors.<sup>147</sup>

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<sup>144</sup> Nancy D. Gordon *et al.* *Stream Hydrology*. Chichester: John Wiley & Sons Ltd. 2004, 101.

<sup>145</sup> Malcolm Newson, *Hydrology and the River Environment*. Oxford: Clarendon Press. 1994, 21.

<sup>146</sup> *Ibid.* page 23.

K. J. Gregory and D.E. Walling, *Drainage Basin Form and Process*. London: Edward Arnold. 1973, 129.

Nancy D. Gordon *et al.* *Stream Hydrology*. Chichester: John Wiley & Sons Ltd. 2004, 103.

Harry H. Barnes, *Roughness Characteristics of Natural Channels*. Geological Survey Water-Supply Paper 1849. Washington: United States Government Printing Office. 1967.

<sup>147</sup> D. Watson, 'Hydraulic Effects of Aquatic Weeds in U.K. Rivers.' *Regulated Rivers Research and Management*. Vol. 1, Issue No. 3. (1987), 222.

Keith Richards, *Rivers. Form and process in alluvial channels*. London: Methuen. 1982, 174-5.

Substituting:  $d_2 / d_1 = (0.04 / 0.07)^{0.66} = 0.57$

Thus it would seem that the effect of cutting the vegetation may reduce the depth of the river by about 50%. This theoretical calculation is in line with observations of the removal of all plant material from the Kennet where it was observed that clearing vegetation clearly resulted in greatly reduced depth<sup>148</sup> and on the Itchin near Winchester by the present author with Environment Agency staff in 2005 where it was agreed that the cutting of the vegetation in summer normally about halved the depth of the river.

The above calculation depends critically on the value of the Manning resistance factors used. It may be wiser to accept Thornes' conclusion that 'the role of vegetation in affecting bank erosion and stability is complex. At this stage it is not possible to quantify the effects of vegetation in any general fashion.'<sup>149</sup> However it does seem clear that removing vegetation has the effect of reducing the depth of the river.

Camden observed that at the end of the 16<sup>th</sup> century the River Ouse in Huntingdonshire was bedecked with flowers, indicating that the vegetation was uncut.<sup>150</sup> During the period 1189-1600 vegetation was cut in the rivers of the Fens and the Somerset levels but no records have been found of in-stream vegetation being cut elsewhere. In certain areas, particularly in chalk streams, aquatic vegetation is now cut several times a year.<sup>151</sup> It seems that this increase in vegetation control may have significantly reduced the usability of many rivers. However when vegetation

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J.F. Watts and G.D. Watts, 'Seasonal Changes in Aquatic Vegetation and its Effect on River Channel Flow.' In J.B. Thornes, Ed. *Vegetation and Erosion*. Chichester: John Wiley & Sons. 1990, 256-257.

<sup>148</sup> C.P. Mainstone, *Chalk rivers. Nature, conservation and management*. Water Research Centre. English Nature contract number FIN/8.16/97-8. Undated.

<sup>149</sup> C.R. Thornes, 'Effects of Vegetation on Riverbank Erosion and Stability.' In J.B. Thornes, Ed. *Vegetation and Erosion*. Chichester: John Wiley & Sons. 1990, 141.

<sup>150</sup> William Camden, *Britain*. Trans. Philemon Holland. London. 1637, 497B.

<sup>151</sup> Andrew Brookes, *Channelized Rivers. Perspectives for Environmental Management*. Chichester: John Wiley & Sons. 1988, 37

had blocked a river its removal may have improved the usability of the river. There are similar effects from the removal of in-stream wood.<sup>152</sup>

#### **2.4.6 Bank vegetation**

The effects of changes in the bank vegetation have been studied.<sup>153</sup> As early as 1978 it was realised that even a single line of trees along a river's bank can result in the tree-lined channel being 30% narrower, and so about 30% deeper, than expected.<sup>154</sup> Other observations have shown that sections of river with grassed banks are up to 30% wider, and so about 30% shallower, than expected.<sup>155</sup> The challenge for future researchers will be to discover the nature of the vegetation on the river banks in the period 1189-1600. At present no suitable data have been found.

#### **2.4.7 Aggradation and Degradation**

In addition to direct channel modifications there have been anthropogenic changes to the catchment areas which have affected the river channels. These include the change in sediment supply to the rivers. When the bed material load in stable alluvial rivers that transport small quantities of gravel increases in a river with constant flow the

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<sup>152</sup> K.J. Gregory and R.J. Davis, 'Fluvial geomorphology of central and southern England.' In K.J. Gregory, Ed. *Fluvial Geomorphology of Great Britain*. London: Chapman Hall, Joint Nature Conservation Committee. 1997, 265.

A.M. Gurnell, *et al.* 'Large wood and fluvial processes.' *Freshwater Biology*. Vol. 47, (2002), 601-619.

<sup>153</sup> K.J. Gregory and A.M. Gurnell, 'Vegetation and river channel form and process.' In Heather A. Viles, *Biogeomorphology*. Oxford: Basil Blackwell. 1988, 11-42.

<sup>154</sup> R.I. Ferguson, 'Channel form and channel changes.' In John Lewin, Ed. *British Rivers*. London: George Allen & Unwin. 1981, 119.

<sup>155</sup> A.D. Knighton, 'River Channel Adjustment - the Downstream Dimension.' In Keith Richards, Ed. *River Channels. Environment and Process*. The Institute of British Geographers Special Publications Series No. 18. Oxford: Basil Blackwell. 1987, 109.

width normally increases and the depth is reduced.<sup>156</sup> However ‘the reaction of a [particular] channel to altered discharge and type of load may result in changes of channel dimensions contrary to those indicated by the standard regime equations.’<sup>157</sup>

In the 12<sup>th</sup>, 13<sup>th</sup> and the first half of the 14<sup>th</sup> centuries the amount of arable farming increased and this may have caused an increase in sediment in the rivers. The resulting change in form may have reduced the navigability of some sections of rivers. Brookes wrote that ‘During the 14<sup>th</sup> and 15<sup>th</sup> centuries extensive silting of rivers is generally thought to have occurred, at least partly as a result of changing land use, and several acts were passed to aid navigation.’<sup>158</sup> In the early 17<sup>th</sup> century it was the law that boatmen could scour the bed of a stream so that they could pass.<sup>159</sup> If they were regularly using a river this would seem to imply that there was significant sedimentation.

The usability of different sections of a river may vary as a pulse of sediment passes down the river. Empirical evidence has shown that pulsed inputs to alluvial storage may result from climate and erosion system fluctuation. These may be triggered by individual extreme climatic events or by agricultural or forestry activities or the input of mining wastes.<sup>160</sup> For example in south-west Britain the removal of grassland on hill slopes is estimated to have increased soil movement by about 400 times.<sup>161</sup>

The form of many rivers varied during the period 1189-1600 due to changing climate and changing land use. Macklin and Lewin note that ‘it is probably true to say that there is no matter of prime significance to the river engineer (and for that matter the geomorphologist) on which ignorance is so profound as that of climate change and

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<sup>156</sup> Stanley A. Schumm, *The Fluvial System*. London: John Wiley & Sons. 1977, 135.

<sup>157</sup> *Ibid.* page 134.

<sup>158</sup> Andrew Brookes, *Channelized Rivers. Perspectives for Environmental Management*. Chichester: John Wiley & Sons. 1988, 12.

<sup>159</sup> ‘Repair of Bridges, Highways, &.’ [1610] Coke Rep. XIII, 33.

<sup>160</sup> Mark G. Macklin and John Lewin, ‘Sediment transfer and transformation of an alluvial valley floor: the river South Tyne, Northumbria, U.K.’ *Earth Surface Processes and Landforms*. Vol. 14, (1989), 233 – 246, 233.

<sup>161</sup> M.A. Carson, & M.J. Kirkby, *Hillslope Form and Process*, 217 (Cambridge University Press, 1972). Cited in M.A. Robinson, G.H. Lambrick, ‘Holocene alluviation and hydrology in the upper Thames basin.’ *Nature*. Vol. 308, (26 April 1984), 811.

how it affects river form and process.’<sup>162</sup> In the short term it will not be possible to establish the reason for each change. There is no record that traffic was transferred from water to land transport due to rivers, other than ponded rivers, becoming less usable.

The extent of out of channel alluviation has varied over time. It raises the level of the flood plain often leaving a deeper channel.<sup>163</sup> No record has been found of the usability of a river being changed in this way, but due to the slow rate of alluviation such change would be unlikely to have been noticed or recorded.

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<sup>162</sup> Mark G. Macklin and John Lewin, ‘Channel, Floodplain and Drainage basin Response to Environmental Change.’ In Colin R. Thorne, *et al*, Eds. *Applied Fluvial Geomorphology for River Engineering and Management*. Chichester: John Wiley & Sons. 1997, 38.

<sup>163</sup> A.G. Brown and M. Keough, ‘Holocene floodplain metamorphosis in the Midlands, United Kingdom.’ *Geomorphology*. Vol. 4, (1992), 441.

#### 2.4.8 Medieval hydrology

In addition to the above changes there were also deliberate attempts to improve the usability of rivers. One well known example was on the Thames at Abingdon where prior to c.1053 there was a short section of the river which was of higher gradient than the sections above and below and so boats could not pass in the dry season. While the creation of the diversion is well known no one seems to have appreciated the brilliance of the person who conceived the scheme. Nor has any estimate been found of the number of boats which must have been using that section of the river at that time to justify the expenditure of digging the new channel. The channel which was dug was about 2 km in length and wide and deep enough to take the flow of the Thames. It seems that the number of boats using that section of the Thames in the mid 11<sup>th</sup> century must have been counted in hundreds rather than tens. Nowhere else has an example been found of a section of river being bypassed by a longer and/or narrower channel to provide a passage with deeper water.

There was a good knowledge of hydrology in the 11<sup>th</sup> to 13<sup>th</sup> century. A new supply of fresh water for Sandwich was created in 1285. Meyer has commented that 'No writer appears to have appreciated the astounding skill of the engineers who carried out the work.'<sup>164</sup> The same could be said of those who set out the streets of Salisbury in 1220 so that water flowed through them. Blair and Bond have described the many canals which were built at that time.<sup>165</sup> These, and especially the one at Bampton, must have been built by people with understanding. It seems that this understanding would be obtained only by people who were using rivers regularly.

However that does not mean that everyone in the country had a good knowledge of hydrology. There has been much discussion as to whether there was a canal from Winchester to Southampton. But little attention seems to have been paid to the findings of a jury in 1276:

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<sup>164</sup> George M. Meyer, 'Early water-mills in relation to changes in the rainfall of East Kent.' *Quarterly Journal of the Royal Meteorological Society*. Vol. 53, (1927), 412.

<sup>165</sup> John Blair, 'Transport on the Upper Thames.' In Blair, 2007, 254-294.

James Bond, 'Canal Construction in the early Middle Ages: An Introductory Review.' In Blair, 2007, 153-206.



‘The jurors summoned on an Inquisition *ad quod damnum* (4 Edw. I) said that they did not think the citizens of Winchester would be able to bring the flood and ebb of the sea as far as their city. They might, however, be allowed by the king to bring it to Stoke, distant 4 leagues from Southampton, on the way to Winchester. The jurors also said that this must harm the bishop, because it would be necessary to remove a mill called the Wodemilne, worth £5 a year, and a salmon fishery of the annual value of 10 marks, and ... [six other named mills of given value]. Finally, the jury also declared that it would not be necessary to widen the water-course, but rather to make it more narrow and deepen it in various places.’<sup>166</sup>

The difficulty of bringing ‘the flood and ebb of the sea as far as their city’ is seriously under-estimated. Winchester is 30 m above sea level and the tidal range at Springs at Southampton 13ft (4 m).<sup>167</sup> Such an objective is impossible.

However ‘the jury also declared that it would not be necessary to widen the water-course, but rather to make it more narrow and deepen it in various places.’ This implies either a remarkably good appreciation of hydrology or a memory of a previous state of the river. In view of their ignorance about the tides the second seems more likely. This may imply that previously the river had been used for transport but that the banks had been eroded by those towing the barges so the river became wider, shallower and unusable.

Rhodes has shown that it is not easy to identify where there has been human modification of river channels.<sup>168</sup>

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<sup>166</sup> *VHC Hampshire and the Isle of Wight, Vol. V*, 451-452.

<sup>167</sup> F.H.W. Green, ‘Tidal Phenomena With Special reference to Southampton and Poole.’ Reprinted from *The Dock & Harbour Authority*. September 1951.

<sup>168</sup> Ed Rhodes, ‘Identifying Human Modification of River Channels.’ In Blair, 2007, 133-152.

### 2.4.9 Summary

The usability of many rivers has been improved by canalisation, but most other anthropogenic modifications have either lessened the usability of rivers or made no change. At present the frequency of dredging and channel clearance in rivers varies with the environment and the rate of sedimentation. It also varies with the finance available and the perceived pressure for the avoidance of flooding. Some of the clay streams of East Anglia carry much sediment and require dredging every five to ten years<sup>169</sup> but it seems that in general rivers are scoured about every twenty years although there is a wide range of frequencies.<sup>170</sup> No evidence has been found as to the frequency of the scouring of most rivers in the period 1189-1600.

It seems that on those rivers which have not been canalised channel shortening, channel widening, scouring and the cutting of in stream vegetation have reduced the depth and so the usability of the rivers since 1600. It has not been possible to assess the effect of the possible removal of bank vegetation and of aggradation and degradation as a result of land use changes on the usability of rivers. The skills of the medieval hydrologists seem to indicate a familiarity with using the rivers.

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<sup>169</sup> Andrew Brookes, *Channelized Rivers. Perspectives for Environmental Management*. Chichester: John Wiley & Sons. 1988, 37.

<sup>170</sup> Personal comment from a staff member of the Environment Agency. 2004.

## **Chapter 2.5 Channel Pattern and Usability**

### **2.5.1 Braided rivers**

It has been stated that the lowland floodplains show little evidence of change during the Roman and medieval periods.<sup>171</sup> However this may be challenged since the evidence for this stability comes from structures like settlements, quays, bridges and weirs which themselves cause the rivers to be stable.<sup>172</sup> The normal post-glacial, autogenic, sequence of river pattern was braided - multi-channel - single-channel<sup>173</sup> with varying processes causing the changes.<sup>174</sup> The changes occurred at different times in different catchments.<sup>175</sup> 'Braided' refers to rivers with beds of gravel or cobble as bed material and where the flow at low stage is multi-channel.<sup>176</sup> Thus only the large braided rivers would have been usable. There is now no usable braided river in England.<sup>177</sup>

It used to be thought that the distinction between braided and meandering rivers could be established from their discharge and slope.<sup>178</sup> It is now known that there is no sharp threshold between channel patterns and that pattern also depends on sediment supply, bed material, the erodibility of the banks, width/depth ratio and the time variability of flow.<sup>179</sup> This complexity is enhanced in the study of palaeochannels

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<sup>171</sup> A.G. Brown, 'Floodplain Palaeoenvironments.' In Malcolm G. Anderson, Des E. Walling and Paul D. Bates, Eds. *Floodplain Processes*. Chichester: John Wiley & Sons. 1996, 125.

<sup>172</sup> A.G. Brown, *Alluvial geoarchaeology*. Cambridge: Cambridge University Press. 1997, 227.

<sup>173</sup> J. Vandenbergh, 'Timescales, Climate and River Development.' *Quaternary Science Review*. Vol. 14, (1995), 631-638.

<sup>174</sup> John Lewin, 'Changes of channel patterns and floodplains.' In K.J. Gregory, Ed. *Background to Palaeohydrology*. Chichester: John Wiley & Sons. 1983, 303.

<sup>175</sup> M.G. Macklin *et al.*, 'The condition of Holocene alluvial archaeology in the UK: progress, constraints and opportunities.' In Andy J. Howard, *et al.*, Eds. *Alluvial Archaeology in Europe*. Lisse: A.A. Balkema Publishers. 2003, 10-11.

<sup>176</sup> David S.G. Thomas and Andrew Goudie, Eds. *The Dictionary of Physical Geography*. 3<sup>rd</sup> Edition. London: Blackwell Publishing. 2000, 62.

<sup>177</sup> R.I. Ferguson, 'Channel form and channel changes.' In John Lewin, Ed. *British Rivers*. London: George Allen & Unwin. 1981, 113.

<sup>178</sup> L.B. Leopold and M.G. Wolman, 'River channel patterns - braided meandering and straight.' *Prof. Pap. U.S. Geol. Surv.* 282-B. 1957. Cited in G.H. Cheetham, 'Palaeohydrological investigations of river terrace gravels.' In D.A. Davidson and M.L. Shackley, Eds. *Geoarchaeology*. London: Duckworth. 1976, 336.

Rob Ferguson, 'Hydraulic and Sedimentary Controls of Channel Pattern.' In Keith Richards, Ed. *River Channels. Environment and Process*. Oxford: Basil Blackwell. 1987, 129.

<sup>179</sup> Colin R. Thorne, 'Channel Types and Morphological Classification.' In Colin Thorne, *et al.*, Eds. *Applied Fluvial Geomorphology for River Engineering and Management*. Chichester: John Wiley & Sons. 1997, 206.

where the flood-dependent nature of the channel patterns makes the determination of the channel pattern at mean flow difficult or impossible.<sup>180</sup>

Clear evidence of the existence of braided rivers since the 12<sup>th</sup> century formed by these processes has only been found for the Tyne and Swale. These are considered first and then the Trent is considered with its braided pattern caused by sediment flow from its tributaries. Finally the existence of braiding on other rivers is considered.

#### A. River Tyne

Macklin observed that some sections of the Tyne were braided in the late Roman period, the 13<sup>th</sup> and 14<sup>th</sup> centuries and also in the late 18<sup>th</sup> and 19<sup>th</sup> centuries. This was linked to the increased rate of coarse sediment supply due to increased bank erosion caused by land-use changes, trunk stream incision and metal mining. Hushing, when overburden was washed into streams, was an important source of sediment.<sup>181</sup>

However Passmore considered that the timing of recent historic braiding and instability appears to be related to changes in flood frequency and magnitude due to climatic variation.<sup>182</sup> While most of the braiding occurred in the upper river it appears that there was braiding as far downstream as Low Prudhoe in the middle of the 15<sup>th</sup> century.<sup>183</sup> Macklin and Needham considered that the reduction in the 20<sup>th</sup> century in the degree of braiding in the South Tyne was partly due to the cessation of metal mining.<sup>184</sup>

The few historic records of use of the middle Tyne are predominantly from the Roman era which may indicate that this section of the river became less usable due to the channel becoming braided.

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<sup>180</sup> Rob Ferguson, 'Hydraulic and Sedimentary Controls of Channel Pattern.' In Keith Richards, Ed. *River Channels. Environment and Process*. Oxford: Basil Blackwell. 1987, 154-155.

<sup>181</sup> M.G. Macklin, 'Fluvial geomorphology of north-east England.' In K.J. Gregory, Ed. *Fluvial Geomorphology of Great Britain*. London: Chapman & Hall for Joint Nature Conservation Committee. 1997, 205.

<sup>182</sup> David G. Passmore *et al.* 'Variability of late Holocene braiding in Britain.' In J.L. Best, C.S. Bristow, Eds. *Braided Rivers*. Geological Society Special Publication Number 75. 1993, 227.

<sup>183</sup> *Ibid.* page 225.

<sup>184</sup> Mark G. Macklin and Stuart Needham, 'Studies in British alluvial archaeology: potential and prospect.' In Stuart Needham and Mark G. Macklin, Eds. *Alluvial Archaeology in Britain*. Oxbow Monograph 27. (1992), 18.

## B. River Swale

During part of the medieval period the river at Catterick on the Swale was a braided channel. Taylor and Macklin established that between about 1550-1670 there was a phase of coarse sediment deposition which altered the pattern to an avulsing single-thread channel.<sup>185</sup> The river downstream of Catterick has a mean flow of  $13 \text{ m}^3 \text{ sec}^{-1}$  and gradient  $3 \text{ m km}^{-1}$  and if it had had a single uniform channel it would probably have been usable. Use of the river to Easby Abbey may have depended on the varying state of the braiding of the river. The river is unusual in that its use past Richmond would not have been possible due to steps in the bedrock river bed. Use upstream of Richmond would have been by small boats only.

## C. River Trent

Observations made at Hemington,<sup>186</sup> 18 miles upstream, and Colwick,<sup>187</sup> 2 miles downstream of Nottingham, have shown that there was a cyclic phase of channel change from single channel meandering to active braiding to fixed multi-channel state and finally back to a single channel meandering state. This cycle took place over 300-400 years between the 9<sup>th</sup> and 14<sup>th</sup> centuries at Hemington and 100-200 years later at Colwick. The cycle was driven by a series of large floods which coincided with the Late Medieval Climatic Deterioration. This channel response is considered to be unique for a large lowland river in England and almost certainly resulted from sediment brought down by the Dove and Derwent.<sup>188</sup>

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<sup>185</sup> M.P. Taylor and M.G. Macklin, 'Holocene alluvial sedimentation and valley floor development: the River Swale, Catterick, North Yorkshire, UK.' *Proceedings of the Yorkshire Geological Society*. Vol. 51, Part 4. (1997), 326.

<sup>186</sup> Lynden Cooper, *et al.* 'The Hemington Bridges.' *Current Archaeology*. Vol. 140, (November 1994) 316-321.

Patrick Clay, 'Medieval bridges at Hemington Quarry, Lockington-Heminton, Leicestershire.' [http://www.eng-h.gov.uk/archcom/projects/summaries/htm196\\_7/1572anl.htm](http://www.eng-h.gov.uk/archcom/projects/summaries/htm196_7/1572anl.htm). Accessed 11/10/2004.

<sup>187</sup> Andy Howard, 'The Contribution of Geoarchaeology to Understanding the Environmental History and Archaeological Resources of the Trent Valley, U.K.' *Geoarchaeology*. Vol. 20, (2005), 93-107.

A.G. Brown, 'Human dimensions of Palaeohydrology.' In Bransom J. *et al.* 'Global continental Changes: the Context of Palaeohydrology.' Geological Society Special Publication No 115. (1996), 57-72.

<sup>188</sup> A.G. Brown *et al.* 'Late Holocene channel changes of the Middle Trent: channel response to a thousand-year flood record.' *Geomorphology*, Vol. 39, (2001), 79.

A.G. Brown, 'Geoarchaeology, the four dimensional (4D) fluvial matrix and climatic causality.' *Geomorphology*. Vol. 101, (2008), 286.

The gravel extraction sites at Hemington and Colwick appear to be the only sites at which detailed observations have been made. It seems likely that the braiding on the Trent progressed downstream over a period of time. Understanding of the full extent and timing of braiding on the Trent must await further observations.

Charters granted by Henry II (1189) and King John (1200) to the Borough of Nottingham provided for a usable channel two perches wide ‘in the waters of Trent’.<sup>189</sup> In 1265 and 1292 there were complaints that the channel downstream of Nottingham was narrowed by weirs so that boats could not ‘pass so conveniently as they were wont’.<sup>190</sup> A more serious obstruction was created by a weir erected by William of Colewyk which produced four complaints to the King<sup>191</sup> in the years 1299 to 1303. A commission which was appointed in 1383 to investigate an apparently different obstruction at Colwick<sup>192</sup> stated that ‘the waters of Trent ... has been used and ought to hold its course from the place where it takes its source to the castle and town of Nottingham’ and from thence to the sea.<sup>193</sup> Edwards gives 38 references to records of the use of the river downstream from Nottingham for the 14<sup>th</sup> century.

In c.1535 Leland crossed the Trent at Hoveringham, 13 miles downstream of Nottingham, *per cymbam* (a boat used for coffins) and his horse crossed *per vadum* (a ferry).<sup>194</sup> In 1592 there was a ‘great and unlawful assembly’ to pull down a weir at Shelford just downstream of Nottingham<sup>195</sup> presumably because it was obstructing the passage of boats and barges. Despite the braiding of the river it seems that

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<sup>189</sup> *Records of the Borough of Nottingham. Volume I.* Editor W.V. Steveson. Nottingham: Corporation of Nottingham. 1882.

<sup>190</sup> Calendar of Patent Rolls, 1258-66, 480.

Calendar of Inquisitions Miscellaneous, 1219-1307, 442.

<sup>191</sup> Calendar of Patent Rolls, 1292-1301, 476-477, 555.

Calendar of Patent Rolls, 1301-1307, 94, 269.

<sup>192</sup> Bernard Smith, ‘Some Recent Changes in the course of the Trent.’ *The Geographical Journal*. Vol. 35, (May, 1910), 572.

<sup>193</sup> ‘Royal Commission to inquire into Obstructions of the course of the Trent at Colwick.’ (1383). In *Records of the Borough of Nottingham. Volume I* Editor W.V. Steveson. Nottingham: Corporation of Nottingham. 1882.

<sup>194</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume Four.* Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 18.

<sup>195</sup> *Acts of the Privy Council*, 1592, pp. 16, 148; 1592-3, pp. 201, 243, 440. Cited in A.C. Wood, ‘The History of Trade and Transport on the River Trent.’ *Transactions of the Thoroton Society*. Vol. 54. 1950. 1 – 44, 7.

downstream of Nottingham there was always at least one channel deep enough to be used.

Upstream of Nottingham there are few references to the use of the river.<sup>196</sup> A boat was stolen at Barton six miles up river from Nottingham in 1313<sup>197</sup> and in 1338 a pontage grant was made at Swerkeston for goods coming to the town ‘by water as by land’.<sup>198</sup> Possibly Wood described this trade accurately when he wrote ‘We possess no clue to the volume of all this early river traffic. No doubt it was comparatively small, and for the most part localized in scope.’<sup>199</sup> It seems that upstream of Nottingham use was restricted to small boats at the confluence with the Derwent and Dove and that the use of these boats was not normally recorded.

#### D. Other Rivers

While the braiding of the Trent seems to have been unique for a lowland river, the braiding on the Tyne and Swale may be typical of the rivers of the North East and other Highland Regions. Dramatically increased sediment supply due to mining has caused well documented changes in channel form in other countries which involved a change from meandering to braided channel pattern with a period of aggradation being followed by incision and reversion to a single channel in less than a century.<sup>200</sup> Mining was carried out in many northern valleys<sup>201</sup> with over a hundred mines in Weardale alone.<sup>202</sup> The period of time during which the river form would have

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<sup>196</sup> Guy Y. Hemingway, ‘History of the navigation of the River Trent.’ Typescript held by the University of Nottingham. 197?, 17.

<sup>197</sup> Calendar of Patent Rolls, 1313-1317, 72.

<sup>198</sup> Calendar of Patent Rolls, 1338-1340, 22.

<sup>199</sup> A.C. Wood, ‘The History of Trade and Transport on the River Trent.’ *Transactions of the Thoroton Society*. Vol. 54, (2007), 7.

<sup>200</sup> Mark G. Macklin and John Lewin, ‘Channel, Floodplain and Drainage Basin Response to Environmental Change.’ In Colin Thorne, *et al.*, Eds. *Applied Fluvial Geomorphology for River Engineering and Management*. Chichester: John Wiley & Sons. 1997, 31-32.

<sup>201</sup> Arthur Raistrick, Bernard Jennings, *A History of Lead Mining in the Pennines*. London: Longmans. 1965.

John Postlethwaite, *Mines and Mining in the English Lake District*. (1<sup>st</sup> Edition 1877.) Whitehaven: Michael Moon’s Bookshop. 1983.

John Adams, *Mines of the Lake District Fells*. 2<sup>nd</sup> Edition. Skipton: Dalesman Publishing Company. 1995.

<sup>202</sup> R.A. Fairbairn, *Weardale Mines*. British Mining No. 56. Northern Mine Research Society. 1996.

changed due to mining varied.<sup>203</sup> In 1997 Macklin commented on the lack of research into the palaeogeomorphology of these northern rivers<sup>204</sup> and few records of studies carried out since then have been found.<sup>205</sup> Lack of records of historic use of these rivers may be due to the fact that the rivers were impassable due to braiding during certain periods.

In the South-West silt blocked some river channels. Camden recorded that the Dart ‘carrieth downe with it certaine grit, and sand out of the Tin-mines, (which by little and little choke up the channel) through the Forrest of Dortmore.’ He also stated that ‘beyond Totnes bridge’ there are whole heaps of sand brought down by the river.<sup>206</sup> On this river it seems that the channel was braided or multi-channel and not passable.

### 2.5.2 Multi-channel rivers

The word multi-channel is used here rather than anabranching or anastomosing since the origin of the divided channels is often obscure. Many of the islands in rivers have been created by the construction of new channels for mills or fish-weirs.<sup>207</sup> On the other hand many multi-channel rivers have been modified to flow in a single channel because river engineers have followed Tulla’s concept that ‘As a rule, no stream or river needs more than one bed’.<sup>208</sup> A large multi-channel river is more usable by small boats than a single channel river, especially travelling upstream, but less usable by a barge or boat which is near the size limit for the river. It seems that journeys by large vessels are more likely to be recorded than those of small boats and so a multi-channel river pattern may result in apparent disuse.

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<sup>203</sup> J. Lewin, *et al.*, ‘Regime Theory and Environmental Change - Irreconcilable Concepts?’ In W.R. White, Ed. *International Conference on River Regime*. Chichester: John Wiley & Sons, on behalf of Hydraulics Research Limited. 1988, 433.

<sup>204</sup> M.G. Macklin, ‘Fluvial geomorphology of north-east England.’ In K.J. Gregory, Ed. *Fluvial Geomorphology of Great Britain*. London: Joint Nature Conservation Committee, Chapman & Hall. 1997, 203.

<sup>205</sup> Andy J. Howard, *et al.* ‘Holocene river development and environmental change in Upper Wharfedale, Yorkshire Dales, England.’ *Journal of Quaternary Science*. Vol. 15 (3), (1999), 239-252.

<sup>206</sup> William Camden, *Britain*. Trans. Philemon Holland, London: Joyce Norton, and Richard Whitaker. 1637, 201, 202.

<sup>207</sup> A.G. Brown, *Alluvial Geoarchaeology*. Cambridge: Cambridge University Press. 1997, 259.

<sup>208</sup> Tulla, 1817, Cited in H. Ryckborst, ‘Geomorphological changes after river-meander surgery.’ *Geologie en Mijnbouw*. Vol. 59, (1980), 121-128.



Geomorphologists have shown that during the Bronze and Iron Ages the Middle Nene floodplain was transformed from a stable, multiple channel system covered by dense woodland, to a cleared agricultural landscape with managed channels.<sup>209</sup> However the river continued to be multi-channel and meandering during the period 1189-1600.<sup>210</sup> Similarly the Lower Welland<sup>211</sup> and Gipping<sup>212</sup> were multi-channel during the medieval period until they were modified by land drainage.

Historians have shown that in the 16<sup>th</sup> century the Medway was used to just downstream of Tonbridge.<sup>213</sup> It is also known that the river was divided into several channels at Tonbridge.<sup>214</sup> No record has been found of use of the river upstream of Tonbridge.

There is an absence of evidence of the use of the Soar despite a flow at Kegworth of  $12.2 \text{ m}^3 \text{ s}^{-1}$  and gradient of  $0.6 \text{ m km}^{-1}$ . In 1693 a two mile section near Loughborough was described as being as broad as the river at Hackney Marsh but divided into ‘many little channels’.<sup>215</sup> It seems likely that if these islands existed for the previous five hundred years they would have obstructed the use of barges.

Few barges seem to have used the Great Ouse to Bedford where the mean flow is  $10 \text{ m}^3 \text{ s}^{-1}$  and gradient  $0.6 \text{ m km}^{-1}$ . In c.1543 Leland wrote ‘Ther be many holmes,

<sup>209</sup> A.G. Brown and M.K. Keough, ‘Palaeochannels and palaeoland surfaces: the geoarchaeological potential of some Midland floodplains.’ In Stuart Needham and Mark G. Macklin, Eds. *Alluvial Archaeology in Britain*. Oxbow Monograph 27. (1992), 195.

<sup>210</sup> Anthony G. Brown, ‘Colluvial and alluvial response to land use change in Midland England: An integrated geoarchaeological approach.’ *Geomorphology*. (2009). Consulted in draft. Doi:10.1016/j.geomorph.2007.12.021. Accessed 23/9/2009.

<sup>211</sup> C.A.I. French, *et al.* ‘Archaeology and palaeochannels in the Lower Welland and Nene valleys: alluvial archaeology at the fen-edge, Eastern England.’ In Stuart Needham and Mark G. Macklin, Eds. *Alluvial Archaeology in Britain*. Oxbow Monograph 27. 1992, 169-176.

A.G. Brown, *et al.* ‘Floodplain Evolution in the East Midlands, United Kingdom: The Late Glacial and Flandrian Alluvial Record from the Soar and Nene Valleys.’ *Philosophical Transactions of the Royal Society of London. A Series*. Vol. 348. (1994), 261-293.

Mark Robinson, ‘Environment, archaeology and alluvium on the river gravels of the South Midlands.’ In Stuart Needham and Mark G. Macklin, Eds. *Alluvial Archaeology In Britain*. Oxbow Monograph 27. 1992, 197-208.

<sup>212</sup> C.A.I. French, ‘Archaeology and palaeochannels in the Lower Welland and Nene valleys: alluvial archaeology at the fen-edge, Eastern England.’ In Stuart Needham and Mark G. Macklin, Eds. *Alluvial Archaeology in Britain*. Oxbow Monograph 27. (1992). 173.

<sup>213</sup> Joan Thirsk, Ed. *Hadlow Life Land and People in a Wealden Parish 1460 – 1600*. Kings Lynn: Heritage Marketing & Publications Ltd. 2007, 55.

<sup>214</sup> William Camden, *Britain*. Trans. Philemon Holland. London: Ioyce Norton and Richard Whitaker. 1637, 330.

<sup>215</sup> John Houghton, ‘Leading Article.’ *A Collection for Improvement of Husbandry and Trade*. Number 46. 16 June 1693.

otharwyse little isles, in the river betwixt Bedforde and Newham'.<sup>216</sup> Newham is downstream of Bedford. The existence of these little islands seems not to have been previously noted.<sup>217</sup> But the fact that barges could not reach Bedford due to the islands may explain why fords and mill dams were not removed from places further downstream. There transport could be provided by small boats using the river between the dams either with the boats being portaged past the weirs or by transferring the loads to other vessels.<sup>218</sup>

In addition reports have not been found of the use of the Cam by barges upstream of Cambridge. Camden records that the river Cam had 'most pleasantly sprinkled the west side of Cambridge with several little isles'.<sup>219</sup> It is possible that it was the limited size of the channels between these islands which limited the use of barges upstream of Cambridge and so permitted the retention of the mills at Silver Street.

It seems likely that multi-channel sections existed on other rivers which have not been recognised. This is particularly true of the rivers which were used in the 17<sup>th</sup> century for floating water meadows. This practice was introduced on the Itchen, Test, Salisbury Avon and other river valleys.<sup>220</sup> No work has been found which describes the previous form of these rivers.

On the other hand, the fact that a river was multi-channel does not imply that it was unusable. It is known that the Lea divided into at least six channels in parallel at Stratford and yet it was still usable.<sup>221</sup> Other were usable upstream of the multi-channel section as on the Soar at Leicester.

Many divided rivers result from the cutting of mill streams as on the Eastern Rother upstream of Robertsbridge, the Cam upstream of Cambridge, the Kentish Stour at

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<sup>216</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume Four.* Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 33.

Copied by: Raphaell Holinshed, William Harrison *et al.* *The First and Second Volumes of the Chronicles.* 2<sup>nd</sup> Edition. London: J. Johnson *et al.* 1807, 173.

<sup>217</sup> eg. Dorothy Summers, *The Great Ouse.* Newton Abbot: David & Charles. 1973.

<sup>218</sup> *Simpson v A-G* [1904] AC 476-515.

<sup>219</sup> William Camden, *Camden's Britannia.* Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 404.

<sup>220</sup> Eric Kerridge, *The Farmers of Old England.* London: George Allen & Unwin Ltd. 1973, 110-115

<sup>221</sup> Stephen Pewsey, *Stratford A Pictorial History.* Chichester: Phillimore. 1993, Plate 3.

Wye and the Sussex Ouse at Barcombe Mills. In general, where a river has been modified by the creation of a mill stream the main channel has reduced its width and depth due to the reduced flow.<sup>222</sup> However it would seem that normally the change was too small to affect the use of the river. Thus on the Severn there were usable barge-gutters at every mill and fish-weir.<sup>223</sup>

Peberdy has noted ‘that many (all?)’ of the fish weirs and mills on the Thames were constructed at points where islands occurred.<sup>224</sup> There seems to have been no research as to whether these channels are natural or anthropomorphic modifications to the river channel.

Many towns were built where there was an island, or islands, in usable rivers. Speed in his maps of 1605-10<sup>225</sup> showed the main towns of some counties as inset maps. These show 27 towns built on usable non-tidal rivers at points where there were islands<sup>226</sup> and only 3 where there was no island.<sup>227</sup> Again there seems to have been no study to establish whether these islands were natural or not.

### **2.5.3 Rivers with pool and riffle form**

So far it has been assumed that boats always floated when in use. But this assumption is correct only for certain types of bed material. If the water is not deep enough for a boat to float on a river with a bed of clay or silt there is considerable frictional resistance to the movement of the boat and the river may be considered to be unusable. However if the bed is of gravel, cobbles or boulders a boat may be dragged up the river with the water lubricating the contact points between the river bed and boat. This is particularly true if the section which is shallow is short as on pool and riffle rivers as defined in Section 1.2.3.

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<sup>222</sup> G.H. Dury, ‘Magnitude-Frequency Analysis and Channel Morphometry’ In Marie Morisawa, Ed. *Fluvial Geomorphology*. London: George Allen & Unwin. 1973, 91 – 121.

<sup>223</sup> Brian Waters, *Severn Stream*. London: J.M. Dent and Sons Ltd. 1949, 68.

<sup>224</sup> Robert Peberdy. Private correspondence. 4 December 2006.

<sup>225</sup> John Speed, *Theatre of the Empire of Great Britaine, Parts I, II, III and IV*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1953-4.

<sup>226</sup> Winchester, Newport, Dorchester, Exeter, Bath, Salisbury, Gloucester, Canterbury, Norwich, Hertford, Buckingham, Reading, Cambridge, Bedford, Oxford, Worcester, Warwick, Northampton, Peterborough, Huntingdon, Ely, Stanford, Leicester, Shrewsbury, Lincoln, Nottingham, Derby.

<sup>227</sup> Hereford, Stafford, Durham.

Selkirk records that when he was carrying out archaeological investigations on the Tyne a gentleman walked up the centre of the river across some shallows towing a fairly large rowing boat containing several hundredweight of eels. When he reached a section of the river where the water was deeper he re-entered his boat and continued rowing upstream.<sup>228</sup> Both fishing and load-carrying boats were certainly dragged up the shingle beaches above tide level in medieval times as they are now. Haslam claims that river beds were also used by horse and cart.<sup>229</sup>

Today if a vehicle moves on land it is normally assumed that it has wheels and if it moves on water it is assumed that it floats. However greater use of sledges in the past may have been paralleled by the more frequent dragging of boats up short sections of shallows and round obstructions. It was reported that in the last quarter of the 12<sup>th</sup> century mares were offered for sale in London for pulling sledges.<sup>230</sup> Parsons wrote that that in the medieval period sledges were used to move stone and slate around quarries and building sites.<sup>231</sup> In 1394 the vicar and churchwardens of Beverley were given permission to transport stones from the Beck to the Minster provided the stones were carried on sleds (*cum sleddis*) and providing that they never requested permission to do so again.<sup>232</sup> The Fabric Rolls show that in c.1395 stone was taken on sledges from the 'Seint Lenard lendyng' to York Minster.<sup>233</sup> Fiennes saw and recorded that in the late 17<sup>th</sup> century sledges were the only vehicles allowed to be used to carry goods in Southampton and that carts were forbidden.<sup>234</sup> She also recorded that at the same date most goods in Bristol were carried on sledges.<sup>235</sup> In 1853 Dickinson wrote of Cumberland 'Only yeomen and the larger occupiers could boast of carts; the produce of the farms, hay, corn and peat being brought in on railed

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<sup>228</sup> Raymond Selkirk, *Chester-Le-Street & its place in history*. Durham: Casdec Printcentre. 2001, 259.

<sup>229</sup> S.M. Haslam, *The Historic River*. Cambridge: Cobden of Cambridge Press. 1991, 118.

<sup>230</sup> William Fitzstephen, c.1175. Printed in John Stow, *Survey of London*. 1598. Cited in Jeanne Krochalis and Edward Peters, Eds. *The World of Piers Plowman*. Philadelphia: University of Pennsylvania Press. 1975, 30.

<sup>231</sup> David Parsons, 'Stone.' In John Blair and Nigel Ramsey, Eds. *English Medieval Industries*. London: Hambledon. 1991, 6.

<sup>232</sup> *Beverley Town Documents*. Editor Arthur F. Leach. Selden Society. Vol. 14, (1900), 24.

<sup>233</sup> Fabric Rolls of the Minster of York (Surtees Society). p 2. Cited in L.F. Salzman, *Building in England down to 1540*. Oxford: Clarendon Press. 1952, 351.

<sup>234</sup> Celia Fiennes, *Through England on a Side Saddle*. London: Field & Tuer. 1888, 42.

<sup>235</sup> *Ibid.* 199.

sledges and the more portable article on pack horses.<sup>236</sup> A sledge was used for transporting hay in the Yorkshire Dales in 1952-54.<sup>237</sup> It seems that the use of sledges in England may have been more frequent than the standard texts on transport imply. Equally there has been no investigation into the extent to which the beds of rivers were used as trackways for sledges nor to what extent boats were dragged up riffles.

Archaeological evidence shows that at Skenfrith on the Monnow a wharf and slipway were constructed in c.1190 when stone was being transported for the building of the castle.<sup>238</sup> Stone, from his study of the papers of the Duke of Rutland, wrote that when iron smelting was developed at Rievaulx the processed iron was transported down the Rye by boat.<sup>239</sup> The Rye at Rievaulx now has similar form to the Monnow at Skenfrith. On both rivers at normal flow the boats would have scraped over the stones at the riffles, if the rivers had the same pool and riffle form that they have now.

In 1586 Harrison, the vicar of Radwinter,<sup>240</sup> wrote of the Pant that ‘Certes by the report of common fame it hath been a pretty water and of such quantity that boats have come in time past from Beeleigh Abbey beside Maldon unto the moors in Randwinter for corn.’ It seems that the boats would not have floated all the way but they could have been dragged. How often, and in how many places, boats were dragged over obstructions, or up riffles, is not known. But it is known that boats were dragged considerable distances on land. Flemming-Yates claimed that in the reign of Mary Tudor a weir was built on the Wye at Monmouth. She wrote that for the next one and a half centuries boats were hauled ashore and then dragged a hundred yards upstream by oxen before being refloated.<sup>241</sup>

Several of the recent limits of use for rivers of pool and riffle form are well upstream of the records of historic use as on the Tees, Wharfe, Swale, Ure, Derbyshire

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<sup>236</sup> William Dickinson, *Essays on the Farming of Cumberland*. (1853). Cited in David Hey, *Packmen, Carriers and Packhorse Roads*. Leicester: Leicester University Press. 1980, 93.

<sup>237</sup> By Mr Porritt, Sparrow Farm, Scugdale, North Yorkshire. Personal comment: Mrs K.E. Caffyn. November 2009.

<sup>238</sup> Phil Evans and Kevin Trott, ‘Excavations at Skenfrith Castle, 2003.’ Report of a CADW sponsored excavation. Paper unpublished at July 2008.

<sup>239</sup> Lawrence Stone, *Family and Fortune*. Oxford: Clarendon. 1973, 194.

<sup>240</sup> William Harrison, *The Description of England* Editor Georges Edelen., (1<sup>st</sup> Edition 1968). Washington: The Folger Shakespeare Library and New York: Dover Publications Inc. 1994, 3.

<sup>241</sup> Joan Fleming-Yates, *The River Running By*. No address: Wedderburn Art Ltd. c.2005, 96.

Derwent, Exe, Torridge, Ribble and Eden. However on the Tyne, Wear, Rye, Nidd, Taw, Teme and Monnow they are at similar places. It has not been possible to establish whether there was a genuine difference in the use of these two sets of rivers or whether the difference lies in the recording of the use.

Similar considerations apply to the records of use of the Tweed, Eden and Esk where frequent periods of fighting may have reduced the use of the rivers and/or may have reduced the recording of their use.

#### **2.5.4 Summary**

There have been considerable changes to the form of some rivers which have affected their usability. Braiding of the full width of a river channel would normally have made the channel unusable for much of the year. However at high discharge a braided river may have been suitable for use by flat-bottomed boats or for the floating of timber.

There have been few investigations of the extent of divided channels in the period 1189-1600. However it appears that the reduction in the depth of rivers caused by the existence of a multi-channel form may explain the lack of use of some rivers by barges. The existence of multi-channel forms in smaller rivers remains to be investigated but no section of river has yet been found where the usability was affected.

The historic use of rivers with a pool and riffle form is difficult to determine because it would be expected that they would only have been used by relatively small boats for which there are few records of use. However the recently established record of use of the Monnow at Skinfrith may encourage more investigations, or help the recognition, of other pool and riffle rivers which were used historically.

## **Chapter 2.6 Ponded Rivers and Meres**

### **2.6.1 Introduction**

The Coastal Wetlands have been well studied.<sup>242</sup> The rivers flowing towards them seem only to have been studied as incidental to the exploitation, modification and transformation of the land. The standard regime equations do not apply to these rivers and there seems to have been no attempt to establish why certain rivers became obstructed while others remained usable. There can be no sharp demarcation between marshes, meres, ponds and rivers. In about 4,000BC wetlands may have extended to 20% to 30% of the land area of England.<sup>243</sup>

In this thesis Ponded rivers are those where the gradient is under  $0.3 \text{ m km}^{-1}$ , water flows out of a section more because water has flowed into it rather than because of the slope. Some pre-estuary rivers flow against the gradient of the land because the land near the sea is higher than the land further from the coast.<sup>244</sup> The ponded rivers include some sections of rivers of the Humberside Estuary, Lincolnshire coastal rivers, the Fens, the Broads area of Norfolk, Romney Marsh, Pevensy Marsh, the Somerset Levels. Much of the land through which the rivers used to flow, or which they used to cover, has now been drained.

The natural state of some non-tidal Ponded rivers was meandering and braided with the channels partly choked with vegetation. The depth and extent of the water on the valley floor varied from the centre to the edge and according to the time of year. Some areas were seasonally flooded and others permanently covered with water. In the upper part of the valley peat would form. In some valleys, like the Hull, the lower boundary was relatively fixed. In others, like the Fens, the boundary moved

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<sup>242</sup> See eg. Stephen Rippon, *The Transformation of Coastal Wetlands*. Oxford: The British Academy by Oxford University Press. 2000.

See the 'Wetland Heritage Series' commissioned by English Heritage. Somerset Levels, Fenlands, North West wetlands, Humber wetlands.

<sup>243</sup> A.G. Brown and C. Bradley, 'Past and Present Alluvial Wetland and the Eco-archaeological Resource: Implications from Research in East Midland Valleys, UK.' In Margaret Cox *et al.*, Eds. *Wetlands Archaeology and Nature Conservation*. London: HMSO. 1995, 189-206, 190.

<sup>244</sup> Stephen Rippon, *The Transformation of Coastal Wetlands*. Oxford: The British Academy by Oxford University Press. 2000, 15, 22.

according to the relative sea level and the growth of peat. In many of the valleys there were islands rising out of the marsh.<sup>245</sup>

Nine Pongd rivers are considered clockwise around England. All of these were usable at the end of the 12<sup>th</sup> century except the Hartlake which is an artificial channel created before the middle of the 13<sup>th</sup> century.<sup>246</sup> It is considered that all the major channels in the Fens had been formed before the end of the 12<sup>th</sup> century.<sup>247</sup> It is possible that the Hull, Witham and Ant were natural channels in 1189.

There is an increase in the number of records from the start of the 14<sup>th</sup> century indicating the need for maintenance work required to keep rivers usable.<sup>248</sup> In all these cases the work was to restore the channel to the state ‘as it anciently used to be’. Whether this ancient state was natural or anthropologically modified is never stated. The increase in the number of records may have been due to the increase in the number of storms, a change in sea level, the improvement of law enforcement, an increase in the proportion of records which have survived, or a combination of these.

The questions considered here are: ‘Did the rivers remain usable?’ ‘For those that remained usable did they require regular maintenance?’ ‘What factor(s) determined whether maintenance was needed?’

The factors considered are gradient, discharge and sediment load. These are listed in Table 6. The evidence considered is extracted from the Records of Historic Use (Appendix A) and contemporary reports of the rivers.

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<sup>245</sup> Based on June A. Sheppard, *The Draining of the Hull Valley*. East Yorkshire Local History Series: No 8. 1958. Reprinted 1976, 1-3.

<sup>246</sup> Michael Williams, *The Draining of the Somerset Levels*. Cambridge: Cambridge University Press. 1970, 66.

<sup>247</sup> David Hall and John Coles, *Fenland Survey* London: English Heritage Archaeological Report 1. 1994, 137.

<sup>248</sup> *Ibid*, 136.



**Table 6 Poned River Data**

	Gradient m km <sup>-1</sup>	Discharge m <sup>3</sup> s <sup>-1</sup>	Base Flow Index	Always usable	Maintained
Till/Foss Dyke	0	Low	n/k	No	Yes
Hull	0.31	3.4	0.85	Yes	No
Ancholme	0.125	0.6	0.53	No	Yes
Witham	0.15	17	n/k	No	No
Nene	0.16	9.3	0.51	No	Yes
Glen	0.33	1.18	0.6	Yes	Yes
Cam	0.14	2.86	*	Yes	No
Ant	0.22	0.3	0.87	No	Boats
Hartlake	0.1	1.1	0.67	Yes	Yes

Notes:-

Witham. Estimated. There is no discharge gauge downstream of Lincoln.

Ant. Boats. Maintained by boats passing along the river.

Cam. \* See Section 2.6.11, paragraph 4.

Base Flow Index. A measure of the proportion of the river runoff that derives from stored sources.<sup>249</sup>

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<sup>249</sup> *Hydrological Data UK 1996-2000.*

### 2.6.2 **River Till and the Foss Dyke**

It seems likely that the lower section of the river Till was initially a marsh. Through this marsh and continuing to Torksey a channel was dug which formed the Foss Dyke. It is not known when it was constructed nor to what extent the early canal used the channel of the river Till. The channel was regularly obstructed when it was not maintained. Sawyer relying on contemporary reports wrote that a fair was held at Torksey at the west end of the canal in the 8<sup>th</sup> and 9<sup>th</sup> centuries when it appears the channel was clear. The lack of coins of the following two centuries and the lack of 10<sup>th</sup> century Torksey pottery at Lincoln may indicate that the canal was then blocked. On the basis of archaeological finds it seems that the canal may have been open in the early 11<sup>th</sup> century.<sup>250</sup> It was open in 1066<sup>251</sup> yet was blocked again before it was reopened in 1121 by Henry II.<sup>252</sup> After that date it seems that it was normally usable by small boats in winter but often not usable by large boats in summer. Possibly it was cleared in 1273, 1329, 1365, 1395 and 1518.<sup>253</sup> Dugdale, citing the Patent Rolls of 1366, stated that at times the banks were degraded into the channel by cattle.<sup>254</sup>

No study has been found of the history of the effect of tides on the Foss Dyke. Torksey is below the tidal limit of the Trent. There is some doubt as to whether the tidal range of the Witham reached to Lincoln. No record has been found of there having been gates on the Dyke before 1600 nor any mention of the tides.

### 2.6.3 **River Hull**

Sheppard relying on contemporary reports wrote that in the 12<sup>th</sup> century a creek was deepened from Beverley to the Hull so that sea-going vessels could reach the town.<sup>255</sup> This implies that the Hull was already usable. In 1150 an island in the Hull valley was granted to the Cistercian monks who shortly after dug channels, or enlarged

<sup>250</sup> Peter Sawyer, *Anglo-Saxon Lincolnshire*. Lincoln: History of Lincolnshire Committee. 1998, 197.

<sup>251</sup> H.C. Darby, *Domesday England*. Cambridge: Cambridge University Press. 1977, 301.

<sup>252</sup> *The Annals of Roger de Hoveden. Volume I. Part I*. Translator Henry T. Riley. London. 1853, 216. (Copy consulted:- Facsimile reprint, Felenfach, Llanerch Publishers. 1994.)

<sup>253</sup> See Appendix A.

<sup>254</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 167.

<sup>255</sup> Beverley MS., Minute Book, 1597-1642, 1641-60; BL, Lansdowne MS 896, f. 167. Cited in T.S. Willan, 'Yorkshire River Navigation.' *Geography*, 22 (1937), 189-199, 197.

earlier channels, to enable them to travel by boat to their granges.<sup>256</sup> Later more dykes were constructed to drain the land to make it suitable for agriculture.

In 1361 a commission was appointed to investigate whether ‘kiddles or weirs’ blocked the channel and if excessive charges were made by masters and mariners of ships and boats passing along the river.<sup>257</sup> Hoskins reported, without stating his sources, that in the 1550s Beverley was still actively in dispute with Kingston-upon-Hull about tolls and harbour facilities.<sup>258</sup> Thus it seems that the river was always usable.

No record has been found of the removal of silt from the Hull. It would be expected that regular cleansing would have been mentioned in the Beverley Town Documents.<sup>259</sup>

#### **2.6.4 River Ancholme**

Contemporary records show that the Ancholme was cleared of obstructions in 1290 so that ships and boats might use it ‘as they were wont to do’.<sup>260</sup> The Patent Rolls show that it required regular clearance throughout the period 1189-1375<sup>261</sup> when it should have been maintained with a width of forty feet but on at least one occasion was reduced to a width of only three feet.<sup>262</sup> No records have been found relating to the period 1375-1533. In 1533 the abbot of Roche was fined for failing to keep the river clear.<sup>263</sup>

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<sup>256</sup> June A. Sheppard, *The Draining of the Hull Valley*. East Yorkshire Local History Series: No 8. 1958. Reprinted 1976, 3.

<sup>257</sup> Calendar of Patent Rolls, 1358-61, 583.

<sup>258</sup> W.G. Hoskins, *The Age of Plunder: King Henry's England 1500-1547*. London: Longman. 1976, 198.

<sup>259</sup> Arthur A. Leach, Ed. *Beverley Town Documents*. Selden Society, Vol. 14. 1900.

<sup>260</sup> Calendar of Patent Rolls, 1281-1292, 400.

<sup>261</sup> See Appendix A for ten references.

<sup>262</sup> Calendar of Patent Rolls, 1374-77, 145.

Ancient Indictments File 179 m. 105, 106. Cited in *Public Works in Mediaeval Law, Volume I*. Editor C.T. Flower, Selden Society Vol. 32. 1915, 301-302.

<sup>263</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII, Volume 6, 315.

### 2.6.5. River Witham downstream of Lincoln.

No record has been found of the use of the river by the Danes.<sup>264</sup> It is reported that messengers used the river in 1066 to travel from the Wash through Lincoln to Torksey.<sup>265</sup> It has been recorded that at about the end of the 12<sup>th</sup> century five tributaries of this section of the river were widened or straightened to provide access by water to religious foundations.<sup>266</sup> The 1202-4 table of tax on merchants shows Boston in second place after London and Lincoln fourth after Southampton.<sup>267</sup> In the 1290s the king and his court went from Boston to Lincoln in thirty-seven barges and boats.<sup>268</sup>

Langdon considered that in the period 1294-1348 the average size of boats on the Witham was only exceeded by those on the Lower Thames, Lea and Lower Trent.<sup>269</sup> Hill stated that there was no general complaint about the condition of the river below Lincoln until 1491.<sup>270</sup> Thompson claimed that great ships continued to go to Lincoln in the 14<sup>th</sup> and 15<sup>th</sup> centuries.<sup>271</sup> The Staple for Wool was transferred from Lincoln to Boston in 1369.<sup>272</sup> This occurred before the river became totally unusable.

Thompson recorded that from at least as early as 1281 the river frequently flooded the surrounding countryside.<sup>273</sup> In 1500 an attempt was made to construct a sluice at

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<sup>264</sup> Pishey Thompson, *The History and Antiquities of Boston*. Boston: John Noble, Jun. 1856, 28-29. (Reprinted 1997.)

<sup>265</sup> Peter Sawyer, *Anglo-Saxon Lincolnshire*. Lincoln: History of Lincolnshire Committee. 1998, 197. H.C. Darby, *Domesday England*. Cambridge: Cambridge University Press. 1977, 301.

<sup>266</sup> James Bond, 'Canal Construction in the early Middle Ages: An Introductory Review.' In Blair, 2007, 196.

<sup>267</sup> Publications of the Pipe Roll Society. 6 *John*, pp. xlv, 218. Cited in J.W.F. Hill, *Medieval Lincoln*. Cambridge: Cambridge University Press. 1948, 307.

<sup>268</sup> Lib. Cont. Gard., p. 60. Cited in J.F. Willard, 'Inland transportation in England during the Fourteenth Century.' *Speculum*, Vol. 1 (1926), 372.

<sup>269</sup> John Langdon, 'The Efficiency of Inland Water Transport in Medieval England.' In Blair, 2007, 130.

<sup>270</sup> J.W.F. Hill, *Medieval Lincoln*. Cambridge: Cambridge University Press. 1948, 314.

<sup>271</sup> Pishey Thompson, *The History and Antiquities of Boston*. Boston: John Noble, Jun. 1856, 356. (Reprinted 1997.)

<sup>272</sup> M.R. Lambert and R. Walker, *Boston Tattershall & Croyland*. Oxford: Basil Blackwell. 1930, 5.

<sup>273</sup> Pishey Thompson, *The History and Antiquities of Boston*. Boston: John Noble, Jun. 1856, (Reprinted 1997.) 356.

Boston to stop the flooding.<sup>274</sup> This was not successful as Leland stated in c.1535 that the river ‘ebbith and flouith withyn a little of Dogdike Fery’.<sup>275</sup> He also wrote that ‘the streame wherof is sumtymes as suifte as it were an arow’.<sup>276</sup> In 1586 Camden wrote that the river was ‘enclos’d on both sides with artificial banks,’ and ‘runs with a full stream into the sea’. This seems to imply that the sluice had by then been totally removed.

However in 1662 Dugdale wrote of the contemporary condition of the river:

the descent of this stream from the said city [Lincoln] to the sea is so little, that the water, having a slow passage, cannot keep it wide and deep enough, either for navigation, or draining of the adjacent marshes, without the frequent helps of digging and clearing the same; the mud and weeds increasing so much therein.<sup>277</sup>

Robinson considered that the change in the form of the channel was due to the rising sea-level in the 13<sup>th</sup> century which overwhelmed the offshore banks and tidal surges which reshaped the coastline.<sup>278</sup> However Rippon found little evidence for a transgression in the 13<sup>th</sup> century<sup>279</sup> and it might be expected that a change in the shape of the offshore banks would have had a much quicker effect on the river form.

### **2.6.6 River Glen**

The records of use which have been found are all for the 14<sup>th</sup> century.<sup>280</sup> However the requirement in the Lynn Law,<sup>281</sup> 1630, that the ‘navigable rivers’ including the Glen should be preserved seems to indicate that it had for a long time been used by boats.

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<sup>274</sup> *Ibid.* 357.

<sup>275</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume Five.* Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 36.

<sup>276</sup> *Ibid.* page 34.

<sup>277</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes.* 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 168.

<sup>278</sup> David Robinson, ‘Drainage and Reclamation.’ In Stewart Bennett & Nicholas Bennett, Eds. *An Historical Atlas of Lincolnshire.* Hull: University of Hull Press. 1993, 72.

<sup>279</sup> Stephen Rippon, *The Transformation of Coastal Wetlands.* Oxford: The British Academy by Oxford University Press. 2000, 22-34.

<sup>280</sup> See Appendix A.

<sup>281</sup> Samuel Wells, *The History of the Drainage of the Great Level of the Fens, called Bedford Level. Volume II.* London: The Author. 1830, 105.

Many smaller rivers and channels were drained and became unusable. In 1643 the river ‘was of no use for drainage’ as the bottom of the channel of the river Glen was for the most part higher than the fenny grounds across which it flowed. The ‘defensible’ banks had to be strengthened and raised periodically.<sup>282</sup>

### 2.6.7 River Nene

The history of the Nene is complex but it seems that it always required regular maintenance and was sometimes illegally obstructed by weirs. The course of the main channel often changed and at times was not discernable. In 1334 a commission was appointed because navigation on ‘divers lodes’ leading from the towns of Peterborough, Yaxley and Spalding were obstructed so that they could not be used even in winter.<sup>283</sup> In 1375 it is recorded that ‘the town of Spalding was in danger of being submerged by the flow of the sea and by the flood of water in the winter towards the marsh, because since the first pestilence the lands of the said township have been so divided and alienated that the keepers of the ditches know not by whom they ought to be repaired.’<sup>284</sup>

In about 1546 Leland stated that the Nene divided into three channels downstream of Peterborough which then reunited and that it flowed into the sea near Kings Lynn.<sup>285</sup> In 1587 Harrison wrote that downstream of Peterborough

it divideth it selfe into sundrie armes, and those into severall branches and draines, among the fennes and medowes, not possible almost to be numbred, before it meet with the sea on the one side of the countie, and fall into the Ouze on the other.<sup>286</sup>

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<sup>282</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 177.

<sup>283</sup> Calendar of Patent Rolls, 1334-38, 70.

<sup>284</sup> Ancient Indictments File 59 m 13. Cited in *Public Works in Mediaeval Law, Volume 1*. Editor C.T. Flower, Selden Society Vol. 32. 1915, 269.

<sup>285</sup> This reference has not been found in Lucy Toulmin Smith’s edition but is quoted from Raphaell Holinshed, William Harrison, and others, *The First and Second Volumes of the Chronicles*. 2<sup>nd</sup> Edition. London: J. Johnson *et al.* 1807, 172.

<sup>286</sup> Raphaell Holinshed, William Harrison, and others, *The First and Second Volumes of the Chronicles*. 2<sup>nd</sup> Edition. London: J. Johnson *et al.* 1807, 172.

It would seem that during the second half of the 16<sup>th</sup> century the channel became blocked so that the water flowed over much of the country. This may have been due to lack of maintenance after the dissolution of the monasteries.

### 2.6.8 River Cam

Astbury considered that archaeological records indicated that sections of the channel of the Cam were straightened and modified at an early date.<sup>287</sup> Ships came from Ireland to trade at Cambridge in the 10<sup>th</sup> century<sup>288</sup> and Greenhough considered that the section of the river from Cambridge to the Great Ouse remained usable thereafter.<sup>289</sup> This seems to be an example of absence of evidence of disuse, supported by evidence of periodic use, being considered to be evidence of continuous use. In 1382 when complaints were made that the prior of Barnwell narrowed the river 'to the hurt of the community of Cambridge'<sup>290</sup> it was *navibus et batellis* which were said to be obstructed. Thus large vessels were using the river at that time. Contemporary records indicate that in 1615 James I was told that 'This river Cam ... is the life of trafficke to this Towne and Countie'.<sup>291</sup> Similar records indicate that in 1650 the University and Town claimed that if the river traffic were to be interrupted by drainage works it would be 'prejudice to a great part of the whole Nation.'<sup>292</sup>

Those who have studied the history of the city indicate that the first reference to the clearance of the river dates from 1578 when the Cambridge Corporation ordered the removal of some shelves downstream of the city so that boats might pass more easily.<sup>293</sup> Also in 1636 the 'scowring and roading' of the river from Newnham Mills to the Silver Street bridges was ordered.<sup>294</sup>

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<sup>287</sup> A.K. Astbury, *The Black Fens*. (1<sup>st</sup> Edition 1958.) Wakefield: S.R. Publishers Ltd. 1970, 118.

<sup>288</sup> *Liber Eliensis* (p.148, ed. Stewart). Cited in Arthur Gray, 'The Ford and Bridge of Cambridge.' *Proceedings of the Cambridge Antiquarian Society*. Vol. XII. (New Series VIII.) (1919.)126-139, 131.

<sup>289</sup> Geoffrey John Greenhough, 'The Present Use of the River Cam in Relation to its Historical Perspective.' Unpub. Master of Letters thesis. Univ. of Cambridge. 1980.

<sup>290</sup> Coram Rege Roll, Hil., 7 Richard II. Rex 22. Cited in *Public Works in Mediaeval Law, Volume I*. Editor C.T. Flower, Selden Society. Vol. 32. 1915, 43-44.

<sup>291</sup> Enid Porter, 'The River Trade of old Cambridgeshire.' *Cambridgeshire and Peterborough Life*. October 1969, 24-26, 24.

<sup>292</sup> J.B. Mitchell, 'The Growth of Cambridge.' In J.A. Steers, Ed. *The Cambridge Region*, London: The British Association for the Advancement of Science. 1965, 176.

<sup>293</sup> Charles Henry Cooper, *Annals of Cambridge. Volume II*. Cambridge: Warwick & Co. 1843, 366.

<sup>294</sup> Rev. D. Stokes, 'The Old Mills of Cambridge.' *Proceedings of the Cambridge Antiquarian Society*. Vol. XIV. (New Series VIII.) 1909-1910, 201.

### 2.6.9 River Ant

There was a presentment in the King's Bench in 1360 that the Ant was stopped

by nobody's default ... because the river fell out of use at the time of the pestilence and nothing was carried on it so that weeds continually grew in it from that time until the present time: that it was not known who ought to clean it because none had cleaned it since the memory of man: that the towns that advantage and profit from the said river were Stalham, Sutton, Catfield, Ludham, Smallburgh, Barton Turf and Irstead.<sup>295</sup>

Blair used this example to illustrate what he claimed was a cycle of decline in the use of water transport after 1250.<sup>296</sup> Gardiner considered that the blockage may have been due to a reduction in the transport of peat to the Broads after they were flooded in the first half of the 14<sup>th</sup> century.<sup>297</sup>

Blair may have been unduly negative. There seems to have been active use of the river by seven villages until the pestilence and then a short period without use possibly due to the reduction in the transport of peat. Then many presentments were made to the local court and then an appeal to the king for the river to be reopened. The appeal was made only ten years after the first blockage. The blockage may not even have been due to disuse, for Bond considered that it may have been caused by the monks of the abbey of St Benet, Hulme diverting both the Ant and the Bure to reduce flooding and to keep access open for boats coming up to the abbey quay.<sup>298</sup>

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<sup>295</sup> *Public Works in Medieval Law. Volume II.* Editor C.T. Flower. Selden Society. Vol. 40. 1923, 88-90.

<sup>296</sup> John Blair, 'Introduction.' In Blair, 2007, 5.

<sup>297</sup> Mark Gardiner, 'Hythes, Small Ports, and Other Landing Places in Later Medieval England.' In Blair, 2007, 106.

<sup>298</sup> James Bond, 'Canal Construction in the Early Middle Ages: An Introductory Review.' In Blair, 2007, 157.



### 2.6.10 River Hartlake

Leland stated that on the Somerset Levels at ‘Hartelak’ bridge the Sowey would flood all the surrounding areas if it were not kept from abundance of ‘weddes’.<sup>299</sup> The river was straightened and embanked before 1326 but it is not known by which route the Hartlake river reached Meare Pool.<sup>300</sup>

### 2.6.11 Summary

The gradient of the nine rivers varied from 0 to 0.3 m km<sup>-1</sup>. Inspection of Table 6 seems to indicate that there is no relationship between gradient and the amount of maintenance needed to maintain the channels.

All the rivers with mean discharge less than 1.5 m<sup>3</sup> s<sup>-1</sup> required regular maintenance to remain clear. It seems likely that with lesser discharge the rivers were so slow-flowing that reeds and sedges could grow and block the channel and that the winter flow was inadequate to remove the debris. Thus between 1268 and 1591 there are nearly a thousand instances in the rolls of Ramsey, Hepmangrove and Bury dealing with the blockage, narrowing or otherwise impeding of the several watercourses in the towns.<sup>301</sup>

There are no measurements of sediment transport available for the period prior to 1600. However the base flow index ‘measures the proportion of the river runoff that derives from stored sources ... and thus is an effective means of indexing catchment geology’.<sup>302</sup> It seems likely that spring water is clear but runoff water transports sediment. Thus a river with a high base flow index will have a low sediment supply. The Ant and Hull have the highest known base flow index and remained more usable than the other rivers except the Cam.

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<sup>299</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume One.* Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 147.

<sup>300</sup> Michael Williams, *The Drainage of The Somerset Levels.* Cambridge: Cambridge University Press. 1970, 66, 67.

<sup>301</sup> *The Court rolls of Ramsey, Hepmangrove, and Bury. 1268-1600.* Editor Edwin Brezette DeWindt. Toronto: Pontifical Institute of Mediaeval Studies. c1990, 49.

<sup>302</sup> *Hydrological data UK 1996-2000.*

The present Base Flow Index at Cambridge is 0.65. However at Cambridge there were dams across the river and between Cambridge and Grantchester the channel is almost level. It would seem that most of the sediment would have been deposited in this section of the river. The miller at Cambridge was responsible for removing this silt.<sup>303</sup> Thus it seems that the quantity of sediment in the river downstream of Cambridge may have been comparable to the amounts in the Hull and Ant. Mill sites have not been identified on any of the other rivers.

The Glen and Witham were constrained within banks whereas the flood waters of the Hull and Cam covered the floodplain. More sediment is transported by a river during times of flood than at lower discharge rates. These high levels of sediment were retained in the channels of the Glen and Witham. This meant that the banks had to be continually raised to constrain the rivers. On the Hull, Ant and Cam in times of flood the sediment would have been distributed evenly over the channel and surrounding land and the stream power, aided in the case of the Ant by the disturbance of the water by boats, was great enough to remove the sediment from the rivers.

Building banks for a river is relatively easy, if expensive. To dredge the Cam the miller only needed to stop his millwheel, lower the sluices and shovel the sediment out of the channel. On a fast-flowing river it is only necessary to disturb the bed and the sediment flows away. On a slow-flowing river sediment could only be cleared by the use of scoop-like ditching tools.<sup>304</sup>

From the limited information available it seems that for rivers with a discharge of more than  $1.5 \text{ m}^3 \text{ s}^{-1}$  the sediment supply determined whether a river remained usable without maintenance.

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<sup>303</sup> Cambridge University Registry, *Sewers, &c.*, 3. 2. 82 (108-113). Cited in Rev. D. Stokes, 'The Old Mills of Cambridge.' *Proceedings of the Cambridge Antiquarian Society*. Vol. XIV. (New Series VIII.) 1909-1910, 194.

<sup>304</sup> Illustrated in E.A. Ellis, *The Broad*s. London: Collins. 1965, opp. 229.

## **Chapter 2.7 Usability from Source**

Many rivers have at their source a pond or lake from which a small stream flows which is not, and was not, usable. Examples include Norman Norris pond in East Sussex from which flows a tributary of the Cuckmere and Stickle and Easedale Tarns in the Lake District. These are usable at their source, but not from their source, and they are not considered in this thesis.

The *BCU Guide* states that now only the River Aire is usable from its source. The subject of this chapter is the rivers which were historically usable from their source.

The River Thames is the longest river in England. It has had the most words written about it. This is partly because it was used to take supplies to the largest city, had a large population living near it and because the government has for much of the time been on its banks. Table 7 gives some indication of the extent to which writing about the Thames exceeds that of other rivers.

**Table 7 Literature about the Thames**

- Column A. Number of rivers with the same name.
- Column B. Number of entries in British Library Catalogue with “River” and “Thames (or other river name)” in the title.
- Column C. Number of references in Edwards to each river in the Calendars of Patent Rolls, Liberate Rolls, Close Rolls, Memoranda Rolls, Charter Rolls, Chancery Rolls and Inquisitions Miscellaneous from 1066 to 1400.

	<b>A</b>	<b>B</b>	<b>C</b>
River Thames	1	1028	163
Severn	1	120	19
Ouse	4	79	74
Avon Large	3	72	28
Small	3		
Trent	1	70	39
Derwent	3	30	14
Total for other rivers		371	174

It seems that there may have been as much written about the Thames as about all the other rivers of England combined. There were almost as many references to the Thames in Government papers for the period 1066 to 1400 as for all the other rivers of England combined. No author has written about the history of any other river in the same detail as Thacker’s three volumes about the River Thames.<sup>305</sup> At least two books have been written about the rivers of London which now run in sewers.<sup>306</sup> No

<sup>305</sup> Fred S. Thacker, *The Stripling Thames*. London: Fred S. Thacker. 1909.

Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968.

Fred S. Thacker, *The Thames Highway. Volume II: Locks and Weirs*. (First published 1920.) Newton Abbot: David & Charles. 1968, 11.

<sup>306</sup> N.J. Barton, *The Lost Rivers of London*. London: Phoenix House Ltd and Leicester University Press. 1962.

A.S. Foord, *Springs, Streams and Spas of London*. London: T. Fisher Unwin. 1910.

book has been found about similar rivers in other cities, like the River Sherbourne in Coventry.

The importance of these facts, for this thesis, is that what is unknown about the River Thames it is not likely to be known about other rivers. It is only for the Thames that a comparison can be made between the conclusions of different authors about the usability of a river towards its source.

Various authors have described the historic use of the Thames. Their opinions as to the upper limit of use of the river are summarised in Table 8. [See also Appendix Q Map 1.]

**Table 8 The Historic Limit of Use of the Thames**

<b>Author</b>	<b>Size of boat</b>	<b>Date</b>	<b>Limit point</b>	<b>Distance to source miles</b>
Taunt. <sup>307</sup>	7 ton burden	Not known	Water Hay bridge	13
Belloc. <sup>308</sup>	Boats	Pre 1783	Cricklade	14
Prior. <sup>309</sup>	<i>Batelli</i>	Saxon – 1600	Radcot +	32
Wilson. <sup>310</sup>	6 – 7 tons	18 <sup>th</sup> century	Cricklade	14
Edwards. <sup>311</sup>	1 ton	1271	Radcot	32
Langdon. <sup>312</sup>	Barges	1290 – 1348	Oxford	58
Blair. <sup>313</sup>	10 ft beam	Pre 1300	Radcot +	32

+ indicates that there was use at least to Radcot and possibly further upstream.

<sup>307</sup> Henry W. Taunt, *A New Map of the River Thames*. 3<sup>rd</sup> Edition. Oxford: Henry Taunt & Co. 1878, 10.

<sup>308</sup> Hilaire Belloc, *The Historic Thames*. (1<sup>st</sup> Edition 1907.) London: J.M. Dent & Sons Ltd. No date, Written in 19<sup>th</sup> C. but first dated edition 1907, 15.

<sup>309</sup> Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 111.

<sup>310</sup> David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. Ltd. 1987, 42.

<sup>311</sup> J.F. Edwards, 'The Transport System of Medieval England and Wales.' Unpub. PhD thesis, Univ. of Salford. 1987.

<sup>312</sup> John Langdon, 'Inland water transport in medieval England.' *Journal of Historical Geography*, Vol. 19, 1. (1993), 1-11.

<sup>313</sup> John Blair, 'Transport on the Upper Thames.' In Blair, (2007), 254-294.

Taunt was a regular user of the Thames and he noted the storehouses at Lechlade and assumed that ‘cheese, corn etc.’ were taken there in small boats and then reloaded into larger boats for transport to London. Belloc quotes no authority for his statement that prior to the building of the Thames and Severn Canal ‘it was possible, and even common, for boats to reach Cricklade, or at any rate the mouth of the Churn’. Prior working from contemporary records noted the fact that there was a hythe in Oxford suitably located for boats coming from upstream and that stone was transported from Eynsham for the building of Merton College, that the region upstream of Oxford was wealthy and the people of Radcot prospered by trade on the river. She also noted the carrying services on the river and the drowning at Radcot in 1271. Wilson was a lock-keeper and he doubted if boats went beyond Cricklade because of the state of the river as he saw it. He seems not to have considered that the form and discharge of the river might have changed since the medieval period.

Edwards noted only the drowning at Radcot and from that one reference assumed that the river was navigable to Radcot. Langdon was explicit in stating that ‘Goods from the country upstream from Oxford came to the city by land’. Blair found ample contemporary written evidence of the use of the river upstream of Oxford including the construction of two canals for boats using the river and he concluded that ‘There must have been a great deal of coming and going around’ at the mill at Kyndelwere.

The value of this analysis lies not in establishing the use of the Thames upstream of Oxford, which could have been achieved by summarising Blair’s text, but in showing that the lists of written historic records, as compiled by Edwards and in Appendix A of this thesis, only give a very incomplete record of the actual use of the rivers. Prior and Blair, by considering the geography and economics of the region, achieved a much fuller description of the historic use.

These historic records may be compared with recent records of use of the Upper Thames. The opinions of some authors as to the upper limit of use during the last 140 years are summarised in Table 9.

**Table 9 The Recent Limit of Use of the Thames**

Author	Type of vessel	Date	Limit place	Distance to source in miles
<b>All Year</b>				
Taunt. <sup>314</sup>	Canoe or punt	1871	Oaklake bridge	12
Thacker. <sup>315</sup>	Canoe	1909	Cricklade	14
Bliss. <sup>316</sup>	Cedar wood canoe	1934	Ewen village	2
<i>BCU Guide</i> . <sup>317</sup>	Lathe & Canvas Canoe	1936	Lechlade	25
Wilson. <sup>318</sup>	Canoe	1987	Cricklade	14
<b>Winter</b>				
Taunt. <sup>319</sup>	Punt	1878	Source	0
<i>BCU Guide</i> . <sup>320</sup>	Lathe & Canvas Canoe	1936	Cricklade	14
Harris. <sup>321</sup>	Canoe or punt	1990	Source	0

Taunt stated that pumping had materially affected the discharge of the springs at the source during the summer but that pumping stopped in the winter when the springs

<sup>314</sup> Fred S. Thacker, *The Thames Highway. Volume II: Locks and Weirs*. (1<sup>st</sup> published 1920.) Newton Abbot: David & Charles. 1968, 19.

<sup>315</sup> Fred S. Thacker, *The Stripling Thames*, London: The author. 1909, 10.

<sup>316</sup> William Bliss, *Canoeing*. London: Methuen & Co. Ltd. 1934, 165.

<sup>317</sup> *BCU Guide*, 101.

<sup>318</sup> David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. Ltd. 1987, 42.

<sup>319</sup> Henry W. Taunt, *A New Map of the River Thames*. 3<sup>rd</sup> Edition. Oxford: Henry Taunt & Co. 1878, 10.

<sup>320</sup> *BCU Guide*, 101.

<sup>321</sup> Mollie Harris, *The Stripling Thames*. Stroud: Alan Sutton Publishing Ltd. 1994, 8.

were recharged. A difference between the winter and all year limits is thus to be expected.

Bliss used a cedar wood Canadian canoe and so was able to travel further upstream than those using lathe and canvas canoes. He refers to his canoe being able to stand ‘very much more rough usage than a smooth-strip canoe’. This is confirmation that usability depends on the type of boat being used. It is claimed here that historically logboats would normally have been able to reach the source of the Thames during the winter.

If the river was usable then actual use would depend on demand. Taint described the ground near the source:

The grass-covered ground in places looks baggy, and small hillocks are formed at intervals, which resemble a sponge when filled with water. Standing on one we force a stick for some distance through its covering of turf, and on withdrawing it, a fountain of water suddenly spurts out to the height of perhaps two feet, and continues gushing up some time, until the hillock on which we stand has sunk down to the level of the mead around.<sup>322</sup>

It would seem that this turf would have been very suitable, after drying, for burning. In addition the sedges and reeds near the source of the rivers would have been suitable both for burning and for thatching. Since the demand was downstream the easiest method of transporting the turfs, sedges and reeds would have been by water. It is not surprising that this movement has not been recorded. We have few records of wood being collected from ‘waste’ ground yet it is assumed that it happened.

It is possibly of interest that a map dated ‘after AD 1534’ shows the source of the Thames as a ring of water around an island.<sup>323</sup> In 1573 Humphrey Lloyd showed the source as a pond,<sup>324</sup> as did Saxton in 1579<sup>325</sup> and Blaeu in 1645.<sup>326</sup>

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<sup>322</sup> Henry W. Taunt, *A New Map of the River Thames*. 3<sup>rd</sup> Edition. Oxford: Henry Taunt & Co. 1878, 8.

<sup>323</sup> Anonymous: ‘Anglia figura. . .’, after A.D. 1534, British Museum, Cotton MS. Aug.i.i.f.9. Contained in Royal Geographical Society, *Early Maps of the British Isles. A.D. 1000 – A.D. 1579*. London: Royal Geographical Society. 1961.



If it is accepted that boats were used to the source of the Thames then consideration needs to be given to the use of other rivers to their source. In medieval times it was thought that ‘all rivers had their source in lakes’.<sup>327</sup> The Gough map shows how this belief was shown by the cartographers. Such a belief was wrong, but it does suggest that some, or many, rivers did rise in lakes or marshes.

Leland records that ‘In the ponde in Milbyri Parke risith an hedde of Ivel River. The hedde of Shirburn Water riseth in Blakmore. From water risith in a valley a 3. or 4. miles above Fromton. There cummith also a streame to it out of the pond in Hoke Parke.’<sup>328</sup> He describes four rivers, two rise in ponds, one in a moor and the other in a valley. The three may have been usable from their sources, the other probably would not.

Hawkins observed that the Great and Little Wilbraham, which are now little more than ditches, had during his lifetime been usable by boats near to, if not to, their sources.<sup>329</sup> Drainage, abstraction and the lowering of water tables have materially affected the form of many rivers near their sources.

The problem is to move from considering the particular to consideration of the general. It may be suggested that one subset of the rivers which were usable from their source is those where the source lies in an Internal Drainage Districts which exist where the land is liable to flooding. It seems reasonable to assume that if land is now liable to flooding then historically it did flood. Where the land was regularly flooded boats would have been used and so the river sources in those areas would have been accessible by boat.

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<sup>324</sup> Humphrey Lhyd: ‘Angiae . . . nova description.’ Antwerp, A.D. 1573. In Ortelius: ‘Theatrum orbis’. Contained in Royal Geographical Society, *Early Maps of the British Isles. A.D. 1000 – A.D. 1579*. London: Royal Geographical Society. 1961.

<sup>325</sup> Christopher Saxton, *Christopher Saxtons’s 16<sup>th</sup> Century Maps*. Shrewsbury: Chatsworth Library. 1992, 53.

<sup>326</sup> John Blaeu, *Blaeu’s Atlas of England Scotland Wales and Ireland*. London: Thames and Hudson. Undated. Pages un-numbered.

<sup>327</sup> E.J.S. Parsons, *The Map of Great Britain circa A.D. 1360 known as The Gough Map*. Oxford: Bodlean Library. 1958, 8.

<sup>328</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume 4*. Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 73-74..

<sup>329</sup> T.D. Hawkins, *The drainage of Wilbraham Fulbourn and Teversham Fens*. Cambridge: The Author. 2000, 52.

In 1271 William Whiteside fell from a boat and drowned at Eaton, Bedfordshire near the source of the Ouzel.<sup>330</sup> This is now in an Internal Drainage District. Since the draining of the marsh such an event is unlikely to recur. There are contemporary written records which indicate that boats could travel from the Little Ouse to the Waveney.<sup>331</sup> Again the area between the sources of the two rivers is in an Internal Drainage District.

There are 248 Internal Drainage Districts in England which have within them the sources of many rivers. Harrison, Camden and others have described rivers as rising in a lake or mere but never commented as to whether the river flowing out was usable or not. The Wetlands surveys of Shropshire, Lancashire, Yorkshire and the Fens provide much information about the wetlands but not about the usability of the rivers.

In 1902 Cornish wrote that ‘the hidden cisterns of the springs are now sucked dry. ... where formerly streams gushed out unbidden, they are now at pains to raise the needed water by all the resources of modern machinery.’<sup>332</sup> This desiccation of the countryside has reduced the usability of these streams near the sources making it difficult to establish their historic form.

It has long been noted that the Salisbury Avon, Bristol Avon, Severn and Warwickshire Avon form a river route from the South Coast to Northamptonshire with only a two mile gap near Devizes.<sup>333</sup> It has not been so well noticed that Leland referred to the Nene as the Avon<sup>334</sup> and that Saxton described it as the Avona.<sup>335</sup> There is scarcely a gap of half a mile between the Warwickshire Avon and the Nene

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<sup>330</sup> *Select Cases from the Coroners' Rolls, 1265-1413*. Editor Charles Gross. Selden Society, Vol. 9. (1895), 16.

<sup>331</sup> J. Thirsk and J.P. Cooper, Eds. *Seventeenth-century Economic Documents*. Oxford: Clarendon Press. 1972, 343.

<sup>332</sup> C.J. Cornish, *The Naturalist on the Thames*. London: Seeley and Co. Limited. 1902, 59.

<sup>333</sup> Eg. Henry Bradley, ‘Some Prehistoric River-Names.’ Mario Praz, Editor, *Miscellany*. Rome: For the British Council by Edizioni di “Storia e Letteratura”. 1950, 10-15.

<sup>334</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume 1*. Editor Lucy Toulmin Smith, Carbondale: Southern Illinois University Press. 1964, 3-7 and others.

<sup>335</sup> Map of Northamptonshire bound into William Camden, *Britain*. (1<sup>st</sup> Edition 1586.) Translator Philemon Holland, London: Joyce Norton and Richard Whitaker. 1637.

Morden – Aufona that is Avfona

Harrison – both Nene and Avon

Speed – Nyne.

across Kelmarsh. Thus the five rivers form a water route from Christchurch to the Wash with only a two mile gap.

Ekwall notes only three other very much smaller Avons in England. He makes no mention of the alternative name for the Nene. He writes of the name Avon, 'so far as it is old, [it] is generally applied to rivers of some considerable importance.'<sup>336</sup> His comment seems to be an inadequate description of the location of the four rivers named Avon.

The name 'Kelmarsh' is considered to be derived from 'Pole marsh'. Watts states that 'The allusion is probably to a guide-post in the marsh.'<sup>337</sup> This, or these, guide-post(s), presumably, were placed for the benefit of people travelling from a distance who did not know the local area well.

It would be a remarkable coincidence if the four rivers were given the same name without there being any other connection between them. Possibly the connection is that goods were regularly taken upstream on one and downstream on another.

Around most of the lakes, ponds or meres at the source of rivers there would have been reeds and sedges which could be used for fuel or thatching. Where there was usability and goods for which there was a demand it would seem that there is a probability of use. However there will need to be considerable further research before it can be established which rivers were usable to their source.

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<sup>336</sup> Eilert Ekwall, *English River Names*. Oxford: Clarendon Press. 1968, 20-23.

<sup>337</sup> Victor Watts, Editor, *The Cambridge Dictionary of English Place-Names*. Cambridge: Cambridge University Press. 2004, 338.

## **Chapter 2.8. Conclusion.**

The object of this chapter is to compare and contrast the rivers of the period 1189-1600 and of the 21<sup>st</sup> century. It is impossible usefully to compare the canalized rivers with their premodified form. They are deeper, slower, their profile is like steps, not a slope, and they often have a different course. The Medway at Teston looks like a large river, for England. The Itchin at Highbridge is little more than a stream in which the anglers wade. Yet the mean discharge at Teston is only double that at Highbridge. To study the canalized rivers in their premodified form one must consider their probable discharge, gradient and other controlling factors.

The greatest change in the rivers is the fact that historically they inundated their floodplain almost every winter often to a depth of one metre or more. Bates has already been quoted 'Water would be pouring down, everywhere, throughout the whole width of the valley, three feet deep, ... It was a great wild wateriness'.<sup>338</sup> This was true not only of the Nene but of every river where there was a floodplain. They are dotted about the Highland Region and widespread in the Lowland. Many were wide, 4½ miles at Chippenham on the Bristol Avon. Economically they were of great importance. The value of an area of meadow was four to ten times as much as arable because it was regularly watered and fertilised by the overflowing of the river.<sup>339</sup> Where the depth of the water was more than 0.5 m there was a usable area of water. In winter boats were used to reach the islands in the floodplains. The Chapter of Wells said that their newly built weir did not obstruct the boats as in summer there was not enough water for boats to use the river and in winter the boats could go over the meadows.<sup>340</sup>

Secondly the flow of the water was slower due to the rivers being longer and the growth of vegetation. Chertsey Abbey was founded on an island in the 7<sup>th</sup> century. It

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<sup>338</sup> H.E. Bates, *Down the River*. (1<sup>st</sup> Edition 1937.) London: Victor Gollancz Ltd. 1987, 50-51

<sup>339</sup> A.E. Wilson, 'Customs of the manors of Laughton, Willingdon and Goring.' *Sussex Record Society*. Vol. 60. 1961, 79.

<sup>340</sup> Wells MSS. Chapter Act Book, ff. 115 et seq. Cited in P.J.Helm 'The Somerset Levels in the Middle Ages (1086-1539).' *Journal of the British Archaeological Association*. Vol. 12. (1949), 48.

is now half a mile from the Thames.<sup>341</sup> Historical maps and fieldwork indicate that on the Wear a neck of a loop has been cut off upstream of Durham.<sup>342</sup> Each change was insignificant but their combined effect was not. On many rivers there is now control of vegetation which increases the speed of the water. Both changes have made the rivers shallower.

Many rivers are wider due to the increase in their channel size because of flood control works. It seems likely that the lowering of the water-tables has increased ground flow and reduced the discharge in rivers. Again both effects result in the rivers becoming shallower.

The discharge in the rivers has varied especially in the East where the effect of evapotranspiration is greater. Some rivers are now flashier due to quicker runoff, drainage of marshes and meres and the straightening and clearance of the channels. Other rivers are less flashy because of the construction of flood control reservoirs. In general, it would seem that a flashy river is less usable than one with more stable discharge. It is known that the discharge of some rivers has been materially reduced by abstraction which has reduced their usability.

There is evidence that the form of some rivers has changed and that the use of some of the larger rivers was limited due to their braided or multi-channel pattern and on others usability has changed due to aggradation and siltation.

In Chapter 2.1 reasons were given why, in the past, the historic usability of rivers has not been established. However by consideration of the gradient, discharge, bed material, width-depth ratio and possibly other factors improved estimations of the historic limits of usability may be possible in the future. In particular work has started on determining the historic velocity of rivers from insect and vegetation remains.<sup>343</sup>

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<sup>341</sup> Susan Reynolds, 'Chertsey, Surrey, and Laleham, Middlesex, mid- or late 15<sup>th</sup> century.' In R.A. Skelton and P.D.A. Harvey, *Local Maps and Plans from Medieval England*. Oxford: Clarendon Press. 1986, 240.

<sup>342</sup> M.G. Snape, 'Durham circa 1440x1446.' In R.A. Skelton and P.D.A. Harvey, *Local Maps and Plans from Medieval England*. Oxford: Clarendon Press. 1986, 206.

<sup>343</sup> eg. F.W. Shotton, 'Archaeological inferences from the study of alluvium in the lower Severn-Avon valleys.' In Susan Limbrey and J.G. Evans, Eds. *The Effect of man on the landscape: the Lowland Zone*. Council for British Archaeology Research Report No 21. 1978, 27-32.

Archaeological investigation of the relict channels where there were historic anthropological modifications may provide information about the channel form, width-depth ratio and bed material. The work which has been carried out on the rivers Tyne, Trent and Severn do not provide a large enough set for the results to be extrapolated to other rivers.

It seems that for barges there is a greater length of river which is now navigable and that these additional sections can be identified with reasonable confidence in most cases. For boats there has been a reduction in the length of the rivers which are usable and the lengths where use is no longer possible are often not easily identified. Thus it is difficult or impossible to identify the historic upper limit of physical usability on many rivers or to know if a river could be used to its source. There is no section of a river which has been identified in the present study which can be used now but is known to have been unusable throughout the period 1189-1600 assuming that individual obstructions were portaged.

While the term 'limit of use' has been used in this Part of the thesis, it needs to be remembered that this is not a fixed place on the river even for a given type of boat. It is neither fixed nor a place. It is not fixed because it moves, often a long way, with the change in discharge of the river. It is not a place because it is rather a section of the river containing a series of increasingly difficult mini-sections. It is a moving section which some users will not wish to use due to the difficulties but which others will use when sufficiently motivated. The one exception to this is when the limit of use was the source of the river.

## **Part 3 Legal and Customary Usability**

### **Chapter 3.1 Theoretical Models of the Creation of Rights of Passage**

#### **3.1.1 Introduction**

In Part 2 the topic was the physical form of the rivers and their physical usability. The topic in Part 3 is who was allowed to use those rivers which were physically usable. First in this chapter consideration is given to the theory as to how public rights of passage were created, that is rights of passage on land, ‘highways’, and on water, ‘rights of navigation’.

Three models are considered. The first had only very limited application. Most lawyers and historians have assumed that the second model was correct. The third, it is claimed here, is the correct one. This third model implies that there is a public right of passage on all rivers. No previous work on this subject has been found.

The words ‘public space’ are used here to refer to a place to which the public have access, as of right, at all times, such as roads, town-squares, churchyards, the ocean and legally usable rivers and since 2000 designated ‘mountain, moor, heath and down’. Tolls may be payable as on toll roads and bridges, in ports and on canals.

A ‘private place’ refers to a place to which only the occupants have access, as of right, at all times. It is a nested concept. A walled city was private compared with the forest outside for the gates were shut at night. A dwelling house is private compared with the street outside. A daughter’s bedroom may be private compared with the other rooms of the family house. A park may contain a garden which contains a bower.

A ‘quasi-public place’ is one to which outsiders have access at some times and not at others. The time may be parts of the day or of the year. Thus at present shopping malls, railway stations, churches, gated London parks where access is allowed from sunrise to sunset are quasi-public places. In Chapter 3.2 consideration is given as to whether the open-fields were quasi-public places with access for the public allowed outside the time when crops were growing. In pastoral areas waterholes may be quasi-

public places with access not allowed for animals of one flock when another flock or herd is being watered.

Ownership does not determine whether a space is public or private. Changing patterns of ownership have been considered by other authors.<sup>1</sup> Ownership can often be traced through documentary records. Right of access is a much more elusive fact. The fact that a place is public does not allow people to make a profit without some form of prior agreement by hunting, fishing, taking turfs, wood or fruit, erecting stalls or trading. However the movement of people and goods by land or water is allowed although the types of vehicle or vessel may be restricted.

Consideration is given to three ways by which rights of passage could have been established:

1. Right of passage before people.
2. People before any right of passage.
3. Enclosure.

### **3.1.2 Right of passage before people**

The first model implies a map of England on which is drawn a grid of highways and public rivers which were public places, mostly not rectangular. Then the land within the spaces was allocated to owners, some of whom received land on both sides of a highway or public river. This network was later augmented by the dedication of new paths.

Margary claims that some of the roads near Ripe were laid out by the Romans in this way.<sup>2</sup> This is the way in which the streets of the 'New Towns of the Middle Ages' were created by the owners of the lands<sup>3</sup> but there is no evidence of it being used

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<sup>1</sup> Eg. R.A. Dodgshon, 'The Changing Evaluation of Space 1500-1914.' In R.A. Dodgshon and R.A. Butlin, Eds. *An Historical Geography of England and Wales*. 2<sup>nd</sup> Edition. London: Academic Press. 1990, 255-259.

<sup>2</sup> Ivan Donald Margary, *Roman Ways in the Weald*. London: Phoenix House. 1949, 204-7.

<sup>3</sup> Maurice Beresford, *New Towns of the Middle Ages*. London: Lutterworth Press. 1967.



outside of towns prior to the enclosure arrangements of the 16<sup>th</sup> to 19<sup>th</sup> centuries. No further consideration is given to this model.

### **3.1.3 People before any right of passage**

Under this model originally people of each community were free to move only within the confines of their own area. Then slowly as time passed different owners dedicated rights of passage for the use of the public. Those who accept this theory never state when dedication took place. This is the model used by all lawyers. Riddall and Trevelyan in the standard work *Rights of Way* wrote:

Relatively few highways can be shown to have been expressly dedicated. The great majority have been accepted as being public since beyond memory. In order to explain the legal basis of such ways, the law presumes that at some time in the past the landowner dedicated the way to the public, either expressly, the evidence of the dedication having been lost, or impliedly, by making no objection to use of the way by the public.<sup>4</sup>

This is the model accepted by 19<sup>th</sup> century historians who assumed that the first inhabitants of England lived in small self-sufficient communities with little communication between them. Cunningham wrote in the 19<sup>th</sup> century of the 13<sup>th</sup> century estates which had very little communication with the outside world.<sup>5</sup>

One problem with this model is that it is anachronistic. There were no ‘landowners’ in the medieval period. Homans described one estate:

In 1279, Angareta de Beauchamp held the manor of Spelsbury as her dower of the inheritance of the Earl of Warenne and Surrey. At her death, the manor was to revert to the earl. [The Earl] held of the Bishop of Worcester, and the bishop held of the king. ... The rest of the land was in the hands of her tenants. These, ...

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<sup>4</sup> John Riddall and John Trevelyan, *Rights of Way*. 3<sup>rd</sup> Edition. Henley-on Thames: Open Spaces Society; London: Rambler’s Association. 2001, 58.

<sup>5</sup> W. Cunningham, ‘Introduction’. In Elizabeth Lamond, *Walter of Henley’s Husbandry*. London: Longmans, Green and Co. 1890, xiii-xiv.

were of three kinds: freeholders (*libere tenentes*), villains (*villain*), and cotters (*cottarii*).<sup>6</sup>

Thus none of the people named in this quotation were, in the modern sense of the word, ‘owners’ of the land. ‘What a tenant in chief acquired by the king’s grant was not the enjoyment of land so much as the enjoyment of rights over land and services due from peasants.’<sup>7</sup> Baker found no instance of the use of the word ‘ownership’ relating to land before 1490.<sup>8</sup> Johnson wrote ‘ownership had existed in the medieval landscape, but its definition was complex as we have seen; there was no necessary equation between ownership, access and use rights.’<sup>9</sup>

People were given the right to do things, plough, pasture their animals, build houses, gather wood, collect rent, etc. They were given the right to stop people from interfering with these rights. Thus prior to the Statute of Merton a lord could not enclose waste land if his tenants had the right to common in it.<sup>10</sup> Even after the passing of the statute a lord could only enclose land if the tenants had enough common remaining for their use.

Singer has identified three models of property: ‘ownership’, which ‘invites owners to use their property without regard to the needs of others’; ‘bundle of rights’ which recognises that property involves a collection of specific rights; and ‘entitlement’ which emphasises both the rights and obligations relating to property.<sup>11</sup> In general terms it may be said that the feudal system of land rights was one that could be described as a ‘bundle of rights’. This was followed by a system described as ‘ownership’, and now many people think that the ‘entitlement’ model is most suitable. There is no evidence that there was ever a time when people did not move outside of their own property and this model is based on an anachronistic concept of the ownership of land and so can not be the source of modern rights of passage.

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<sup>6</sup> George C. Homans, *English Villages of the Thirteenth Century*. (1<sup>st</sup> Edition 1941.) New York: Harper & Row. 1970, 224-225.

<sup>7</sup> A.W.B. Simpson, *A History of the Land Law*. 2<sup>nd</sup> Edition. Oxford: Clarendon Press. 1986, 5.

<sup>8</sup> J.H. Baker, *An Introduction to English Legal History*. 3<sup>rd</sup> Edition. London: Butterworths. 1990, 255, fn 2

<sup>9</sup> Matthew Johnson, *An Archaeology of Capitalism*. Oxford: Blackwell Publishers Ltd. 1996, 75.

<sup>10</sup> (1235) 20 Henry III c. 4.

<sup>11</sup> Joseph William Singer, *Entitlement*. New Haven: Yale University Press. 2000.

### 3.1.4 Enclosure

According to the third model the country was allocated to, or claimed by, different people. Everyone was free to go anywhere in the country. Soon people built houses and surrounded them with fences and these areas were then considered to be private. Into these only the owner of the land, or people granted his permission, could enter. People enclosed fields for arable or pasture. It seems that these areas were considered to be private from about the end of the 15<sup>th</sup> century. People also planted crops in unenclosed areas and while the crops were growing the areas could not be entered but after the harvest they could be crossed again. The nobles created parks with high fences to keep the deer in and to keep out people who had no permission to enter. These again were private.

Over the years, at different rates in different parts of the country, more and more land became private. At the same time people travelled: home to manor house or mill, manor to market, to the hundred or shire court or to Parliament, wherever it was meeting, merchants, tinkers, traders, bishops, friars, soldiers, messengers, judges, lawyers, sheriffs and whole households, including the king's household. Much of this movement was from town to town or village to village. The ways on land that were most frequently used came to be called highways, royal highways or the king's highway. By 1189 it seems that the law required that these highways be kept clear of obstructions. At this date part of the land was private, part highway and the remainder pasture, fallow, waste, moor or other land which people were allowed to pass over providing they caused no physical damage. The rivers had not been enclosed and so remained public places.

The law books of the 12<sup>th</sup> century refer to the special protection of people using Watling Street, Fosse Way, Icknield Way and Ermine Street and the principal rivers.<sup>12</sup> Wormald has referred to the obsession of the early 12<sup>th</sup> century legal treatises with 'roads and their peace'.<sup>13</sup> However it seems that the point at issue in these texts was

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<sup>12</sup> *The annals of Roger de Hoveden Volume 1. Parts 1 & 2.* Translator Henry T. Riley. (London, Bohn H.C., 1853), 545 – 547.

<sup>13</sup> Patrick Wormald, *The Making of English law: King Alfred to the Twelfth Century.* Oxford: Blackwell Publishers. 1999, 140.

whether offences committed on these highways were against the Sheriff's Peace or the King's<sup>14</sup> and so who had the benefit of the fines imposed on those breaking the peace.

No history of the royal highways has been found. Coss having studied medieval manuscripts has shown that in Coventry in the 13<sup>th</sup> century one or more roads were called the *regia strata*, *regali via* and *regia via*. The other roads were referred to as Potter's Row or Much Park St or by some similar name.<sup>15</sup> But all were equally public places. On a map of the Isle of Thanet of c.1400 the red lines show, according to the cartographer, 'the king's highways of the island from one parish to another.' There are some parishes which have no highway leading to them.<sup>16</sup> The number of highways which were titled 'king's highway' may have changed over time but it seems that the public had free access to all the highways at all times.<sup>17</sup>

This theory implies a right not dissimilar to the law of the Scandinavian countries where there has always been a right of *allmansratten*. Blackshaw has claimed that the law of Scotland never changed with regard to simple trespass.<sup>18</sup> In England by the end of the period of the enclosures, c.1830, most of the land was enclosed except the highways, rivers and land over which there were local rights of common or village green.

If the second model correctly records the development of English Law then all land, including land covered by flowing water, was private and remains so except where made public by statute or dedication. No example has been found of a section of a river being dedicated under Common Law for public use. If the third model correctly records the development of English Law, as claimed in this thesis, then all rivers which were physically usable were public during the period 1189-1600 because they were never enclosed.

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<sup>14</sup> *Leges Henrici Primi*. Editor L.J. Downer. Oxford: Clarendon Press. 109.

<sup>15</sup> *The Early Records of Medieval Coventry*. Editor Peter R. Coss. London: The British Academy. 1986, 82, 167, 102, 113.

<sup>16</sup> F. Hull, 'Isle of Thanet, Kent, late 14<sup>th</sup> century x 1414.' In R.A. Skelton and P.D.A. Harvey, Eds. *Local Maps and Plans from Medieval England*. Oxford: Clarendon Press. 1986, 122, plate 8.

<sup>17</sup> Sir Frederick Pollock, *Oxford Lectures and other discourses*. London: Macmillan and Co. 1890, 65-90.

<sup>18</sup> Alan Blackshaw, 'An Historical Approach to the New Outdoor Access Legislation.' *Scottish Affairs*. Number 62. (2008), 1 - 46.

## **Chapter 3.2 The Law of Trespass**

### **3.2.1 Introduction**

Theory may not always be reflected in practice. The law may not be reflected in practice. The law relating to prescription whether common law, the doctrine of lost modern grant or the statute law in the Prescription Acts is concerned with the legalisation of previously wrongful acts. In this chapter the law relating to trespass is studied. It is shown that there was no offence of simple trespass in unenclosed places during the period 1189-1600 and so, because rivers were unenclosed, they were public places.

The contemporary lawyers Glanvill,<sup>19</sup> Bracton,<sup>20</sup> Britton<sup>21</sup> and Callis<sup>22</sup> all stated that usable rivers were public places. Magna Carta, other legislation and the Parliamentary Rolls are all evidence that rivers were considered to be public in the period 1189-1600. However this evidence has not been universally accepted. The evidence has been considered in a previous thesis by the present author and is not repeated here.<sup>23</sup>

The word ‘law’ in this chapter is used in the sense that Baker described it:

The law today is not what particular courts or parliaments in the past have said it is, but what lawyers at present think the relevant courts would do in a particular case. And the perceptive lawyer will now and again see that that may be at odds with what the books say.<sup>24</sup>

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<sup>19</sup> *The Treatise on the Laws and Customs of the Realm of England Commonly called Glanvill*, Editor G.D.G. Hall. Oxford: Clarendon Press. 1965, 113 -114

<sup>20</sup> *Henrici de Bracton De Legibus et Consuetudinibus Angliae*. Editor Sir Travers Twiss. London: Longman & Co and others. 1878.

<sup>21</sup> *Britton, Volume 1*. Editor Francis Morgan Nichols. Oxford: Clarendon Press. 1865, 81

<sup>22</sup> Robert Callis, *The Reading of The Famous and learned Robert Callis; Upon the Statute of 23 H. 8. cap. 5. of Sewers: as was delivered by him at Gray's Inn, in August, 1622, 2<sup>nd</sup> Edition*. London: Thomas Basset. 1685, *Lectura Secunda*.

<sup>23</sup> Douglas Caffyn, ‘The Right of Navigation on Non-tidal Rivers and the Common Law.’ LLM Dissertation, Univ. of Kent. 2004.

<sup>24</sup> J.H. Baker, *The Law's Two Bodies*. Oxford: Oxford University Press. 2001, 4.

In the English Legal system ‘legislation is superior to everything ...’<sup>25</sup> and ‘It is a basic principle of the administration of justice that like cases should be decided alike.’<sup>26</sup> Yet the law has changed often quite apart from statute law. In particular the law relating to *the ownership of land* and *trespass to land* has changed since 1189 and it is necessary to consider the second of these in order to understand the law relating to access to water which applied from 1189 to 1600.

### **3.2.2 Types of Trespass**

Feudal laws of tenure and private rights have been well described elsewhere and are not considered here.<sup>27</sup> However no text has been found which discusses the history of the public right of access over land or its converse trespass. These are discussed first in order to establish the corresponding rights over water. Private rights whether in the form of a licence or easement are not considered.

The word ‘trespass’ is used in this thesis only in the sense of ‘trespass to land’. It is useful at this stage to define three types of trespass:

‘Simple trespass’ is defined as ‘entering the unenclosed land of another, without licence, and without causing, or intending to cause, damage’.

‘Enclosure trespass’ is defined as ‘entering the enclosed land of another without licence.’

‘Composite trespass’ is defined as ‘entering the land of another, without licence, and causing, or intending to cause, some form of damage’.

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<sup>25</sup> Michael Zander, *The Law-Making Process*. London: Butterworths. 1999, 1.

<sup>26</sup> Rupert Cross and J.W. Harris, *Precedent in English Law*. 4<sup>th</sup> Edition. Oxford: Clarendon Press. 1991, 3.

<sup>27</sup> A.W.B. Simpson, *A History of the Land Law*. 2<sup>nd</sup> Edition. Oxford: Clarendon Press. 1986.

### 3.2.3 The ancient law of trespass

‘William claimed to be king by lawful succession, and one of his first acts was to promise the English that they could keep their old laws.’<sup>28</sup> It is therefore justifiable to consider the law prior to his arrival, while noting that rights to any particular land may not be based on evidence from before 1189.<sup>29</sup>

In 690 the laws of the Kingdom of Wessex provided that ‘If a man from afar, or a stranger, travels through a wood off the highway, and neither shouts, nor blows a horn, he shall be assumed a thief.’<sup>30</sup> In 695 there was the same provision in Kent for those who ‘quit the road’.<sup>31</sup> It seems likely that the Danelaw, as applied in England, followed the law of Scandinavian countries. This allowed free access to unfenced land. Cooper having studied the Anglo-Saxon laws relating to the highways described them as being not a matter of physical construction and repair, of gravel and flagstones, but rather of a legal idea, and of conceptual and ideological space.<sup>32</sup>

In 1189 much of the country, especially the Midlands and South East, was unfenced. In these regions it would have been easy to move from place to place without entering fenced areas of land and without doing any damage.<sup>33</sup> It would seem that a person could move over any unfenced land, providing no actual damage was caused, and that land could be fenced providing no established right of way was obstructed.<sup>34</sup> *Select Pleas in Manorial and other Seignorial Courts. Volume I. Henry III and Edward I*<sup>35</sup>

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<sup>28</sup> J.H. Baker, *An Introduction to English History*. 3<sup>rd</sup> Edition. London: Butterworths. 1990, 14.

<sup>29</sup> (1275) 3 Edward I c. 39. Statute of Westminster I.

<sup>30</sup> F.L. Attenborough, Ed. and Trans. *The Laws of the Earliest English Kings*. Cambridge: Cambridge University Press. 1922, 37.

<sup>31</sup> *Ibid.* page 31.

<sup>32</sup> Alan Cooper, ‘The Rise and Fall of the Anglo-Saxon Law of the Highway.’ *Haskins Society Journal*. Vol. 12. (2002), 46.

<sup>33</sup> Warren O. Ault, ‘Open-Field Husbandry and the Village Community.’ *Transactions of the American Philosophical Society*. New Series – Vol. 55, Part 7. (1965), 5.

<sup>34</sup> c1118. *Stretbreche. Leges Henrice Primi*. Editor L.J. Downer. Oxford: Clarendon Press. 1972, 115, 141 and 251.

<sup>35</sup> *Select Pleas in Manorial and Other Seignorial Courts*. Editor F.W. Maitland. Selden Society. Vol. 2. 1888.

*The Court Baron: Precedents of pleading in Manorial and other Local Courts*. Editor F.W. Maitland. Selden Society. Vol. 4. 1890.

and *Select Cases of Trespass in the King's Courts 1307-1399*<sup>36</sup> contain no report which contradicts this concept of the law.

In about 1260 Bracton wrote that trespass to land involved the intention of using the land and dispossessing the previous owner. He makes no mention of an offence similar to 'simple trespass'.<sup>37</sup>

In the second half of the 14<sup>th</sup> century Langland wrote

For yf a marchant and [a] mesager metten togyderes ...  
 Thogh the messenger make his way amydde the fayre whete  
 Wol no wys man be wroth ne his wed take-  
*Nesessitas non habet legem-*  
 Ne non haiward is hote his wed for to taken.  
 Ac if the marchaunt make his way ouer menne corne  
 And the hayward happe with hym for to mete,  
 Other his hatt or his hoed or elles his gloues  
 The marchaunt mote forgo or moneye of his porse  
 And zut be ylette, as y leus, for the lawe asketh  
 Marchauntz for here marchaundyse in many place to tolle.<sup>38</sup>

Thus the king's messenger could go where he liked. But if the merchant rode across standing corn, the Hayward, if he caught him, would take from him his hat, his hood, his gloves, or a sum of money, presumably as satisfaction for the damages.<sup>39</sup> Outside of the standing corn, and presumably the curtilage of the houses, the merchant was free to make his way by any route.

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<sup>36</sup> *Select Cases of Trespass in the King's Courts, 1307-1399. Volumes 1 and 2.* Editor Morris S. Arnold. Selden Society. Vols. 100 and 103. 1984, 1987.

<sup>37</sup> Bracton's Notebook f. 216b. Quoted and translated in C.H.S. Fifoot, *History and Sources of the Common Law*. London: Stevens & Sons Limited. 1949, 57-58.

<sup>38</sup> William Langland, *The Vision of William concerning Piers The Plowman in three parallel Texts*. Editor Walter W. Skeat. Oxford: Oxford University Press. 1886, 454-456.

<sup>39</sup> George C. Homans, *English Villagers of the Thirteenth Century*. (1<sup>st</sup> Edition 1941.) London: Harper Torchbooks. 1970, 295.



### 3.2.4 Blackstone

The first reasonably comprehensive survey of English law after *Bracton* was written by Blackstone in 1766.<sup>40</sup> His concept of the law is stated first and then consideration is given as to how and when the law changed between 1260 and 1766.

Blackstone wrote that property is ‘that sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe.’<sup>41</sup> His concept corresponded to the idea that ‘an Englishman’s house is his castle’. Taggart wrote ‘In the age before the modern textbook or treatise, William Blackstone’s *Commentaries on the Laws of England* ... was an easily accessible, readable, and manageable primer for lawyers ... on the laws of England as a whole. It became the lawyers’ bible.’<sup>42</sup>

About the law of trespass Blackstone wrote:

Every unwarrantable entry on another’s soil the law entitles a trespass by *breaking his close*; the words of the writ of trespass commanding the defendant to shew cause, *quare clausum querentis fregit*. For every man’s land is in the eye of the law inclosed and set apart from his neighbours: and that either by a visible and material fence, as one field is divided from another by a hedge; or, by an ideal invisible boundary, [210] existing only in the contemplation of law, as when one man’s land adjoins to another’s in the same field. And every such entry or breach of a man’s close carries necessarily along with it some damage or other: for, if no other special loss can be assigned, yet still the words of the writ itself specify one general damage, *viz.* the treading down and bruising his herbage.[fn. Cro. Eliz. 421.]<sup>43</sup>

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<sup>40</sup> Sir William Blackstone’s *Commentaries on the Laws of England* (1765-69).

<sup>41</sup> Sir William Blackstone, *Commentaries on the law of England*. (1<sup>st</sup> Edition 1766.) Facsimile reprint edition, University of Chicago Press. 1979, 2. Cited in Joseph William Singer, *Entitlement*. New Haven: Yale University Press. 2000, 3.

<sup>42</sup> Michael Taggart, *Private Property and Abuse of Rights in Victorian England*. Oxford: Oxford University Press. 2002, 109.

<sup>43</sup> Sir William Blackstone, *Commentaries on the Laws of England. Book the Third. Chapter 12*. 11<sup>th</sup> Edition. London: T. Dadell. 1791, 209-210.

‘Cro. Eliz. 421’ is the case of *Welden v Bridgewater* in which it was stated that the ‘defendant entered and cut down the grass’.<sup>44</sup> The record appears to describe a case of ‘composite trespass’ not ‘simple trespass’.

### 3.2.5 How the law changed

Blackstone refers to two fictions in the writ for trespass which was worded *quare clausum fregit* [Why was the close broken.]. First unenclosed land was to be considered as enclosed by ‘an ideal invisible boundary’ and second that entry ‘carries necessarily along with it some damage or other’ because ‘the words of the writ require it’. Baker wrote of these and other fictions that ‘there is something inescapably exasperating about a logic which so effectively defeats the historian at every turn.’<sup>45</sup> They ‘rebuff the inquirer who chiefly wants from his report or his plea roll just a simple slice of life.’<sup>46</sup> One’s study is not helped by the fact that it is only the later commentators on the law who recognised that it is unnatural to say ‘that to walk peacefully across another man’s land is a forcible injury and a trespass.’<sup>47</sup>

The reasons for some fictions are clear. It was early realised that when it was claimed that a man entered the property of another *cum vi et armis contra pacem* the claim was included in the writ, prior to the 1360s,<sup>48</sup> to enable the case to be heard in the king’s courts, not because it was true.<sup>49</sup> The presence of fictions in the law reports makes the study of violence and some other social actions in the medieval period almost impossible. ‘Today there is an elaborate body of law ... riddled ... with fiction and absurdity, but in the Middle Ages only the germs of the disease are apparent.’<sup>50</sup> Identifying and dating the origins of the fictions is a challenge.

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<sup>44</sup> *Welden v Bridgewater*, (1592) Cro. Eliz. 421.

<sup>45</sup> J.H. Baker, *The Law’s Two Bodies*. Oxford: Oxford University Press. 2001, 50.

<sup>46</sup> S.F.C. Milsom, *Studies in the History of the Common law*. London: The Hambledon Press. 1985, 150.

<sup>47</sup> The late R.F.V Heuston and R.A. Buckley, *Salmond and Heuston on the Law of Torts*. 21<sup>st</sup> Edition. London: Sweet & Maxwell Ltd. 1996, 5.

<sup>48</sup> Anthony Musson, *Medieval Law in Context*. Manchester: Manchester University Press. 2001, 158.

<sup>49</sup> S.F.C. Milsom, *Historical Foundation of the Common Law*. 2<sup>nd</sup> Edition. London: Butterworths. 1981, 289.

<sup>50</sup> A.W.B. Simpson, *A History of the Land Law*. 2<sup>nd</sup> Edition. Oxford: Clarendon Press. 1986, 109.

At the end of the 16<sup>th</sup> century some judges thought that the law did not change. Popham C.J. stated ‘that the laws of England had continued as a rock without alteration in all the varieties of people that had possessed this land, namely, the Romans, Britons, Danes, Saxons, Normans, and English.’<sup>51</sup>

Lord Hobhouse said recently ‘The common law develops as circumstances change and the balance of legal, social and economic needs changes.’<sup>52</sup> Allen more wisely wrote of customs, and it seems to be equally true of changes in the common law, ‘customs establish themselves not because they correspond with any conscious, widespread necessity, but because they fit the economic convenience of the most powerful caste.’<sup>53</sup>

Baker considered that ‘The object of fictions is that they allow the operation of the law to change while avoiding any outward alteration in the rules.’<sup>54</sup> In this he was criticised by Skinner who considered that ‘Fiction involves manipulation, which does not *always* stem from a desire for justice; critical reflection on the aims and interests of the manipulators needs to accompany research into the evidence of their activities.’<sup>55</sup>

There is the maxim *fictio legis inique operator alicui damnum vel injuriam* (a legal fiction operates unfairly when it causes damage or inflicts a wrong).<sup>56</sup> Lord Mansfield said in 1768 ‘The court would not endure that a mere form or fiction of law, introduced for the sake of justice, should work a wrong, contrary to the real truth and substance of the thing.’<sup>57</sup> Bayley J. said in 1824 ‘Wherever a fiction of law works injustice, and the facts, which by fiction are supposed to exist, are inconsistent with the real facts, a court of law ought to look to the real facts.’<sup>58</sup>

Yet for all the pious words of the lawyers, fictions excluded the public from unenclosed land and produced a charge for damages for entering them. Two hundred and fifty

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<sup>51</sup> Cited in Spence, *Equitable Jurisdiction*, I. 125. Cited in Sir Carleton Kemp Allen, *Law in the Making*. 6<sup>th</sup> Edition. Oxford: Clarendon Press. 1958, 90, fn 1.

<sup>52</sup> *R v Governor of Brockhill Prison, ex p. Evans (NO.2)* [2002] 2 A.C. 19 at 48.

<sup>53</sup> Sir Carleton Kemp Allen, *Law in the Making*. 6<sup>th</sup> Edition. Oxford: Clarendon Press. 1958, 88.

<sup>54</sup> J.H. Baker, *The Law's Two Bodies*. Oxford: Oxford University Press. 2001, 35.

<sup>55</sup> Stephen Skinner, ‘Book Review. *The Law's Two Bodies; Some Evidential Problems in English Legal History*.’ *Law Quarterly Review*. Vol. 118. (2002), 661.

<sup>56</sup> Lord Trayner, *Trayner's Latin Maxims*. 4<sup>th</sup> Edition. Edinburgh: W. Green. 1993, 224-225.

<sup>57</sup> *Johnson*, (1760) 2 Burr, 963.

<sup>58</sup> *Lyttleton v Cross*, (1824) 3 B. and C. 325.

years later the legislature largely rectified the injustice with regard to access to unenclosed land by the passing of the Countryside and Rights of Way Act 2000.<sup>59</sup>

### 3.2.6 Statutes and Law Reports

Statute law gives very little help in establishing the historic scope of the law relating to trespass. The Statute of Westminster of 1275 indicates that at that time a close was a physical enclosure.<sup>60</sup> The only Act which expressly refers to the Action of *quare clausum fregit* is the 'Acte for lymytacon of Accons' of 1623-4<sup>61</sup> which limits the time during which the action can be brought and the amount of damages which may be awarded.

'Composite trespass' is 'criminal damage committed on the land of the plaintiff' and has always been a civil wrong. Further examination is needed as to when 'simple trespass' and 'enclosure trespass' became offences. Maitland wrote that 'in old days a trespass that did no harm would have been no trespass.'<sup>62</sup>

Fictions found their place early in English Law. Palmer places the introduction of the standardized writs to the king's courts to 1176.<sup>63</sup> Standardized writs would have encouraged fictions by tempting people to make statements to fit the writ rather than the facts. By 1265 *Les Encoupermenz en Court Baron* provided a set of precedents for use in a seigniorial court. Most of these would have come from an earlier date for 'such literature is not made but grows.'<sup>64</sup> Fifoot states that it was in these courts that most cases were heard.<sup>65</sup> It might be expected that any case of 'simple trespass' would be dressed up to look like 'composite trespass' making it impossible to recognise.

There are now a large number of manor court rolls available each listing many cases of trespass.<sup>66</sup> At the Newton Manor Court, Buckinghamshire, held on Saturday, 1 July

<sup>59</sup> Countryside and Rights of Way Act 2000. Chapter 37.

<sup>60</sup> (1275) 3 Edward 1 c. 17.

<sup>61</sup> 1623/4 21 James I c.16.

<sup>62</sup> F.W. Maitland, *Domesday Book and Beyond*. (1<sup>st</sup> Edition 1897.) London: Collins. 1960, 405.

<sup>63</sup> Robert C. Palmer, *The Whilton Dispute, 1264-1380*. Princeton: Princeton University Press. 1984, 16.

<sup>64</sup> *The Court Baron: Precedents of Pleading in Manorial and Other Local Courts*. Editors F.W. Maitland and W. Paley Baildon. Selden Society Vol. 4. 1890, 5.

<sup>65</sup> (1278) 6 Edward I c. 8. Statute of Gloucester.

<sup>66</sup> *Select Cases in Manorial Courts*. Editor L. Bonfield. Selden Society. Vol. 114. 1997, xvi.

1290 there were 29 cases of trespass heard in one day.<sup>67</sup> But no case has been found which was an offence of ‘simple trespass’. Every intrusion was accompanied by one of a rich variety of aggravating incidents – destruction of corn, the theft of chattels or assault upon master or man.<sup>68</sup>

There is one early case which might at first sight appear to be ‘simple trespass’. Milsom said of *Bracton’s Notebook Plea* 843 that ‘the defendant had done nothing but come onto the plaintiff’s land.’<sup>69</sup> However it is clear that the entry was repeated and that the defendant was seeking to establish possession of the land. He claimed that his father had right of possession which had passed to him.

The fiction relating to *vi et armis* was admitted early in the 14<sup>th</sup> century. In a case in 1304 Bereford CJ stated that the plaintiff should recover damages for trespass although the defendants ‘had not come with force and arms’.<sup>70</sup> Sometimes counsel admitted that the claim of *vi et armis* was fictitious:- ‘Willoughby. “Although we have made mention of a coming [with force and arms] these are but [formal] words etc. It is not force and arms that give cause of damages, but the trespass.”’<sup>71</sup> By 1308 the words *quare clausum fregit* were also being used as a fiction.<sup>72</sup>

In 1330 counsel for William de Thwing claimed that ‘as for the close, he says that he found gaps in the close and he entered by the gaps in the close with his beasts; without this, that he broke the close or did anything against the peace etc.’<sup>73</sup> Thus claiming that there could be no breaking of the close if nothing was broken.

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<sup>67</sup> W.O. Ault, *Open-Field Farming in Medieval England*. London: George Allen and Unwin Ltd. 1972, 149.

See also Warren O. Ault, ‘Open-Field Husbandry and the Village Community.’ *Transactions of the American Philosophical Society*. New Series. Vol. 55, Part 7. (1965).

<sup>68</sup> C.H.S. Fifoot, *History and Sources of the Common Law*. London: Stevens & Sons Limited. 1949, 53. *Select Cases of Trespass in the King’s Courts, 1307-1399. Volumes I and II*. Editor Morris S. Arnold. Selden Society Vols. 100, 103. 1984, 1987.

<sup>69</sup> S.F.C. Milsom, *Studies in the History of Common Law*. London: The Hambledon Press. 1985, 3 and 11-12.

<sup>70</sup> Year Book 32 Edward I (Rolls Series), p. 259. Common Pleas. Cited in J.H. Baker, *The Law’s Two Bodies*. Oxford: Oxford University Press. 2001, 114.

<sup>71</sup> *Petstede v Marreys* (1310) Year Book 3&4 Edwards II. Selden Society. Vol. 22. 1907, 29.

<sup>72</sup> *eg. Anon.* 1 Edward II 1308. In *Year Books I & 2 Edward II (1307-1308 and 1308-1309). Volume I*. Editor F.W. Maitland. Selden Society. Vol. 17, 1903, 36.

<sup>73</sup> *William de Thwing v Walter de Strickland*. Common Pleas 40/283, m. 253d (De Banco roll, Michaelmas 1330). Reported in *Select cases of Trespass in the King’s Courts, 1307-1399. Volume II*. Editor Morris S. Arnold. Selden Society. Vol. 103. 1987, 375.

In 1494 in *Bateman v Baron*<sup>74</sup> the defendant was accused of breaking a close and taking a horse. His defence was that he 'went to the place where the trespass was supposed to have been committed and, finding the gate open, entered and peaceably took the horse in the name of a distress for levying the amercement'.

In response *Kebell* stated:

Everyone's several close is enclosed with the law, and it is not the hedge or wall alone which constitutes the enclosure. A man is equally punishable by writ of trespass *quare clausum fregit* when (having no title) he entered my several close which lies open as he is when he breaks my hedge in entering.

This was agreed, because the writ is true in either case when it says *clausum fregit*, if he enters by wrong.

This is the first case which has been found in which enclosure trespass was held to be an offence.

From this it seems that from the end of the fifteenth century the writ of *quare clausum fregit* was extended to all places which were enclosed by a hedge or wall and that the plaintiff did not need to establish that the gates were closed when the entry occurred. However it seems that it was relevant whether the place was enclosed or not. There would have been no argument about gaps in hedges or gates being left open if the same law had have applied outside the close as inside it.

In 1466 there was the interesting Case of Thorns.<sup>75</sup> It appears that Richard Orynge cut a hedge and allowed the clippings to fall on his neighbour's land. He collected them and was sued. The writ claimed that he

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<sup>74</sup> Court of Common Pleas, Trinity Term 1494. Record: CP 40/929, M. 197. Reported in *Reports of cases by John Caryll: Volume I. 1485-1499*. Editor J.H. Baker. Selden Society. Vol. 115. 1998, 258.

<sup>75</sup> Common roll, Easter 5 Edward IV, P.R.O. ref. C.P. 40/815, m. 340, Devon. Cited in A.K.R. Kiralfy, *A Source Book of English Law*. London: Sweet & Maxwell Ltd. 1957, 128-132.  
*The Case of Thorns*. (1466) B. & M. 327.

did with force and arms break the close of the said P. and cut down and carried off trees and under-growth to the value of £5, lately there growing, and trod down and consumed his grass, to the value of 5 marks, lately there growing, and inflicted other enormities on him, to the damage of the said P. and against the peace of our Lord the King.

The case was unusual in that it was heard before a full bench of seven judges whose very varied judgements have been recorded. The case was found for the plaintiff by four to three whereupon the plaintiff voluntarily remitted the damages. Clearly the case had little to do with the thorns and what it did involve we do not now know. But it does make clear that ‘simple trespass’ was not then an offence.

The earliest case, that has been found, in which ‘simple trespass’ was claimed to be a civil wrong started in 1519. Fitzherbert counsel for the plaintiff in *Harecourt v Spycer* said ‘It is not lawful for anyone to come onto my land without my leave, even if he just wants to speak to me.’<sup>76</sup> Newport counsel for the defendant replied ‘The law will never punish anyone, nor does it give an action of trespass, where there is neither wrong (*tort*) nor damage.’ As usual no decision of the court was recorded.

This first suggestion that ‘simple trespass’ is a civil wrong came three years after the publication of More’s *Utopia* in which he criticised the current agrarian changes.

In order that one insatiable glutton and accursed plague of his native land may join field to field and surround many thousand acres with one fence, tenants are evicted.... What remains for them but to steal and be hanged.<sup>77</sup>

Two years later Wolsey’s Commission was set up to investigate the damaging effects of enclosure.<sup>78</sup>

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<sup>76</sup> *Harecourt v Spycer*. (1519-21) Reported in *The Year Books of 12-14 Henry VIII*. Editor J.H. Baker. Selden Society Vol. 119. 2002, 7-10, 81-85.

<sup>77</sup> St. Thomas More, ‘Utopia’. (1<sup>st</sup> Edition 1516.) In Edward Surtz and J.H. Hexter, Eds. *The Complete Works of St Thomas More. Volume 4*. New Haven: Yale University Press. 1965, 67.

<sup>78</sup> W.E. Tate, *The English Village Community and the Enclosure Movement*. London: Victor Gollancz Ltd. 1967, 45.

In 1522 it was claimed that a plea of *quare clausum suum fregit* could be made for a wood. However it seems that the Court of Common Pleas rejected the claim.<sup>79</sup> In general forests, the areas of land protected for hunting, were not enclosed and people could move through them freely. It was only the offences committed in the forests which were punished sharply.<sup>80</sup>

In 1625 the by-laws of the Manor Court of Kirton in Lindsey, Lincolnshire, provided that people going to the mill or market should use only 'those ways as be knowne to be high ways' unless they had consent of the owner to pass through land which was gated. This by-law made 'enclosure trespass' an offence in Kirton in Lindsey. However it also implies that up to this date the 'common people' still passed through enclosed fields. These by-laws claimed to be the 'ancient customs' of the manor although they related to 'lands lately inclosed'.<sup>81</sup>

In *Henns Case* in 1633 'The Judges agreed, that it hath been adjudged, that if a man do inclose, where he may by law, that he is bound to leave a good way, and also to keep it in continual repair at his own charge.'<sup>82</sup> This seems to imply that before enclosure there was freedom to walk on all the land and that 'simple trespass' was not an offence. Nothing has been found which indicates that 'simple trespass' was an offence before 1600. It follows that the rivers would have been public places as they were not enclosed.

Distortions of the understanding of the law have come in other ways. Isaac Walton wrote in an appendix to *The Compleat Angler*: 'If I [an angler] come upon another man's ground without his licence, or the licence of the law, I am a trespasser, for which the other may have an Action of Trespass against me.'<sup>83</sup> Walton wrote that a poacher is a trespasser.

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<sup>79</sup> *Bishop of London v Nevell and Bowers*. (1521/2). Reported in *The Year Books of 12-14 Henry VIII*. Editor J.H. Baker, Selden Society Vol. 119. 2002, 91.

<sup>80</sup> John Manwood, *A Treatise of the Lawes of the Forest*. London: Societie of Stationers. 1615, Preface, pages unnumbered.

<sup>81</sup> H.W. Atkinson, 'Manor Court Ordinances.' *Genealogists' Magazine*. Vol. 4, (1928), 38, fn. 458.

<sup>82</sup> *Henn's Case*. (1633) Jones W. 296-297.

<sup>83</sup> Isaac Walton and Charles Cotton, *The Compleat Angler*. 3<sup>rd</sup> Edition. London: 1664. Appendix. Pages unnumbered.



Samuel Johnson under his definition of trespass wrote: ‘One who enters unlawfully on another’s ground. If I come upon another’s ground without his licence, or the licence of the law, I am a trespasser, for which the owner may have an action of trespass against me. Walton.’<sup>84</sup> Thus giving the spurious authority of Walton to his definition.

The *Oxford English Dictionary* under its definition of trespass, as a verb, quotes Johnson without qualification. ‘1755 Johnson, Trespass, 2. to enter unlawfully on another’s ground.’<sup>85</sup> Somewhere along the line Walton’s ‘poacher’ has turned into the OED’s ‘simple trespasser’.

‘Trespass’ used to mean ‘to commit an offence’. It may now mean ‘one who enters the ground of another without lawful authority’. This new meaning seems to have come after 1600. All the pre-1600 quotations in the *Oxford English Dictionary* relating to ‘trespass’ appear to refer to ‘composite trespass’ not ‘simple trespass’.

### **3.2.7 Legislation and Commissions**

All relevant legislation, Parliamentary Petitions and Commissions for the period 1189-1600 are listed in Appendix E. These imply that the public use of rivers was a natural right. Magna Carta and the succeeding statutes stated that all the rivers of England were to be kept free for use by vessels. In times of unrest, and at other times, this law was not always and everywhere observed. Very few laws are always and everywhere observed. The weirs were built by the land-owners. Those who challenged their right to obstruct the rivers were sometimes other land-owners from upstream but sometimes it was merchants from the towns or common carriers who used the rivers. These people did not have equal political power. However if someone wished to use a river then the law required that obstructions created since the time of Edward I had to be removed. Nothing has been found in the Parliamentary records which supports the view that in the period 1189-1600 some usable rivers were considered to be private. The quotations in Appendix E concerning the River Brant, the rivers of Somerset, rivers in Wales, the water of Witham in the county of Nottingham and the Middlesex Colne all with

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<sup>84</sup> Samuel Johnson, *A Dictionary of the English Language*. 2<sup>nd</sup> Edition. London: J. & P. Knapton. 1755. Facsim. London: Times. 1983. Pages unnumbered.

<sup>85</sup> ‘Trespass.’ *The Oxford English Dictionary*. Volume VIII. 2<sup>nd</sup> Edition. Editors J.A. Simpson & E.S.C. Weiner. Oxford: Clarendon Press. 1989, 488.

reference to the statutes of 25 and 45 Edward III show that the legislation which referred to the great rivers applied to all usable rivers and was not limited to the Thames, Severn, Trent and Ouse.

This opinion is supported by Callis who in the first Reading on ‘The Statute of Sewers’ in 1622 said that those who regularly use rivers should contribute towards the maintenance of the rivers as provided in 37 Lib. Assiz. Pl. 10. [1346] but that no charge should be made against ‘poor Boatmen which come thereon with their Boats accidentally, by the general Custome of the Realm.’<sup>86</sup> Thus it is concluded that from 1189 to 1600 there was a public right to use all the rivers which were physically usable.

### 3.2.8 Rights in principio

It may be considered unusual to suggest that there was a right for the public to pass over what would now be considered to be private land other than along highways. However there were, it is claimed here, one type of passage and six types of land over which the public could pass in the period 1189 to 1600. These are listed here and discussed more fully in Appendix P.

- |  |   |
|--|---|
| 1. By air.                               | Never lost.   |
| 2. Tidal waters.                         | Never lost.   |
| 3. The foreshore.                        | Restored. Marine Act 2009 (c.23). 296 - 309                     |
| 4. River Banks.                          | Apparently lost 1789 due to impossibility of use. <sup>87</sup> |
| 5. Lakes.                                | Apparently never lost.  |
| 6. Non-tidal rivers.                     | Disputed.   |
| 7. The Right to Roam on unenclosed land. | Restored. Countryside and Rights of Way Act 2000 (c.37).        |

<sup>86</sup> Robert Callis, *The Reading of the Famous and Learned Robert Callis, Esq; Upon the Statute of 23 H.8. cap. 5. of Sewers. 2<sup>nd</sup> Edition*. London: M. Flesher. 1685, 137.

<sup>87</sup> *Ball v Herbert* (1789) 3 TR 253.

## **Part 4 Use**

### **Chapter 4.1 The importance of the use of rivers**

#### **4.1.1 Introduction**

Having considered the physical and legal usability of rivers attention is now turned to the actual use of the rivers. No attempt to quantify the historic demand for transport has been found, except for the supply of grain and fuel to London c.1300. This was based on the judicial and administrative records of the city of London and its formal customs; the taxation records; *Liber de Assissa Panis*, a record of wheat prices; chronicles; the purveyance accounts; records of land use and *Inquisitions post mortem*; monorial and other estate records.<sup>1</sup> These two studies did not include the movement of stone, reeds and rushes, iron goods, fish, fruit or people.

In this chapter the overall demand for transport is considered first and then the proportion that was carried on the rivers. Then three factors which may provide evidence of the importance of river transport are considered: the construction of canals, the importance given to river transport by the King and the location of wealth in the country. Finally it is shown that while for long distance transport of heavy or bulky goods river transport was cheaper than land transport, this was not the case for short journeys.

#### **4.1.2 The amount of goods moved**

It was shown in Part 3 that medieval authors wrote that their rivers were public whereas 19<sup>th</sup> century authors wrote that they were private. In a similar way some medieval authors wrote that there was much trade in agricultural produce<sup>2</sup> whereas some 19<sup>th</sup> century authors claimed of the medieval period that there had been a policy 'to do

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<sup>1</sup> Bruce M.S. Campbell, *et al.* *A Medieval Capital and its grain supply*. Historical Geography Research Series No. 30. 1993.

James A. Galloway, *et al.*, 'Fuelling the City: Production and Distribution of Firewood and Fuel in London's Region, 1290-1400.' *The Economic History Review*. New Series Vol. 49, No 3. (1996), 447-472.

<sup>2</sup> Anon, *Senshauchie*. Pre 1307. In Elizabeth Lamond, *Walter of Henley's Husbandry*. London: Longmans, Green and Co. 1890, 97.

without trade as far as possible.’<sup>3</sup> It has been shown that in the 13<sup>th</sup> century 17 out of 32 manors belonging to the See of Winchester sold more than half their grain and that ‘the peasants of the episcopal manors put more produce on the market than came from the demesnes.’<sup>4</sup> This indicates that there was a demand for transport.

Gras considered that there was a considerable increase in the demand for the transport of grain in the period 1100 to 1300.<sup>5</sup> His opinion was questioned by Postan<sup>6</sup> but supported by Britnell<sup>7</sup> and Dyer.<sup>8</sup> The work of Gras now seems to be generally accepted. Also Masschaele has shown that the number of markets rapidly increased in the period 1150 – 1350.<sup>9</sup> This would have caused an increase in the demand for transport. At these rural markets no tolls were charged on goods bought or sold for household provisioning rather than as a source of profit.<sup>10</sup> The profit for the market owner came from stallage and tolls from traders who would take the goods out of the area.

The purchase of goods for the king and monasteries has been studied<sup>11</sup> but there are few records of the activities of the traders partly, perhaps, because traders were not welcome in the middle ages.<sup>12</sup> Few of their accounts have been found and few records have been printed concerning how the goods which the traders purchased were moved from the markets and fairs to their next destination. Yet these were the people who provided the profits from the dense system of rural markets.

There were not only markets but also fairs. Moore noted that ‘Thousands of lesser individuals crowded every major fair annually during the twelfth and thirteenth centuries,

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<sup>3</sup> W. Cunningham, ‘Introduction.’ In Elizabeth Lamond, *Walter of Henley’s Husbandry*. London: Longmans, Green and Co. 1890, xiii-xiv.

<sup>4</sup> E.A. Kosminsky, *Studies in the Agrarian History of England in the Thirteenth century*. Ed. R.H. Hilton, Trans. Ruth Kisch, Oxford: Basil Blackwell. 1956, 324-5.

<sup>5</sup> Norman Scott Gras, *The Evolution of the English Corn Market*. Cambridge: Harvard University Press. 1926.

<sup>6</sup> M.M. Postan, *The Medieval Economy and Society*. (1<sup>st</sup> Edition 1972.) London: Penguin Books. 1975.

<sup>7</sup> Richard H. Britnell, ‘Commercialisation and economic development in England, 1000-1300.’ In Richard H. Britnell and Bruce M.S. Campbell, *A Commercialising Economy*. Manchester: Manchester University Press. 1995, 7 – 26.

<sup>8</sup> Christopher Dyer, *An Age of Transition?* Oxford: Clarendon Press. 2005, 30.

<sup>9</sup> James Masschaele, *Peasants, Merchants, and Markets. Inland Trade in Medieval England*. New York: St Martin’s Press. 1997, 2.

<sup>10</sup> *Ibid.* pages 69, 70.

<sup>11</sup> Eg. Miranda Threlfall-Holmes, *Monks and Markets*. Oxford: Oxford University Press. 2005.

<sup>12</sup> L.F. Salzman, *English Trade in the Middle Ages*. Oxford: Clarendon Press. 1931, 75.

transforming the fairgrounds into mid-sized cities for several weeks'<sup>13</sup> and that 'another characteristic of all these great fairs is their location on rivers.'<sup>14</sup>

It seems likely that an urban community required a greater amount of transport than an equal sized rural community, but the difference is hard to quantify. Pallister wrote that:

Though some writers have put the urban proportion of the population at only 5 or 10 per cent as late as 1500, the best recent estimates are considerably higher; up to 10 per cent in 1086, 15 or more percent by 1300, 20 per cent in 1377, and after perhaps a fall in the fifteenth century a return to about 20 per cent by 1524.<sup>15</sup>

There was famine in England at the start of the 14<sup>th</sup> century and plague in, and after, 1348 when the population of England fell by between 30 and 50%.<sup>16</sup> It might have been expected that these would have caused a reduction in the use of the rivers after the middle of the 14<sup>th</sup> century due to the lack of the supply of goods and the demand for them.<sup>17</sup> It is known that on the Ant this reduction of transport only lasted for a short period.<sup>18</sup> Dyer has written of the period 1350-1500:

Those who rely on institutions as a guide to trading activity would conclude that the economy was gripped by a crippling recession. However, other indices, such as per caput incomes and expenditure, the growth of more specialized and market-oriented production in agriculture, the amount of building activity, all point to a lively trading system.<sup>19</sup>

In the second half of the sixteenth century there was a rapid increase in the population.<sup>20</sup> There were also fundamental changes in agriculture with a move to 'freer, more mobile

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<sup>13</sup> Ellen Wedemeyer Moore, *The Fairs of Medieval England*. Toronto: Pontifical Institute of Mediaeval Studies. 1985, 1.

<sup>14</sup> *Ibid.* page 11.

<sup>15</sup> D.M. Palliser, 'Introduction.' In D.M. Pallister, Ed. *The Cambridge Urban History of Britain*. Cambridge: Cambridge University Press. 2000, 4.

<sup>16</sup> Colin Platt, *King Death*, Toronto: University of Toronto Press. 1997.

<sup>17</sup> Johann Heinrich von Thunen, *The Isolated State*. Ed. Peter Hall, Trans. Carla M. Watenberg. [*Der Isolierte Staat*.] London: Pergamon Press. 1966, 316-317.

<sup>18</sup> *Public Works in Medieval Law. Volume 2*. Editor C.T. Flower. Selden Society. Vol. 40. 1923, 88-89.

<sup>19</sup> Christopher Dyer, 'The hidden trade of the middle Ages: evidence from the West Midlands of England.' *Journal of Historical Geography*, Vol. 18, Part 2. (1992.), 153.

<sup>20</sup> D.M. Palliser, *The Age of Elizabeth. 2nd Edition*. London: Longman. 1992, 40.

conditions of agriculture carried on the basis of money and markets, the exchange of goods rather than services.’<sup>21</sup> Fisher considered that by the end of the sixteenth century ‘the larger provincial towns, the embryonic Black Country, the Tyneside mining area, the textile districts of Yorkshire, East Anglia and the west’ must all have been ‘of sufficient size and concentration to have considerable influence, as markets, upon both agriculture and the trade in agricultural produce.’<sup>22</sup> These changes would have resulted in an increased demand for transport.

Thus it seems that the demand for transport increased steadily from 1189 to 1350, remained steady for 150 years and then increased throughout the 16<sup>th</sup> century.

#### **4.1.3 The proportion of goods carried by river**

River transport was only a fraction of the total transport and this fraction was not necessarily constant and its values are not agreed upon by historians. Farmer, like many other authors, wrote:

For heavy or bulky loads ... the waterways were more economical than the roads. ... Most English waterways flowed in the direction of trade, and by the early thirteenth century much of the produce of the countryside went to market by water.<sup>23</sup>

Whereas Holt considered that rather than there being any development in water transport in medieval England a decline occurred as private, proprietorial rights outweighed perceptions of the public benefit to be derived from usable watercourses,<sup>24</sup> Blair placed the downturn in the use of rivers to about 1250 due to the improvement of roads, bridges, and haulage in the 13<sup>th</sup> century.<sup>25</sup>

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<sup>21</sup> A.L. Rowse, *The England of Elizabeth*. (1<sup>st</sup> Edition 1950.) London: Sphere Books Ltd. 1973, 96.

<sup>22</sup> F.J. Fisher, ‘The Development of the London Food Market, 1540-1640.’ *The Economic History Review*. Vol. 5, No. 2. (April 1935.), 46.

<sup>23</sup> David L. Farmer, ‘Marketing the Produce of the Country. 1200 – 1500.’ In Edward Miller, *The Agrarian History of England and Wales. Volume III. 1348-1500*. Cambridge: Cambridge University Press. 1991, 353.

<sup>24</sup> R. Holt, ‘Medieval England’s Water-Related Technologies.’ In P. Squatriti, Ed. *Working with Water in Medieval Europe: Technology and Resource-Use*. Leiden: Brill. 2000, 55-6.

<sup>25</sup> John Blair, ‘Introduction.’ In Blair, 2007, 1-18, 5.

No investigation as to how goods were carried to the markets has been found. Most goods went by land, cart, pack-horse or carried on people's backs. However fresh fish, firewood, withies, reeds and sedges would have been gathered by the rivers and where a market was on a river bank could more easily have been transported by boat. The Pipe Roll of the Bishopric of Winchester 1208-9 shows that agents of the Earl of Lincoln sold 1¾ million peat turfs at Whitgift in 1304-5.<sup>26</sup> It seems that these must have been moved by water transport. The water-bailiffs' accounts for Great Yarmouth show that some of the surplus agricultural produce taken to the port for sale in the early 15<sup>th</sup> century was transported by river and coastal craft.<sup>27</sup>

In 1514 Acts were passed relating to the improvement of the Kentish Stour<sup>28</sup> and overcharging by watermen on the Thames and Medway.<sup>29</sup> In 1531 the Statute of Sewers<sup>30</sup> which related to navigation on all the rivers of England was passed as were Acts relating to obstructions on the Ouse and Humber<sup>31</sup> and tolls on the Severn.<sup>32</sup> These seem to indicate that there were people seeking to increase the use of the rivers.

Blair<sup>33</sup> and Langdon<sup>34</sup> refer to the fact that some rivers could only be used in a downstream direction and that the nature of the rivers was such that barges and boats must have been taken upstream empty. This is not such a great disadvantage as it might seem since, in general, towns and cities consume more than they produce and many towns are at the downstream end of the rivers. Thus most of the goods carried on non-tidal rivers would have been carried downstream. Possibly the proportion of boats and barges returning empty was no greater than the proportion of carts and packhorses which returned home with no load. However wine would have been carried on the water whenever possible because:

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<sup>26</sup> Edward Miller and John Hatcher, *Medieval England: Towns, Commerce and Crafts 1086-1348*. London: Longman. 1995, 141.

<sup>27</sup> Terence R. Adams, 'Aliens, Agriculturalists and Entrepreneurs: Identifying the Market-Makers in a Norfolk Port from the Water-Bailiffs' Accounts, 1400-1460. In Dorothy J. Clayton *et al.* Eds. *Trade Devotion and Governance*. Stroud: Alan Sutton. 1994, 142.

<sup>28</sup> (1514.) 6 Henry VIII c 17.

<sup>29</sup> (1514.) 6 Henry VIII c 7.

<sup>30</sup> (1531.) 23 Henry VIII c 5.

<sup>31</sup> (1531.) 23 Henry VIII c 18.

<sup>32</sup> (1531.) 23 Henry VIII c 12.

<sup>33</sup> John Blair, 'Transport and Canal-Building on the Upper Thames. 1000-1300.' In Blair, 2007, 285.

<sup>34</sup> John Langdon, 'The Efficiency of Inland Water Transport in Medieval England.' In Blair, 2007, 126.

pack horses could not be used for the transport of tons of wine, and a cart conveying a ton of wine might require as many as six horses at a time. The rough roads damaged the wine and caused much leakage even when special precautions were taken and there seems little doubt that the great fragility of wine resulted in a generally high rate of carriage charges.<sup>35</sup>

The cost of transport of wine up the Severn in 1308/9 was 0.4 pence per tun mile and 2.5 pence per tun mile for road transport in the West Midlands. The equivalent figures for 1452/3 were 0.6 and 3.2.<sup>36</sup> Clearly some goods were transported up some rivers and such movements could be significantly cheaper than transport by road.

The proportion of goods transported by river would have depended on the condition of the alternative, land transport. It is claimed in Appendix O that in general the surface of 'roads' would have been no better than unimproved meadow and, where the region was enclosed, worse. Walking, horse riding and the movement of carts over dry meadow is easier than on rutted roads. It is claimed that the concept of roads, rather than ways, between towns and cities is anachronous.

No evidence has been found that the proportion of goods carried on the rivers changed significantly during the period 1189 to 1600.

#### **4.1.4 Canals**

While details of the construction and use of canals is outside the scope of this thesis their remains and written evidence about them provide some information about the use of rivers. The medieval canals have been studied recently by Bond who has listed the dates of the construction of canals up to 1300.<sup>37</sup> This shows that in many places channels were dug to provide water transport for goods from rivers to towns and monasteries.

#### **Table 10 Date of Construction of Canals.**

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<sup>35</sup> Margery Kirkbride James, *Studies in the Medieval Wine Trade*. Ed. Elspeth M. Veale. Oxford: Clarendon Press. 1971, 147 -148.

<sup>36</sup> Christopher Dyer, *Everyday Life in Medieval England*. London: Hambledon and London. 1994, 262.

<sup>37</sup> James Bond, 'Canal Construction in the early Middle Ages: An Introductory Review.' In Blair, 2007, 153-206.



<u>Date</u>	<u>Number</u>	<u>Length in km</u>
900-1000	2	12
1000-1100	2	14
1100-1200	7	27
1200-1300	8	61
1300-1600	No records have been found.	

The list is incomplete as it does not include the canals studied by Blair which are reported in the same book and there was a canal to Swaton in Linclonshire in 1240.<sup>38</sup> It seems likely that there was also a canal from the Parrett to Muchelney Abbey<sup>39</sup> and very possibly others.

The implication of these canals in terms of the use of the connecting rivers seems not to have been appreciated by most historians. Canals would only have been constructed where they could be connected to usable rivers at a time when use of the rivers was well established. They indicate that sufficient goods were transported to the monasteries or abbeys on the rivers to justify the cost of constructing the canals.

#### **4.1.5 Royal support for river transport**

Royal support for river transport may indicate its changing relative importance for those in power in the country. *Magna Carta* provided for a general prohibition of weirs in rivers. From the first this was never fully implemented. The King's weir at Chester was never removed. However Edward III seems to have made a genuine attempt to remove recent weirs and enhancements in 1350<sup>40</sup> and 1371.<sup>41</sup> He was clearly not totally successful but his policy was continued by both Henry IV and V who also authorised the destruction of weirs.<sup>42, 43</sup>

<sup>38</sup> Curia Regis Rolls, Volume 16, 21-26 Henry 3, 490.

<sup>39</sup> Inspection by present author.

<sup>40</sup> (1350) 25 Edward III, Stat. 3. c 4.

<sup>41</sup> 1371, 45 Edward III, c. 2.

<sup>42</sup> 1399, 1 Henry IV, c. 12.

<sup>43</sup> 1413, 1 Henry V, c 2.

It seems that in 1464 the manufacturers persuaded Edward IV to refuse a petition of the Commons to enforce the statutes of 1351 and 1371 relating to the Severn and its tributaries so that they could install weirs.<sup>44</sup> Nevertheless, in 1472, after his restoration, the shipping and mercantile interests prevailed and another Act<sup>45</sup> was passed.<sup>46</sup>

Under Henry VIII in 1531 the Statute of Sewers was passed which provided for the removal of obstructions in rivers.<sup>47</sup> At first there was an attempt to vigorously enforce the statute. In the Letters and Papers of Henry VIII for the period August to December 1535 there are 27 entries relating to the destruction of weirs.<sup>48</sup> The Mayor and Citizens of Winchester wrote to Cromwell that 'some of those who have executed the statute have been sore threatened by the great lords and their officers in these parts.'<sup>49</sup> It seems that this work was not due entirely to the influence of Thomas Cromwell, 'himself of the merchant class,'<sup>50</sup> as it is recorded that the king was also enthusiastic about the clearance.<sup>51</sup>

In 1536 there was a proposal for an Act that 'never weir nor water-mill shall hereafter be erected or made within this realm'<sup>52</sup> but it seems that the Bill never reached the Commons. Queen Mary, seeking the support of the land owners, allowed the rebuilding of some of the weirs including those on the Itchen at Woodmill and on the Wye at Hereford.<sup>53</sup>

Those who operated the boats were, in general, from the merchant class or below but they supplied people of all classes. Those who built the mills and fish weirs were land owners. Yet, it seems that, except in what has been called 'the age of anarchy' (1300-

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<sup>44</sup> PROME, Edward IV, 1463, April, 60, v-569-570.

<sup>45</sup> (1472) 12 Edward IV, c. 7.

<sup>46</sup> I.S. Leadam, (The late) 'Trade and Commerce.' In H.W.C. Davis, Ed. *Medieval England*. Oxford: Clarendon Press. 1924, 612 – 3.

<sup>47</sup> (1531) 23 Henry VIII, c. 5.

<sup>48</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 9.

<sup>49</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 10, 24.

<sup>50</sup> I.S. Leadam, (The late) 'Trade and Commerce.' In H.W.C. Davis, Ed. *Medieval England*. Oxford: Clarendon Press. 1924, 613.

<sup>51</sup> *The Lisle Letters. Volume Two*. Editor Muriel St. Clare Byrne. Chicago: The University of Chicago Press. 1981, 483.

<sup>52</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 10, 92.

<sup>53</sup> Joan Fleming-Yates, *The River Running By*. Weddenburn Art Ltd. Undated, 96.

1500),<sup>54</sup> it was considered to be for the benefit of the country that the rivers should be kept clear.

#### 4.1.6 Location

It has long been known that one reason why towns were built by rivers was the availability of river transport. 'There is not any Town or City, which hath a Navigable River at it, that is poore; nor scarce any that are rich, which want a River with the benefit of Boats.'<sup>55</sup> Edwards and Hindle provided the names of twenty of the fastest growing medieval towns and stated that all except Coventry and Leicester were sea and/or river ports.<sup>56</sup> Yet Leicester did have a river flowing past the town which was used, although it may not have been directly linked to the sea.<sup>57</sup> Local produce could have been taken to the town by boat. Hindle and Edwards also stated that as the size of ships increased so trade moved from Winchester, Norwich and Lincoln to Southampton, Yarmouth and Boston.

In this section investigation is made as to whether water transport influenced the prosperity of the regions. If there is found to be a close correlation between them then water transport may have been one cause of prosperity. If the correlation is low then water transport is likely to have been of little importance, although other factors may also have been significant.

The Lay Subsidy of 1334 is possibly the most relevant reference to the wealth of the regions for most of the country in the 13<sup>th</sup> and 14<sup>th</sup> centuries although it contains no data for Cheshire and Durham and the figures for Cumberland, Westmorland and Northumberland need to be taken from the 1336 Subsidy. Willard suggested that 'the goods taxed as movables at the Lay Subsidy of 1334 represented the surplus over and above the essentials that a family needed to live and work.'<sup>58</sup> This view has been

<sup>54</sup> Alan Harding, *The Law Courts of Medieval England*. London: George Allen & Unwin Ltd. 1973, 95.

<sup>55</sup> John Taylor, 'A Discovery by Sea from London to Salisbury.' In *All the Works of John Taylor the Water Poet*. London: James Boler. 1630, 187.

<sup>56</sup> James Frederick Edwards and Brian Paul Hindle, 'The transportation system of medieval England and Wales.' *Journal of Historical Geography*. Vol. 17. (1991), 123-134.

<sup>57</sup> *Records of the Borough of Leicester. Volume 1 1103-1327*. Editor Mary Bateson. London: C.J. Clay and Sons 1899, 244-245, 350-351.

<sup>58</sup> J.F. Willard, *Parliamentary Taxes on personal property, 1290-1334*. Cambridge Massachusetts: The Medieval Academy of America. 1934, 84-85.

supported by others from their study of county records of the tax.<sup>59</sup> This tax assessment continued to be used for about two hundred years. It may be claimed that ‘The surplus over and above the essentials that a family needed to live and work’ is, in agricultural areas, the amount available for selling to neighbours and for export from the area.

The weaknesses of this source include: evasion, undervaluation, extortion by officials and the exemption of certain groups including the Church and the poor.<sup>60</sup> Possibly a more serious weakness is the definition of the boundaries of the places - inevitable with this type of evidence. Glasscock wrote ‘For many reasons, but particularly because of the problem of the inclusion or exclusion of suburbs in tax quotas, it is not easy to construct an entirely satisfactory list of towns ranked in the order of their taxed movable lay wealth.’<sup>61</sup> Places were boroughs, townships, parishes, hamlets or manors. The one hundred places with the highest assessments are listed in Appendix G and summarised in Table 11.

**Table 11 Location of the 100 most prosperous places in 1334.**

On a usable non-tidal river.	40
Fenland.	25
Sea Port.	21
On a river with no found record of use.	9
No access to water.	5

The Lay Subsidy records show that there was relative poverty in the counties north of a line from the Mersey to the Humber and in Devon and Cornwall. The only place in these regions which is included in the list and which is not a port is Penrith. There are fewer records of the use of rivers in these areas than elsewhere.

<sup>59</sup> A.T. Gaydon, ‘The taxation of 1297.’ *Bedfordshire Historical Record Society*, Vol. XXXIX (1959).  
L.F. Salzman, ‘Early taxation in Sussex.’ *Sussex Archaeological Collections*. Vol. XCVIII (1960), 29-43 and XCIX (1961), 1 – 19.

R.E. Glasscock, ‘England circa 1334.’ In H.C. Darby, Ed. *A New Historical Geography of England*. Cambridge: Cambridge University Press. 1973, 140.

<sup>60</sup> *Ibid.* page 138.

<sup>61</sup> Robin E. Glasscock, *The Lay Subsidy of 1334*. London: Oxford University Press for The British Academy. 1975, xxx.

Thus it seems both from the list of prosperous places and from the distribution of the regions where there were few prosperous places that it not unlikely that access to water transport, and its use, was one cause of prosperity and that its lack a cause of relative poverty.

#### 4.1.7 Cost

Cost was not the only factor when deciding whether goods would be transported by river or by land. Speed, convenience, security and availability were other factors to be considered. Wharfs might not be available or roads might be impassable. Thus in 1648 three tons of cheese were portaged round sixteen mills on the Nene between Peterborough and Highham Ferrers when the road was impassable due to flooding.<sup>62</sup> This mode of transport was cheaper than the normal transport by road but it appears that after the floods subsided road transport was used again as it was more convenient. Cost was not a factor in choosing the mode of transport when customary services required a villein to transport goods without payment. In 1304 grain was carried from Shillington, Cranfield, and Higham Gobion in Bedfordshire to London without charge.<sup>63</sup>

In the past two methods have been used to try to establish the relative costs of water and land transport. Some authors have found written records of charges and have calculated the cost per ton mile by dividing the charge by the straight line distance and load. Using this method Duncan-Jones calculated the ratio for land : river transport cost in Roman times to be 8:1.<sup>64</sup> Other authors have calculated the cost of operating a cart or wagon and the load which could be carried. Using this method Selkirk calculated the ratio for land : river transport in Roman times to be 58:1.<sup>65</sup>

Estimates of the relative cost of land and river transport which have been made by other authors are given in the following table. Costs have been converted to d. per ton mile.

<sup>62</sup> Anon. 'Some Considerations of the River Nine, running from Northampton to Peterborow, and so to the Sea; shewing the Fesability and convenience of making it Navigable.' Pamphlet. Cambridge University Library. Bb\*.11.50''(E). c.1653, 2.

<sup>63</sup> Galloway, J.A., Murphy, M. 'Feeding the City.' *London Journal*. Vol. 16, (1991), 7.

<sup>64</sup> Richard Duncan-Jones, *The Economy of the Roman Empire*. 2<sup>nd</sup> Edition. Cambridge: Cambridge University Press. 1982, 368

<sup>65</sup> Raymond Selkirk, *The Piercebridge Formula*. Cambridge: Patrick Stephens. 1983, 83.

**Table 12. Estimates of Land : River transport costs.**

Date	Author	Land	River	Ratio
1250-1450	Rackham. <sup>66</sup>	1.3	0.25	5
1290	Campbell <i>et al.</i> <sup>67</sup>	0.35	0.03	12
1301	Pelham. <sup>68</sup> Wheat	0.9	0.3	3
	Oats	0.6	0.11	5.4
14 <sup>th</sup> century	Cook. <sup>69</sup>	0.5	0.3	1.7
1296-1352	Masschaele. <sup>70</sup>	0.9 – 2.3	0.6 – 0.9	1.5 – 2.5
1305-1346	Masschaele. <sup>71</sup>	0.5 – 1.9	0.3 – 1.5	1.6 – 1.3
1308-09	Dyer. <sup>72</sup>	2.5	0.4	6.2
1452-53	Dyer. <sup>73</sup>	3.2	0.6	5.3

Most of these figures are based on the cost of transporting grain. Since stone is denser than grain it seems likely that the ratio would be higher for stone.<sup>74</sup> The ratios vary from 1.3 to 12. There are many reasons for the differences of which distance, loading and unloading costs, size of boat and level of demand for transport are among the most obvious.

Because of these variations no attempt is made here to establish either the actual cost or the relative cost of road and river transport. At any one time the charge for transport was not necessarily the same as the cost of providing the transport. In 1559 an order was made ‘to provide carriage by water at reasonable rates for 6000 loads of wood stored at

<sup>66</sup> Oliver Rackham, *The History of the Countryside*. London: Phoenix Press. 1986, 264.

<sup>67</sup> Bruce M.S. Campbell, *et al.* *A Medieval Capital and its Grain Supply: Agrarian Production and Distribution in the London Region c 1300*. Historical Geography Research Series No 30, 60.

<sup>68</sup> R.A. Pelham, ‘Provisioning the Lincoln Parliament of 1301.’ *University of Birmingham Historical Journal*. Vol. 3. (1951), 24-32.

<sup>69</sup> Martin Cook, *Medieval Bridges*. Princes Risborough: Shire Publications Ltd. 1998, 12-13.

<sup>70</sup> James Masschaele, ‘Transport Costs in Medieval England.’ *Economic History Review*. New Series, Vol. 46, No. 2. (1993), 266-279.

<sup>71</sup> James Masschaele, *Peasants, Merchants, and Markets*. New York: St. Martins’s Press. 1997, 208-209.

<sup>72</sup> Christopher Dyer, ‘The Consumer and the Market in the Later Middle Ages.’ *Economic History Review*. New Series, Vol. 42, No. 3. (1989), 309.

<sup>73</sup> *Ibid.* 309.

<sup>74</sup> See eg. L.F. Salzman, *Building in England down to 1540*. Oxford: Clarendon Press. 1952, 349-351.

T.W.T. Tatton-Brown, ‘Building Stone in Canterbury c.1070-1525.’ In David Parsons, Ed. *Stone Quarrying and Building in England AD 43-1525*. Chichester: Phillimore & Co. Ltd. in association with the Royal Archaeological Institute. 1990, 78-79.

Henley, Weybridge and elsewhere against the winter ... as the price of water carriage has been unreasonably advanced to more than half what it was.<sup>75</sup> The cost of transport varied with climatic conditions<sup>76</sup> and the current demand for agricultural use of the oxen or horses and men. Most goods were purchased in towns where the cost of transport was included in the price so relatively little data are available.

It seems likely that, where it was available, water transport was always cheaper for the movement of bulk goods of relatively low value over long distances. No one took coal from Newcastle to London by land. The isopleths on Landers' map of the cost of transporting grain to London in c.1300, while based apparently only on data from sixteen places, show that for long distances water transport was cheaper.<sup>77</sup>

However it seems that some historians have assumed that transport by river was always cheaper than by land and that where land transport was used between two riverside locations the river must have been unusable.<sup>78</sup> The following calculation illustrates one possible method of determining the breakeven distance between the cost of land and water transport.

Eaton has estimated the cost of obtaining stone for Chepstow Castle.<sup>79</sup> He estimated that it took 0.4 mh per tonne (mh = manhour) to load or unload a cart and 0.8 mh per tonne to load or unload a barge. If the store was a safe distance from a river the second figure seems to be too low. 2 mh per tonne is used in this calculation. It is assumed that one man could lead an ox cart loaded with 1 tonne at 2 km hr<sup>-1</sup> and that four men controlled, or towed, a barge carrying 16 tonnes at a speed of 2 km hr<sup>-1</sup>.

For a journey from quay to quay a cart was cheaper if

$$0.4 \times 2 + d/2 < 2 \times 2 + 4 \times d/(2 \times 16) \text{ where } d \text{ is the distance in kilometres.}$$

<sup>75</sup> Calendar of Patent Rolls, 1558-60, 25.

<sup>76</sup> Bart Ballaux & Bruno Blondé, 'Transport Prices in the Long Sixteenth Century.' [www.lowcountries.nl/papers/2004-4\\_ballaux.pdf](http://www.lowcountries.nl/papers/2004-4_ballaux.pdf). Accessed 23/4/2007.

<sup>77</sup> John Landers, *The Field and the Forge*. Oxford: Oxford University Press. 2003, 92.

<sup>78</sup> eg. R.B. Peberdy, 'Navigation on the River Thames between London and Oxford in the Late Middle Ages. A Reconsideration.' *Oxoniensia*, Vol. 61. (1996), 311-340.

<sup>79</sup> Tim Eaton, *Plundering the Past*. Stroud: Tempus Publishing Ltd. 2000, 48-53.

Thus land transport was cheaper if the journey was less than 8.5 km.

With the same assumptions if the load needed to be transported a short distance by cart from a store to the barge and from the barge to the new store the cart was cheaper if

$$0.4 \times 2 + d/2 < 2 \times 2 + 0.4 \times 2 + 4 \times d / (2 \times 16)$$

that is if the journey was less than 10.5 km.

These estimates are crude. There also needs to be taken into account the problems of organising the transport, breakage, pilferage, the capital cost of cart and barge and the cost of maintaining and replacing the oxen.

However these estimates may explain why imported stone for Canterbury cathedral was transported from Fordwich by cart.<sup>80</sup> They may also explain why stone from Barrington, Cherry Hinton, Eversden and Haslingfield was transported to Cambridge by land although river transport may have been available from Granchester.<sup>81</sup> For similar reasons barges taking goods from Ware to London would sometimes unload at Hackney or Stratford.<sup>82</sup>

While this calculation may be considered suitable for the bulk transfer of goods it is not applicable for the movement of small quantities of goods. If a man collects firewood or reeds for his own use or takes goods to the local market the availability of horse or oxen and cart or of a boat would be of much greater importance.

Lee by studying college accounts has shown that in the early 16<sup>th</sup> century most of the food for the Cambridge colleges came from within 10 miles of the town and was transported by land. Barley was bought from Methwold by water. Wood was transported

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<sup>80</sup> See Appendix C. Transport of Stone for Cathedrals and Colleges.

<sup>81</sup> See sources quoted in Appendix C.

‘*Collegium Sancti Hohannis Evangeliste in Cantabrigie.*’ C17.23. Archives of St John’s College, Cambridge.

Eg. ‘The Eagle, Easter 1982.’ *Journal of St John’s College, Cambridge.*

I am grateful to Mr. Malcolm Underwood, Archivist for these two references.

<sup>82</sup> Keith Fairclough, ‘The River Lea before 1767: an adequate flash lock navigation.’ *Journal of Transport History.* 3<sup>rd</sup> Series. Vol. 10. (1989), 136.



by land from the south-east from where river transport seems to have been unavailable.<sup>83</sup> The King's Hall Account Books show that turf was brought from Waterbeach, Swaffam and Bottisham in barges on the Cam.<sup>84</sup> Gray confirms that 'Traffic between Cambridge and Ely, down to very recent times, went almost entirely by water.'<sup>85</sup> It is unfortunate that the very full accounts of Peterhouse have not yet been published. It is the one college which had direct access to the river upstream of the mills.

Campbell *et al.* have shown that for London the theoretical circles of supply of Von Thunen's Isolated State were distorted by the fact that west of London river transport was cheaper than land transport.<sup>86</sup> The wharfs at Henley and at Queenhythe were conveniently located adjacent to the river.

It will be shown in Chapter 4.2 that stone for cathedrals was very seldom transported more than 12 miles by land. For such a dense material land transport was prohibitively high. Leland considered that the house built in Milbyri Parks to have been 'builde richely' when it required 'thre thousand lode of fre-stone to be fetched from Hamden quarre nyne myles.'<sup>87</sup>

The wide variations which have been found in the comparative cost of land and river transport, the problem of determining the constituent elements in the total cost and the difference between average cost and marginal cost mean that extreme care is needed if any argument is to be based on the cost of transport. While cost would often have been a factor in the choice of mode of transport the reverse process of taking cost as evidence of the usability of rivers must only be used with great care.

Despite the failure to establish the amount, or the proportion, of goods moved on rivers it seems that river transport was important during the whole of the period 1189 to 1600 but

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<sup>83</sup> John S. Lee, 'Feeding their colleges: Cambridge's food and fuel supplies, 1450-1560. *Economic History Review*, Vol. LVI, (2003.) 243 – 264.

<sup>84</sup> Alan B. Cobban, *The King's Hall*. Cambridge: Cambridge University Press. 1969, 215.

<sup>85</sup> Arthur Gray, 'The Ford and Bridge of Cambridge.' *Proceedings of the Cambridge Antiquarian Society*. Vol. XIV. (New Series VIII) (1909-1910), 132.

<sup>86</sup> Bruce M.S. Campbell, *et al.* *A Medieval Capital and its grain supply*. Historical Geography Research Series No. 30. 1993

<sup>87</sup> *The Itinerary of John Leland in or about the years 1535 – 1543. Volume 4*. Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 73.

that care is needed when investigating the reasons for the use, or lack of use, of any section of a river.

## **Chapter 4.2 Archaeological evidence of use**

### **4.2.1 Introduction**

In Chapters 4.2 and 4.3 the subjects are the various types of archaeological and written evidence of the use of rivers. Many people have written about the historic use of rivers but their texts do not indicate that they have considered carefully how much data have been lost or how many river journeys were never recorded even by a mark on the river bank for boats leave no footprints. As one moved upstream it seems likely that use would have been less frequent and the boats would have been smaller. Both factors would have reduced the probability of the use being recorded. It is normally not possible to identify whether the existence of only a few records of use is due to there having been only infrequent use or the poor preservation of records of frequent use.

The completeness of the archaeological record is considered in this chapter in sections according to the different types of articles which have been discovered. The evidence of historic use which has been found has been listed in Appendix A. Since the evidence is not all of the same quality the total evidence for each section of river has been divided into two categories. The categories are wide and may be considered to correspond to evidence of ‘probable’ and ‘possible’ use.

- A. A record or report of the transport of goods or taking of tolls.
- A record of floating of timber.
- Investigation of, or removal of, obstructions to boats.
- A requirement that boats should be able to pass a bridge.
- A town being listed as a port or being granted right of toll on boats.
- A town where customs dues on exported items were collected.
- A distribution of pottery which indicates transportation by river.
- A record of a vessel owned by an inhabitant of a town.
- A record of a person having fallen from a boat into a river.
- A river known to have been used because it is listed in, or a licence was granted under, Elizabethan legislation.<sup>88</sup>

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<sup>88</sup> 1558. 1 Elizabeth c. 15. Timber not to be felled for making coals.

**B.** Secondary statements relating to the transport of goods or tolls.

A record of use or the discovery of a log-boat or anchor which is undated or outside the period 1189-1600 on an unmodified river.

A weir destroyed as a consequence of the 1532 Act of Sewers.<sup>89</sup>

Place name evidence of a port or landing place.

Where a grading is given to one section of a river it is given to all downstream sections.

#### **4.2.2 Boats and Barges**

The probability of the remains of historic boats being found in any place depends on three factors: the number of boats used, the chance of a disused boat being preserved and the chance of such a boat being found, recognised and reported. McGrail has recorded about 180 logboat (boats made from one log of wood) remains which have been found in England. Most of these have not been dated but a significant number date from after 1189.<sup>90</sup> The location of the logboat finds is not analysed here as the information has been published by McGrail and because the location of the finds may depend as much on the preservation and recognition of the remains as on historic usage.

It is not known for what purpose these logboats were built but it would be wrong to assume that they were all used for fishing. In Sussex in 1583 'J and A were getting into a small boat worth 2s in a pond at Cuckfield to enjoy the water, by misadventure, the boat being weighed down, water entered into it, it immediately sank in the depths of the pond and J and A were drowned.'<sup>91</sup> McGrail has analysed the boats on the assumption that they were used for carrying loads and/or people.

No collation of records of finds of other types of boats has been found. The planks of boats, like those of carts, rot quickly. The remains which have been found are those of boats which had been buried in silt. In the Dour a boat dating from about 1550 BC was found up a side creek of the river.<sup>92</sup> A ship was found at Appledore 10 ft below the

<sup>89</sup> 1532. 23 Henry VIII c. 5. Act of Sewers.

<sup>90</sup> Sean McGrail, *Logboats of England and Wales. Part ii*. National Maritime Museum, Greenwich Archaeological Series No. 2. BAR British series 51(ii). 1978, Fig 207.

<sup>91</sup> *Sussex Coroners' Inquests 1558-1603*. Editor R.F. Hunnisett. Kew: PRO Publications. 1996, 65-66.

<sup>92</sup> [www.dover.gov.uk/museum/boat/lab.asp](http://www.dover.gov.uk/museum/boat/lab.asp). Accessed 01/05/2006.

present ground level.<sup>93</sup> Less than half of a small river boat was found at Caldecotte.<sup>94</sup> A small boat dating from 1540 was found 8ft below ground level when a sewer was being dug in a meadow (or in a riverbank) near Weybridge.<sup>95</sup> There have been disputes about the existence of the remains of boats at St Albans for the last four hundred years.<sup>96</sup> Hundreds of Roman ships' rivets have been found on the 23 metre contour round the now dry Lake Pickering.<sup>97</sup>

Anchors have been found in the bed of a tributary of the Waveney at Weybread,<sup>98</sup> in the Fleet just north of Camden Town<sup>99</sup> and at Chilham on the Kentish Stour six miles upstream of Canterbury.<sup>100</sup> These anchors do not prove that the rivers were used at these places. Even less do they prove that the rivers were used at a particular time. However they are evidence that the use of rivers may not have been limited to those sections for which there is written evidence of use.

It seems that the archaeological finds of vessels and their equipment provide evidence of only a very small proportion of those which were used.

#### **4.2.3 Lost loads**

Eaton reported that in about 1900 'a Roman altar, pilaster fragment and other Roman stones' were recovered from the bed of the Tyne at Hexham. They may have fallen from a boat, or a boat may have sunk, when Hexham Abbey was built in about 675.<sup>101</sup>

Similarly Astbury reported that large roughly cut pieces of masonry were found in Whittlesea mere when it was drained in 1851. These may well have been intended for Sawtry Abbey.<sup>102</sup> Similar reports refer to cargoes which have been found at Upware on the Cam and Prickwillow on the Lark. The latter load would seem to have been intended

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<sup>93</sup> Harold Sands, 'Bodiam Castle' *Sussex Archaeological Collections*. Vol. 46. (1903), 118.

<sup>94</sup> Gillian Hutchinson, 'Boatfind at the Caldecotte Lake Site.' *Archaeology in Milton Keynes*. 1982, 7-8. Milton Keynes, Development Corporation archaeology Unit. Cited in Gillian Hutchinson, *Medieval Ships and Shipping*. London: Leicester University Press. 1994, 195.

<sup>95</sup> Gillian Hutchinson, *Medieval Ships and Shipping*. London: Leicester University Press. 1994, 198.

<sup>96</sup> See Appendix A.

<sup>97</sup> See Appendix A.

<sup>98</sup> Douglas R. Pluck, *The River Waveney, Its Watermills and Navigation*. Bungay: Morrow & Co. 1994, 15.

<sup>99</sup> N.J. Barton, *The Lost Rivers of London*. London: Phoenix House Press Ltd. 1962, 27.

<sup>100</sup> D. Gardiner, *Canterbury*. London: The Sheldon Press. 1923, 9.

<sup>101</sup> Tim Eaton, *Plundering the Past*. Stroud: Tempus Publishing Ltd. 2000, 111.

<sup>102</sup> A.K. Astbury, *The Black Fens*. Cambridge: The Golden Head Press Ltd. 1958, 44.

for Bury St Edmonds.<sup>103</sup> Barley reported that a boat-load of dressed stone was discovered in the bed of the Carr Dyke at Morton, 3 miles to the north of Bourne.<sup>104</sup>

Unlike the anchors the lost loads do seem to be direct evidence of use of the rivers. The records from Hexham, Prickwillow and the Carr Dyke provide information of use of sections of rivers for which no other evidence has been found.

#### 4.2.4 Wharfs

Wharfs by their nature are on the banks of rivers normally close to habitations or the source of raw materials. In towns most river banks have been redeveloped over the last four hundred years. Thus there are no visible remains of the quays in the college grounds upstream of Magdalene Bridge in Cambridge. The remains of medieval wharfs on the Thames, Severn, Great Ouse and Trent and at Lincoln and other riparian cities have not been investigated because there is adequate evidence of the use of these rivers from other sources. The archaeological evidence of medieval wharfs on the Fens, Somerset Levels, Humber Levels, Romney Marsh and Pevensey Marsh have been investigated by others.<sup>105</sup> Their number and locations indicate that the waterways in these areas were intensively used.

Reports of remains of wharfs on non-tidal rivers include: a prehistoric wharf on the Thames at Runnymede;<sup>106</sup> Roman wharfs at Kenchester, 6 miles upstream of Hereford;<sup>107</sup> Canterbury on the Kentish Stour;<sup>108</sup> Ilcester on the Yeo.<sup>109</sup> Selkirk states that a suspected Roman barge basin has been found at Mordon on the Skerne and jetties on the Og, a

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<sup>103</sup> Sir Harry Godwin, *Fenland: its ancient past and uncertain future*. Cambridge: Cambridge University Press. 1978, 100.

<sup>104</sup> M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, Vol. 1, Part 1. (1936), 17.

<sup>105</sup> See Appendix A.

<sup>106</sup> Stuart Needham, 'Holocene alluviation and interstratified settlement evidence in the Thames valley at Runnymede Bridge.' In Stuart Needham and Mark G Macklin, Eds. *Alluvial Archaeology in Britain*. Oxbow Monograph 27. 1992, 255.

<sup>107</sup> H.C. Moore, 'The supposed Roman Bridge in the grounds of the New Weir, Kenchester.' *The Transactions of the Woolhope Naturalists Field Club for 1893-4.* 1896, 56-60.

<sup>108</sup> H.T. Mead and K.H. Jones, 'Roman Site and Finds, Stour Street, Canterbury.' *Archaeologia Cantiana*, Vol. 48. (1936), 219.

<sup>109</sup> Charles Hadfield, *The Canals of South West England*. Newton Abbot: David & Charles. 1967, 83.

tributary of the Kennet.<sup>110</sup> There were Viking docks at Willington 5 miles east of Bedford on the Great Ouse.<sup>111</sup>

There was a concentration of medieval wharfs on the Cam and its tributaries upstream of the mills in Cambridge. A stone wall was built in the 14<sup>th</sup> century on the west side of Peterhouse which is upstream of the King's Mills. The College records show that the wall was built *juxta aquam* and there is a gate in the wall, now blocked up, with the arms of John Hotham, Bishop of Ely (1316-1337) above the gate on the outside and of John Alcock, Bishop of Ely (1486-1500) on the inside. The gateway appears to be part of the original construction. This would seem to imply that boats used the river upstream of the mills between 1316 and 1500.<sup>112</sup> There is a good stone wharf at the upstream end of Saffron Walden<sup>113</sup> and a brick Water Gate at Walden Abbey, 'apparently of the 16<sup>th</sup> century'.<sup>114</sup> Parker considers that blocks of stone may have been used for 'a small wharf or landing-stage' at Barrington.<sup>115</sup> This appears to be a unique collection of wharfs in a lowland area where there are few other records of the use of the rivers.

The discovery of the stone wharf and slipway dating to the late 12<sup>th</sup> century at Skenfrith in 2003 on a river with a present mean flow of  $6.0 \text{ m}^3 \text{ s}^{-1}$  and gradient of  $1.9 \text{ m km}^{-1}$  is, at present, unique.<sup>116</sup> The wharf and slipway had previously been buried and their presence was totally unexpected. It is too early to know if similar structures will be found elsewhere. The discovery of the wharf and slipway at Skenfrith is of major importance for it provides evidence of the intensive use of a river having a pool and riffle form; a type of river for which little written evidence of use has been found.

#### 4.2.5 Weirs and Fishtraps

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<sup>110</sup> Raymond Selkirk, *Chester-Le Street & its place in history*. Durham: Casdec Printcentre. 2001, 143.

<sup>111</sup> Dorothy Summers, *The Great Ouse*. Newton Abbot: David & Charles. 1973, 25.

<sup>112</sup> T.A. Walker, *Peterhouse*. 2<sup>nd</sup> Edition. Cambridge: W. Heffer & Sons Ltd, 1935, 10.

Robert Willis, *The Architectural History of the University of Cambridge. Volume 1*. Cambridge: Cambridge University Press. 1886. Reprint 1988, 14.

<sup>113</sup> Haslam, S. M., Personal communication 2/4/2006.

<sup>114</sup> Royal Commission on Historical Monuments, *An Inventory of the Historical Monuments in Essex. Volume 1*. HMSO 1916, 359.

<sup>115</sup> R. Parker, 'Riverside Moated Sites at Barrington and Malton.' In Elsie M. Widdowson, *Cam or Rhee*. Cambridge. 1973, 30.

<sup>116</sup> Phil Evans and Kevin Trott, 'Excavations at Skenfrith Castle, 2003.' Report of a CADW sponsored excavation. Paper unpublished at July 2008.

It might have been hoped that the discovery of the remains of medieval weirs and fishtraps would show which rivers were so obstructed that they could not be used. However the remains are so few<sup>117</sup> that no pattern can be discerned. Similarly records of groynes built to direct flow into one channel and to cause increased siltation in another are too few to be analysed.<sup>118</sup>

The direct archaeological evidence is too sparse to provide more than occasional evidence for the use of rivers. However it does show that the use of boats was widespread.

#### **4.2.6 Transport of stone**

Heer wrote 'it has been argued that Romanesque churches were constructed near water because it "was holy, a direct means of communicating with the womb of the world where it lay in the depths of the earth"'.<sup>119</sup> It is considered here more likely that cathedrals and large churches were built near rivers because of the low cost of water transport.

The technology existed throughout the medieval period to move stone from one end of the country to the other by land. Thus in the 14<sup>th</sup> and 15<sup>th</sup> centuries stone was moved from Taynton to Windsor Castle, a distance of 60 miles by land.<sup>120</sup> But this was the exception. It is generally accepted that normally when stone was moved a long distance it was transported on water.<sup>121</sup> Some stone must have been moved by land where there was no suitable river.<sup>122</sup> Other stone must have been moved on water, as for Caen stone.

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<sup>117</sup> See for example:- C.R. Salisbury, 'Primitive British Fishweirs.' In G.L. Good, *et al.*, Eds. *Waterfront archaeology*. Council for British Archaeology. CBA Research Report 74. 1991, 76-87.

D.J. Pannett, 'Fish Weirs on the River Severn.' *Folk Life*. (1987-88), 55-69.

D.J. Pannett, 'Fish Weirs on the River Severn.' In Trevor Rowley, Ed. *The Evolution of Marshland Landscape*. Oxford: Oxford University Department for External Studies. 1981, 144-155.

<sup>118</sup> See for example: A.G. Brown, *et al.* 'Floodplain evolution in the East Midlands, United Kingdom: the Lateglacial and Flandrian alluvial record from the Soar and Nene valleys.' *Philosophical Transactions of the Royal Society. London. Series A*. Part 348. (1994), 261-293.

<sup>119</sup> F. Heer, Translated by Janet Sondheimer. *The medieval world: Europe, 1100-1350*. London: Weidenfeld and Nicolson. 1962, 153.

<sup>120</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber & Faber Limited. 1972, 22.

<sup>121</sup> eg. J.L. Bolton, *The Medieval English Economy 1150-1500*. London: JM Dent & Sons Ltd. 1980, 152.

<sup>122</sup> Eileen Roberts, 'Totternhoe Stone and Flint in Hertfordshire Churches.' *Medieval Archaeology*. Vol. 18. (1974), 66-84.



However no previous work has been found which attempted to assess the normal maximum distance for the transport of stone on land.

The cathedrals and colleges existing in 1600 have been chosen for investigation as they form a well-defined set, they have a wide geographical distribution, they are still in existence, except for the old St Paul's cathedral in London, and most have been well studied. For some stone there are records of the mode of transport, the Building Accounts of Exeter Cathedral being particularly good. The quality of the information for the other cathedrals is varied and many of the estimates which have been made here may be revised in the future. The estimates are listed in Appendix C.

The main challenge has been to assess whether the amount of stone from any source was significant. The object has been to list all sources of more than about twenty tonnes of stone, about twenty cart loads. However since in almost every building there is no record of the amount of each type of stone used, reliance has had to be placed on the available records to assess where in the structure the stone was used and hence an estimate has been made of the likely quantities. For some buildings the sources are given for single stones which might have been moved on horseback.<sup>123</sup> Where this has been identified the information is not included.

Appendix C shows that if the Beult, Mole, Kentish Stour and Windrush were used for transport, the only two places where stone must have been transported by land for more than one day's journey was the relatively small amount of stone taken from Selbourne to Winchester after 1300, even though the Itchen was still usable,<sup>124</sup> and some of the stone for the Oxford Colleges brought from Taynton for use in preference to the rotten local stone.

The normal meaning of journey (*journée*) from 1250 to about 1550 was one day's travel.<sup>125</sup> No study has been found of the normal distance that workmen travelled away from their homes in the period 1189-1600. The many studies of travelling folk and the

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<sup>123</sup> Eg. 'One to ten blocks.' John F. Potter, 'The geology of London Basin churches: the Palaeogene rocks.' *Tertiary Research*. Vol. 19 (3+4). 1999, 117-138, 123.

<sup>124</sup> See *The Local Port Book of Southampton for 1439-40*. Editor Henry S. Cobb. Southampton: At the University. 1961, xiii-xiv.

<sup>125</sup> 'Journey.' *Oxford English Dictionary*. Electronic edition.

journeys of the rich may have hidden the fact that most people were very unwilling to sleep away from their homes.

These figures do seem to indicate that in general those who chose the sites of the cathedrals selected places which were accessible to what they thought were suitable supplies of stone, except for London whose position was determined by other factors. However some Oxford colleges and Chester, Litchfield and Carlisle cathedrals have suffered from excessive wear to the stonework due to the use of poor quality local stone.<sup>126</sup>

The only comparable figures for the movement of stone, that have been found, are Eaton's record of the distance that stone was moved from Roman sites in Northumberland for reuse in a church building or castle. He found one example of stone being moved 9.4 km on the Tyne. The maximum distance that stone was moved by land fell steadily from 5.4 km in 1020 to 0.6 km in 1450. Eaton also listed the distances to sites from which Roman stone was not taken. These fell steadily from 6 km in 1180 to 1.8 km in 1430.<sup>127</sup>

Hutchinson wrote that many castles were sited so that they could be reached by boat.<sup>128</sup> However the extent to which stone for castles, abbeys, monasteries and other buildings was transported by river has not yet been studied.

#### **4.2.7 Transport of pottery**

To study the movement of goods in the medieval period it is necessary to know where the item originated, where it was found and if possible how it was transported. Normally the third is not known. Vince has shown that medieval pottery production was carried out in a limited number of places. Thus the distribution of the fragments links the source to the finding place. He states that 'The distances over which pottery was carried vary from period to period but were actually as high or higher in the Middle to Late Anglo-Saxon

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<sup>126</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber & Faber Ltd. 1972, 87, 110, 125-6.

<sup>127</sup> Tim Eaton, *Plundering the Past*. Stroud: Tempus Publishing Ltd. 2000, 31-35.

<sup>128</sup> Gillian Hutchinson, *Medieval Ships and Shipping*. London: Leicester University Press. 1994, 125-126.

Period as in the 13<sup>th</sup> to 14<sup>th</sup> centuries.’<sup>129</sup> This may imply that the transport system was more efficient at the earlier date or that the number of production centres had increased by the later date.

Symonds claimed that the local distribution of pottery was normally by road but long distance transport was by river.<sup>130</sup> She wrote:

According to their [Edwards and Hindle] reading of medieval documents most of the rivers of Lincolnshire were partially navigable with the exception of the Bain. ... The distribution of pottery also suggests that the Bain was used to transport pottery from Tattershall up to Horncastle.

This is of particular interest as it is the only evidence which has been found that goods were taken to or from Horncastle by river.

It seems that Spoerry in his analysis of the distribution of pottery in the Fenland assumed that all the distribution was by water transport<sup>131</sup> both because of the nature of the Fenland and because pottery is less likely to be broken when transported by river than by land.<sup>132</sup> While the pottery of London has been well studied, at present, it seems no link has been found between sources and modes of transport.<sup>133</sup>

#### **4.2.8 Transport of timber and wood**

It is convenient to consider here the evidence concerning the transport of timber and wood although the evidence is mostly written rather than archaeological. Rackham wrote that ‘When the twelfth-century monks of Abingdon (Berks) wanted timber, they sent twelve-ox wains 120 miles to North Wales, passing by on the way the third and fourth largest concentrations of woodland in England at the time.’<sup>134</sup> The original text stated

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<sup>129</sup> Alan Vince, ‘Ceramic Petrology and the Study of Anglo-Saxon and Later Medieval Ceramics.’ *Medieval Archaeology*. Vol. 49. (2005), 219.

<sup>130</sup> Leigh Andrea Symonds, ‘Landscape and Social Practice.’ *BAR*. British Series 345. (2003), 23 and 128.

<sup>131</sup> Paul Spoerry, ‘Town and Country in the Medieval Fenland.’ In Kate Giles and Christopher Dyer, Eds. *Town and Country in the Middle Ages*. Leeds: Maney Publishing. 2007, 101.

<sup>132</sup> John Blair, ‘Introduction.’ In Blair, 2007, 14.

<sup>133</sup> A.G. Vince, ‘The Saxon and Medieval Pottery of London: A Review.’ *Medieval Archaeology*. Vol. 29. (1985), 25-89.

<sup>134</sup> Oliver Rackham, *The History of the Countryside*. London: Phoenix Press. 1986, 264.

that they went to Shrewsbury.<sup>135</sup> From this statement he made an inference which may be challenged. He wrote 'There was little economizing in transport, and the documents refuse to support the theory that heavy materials were always of local origin or else were moved by water.' While the records of the transport of stone by land show that it was normally limited to relatively short distances, timber was often transported over much greater distances. Thus studies of the timber in Salisbury cathedral have shown that it was brought from Ireland and Trivelles Forest near Kilpeck, Herefordshire in 1224 and from the forest of Dean in 1234.<sup>136</sup> Large good quality timber was only available from a very few sources. The existence of woodland did not mean that suitable timber existed within it and even less that the timber could be purchased.

There is, at present, a remarkable lack of information about the historic transport of timber but this may change if Simpson's survey at Salisbury is repeated elsewhere.

In 1558 the burning of timber for charcoal was prohibited within 'fourteen Miles of the Sea, or of any Part of the Rivers of *Thames, Severn, Wye, Humber, Dee, Tine, Teese, Trent* or any other River, Creek or Stream, by the which Carriage is commonly used by Boat or other Vessel to any Part of the Sea.'<sup>137</sup> Of itself this does not state which rivers were 'commonly used'. However the second clause of the Act provides that the Act 'shall not extend to the County of *Sussex* nor to the Weild of *Kent*, nor to any of the Parishes of *Charlewood, Newdigate* and *Ligh* in the Weild of the county of *Surrey*.' This implies that Charlewood, Newdigate and Ligh were within fourteen miles of a 'commonly used river', that is that the upper parts of either the Mole, Wey or both were used by boats in 1558.

Other examples of evidence of the use of rivers for the transport of wood include a grant that was made in 1563 of a 'licence to make cole from timber in Haye Chistelin alias Chistlin Haye parcel of the possessions of Ambrose, earl of Warwick.'<sup>138</sup> This seems to

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<sup>135</sup> *Chronicon Monasterii de Abingdon, A.D. 201-1189*. Rolls Series London, 1858. ii. 150. Cited in L.F. Salzman, *Building in England down to 1540*. Oxford: Clarendon Press. 1952, 245.

<sup>136</sup> Gavin Simpson, 'Documentary and Dendrochronological Evidence for the Building of Salisbury Cathedral.' In Lorraine Keen and Thomas Cocke, Eds. *Mediaeval Art and Architecture at Salisbury Cathedral*. The British Archaeological Association Conference Transactions. XVII. 1996, 14, 11.

<sup>137</sup> 1558 1 Elizabeth I. c.15.

<sup>138</sup> Calendar of Patent Rolls, 1560-63, 478.

imply that the Penk at Penkridge was ‘commonly used by boats’.<sup>139</sup> There is also a record from 1332 of the appointment of William de Swynmor to convey timber and brushwood on the Conway from near Llanrwst to the sea<sup>140</sup> which shows that timber was moved on steep shallow rivers at that date.

While it is known that timber was floated down the Severn<sup>141</sup> the only other four clear references which have been found to the floating of timber all come from Sussex. The Adur and the Ouse Navigation Acts<sup>142</sup> provided for the floating of rafts of timber. In 1634 two men were ‘towing certaine tymber from’ Scots Float to Rye but the cocke overturned and they were drowned.<sup>143</sup> In 1771 timber was taken from Fletching to Landport near Lewes and then floated to Newhaven.<sup>144</sup>

The supply of wood to London in the period 1290-1400 has been studied by Galloway *et al.*<sup>145</sup> They state that it was unusual to carry firewood more than ‘12 to 18 miles overland’ in the early 14<sup>th</sup> century. However their map shows that all sources of supply were less than 10 miles from water transport on the Thames, Medway, Lea, Colne or Wey in 1300 and 8 miles in 1400,.

In 1587 Harrison noted the shortage of wood at Cambridge which meant that it had to be brought from ‘Essex and other places thereabouts’.<sup>146</sup> Lee, from his study of college accounts, wrote that wood and charcoal had to be transported by land distances up to 15 miles and that turfs and sedge were brought from the fenland by barge.<sup>147</sup> It seems that to transport wood by land for this distance was unusual. For most other places it was either available locally or was transported by water.

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<sup>139</sup> See Appendix A.

<sup>140</sup> Calendar of Patent Rolls, 1330-34, 367.

<sup>141</sup> Calendar of Patent Rolls, 1281-92, 116.

<sup>142</sup> 47 George III c. 117 and 1790 30 George III c. 52.

<sup>143</sup> *Sussex Coroners' Inquests 1603-1688*. Editor R.F. Hunnisett. Kew: PRO Publications. 1998, 82.

<sup>144</sup> T.W. Horsfield, *History of Sussex*. Volume 1. 377. Cited in *V.C.H. Sussex, Vol. 2*, 322.

<sup>145</sup> James A. Galloway, *et al.*, ‘Fuelling the city: production and distribution of firewood and fuel in London’s region, 1290-1400.’ *Economic History Review*, Vol. 49. (1996), 468.

<sup>146</sup> William Harrison, Georges Edelen, Ed. *The Description of England*. Washington; The Folger Shakespeare Library and New York: Dover Publications Inc. 1968, 67.

<sup>147</sup> John S. Lee, *Cambridge and its Economic Region 1450-1560*. Studies in Regional and Local History Vol. 3. Hatfield: University of Hertfordshire Press. 2005, 161.

## **Chapter 4.3 Written Evidence of Use**

### **4.3.1 Introduction**

For most river journeys in the period 1189-1600 there is not, and never has been, a written record. It is too much to expect that a diary of a boatman will be found from the 13<sup>th</sup> or 14<sup>th</sup> century. Even if such a record was found it is likely that it would record the journeys of a large barge and so give little information about the limits to which boats were taken.

The writings of the later middle ages varied in competence and extent. Flower has drawn attention to the lack of geographical balance in the records. He stated that it is impossible to determine whether this is due to the 'peripatetic nature of the Court of King's Bench' or the location of the 'important waterways'.<sup>148</sup> Dyer has shown that most written evidence is socially selective<sup>149</sup> towards the upper classes which is frustrating for Norden wrote that it was the 'meaner' who lived 'by the barge, by the wherrye, or ferrye'.<sup>150</sup>

Many written records are in a form which makes it impossible to know whether the use of a section of a river was intensive or occasional or if use was for a long period of time or short. In the case of the boats which floated over the churchyard wall in St. Neots in 1571<sup>151</sup> the location does seem to indicate that this would have been only an occasional event. Some types of evidence show that part of a river was used but do not indicate which part.

At an early stage of the research for this thesis it was decided that original manuscripts would seldom be studied for three reasons. References to the use of rivers are scattered among other records and there are no unpublished records where it is expected that more than one record in a thousand would provide useful information. Thus time available for research was more usefully employed in studying printed records. Secondly, in most pre-17<sup>th</sup> century manuscripts there are problems of legibility, script and in extending

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<sup>148</sup> *Public Works in Mediaeval Law, Volume I*. Editor Flower, C.T. Selden Society, Vol. 32. 1915, xxix..

<sup>149</sup> Christopher Dyer, 'Documentary Evidence: Problems and Enquiries.' In Grenville Astill and Annie Grant, Eds. *The Countryside of Medieval England*. Oxford: Blackwell. 1988, 12 ff.

<sup>150</sup> John Norden, Ed. Sir Henry Ellis, *Speculi Britanniae Pars. An Historical and Chorographical Description of the County of Essex. 1594*. London: Camden Society. 1840, xi.

<sup>151</sup> C.F. Tebbutt, *St. Neots*. Chichester: Phillimore. 1978, 92.

abbreviations. Thirdly, the manuscripts are fragile and it seemed inappropriate to handle them with such a low proportion of relevant records. This has, in general, provided very little difficulty as photocopies are available from all the official depositories. They are however expensive and are not suitable for relatively random searches.

#### **4.3.2 The Royal Rolls**

Some historians seem to have assumed that the Calendars of Patent Rolls, Close Rolls and other Calendars, are complete records. These are, as their name implies, extracts from the manuscripts and some common lists have been omitted from the printed editions. In general what is needed has been extracted but in the case of pontage grants this may not have been the case. The initial grants have been listed at Appendix L. The pontage grants were sometimes tolls only on goods passing over the bridge. At other times and places the tolls were charged on goods passing both over and under the bridge. It is known that most of the rates charged on the various goods have been omitted from the printed Calendars.<sup>152</sup> It seems likely that the information as to whether cargoes in boats were to be charged or not has also been omitted. This could be checked by examining the original documents but it would still not be known whether the scribe had copied a standard form of pontage grant or if the provisions were specific for a particular bridge.

A second problem with the Royal Rolls is that the type of information recorded in them changed over the years.<sup>153</sup> The early records include the appointment of commissioners to investigate the obstruction of rivers. Later this work was the responsibility of the Commissioners of Sewers whose records have mostly not survived.<sup>154</sup> The later Patent Rolls did not record the movement of goods for the king. By the reign of Elizabeth the Patent Rolls were mostly concerned with leases, pardons, pensions, presentations and similar topics. It is stated that the descriptions of land are generally left out of the calendars except for 'entries of special interest, such as those relating to property in London which are calendared in full.'<sup>155</sup> The entry for 1565 for pontage at Staines bridge

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<sup>152</sup> Calendar of Patent Rolls, 1327-30, viii.

<sup>153</sup> Matthew Johnson, *An Archaeology of Capitalism*. Oxford: Blackwell. 1996, 40-41.

<sup>154</sup> A.E.B. Owen, 'Records of Commissions of Sewers.' *History*. Vol. LII. (1967), 35-38, 36.

<sup>155</sup> Calendar of Patent Rolls, 1558-60, v.

includes the statement that a toll was to be paid on goods passing under the bridge.<sup>156</sup> This information may have been included in the Calendar because it was unusual or because the river at Staines was the responsibility of the City of London.

These changes in the nature of the Rolls make it impossible to make comparisons of the records of the use of rivers for different periods.

#### **4.3.3 Accounts**

Research has been carried out into the accounts of four Customs Ports by Uhler,<sup>157</sup> the Southampton Port Books by various authors,<sup>158</sup> and the national purveyance accounts for the period 1290 to 1348 by Langdon.<sup>159</sup> The building accounts for Exeter Cathedral and York Minster are extant and reports about them have been published. These reports have been studied and relevant details extracted.

However Elton stated that the mass of extant financial information about the state for the period 1200-1600 is so vast that he could not even describe it.<sup>160</sup> Almost any entry in these rolls could refer to the carriage of goods on a river. There also remain to be considered the building accounts of the other cathedrals, minsters, monasteries, palaces and stately homes and the accounts relating to their purchase of food and fuel.

There are in Appendix A a few records taken from the accounts or minutes of the Parish records. There are many other references to the movement of bells, stone and people by water which have not been found, extracted and listed.

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<sup>156</sup> Calendar of Patent Rolls, 1563-65, 335.

<sup>157</sup> Sharron G. Uhler 'English Customs Ports 1275-1343.' Unpub. PhD thesis, Univ. of St Andrews. 1977.

<sup>158</sup> Southampton record Book Series.

<sup>159</sup> John Langdon, 'Inland water transport in medieval England.' *Journal of Historical Geography*, Vol. 19, (1993).

<sup>160</sup> G.R. Elton, *England 1200-1640*. London: Sources of History Ltd. in association with Hodder and Stoughton Limited. 1969, 46.



#### 4.3.4 Eyres and Inquests

One of the more productive sources of historic records of the use of rivers is the records of people falling from boats into the water of a named river and drowning. The eyres received reports of all deaths by misadventure and some of their records are available for the period 1194-1348. Twelve printed records of visitations to counties by eyres have been examined. If it is assumed that the records are complete and that an eyre was held every seven years in each county then about 84 county-years have been examined.<sup>161</sup> In addition a few coroners records for the sixteenth century have been printed. 181 county-years of these have been examined. There were 41 historic counties and over a period of 411 years there were a potential 16,851 county-years of records. Thus records of about 1.6% of the potential records of death may have been examined. The proportion of boat users who fell out of their boats and died each year is unknown.

There are two particularly interesting records from the eyres. Between 1235 and 1243 two men were drowned falling from boats into the Wear downstream of Durham and one man was killed by a boat falling on him. There are no other records from the 13<sup>th</sup> century of the use of this section of the river. Between 1255 and 1275 two men fell from boats on an eight mile section of the Teme and were drowned.

It has not been possible to investigate the records of boats in the probate inventories except for a few from Hampshire. Thirsk has shown that there are also records of boats for the Holland region of Lincolnshire<sup>162</sup> and it seems possible that there may be many more records in County Record Offices and other repositories similar to those for the Kentish fishing communities analysed by Sweetinburgh.<sup>163</sup>

A similar source of evidence is provided by the *post-mortem* accounts of Thomas West who traded on the Thames and died in 1573. Prior wrote a paper about these accounts

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<sup>161</sup> For a list of surviving rolls see: David Crook, *Records of the General Eyre*. Public Record Office Handbooks. Number 20. 1982, 13.

<sup>162</sup> Joan Thirsk, *Fenland Farming in the sixteenth century*. Department of English Local History Occasional Papers No. 3. Leicester University Press. 1965, 26-27.

<sup>163</sup> Sheila Sweetinburgh, 'Strategies of inheritance among Kentish fishing communities in the later Middle Ages.' *The History of the Family*. 11 (2006), 93-105.

and listed the places at which West traded and the goods which he sold.<sup>164</sup> No other record of this type has been found.

#### **4.3.5 Law Reports**

The records of the Law Courts provide evidence of rivers being illegally obstructed and of some rivers which were not maintained to the required standard. There are more than four thousand extant rolls from the King's Bench, Common Pleas and Exchequer alone<sup>165</sup> and many records of the County and Manor courts. Only a very small fraction of these have been examined and printed. Many have provided evidence of the use of rivers.

#### **4.3.6 Records of Tolls**

It seems that tolls were charged on some rivers in the 13<sup>th</sup> century and charges were made for the release of water from weirs on the Thames in the 17<sup>th</sup> century, and some authors would claim before that date. However none of the account books for these has been found.

Only one record has been found which makes it possible to estimate the number of boats on one section of one river. There is a record in the *Rotuli Hundredorum*<sup>166</sup> that in 1273 Robert of Donham levied a toll of a halfpenny (more or less) per ship passing from Lincoln by Fossey to Dunham. Dunham is a village on the Trent upstream of Torksey. In one year his receipts amounted to half a mark which means that about 160 ships paid a toll in the year. This figure would not include ships passing downstream from Torksey.<sup>167</sup>

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<sup>164</sup> Mary Prior, 'The Accounts of Thomas West of Wallingford, a Sixteenth-Century Trader on the Thames.' *Oxoniensia*, Vol. XLVI. 1981, 73-93.

<sup>165</sup> G.R. Elton, *England 1200-1640*. London: Sources of History Ltd. in association with Hodder and Stoughton Limited. 1969, 56.

<sup>166</sup> *Rotuli Hundredorum*, I, 320a.

<sup>167</sup> J.W.F. Hill, *Medieval Lincoln*. Cambridge: Cambridge University Press. 1948, 311.

For the period 1294 to 1348 Langdon found 26 references to boats used for purveyance on the Trent.<sup>168</sup> In those 55 years about 8,800 vessels would have passed Dunham. It seems that the use of boats for the supply of the army and Royal Household was only a small fraction of the total number of journeys on this section of the Trent.

This may be compared with the records of the use of boats to take people to milk cattle.<sup>169</sup> There is one record which has been found and if it is assumed that cows were milked on 250 days a year, twice a day, for 400 years by five families then there is one found record of historic use for a million journeys.

#### 4.3.7 Maps

In general, maps from the period 1189-1600 show rivers but not roads between towns. This may imply that roads were less important or that they did not exist. (Appendix O.)

Maps drawn before 1570 do not portray the rivers clearly enough to provide any information about their condition. After that date big rivers are shown with double lines, streams as a single line. The available reproductions of the maps of Saxton<sup>170</sup> and Speed<sup>171</sup> do not allow for any deductions to be made about the form of the rivers except for the location of ponds or lakes in their course or at their source. However Norden on his map of Essex draws the Pant at Radwinter and the Stort above Stortford with double lines. When compared with other rivers it would seem that the physical size of these two rivers has been considerably reduced since 1600. This may imply that they were usable.

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<sup>168</sup> John Langdon, 'Inland water transport in medieval England.' *Journal of Historical Geography*, Vol. 19, (1993).

<sup>169</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 461.

<sup>170</sup> Christopher Saxton, *An Atlas of England and Wales. Engraved 1574-1578*. London: The Collectors Library of Fine Art. 1979.

<sup>171</sup> John Speed, *Theatre of the Empire of Great Britaine, Parts I, II, III and IV*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1953-4.

#### 4.3.8 The limit of upstream use of rivers

The written records sometimes show that there was use of a river at a certain place but do not indicate how much further upstream the river was used. One example of this relates to the river Wensum. The City of Norwich exercised a wharfage monopoly from 1379.<sup>172</sup> In 1671 the City of Norwich maintained a common quay for the unloading of vessels. The city claimed that there was a custom that every vessel passing through the river should pay a toll, whether it unloaded at the quay or not.<sup>173</sup> This implies that vessels went from upstream of Norwich to downstream of the city without stopping. The only other record of the use of the rivers upstream of Norwich is a statement that in 1295 Taverham, 7 miles upstream of Norwich, was included in a list of ‘maritime’ places.<sup>174</sup>

Another example comes from the Trent where in 1738 it was held that there was an ancient public right of navigation through Nottingham and so also upstream of Nottingham.<sup>175</sup>

Langdon found no evidence of the use of the Thames upstream of Oxford, Edwards found one record of use and yet Blair after his study of medieval texts and accounts wrote that at *Kyndelwere* ‘There must have been a great deal of coming and going around the mill with grain-laden boats, belonging both to tenants obliged to grind here and to other landowners who found it a convenient mill to patronize.’<sup>176</sup> In addition Blair found evidence for the regular passage of ships from Faringdon to the sea.<sup>177</sup>

These examples show that three of the rivers upstream of cities were regularly used by boats but the written records do not indicate the limits of use or the intensity of use nor do they establish if other rivers were used in a similar way.

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<sup>172</sup> *The Records of the City of Norwich, Volume 2*. Editors W. Hudson & J.C. Tingley. 1910, 233-6. Cited in A. Carter, ‘Norwich.’ In Gustav Milne and Brian Hopley, Eds. *Waterfront Archaeology in Britain and Northern Europe*. CBA Research Report No. 41, 1981, 139.

<sup>173</sup> *Haspurt v Wills*, (1671), 1 Vent, 71.

<sup>174</sup> Calendar of Patent Rolls, 1292-1301, 169.

<sup>175</sup> *The Mayor and Burgesses of the Town of Nottingham v Richard Lambert*. (1738) Willes, 111-119.

<sup>176</sup> John Blair, ‘Transport and Canal-Building on the Upper Thames, 1000-1300.’ In Blair, 2007, 282.

<sup>177</sup> *Ibid.* page 260.

#### 4.3.9 Place-Name Evidence

Place-name evidence for the use of rivers has recently been considered by Cole.<sup>178</sup> Most of the information relating to ports, hythes and other landing places confirmed usage which was previously known from other sources. However the fact that the name *lād* (the place-name term for an artificial watercourse) implies that there was not only an artificial waterway leading to a place but also a usable waterway at the other end of it and this confirms the intensive use that was made of the Fens and Somerset Levels.

Cole considered that the presence of *ēa-tūn* (the place-name term for a river settlement) in a name implied that the settlement had a special responsibility for the river. This interpretation is certainly significant. Cameron states that *ēa* ‘seems to have been used of a waterway larger than a brook or burn.’<sup>179</sup> Thus it seems to refer to a river on which boats might be able to be used. Cole wrote that the name might be linked with the maintenance of a ford or with responsibility for keeping the river open for navigation. The former suggestion seems to be unlikely because the places are mostly not on recognisable land routes. Cole preferred the latter because most places with the name *ēa-tūn* are on the upper reaches of major rivers or their tributaries.

If it is established that all places with *ēa-tūn* in their name were located where boats used the rivers then this would provide additional confirmation that the network of usable rivers was much more extensive in the medieval period than it is now.

#### 4.3.10 Recreation

Fitzstephen described water jousting on the Thames in the 12<sup>th</sup> century<sup>180</sup> as did Stowe at the end of the 16<sup>th</sup> century.<sup>181</sup> It seems likely that this sport is limited to those societies in which the use of boats is not uncommon.

<sup>178</sup> Ann Cole, ‘The Place-Name Evidence for Water Transport in Early Medieval England.’ In Blair, 2007, 55-84.

<sup>179</sup> Kenneth Cameron, *English Place Names*. New Edition. London: B T Batsford Ltd. 1996, 167.

<sup>180</sup> William Fitzstephen, *Descriptio nobilissimae civitatis Londoniae*. Cited in John Marshall Carter, *Medieval Games*. London: Greenwood Press. 1992, 128.

<sup>181</sup> John Stow, *A Survey of London. Text of 1603. Volume I*. Ed. Charles Lethbridge Kingsford. Oxford: Clarendon Press. 1908, 92, 94.

Taking one's leisure on the water is portrayed in medieval manuscripts, often with musicians in the boats, but where people took to the water and when is unknown. The first book on swimming was written in 1587 in the hope that it would reduce the number of young men at Cambridge who drowned.<sup>182</sup> It would seem likely that these young men fell into the water from boats rather than from the banks of the rivers.

Carter considered that of 'sixty-six sport/recreation-related crimes in the thirteenth century, twenty-eight, or 43 percent, were water-related pastimes: bathing, boating, fishing, ice skating, swimming, and water tilting.'<sup>183</sup> However his division of activities between sport/recreation and commercial use may be challenged.

#### **4.3.11 The Quality of the Evidence**

In a study such as this each piece of evidence is noted and recorded. In this thesis evidence for each river has been placed in one of two categories according to its type. This is only a crude measure. Purbeck marble was taken from Dorset to Durham in 1170-76 and can be seen in the Galilee Chapel of the cathedral. It would be extraordinary if it was not taken by sea to Sunderland. Clifton-Taylor is considered to be reliable and he stated that the marble was 'brought up the river to the cathedral'.<sup>184</sup> But his main interest was the places where stone was used not how it was transported. It is possible that by writing 'brought up the river' he meant brought up the river valley rather than 'transported up the river in barges'. Again writing about the Wear Clifton-Taylor wrote that Frosterley marble was floated down the river to Durham.<sup>185</sup> Selkirk wrote that the marble was rafted down the river.<sup>186</sup> It has not been possible to enquire of the authors whether they have evidence that the transport was actually on the river nor to consult any extant cathedral records..

Some records do seem to be certain, as for example when the Durham Household accounts record that goods were taken to Durham in the 16<sup>th</sup> century '*a navi in 1 keyll*,

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<sup>182</sup> E. Digby, *De Arte Natandi*. 1595.

<sup>183</sup> John Marshall Carter, *Medieval Games*. London: Greenwood Press. 1992, 88.

<sup>184</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 180.

<sup>185</sup> *Ibid.* page 187.

<sup>186</sup> Raymond Selkirk, *Chester-Le-Street & it's place in history*. Durham: Casdec Printcentre. 2001, 243.

*cum navigacione eorundem, 12d.*<sup>187</sup> [For transport by boat in one *keyll*, with freightage thereon, 12d.]

The written records of historic use vary in quality. In this thesis explicit reference is not made every time that the authenticity of a record could be queried because the boundary lines are vague.

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<sup>187</sup> *The Durham Household Book: or, the Accounts of the Bursar of the Monastery of Durham, from Pentecost 1530 – Pentecost 1534*. Editor J. Raine. Surtees Society, Vol. 18, 1844, 63.

## **Chapter 4.4 Records of Historic Use by Regions**

### **4.4.1 Introduction**

In this chapter the historic records of use of all rivers are considered. During the last two hundred years there has been a steady increase in awareness of the historic use of rivers. In 1789 during a case in the Court of King's Bench Graham, counsel for a plaintiff, said 'Few of our rivers beside the Thames and Severn were naturally navigable'.<sup>188</sup> Woolrych in the first text on 'The Law of Waters' written in 1830 accepted this statement.<sup>189</sup>

Table 13 shows the total length of non-tidal rivers which have been accepted as being navigable by previous authors and the increase in total length.

**Table 13. The length of usable rivers.**

	<b>Date</b>	<b>Length miles</b>	<b>Increase miles</b>
Graham <sup>190</sup>	1789	200	
Flower <sup>191</sup>	1915	436	236
Edwards <sup>192</sup>	1987	1199	763
Langdon <sup>193</sup>	1993	391	
Evidence Category A	2010	2141	942
Evidence Category B	2010	3073	1857

It would be expected that as the records approach completeness there would be an asymptotic approach to the actual total length of the rivers which were used. Table 13 seems to indicate that this limit is not yet being approached. The length of the rivers for which there is evidence of historic use is 78% greater in this thesis than in the previous

<sup>188</sup> *per Graham. Ball v Herbert* (1789) 3 T.R. 254-265, 255.

<sup>189</sup> Humphrey W. Woolrych, *A Treatise on the Law of Waters and of Sewers*. London: Saunders and Benning. 1830.

<sup>190</sup> *per Graham. Ball v Herbert* (1789) 3 T.R. 254-265, 255.

<sup>191</sup> *Public Works in Mediaeval Law, Volume I*. Editor C.T. Flower. Selden Society, Vol. 32. 1915, xxvi.

<sup>192</sup> J.F. Edwards, 'The Transport System of Medieval England and Wales.' Unpub. PhD thesis Univ. of Salford. 1987.

<sup>193</sup> John Langdon, 'Inland water transport in medieval England.' *Journal of Historical Geography*, Vol. 19, 1. (1993), 1-11.



comparable thesis by Edwards written in 1987. For rivers other than the Trent, Great Ouse, Thames and Severn the increase is 108%.

#### **4.4.2 Evidence of Use by Regions**

Table 14 is a list of the total lengths of the rivers for which evidence of the historic use was found by Edwards and for this thesis.

**Table 14 Regional Lengths of Historic Use.**

Column 2 is the length of non-tidal river for which Edwards found evidence of use.

Column 3 is the length of river for which category A evidence has been found by the present author.

Column 4 is the length of river for which category B evidence has been found by the present author.

Column 5 is the length of river described as being usable in the *BCU Guide*.

Distances are measured in miles.

<b>Region</b>	<b>Edwards</b>	<b>A</b>	<b>B</b>	<b>RLU</b>
North East	31	96	143	117
Yorkshire	172	261	333	371
Trent	103	182	283	284
Lincolnshire Coast	93	123	152	61
Fenland	231	368	433	434
East Anglia	30	138	209	143
Thames	168	336	434	403
South East	80	169	239	187
South West	57	73	254	159
Severn	184	321	434	387
North West	52	74	159	182
<b>Total</b>	<b>1201</b>	<b>2141</b>	<b>3073</b>	<b>2728</b>

(The remainder of this section is a summary of the information in Appendix A.)

In the North East region the form of the rivers implies that use by barges was limited to the lower reaches of the rivers and other sections which had low gradient. Thus there are records of a ‘Stanbate’ (a boat used for moving stones) being used at Durham from 1336 to 1415.<sup>194</sup> The records of the Courts of Eyre show that on the Wear between 1235 and 1243 two people drowned falling from boats between Durham and the sea and one was killed by a boat which he was building at Durham falling on him. Thus it seems that at that time the use of the river was moderately intensive. Records have not been found for other periods. There are two records from the 16<sup>th</sup> century of goods being transported on the river upstream to Durham. It is, at present, impossible to know if the lack of evidence of the use of the river in the 15<sup>th</sup> century is due to the river being braided and so unusable, to the reduction in transport due to the reduced population, increased violence in the area or a reduction in extant records.

Similar comments could be made about the Tweed and Tyne but records of the use of the Tees between Whorton Falls and Cleasby are noticeably lacking. The names of the settlements on the Leven, Great Ayton and Little Ayton are of particular interest. As stated above, Cole suggested that settlements with these names had a responsibility for keeping the river open for navigation. If this is correct then the Leven was a more usable river when the settlements received their names than it is now.

No records of mills obstructing the use of rivers in the region have been found. It seems likely that this is because the rivers are liable to major floods and mills built on the main river would have been at risk of frequent destruction.

In the Yorkshire region many of the rivers are biconvex upwards. It would seem that use of the lower sections by barges was common because Camden records that in 1548 the Bishop of Durham told Henry VIII that within 10 miles of Haslewood, near Sherburn in Elmet, there were 5 navigable rivers.<sup>195</sup> In the 14<sup>th</sup> century there were several commissions appointed to investigate the obstruction of the lower sections of all the

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<sup>194</sup> For references to the use of the Wear see Section 4.5.4.

<sup>195</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 730 [x].

rivers by fish weirs and mill weirs. This seems to imply both that there were many obstructions and also that there were people using the rivers whose journeys were hindered. The recent limits of use of the Wharfe and Ure are well upstream of the recorded limit of historic use. In the case of the Ure this is known to be partly due to a lack of records as it is known that vessels used the river upstream of Boroughbridge but the limit of their usage is not known.<sup>196</sup>

The river traffic on the Trent was described in 1976 as being ‘singularly ill-documented’<sup>197</sup> and this is still the case today. In the 14<sup>th</sup> century it was considered that there was a public right of navigation over the full length of the river.<sup>198</sup> Edwards has established that there was regular use to Nottingham. There are few records from further upstream. It is recorded that ‘Primitive boats preserved in river silt have been found along the length of the Trent from the Humber Ferry to Abbey Hulton in Stoke-on-Trent.’<sup>199</sup> But it seems that braiding of the river may have stopped barges from going far upstream of Nottingham and that smaller boats were either seldom used or their use was seldom recorded. It seems likely that the lower tributaries of the Trent were used by boats as demand required as on other lowland areas. However knowledge of the use of the Tame, Anker, Sow and Penk, if it occurred, is almost totally lacking. The upper reaches of the Dove and Derwent would have been unusable due to their form but in the 17<sup>th</sup> century Isaac Walton wrote that the Dove was swelled before it fell into the Trent and was of such a breadth and depth as to be in most places navigable, were it not that the passage was frequently interrupted with fords and weirs.<sup>200</sup>

In the Lincolnshire region the Witham dominated the pattern of use but many other rivers were also used. The pottery evidence near the Bain seems to indicate that the written evidence of the use of the rivers is incomplete.<sup>201</sup> With the ready availability of boats and boatmen throughout the period it seems that there is no reason to think that any usable

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<sup>196</sup> Duchy of Lancaster and Palatinate of Lancaster: Chanceries: Enrolments 1354-1509. DL 37/63 m. 71 d. Cited in Robert Somerville, *History of the Duchy of Lancaster. Volume 1. 1265-1603*. London: The Chancellor and Council of the Duchy of Lancaster. 1953, 313.

<sup>197</sup> W.G. Hoskins, *The Age of Plunder: King Henry's England 1500-1547*. London: Longman. 1976, 198.

<sup>198</sup> ‘Royal Commission to inquire into Obstructions of the course of the Trent at Colwick.’ (1383) In *Records of the Borough of Nottingham. Volume I* Editor W.V. Steveson. Nottingham: Corporation of Nottingham. 1882.

<sup>199</sup> Richard Stone, *The River Trent*. Chichester: Phillimore. 2005, 4.

<sup>200</sup> Izaak Walton, *The Compleat Angler*. Ed. Richard le Gallienne. London: John Lane. 1904, 295-296.

<sup>201</sup> Leigh Andrea Symonds, ‘Landscape and Social Practice.’ *BAR. British Series* 345. (2003), 23 and 128.

river was unused. The steady deterioration of the Witham has already been considered. Some of the other rivers would, it seems, have required regular clearance to avoid their becoming unusable. It is now extremely difficult to establish which of the rivers, if any, had retained their natural form and which were regularly, or occasionally, maintained. The distribution of the Domesday watermills seems to indicate that there would have been little interference between mills and river use.<sup>202</sup> The smaller rivers flowing off the Wolds were more suited to milling than transport and the rivers of Holland and other level areas were unusable for milling. Thus the only rivers which seem to have been obstructed by mills were the Upper Witham and Brant where the earliest complaint, which has been found, was made in 1328.

In much of the Fenland, boats were the main, or only, form of transport. The eastern tributaries of the Great Ouse seem to have been used almost to their sources. The historic form and use of the Cam upstream of the Silver Street bridge, and of the Rhee, Granta and Bourne remain to be established. The remains of wharfs contrast with the lack of records of historic use.<sup>203</sup> Use of the Great Ouse by barges seems to have been obstructed by division of the channel below Bedford and use upstream of Bedford, if any, would have only been by small boats and so poorly recorded. It is difficult to know how much weight to put on the fact that a man drowned having fallen from a boat near Eaton on the Ouzel in 1271.<sup>204</sup> It is clear that the river was then much more usable than it is now because the marsh has been drained. It seems likely that the upper sections of the Great Ouse, Ivel and Tove were also much more usable, and so more likely to have been used, than they are now. The extent to which the mills obstructed the rivers has been overestimated by some authors because they have failed to note that most mills were on small, steep tributaries. It seems that some traffic continued on the Ouse with loads being carried over or round the weirs<sup>205</sup> but that on the middle and upper Nene the weirs were so frequent that latterly the upper section of the river became effectively unusable. It seems that after the dissolution of the monasteries even the lower Nene became impassable at times.

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<sup>202</sup> Simon Pawley, 'Domesday Watermills in Lincolnshire.' In Stewart Bennett and Nicholas Bennett, Eds. *An Historical Atlas of Lincolnshire*. Hull: University of Hull Press. 1993, 44-45.

<sup>203</sup> See Section 4.2.4.

<sup>204</sup> *Calendar of the Roll of the Justices of Eyre, 1247*. Editor G. Herbert Fowler. Bedfordshire Historical Record Society, Vol. XXI. Published by the Society. 1939, 163.

<sup>205</sup> Dispute relating to tolls on corn sold at St Neots. 1672. *Special Commissions and Depositions, P.R.O.* Cited in C.F. Tebbutt, *St. Neots*. Chichester: Phillimore. 1978, 84-86.

In the East Anglian region there seems to have been use of the rivers flowing to the north coast of Norfolk. No report of the form of these rivers in the medieval period has been found but if they were used then they must have been broader and deeper than they are now. There is evidence of the intensive use by barges of the rivers of what is now the Broads, transporting peat. The limits of historic use of the Yare, Wensum and Tud are unknown but are they known to be upstream of the limits of historic evidence. It seems that the Waveney was used to its source and that it formed a continuous waterway with the Little Ouse. There are records which show that some rivers were kept clear by the passage of boats and that others were regularly maintained.<sup>206</sup> Similarly it seems that the rivers of Suffolk and Essex were regularly used. As in Lincolnshire the rivers of Norfolk most used by boats were not suitable for mills. However it does seem that the rivers of Suffolk and Essex may have become less usable as mills migrated downstream in the 14<sup>th</sup> and 15<sup>th</sup> centuries.

Of the Thames tributaries the Lea was a Great River, an important supply route to London.<sup>207</sup> It seems that the tributaries as far upstream as the Brent were in fact used whenever they were usable. The extent to which they were blocked by rubbish is not known. There is evidence that most of the other tributaries were used and Blair has suggested that the Cherwell and Ray provided an important link between the Thames and Great Ouse.<sup>208</sup> Large quantities of Reigate stone were used in the building of London. All the authors whose works have been studied state that the stone was taken to Battersea by land. There is no indication that any have considered that the stone might have been transported on the Mole. There seems to be no more information about carts or cartage than there is about rafts or barges. While the number of records for the tributaries of the Middle Thames are relatively few their quality is unusually high and mostly late in date.

In 1632 Taylor wrote of the Thame:

Poore *Tame* all heavie and disconsolate,  
Unnavigable, scorn'd, despis'd, disgrac'd,  
Having in vaine so many paces pac'd;

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<sup>206</sup> Eg the Ant. See Appendix A.

<sup>207</sup> (1430) 9 Henry VI c 9.

<sup>208</sup> John Blair, 'Transport on the Upper Thames.' In Blair, 2007, 268-270.

Despairing and quit desperate with these harmes,  
 He hurles himselfe unwares in *Isis* armes;  
 Nor closer can the barke be to the tree,  
 Than their infolding and embracings be.<sup>209</sup>

The limit of recent usability of the Thame was at Aylesbury 31 miles upstream of the confluence. It seems that in 1632 the Thame must have been unusable due to the number of mills on the river. But such strong criticism of this, and only this tributary, does seem to imply that most of the other tributaries were usable and used.

For this thesis the rivers of the South East region have been more intensively studied than those of other regions and the limit of recent usability is upstream of the recorded limit of historic use only on the Medway, Western Rother and Salisbury Avon. Early maps show that the form of the Medway at Tonbridge and of the Test and Salisbury Avon were multi-channel but it has not been possible to assess how much this would have affected the use of the rivers. The Western Rother was modified for use by barges in the 18<sup>th</sup> century and is now deeply entrenched. The form of its channel in the period 1189-1600 is unknown. The use of the Eastern Rother was important for the market at Etchingham.<sup>210</sup> This might be taken as implying that the Kentish Stour, a wider and deeper river, would have been used to Ashford, another market town, but no records of use have been found. The quantity of use of a river depended on the demand which in turn depended on the location of the markets.

It is unfortunate that the building accounts of Salisbury Cathedral are not available for they might have shown if the building stone was transported from Tisbury by land or water. It is perhaps strange that some authors claim that rivers could only be used downstream and that they then claim that the limits of historic use were located at towns. Others might think that the towns would have been supplied with food and fuel from upstream farms and villages.

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<sup>209</sup> John Taylor, *Taylor on Thame Isis*. John Haviland. 1632. In *Works of John Taylor, The Water Poet. The First Collection*. The Spenser Society. Vol. 7. New York: Burt Franklin. 1967, 12.

<sup>210</sup> Calendar of Patent Rolls, 1348-50, 80, 177-78.

In the South West region there are few records of historic use for rivers in Dorset, Devon or Cornwall and these are mostly of Category B evidence. The form of the Dorset Stour, Axe, Exe and Dart are such that only small boats could have used them. It seems that the supply of transport in inland Devon and Cornwall was less than in other regions as the roads were also, apparently, difficult to use. Transport by sea was however plentiful. The rivers of the Somerset Levels were regularly used.

In the Severn region it seems that most, if not all, of the rivers were regularly used. The construction of the slipway and wharf at Skinfrith indicate that where required the rivers could be used on the sections which were of pool and riffle form as well as on the sections which were deep enough for boats to float along their full length.<sup>211</sup> One of the questions which has apparently not yet been considered is why boats on the Severn normally could pass the weirs easily but on the Wye they were considered to be an obstruction.

The North West region was less affluent and had smaller home and overseas markets than other regions and lacks the manorial and monastic archives which are available for some other regions.<sup>212</sup> In addition part of the area was regularly fought over. These are some of the reasons why the existing historic records of use of the Dee, Ribble and Eden are fewer than for comparable rivers in other regions. There were certainly boats on these and many of the smaller rivers but the extent to which goods were transported down the rivers is little known. Apart from the King's mill at Chester no evidence has been found of the rivers being obstructed by mills.

#### **4.4.3 Observer Bias**

In Appendix A for many rivers there is only one record of historic use. One reason for this is that at the midway point of this research a list was made of the rivers which would have been expected to have been used but for which no record was then held. Particular

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<sup>211</sup> Phil Evans and Kevin Trott, 'Excavations at Skenfrith Castle, 2003.' Report of a CADW sponsored excavation. Paper unpublished at July 2008.

<sup>212</sup> N.J. Higham, *A Frontier Landscape*. Macclesfield: Windgather Press Ltd. 2004, 12.

David Hey, Ed. *The Oxford Companion to Local and Family History*. Oxford: Oxford University Press. 1996, 1.

attention was then paid to these rivers. When one record was found attention was redirected elsewhere.

No evidence of historic use was found for five rivers which are included in the *BCU Guide*. These are in the Trent Region: Derbyshire Wye, Churnet and Mease and in the South East Region: Eden and Teise. These two groups of rivers are near the homes of the two editors of the *Guide* and it is possible that they used a different standard of usability for local and distant rivers.

The ratio of the length of rivers for which historic records of use have been found by Edwards and for this present thesis, in excess of the lengths of the four main rivers, are shown in the following table:

**Table 15 Observer Bias**

	<u>Edwards</u>	<u>This thesis</u>	<u>Percentage</u>
		<u>Category A</u>	<u>Increase</u>
North East.	31	96	209
Yorkshire.	172	261	51
Trent.	103	182	77
Lincolnshire.	93	123	32
Fens.	231	368	59
East Anglia.	30	138	360
Thames.	168	336	100
South East.	80	169	111
South West.	57	73	28
Severn.	184	321	74
North West.	52	74	40
Total.	1201	2141	78

There are various possible reasons for the significant difference between the additional records found. Firstly, they come from different sources. Edwards' records are almost



all from State Records which may have been biased due to the peripatetic nature of the Court of King's Bench. The additional records are taken from a much wider range of sources. There may be similar reasons for bias in the additional records. Although the records are taken from different periods no obvious bias has been noted due to this. But it would be wrong not to note that Edwards lives in the North West and the present author has lived in East Anglia and the South East and his wife comes from the North East. The full records of the Sussex and Kent Archaeological Societies are available in the Sussex University library and the detailed information about the rivers near the Pevensy marshes in Appendix A does seem to indicate a certain geographical bias. This bias is not due to additional erroneous entries for the South East but the failure to identify records from other areas.

#### **4.4.4 Conclusion**

The Eastern Rother upstream of Etchingham is an overgrown, deeply incised river which if it was cleared would be usable for much of the year. Downstream is a clear, usable channel. It seems that responsibility for maintaining the channel changes at Etchingham.<sup>213</sup> The only reason why it is now known that the river was used as far upstream as Etchingham in the 14<sup>th</sup> century is that passage was blocked downstream and a complaint about the blockage was made to the king. There is no obvious reason why use of the river should have stopped at Etchingham. From inspection it would seem as likely that goods were taken downstream to the market as upstream. However it seems that the upstream section of the river was never obstructed so there is no evidence of use. Many other examples could be given of rivers for which the present limit of historic evidence does not coincide with the apparent physical limit of usability.

In 1989 Edwards found written evidence of historic use of 1201 miles on 68 rivers for the period 1200-1400. In this study evidence of historic use has been found for 2140 miles at Category A evidence and of 3029 miles at Category B evidence on 186 rivers for the period 1189-1600. It has been said that dwarfs see further than giants if they stand on the giant's shoulders. There is no doubt that there is more evidence to be found.

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<sup>213</sup> Personal observation by the author.

## **Chapter 4.5 Particular Rivers**

### **4.5.1 Introduction**

In this chapter five sections of rivers have been chosen for special study. The first is a section which has frequently been discussed, the middle section of the Thames. The second is a minor river which, it seems, has not previously been studied, the Kentish Stour. The other three rivers are chosen because there have recently been disputes concerning the right of the public to use them.

### **4.5.2 Disuse of the Middle Thames** [See also Appendix Q. Map 2.]

In this section consideration is given to a section of the Thames which has often been discussed in various journals due to the possible lack of use in and after the late medieval period. A summary of previous authors' conclusions is given in Table 16.

**Table 16 The disuse of the Thames downstream of Oxford**

Author	Limit places	Dates of disuse	Reason
Rogers. <sup>214</sup>	Henley – Oxford Burcot – Oxford	14 <sup>th</sup> C. – 1541 1541- 1600	No reference to cost of use found
Thacker. <sup>215</sup>	All river used at all dates		
Davis. <sup>216</sup>	Henley – Oxford	14 <sup>th</sup> C. – 1600	Too many weirs
Prior. <sup>217</sup>	Henley – Oxford Burcot – Oxford Culham – Oxford	Mid 14 <sup>th</sup> C. – 1600 1556 – 1600 1562 – 1600	Too many weirs and deterioration of winches at flashlocks
Edwards. <sup>218</sup>	All river used	Only studied to 1400	
Langdon. <sup>219</sup>	Seasonal use only	Only studied 1294 – 1348	No records of use
Peberdy. <sup>220</sup>	Henley – Oxford Culham – Oxford	1458 – 1560 1458 – 1600	Lack of demand Increased size of boats

Peberdy in the most recent text posed the question ‘When did the navigation to Oxford cease and why?’ It seems not unreasonable to ask first ‘Did navigation to Oxford cease?’

There is ample evidence that weirs were built and altered which made the use of the river more difficult. There are records of some loads from Oxford to London which were taken to Henley by road and then transferred to boats. However there are certain strange omissions in the evidence. If the river was physically unusable for 150 years it is

<sup>214</sup> J.E.T. Rogers, *A History of Agriculture and Prices in England. Volume 5.* Oxford: Clarendon Press. 1887, 758.

<sup>215</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History.* (1<sup>st</sup> Edition 1914.) Newton Abbot: David & Charles. 1968, 268-273.

<sup>216</sup> R.H.C. Davis, ‘The Ford, the River and the City.’ *Oxoniensis.* Vol. 38. (1973), 258-267.

<sup>217</sup> Mary Prior, *Fisher Row.* Oxford: Clarendon Press. 1982, 107-111.

Mary Prior, ‘The Accounts of Thomas West of Wallingford, a Sixteenth-Century Trader on the Thames.’ *Oxoniensis.* Vol. 46. (1981), 73-93.

<sup>218</sup> J.F. Edwards, ‘The Transport System of Medieval England and Wales.’ Unpub. PhD thesis, Univ. of Salford, 1987.

<sup>219</sup> John Langdon, ‘Inland water transport in medieval England.’ *Journal of Historical Geography,* Vol. 19, 1. (1993), 1-11.

<sup>220</sup> R.B. Peberdy, ‘Navigation on the River Thames between London and Oxford in the Late Middle ages: A Reconsideration.’ *Oxoniensis.* Vol. 61. (1996), 311-325.

remarkable that no one stated that it was not usable, as opposed to difficult to use. No statement has been found as to the place, or places, at which it was not usable. Nor has any explanation been found as to how some sections of the river became usable again in the middle of the 16<sup>th</sup> century. Bishop in his 1585 list of the locks on the Thames did not distinguish between those above Burcot and those below. He gave no indication that one or more were impassable. Many of the authors who wrote about the use of the Thames refer to flashlocks yet no mention has been found of flashlocks before 1661.<sup>221</sup> Camden, Harrison and John Taylor all gave descriptions of the river but none mentioned the unusual practice of opening flashlocks in series to enable boats to ride down the river on the ensuing wave nor of the opening of one flashlock to enable a boat to pass a shoal.

Not all obstructions on the Thames were physical. In 1301 the Mayor and Citizens of London wrote to the Countess of Gloucester, daughter of the King, politely complaining that her bailiffs at Marlowe were detaining merchandise on the Thames which they said was causing distress to the people of London.<sup>222</sup>

It is questionable if the Thames was ever usable year round by barges. In c.1050 the river was diverted at Abingdon to make it more usable in summer.<sup>223</sup> In 1348 it was claimed that only in times of abundance of water could ships pass to London.<sup>224</sup> In 1632 Taylor reported that there were five barges aground downstream of Staines.<sup>225</sup> In 1641 Taylor had to drag his 'small Scullers boate' over shoals between Marlow and Goring.<sup>226</sup> If a river was difficult for a 'small Scullers boate' it would have been impassable at that time for a barge. It is difficult to establish to what extent the river was made less usable by the shoals which had formed above and below the weirs.

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<sup>221</sup> Anthony Wood, "*Survey of the Antiquities of the City of Oxford*," composed in 1661-6. Ed. Andrew Clarke. Oxford: Clarendon Press. 1889, 431.

<sup>222</sup> Catherine Moriarty, Ed. *The Voice of the Middle Ages*. Oxford: Lennard Publishing. 1989, 102.

<sup>223</sup> *Chronicon Monasterii de Abingdon*, Rolls Series 2., I, 480-1. Cited in R.H.C. Davis, 'The Ford, The River and The City.' *Oxoniensis*. Vol. 38. (1973), 263.

<sup>224</sup> Parliamentary Records Of Medieval England, Edward III, 1348, para. 34, ii – 169.

<sup>225</sup> John Taylor, 'Taylor on *Thame Isis*.' London, Printed by John Haviland. 1632, 25. Reprinted as *Works of John Taylor the Water Poet. First Collection*. The Spenser Society Vol. 7. New York: Burt Franklin. 1967.

<sup>226</sup> John Taylor, *John Taylor's last Voyage*. London: John Taylor. 1641. Contained in *Works of John Taylor. Second Collection*. The Spenser Society 14. 1873. New York: Burt Franklin. 1967, 11.

In 1535 weirs were pulled up in Oxfordshire and Buckinghamshire to make the river more usable.<sup>227</sup> The great timbers which needed to be removed could only be lifted by men working from a barge. If the barges could get to the weirs to remove timber it would appear that boats could have carried goods on those sections of the river. The above authors have not noted that there is a report that in 1555 lead was carried from Abingdon to Windsor<sup>228</sup> and it is claimed that a pleasure boat went in the same year from Abingdon to Oxford.<sup>229</sup>

There may be a problem with the historical methodology of some of the authors. They looked for evidence of use and where they failed to find it they assumed that the river was unusable. A classic case of absence of evidence being taken as evidence of absence. It is suggested here that the river was never totally blocked but that use was seasonal, depending on the size of boat, and that movement was so hindered by weirs that at times the use of some sections of the river was uneconomic. This conclusion is supported by an apparently previously unnoticed grant of a parcel of meadow in 'Clopcote by Walyngford' in 1314 for the construction of a watermill with the condition that 'ships passing there by the water of Thames be not hindered more than usual.'<sup>230</sup>

It seems likely that the Thames was not blocked in the section Burcot to Oxford but rather that for most people the use of the river was not economic at times. The distance from Burcot to Oxford is 7½ miles by land and 14 miles by water. Between Burcot and Oxford there were six weirs which would have caused delays. The return journey of 15 miles was less than a day's journey for a horse and so would have been economic for horse drawn carts but possibly not for an ox-drawn cart. The introduction of horses in the 12<sup>th</sup> and 13<sup>th</sup> centuries may have made the maintenance of winches, which were required by barges, uneconomic, although the river may have continued to have been used by smaller boats which might have been portaged at the weirs. There is possibly a certain irony that John Langdon's classic work on horse transport may provide a better

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<sup>227</sup> Letters and Papers, Foreign and Domestic, of the Reign of Henry VIII. Volume 9, 170.

<sup>228</sup> David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. 1987, 30.

<sup>229</sup> Alan Wykes, *An Eye on the Thames*. London: Jarrolds Publishers (London) Ltd. 1966, 114-118.

<sup>230</sup> Calendar of Fine Rolls, 1307-19, 214.

explanation for the reduction in the use of the river between Burcot and Oxford than his work on the rivers.<sup>231</sup>

It is suggested that it was the demand for coal which caused the improvement of the river by the construction of locks in the early 17<sup>th</sup> century. The economics of regularly moving large quantities of heavy, bulky goods may have justified the capital cost of the improvements.

There is further interest for this thesis in the methodology of some historians. It is reported that in 1448 stone from Taynton was carried by road to Culham from where it was taken by barge to Eton. After the river had been inspected from another barge later consignments were taken by land to Henley and there transferred to barges.<sup>232</sup> This information is said to come from 'John Keys' accounts.' However in the *The History of the King's Works* there is no record as to which, if any, appointment John Keys held. Some historians have been taken this report to be evidence that the river was unusable at this time. But there would not have been usable barges on the river at Culham and Abingdon about fifty years after the river became unusable. It is possible that the stone was to be moved at a season when the water was low or a special rate may have been available because of lack of business in the haulage industry. It seems that it is not necessary to assume that the river was unusable from Culham to Henley in 1448.

If Records of Historic Use are insufficient to establish where and when the Thames downstream of Oxford was usable then it seems that on other rivers lack of evidence of use is insufficient to establish that a river could not physically be used. This can only be established by direct evidence as is available for the Great Ouse and Exe.

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<sup>231</sup> John Langdon, 'A Revolution in Vehicle Transport in Twelfth and Thirteenth-Century England?' *Past and Present*. Number 103. 1984, 62.

<sup>232</sup> R.A. Brown and H.M. Colvin, 'The King's Works 1272-1485.' In R. Allen Brown *et al.*, Eds. *The History of the King's Works. Volume I. The Middle Ages*. London: Her Majesty's Stationery Office. 1963, 282.

#### 4.5.3 The Kentish Stour [See also Appendix Q. Map 3.]

In this thesis there is space only for a detailed study of one minor river. The Kentish Stour has been chosen because it was the first river, other than the four great rivers, for which a Navigation Act was passed.

The river rises near Lenham and flows south east, past Great Chart, to Ashford (14 km) where it is joined by the East Stour. It then flows north east past Wye (19 km) and Chartham (29 km) through Canterbury (38 km) to Fordwich (41 km), the tidal limit. Downstream of Ashford there is a flood-plain which continues to Fordwich apart from a short section through Canterbury.

The mean flow at Wye is  $2.2 \text{ m}^3 \text{ s}^{-1}$  and at Canterbury about  $3.5 \text{ m}^3 \text{ s}^{-1}$ . The river is a chalk stream and is wider and shallower than most rivers with similar flow. The gradient of the river is unusual in that upstream of Ashford it is  $2 \text{ m km}^{-1}$ , downstream of Ashford it reduces to  $0.7 \text{ m km}^{-1}$  but after flowing through the gap in the North Downs it increases again to  $2 \text{ m km}^{-1}$  at the 10 m contour. The river divides immediately upstream of Canterbury. At present it is usable from Ashford.

It is likely that in Roman times the only river channel at Canterbury was to the north of the city.<sup>233</sup> In 1100 the main channel of the river was through the centre of the city where there were Anglo-Saxon mills. In the 13<sup>th</sup> century the main flow was diverted back to the northern channel with reduced flow in the southern channel.<sup>234</sup> Since then it seems that the river's course in the city has not changed except for the alteration to a few minor channels connecting the branches of the river.

There may have been changes in the hydrological regime in the area during the historic period as it is recorded that in 1272 'a great fount of water' suddenly sprang up in Canterbury which damaged a considerable number of houses.<sup>235</sup> It would seem that much of the flood-plain from Ashford to Fordwich was at one time a marsh. The earlier

<sup>233</sup> Frank Jenkins, 'Archaeological Notebook, Canterbury 1949-51.' *Archaeologia Cantiana*, Vol. 64. (1951), 63-73, 68.

<sup>234</sup> *Liber Camera Civitatis*. Cited in William Somner, *The Antiquities of Canterbury*. 2<sup>nd</sup> Edition enlarged by Nicolas Battely. (1<sup>st</sup> Edition 1640.) London. 1703, 21. (Republished 1977.)

<sup>235</sup> *Annales monastici. Volume 4. Osney, 1016-1347. Rerum britannicarum medii aevi scriptores*. Editor Henry Richards Luard. Public Record Office 36. 1869, 248.

name of Canterbury, *Durovernum*, seems to be derived from alder fort or a walled town by the alder-swamp.<sup>236</sup> This swamp has now largely been drained. In Canterbury the ground level is now 6 to 9 feet above, and the river bed 3 ft above, the levels in Roman times.<sup>237</sup>

There was a Roman port at Fordwich<sup>238</sup> and there is plentiful evidence of the use of the tidal river downstream throughout the period 1189-1600. There were four main reasons for this choice: it is the tidal limit; it seems that the river has always become narrower and shallower just above this place;<sup>239</sup> there is solid ground on which buildings can be erected<sup>240</sup> and there is plentiful fresh water.<sup>241</sup>

In August 1264 the Minor Friars of Canterbury received a licence to build a bridge “over the water of Stour between the site of their house and their place called Brokmede,” but only on condition that “little ships (*navicule*) may pass under without impediment.”<sup>242</sup> In 1309 another licence was granted and this bridge also had to be of sufficient height to allow ‘a clear passage for boats underneath’.<sup>243</sup> It would appear that this bridge replaced the 1264 bridge. Brokmede was an island upstream of King’s Bridge at a place where the river was divided into at least three channels.

It is recorded that in 1424 stone for the cathedral was transported by land from Fordwich to Canterbury.<sup>244</sup> As shown above in Section 4.1.7 this may have been cheaper than loading the stone into small vessels and then reloading into carts for transport from the river to the cathedral.

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<sup>236</sup> Vistor Watts, Ed. *English Place-Names*. Cambridge: Cambridge University Press. 2004, 114.

<sup>237</sup> See Appendix M.

<sup>238</sup> F. Jenkins, ‘Recent Excavation in the Canterbury District. Sturry.’ *Archaeologia Cantiana* Vol. 62 (1949), 145-146.

<sup>239</sup> E. Hasted, *Kent*. Canterbury: W. Bristow. 1800, 63.

<sup>240</sup> D.S. Stafford, ‘A Possible Ancient Route in the Parish of Fordwich.’ In K.H., McIntosh. *Fordwich the Lost Port*. Canterbury: The author. 1975, 132.

<sup>241</sup> R.W. Paine, ‘How Fordwich Grew.’ In K.H., McIntosh. *Fordwich the Lost Port*. Canterbury: The author. 1975, 116.

<sup>242</sup> Calendar of Patent Rolls, 1258-66, 342.

<sup>243</sup> Calendar of Patent Rolls, 1307-13, 178.

TNA, Inquisitions *Ad Quod Damnum* file **73, No 8**. Cited in *VHC Kent Vol. II*, 191

<sup>244</sup> T.W.T. Tatton-Brown, ‘Building Stone in Canterbury c 1070-1525.’ In David Parsons, *Stone. Quarrying and Building in England. AD 43-1525*. Chichester: Phillimore in association with The Royal Archaeological Institute. 1990, 78.



It was reported that in c.1462 money was left for buying 300 foot of *Asheler* or *Folkstone* Stone to make a wharf near the King's Mill<sup>245</sup> on what is now the High Street. In 1515 an Act was passed for making the River Stour navigable to Great Chart because the city was of late 'in great ruin and decay'.<sup>246</sup> But it is reported that no action was taken to carry out the work at that time.<sup>247</sup> In 1588 a 'large sum of money was laid out in scouring the River Stour.'<sup>248</sup> In 1592 the Privy Council ordered the Kentish justices of the peace to put in present execution the Act of 1515.<sup>249</sup> In 1594 there was a report of locks in the river at Sturry and Barton and of lighters going between Canterbury and Fordwich.<sup>250</sup> In the same year the Chancery Court held that the river had been made navigable from Fordwich to Canterbury but was ruined by "great and sudden floods, that happened by extraordinary downfalls of rain."<sup>251</sup> In 1596 the Corporation spent nearly £1,400 on the river.<sup>252</sup>

A map dated 1573 by Braun & Hogenbury shows a waterlock, near St Mildred's Church on the east side of the river.<sup>253</sup> This was a channel cut at right angles to the main river and appears to have been a haven for boats. A map of 1595 by Thomas Langdon shows another "Water Locke" to the south of the Black Friars' site, south of St Peter's Way.<sup>254</sup>

Jervoise wrote in the report of his survey of the bridges of England and Wales for the Society for the Protection of Ancient Buildings in 1930 that 'In the [Canterbury] museum is an interesting collection of engravings and etchings which show views of the city during the eighteenth century. Westgate and Blackfriars Bridges are depicted with pointed arches, as is also one shown alongside a large mill. This last one is difficult to

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<sup>245</sup> William Somner, *The Antiquities of Canterbury*. 2<sup>nd</sup> Edition enlarged by Nicolas Battely. (1<sup>st</sup> Edition 1640.) London. 1703, 24. (Republished 1977.)

<sup>246</sup> 6 Henry VIII c 17

<sup>247</sup> William Somner, *The Antiquities of Canterbury*. 2<sup>nd</sup> Edition enlarged by Nicolas Battely. (1<sup>st</sup> Edition 1640.) London. 1703, 22. (Republished 1977.)

<sup>248</sup> Cyprian Rondeau Bunce, Minutes of the City of Canterbury. 1800-1804. Republished in *Ancient Canterbury*. Canterbury: Kentish Gazette and Canterbury Press. 1924, 8.

<sup>249</sup> Acts of the Privy Council 1591-92. 535.

<sup>250</sup> Cyprian Rondeau Bunce, Minutes of the City of Canterbury. 1800-1804. Republished in *Ancient Canterbury*. Canterbury: Kentish Gazette and Canterbury Press. 1924, 8.

<sup>251</sup> *Ibid.* 34.

<sup>252</sup> *Ibid.* 8.

<sup>253</sup> Photocopy. Canterbury City Library.

<sup>254</sup> Photocopy. Canterbury City Library.

identify.<sup>255</sup> The bridges may have been pointed to allow boats to pass under as well as being cheaper to construct.

Six miles upstream of Canterbury an anchor was found at Chilham<sup>256</sup> and Hoskins reported that 16<sup>th</sup> century records show that boats reached as high up the river as Wye, at least on occasions.<sup>257</sup> Unfortunately he did not record his source. However as he was a visitor to Wye College in the 1950s it seems likely that he would have studied the college records at that time.<sup>258</sup>

Thus it is known that in 1264 and 1309 the Grey Friars were required to build their bridge in such a way that small boats could pass under them. This seems not to be a standard clause inserted by a clerk. There are very few other places where such a condition was imposed. It seems unlikely that these boats would only have been used for trading with Fordwich. By the time they had reached the bridge they would have passed the city market and the properties of Christ Church and the Black Friars. They would also have had to pass either Criene Mill or Hottemelne and also the King's Mill and Abbot's Mill. It seems much more likely that they would have been trading upstream with only the St Mildred Mill to pass.

If it is accepted that there was little use of the river from Canterbury to Fordwich because the section was too short to justify double handling then it seems likely that the same would apply to transport for short sections upstream. Chilham and Fordwich are about the same distance from Canterbury so it seems likely that the boats were going from Canterbury to Wye, Ashford and/or Great Chart.

No previous author seems to have considered why the Act of 1515 stated that the river was to be cleared to Great Chart. It seems likely that Great Chart would have been close to the physical upper limit of use of the unmodified river if the obstructions had been cleared. The Preface of the Act states that once the city of Canterbury was of great fame but the inhabitants had become impoverished. The proposal was that prosperity could be

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<sup>255</sup> E Jervoise, *The Ancient Bridges of the south of England*. Westminster: The Architectural Press. 1930, 42.

<sup>256</sup> D. Gardiner, *Canterbury*. London: The Sheldon Press. 1923, 9.

<sup>257</sup> W.G. Hoskins, *Fieldwork in Local History*. London: Faber and Faber Limited. 1967, 60

Also Raymond Selkirk, *On the Trail of the legions*. Ipswich: Anglia Publishing. 1995, 56

<sup>258</sup> I am grateful to Mr D. Sykes for this information.

restored if action was taken to ‘deep, inlarge, cleanse, inhanse and scowr’ the river from Great Chart to Fordwich so that it could be used by Lighters and Boats. This seems to imply that restoration of prosperity depended on restoration of the ancient use of the river rather than a new initiative. If this is the correct interpretation then the Kentish Stour had at some previous date within historic memory been used upstream to Great Chart.

Support for this interpretation comes from the records which show that in 1311-12 oats were supplied to Canterbury Cathedral Priory from three home demesnes which lay within 10 miles of the priory and also from Great Chart, Little Chart, Hollingbourne and Appledore.<sup>259</sup> Oats were a bulky, low value grain which were not normally transported over long distances. This transfer may have been economically viable because river transport was available from Great Chart and Ashford.

#### **4.5.4 River Wear** [See also Appendix Q. Map 4.]

The final three rivers are chosen because the right of access to them is disputed today.

The following information is known about the Wear:-

1. 1170s. It is reported that marble may have been taken up the river to Durham.<sup>260</sup>
2. 12<sup>th</sup>, 13<sup>th</sup> centuries. It is reported that marble may have been rafted downstream from Frosterley to Durham.<sup>261</sup>
3. 1243-1250. The Durham Eyre Rolls record that a man died from a boat falling on him at Durham and two men died falling from boats into the river downstream of Durham.<sup>262</sup>
4. 14<sup>th</sup> century. The Durham Abbey Accounts show that a boat was used for carrying stone at Durham.<sup>263</sup>

<sup>259</sup> Bruce M.S. Campbell *et al.*, *A Medieval Capital and its Grain Supply*. Historical Geography Research Series Number 30. 1993, 152.

<sup>260</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 180, 187.

<sup>261</sup> Raymond Selkirk, *Chester-Le Street & its place in history*. Durham: Casdec Printcentre. 2001, 243.

<sup>262</sup> ‘Two Thirteenth-Century Durham Assize Rolls: Durham Eyre Roll, 27 Henry III.’ Editor K.E. Bayley. In *Miscellanea Volume II*. Surtees Society. 1916, 24, 62.

<sup>263</sup> *Extracts from the Account Rolls of the Abbey of Durham*. Vols. 1,2,3. The Surtees Society, Vols. 99, 100, 103. 1898, 1899, 1900. pages 533, 536, 546, 552, 554, 560, 564, 583, 612.

5. 1361. Finchale Priory, downstream of Durham, bought a boat.<sup>264</sup>
6. 1440. The Muniments of the dean and chapter of Durham<sup>265</sup> indicate that a boat was used 2 miles upstream of Durham for carrying soil.<sup>266</sup>
7. 1532, 1533. The Monastery of Durham Account Books indicate that food was carried at least twice in boats upstream to Durham.<sup>267</sup>
8. 1716. An Act stated that the river had lately become obstructed and the commissioners were given power to clear the river upstream to Durham.<sup>268</sup>
9. Nationally there are records of less than about 0.05% to 0.00001% of the river journeys. Records for Durham may be fewer due to the Palatinate records not being included in the Court Rolls.
10. There may have been changes in the form of the river due to sediment being washed downstream from mines as on the Tyne.
11. There were weirs on the river near Durham. It is not known if these were full-weirs or part-weirs.

It seems that there is adequate evidence to show that there was use of the river at times downstream of Durham during part of the period 1189-1600. The periods of use, and disuse, if any, can not be determined. Of the river upstream of Durham on the balance of probabilities it seems that there was some use of the river downstream of Frosterley.

#### 4.5.5 River Teme [See also Appendix Q. Map 5.]

Green has summarised most the information available about the Teme and he also states that 'Navigation on the River Teme is shrouded in mystery.' He records that 25 miles upstream of Ludlow there is a pub called *The Wharf* at Felindre, which in Welsh means 'Three Mills'. Lead may have been shipped down the river and corn brought back up. In the 14<sup>th</sup> century stone was brought from Caen for the mill at Ashford Carbonel, three

<sup>264</sup> James E. Thorold Rogers, *A History of Agriculture and Prices in England. Volume II. 1259-1400*. Oxford: Clarendon Press. 1866, 567.

<sup>265</sup> Muniments of the dean and chapter of Durham. Miscellaneous Charter 5828/9.

<sup>266</sup> R.A. Skelton and P.A. Harvey, *Local Maps and Plans from Medieval England*. Oxford: Clarendon Press. 1986, 207.

<sup>267</sup> *The Durham Household Book: or, the Accounts of the Bursar of the Monastery of Durham, from Pentecost 1530 – Pentecost 1534*. Editor J. Raine. Surtees Society, Vol. 18, 1844, 63.

Miranda Threlfall-Homes, *Monks and Markets, Durham Cathedral Priory 1460 – 1520*. Oxford: Oxford University Press. 2005, 184.

<sup>268</sup> 1716. 3 George I c. 3.

miles downstream of Ludlow, using water transport all the way. In the 15<sup>th</sup> century there were problems with Ludlow's trade because there was not a viable connection to the navigable Severn.<sup>269</sup>

At the Worcester Eyre in 1275 it was recorded that 'Richard le Hoppere fell out of a boat into the Teme and drowned' and that 'William Fisher of Ankerdine Hill was trying to cross the Teme in a boat; he fell in and drowned.'<sup>270</sup> Richard and Nina Muir recorded that in the 17<sup>th</sup> century there was a wharf at Bringewood Forge which is three miles upstream of Ludlow.<sup>271</sup> It is at least possible that that this wharf was in use at the end of the 16<sup>th</sup> century. A late 18<sup>th</sup> century lithograph shows a trow on the river.<sup>272</sup> There are two places on tributaries with the name Eaton which may indicate that they were responsible for keeping the river in a usable state.<sup>273</sup>

There were boats on the river but the upper limit of use is not at present known. Although the belief that the river was navigable has been challenged, those who made the challenge would not have known that a stone wharf and slipway were constructed on the Monnow at Skinfrith. There is some doubt as to whether evidence of use of one river implies a probability of use of another similar river. There can be no doubt that the technical ability to use one river is evidence that there would have been the technical ability to use a similar river. Thus it is considered here that there was use of the river but that the intensity and extent are unknown.

#### **4.5.6 Salisbury Avon** [See also Appendix Q. Map 6.]

Salisbury cathedral was built c.1200. In the cathedral there are 15,000 tons of marble which was transported from Purbeck. It was shown in Chapter 4.2 that this movement was probably on rafts or barges. It seems likely that the 400 tons of lead and the oak timbers from Ireland for the roof of the cathedral were also brought to Salisbury by

<sup>269</sup> All Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 33.

<sup>270</sup> *The Worcester Eyre of 1275*. Editor Jens Röhrkasten. Worcestershire Historical Society. New Series Vol. 22. 2008, 434, 540.

<sup>271</sup> Richard and Nina Muir, *Rivers of Britain*. London: Guild Publishing. 1986, 127-128.

<sup>272</sup> Samuel Ireland, *Picturesque Views on the Severn*. Reproduced in Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 34.

<sup>273</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

river.<sup>274</sup> It is much harder to establish whether the 60,000 tons of stone which were quarried or mined at Tisbury were transported down the Nadder valley by cart or raft.

Crane Street in Salisbury was named after an inn but it seems likely that the inn was named after a crane on a wharf beside the River Avon.<sup>275</sup> In 1339 it appears from the Sheriff's Accounts that grain was taken by river from Fordingbridge to Christchurch and then by the sea to Southampton.<sup>276</sup>

In 1372 the King ordered that a barge 'be made at Salisbury ... to resist the malice of his enemies of France'<sup>277</sup> but in 1378 the people of Salisbury were given exemption from making another small barge as the earl of Salisbury had undertaken to 'provide the same in their stead'.<sup>278</sup>

In 1402 there was an inquisition to determine whose fault it was that the passage of ships and boats in the rivers of Wiltshire were hindered.<sup>279</sup> Six years later the bailiffs of Gloucester were ordered to set free John Milbourne who had been imprisoned for obstructing the Avon with 'certain pales' in the bed of the river at New Sarum.<sup>280</sup>

After the passing of the Act of Sewers in 1535 a commission was appointed to remove all weirs and obstructions on the Avon.<sup>281</sup> As a result of this Sir Peter Philpot wrote to Cromwell confirming that the 'mills, weirs and fishgarths' would be plucked down as soon as possible and that by Whitsuntide the trees obstructing the river would be cut away and the 'shelpis scored'.<sup>282</sup> On the same topic John Husee wrote to Lord Lisle that the weirs would be removed.<sup>283</sup>

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<sup>274</sup> Bruce Purvis, *Salisbury*. Derby: Wiltshire County Council and Breedon Books. 2003, 30.

<sup>275</sup> John Chandler, *Endless Street*. Salisbury: The Hobnob Press. 1983, 300.

<sup>276</sup> TNA, E101/561/13. Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 274.

<sup>277</sup> Calendar of Patent Rolls, 1370-74, 219.

<sup>278</sup> Calendar of Patent Rolls, 1377-81, 108.

<sup>279</sup> Calendar of Close Rolls, 1399-1402, 518.

<sup>280</sup> Calendar of Patent Rolls, 1405-09, 332.

<sup>281</sup> Don Cross, *When Salisbury was a Seaport*. Salisbury. 2001, 3.

<sup>282</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 9, 286.

<sup>283</sup> Muriel St. Clare Byrne, *The Lisle Letters. Volume 2*. Chicago and London: The University of Chicago Press. 1981, 628.

In 1590-1591 an order for the regulation of the River Avon made at the Salisbury Quarter Sessions stated that the free passage of boats had been obstructed and provides for the river to be kept open.<sup>284</sup> A similar order of 1592 by the Commissioners of Sewers refers to the obstruction of the free passage of fish, swans and boats on the river between Harnham Bridge, Salisbury and Christchurch.<sup>285</sup> In 1604 the Commissioners of Sewers stated that the ancient custom of this part of the river was that a passage was to be left free, fifteen feet wide, and twelve feet distant from either bank. This custom was confirmed by another commission in 1632.<sup>286</sup>

In 1623 John Taylor and his companions rowed a wherry upstream to Salisbury.<sup>287</sup> And in 1632 the inventory of Joseph Warne of Bisterne, Ringwood included two boats.<sup>288</sup>

It seems that the river was usable downstream from Salisbury in the 13<sup>th</sup> and 14<sup>th</sup> centuries and the second half of the 16<sup>th</sup> century. There is insufficient evidence to establish if the river was unusable during the 15<sup>th</sup> and first half of the 16<sup>th</sup> centuries.

It is known that the Itchen was usable at least as far as Winchester in the middle of the 14<sup>th</sup> century. This would seem to imply that the Salisbury Avon, a very much bigger river, would also have been usable.

#### **4.5.7. Conclusion**

Some historians, since they had only seen evidence of the use of a few rivers, seem to have assumed that all other rivers were not used. Thus Threlfall-Holmes in her otherwise excellent book about Durham Cathedral Priory states on page 12 that ‘Durham was unable to take direct advantage of water transport, since the river Wear was not navigable

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<sup>284</sup> Hampshire Record Office. 24M82/PZ3.

<sup>285</sup> Order of the Commissioners of Sewers for the Avon. Wiltshire and Swindon Record Office, PR/Salisbury St Martin/1899/223 - date 1592.

<sup>286</sup> Henry Hatcher, *The History of Modern Wiltshire. Old and New Sarum, or Salisbury*. London: The Author. 1843, 460.

<sup>287</sup> John Taylor, *All The Works of John Taylor the Water Poet. A Discovery by Sea from London to Salisbury*. London. 1630.

<sup>288</sup> Hampshire Record Office 1632AD/87. Inventory of Joseph Warne of Bisterne, Ringwood, Hampshire, Yeoman.

from the sea.’ Yet on page 184 she quotes a transcription of the Durham Household Book for 1530-34<sup>289</sup> which states that goods were brought up the river by boat.<sup>290</sup>

Table 13 shows that for almost a third of the length of rivers for which there is evidence of use the evidence is of Category B, ‘possible use’ rather than ‘probable use’. The upper limit of use is known to be unknown on the Thames, Kentish Stour, Wear and Teme. The Salisbury Avon is unusual in that no firm evidence of use has been found on the river upstream of Salisbury. At Scales Bridge, 25 miles upstream of Salisbury, it now has a flow of  $1.48 \text{ m}^3 \text{ s}^{-1}$ , gradient  $1.2 \text{ m km}^{-1}$ , a gravel bed and even though the width/depth ratio of is 27 it would be expected to be have been usable. At Salisbury it has a flow of  $14.5 \text{ m}^3 \text{ s}^{-1}$  and gradient  $0.82 \text{ m km}^{-1}$  and a gravel bed which on most other rivers is adequate for use.

It is possible, or likely, that some sections of the rivers were usable, and used, at some dates but unusable at others. The assumption that there was no use of rivers for which there is, at present, no evidence of use, seems to be no longer tenable.

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<sup>289</sup> *The Durham Household Book: or, The Accounts of the Bursar of the Monastery of Durham, from Pentecost 1530 to Pentecost 1534.* Editor J. Raine. Surtees Society Volume 18. 1844, 63.

<sup>290</sup> Miranda Threlfall-Homes, *Monks and Markets, Durham Cathedral Priory 1460 – 1520.* Oxford: Oxford University Press. 2005, 184.



## **Chapter 4.6 Physical Obstructions to Use**

### **4.6.1 Bridges**

While it is claimed in this thesis that there were no legal objections to the use of rivers there certainly were physical obstructions to their use during the period 1189-1600. Indeed it is records of these obstructions, and the disputes about them, which provide some of the evidence that the rivers were previously used. Since possibly more court records have survived, and have been printed, than any other type of document there may now be an over emphasis on obstructed rivers at the expense of other rivers which were used peacefully throughout the period.

In this chapter anthropogenic obstructions are considered: bridges, fords, weirs and water-mills. It is also convenient in this chapter to consider the estuaries. The use of estuaries, in general, is outside the scope of this thesis but their obstruction affected the use of the rivers reducing both imports and exports.

Blair wrote recently of the medieval period:

The investment that was now helping road transport to compete more strongly with waterways created another class of barriers across rivers. During the twelfth and thirteenth centuries, many fords and timber bridges were replaced by masonry arches and solid causeways. If the effects were occasionally beneficial to river traffic, by encouraging a faster and deeper flow through the arches, they much more frequently limited vessel size and encouraged the formation of silty, static pools.<sup>291</sup>

This statement may be challenged. Speed showed several bridges with many ships on one side and few or none on the other as at Lancaster, Chester, York, Hull and Berwick on Tweed. At Newcastle he shows two large boats downstream of the bridge and ten smaller ones upstream.<sup>292</sup> Millerd showed a similar distribution of vessels at Bristol in

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<sup>291</sup> John Blair, 'Introduction.' In Blair, 2007, 11.

<sup>292</sup> All - John Speed, *John Speed's England. Part IV.* (1<sup>st</sup> Edition 1611) London: Phoenix House Limited. 1954.

1673.<sup>293</sup> These bridges were all at or about the tidal limit and had been built just beyond the furthest point that most seagoing ships with fixed masts would have reached. The first bridge was not always the upper limit of use for ships. Ships could pass through the drawbridge in London Bridge and at York the staith for St Mary's Abbey was upstream of the bridge.<sup>294</sup>

There are many records of bridges which were built so that boats could pass. Stow states that one arch of London Bridge 'was then readily to be drawn up, as well to give passage for ships to *Queenehith*, as for the resistance of any forraigne force.'<sup>295</sup> Gibson amplified Camden's comment about the Torridge by adding to the text 'The river goes next to *Bediford*, mentioned by our Author for it's bridge. It is so high, that a ship of 50 or 60 tunn may sail under it.'<sup>296</sup> Camden also records the drawbridge on the bridge over the Yare at Yarmouth.<sup>297</sup> Salter reported that both South Bridge<sup>298</sup> and the Magdalene Bridge at Oxford<sup>299</sup> had sections which could be raised, possibly for defence and possibly to allow boats to pass through. At Snaith a bridge was built in 1442<sup>300</sup> on the tidal section of the Aire with a draw-leaf 4 feet in breadth 'for the voiding thorough of the Mastes of the Shippes passage under.'<sup>301</sup> Jervoise records that a drawbridge was required when a bridge was to be built at Colchester in 1474 so that 'Sippes, boytez and oder Water-vessellez shall mowe passé there.'<sup>302</sup> Camden reported that at Boston there was a 'very high wooden-bridge' over the Witham<sup>303</sup> presumably built to enable boats to pass under it.

<sup>293</sup> Marc Boone & Peter Stabel, Eds. *Shaping Urban Identity in Late Medieval Europe*. Leuven-Apeldoorn: Garant. 2006, 219.

<sup>294</sup> Baron F. Duckham, *The Yorkshire Ouse*. Newton Abbot: David & Charles. 1967, 30.

<sup>295</sup> John Stow, Ed. Charles Lethbridge Kingsford, *A Survey of London*. (1<sup>st</sup> Edition 1603) Oxford: Clarendon Press. 1908, 25.

<sup>296</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 41.

<sup>297</sup> *Ibid.* page 388.

<sup>298</sup> The Rev. H.E. Salter, *Records of Mediaeval Oxford Coroner's Inquests, the Walls of Oxford, Etc.* Oxford: The Oxford Chronicle Company, Ltd. 1912, 58, 61.

<sup>299</sup> *Ibid.* page 50.

<sup>300</sup> Wendy R. Childs, 'Moving around.' In Rosemary Horrox and W. Mark Ormrod, Eds. *A Social History of England. 1200-1500*. Cambridge: Cambridge University Press. 2006, 266.

<sup>301</sup> Rotuli Parliamentorum V, 44. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' Lincolnshire Architectural & Archaeological Society Reports and Papers, New Series, 1 (1938), 3.

E. Jervoise refers to this bridge as being over the Don. The river was realigned. E. Jervoise, *The Ancient Bridges of The North of England*. Westminster: The Architectural Press. 1931, 111.

<sup>302</sup> E. Jervoise, *The Ancient Bridges of Mid and Eastern England*. Westminster: The Architectural Press. 1932, 131.

<sup>303</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 462.

In 1189-1206 Simon le Bret gave the Abbey of Waltham permission to build a bridge in Wrangle and he specified that it should be built '*ita ut nauicule que turbam portant: subtus pontem transire possint*'.<sup>304</sup> Dugdale wrote that the papers from the collection of Mountagu Comititis de Lindsey stated that in 1571 Commissioners gave instructions that new bridges should be built over the sewer called Newdike at Rusgate Ee and Surflete in Lincolnshire 'of such heights as boats might well pass under'.<sup>305</sup>

When a bridge was to be built there was sometimes a requirement by the king that boats should be able to pass, as at Canterbury<sup>306</sup> and the Mondenmeme (Hurn) to Bleadney bridge over the Sheppey.<sup>307</sup> In 1574 a similar requirement was made relating to bridges at Newdike in Lincolnshire.<sup>308</sup> It is not known why licences were required for these bridges and apparently not elsewhere.

However, as Blair indicated, there were some bridges which obstructed vessels. When a river was running high there could be too little headroom, as was reported on the Waveney at Beccles.<sup>309</sup> There was a bridge over the Adur at Bramber which obstructed vessels but it is clear from Dugdale's *Monasticon* that the obstruction was illegal.<sup>310</sup> There were enquiries into the bridges at Stoke Ferry on the Wissey in 1291, a bridge downstream of Bawtry on the Idle in 1396 and a series of enquiries about a bridge over the Don at Thorne from 1324 to 1381. In 1392 a bridge over the Aire at Tunbridge was so low that 'no ship could pass beneath it'. The local people were told to 'raise and mend it'.<sup>311</sup> Dugdale again wrote that the papers from the collection of Mountagu Comititis de Lindsey stated that at Kyrton and Lichfeld in Lincolnshire the townships were ordered in 1574 to reform their bridges so that they were 'to be 12 feet in breadth, and of height

<sup>304</sup> British Museum Library Cottonian Tiberius C ix, ff. 97d, 98. Cited in H.E. Hallam, *Settlement & Society*. Cambridge: Cambridge University Press. 1965, 171.

<sup>305</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 241-242.

<sup>306</sup> Calendar of Patent Rolls, 1258-66, 342.

Calendar of Patent Rolls, 1307-13, 178.

TNA, Inquisitions *Ad Quod Damnum*, file 73, No 8. Cited in *VHC Kent. Vol. II*. 191.

<sup>307</sup> A. Watkin, Ed. 'The Great Chartulary of Glastonbury Abbey. Volume 1', *Somerset Record Society*, LIX, (1944). Cited in Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 67.

<sup>308</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 241.

<sup>309</sup> Robert Malster, *Wherries and Waterways*. Lavenham: Terence Dalton Limited. 1971, 49.

<sup>310</sup> William Dugdale, *Monasticon*, vi, p.1083, no. ii. Cited in R.C. Van Caenegem, Ed. *English Lawsuits from William I to Richard I. Volume I. William to Stephen*. Selden Society. Vol. 106. for 1990. 132.

<sup>311</sup> Calendar of Patent Rolls, 1381-85, 414.

sufficient for boats to pass under'.<sup>312</sup> Arcott wrote that bridges at Cattawade, Stoke and Wilford may have effectively barred the upper reaches of the Suffolk Stour 'to anything but the lightest barge'<sup>313</sup> but possibly only light barges could have used the river at that time. Where these bridges obstructed boats it appears that the obstruction was illegal.

It seems that only on the Parrett were obstructions allowed. Green wrote that 'From early times, river traffic took place to Langport Bridge, where any goods destined for the wharves of Thorney, three miles upstream on the Parrett, or Ilchester, on the tributary River Yeo, had to be transhipped, because the bridge totally obstructed the navigation.'<sup>314</sup> Helm wrote that at the time of Richard I direct communication with the sea on the Parrett-Tone system ceased with the building of a bridge at Bridgewater.<sup>315</sup>

Blair also suggested that at some bridges the width of the main arch restricted the size of the vessels which could pass.<sup>316</sup> On the Severn in 1387 a gap of 18 feet (5.5 m) was normally left open at weirs.<sup>317</sup> Harrison stated that the span of the arches on London Bridge was 'c.8 metres' but that in the medieval period arch spans were 'usually under 6 metres.'<sup>318</sup> Radcot bridge, which Blair used as an example, was constructed in the 14<sup>th</sup> century and had unusually narrow arches of 3.66 m. The next bridge downstream had arches 5.50 m wide.<sup>319</sup> It seems likely that the arches of bridges were built of such a width that the boats which used the section of the river could pass.

Bridges could cause sandbanks which obstructed vessels, as on the Lea in 1355.<sup>320</sup> Blair suggested that the bridge at Grandpont, Oxford, may have caused changes to the bed which obstructed vessels.<sup>321</sup> However the state of the river prior to the construction of the bridge needs to be established before it can be known if passage became more

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<sup>312</sup> Dugdale, William, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 242.

<sup>313</sup> W.G. Arcott, *Orwell Estuary*. Ipswich: Norman Adlard & Co. Ltd. 1954, 104-105.

<sup>314</sup> Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 23.

<sup>315</sup> P.J. Helm, 'The Somerset Levels in the Middle Ages.' *Journal of the British Archaeological Association*. Vol. 12. (1949), 47.

<sup>316</sup> John Blair, 'Transport and Canal-Building on the Upper Thames, 1000-1300.' In Blair, 2007, 254-286.

<sup>317</sup> C.T. Flower, Ed. *Public Works in Mediaeval Law, Volume I*. Selden Society, Vol. 32. 1915, 157-158.

<sup>318</sup> David Harrison, *The Bridges of Medieval England*. Oxford: Clarendon Press. 2004, 114-115.

<sup>319</sup> John Blair, 'Transport and Canal-Building on the Upper Thames, 1000-1300.' In Blair, 2007, 254-294, 285.

<sup>320</sup> Calendar of Inquisitions Miscellaneous, 1348-77, 70-73.

<sup>321</sup> John Blair, 'Transport and Canal-Building on the Upper Thames, 1000-1300.' In Blair, 2007, 254-262.

difficult. The fact that there had previously been a ford may indicate that the river had always been difficult to negotiate.

It might be hoped that the medieval bridges would provide information about the width and flow of rivers at the time they were built. However this seems not to be possible because bridges change the form of rivers. Camden recorded that the Isis was 'kept in and restrained with Rodcot bridge.'<sup>322</sup> If a bridge was built with piers, where the bed material was of fine alluvial material, without altering the width of the river, then the piers would obstruct the flow of the river. The water would back up above the bridge. The flow through the arches would be faster. The bed would be degraded downstream. The degradation would migrate upstream until the piers were undermined and collapsed. This was the fate of a bridge at Hemington in the early 12<sup>th</sup> century.<sup>323</sup> The only way to ensure stability was to widen the river at the place where the bridge was built and to ensure that the total width of the arches was equal to, or greater than, the original width of the river. Other changes to the river form were caused by the cuttings made in the bank above and below the bridges where barges and boats moored and unloaded.

Where a bridge was built on bedrock the configuration of the bridge normally depended on the location of the most secure bases.

There are several bridges where the end arches are now buried. This may be due to a multi-channel river being modified to one or two channels, as at Yalding on the Beult, or a reservoir being constructed upstream reducing the maximum flood, as at Kendall on the Kent. Jervoise recorded that at Salisbury 'at least one of the ancient arches [of the Fisherton Bridge] remains under the street alongside the County Hotel.'<sup>324</sup> He also recorded that at Lower Eashing one arch of an ancient bridge over the Wey has been filled in.<sup>325</sup> Cook reported that at Hebden it seems that one arch has been blocked.<sup>326</sup>

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<sup>322</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 251.

<sup>323</sup> A.G. Brown, 'Geoarchaeology, the four dimensional (4D) fluvial matrix and climatic causality.' *Geomorphology*. Vol. 101. (2008), 290-1.

L.P. Cooper, 'Hemington Quarry, Castle Donington, Leicestershire, UK: a decade beneath the alluvium in the confluence zone.' In Andy J. Howard *et al.*, Eds. *Alluvial Archaeology in Europe*. Lisse, Swets & Zeitlinger. 2003, 27-41.

<sup>324</sup> E. Jervoise, *The Ancient Bridges of the South of England*. Westminster: The Architectural Press. 1930, 72.

<sup>325</sup> *Ibid.* page 23.

<sup>326</sup> Martin Cook, *Medieval Bridges*. Princes Risborough: Shire Publications Ltd. 1998, 30.

However some medieval bridges have been lengthened as Jervoise recorded at Holme Bridge over the Frome.<sup>327</sup> All these changes are evidence that the form of some rivers have changed since 1600.

The cost of building a stone bridge was considerable. When planning a new bridge the cost would have increased with the number of piers and also with the span of the arches. Since the only examples of obstruction of rivers by bridges which have been found were illegal constructions and the bridges at Langport and Bridgewater it would seem that the law and the fear of wasted construction costs ensured that rivers remained usable through the bridges.

There is a further form of evidence from the records of medieval bridges. Pontage grants were made by the king to permit people to charge for the use of bridges so that money would be available for the repair of the bridges. Many of these grants are listed in the Calendar of Patent Rolls. The rivers which were to be crossed by bridges would normally have been too deep to be crossed conveniently by a ford and so would have been deep enough to be usable. For the majority of the places for which pontage grants were made there is evidence of use of the rivers. (See Appendix L. Grants of Pontage. 1229-1399.) However three bridges were over highland rivers which were deep but may have been difficult to use due to the boulders on their beds: the Eamont, Eden and Kent. Eight are considered to be usable now but no records of historic use have been found: Bristol Avon at Bradford on Avon and Chippenham, Dane at Holmes Chappel, Great Ouse at Stony Stratford, Lune at Stangerthwaite, Thame at Aylesbury, Ure at Ripon and the Wharfe at Wetherby. All of these rivers may have been used at these places. There were other rivers for which pontage grants were made but which are not in the *BCU Guide*: the Aln, Dane, Dearne and Worfe. The Dearne has been described as being ‘skinny but shallow in places’.<sup>328</sup> It seems that the other rivers could be described similarly and that they may also have been used in the medieval period.

Thus it seems that no bridge which obstructed boats was legal except on the Parrett. No reason has been found for this exception.

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<sup>327</sup> E. Jervoise, *The Ancient Bridges of the South of England*. Westminster: The Architectural Press. 1930, 86.

<sup>328</sup> Personal comment Chris Hawkesworth, British Canoe Union Facilities Officer. October 2009.

#### 4.6.2 Fords

Bridges could, and it seems should, have been built in such a way that they did not obstruct the use of the rivers. This would have been difficult with fords. Those building fords worked to make the water as shallow as possible, exactly the opposite to what was needed by those using boats on the rivers. Very little information has been found concerning medieval fords.<sup>329</sup> A consideration of their depths is given in Appendix I which concludes that most fords were not more than one metre deep.

There were three types of ford. There were places where a way led to a natural stream and out the other side. This was suitable for small streams and certain special locations like the estuary of the Sussex Ouse at Seaford and at Cuckmere Haven where the water flowing from upstream now spreads out and percolates through the shingle at low tide.

There were places where a stream was artificially widened and so made shallower to make the stream easier to cross. Sometimes the ford was immediately downstream of a mill where the flow of the water was held back much of the time by the refilling of the mill-dam. Parker wrote of the Cam or Rhee 'It will be noticed that it is virtually impossible to consider river-crossings without at the same time speaking of mills. The siting of the mill was in most cases determined by the existence of the crossing. In no case, I think, was the crossing determined by the siting of the mill.'<sup>330</sup> The ford at Flatford on the Suffolk Stour as illustrated in Constable's 'Haywain' appears to have been of this type.

The third type of ford was across deeper rivers where a causeway was built on the river bed and the water allowed to flow over the causeway. It seems that all of these have been destroyed by the Environment Agency and its predecessors. Only one description has been found which is of a Roman causeway at South Stoke:

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<sup>329</sup> Eg. see S.M. Haslam, *The Historic River*. Cambridge: Cobden of Cambridge Press. 1991, 143-145.  
S.M. Haslam, *The River Scene*. Cambridge: Cambridge University Press. 1997, 266.

<sup>330</sup> R. Parker, 'River – Crossings.' In Elsie M. Widdowson, Ed. *Cam or Rhee*. Barrington Local History and Conservation Society. c. 1973, 39.

It spans the river's bed at right angles, a solid bar of flints and chalk, continuous save for a gap of some 8 or 9 feet in width immediately next to the eastern bank. The crown of it is perhaps 10 or 12 feet wide, and the sides batter outward at an angle of 45 degrees or so. On the up-stream side it rises a full 6 feet above the river's mid-stream floor, for scour has prevented any silting; on the down-stream side, where scour is less effective, the rise is about 3 feet only. These data were gathered in the half-hour between ebb and flood of a spring tide.<sup>331</sup>

The scouring was greater upstream because in Sussex rivers the flood tide flows faster than the ebb. On non-tidal rivers the scouring would be downstream of the ford. The gap had been made at some time to allow boats to pass more easily.

This type of ford also caused an obstruction to the flow of water on the rivers and was equivalent to the 'landings and water gangs' which were forbidden on Romney and Pevensey marshes<sup>332</sup> and all other marshes where the laws of Romney Marsh applied.

Haliczer stated that 'England has 66 *ford* names in the 5,400 square miles of the Thames valley, 14 on the right bank and 52 on the left bank.' He found 306 ford-names on the half-inch O.S. maps of England but states that this list was 'probably not complete'.<sup>333</sup> This is certainly a serious underestimation. Digimap Gazetteer gives 458 names including the letters 'f,o,r,d' for Devon, 69 for Norfolk and 58 for Sussex. While many of these will have more than one reference to each ford the total number of ford-names in the country may well exceed 2,000. Furthermore not every ford would have been recorded with a ford-name.

Fords would have caused little obstruction to vessels if rivers flowed at constant stage. They could have been one metre deep. This would have enabled people to walk over and most vessels to pass over. It was the variation of stage which caused problems. Land travellers who wanted to cross the rivers when the stage was high were liable to build causeways and boats wishing to pass when the stage was low would then demolish them.

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<sup>331</sup> A. Hadrian Allcroft, *Water of Arun*. London: Methuen & Co. Ltd. 1930, 1.

<sup>332</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 32, 97.

<sup>333</sup> J. Haliczzer, 'The Distribution of Place-names.' *Geography*. Vol. XXII. 1937, 200.



No court case has been found in which it was discussed whether land traffic or boats had priority at fords. Leland in about 1543 stated that the Irwell was not navigable in some places because of fords and rocks.<sup>334</sup> John Taylor in 1641 complained that fords obstructed his journey up the Churn between Cricklade and Cirencester. Isaac Walton stated that the Dove would have been navigable were it not for the fords and weirs.<sup>335</sup>

There were other similar obstructions to the use of rivers. On the Lea Burnaby and Parker record that ‘the abbot of Waltham was accused of planting an ‘ayland’ in midstream, as was Sir John le Fiz Walter at Reydon.’<sup>336</sup> Trenches were dug which diverted the water from the main stream.<sup>337</sup>

Some rivers at some times were obstructed by fords. At present there is not enough information to establish the legal priority between boats and the users of fords nor has it been possible to establish their number, location or dates.

#### 4.6.3 Weirs

##### Part-weirs, Split-weirs and Full-weirs.

Bridges may possibly have delayed some vessels, some fords made the use of rivers difficult but it was the weirs which caused the most frequently reported problems. While it has been claimed that ‘inland river navigation often tended to stop sharply at the first mill-weir encountered’<sup>338</sup> it seems more likely that most weirs did not block all movement, rather, in places, they made the use of the river more difficult or more dangerous.

There are reports of weirs on all four great rivers. On the Severn wherever there was weir there was also a bypass channel for boats. On the Trent there was a public right to use the river.<sup>339</sup> There were inquiries into the obstruction of the river at Colwick in

<sup>334</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume Four.* Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 6.

<sup>335</sup> Isaac Walton, *The Compleat Angler*. Ed. Richard le Gallienne. London: John Lane. 1904, 295-296.

<sup>336</sup> J.G.L. Burnby and M. Parker, ‘The Navigation of the River Lee (1190 – 1790).’ *Edmonton Hundred Historical Society Occasional Paper*. New Series No. 36. (1978), 4.

<sup>337</sup> Parliamentary Records of Medieval England. Henry VI 1427, iv-332.

<sup>338</sup> John Langdon, ‘The Efficiency of Inland Water Transport in Medieval England.’ In Blair, 2007, 116.

<sup>339</sup> Charter of King Henry II. 1189. Charter of King John 1200. Royal Proclamation 1382. All in *Records of the Borough of Nottingham*. Editor W.V. Steveson. Nottingham: Corporation of Nottingham. 1882.

1299,<sup>340</sup> 1300,<sup>341</sup> 1302,<sup>342</sup> 1303<sup>343</sup> and in 1383.<sup>344</sup> It seems likely from the wording of the reports that the river was partially obstructed from 1229 to 1303 and that in 1383 the river was totally blocked but that the obstruction was quickly removed.

The Great Ouse was one of the rivers where continuous passage was available in 1189 but which was blocked by weirs after the reign of Edward I.<sup>345</sup> Speed states that

To this Shire-Towne [Huntingdon], and benefit of the neighbour Countries, this river was navigable, untill the power of Grey, a mynion of the time, stopt that passage, and with it all redresse, either by law or Parliament.<sup>346</sup>

Jones recorded that upstream of St Ives goods were transported on the river by being backed over the weirs at each mill.<sup>347</sup> The question as to whether the use of a river ends at the point where the first portage is required depends on the attitude of the writer. In Canada portaging was considered to be a normal activity for those travelling by water.

Table 17 is a list of weirs which, it seems, were an obstruction to boats.

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<sup>340</sup> Calendar of Patent Rolls, 1292-1301, 476-477.

<sup>341</sup> Calendar of Patent Rolls, 1292-1301, 533.

<sup>342</sup> Calendar of Patent Rolls, 1301-07, 94.

<sup>343</sup> Calendar of Patent Rolls, 1301-07, 269.

<sup>344</sup> Royal Commission to inquire into Obstructions of the course of the Trent at Colwick. (1383) *Records of the Borough of Nottingham*. Editor W.V. Steveson. Nottingham: Corporation of Nottingham. 1882.

<sup>345</sup> Dorothy Summers, *The Great Ouse*. Newton Abbot: David & Charles. 1973, 28.

<sup>346</sup> John Speed, *Theatre of the Empire of Great Britaine, Parts III*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1953-4, Fol. 53-54.

<sup>347</sup> Evan T. Jones, 'River navigation in Medieval England.' *Journal of Historical Geography*. Vol. 26 (1). (2000), 67.

**Table 17 Weirs which apparently could not be passed**

<b>River</b>	<b>Place of Obstruction</b>	<b>Dates obstructed</b>		<b>Note</b>
Kentish Stour	Fordwich	1189-1600		A
Dee	Chester	1189-1600	Mill	B
Cam	Cambridge	1189-1600		
Great Ouse	Outwell	(1272-1307)-1331		
Derbyshire Derwent	Borrowash	1268	Mill	
Great Ouse	St Ives-Huntingdon	1275-1600		
Itchin	Woodmill	1276-1535	Mill	C
Wye	Wyesham	1312		
Wye	Trellech	1315		
Exe	Topsham	c.1290-1600		
Great Ouse	Hemingford Grey	1370-1600	Mill	D
Trent	Cowick	1299	Mill	
Wye	Monmouth	c.1553-1600		E
Trent	Shelford	1592		

## Notes

- A. Fordwich was the tidal limit and transhipment might have been required even if the weir had not been built.
- B. Boats may have passed over the weir at high tide.
- C. Fieldwork shows that there was an alternative channel.<sup>348</sup>
- D. The river may have been impassable by barges downstream of Bedford. Goods were backed across the weirs.
- E. Barges were dragged round the weir by oxen.

Thus on nine rivers there were weirs which stopped all vessels during some periods. Others may not have been identified. Most of these have been well known for some time. When it was thought that there were only about twelve navigable rivers in England it would have been thought that about three quarters of the navigable rivers had been

<sup>348</sup> Christopher K. Currie, 'Early Water Management on the Lower River Itchin in Hampshire.' In Blair, 2007, 244-253.

obstructed by weirs. It is shown in Appendix A that over 150 rivers were used by boats. Thus about ten per cent of the rivers which were used are now known to have been blocked by weirs.

Most previous authors have failed to realise that there are three distinct types of weir. These are called here part-weir, split-weir and full-weir. To establish the effect of the weirs on river transport the differences between these types must be considered. The challenge in studying the written records about weirs is compounded by the fact that one word may describe different types of weir at different times and in different parts of the country.<sup>349</sup> Also one type of weir may be described by two different words.<sup>350</sup> Thus we have no description of the 'navigable sluice' at Salters Lode referred to by commissioners in 1605.<sup>351</sup>

Some weirs stopped all vessels from passing. Some stopped all vessels at certain stages of the river. Some made the passage more dangerous, sometimes unacceptably dangerous. Some did not affect the channel which was used by vessels. Thus Thacker wrote that in 1404 a weir at Shiplake on the Thames was 'of such height and width that all men with shouts and barges and kidels can pass therby without danger as of old time.'<sup>352</sup>

A part-weir was a weir which projected only part of the way across a river, or from one bank to an island. They were used to divert water into a leat, to provide a haven for fish or to direct the flow to protect banks. Cornish wrote 'Fish and flour go together as bye-products of nearly all our large rivers. The combination comes about thus: wherever there is a water-mill, a mill cut is made to take the water to it. This mill-dam holds the biggest fish.'<sup>353</sup> In these cases it was the side stream which contained the mill-dam not the main channel.

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<sup>349</sup> Eg. 'Sluice' See M. Chisholm, 'Navigation and the seventeenth-century draining of the Fens.' *Journal of Historical Geography*. Vol. 32, No 4. (2006), 747.

<sup>350</sup> Eg. Gortz and Lokkez.

<sup>351</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 384.

<sup>352</sup> Fred S. Thacker, *The Thames Highway. Volume II: Locks and Weirs*. (1<sup>st</sup> Edition 1920) Newton Abbot: David & Charles. 1968, 255.

<sup>353</sup> C.J. Cornish, *Naturalist on the Thames*. London: Seeley and Co. Limited. 1902, 100.

A split-weir was one where two part-weirs projected from opposite banks and there was a relatively narrow gap between them. The water level upstream was raised and the flow through the gap was faster. Where the gap was wide there is no obstruction to traffic. Where it was narrow the passage downstream was dangerous and upstream impossible without a winch. Thus in the Patent Rolls for 1275 there was an order to the sheriff of Oxford and Berks requiring him to widen the water of the Thames because it had been 'so narrowed in divers places' that ships and barges were unable to pass.<sup>354</sup> It seems likely that it was the gap in the split-weirs which had to be widened. In 1286 commissioners were appointed to investigate the 'narrowing and heightening of weirs on the Severn' as 'vessels cannot pass through as they were wont.'<sup>355</sup> The use of the word 'narrowing' shows that this also referred to split-weirs.

A full-weir stretched from one bank to the other and normally raised the depth of the water upstream. Depending on the height of the weir, the flow over the weir and the size of a boat it may have been possible, when going downstream, to slide a boat over the weir. Full-weirs were normally major obstructions to upstream traffic.

Fish-weirs often had a V shape in plan with a basket or net at the vertex.<sup>356</sup> If they were built across the full width of the river they were full-weirs. In the larger rivers they were sometimes built at the side of the river and did not affect the river traffic. Lennard considered that the existence of a *piscaria* or *piscina* in the fens implied the presence of a weir.<sup>357</sup> However no report has been found of such weirs obstructing vessels using the fenland rivers.

In some places there would have been combinations of different types of weir. One channel blocked by a mill wheel, a second by a fish-weir and a third contained a usable split-weir.<sup>358</sup> At other places a mill-weir may have replaced an earlier fish-weir.<sup>359</sup>

<sup>354</sup> Calendar of Close Rolls, 1272-79, 216.

<sup>355</sup> Calendar of Patent Rolls, 1281-92, 257.

<sup>356</sup> C.R. Salisbury, 'Primitive British fishweirs.' In G.L. Good, *et al.* Eds. *Waterfront Archaeology*. CBA Research Report No 74. (1991), 76-87.

<sup>357</sup> Reginald Lennard, *Rural England 1086-1135*. Oxford: Clarendon Press. 1959, 248-251.

H.C. Darby, *The Domesday Geography of Eastern England*. Cambridge: Cambridge University Press. 1971, 368.

<sup>358</sup> Eg. 1786, Thames, Whitchurch Weir. A.W. Skempton, 'Engineering on the Thames navigation, 1770-1845.' *Transactions of the Newcomen Society*. Vol. 55. (1983-4), 153-176, 155.

The types of obstruction which were prohibited by legislation were:

1215            *Kidelli*.<sup>360</sup>

1351-1399    *Gortz molins, estanks, estaches & kideux*.<sup>361</sup>

1402            *Gortz estakes & kidelx*.<sup>362</sup>

1413            *gors des moleyns estankes estakes & kideux*.<sup>363</sup>

1423    (Thames only.)    *les Weres kydelles & trinkes*.<sup>364</sup>

1472            *gentz fishgarthez molyns milledammez estankez de molyns lokkez  
hebbyingwerez estakez kideux hekkez flodegates & divsez atus  
disto<sup>r</sup>bauncez*.<sup>365</sup>

The Oxford English Dictionary defines a ‘kiddle’ as ‘A dam, weir, or barrier in a river, having an opening in it fitted with nets or other appliances for catching fish.’<sup>366</sup> In 1610 on appeal it was held that a fish-weir built of stone is not a kiddle since they must be constructed of stakes and wattles.<sup>367</sup> However this was a case involving the King’s weir at the time of James I and was not followed in a later case where it was held that such an obstruction in a river must be removed.<sup>368</sup> The word *stagnum*, a dam, may refer either to the structure or to the pool of water created upstream of the structure.

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<sup>359</sup> Eg. Patrick Clay, ‘A Norman mill dam at Hemington Fields, Castle Donington, Leicestershire.’ In Stuart Needham and Mark G. Macklin, Eds. *Alluvial Archaeology in Britain*. Oxbow Monograph 27. 1992, 165.

<sup>360</sup> Magna Carta and its many confirmations.

<sup>361</sup> 25 Edward III s 3, c 4.

45 Edward III c 2.

21 Richard II c 19.

1 Henry IV c 12.

<sup>362</sup> 4 Henry IV c 11.

<sup>363</sup> 1 Henry V c 2.

<sup>364</sup> 2 Henry VI c 12.

<sup>365</sup> 12 Edward IV c 7.

<sup>366</sup> ‘Kiddle.’ Oxford English Dictionary electronic edition.

<sup>367</sup> *Chester Mill upon the River of Dee*, (1610) 10 Co Rep 137b.

<sup>368</sup> *R v The inhabitants of Westham in Essex*. (1714) 10 Mod 159.

Most translators have translated *gortz* as ‘weir’<sup>369</sup> leading readers to assume that the obstructions were full-weirs which vessels could not pass. Rather they appear to have been of varying types with the degree of obstruction and danger which they caused depending on their height, the width of their gap, if any, and the flow of the river. Many *gortz* in good repair could be passed by boats.<sup>370</sup>

It seems that at some *gortz* the riparian owner deliberately blocked the river. One complaint to the king was that:

many *gortz* which ought to be repaired so that boats might pass; are now so obstructed, restrained and barred, by bar and lock, by those who own them that no boat can pass without giving great toll to those who own the said *gortz*; whereby merchants often [have to] lie there two or three days before they can pass, untill they make redemption or agreement, and thus they lose their advantages, corn and other victual grow dear, and other damages to people ensue. ...

The King replied ‘[action should be taken] so that boats may pass as they reasonably ought and have anciently been used.’<sup>371</sup>

*Molyns* are mills and also the channels in which the mill wheel was set.

*Estanks* are pools or fishponds and apparently the pool above a part-weir.

*Estaches* are ‘an arrangement of stakes for defence or a raft made of balks of timber, fastened together with chains, used to block up a channel’.<sup>372</sup>

*Trinkes* were a kind of fixed fishing-net formerly used in the Thames and other rivers.<sup>373</sup>

*Lokkez*. Wilson wrote ‘The term *lock* seems to have originally meant a narrow passageway for barges, for some bridge arches were also called locks, particularly at London Bridge.’<sup>374</sup> The word was also used for ‘barriers on a river, constructed so as to be opened or closed at pleasure.’<sup>375</sup>

<sup>369</sup> See Statutes at Large for the above Acts.

<sup>370</sup> See next quotation.

<sup>371</sup> TNA, ? Temp. Edw II. Ancient Petitions, File 125. No 6201. Cited in Lucy Toulmin Smith, ‘Parliamentary Petitions Relating to Oxford.’ In Montagu Burrows, Ed. *Collectanea, Third Series*. The Oxford Historical Society. Vol. 32. 1896, 138.

<sup>372</sup> Oxford English Dictionary electronic edition.

<sup>373</sup> *Ibid*.

<sup>374</sup> David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. 1987, 18-19.

<sup>375</sup> Oxford English Dictionary electronic edition.

*Hekkez* are ‘a grating or frame of parallel bars in a river to obstruct the passage of fish, or other solid bodies, without obstructing the flow of the water.’<sup>376</sup>

The weirs would have often needed repair and must have often been washed away. It is recorded that ‘Numerous manorial extents record the customary services of the servile tenants in repairing the watermill dam, sometimes specifying the number of days to be spent on that service.’<sup>377</sup> In general weirs were constructed to preserve fish or to provide a head of water for a mill, the obstruction of traffic was incidental. However on the Exe at Topsham the Earl of Devon constructed an illegal weir apparently to force the townspeople of Exeter to use his wharf and to pay tolls for that use.<sup>378</sup>

Vessels went past weirs in different ways. Part-weirs and split-weirs with wide gaps presented no problem. All weirs on the Severn were built between an island and a bank and a ‘barge-gutter’ was left ‘eighteen feet in breadth’ for barges to pass.<sup>379</sup> It was the law on some rivers that a gap, normally of two perches, should be left in all split-weirs and any other obstruction as on the Derbyshire Derwent<sup>380</sup> and the Trent.<sup>381</sup> Hatcher wrote that there was an ancient custom that on the Salisbury Avon ‘a passage was to be left free, fifteen feet wide, and twelve feet distant from either bank.’ And that ‘This custom was confirmed by the commissioners in [1604 and 1632].’<sup>382</sup> Contemporary records show that on some rivers, like the Arun, the weirs were opened for boats at certain times of day.<sup>383</sup> On other rivers, like the Kentish Stour, the boats seem to have operated either upstream or downstream of a weir. Peberdy has drawn attention to the fact that on the Thames downstream of Oxford all mills were between the bank and an

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<sup>376</sup> *Ibid.*

<sup>377</sup> S.A. Moorhouse, ‘Cornmills.’ In M.L. Faull and S. Moorhouse, Eds. *West Yorkshire: an archaeological survey to AD 1500. Volumes I and III.* Wakefield: West Yorkshire Metropolitan County Council. 1981, 712.

<sup>378</sup> John Vowell *alias* Hooker, *The Description of the Citie of Excester, c1600*. Exeter: Devon and Cornwall Record Society. 1919, 33.

<sup>379</sup> D.J. Pannett, ‘Fish Weirs on the River Severn.’ In Trevor Rowley, Ed. *The Evolution of Marshland Landscape.* Oxford: Oxford University Department for External Studies. 1981, 144- 154.

D.J. Pannett, ‘Fish Weirs on the River Severn.’ *Folk Life*. Vol. 26, (1987-88), 55-69.

<sup>380</sup> Calendar of Charter Rolls, 1226-57, 96.

<sup>381</sup> *Records of the Borough of Nottingham, 1155-1399.* Published under the authority of the Borough of Nottingham. Editor W.V. Steveson. London: Bernard Quaritch. 1882, 2.

<sup>382</sup> Henry Hatcher, *The History of Modern Wiltshire. Old and New Sarum, or Salisbury.* London: The Author. 1843, 460.

<sup>383</sup> *A Description of the High Stream of Arundel.* (Written c.1637) Editor Joseph Fowler. Littlehampton: Nature and Archaeology Circle, Extra Publication, No. 1. 1929, 59.



island.<sup>384</sup> Wilson, a lock-keeper, wrote that ‘Thames mills were constructed at the “tail” or downstream end of narrow channels at islands, and sometimes new cuts were dug. As the river pushed down the dammed off millstream, a ‘head’ of water built up to work the mill wheel. Later, dams were thrown across any other adjacent channels to provide a greater head for extra power.’<sup>385</sup> This explains why ‘later’ the objections to the obstruction of the Thames increased. On the Lea there were nine mills at Stratford yet vessels went upstream without, apparently, any trouble since there were suitable alternative channels available.<sup>386</sup>

Thacker records that Strype wrote in 1574 that at some weirs it was normal for a vessel to be unloaded before it went down through the gap.<sup>387</sup> Records of winches on the Thames to assist upstream passage through split-weirs have been found for Marlow, 1307 and 1314,<sup>388</sup> Bisham, 1544,<sup>389</sup> Hambledon, 1383<sup>390</sup> and Rotherfield Peppard, 1395-99.<sup>391</sup> In other places, as on the Wye at Monmouth, it is reported that vessels were taken from the water and hauled upstream past a weir.<sup>392</sup> Since at many places it was normal to haul boats out of the sea and clear of the tide every evening<sup>393</sup> it does not seem that it would have been a major problem to haul boats past a weir. At Cambridge in the 1950s boats were regularly pulled up a ramp beside the Silver Street weir.<sup>394</sup> On the Dee at Chester it seems that shallow vessels could pass over the weir at high tide.<sup>395</sup>

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<sup>384</sup> R.B. Peberdy, ‘Navigation on the River Thames between London and Oxford in the Late Middle Ages: A Reconsideration.’ *Oxoniensia* Vol. 61. (1996), 335-339.

<sup>385</sup> David Gordon Wilson, *The Making of the Middle Thames*. Bourne End: Spurbooks Ltd. 1977, 64.

<sup>386</sup> Stephen Pewsey, *Stratford*. Chichester: Phillimore. 1993, 1.

<sup>387</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (1st published 1914.) Newton Abbot: David & Charles. 1968, 53.

<sup>388</sup> TNA, C133/128, C134/42. Cited in R.B. Peberdy, ‘Navigation on the River Thames between London and Oxford in the Late Middle Ages: A Reconsideration.’ *Oxoniensia* Vol. 61, (1996), 335.

<sup>389</sup> Fred S. Thacker, *The Thames Highway. Volume II: Locks and Weirs*. Kew: Fred S. Thacker. 1920. (Reprinted Newton Abbot: David & Charles. 1968.), 285.

<sup>390</sup> TNA, C135/56 no. 13. Cited in R.B. Peberdy, ‘Navigation on the River Thames between London and Oxford in the Late Middle Ages: A Reconsideration.’ *Oxoniensia* Vol. 61, (1996), 336.

<sup>391</sup> C.T. Flower, *Public Works in Medieval Law. Volume II*. Selden Society Vol. 40. 1923, 125, 127.

<sup>392</sup> Joan Fleming-Yates, *The River Running By*. No address given: Wedderburn Art Ltd. c. 2005, 96.

<sup>393</sup> Eg. at Brighton. John Bleach and Mark Gardiner, ‘Medieval Markets and Ports.’ In Kim Leslie and Brian Short, Eds. *An Historical Atlas of Sussex*. Chichester: Phillimore. 1999, 42.

<sup>394</sup> Personal observation by the present author.

<sup>395</sup> Richard Bennett and John Elton, *History of Corn Milling. Volume IV*. New York: Burt Franklin. 1904, 96.

New weirs were built throughout the period 1189-1600.<sup>396</sup> Others were ‘heightened’ or ‘narrowed’ by their owners. Some weirs were washed away and others were pulled down. It would not have been unusual for passage of a weir to be difficult at low flow, dangerous as the flow increased and then easy when the level of the water in the river was well above the top of the weir.

### Flash-locks

A simple flash-lock weir was a weir in which there were boards which could be removed when a vessel wished to pass. When the boards were removed the water stored above the weir flowed through the gap, boats and fish followed, the boards were then replaced and the water level upstream of the weir slowly rose again. On some rivers the boards were required to be removed on Sundays so that there was free passage for migrating fish on the day when the mill was not working as on the Arun in 1637.<sup>397</sup>

A flash-lock enabled a vessel to pass over a shoal, or shallow section of the river, by the quick release of a ‘flash’ or ‘flush’ of water which temporarily provided a cushion on which the boat could pass. It is reported that there were flash-locks on the Thames, Sussex Ouse, Parrett and Little Ouse but the date of their construction is uncertain.<sup>398</sup>

Flash-locks have been described by most authors who have written about the Thames. Some have claimed that they have existed for a thousand years.<sup>399</sup> However no record has been found of any flash-lock prior to 1661<sup>400</sup> when Wood wrote that there were weirs which caused ‘stoppages of water severall miles distant’ and ‘about Oxon’ some of which ‘give a shoote to vessels in their passage,’ but ‘though probably [the flash] might hasten them in their journey yet not without great expence.’ He added that ‘These with severall

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<sup>396</sup> Arthur J. Willis, Ed. *Winchester Consistory Court Depositions. 1561-1602*. Lyminge: Arthur J. Willis. 1960, 23.

<sup>397</sup> *A Description of the High Stream of Arundel*. Editor Joseph Fowler. Littlehampton: Nature and Archaeology Circle, Extra Publication, No. 1. 1929, 59.

<sup>398</sup> M.T.J. Lewis *et al.* ‘Flashlocks on English Waterways.’ *Industrial Archaeology*. Vol. 6. (1969), 218, 222, 235, 244.

<sup>399</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (1st Edition 1914) Newton Abbot: David & Charles. 1968, 8.

John Blair, ‘Introduction.’ In Blair, 2007, 10.

<sup>400</sup> Blair’s translation of *gurgites* as flashlocks is not accepted here. They appear more likely to have been *gortz* as described above. John Blair, ‘Transport on the Upper Thames.’ In Blair, 2007, 264.

other annusanes if removed would breed noe small commodigy to our city.’<sup>401</sup> The next dated record of a flash-lock which has been found was in 1699 when a miller ‘sold to the waterman any gushes or floats of water to bring up their boats to Cambridge.’<sup>402</sup>

When flash-locks were used in series a boat could proceed a considerable distance down a shallow river. Thus Thacker records that in 1793 there were flushes on Saturday night and Wednesday morning on the Thames from Buscot to Bold Weir.<sup>403</sup> If used singly they would scarcely seem to justify the cost of their construction and maintenance. It seems unlikely that such regular flushes of water down the Thames would have escaped the attention of Harrison, Camden or John Taylor if they had been used at the end of the 16<sup>th</sup> century or early in the 17<sup>th</sup> century. Thus it seems likely that the first flash-locks on the Thames were constructed at about the same time as pound locks were installed between Burcot and Oxford, 1635.

Thacker wrote of the flash-locks on the Thames that when the level of the whole of the upper reach was lowered for two miles by a considerable number of inches it needed, perhaps, several days to recover its normal depth.<sup>404</sup> Later, possibly sarcastically, he wrote that ‘A fortnight’s leave, if such a privilege then existed, might easily have been spent in waiting, in a dry summer, to pass through any one of the “seventy locks”’.<sup>405</sup> However this would have been very unusual. Let it be assumed that the several inches was 20 ins. (about 0.5 m). Thacker considered the length of the pound to be 2 miles. Just upstream of Reading the width of the river is now about 65 m. The mean flow at Reading is now  $39 \text{ m}^3 \text{ s}^{-1}$ . The average time to refill the pound would have been about 45 mins, assuming that the weirs were watertight. In summer if the flow was  $5 \text{ m}^3 \text{ s}^{-1}$  (which is exceeded for 95% of the time) the original depth would have been restored in six hours. All except the largest vessels could have continued their journey before the pound was full.

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<sup>401</sup> Anthony Wood, “*Survey of the Antiquities of the City of Oxford*,” composed in 1661-6. Ed. Andrew Clarke. Oxford: Clarendon Press. 1889, 430-431.

<sup>402</sup> Rev. Dr. Stokes, ‘The Old Mills of Cambridge.’ *Proceedings of the Cambridge Antiquarian Society*. Vol. XIV (New Series VIII) 1909-1910, 215.

<sup>403</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (1st published 1914) Newton Abbot: David & Charles. 1968, 147.

<sup>404</sup> *Ibid.* page 8.

<sup>405</sup> *Ibid.* page 47.

All illustrations, which have been found, of boats passing through a flash-lock show a vessel the size of a punt. Most authors have failed to appreciate the problems involved in manoeuvring a barge down a river on a flash. It would seem to have been a most dangerous activity. No evidence has been found of flash-locks operating in the period 1189-1600. They are discussed here not because they existed during that period but because other authors have assumed that they did.

#### 4.6.4 Water-mills

Modern authors make many references to mills obstructing rivers. Syson wrote of the 'constant disputes over the water supply to the mill. Generally, these were caused by some hindrance to navigation or the prevention of fish passing up river.'<sup>406</sup> Brandon and Short state that 'rivers such as the Rother, Medway or Stour had riparian owners with weirs and mills which blocked them.'<sup>407</sup> The purpose of this section is to establish the extent to which river transport was hindered by mills.

Domesday Book listed just over 6,000 mills in England in 1086.<sup>408</sup> Holt by considering chiefly Domesday Book, the *Rotuli Hundredorum* and the *Red Book of Worcester* calculated that by 1300 there were between 10,000 and 12,000 mills in England.<sup>409</sup>

Langdon studied manorial records and calculated from these that about 80%, that is 8,000 – 9,000, were watermills.<sup>410</sup> He calculated that there was a fall in the number of mills of about 22% between 1440 and 1485<sup>411</sup> after which there may have been an increase in the number of industrial mills. Thus he implied that the number of water-mills varied between about 6,000 and 10,000.

Langdon's study of the mills was based on mills which belonged to manors. He estimated that the number of horse-mills was less than 3% of the total during the period 1300-1540.<sup>412</sup> However there is evidence that private mills were much more often powered by horses. Bennett and Elton wrote that in Shrewsbury between 1267 and 1279 the right of multure was questioned. The four town mills should have been maintained

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<sup>406</sup> Leslie Syson, *British Water-mills*. London: B.T. Batsford Ltd. 1965, 45.

<sup>407</sup> Peter Brandon & Brian Short, *The South East from AD 1000*. London: Longman. 1990, 166.

<sup>408</sup> H.C. Darby, *Domesday England*. Cambridge: Cambridge University Press. 1986, 272.

<sup>409</sup> Richard Holt, *The Mills of Medieval England*. Oxford: Basil Blackwell. 1988, 116.

<sup>410</sup> John Langdon, *Mills in the Medieval Economy*. Oxford: Oxford University Press. 2004, 37.

<sup>411</sup> *Ibid.* page 31.

<sup>412</sup> *Ibid.* page 35.

by the burgesses of the town but they were allowed to fall into disrepair. During this time twelve other mills were constructed ‘mostly horse- or ass-mills’.<sup>413</sup> Hoskins states that in Midland England ‘The old bakers frequently, if not invariably, ... milled their own corn on their own premises (usually by means of a horse-mill).’<sup>414</sup> Stokes wrote that in Cambridge there were three water-mills and at least four horse mills.<sup>415</sup> There are records of royal horse-mills at Lincoln and Windsor in the King’s Remembrancer accounts and records of a horse-mill at Peak in Derbyshire and of a hand-mill at Caernarvon in the Pipe Rolls.<sup>416</sup> In other places where the lord did not have right of multure it would seem possible that there would have been many private horse-mills.

It used to be thought that mills have seldom moved since the time of Domesday. Ellis wrote in 1833 ‘wherever a mill is specified, we generally find it still subsisting.’<sup>417</sup> However on closer examination it is found that while some sites were occupied throughout the period 1189-1600 other sites were vacated. Aston has shown that in Leicestershire the distribution of mills ‘shifted quite significantly from east to west’ during the 700 years after Domesday times.<sup>418</sup> The watermills also tended to migrate downstream. Holt wrote that in Huntingdonshire during the period 1086 to 1279 ‘at the same time as mills on the lesser watercourses had been taken out of use, ... where there was adequate waterpower the number of watermills was continuing to rise.’<sup>419</sup> The proportion of mills with horizontal wheels is unknown. Those which have been inspected in the Hebrides and Tibet by the present author were on small streams with a gradient in excess of 1:100 which could never have been used by boats. No reference has

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<sup>413</sup> Richard Bennett and John Elton, *History of Corn Milling. Volume II. Watermills and Windmills.* (1<sup>st</sup> Edition 1899.) Wakefield: EP Publishing Ltd. 1973, 48-49.

<sup>414</sup> W.G. Hoskins, *Midland England.* London: B.T. Batsford Ltd. 1949, 73.

<sup>415</sup> Rev. Dr. Stokes, ‘The Old Mills of Cambridge.’ *Proceedings of the Cambridge Antiquarian Society.* Vol. XIV (New Series VIII) 1909-1910, 224.

<sup>416</sup> Cited in R.A. Brown and H.M. Colvin, ‘The Royal Castles 1066-1485.’ In R. Allen Brown *et al.* *The History of the King’s Works. Volume II.* London: Her Majesty’s Stationery Office. 1963, 705, 777, 875; and A.J. Taylor, ‘The King’s Works in Wales 1277-1330.’ In R. Allen Brown *et al.* *The History of the King’s Works. Volume I.* London: Her Majesty’s Stationery Office. 1963, 381.

<sup>417</sup> Sir Henry Ellis, *General Introduction to Domesday.* Cited in Mark Anthony Lower, ‘Notes on Watermills and Windmills in Sussex.’ *Sussex Archaeological Collections.* Vol. V. (1852), 268.

<sup>418</sup> Norman Aston, *Leicestershire Watermills.* England: Norman Ashton. 1977, 26.

<sup>419</sup> Richard Holt, *The Mills of Medieval England.* Oxford: basil Blackwell. 1988, 109.

been found that implies that mills with horizontal wheels obstructed boats.<sup>420</sup> (The Tamworth mill was supplied by a leat at least 400 m long.)<sup>421</sup>

In general authors have assumed that if Domesday recorded a mill in a vill then the mill was located on the largest river in the vill. Thus Darby stated that 'The group of eight [mills] was at Meldreth on the upper waters of the River [Rhee]'<sup>422</sup> whereas all eight were on the River Mel, a much smaller stream.<sup>423</sup> The Rhee at Meldreth was at times more than half a mile wide.<sup>424</sup> It seems that there may have been few mills actually on the river between Guilden Morden and Granchester.

Williamson has drawn attention to the difficulty of mapping mills recorded in the Domesday Book because some of the mills were not physically located within the main geographical boundaries of the vill to which they are allocated.<sup>425</sup>

There were five methods of supplying water from a river, stream or ditch to a mill:- a storage pond, leat, divided stream, direct drive and weir. In some places a combination was used. In general, storage ponds or millponds were on small streams. They stored up the water during the night and allowed the mill to operate for some hours during the day, longer in winter than summer. Possibly the best known are the hammer ponds of the Weald. These were normally on streams which were too small to be used by boats.

A leat could be any length from 10 yards to 2 miles as at Robertsbridge. Often they did not interfere with the river traffic. Some leats had more than one mill on them before the water was returned to the river again as at Robertsbridge. The flow in a river is reduced by the flow in the leat for the section between the intake and outflow but due to the

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<sup>420</sup> See eg. Paul N. Wilson, *Watermills with Horizontal Wheels*. Society for the Protection of Ancient Buildings. No. 7. 1960.

<sup>421</sup> Philip Rahtz and Robert Meeson, *An Anglo-Saxon Watermill at Tamworth*. CBA Research Report No 83. 1992, 13.

<sup>422</sup> H.C. Darby, *The Domesday Geography of Eastern England*. 3<sup>rd</sup> Edition. Cambridge: Cambridge University Press. 1971, 309.

<sup>423</sup> Cecil Chapman, 'Watermills'. In Elsie M. Widdowson, Ed. *Cam or Rhee*. Barrington: Barrington Local History and Conservation Society. 1973, 46.

<sup>424</sup> R. Parker, 'River – Crossings.' In Elsie M. Widdowson, Ed. *Cam or Rhee*. Barrington Local History and Conservation Society. C. 1973, 37.

<sup>425</sup> Tom Williamson, 'Domesday Industries: Mills, Salt Pans and Fisheries.' In Trevor Ashwin and Alan Davison, *An Historical Atlas of Norfolk*. 3<sup>rd</sup> Edition. Chichester: Phillimore. 2005, 42-43.

annual variation in flow in the main stream this would, at most, only have been significant for a short periods of time.

Many mills were on divided streams blocking one channel but leaving the other(s) clear. There were examples at Guilden Morden,<sup>426</sup> Winchester, Exeter and Bath.<sup>427</sup> On some rivers an undershot drive wheel dipped into one side of the river leaving the other side clear, as at King's mill at Canterbury and in Salisbury.<sup>428</sup>

It has for a long time been recognised that rivers could be too large to be conveniently used for mills. In 1523 Fitzherbert wrote 'Commonly these mills be not set upon the great streams of these great rivers, but a great part of the water is conveyed out of the great stream by a mill stream made with man's hand ...' He criticises mills set 'on the one side of the great river and a weir made of timber and stone to hold up the water to the mill, the which is a great cost and many times it will stand in lack of water, that it may not well go at a great flood except the ground work be made very high.'<sup>429</sup> Camden wrote 'And now the *Ise* [Exe] is grown bigger; but dividing into many streams vey convenient for mills, it flows to the City *Isca* [Exeter].'<sup>430</sup>

In London the mills were not on the Thames but as Fitzstephen wrote in 1180 'On the north side are fields for pasture, and a delightful plain of meadow land, interspersed with flowing streams, on which stand mills, whose clack is very pleasing to the ear.'<sup>431</sup>

Writing about Domesday water-mills Hodgen has observed that '(although small-scale maps fail to present the facts clearly) the banks of the three great highway rivers, the Severn, Trent and Thames, were seldom regarded by mill builders as suitable sites for milling operations.'<sup>432</sup> Coates and Tucker writing about the Wye between Monmouth and Hay-on-Wye state that 'Although one or two possible mill-sites appear to be on the

<sup>426</sup> *VCH Cambridgeshire. Vol. 8*, 106.

<sup>427</sup> All three – John Speed, *Theatre of the Empire of Great Britaine, Parts I.* (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1953-4.

<sup>428</sup> *Ibid.*

<sup>429</sup> John Fitzherbert, *The Boke of Surveying*. London: Thomas Marshe. 1523, fo. 49.

<sup>430</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 30.

<sup>431</sup> William Fitzstephen, *Vita Sancti Thomae*. 1180. Cited in N.J. Barton, *The Lost Rivers of London*. London: Phoenix House Ltd. 1962, 13.

<sup>432</sup> Margaret T. Hodgen, 'Domesday Water Mills.' *Antiquity*. Vol. 13. (1939), 266.

Wye itself, all those which have been positively identified – with the exception of No 6, New Weir Forge [earliest reference 1754] – are on the tributaries.<sup>433</sup>

There are references to people removing weirs without first obtaining authorisation from the Courts as on the Ray in 1260,<sup>434</sup> Thames c.1369<sup>435</sup> and 1574,<sup>436</sup> Buckfast on the Dart in 1371,<sup>437</sup> Godmanchester on the Great Ouse c.1485<sup>438</sup> and Shelford on the Trent in 1593.<sup>439</sup> Regarding the obstruction of the Great Ouse Summers wrote that

Reginald de Grey and the abbot undoubtedly persisted in their course of obstruction through influence, and in general a strong presumption arises in favour of the public right [of navigation] from the pertinacity with which the local people insisted on their right of free passage on the river.<sup>440</sup>

This may well apply also to the other rivers.

*Magna Carta* confirmed the ancient right to the use of rivers. The next legislation relating to the obstruction of rivers was in 1351. Thus it seems likely that the rivers remained relatively clear of obstructions during the 13<sup>th</sup> century and that the obstructions occurred on a major scale from the start of the 14<sup>th</sup> century.

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<sup>433</sup> S.D. Coates and D.G. Tucker, *Water-mills of the Middle Wye Valley*. Monmouth: Monmouth District Museum Service. 1983, 5.

<sup>434</sup> John Blair, 'Transport on the Upper Thames.' In Blair, 2007, 268.

<sup>435</sup> Anthony Wood, "*Survey of the Antiquities of the City of Oxford*," composed in 1661-6 by Anthony Wood. Ed. Andrew Clarke. Oxford: Clarendon Press. 1889, 429.

<sup>436</sup> British Library Lansdowne MS 18, fo. 137 (no. 62). Cited in John Langdon, 'Inland water transport in medieval England.' *Journal of Historical Geography*, Vol. 19, 1. (1993), 1-2.

<sup>437</sup> *Select Cases of Trespass in the King's Courts. 1307-1399. Volume II*. Editor Morris S. Arnold. Selden Society, Vol. 103. (for 1987), 384-386.

<sup>438</sup> Dorothy Summers, *The Great Ouse*. Newton Abbot: David & Charles. 1973, 28.

<sup>439</sup> Stanley Revill, 'A 16th-Century Map of the River Trent near Shelford.' Reprinted from the Transactions of the Thoroton Society of Nottinghamshire. 1971. 81-90, 87.

<sup>440</sup> Dorothy Summers, *The Great Ouse*. Newton Abbot: David & Charles. 1973, 28.



#### 4.6.5 Estuaries

Changes in the condition of some estuaries affected river transport. Where ships were unable to access an estuary goods which might have been brought downstream in boats or barges could not be exported. Equally goods were not available for transport upstream. The record is confused by the fact that while some estuaries became shallower other estuaries were used less due to the increase in the size of ships.

On the Yorkshire Ouse there were three factors which reduced the use of the river downstream of York. In the 14<sup>th</sup> and 15<sup>th</sup> centuries the river was often obstructed by fishgarths and in the 16<sup>th</sup> century it seems that the river became shallower due to siltation.<sup>441</sup> In addition Hull was founded in the last decade of the 12<sup>th</sup> century and steadily drew trade from York. On the Trent at the end of the 12<sup>th</sup> century silt so obstructed the channels of the Idle, Don, Trent and other rivers that their free passage was blocked. Axholme was an island accessible only by boat. It seems that boats could still use the rivers but their size was limited.<sup>442</sup> Lambert and Walker reported that the estuary of the Witham was blocked in about the second half of the 15<sup>th</sup> century which stopped boats from going to Lincoln.<sup>443</sup>

There have been many changes to the course of the Welland, Nene and Great Ouse including the blockage of the Wisbech estuary before the end of the 13<sup>th</sup> century. However no record has been found of these changes stopping the use of the rivers. A record of 1202 implies that sea-going ships sailed from Cambridge to Norway and no record has been found of this route being closed before 1600.<sup>444</sup> Dugdale wrote that a Commission which inspected the river channel of the Nene on 24 June 1605 stated that from Peterborough to the Old Ea was 'so grown up with earth and weeds, as that it serveth neither for passage of boats, nor draining, so hath been for a long time'.<sup>445</sup> It

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<sup>441</sup> Baron F. Duckham, *The Yorkshire Ouse*. Newton Abbot: David & Charles. 1967, 29-42.

<sup>442</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 141.

<sup>443</sup> M.R. Lambert and R. Walker, *Boston, Tattershall & Croyland*. Oxford: Basil Blackwell. 1930, 59.

<sup>444</sup> Pipe Rolls 1202 (Publications of the Pipe Roll Society New Series XV) 131. Cited in *VCH, Cambridge and the Isle of Ely, Vol. III*, 87.

<sup>445</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 380.

seems that at least some of the many channels through the Fens were always usable but one could not always travel by the most direct channel.

It seems that the Yare was always tidal to Norwich. In the 12<sup>th</sup> century ships went direct to Norwich but later goods were transferred to barges and boats at Great Yarmouth. No evidence has been found that the River Yare became less usable due to siltation so it seems that the transfer of goods at Yarmouth may have been due to the increase in the size of ships.

On the Kentish Stour ships originally sailed to Fordwich but by the 14<sup>th</sup> century goods were transferred to barges at Sandwich. On the rivers which flow into the sea at Rye there have been many changes which can not easily be analysed.<sup>446</sup>

The estuaries of all the Sussex rivers have been altered greatly due to the drifting of shingle which first diverted the rivers to the east, then formed a bar, which was eventually broken through. Thus in 1586 Camden wrote of Sussex 'It has many little rivers; but those that come from the north-side of the County, presently bend their course to the sea, and are therefore unable to carry vessels of burden.'<sup>447</sup> Yet in 1569 there was a boat of about 60 tons on the Arun at Arundel.<sup>448</sup> In 1577 there was a ferry at Southease on the Ouse carrying a man, a boy and 58 sheep before it sank.<sup>449</sup> Holland added to Camden's text the statement that 'From Lewis, the river as it descendeth, so swelleth, that the bottom cannot contain it, and therefore maketh a large mere.'<sup>450</sup> It is hard to reconcile Camden's statement with the known use of the rivers. The extant records are insufficient to enable a calendar to be created showing when the rivers were usable by ships and when they were obstructed.

Leland records that he crossed the Axe at 'ebbe'. The river then had its mouth 'under the rootes of Whitecliff'. Upstream was a bridge of two stone arches which could not be passed over 'at high tydes'. This is the only record which has been found of a bridge

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<sup>446</sup> Jill Edison, 'Catastrophic Changes: A Multidisciplinary Study of the Evolution of the Barrier Beaches of Rye Bay.' In J. Eddison, *et al.*, Eds. *Romney Marsh: Environmental Change and Human Occupation in a Coastal Lowland*. Oxford University Committee for Archaeology Monograph No. 46. 1998, 65-88.

<sup>447</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 167.

<sup>448</sup> *Sussex Coroners' Inquests 1558-1603*. Editor R.F. Hunnisett. Kew: PRO Publications. 1996, 13-14.

<sup>449</sup> *Ibid.* page 37.

<sup>450</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 174, fn 13.

only passable at low tide. It seems likely that the river had changed its course since the bridge was built. At some stages of the tide the bridge must have obstructed river traffic.<sup>451</sup>

The estuary of the Exe was obstructed by a weir at some date between 1317 and 1327.<sup>452</sup> Camden wrote:

But Exeter received not so great damage at these enemies hands, as it did by certaine dammes, which they call *Wears*, that Edward Courtney Earle of Denshire, taking high displeasure against the Citizens, made in the river *Ex*, which stop the passage so that no vessel can come up to the Citie; but since that time all merchandize is carried by land from Topesham three miles off. And albeit it hath beene decreed by Act of Parliament, to take away these Weares, yet they continue there still.<sup>453</sup>

He noted that the river was divided into many channels at Exeter, presumably for the mills. He also wrote that in the Dart ‘grit and sand out off the Tin-mines little by little choke up the channel’ and that below Totnes there were whole heaps of sand obstructing the river.<sup>454</sup> It is not known if the river was usable before this sediment was deposited in the river.

Ranulph Higden, (c.1280-c.1363) a local man, wrote that on the Dee there was considerable trade ‘not only by importing but by return’.<sup>455</sup> However Camden records that by 1586 the sea had ‘withdrawn it self’ from Chester so that the city had lost its harbour. This is likely to have reduced the trade upstream on the Dee.

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<sup>451</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume One.* Editor Toulmin Smith, Lucy. Carbondale: Southern Illinois University Press. 1964, 243-4.

<sup>452</sup> *Local Customs Accounts of the Port of Exeter. 1266-1321.* Editor Maryanne Kowaleski. Devon and Cornwall Record Society. New Series, Volume 36. 1993, 1-7.

<sup>453</sup> William Camden, *Britain*. Trans. Philemon Holland. London: Joyce Norton, and Richard Whitaker. 1637, 205, 203.

<sup>454</sup> *Ibid.* page 210, 211.

<sup>455</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 554.

#### 4.6.6 Conclusion

It was shown in Part 2 that the physical usability of rivers varied during the period 1189-1600. To this may now be added the fact that some rivers became obstructed by bridges, fords or weirs and others became inaccessible from the sea.

The dates at which the first record of an obstruction on each river, which has been found, are listed in Table 18.

**Table 18. Date of First Obstruction of Rivers.**

<u>Date</u>	<u>Total</u>	<u>Weirs&amp;Mills</u>	<u>Weeds Dirt etc</u>	<u>Fishing</u>
1200-1249	2	1		1
1250-1299	14	9	3	2
1300-1349	13	6	3	4
1350-1399	14	5	4	5
1400-1449	4	2	2	
1450-1499	2	1		1
1500-1549	5	4	1	
1550-1599	4	2	1	1

For the period 1200-1249 it is likely that many records are missing. In the 16<sup>th</sup> century complaints which were made would have been considered by the Commissioners of Sewers, most of whose records have been lost. The nature of the records makes it very difficult to know if the obstruction caused inconvenience or the total obstruction of the waterway and also normally it is not known if, or when, the obstruction was removed. Some reports referred to one river, others to many. Some complaints referred to more than one obstruction.

Throughout the period weirs and mills caused about half the complaints, and lack of maintenance about a quarter. Jones wrote that ‘commissions were also created to examine waterways, or stretches of waterways, where no evidence has been found that

open navigation even existed.<sup>456</sup> This may be because the relevant records of use are missing. If Jones is suggesting that commissions were set up to investigate obstructions on rivers which had never before been used then this has interesting implications. Firstly it would imply that those making the claim considered that all physically usable rivers could be used legally. There would have been no advantage in obtaining the clearance of a river which could not then legally be used. Secondly it would imply that use of the rivers was so important that some people were willing to commit perjury to have the obstructions removed. Unfortunately Jones gives no examples of such commissions.

The reign of Edward II (1307-27) has been described as the beginning of almost two centuries of intermittent anarchy.<sup>457</sup> There many reasons for this anarchy, including the absence of the king on military campaigns, the corruption of officials, the private armies of the magnates and the ineffectiveness of the commissions compared with the earlier Courts of Eyre.<sup>458</sup> The lawlessness is shown both in the court records<sup>459</sup> and the literature of the time.<sup>460</sup> The anarchy did not suddenly start or finish. The Great Ouse downstream of Huntingdon was deliberately, permanently and illegally obstructed in about 1275 and the Exe at Topsham in 1317. It seems that some magnates used the opportunity to obstruct some of the rivers with weirs and fishing equipment. What is not known is how successful the authorities were in removing these obstructions.

The above table shows that there are many more records of complaints for the period 1250 to 1400 than before and after this period. The starting date is about when the records start to become available. The end date is harder to explain. The absence of later complaints may be due to the humble boatmen being driven out of business by the land-owners and so no longer complaining, or the realisation that justice was no longer available, or the various parties arriving at appropriate ways of working together, or just the loss of records or a combination of some, or all, of these reasons.

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<sup>456</sup> E. Jones, 'River Navigation in Medieval England.' *Journal of Historical Geography*. Vol. 26. 2000, 70.

<sup>457</sup> Alan Harding, *The Law Courts of Medieval England*. London: George Allen & Unwin Ltd. 1973, 95.

<sup>458</sup> John Bellamy, *Crime and Public Order in England in the Later Middle Ages*. London: Routledge & Kegan Paul. 1973.

<sup>459</sup> Richard W. Kaeuper, *War, Justice, and Public Order*. Oxford: Clarendon Press. 1988.

<sup>460</sup> Richard W. Kaeuper, 'An Historian's Reading of "The Tale of Gamelyn." "' *Medium aevum*. Vol. 52. (1983), 51-62.

Some historians have emphasised the fact that some rivers were obstructed by powerful landowners as on the Exe and Great Ouse. They have perhaps underemphasised the extent to which such people were criticised for their actions even two or three hundred years later.<sup>461</sup>

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<sup>461</sup> Exe. William Camden, *Britain*. Trans. Philemon Holland. London: Joyce Norton, and Richard Whitaker. 1637, 205, 203.

Great Ouse. John Speed, *Theatre of the Empire of Great Britaine, Parts III*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1953-4.

### **Chapter 4.7 Actual Use**

Historians do not study the past; they study evidence of the past. The assessment of probabilities is essential in the historian's task for 'good' evidence is often lacking. Although some 'facts' have such a high probability that they are normally considered to be certainties,<sup>462</sup> the calculation of lesser orders of probability is an exercise which involves the assessment of the evidence and the application of probability theory.<sup>463</sup> Fogel and Elton have criticised historians who lose themselves in details, piling fact upon fact without adding to the understanding of the actions which they seek to study.<sup>464</sup> It is necessary to step back from the individual facts and to seek to establish the extent of river use.

Some authorities consider that the evidence needed to establish that a fact is proved on the balance of probabilities needs to be stronger when the event is thought to be unlikely compared with when the event is thought to be likely.<sup>465</sup> Thus those historians who think that transport by water was common may consider that usability alone establishes a probability of use, those who consider that transport by water was uncommon may seek more evidence. Such subjective differences of opinion are difficult to avoid.

Ideally one would find the upper limit of usability, note the upper limit of historic records and then consider the probability of the use the section of the river between these two places. Regrettably this method cannot be applied. It has been shown that on the Thames the upper limit of usability varied from the source to Staines, 135 miles downstream, depending on the season of the year and type of vessel being used. The upper limit of historic recorded use has moved steadily upstream over the last hundred years. Historic usability and historic use probably did not correspond exactly. On a few days of the year the extreme upper reaches of some rivers, when in flood, were physically usable but there is no reason to assume that they were used.

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<sup>462</sup> Richard Eggleston, *Evidence, Proof and Probability*. London: Weidenfield and Nicolson. 1978.

<sup>463</sup> Philip R. Davies, *Memories of Ancient Israel*. Louisville: Westminster John Knox Press. 1989, 136.

<sup>464</sup> Robert William Fogel and G.R. Elton, *Which road to the past?* New Haven and London: Yale University Press. 1983, 125.

<sup>465</sup> *Re H and Others*. [1996] AC 563, 568-87.

Christopher Allen, *Practical Guide to Evidence*. 3<sup>rd</sup> Edition. London: Cavendish Publishing Limited. 2004, 133-135.

Martin Hannibal and Lisa Mountford, *The Law of Criminal and Civil Evidence*. London: Longman. 2002, 457-461.

The length of river used historically is known to be greater than the length for which there are historic records of use. It is not possible to establish which additional sections were used. However the implication of Cole's work on the place-name evidence for water transport seems not to have been fully appreciated.<sup>466</sup> She suggested that an *ēa-tūn* had some special function relating to the river and that because most are located on the upper reaches of rivers the most plausible reason for the name is that the community was required to keep the river open for navigation. It seems likely that if thirty places were named *ēa-tūn* because of their responsibility for maintaining a river for transport other communities would also have had the same responsibility. The *ēa-tūn* names are widely spread within a circle through Sussex, Norfolk, North Yorkshire and the Welsh border region with four in Yorkshire, East and West Eaton and Great and Little Ayton, on streams which are now small. Their existence seems to imply that on many rivers the local community thought that the limit of historic usability was not acceptable and that increasing the usable length of the river was economically justifiable. If this is correct then river use, in general, extended well beyond the present limits of usability. Other evidence has not been found to support Cole's work which, it seems, must be considered to be provisional.

It has been shown that the distribution of logboat finds indicates that the use of boats was widespread. The fact that three people died in fatal accidents involving boats on the Wear in seven years<sup>467</sup> and that Huntingdonshire Eyre rolls show that 22 people died in Huntingdonshire in 17 years<sup>468</sup> indicates that the use of some rivers was intensive. The Fens have been described as the motorway of the medieval period.<sup>469</sup> While most people travelled on horseback the fact that a lawyer went from Bishop Stortford to London by water indicates that water transport could be a more convenient mode of transport.<sup>470</sup> It was shown that taxable wealth appears to have been higher where water transport was available and lower where it was not. Counties with good river transport sent supplies to

<sup>466</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In Blair, 2007, 55-84.

<sup>467</sup> 'Two Thirteenth-Century Durham Assize Rolls: Durham Eyre Roll, 27 Henry III.' Editor K.E. Bayley. In *Miscellanea* Vol. II. Surtees Society. 1916.

<sup>468</sup> Anne Reiber DeWindt and Edwin Brezette DeWindt, *Royal Justice and the Medieval English Countryside*. Toronto: Pontifical Institute of Mediaeval Studies. 1981, 65 ff.

<sup>469</sup> Paul Spoerry, 'Town and Country in Medieval Fenland.' In Kate Giles and Christopher Dyer, Eds. *Town and Country in the Middle ages*. The Society for Medieval Archaeology Monograph 22. 2007, 101.

<sup>470</sup> Jacqueline Cooper, *Bishop's Stortford*. Chichester: Phillimore. 2005, 27.



the army in Scotland and France, those with poor river transport did not.<sup>471</sup> It was claimed that the blockage of a relatively small river, the Eastern Rother, caused ‘great damage to the king’ due to the reduced traffic at Etchingham.<sup>472</sup> There are several records of violence being used to remove obstructions to navigation.<sup>473</sup> When the responsibility for the maintenance of rivers was unclear and the river became blocked there could be quick recourse to the courts.<sup>474</sup> The sections of rivers upstream of major towns were used as well as those downstream.<sup>475</sup> Thus it seems that the usable river network was extended, extensive and improved, and that in places it was intensively used, convenient, popular and apparently increased wealth.

‘There are of course some relevant facts which a judge or jury is entitled to know, without any evidence being called. These are facts of such notoriety that everyone is presumed to be aware of them.’<sup>476</sup> Possibly one such fact used to be that most rivers were not used historically. Now possibly this needs to be reversed since it seems that most rivers were used historically.

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<sup>471</sup> John Langdon, ‘Inland water transport in medieval England.’ *Journal of Historical Geography*, Vol. 19, 1. (1993), 1-11.

<sup>472</sup> Calendar of Patent Rolls, 1348-50, 80, 177-78.

<sup>473</sup> See Part 4, Chapter 6.

<sup>474</sup> Ant. See Appendix A. 1360.

<sup>475</sup> eg. Oxford, Shrewsbury, Norwich, Nottingham, Canterbury.

<sup>476</sup> Richard Eggleston, *Evidence, Proof and Probability*. London: Weidenfeld and Nicolson. 1978, 120.

## **Part 5 Conclusion.**

### **Chapter 5.1 Physical usability, Legal usability and Use**

The aim of this thesis is to investigate which sections of non-tidal rivers in England were used for the transport of goods and people in the period 1189-1600, both bulk transport to major cities and ports and also local transport to villages, monasteries and markets. It is shown in Appendix O that for journeys by land between towns and cities, in general, ways and not roads existed and that these had a surface which was no better, but often worse, than that found on pasture or unimproved land. It is considered that, apart from grain and fuel carried into London on the Thames, there is insufficient evidence to quantify the amount of goods carried.

Before proceeding further it is worth considering an analogy. There is day and there is night, light and dark. Yet in the evening one can not establish the exact time that one moves from one to the other. There are different definitions of darkness, unable to read outdoors, unable to see a hand in front of one's face, and many other definitions in between. Darkness comes at different times as the seasons vary and according to the amount of cloud. Finally on some moonlight nights, under some definitions, it is never dark.

So it is with the physical usability of rivers. Some sections of rivers are usable and others are not. But the dividing line varies from season to season, according to the weather, the amount of recent scouring and sometimes the limit is the source of the river. Those who have written about limits of navigability may not have realised this. No text has been found which clearly states that the limits of navigability moved.

The earlier writers about the use of rivers referred to 'heads of navigation' as if the upper limit of use was fixed. However in a book published in 2007 this approach was rejected. Blair, the editor, wrote at the end of his 'Introduction' - 'For the study of traffic and transport in and around England before 1250, this book is a starting point rather than a summing-up: if it encourages others to explore further by showing how

much we still do not know, it will have served its purpose.’<sup>1</sup> In the book Bond described how one may identify ‘Human Modifications of River Channels’<sup>2</sup> and Gardiner wrote about the Hythes, Small Ports, and Other Landing Places in Later Medieval England. He stated that ‘These places were of limited economic significance; locally they may have been of considerable value; collectively, they played an important role in the movement of goods and people in later medieval England.’<sup>3</sup>

The purpose here is to establish the geographic extent of these landing places, if that is not too grand a term to use to refer to the river bank beside a field or cottage, the length of sedges on a mere, the side of a flooded valley from which mother and child embarked to be taken to a baptism service. Next to the mill there may well have been a wharf, but at the other end of the journey there was no wharf for as Pepys observed they were just ‘rowing ... and then wading.’<sup>4</sup>

One change has occurred in the relationship between physical usability, legal usability and use. From 1189 to 1600 legal usability existed where there was physical usability. Since 1830, in legal texts, it has been assumed that historic legal usability existed only where there had been prior historic use.

It has been demonstrated that because of fluctuating precipitation, changes in channel form and autogenic channel changes usability has fluctuated. It has also been shown that anthropogenic channel modification, clearance, drainage, reduction in the water-table levels and abstraction have reduced usability on many or most rivers. Usability has been improved on rivers which have been canalized. It seems likely that the presence of a series of weirs in a river improves the usability upstream but reduces it downstream of each weir unless the river has been effectively canalised.<sup>5</sup>

Cole’s work has interesting implications not only for the use of rivers but also for their usability. If these thirty communities took their names from the fact that they were responsible for maintaining the usability of a river then there are likely to have been

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<sup>1</sup> John Blair, ‘Introduction’. In Blair 2007.

<sup>2</sup> Ed Rhodes, ‘Identifying Human Modification of River Channels.’ In Blair 2007.

<sup>3</sup> Mark Gardiner, ‘Hythes, Small Ports, and Other Landing Places in Later Medieval England.’ In John Blair 2007, 85.

<sup>4</sup> Samuel Pepys, *Diary*, London: Macmillan, 1905. 18 September 1663.

<sup>5</sup> See definition in Chapter 1.2.

many other sections of rivers whose usability was maintained by regular work. This seems to imply that river transport was important for a large number of communities sited at locations where the rivers are now unusable as with the four Eaton's in Yorkshire.

The relevant facts about river use may be summarized:

1. It was shown in Part 2 that the usability of rivers has always varied due to natural and anthropogenic factors, that rivers are now in general less usable by boats than they were in the period 1189-1600 and that at present it is not possible to identify all the sections which have become unusable.
2. It was shown in Part 3 that in the period 1189-1600 there was a legal right to use all rivers which were physically usable.
3. There were anthropogenic obstructions on some rivers, especially in the period 1300-1535, and access to the rivers from the sea has varied.
4. In general in the late medieval period places with access to water transport were more prosperous than those without.
5. At least 34 canals were dug to improve transport between c.1000 and 1250. Each of these was linked to a river which was used for transport.
6. For the long distance transport of bulk goods water transport, where available, was cheaper. For short distances this was not necessarily the case and other factors like convenience, security and speed might override lower costs.
7. It is shown in Appendix O that the surface used by long distance land transport was seldom better than unimproved pasture and in some places worse.
8. Over the past 200 years knowledge of the historic use of rivers has increased and it is known that there is still more to be discovered. However there never was a written record of most journeys. Possibly on the best recorded rivers one journey in a thousand was recorded, on other rivers less than one journey in a million was recorded.
9. Some rivers were probably used from their source like the Little Ouse and Waveney.
10. There are in excess of 2724 miles of river which were recently listed as being usable.
11. There is Category A evidence of the historic use of 2158 miles of rivers.

12. There is Category B evidence of the historic use of 3022 miles of rivers.

13. Of the 187 rivers for which there is evidence of use it is known that at least 14 rivers were used further upstream for an unknown distance.

Thus it is claimed that with the present state of knowledge the use of rivers in the period 1189-1600 is best described by the statements ‘(1) there is a high probability that each section of river which is now physically usable was usable by small boats, both physically and legally, in the period 1189-1600 and that (2) on the balance of probabilities each section of river which is now physically usable was used during that period.’

The second statement seems to be a new concept for England but not for Scotland. In 1976 Lord Fraser said:

It seems most unlikely that any river in Scotland which is capable of providing a useful channel of communication for transport would not have been used by now, especially in the days before 1781 when there was no competition from railways and motor lorries.<sup>6</sup>

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<sup>6</sup> per Lord Fraser: *Wills’ Trustees v Cairngorm Canoeing and Sailing School Limited*. 1976 SLT 213.

## **Chapter 5.2 Present Day Legal Implications**

There is a statutory right to use some of the rivers in England. These include the Thames downstream of Cricklade, the Medway downstream of Tonbridge and the Cam downstream of Cambridge.<sup>7</sup> The list is not well-defined as for some rivers, like the Western Rother and Sussex Ouse, the Navigation Acts have lapsed but have not been repealed. This statutory right is additional to any common law right. This chapter is not concerned with the statutory right but only with the common law right.

In 1973 the Select Committee of the House of Lords on Sport and Leisure stated that, 'The legal question of rights of way over water must be settled. A number of different legal interpretations of this right of way have been referred to in evidence and it is time for these to be resolved.'<sup>8</sup> Actions taken by various official bodies since then to resolve the question are listed in Appendix N.

The books on the Law of Waters state that a public right of navigation exists only where there is evidence of historic use. The amount of use required to be proved has to be sufficient to show that the riparian owner intended to dedicate the public right.<sup>9</sup> No case has been found of Common Law dedication of a public right of navigation.<sup>10</sup>

In Part 2 of this thesis it was shown that rivers which are usable now were probably usable in the period 1189-1600. In Part 3 it was concluded that throughout the period 1189 to 1600 there was a public right to use all rivers which were physically usable. It is an established principle in English law that a public right can only be removed by statute or because the right has become unusable. Public rights include freedom of religion and speech and freedom from arrest. One example of these rights is that where there was once a public right of navigation there is still a public right of navigation

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<sup>7</sup> The Canoe England 2010 Members' Directory also includes:- Great Ouse from Kempston, Beds; Little Ouse; Wissey; Lark; Ancholme; Nene from Northampton; Welland; Glen; Suffolk Stour from Brundon, Suffolk; Warwickshire Avon from Alveston to Twekesbury; Norfolk Broad.

<sup>8</sup> Second Report from the Select Committee of the House of Lords on Sport and Leisure. 1973. HL 193, lxxiii.

<sup>9</sup> H.J.W. Coulson and Urquart A. Forbes, *The law relating to Waters, Sea, Tidal and Inland*. 2<sup>nd</sup> Edition. London: Sweet and Maxwell, Limited. 1902.

A.S. Wisdom, *The Law of Rivers and Watercourses*. London: Shaw & Sons Ltd. 1962.

William Howarth, *Wisdom's Law of Watercourses*. 5<sup>th</sup> Edition. Crayford: Shaw & Sons Limited. 1992.

<sup>10</sup> Dedication has been made under the Countryside and Rights of Way Act 2000.

unless the right has been extinguished by statute or the river is no longer usable.<sup>11</sup> If the conclusion to Parts 2 and 3 of this thesis are accepted then there is a public right of access to all rivers which are physically usable.

The implication of this is that the length of the rivers on which there is a public right of navigation in England, and in Wales where the laws are the same, increases from the present generally accepted length of 2,179 km (1,361 miles) to over 14,862 km (9,289 miles). [Based on the data in *Water-Based Sport and Recreation: the facts*.<sup>12</sup>]

Until this is generally accepted, or confirmatory legislation is enacted, the data included in Appendix A will provide evidence for the existence of a public right of access on many more rivers than was previously available.

Atiyah wrote:

Laws may be bad because they are ‘technically’ bad; for instance, because they are obscure, ambiguous, internally inconsistent, difficult to discover, or hard to apply to a variety of circumstances. And secondly, laws may be substantively ‘bad’ simply in the sense that they produce unacceptable results – injustice or plain idiocy, or less extremely, because they are inefficient and expensive, or produce inconsistency or anomaly between like cases.<sup>13</sup>

The present general understanding of the law seems to be bad in both senses.

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<sup>11</sup> Confirmed by Mr Justice Lightman, *Rowland (Josie) v The Environment Agency* [2003] 1 All ER 625.

<sup>12</sup> Brighton University Consortium, *Water-Based Sport and Recreation: the facts*. 2001, 30.

Paper prepared for Department for Environment, Food and Rural Affairs (Countryside Division); British Waterways; Countryside Agency; Countryside Council for Wales; Sport England.

<sup>13</sup> P.S. Atiyah, *Law & Modern Society, 2<sup>nd</sup> Edition* Oxford: Oxford University Press. 1995, 203

### **Chapter 5.3 Further Research.**

The study of the historic form and discharge of rivers is most likely to be funded by those interested in water resources and flooding. Much could be done to apply the methods used to study the Tyne to other rivers because forecasting the future depends on knowledge about the past. This research may also assist in the understanding as to which rivers were historically usable.

It has been shown that the present records of historic use are only a small percentage of the total number of journeys. The limit of historic use and the limit of recorded historic use may on many rivers be far apart. The lists of records of historic use will in time become greater as those interested in the subject find or recognise more records. But there comes a time when such academic research deteriorates into an activity similar to stamp collecting. It is suggested that the accumulation of lists like Appendix A, while needed early in the research of a topic, becomes less useful as the lists increase and as it becomes clear that any such list will never be complete. On the other hand the rapid increase in the availability of historic records in searchable form will make it much easier in the future to find further examples of the historic use of rivers.

It seems likely the ending of disputes on the banks of rivers between boaters and riparian owners will only come with the introduction of legislation clarifying their respective rights. This may be introduced, as it was in Scotland,<sup>14</sup> by a general statement that all rivers which are physically usable may be used by the public. Any attempt to state the physical size of the sections to be declared usable would require considerable research to obtain a workable definition.

One appropriate subject for research in the near future is the transport of specific types of goods like stone and pottery. Appendix C is, it is hoped, a useful preliminary study of the transport of stone for cathedrals. However a fuller study, including, where possible, estimates of the quantity of stone moved, would seem to be an interesting project. This could include investigation of the way in which the availability of suitable stone affected the choice of the sites of cathedrals and minsters. Symonds' study of the

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<sup>14</sup> Land Reform (Scotland) Act 2003, 2003 asp 2.



pottery of Lincolnshire<sup>15</sup> could be repeated in other counties and may produce further convincing evidence of river transport.

Confirmation of Coles' interpretation of the meaning of the word *ēa-tūn* would provide independent evidence for the conclusions reached in this thesis.

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<sup>15</sup> Leigh Andrea Symonds, 'Landscape and Social Practice.' *BAR*. British Series 345. 2003, 23 and 128.

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# **RIVER TRANSPORT 1189 – 1600**

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**AUGUST 2010**

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## Appendix A

### Records of Historic Use

#### Index of Rivers and Table of Distances

In this appendix the rivers are listed clockwise. Tributaries are listed in order going upstream. Tributaries of tributaries are listed immediately after the tributary. Distances are measured in miles.

*Edwards* Length of non-tidal river for for which Edwards found evidence of historic use as amended in this appendix.

A Length of river for which Category A evidence of use has been found.

B Length of river for which Category B evidence of use has been found.

RLU Length of river considered usable in 1936 in the *BCU Guide* at mean flow at Grade 1 or 2 level of difficulty as described in Chapter 1.2.

+ indicates that it is known that boats used the river further upstream.

\* indicates that the river was not included in the *BCU Guide* because it was canalized or it was considered that there were excessive objections to its use.

	<u>Edwards</u>	<u>A</u>	<u>B</u>	<u>RLU</u>
<b>North East</b>				
1. Tweed.	16	16+	16+	16
2. Tyne.	3	22+	22+	20
3. Durham Don.			3	
4. Wear.	12	44	44	42
5. Tees.		14+	26	39
6. Skerne.			15	
7. Leven.			17	
	<hr/> 31	<hr/> 96	<hr/> 143	<hr/> 117
<b>Yorkshire</b>				
1. Hornsea Beck.		1	1	
2. Hedon.	4	4+	4+	
3. Hull.	23	23	23	25
4. Beverley Beck.	1	1	1	
5. Yorkshire Ouse.	26	26	26	26
6. Yorkshire Don.	14	14	14	14*
7. Aire.	9	55	55	55*
8. Calder.			9	9*
9. Derwent.	21	39+	59	56
10. Rye.		22	22	20
11. Wharfe.	10	10	10	51
12. Bolton Percy Foss.		2	2	
13. York Foss.	6	6	6	
14. Nidd.	23	23	32	28
15. Swale.	32	32	50	45
16. Ure.	3	3+	19+	42
	<hr/> 172	<hr/> 261	<hr/> 333	<hr/> 371

**Trent**

1. Trent.	51	72	117	111
2. Eau.	3	5+	5+	
3. Idle/Poulter.	25	10	25	20
4. Till.		8	8	
5. North Beck.		3	3	
6. Devon.		15	15	
7. Greet.			4	
8. Soar.		25+	25+	25
9. Derbyshire Derwent.	24	24	24	53
10. Dove.			30	30
11. Tame.		10	10	25
12. Anker.		2	2	7
13. Sow.			5	5
14. Penk.		8	10	8
	<hr/> 103	<hr/> 182	<hr/> 283	<hr/> 284

**Lincolnshire Coast**

1. Ancholme/Rase.	25	25	25	
2. Anderby Creek.		4	4	
3. Steeping.	5	10	10	
4. Wrangle Drain.		2+	2+	
5. Witham.	49	49	71	61
6. Hammond Beck/Newdyke.		10	10	
7. Sleas/Kyme Eau/Old Sleas.	12	12+	12+	
8. Bain.	2	11	11	
9. Brant.			7	
	<hr/> 93	<hr/> 123	<hr/> 152	<hr/> 61

**Fenland**

1. Welland.	15	33	33	21
2. Glen/West Glen.	5	10	10	10
3. Nene.	16	48	65	65
4. Great Ouse.	115	126	135	147
5. Nar.	15	15	15	12
6. Wissey/Oxborough.	11	11	14	25
7. Little Ouse/Brandon	21	21+	38	33
8. Lark.	13	25	25	25
9. Kennett.		5	5	
10. Snail/Soham.		5	5	
11. Cam.	16	28	32	33
12. Bourn.	4	4	4	
13. Rhee.		5	15	
14. Granta.				3
15. Ivel/Flit/Hiz.		17	17	20
16. Ouzel/Lovat.		20	20	15
17. Tove.			10	10
	<hr/> 231	<hr/> 368	<hr/> 433	<hr/> 434

**East Anglia**

1. Babingley.		10	10	
2. Heacham.		1	2	
3. Stiffkey.		8	8	
4. Bure.	1	15+	15+	15
5. Pickerill Holme.		3	3	
6. Dobb's Beck.			3	
7. Ant.	9	9	9	13
8. Yare.				8
9. Wensum.	7	12	12	10
10. Tud.		6	6	
11. Waveney.	13	13	31	26
12. Blythe/Dunwich.			1	1
13. Deben.			16	
14. Rattleden/Gipping/Orwell.		16	21	16
15. Suffolk Stour.		20	20	32
16. Colne.		10	10	
17. Pant/Blackwater.		8	31	8
18. Chelmer.		6	6	15
19. Roach.			5	
	<u>30</u>	<u>138</u>	<u>209</u>	<u>143</u>

**Thames**

1. Thames.	120	128	142	139
2. Mar Dyke.			2+	
3. Darent.			13	
4. Ingrebourne.	8	8	8	
5. Roding.			3	
6. Lea.	28	28	28	28*
7. Stort.		16	16	14
8. Rib.			8	
9. Beane.		13	13	
10. Fleet.	1	1	3	
11. Tyburne.			2	
12. Effra.	2		2	
13. Brent.		1	1	
14. Mole.		30	30	45
15. Wey.		20	20	36
16. Colne.		10	30	7
17. Bulbourne/Gade.			11	
18. Loddon.				13
19. Kennet.		30	40	30
20. Badford Brook.			2	
21. Thame.		17	17	31
22. Ock			2	2
23. Cherwell.	7	7	7	20
24. Ray.	2	4	4	
25. Evenlode.		8	8	15
26. Windrush.		15	15	23
27. Churn			7	
	<u>168</u>	<u>336</u>	<u>434</u>	<u>403</u>

**South East**

1. Medway.	2	19	25	35
2. Beult.			12	12
3. Kentish Stour.	2	14	20	18
4. Little Stour.		6	7	3
5. Dour.			1	
6. Eastern Rother.	20	20	20	20
7. Brede.		10	10	
8. Reading Sewer.		2	2	
9. Combe Haven.		1	1	
10. Waller's Haven.		5	5	
11. Ashbourne Stream.		2	2	
12. Nunningham Stream.		2	2	
13. Pevensey Haven.		3	3	
14. Middle Sewer.		4	4	
15. Cuckmere.		5	5	
16. Sussex Ouse.		10	10	
17. Adur.		1	4	
18. Western Rother.		2	2	13
19. Itchen.	16	16	26	26
20. Alre.			1	
21. Test.	5	12	15	
22. Salisbury Avon.	35	35	62	60
	<hr/> 80	<hr/> 169	<hr/> 239	<hr/> 187

**South West**

1. Dorset Stour.			42	46
2. Dorset Frome.			42	23
3. Axe.		6		
4. Exe.		1	1	20
5. Teign.			3	
6. Bovey.			2	
7. Tory Brook.		3		
8. Red.		5		
9. Tresillian.			3	
10. Torridge.		2	2	16
11. Taw			12	12
12. Bray.			10	
13. Parrett.	3	7	11	
14. Cary.			15	
15. Tone.	10	10	10	
16. Yeo.			6	
17. Brue.	13	13	18	
18. Whitelake.		7	7	
19. Axe.	15	15	20	
20. Cheddar Yeo.			5	
21. Sheppey.		1	1	
22. Banwell.			8	
23. Bristol Avon.	16	16	16	42
24. Bristol Frome.		1	1	
25. Stroud.			5	
	<hr/> 57	<hr/> 73	<hr/> 254	<hr/> 159

**Severn**

1. Severn.	97	116	116	116
2. Warwickshire Avon.	28	47	82	68
3. Teme.		47	49	44
4. Onny.			10	
5. Eaton Brook.			5	
6. Salwarpe.	5	5	5	
7. Worcestershire Stour.		5	5	
8. Cound Brook.			3	
9. Tern.			23	15
10. Perry.			9	8
11. Vyrnwy.		8	8	8
12. Hereford Wye.	54	83	83	83
13. Monnow.		10+	10+	19
14. Lugg.			26	26
	<hr/> 184	<hr/> 321	<hr/> 434	<hr/> 387

**North West**

1. Dee.	12	12	12	12
2. Weaver.	4	4	50	36
3. Mersey.	3	8	8	
4. Irwell.	3		3	
4A. Bollin.		1	1	
5. Ribble.			10	45
6. Lune.	17	17	17	28
7. Condor.			2	
8. Wenning.			3	
9. Kent.		7	17	
10. Duddon.		2	2	
11. Annas.			2	
12. Cumberland Derwent.	9	9	9	
13. Marron.			4	
14. Waver.	1	1	1	
15. Eden.	3	13	13	61
16. Esk.			5	
	<hr/> 52	<hr/> 74	<hr/> 159	<hr/> 182

Total.	1201	2141	3057	2728
(187 rivers)				

## 1 The River Data

The '**Tidal Limit**' is as shown on the current Ordnance Survey maps. 'Coast' is used where the shore is relatively straight and there is no named place at the point of discharge. '**Lower limit**' is the confluence of a tributary with a river.

**Edwards** is the amended upper limit of recorded historic use as stated in Edwards. The amendments are explained under the individual rivers and have been made where it is considered by the present author that Edwards extracted an entry from the Rolls which did not adequately establish that the river was used. eg:- River Len. [SE 1A.]

**A** states the limits of recorded historic use for category A evidence as found for this thesis and the flow, gradient and a description of the river form.

**B** states the limit of recorded historic use for category B evidence.

**RLU** states the Recent Limit of Use and the flow, gradient and a description of the river form. (For a fuller statement about the RLU see below under Comment.)

### **Column 6**

One of the following terms is used:-

Confl.	Confluence. This implies that the flow can not be interpolated at the limit point.
Canalised.	The river has been modified and the present form of the river can not be considered to be natural.
P&R.	The form of the river is pool and riffle.
Br.	The bed material is predominantly bedrock.
B.	boulders.
C.	cobbles.
G.	gravel.
S.	sand, silt and/or clay.

## 2 Comment

**Edwards** Edward's thesis provides the previous most extensive list of sections of rivers for which there is evidence of navigation.

**Distances** Distances are taken from the *BCU Guide* or measured with an opisometer on 1:100,000 or 1:25,000 maps. It is accepted that for rivers which are sinuous these do not provide accuracy to the nearest mile.

**Gradient** The gradient is measured in metres per kilometre. Gradients have been calculated from the distance between contour lines on the Ordnance Survey 1:25,000 maps. Where a place is less than 20 m above sea level no gradient could be calculated.

**The Material forming the bed of the river** was obtained by observation from bridges. Where a river was opaque and the banks formed of fine material it was, normally, assumed that the bed material was sand, silt or clay.

### **Recent Limit of Use**

The most recent publication to give a reasonably comprehensive description of the 'Recent Limit of Use' (RLU) of rivers is the *BCU Guide*. Its limitations are discussed in Chapter 2.2.

### **River Discharge**

Discharge is taken from *Hydrological data UK*. The accuracy of the gauges used in *Hydrological data UK* is discussed in the Introduction to that book. These readings are considered adequate for this work. Interpolation or extrapolation from these records is considered in Appendix B. Where the distance from the nearest gauging point is too great the flow is regarded as being unobtainable.

Data records were used from all the information in the book. The data provided refers to different periods of time. For example the mean flow for Riding Mill and Bywell on the Tyne are given for the periods 1989-2000 and 1956-2000 respectively. Their catchment areas are 2174.5 and 2175.6 km<sup>2</sup> respectively. Their mean annual flows are 34.41 and 45.06 m<sup>3</sup> s<sup>-1</sup>. This is an extreme example but it illustrates the variation in average annual mean flow over time.

On the Stour at Lamarsh the mean flow in 2000 was 4.21 m<sup>3</sup> s<sup>-1</sup> and in 1996 1.45 m<sup>3</sup> s<sup>-1</sup>. The measurements are not at fault. They accurately record the variability of the English weather. When seeking to draw conclusions from the data this variability must be considered.

### **Gradients**

To measure the gradient of a section of a river which includes weirs is equivalent to measuring the gradient of a curved flight of steps with sloping treads of unequal lengths and unequal risers where the treads move up and down and change their slope with time. Available, affordable, GPS equipment does not provide a suitable level of accuracy for calculating the gradients of the rivers.

Gradients have been calculated by measuring the distance between contour lines on 1:25,000 maps with an opisometer. Normally the interval chosen has been from the contour line next below the relevant place to the fourth line below. It is considered that this provides a suitable level of accuracy to enable the gradients of the rivers to be compared. However the gradient can not be calculated for any place which is less than 20 metres above sea level.

This method of calculating gradients is not appropriate where the river flows above the level of the adjoining land. At these points the gradient has been shown as 'n/a'. An error in estimating the gradient of the river may lie in the assumption that the river gradient is the same as the gradient of the top of the bank. This error would not have been avoided by using the Centre for Ecology and Hydrology spatial data where the heights of rivers are also interpolated from the Ordnance Survey records of contour lines. It seems that this error could only have been avoided by making an on site measurement of the gradient.

On some rivers the gradient of the water has been modified so that there is a vertical, or near vertical, drop at weirs and the surface of the water above the weirs is almost horizontal. It has not been possible to make allowance for this. The weirs artificially



increase the depth of the rivers. Boats will either use locks, shoot the weirs or be portaged round them. Thus on these rivers the RLU may be further upstream than if the river had not been modified.

### **Bed Material**

As the research progressed it became clear that the material forming the bed of a river affected the usability. Normally the bed material is variable in size both across and along a river.<sup>1</sup> For a work of this type it is considered that sight is an adequate way of assessing the predominant size of the bed material. The bed material has been divided into: S, clay, silt or sand; G, gravel; C, cobbles; B, boulders; Br, bedrock. Grain size was estimated on the Wentworth scale.<sup>2</sup>

### **Rivers of the North East**

#### **NE 1 Tweed**

Tidal limit.	Horncliffe.		
Edwards.	Carham. (Border.)	16 miles	Not the limit point for boats.
A.	Carham. (Border.)	16 miles.	
RLU.	Carham. (Border.)	16 miles.	

Edwards included a record for 1244 that 'a consignment of wine was taken by boat to Norham Castle (Calendar of Patent Rolls, 1240-45, 255)'. The entry in the Patent Roll states that the wine was taken from ships at Newcastle to Norham. It does not state how the wine was transported. This record is not accepted here.

1367. Complaint was made that the tolls for the passing of ships had been taken from the bishop's lordship and seized into the King's hand on the section of the river where it was the boundary between England and Scotland and 'where the said water adjoins the land of their lordship of Norham and Tweedmouth'.<sup>3</sup>

1401. Norham and Rokesburgh are amongst places listed relating to a subsidy on each tun of wine to be collected in 'all ports and places adjacent'.<sup>4</sup>

1412. The captain of Rokesburgh castle successfully petitioned to have a vessel of his dearrested. The vessel, a balinger of 30 tuns burden called la Katherine, had been on a voyage 'to be loaded with victuals and other things needful for the castle'.<sup>5</sup>

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<sup>1</sup> Tetsuro Tsujimoto, 'Sediment Transport Processes and Channel Incision: Mixed Size Sediment Transport, Degradation and Armouring.' In Stephen E. Darby and Andrew Smith, Eds., *Incised River Channels*. Chichester: John Wiley & Sons. 1999, 38 - 66.

<sup>2</sup> See for example G. Mathias Kndolf and Herve Piegay, *Tools in Fluvial Geomorphology*. Chichester: John Wiley & Sons Ltd. 2003, 348.

<sup>3</sup> Calendar of Patent Rolls, 1364-67, 427.

<sup>4</sup> Calendar of Fine Rolls, 1399-1405, 122.  
Calendar of Patent Rolls, 1399-1401, 468.

<sup>5</sup> Calendar of Close Rolls, 1409-13, 278.

**NE 2 River Tyne/South Tyne**

Tidal limit.	Wylam.				
Edwards.	Prudhoe.	3 miles.			
A.	Haydon Bridge.	22 miles.	$18 \text{ m}^3 \text{ s}^{-1}$ .	1.9	P&R, B
RLU.	Confluence North and South Tyne.	20 miles.	$39 \text{ m}^3 \text{ s}^{-1}$ .	1.2	Confl.

‘There was a bridge at Hexham by 1263; it is referred to again in 1324, but not thereafter. Jervoise noted that in the fifteenth and sixteenth centuries the only method of crossing the river here was by ferry.’<sup>6</sup>

7<sup>th</sup> Century. ‘Bede tells us that the seventh-century monks of Jarrow used to raft timbers for house-building down the River Tyne.’<sup>7</sup>

c675. In about 1900 Roman stones were found on the bed of the river at Hexham. They may have fallen from a boat, or a boat may have sunk, when Hexham Abbey was built.<sup>8</sup>

c1000. Eaton considers that stones from the Roman remains at Corbridge were floated 9km downstream to Bywell.<sup>9</sup>

1265-1350. ‘A Ship with merchandise’ was included in the list of items subject to toll at Haydon Bridge. Fraser considers that this would ‘probably be explained as a blind copying of the tariff of some other river-port.’ However no corresponding list has been found for any other river-port.<sup>10</sup>

1371. A commission to investigate and remove ‘weirs, mills, stanks, piles and kiddles in the water of Tyne between Prudhoe and Newcastle-upon-Tyne’ ... which ‘totally obstruct the river for the passage of ships and boats.’<sup>11</sup> Prudhoe is 3 miles up-stream of Wylam.

1558. A statute provided that ‘no timber tree of Oak, Beech or Ash ... growing within fourteen miles of the Sea, or of any Part of the Rivers of ... *Tine*, ... or any other River, Creek or Stream, by the which Carriage is commonly used by Boat or other Vessel to any Part of the Sea.’<sup>12</sup> This implies that timber was transported at least for 14 miles on the Tyne.

1611. Speed shows nine boats on the river upstream of the bridge at Newcastle.<sup>13</sup>

<sup>6</sup> David Harrison, *The Bridges of Medieval England*. Oxford: Clarendon Press. 2004, 60.

<sup>7</sup> The Ven. Bede, *Life and Miracles of St. Cuthbert*. Chapter 3. Cited in Sean McGrail, *Ancient Boats in North-West Europe*. London: Longman. 1998, 54.

<sup>8</sup> Tim Eaton, *Plundering the Past*. Stroud: Tempus Publishing Ltd. 2000, 111.

<sup>9</sup> *Ibid.* page 33.

<sup>10</sup> TNA, C66/174, m. 40. Cited in Constance M. Fraser, ‘The pattern of trade in North-East England. 1265-1350.’ *Northern History*. IV (1969), 47.

<sup>11</sup> Calendar of Patent Rolls, 1370-74, 109

<sup>12</sup> 1558. 1 Elizabeth I. c. 15. Timber not to be felled for making Coals.

<sup>13</sup> John Speed, *Theatre of the Empire of Great Britaine Volume IV*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1954, Map 4.

1709. 'An application was made to Parliament for powers to enable the Tyne to be made navigable to Hexham.'<sup>14</sup> Since in almost every case where a river was made navigable under an Act of Parliament there is evidence that the river had been previously been used by boats, it is arguable that other applications would have been made only for rivers which had been used.

1900's Selkirk reports that an eel-man with several hundredweight of eels on board his rowing boat was seen going upstream to Hexham from where he would return to Wylam.<sup>15</sup>

### **NE 3 River Durham Don**

Tidal limit. Jarrow.

B. 3 miles upstream from Jarrow. 3 miles.

According to tradition vessels could proceed up the Don to a distance of three miles inland from Jarrow.<sup>16</sup>

### **NE 4 River Wear**

Tidal limit. Lambton Castle. 2½ miles downstream from Chester-Le-Street.

Edwards. Chester-Le-Street. 12 miles.

A. Frosterley. 44 miles. 4 m<sup>3</sup>s<sup>-1</sup>. 6.2 P&R, BandC

RLU. Wolsingham. 42 miles. 4 m<sup>3</sup>s<sup>-1</sup>. 4.3 P&R, BandC

It has been claimed that staithes were made and coal taken out at Biddick (near Chester-le-Street) during the medieval period.<sup>17</sup>

1170-76. Purbeck marble was brought up the river to the cathedral for use in the Galilee Chapel in Durham Cathedral.<sup>18</sup>

1190-1200. 'It was very much easier just to float the required stone down the Wear. ... Frosterley marble had already been used to excellent effect just before 1200 in Bishop Pudsey's Great Hall, now the Chapel, in the Palace at Bishop Auckland.'<sup>19</sup>

12<sup>th</sup>, 13<sup>th</sup> centuries. 'The black marble in Durham Cathedral was rafted down the River Wear from Frosterley.'<sup>20</sup>

1243. Adam was making a boat at Shincliffe when it fell on him and killed him.<sup>21</sup>

1243. Roger fell from a boat at Cestre [Chester le Street] and was drowned.<sup>22</sup>

<sup>14</sup> The late James Guthrie, *The River Tyne*. London: Longmans and Co. 1880, 39-40.

<sup>15</sup> Raymond Selkirk, *Chester-Le Street & its place in history*. Durham: Casdec Printcentre. 2001, 259.

<sup>16</sup> The late James Guthrie, *The River Tyne*. London: Longmans and Co. 1880, 6.

<sup>17</sup> Communication – (Assistant Keeper) University of Durham – Department of Palaeography. Cited in Edwards.

<sup>18</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 180.

<sup>19</sup> *Ibid.* page 187.

<sup>20</sup> Raymond Selkirk, *Chester-Le Street & its place in history*. Durham: Casdec Printcentre. 2001, 243

<sup>21</sup> 'Two Thirteenth-Century Durham Assize Rolls: Durham Eyre Roll, 27 Henry III.' Editor K.E. Bayley. In *Miscellanea Volume II*. Surtees Society. 1916, 24.

1243. Garciones fell from a coble at Cocken [nr Finchale] and was drowned.<sup>23</sup>

These three records refer to the Eyre of 1243. The previous Eyre was held in 1235 and so these deaths would have occurred between 1235 and 1243. There are no other extant Pleas of the Crown for Durham.<sup>24</sup>

1336, 1338-9, 1347-8, 1350-51, 1353, 1357, 1360, 1415. Payments were made relating to a 'Stanbate' (a boat used for moving stones) at Durham.<sup>25</sup>

1361. Finchale Priory bought a boat for 45s.10d.<sup>26</sup>

1440. 'In the presentments of 1440-5 already referred to, the "king's common highway below Elvet Wood called Wodsnab is said to have been damaged by the carrying away of soil by boat."<sup>27</sup>

1532. Goods were brought up the river by boat to Durham Cathedral Priory. '*Et 20 februarii, solute pro carriagio 20 qu. ordii et 2 hogeshedes vini a navi in 1 keyll, cum navigacione eorundem, 12d.*'<sup>28</sup> Threlfall-Holmes comments that the carriage charges ruling then were 1s. 4d. per hogshead, or 2s. 4d. per tun. 'It is surprising, in the light of this difference, that more goods were not moved by water.'<sup>29</sup>

1533. Ten barrels of herrings were taken from Berwick to Durham by sea.<sup>30</sup> At 4d. per barrel it seems that they must have been transported by water up the River Wear.

1686. Coal was sent down the river from Lumley to the sea.<sup>31</sup>

1716. An Act was passed to provide for the clearing of the port of Sunderland and the Wear which had lately become obstructed. The power of the Commissioners extended from the sea to the city of Durham.<sup>32</sup>

1729. A statute was given to the City of Durham 'as a symbol of the scheme to link Durham to the sea by improved navigation of the River Wear'.<sup>33</sup> This would seem to

<sup>22</sup> *Ibid.* page 62.

<sup>23</sup> *Ibid.* page 62.

<sup>24</sup> David Crook, *Records of the General Eyre*. Public Record Office Handbooks Number 20. London: Her Majesty's Stationery Office. 1982, 93.

<sup>25</sup> *Extracts from the Account Rolls of the Abbey of Durham*. Vols. 1,2,3. The Surtees Society, Vols. 99, 100, 103. 1898, 1899, 1900. pages 533, 536, 546, 552, 554, 560, 564, 583, 612.

<sup>26</sup> James E. Thorold Rogers, *A History of Agriculture and Prices in England*. Volume II. 1259-1400. Oxford: Clarendon Press. 1866, 567.

<sup>27</sup> R.A. Skelton and P.A. Harvey, *Local Maps and Plans from Medieval England*. Oxford: Clarendon Press. 1986, 207.

<sup>28</sup> *The Durham Household Book: or, the Accounts of the Bursar of the Monastery of Durham, from Pentecost 1530 – Pentecost 1534*. Editor J. Raine. Surtees Society, Vol. 18, 1844, 63.

<sup>29</sup> Miranda Threlfall-Homes, *Monks and Markets, Durham Cathedral Priory 1460 – 1520*. Oxford: Oxford University Press. 2005, 184.

<sup>30</sup> J.E.T. Rogers, *A History of Agriculture and Prices in England Volume III*, Oxford: Clarendon Press. 1882, 671.

<sup>31</sup> Lawrence Stone, *The crisis of the aristocracy*. Oxford: Clarendon Press. 1965, 341.

<sup>32</sup> 1716. 3 George I c. 3.

<sup>33</sup> I am grateful to Stuart Fisher for providing me with the wording on this plaque.

imply that the river had previously been usable but not of a standard suitable for the 18<sup>th</sup> century.

## NE 5 River Tees

Tidal limit.	Low Worsall.	4 miles upstream of Yarm.		
A.	Hurworth-on-Tees.	14 miles.	n/a.	
B.	Cleasby.	26 miles.		
RLU.	Whorlton Falls.	39 miles.	14 m <sup>3</sup> s <sup>-1</sup> .	4 P&R, BandC.

*Edwards* quotes a reference to the transport of stone in 1361 from Stapleton, near Darlington. The reference is to transport 'by land and water carriage'. The reference is not accepted here.

1558. A statute provided that 'no timber tree of Oak, Beech or Ash ... growing within fourteen miles of the Sea, or of any Part of the Rivers of ... *Teese*, ... or any other River, Creek or Stream, by the which Carriage is commonly used by Boat or other Vessel to any Part of the Sea.'<sup>34</sup> This implies that timber was brought downstream from more than 14 miles up the Tees. (Hurworth-on-Tees.)

1753. There was a boatman at Stapleton.<sup>35</sup>

1821. A man was rescued by boat at Hurworth.<sup>36</sup>

1829. There was a boathouse at Cleasby.<sup>37</sup>

## NE 6 River Skerne

Lower limit.	River Tees.
B.	Mordon. 15 miles.

Selkirk states that a suspected Roman barge basin has been found at Mordon.<sup>38</sup>

## NE 7 River Leven

Tidal limit.	Leven Bridge. (A1044.)
B.	Little Ayton. 17 miles.

The names Great and Little Ayton may indicate that the settlement had to 'keep the river open for navigation'.<sup>39</sup>

<sup>34</sup> 1558. 1 Elizabeth I c. 15. Timber not to be felled for making coals.

<sup>35</sup> David Archer, *Land of Singing Waters*. Stocksfield: Spredden Press. 1992, 19.

<sup>36</sup> *Ibid.* page 25.

<sup>37</sup> *Ibid.* page 29.

<sup>38</sup> Raymond Selkirk, *Chester-Le Street & its place in history*. Durham: Casdec Printcentre. 2001, 143.

<sup>39</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, Ed. *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

## **Rivers of Yorkshire**

### **Y 1    Hornsea Beck**

Tidal limit.	Coast.			
A.	Hornsea.	1 mile.	n/a.	< 10m.

1369. 'A little boat fell on S and broke his neck and back at Hornsea Beck, nr Holderness, Yorkshire.'<sup>40</sup>

### **Y 2    River Hedon**

Tidal limit.	½ mile from River Humber.			
Edwards.	Burstwick.	4 miles.		
A.	Burstwick.	4 miles.	n/a.	< 10m.

1338. A commission investigated an unlawful diversion of the watercourse. It was claimed that ships and boats were unable to pass the town of Bondebrustewyk (Burstwick) because of the illegal diversion of the sewer 'Le Scurth'.<sup>41</sup>

1345. The keeper of the manor of Brustwyk was ordered 'to receive toll and custom in the parts of Holderness from ships laden with merchandise and other things coming there, to wit, as well in the rivers and fleets of Wilflete, Potterflete, Witheflete, and Stanherthe by the coast of the water of Humber, as in the town of Hedon.'<sup>42</sup>

### **Y 3    River Hull**

Tidal limit.	Hempholme Lock.			
Edwards.	Wansford.	23 miles.		
A.	Wansford.	23 miles.	2.5 m <sup>3</sup> s <sup>-1</sup> .	< 10 m.
RLU.	Driffild.	25 miles.	2.5 m <sup>3</sup> s <sup>-1</sup> .	< 10 m.

13<sup>th</sup> C. Early in the thirteenth century the Archbishop of York claimed right of passage in the river 'of the breadth of 24 feet and one grain of barley.'<sup>43</sup>

13<sup>th</sup> C. Meaux Abbey had free passage on the River Hull.<sup>44</sup>

13<sup>th</sup> C. Purbeck marble was taken by river to Beverley.<sup>45</sup>

c1235. The Cistercians used small boats on the drainage ditch which served the grange at Skerne.<sup>46</sup>

<sup>40</sup> *Select Cases for the Coroner's Rolls. 1265-1413*. Editor Charles Gross. Selden Society Vol. 9. 1895, 121.

<sup>41</sup> Calendar of Patent Rolls, 1338-40, 66-67.

<sup>42</sup> Calendar of Fine Rolls, 1337-47, 407.

<sup>43</sup> B.F. Duckham, *Navigable Rivers of Yorkshire*. Clapham: The Dalesman Publishing Company Ltd. 1964, 8.

<sup>44</sup> R.A. Donkin, *The Cistercians: Studies in the Geography of Medieval England and Wales*. Toronto: Pontifical Institute of Mediaeval Studies. 1978, 142.

<sup>45</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 180.

1260. Hull Bridge was first mentioned. 'It has a long and controversial history, with conflicts of interest between the road users and the navigation.'<sup>47</sup>

1268. Attempts were made to clear the river of obstructions. It appears that the obstructions were fish-garths.<sup>48</sup>

1298. A member of crew died on a ship whilst the vessel was on the water of Hull near Beverley.<sup>49</sup>

1298. Produce was taken down the river from Wansford, Beverley and Leven for onward shipping to the army at Berwick.<sup>50</sup> (Also Beverley Beck.)

1309. Grain was taken overland from Malton and Pocklington to Wansford and then by river to Hull for onward shipping to the army at Berwick.<sup>51</sup>

1343. A ship was arrested near Grimsby, taken to Hull, then Beverley and back to Hull 'because wool found therein was not coketted or customed.'<sup>52</sup> (Also Beverley Beck.)

1361. A commission was appointed 'to survey kiddles and weirs in the waters and rivers of Use, Ayre, Derwent, Querf, Yore Swale, Nidd, Hull and Don, and to make inquisition ... whether any of these obstruct the passage.' The members of the commission were also asked to determine whether the owners, masters and mariners of ships and boats passing along the rivers were guilty of charging 'excessive stipends, wages and other sums for carriage in their ships and boats, contrary to the form of the statutes of labourers and workmen, by covenants made in advance, and refuse to carry for a reasonable sum.'<sup>53</sup>

1377. Beverley was described as a dry place remote from the sea.<sup>54</sup>

1550s. 'Beverley was still actively disputing with Kingston-upon-Hull in the 1550s about tolls and harbour facilities: and even in the seventeenth century it was still possible to reach Wansford, though the way was then hazardous.'<sup>55</sup>

16<sup>th</sup> century. A 16<sup>th</sup> century logboat was found at the mouth of the Hull in 1912.<sup>56</sup>

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<sup>46</sup> R.A. Donkin, *The Cistercians: Studies in the Geography of Medieval England and Wales*. Toronto: Pontifical Institute of Mediaeval Studies. 1978, 117.

<sup>47</sup> Richard Middleton, 'Landuse in the Hull Valley.' In Robert Van de Noort and Stephen Ellis, Eds., *Wetland Heritage of the Hull Valley*. Kingston upon Hull: Humber Wetlands Project. Commissioned by English Heritage. 2000, 13-20, 15.

<sup>48</sup> B.F. Duckham, *Navigable Rivers of Yorkshire*. Clapham: Dalesman Publishing Company Ltd, 1964, 8-9.

<sup>49</sup> Calendar of Inquisitions Miscellaneous, 1219-1307, 492-93.

<sup>50</sup> TNA, E/101/597/3. Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 270.

<sup>51</sup> TNA, E/101/597/17 Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 273.

<sup>52</sup> Calendar of Close Rolls, 1343-46, 15.

<sup>53</sup> Calendar of Patent Rolls, 1358-61, 583.

<sup>54</sup> *Beverley Town Documents*. Editor Arthur A. Leach. Selden Society, Vol. 14. 1900, xviii.

<sup>55</sup> W.G. Hoskins, *The Age of Plunder King Henry's England 1500-1547*. London: Longman. 1976, 198.

<sup>56</sup> S. McGrail, 'Early boats in the Humber Basin'. In S. Ellis and D.R. Crowther, Eds., *Humber Perspectives*. Hull: Hull University Press. 1990, 110.

**Y 4    Beverley Beck**

Lower limit.    River Hull.

Edwards.        Beverley.        1 mile.

A.                Beverley.        1 mile.            n/a.                < 10 m.            Modified.

See River Hull, 1298, 1343.

1200-1600.    ‘Beverley beck, that “very ancient canal, constructed 500 or 600 years ago,” was regarded as the property of the Corporation, which kept it clean throughout the 17<sup>th</sup> century.’<sup>57</sup>

12<sup>th</sup> C.    Archbishop Thurston of York persuaded the merchants of Beverley to deepen the creek which led from their town to the River Hull, thus enabling sea-going vessels to come and go.<sup>58</sup>

1321.    Ships from Beverley paid quayage at Scarborough.<sup>59</sup>

c1543.    ‘Beverle. ... Ther is a great gut cut from the town to the ripe of Hulle Ryver, wherby preaty vessels cum thyther.’<sup>60</sup>

1611.    ‘This is memorable, that the River from *Hull*, [to Beverley] was cut by the Townesmen, sufficient to carrie boats and barges.’<sup>61</sup>

1641.    ‘Beverley great Fair, ... Thither the Londoners send their wares by water.’<sup>62</sup>

**Y 5.    Yorkshire Ouse.**

Treated here as the river from the junction of the Swale and Ure to the tidal limit.

Tidal limit.    Naburn.

Edwards.        Ure / Swale.            26 miles.            Not limit of use.

A.                Ure / Swale.            26 miles.            Not limit of use.

Records of use are not quoted for this river. Edwards gives 74 references to the use of the whole of the river Ouse. Use of the Swale or Ure imply use of the Ouse. ‘The Ouse was naturally navigable up to York, while small craft could venture upstream almost to the edge of the highland zone.’<sup>63</sup>

<sup>57</sup> Beverley MS., Minute Book, 1597-1642, 1641-60; BL, Lansdowne MS 896, f. 167. Cited in T.S. Willan, ‘Yorkshire River Navigation.’ *Geography*, 22 (1937), 189-199, 197.

<sup>58</sup> B.F. Duckham, *Navigable Rivers of Yorkshire*. Clapham: The Dalesman Publishing Company Limited. 1964, 8.

<sup>59</sup> TNA, E 122/134/3. Cited in Bryan Waites, ‘The Medieval Ports and Trade of North-East Yorkshire.’ *Mariners Mirror* Vol. 63, (1977) 137 – 149.

<sup>60</sup> Lucy Toulmin Smith, *The Itinerary of John Leland in or about the years 1535-1543. Volume Five*. Carbondale: Southern Illinois University Press. 1964, 39.

<sup>61</sup> John Speed, *Theatre of the Empire of Great Britaine. Volume IV*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1954, Folio 75.

<sup>62</sup> Henry Best, *Rural Economy in Yorkshire in 1641, being the Farming and Account Books of Henry Best of Elmeswell in the East Riding*. Ed. C.B. Robinson, Surtees Society, Vol. XXXIII, 1857, pp. 112-14, 112.

<sup>63</sup> Baron F. Duckham, *The Yorkshire Ouse*. Newton Abbot: David & Charles. 1967, 14.



Roman. 'Water-borne transportation of building stone (and other materials) to York continues to be perceived as the most expedient means by which such materials would have been supplied.'<sup>64</sup>

'Throughout the Middle Ages, York stood at the centre of an extensive system of river navigation.'<sup>65</sup>

Post 1200 in the Humberhead Levels strips of land were allocated, mainly to religious institutions extending from the Ouse 'as far as the moor goes towards the south'. 'These strips were for turbary and included provisions for the construction of Dikes, the largest of which could be used for boats (e.g. Whitgiftmer and Landemere).'<sup>66</sup>

1548. The Bishop of Durham told Henry VIII that within 10 miles of Haslewood, near Sherburn in Elmet, there were 5 navigable rivers.<sup>67</sup>

## Y 6 River Don

Tidal limit. Kirk Sandall. (1 mile north of Doncaster.)

Edwards. Rotherham. 14 miles.

A. Aldwarke. 14 miles.  $12 \text{ m}^3 \text{ s}^{-1}$ . < 10 m.  
(now in NE Rotherham.)

The route of the lower reaches of the River Don were radically altered in the seventeenth century.<sup>68</sup>

The dedication of the parish church at Thorne to St Nicholas seems to indicate that this was an inland port.<sup>69</sup>

Medieval. 'The rivers crossing the outcrop assisted the transport of the creamy limestone from Tadcaster and Conisbrough to nearby towns and villages.'<sup>70</sup>

Timber was sent from Aldwark, near Rotherham, to York Minster throughout the medieval period.<sup>71</sup>

<sup>64</sup> Malcolm Lillie, 'The palaeoenvironmental survey of the Rivers Aire, Went, former Turnbridge Dike (Don north branch), and the Hampole Beck.' In Robert Van de Noort and Stephen Ellis, Eds., *Wetland Heritage of the Humberhead Levels*. University of Hull, Humber Wetlands Project. 1997, 59.

<sup>65</sup> T.S. Willan, 'Yorkshire River Navigation.' *Geography*. Vol. XXII. (1937), 189-199, 192.

<sup>66</sup> Mark Dinnin, 'The drainage history of the Humberhead Levels.' In Robert Van de Noort and Stephen Ellis, Eds., *Wetland Heritage of the Humberhead Levels*. University of Hull, Humber Wetlands Project. 1997, 22.

<sup>67</sup> William Camden, *Camden's Britannia*. Ed. and Trans. Edmund Gibson. London: F. Collins. 1695, 730 [x]

<sup>68</sup> B.F. Duckham, *Navigable Rivers of Yorkshire*. Clapham: Dalesman Publishing Company Ltd. 1964, 22-23.

<sup>69</sup> David Hey, Ed., *The Oxford Companion to Local and Family Names*. Oxford: Oxford University Press. 1996, 85.

<sup>70</sup> Rita Wood, 'The corpus of ROMANESQUE SCULPTURE in Britain and Ireland. Preface to the West Riding of Yorkshire. 2005.' [www.crsbi.ac.uk/crsbi/ywpreface.html](http://www.crsbi.ac.uk/crsbi/ywpreface.html). Dated 20/02/2006.

<sup>71</sup> M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *The Architectural & Archaeological Society of the County of Lincoln*. New Series, Vol. 1, (1936), 17.

1218. Three children fell from a boat and were drowned in the Don in Strafford Warpentake.<sup>72</sup> Strafford Warpentake was to the south of Marshe Lands.

1218. H of Barnaby fell from a boat and was drowned in the Don in Villata Doncaster.<sup>73</sup>

Mid 13<sup>th</sup> C. 'A waterfront where boats and barges could be offloaded with ease' was built at Doncaster.<sup>74</sup>

1314. Monks of Louth Park were given permission to cut turf by the town of Swinefleet and to 'carry it and other goods to the waters of the Use and Don, and there load ships and take them thence freely and without disturbance.'<sup>75</sup>

1322. The King 'lately appointed Thomas de Roassale to keep the bridge and water of Roderham, and to arrest the King's enemies trying to pass the same.'<sup>76</sup>

1326. A commission was appointed to investigate an obstruction in the course of the Don between Thorne and the Isle of Axholme and the River Trent.<sup>77</sup>

1343. A commission was asked to investigate obstructions concerning 'the river Done, where there used to be a course of water for the passing of ships from the town of Doncastre to the water of the Trent, ... to remove the obstructions, and cause the river to be brought back to its ancient course, ... and they caused the river to be dug at the charges of the men of the said parts from a place called "Crullflethill" to a place called "Donmyn" to a breadth of 16 feet and one grain of barley and the course of the water to be brought back to the ancient course, and now the river is again obstructed by bridges, weirs and other things so that the said breadth is not kept, whereby the passing of ships is impeded and the land adjoining is flooded, and praying him to cause the obstructions to be removed.'<sup>78</sup>

1382. A commission was appointed to enquire into the same obstructions as in 1343.<sup>79</sup>

1394. William Bleburgh was instructed 'to arrest ships and other vessels sufficient for the carriage of free stones from a place called "le Mar" by Doncastre to the palace of Westminster by water for the King's work there.'<sup>80</sup>

1394. Stone was sent from Mar by Doncastre for works at Westminster Abbey.<sup>81</sup>

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<sup>72</sup> *Rolls of the Justices in Eyre for Yorkshire in 3 Henry III (1218-1219)*. Editor Doris M. Stenton. Selden Society, Vol. 56. 1937, 199.

<sup>73</sup> *Ibid.* page 208.

<sup>74</sup> S.J. Allen, *et al.* 'Re-used Boat Planking from a 13<sup>th</sup>-century Revetment in Doncaster, South Yorkshire.' *Medieval Archaeology*. Vol. XLIX. (2005.) 281-304.

<sup>75</sup> Calendar of Charter Rolls, 1300-26, 254.

<sup>76</sup> Calendar of Close Rolls, 1318-23, 472.

<sup>77</sup> Calendar of Patent Rolls, 1324-27, 291.

<sup>78</sup> Calendar of Patent Rolls, 1343-45, 91.

<sup>79</sup> Calendar of Patent Rolls, 1381-85, 193.

<sup>80</sup> Calendar of Patent Rolls, 1391-96, 419.

<sup>81</sup> Calendar of Close Rolls, 1392-96, 218.

14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup> centuries. Stone was sent by water from Doncaster for the building of York Minster.<sup>82</sup>

The Don together with other Yorkshire rivers was subject to various surveys. See River Hull 1361.

1639. Iron was carried down the river by water being portaged at the weirs.<sup>83</sup>

1698. In a petition presented in support of a Bill to make the river navigable the gentlemen, traders and inhabitants of Doncaster declared that it would be a great advantage 'to make the said river navigable, which, in a great measure, is so already.' The Corporation of Lincoln stated that the Don was 'in great measure navigable from Sheffield to Doncaster, and is capable of being made navigable to Rotherham.'<sup>84</sup> Willan states that the above statement 'shows that the Corporation lacked local knowledge.'<sup>85</sup>

## Y 7 River Aire

Tidal limit. Chapel Haddlesey. A19 bridge.

Edwards. Fairburn. 9 miles. (3 miles upstream of Knottingley.)

A. Coniston Cold. 55 miles.  $2.1 \text{ m}^3 \text{ s}^{-1}$ . 2.1 P&R, C.

RLU. Coniston Cold. 55 miles.  $2.1 \text{ m}^3 \text{ s}^{-1}$ . 2.1 P&R, C.

At Snaith, on the tidal section of the river, 'a bridge was built with a draw-leaf 4 feet in breadth, "for the voiding thorough of the Mastes of the Shippes passage under the seid new Brigg."<sup>86</sup>

Stone was carried by boat from Snaythland to Brotherton and Knottingley.<sup>87</sup>

Timber was sent from Knottingley for the construction of York Minster.<sup>88</sup>

1218. 'Water Fryston lies immediately to the north of Ferry Fryston, which is located at the highest point on the Aire which could be reached by sea-going ships in the High Middle Ages and is also at a crossing point of the river. At the pleas of the Crown at York in 1218-19, Ranulf de Fery accused Nigel de Fareburn, Fairburn (North Yorkshire) being the township on the bank of the river Aire opposite Ferry Fryston, of drowning Simon de Fareburn by throwing him overboard from a ship.' The other people involved in the case all came from townships in the vicinity of Ferry Fryston,

<sup>82</sup> Raine, J., *Fabric Rolls of York Minster* (Surtees Society). Cited in Douglas Knoop and G.P. Jones, 'The English Medieval Quarry.' *The Economic Review*, Vol. IX, (November 1938,) 17-25, 20.

<sup>83</sup> P.W. King, 'The early navigation of the river Don: portage in English river navigation.' *Journal of the Railway and Canal Historical Society* Vol. 31:8 (1995), 414-416.

<sup>84</sup> Cited in T.S. Willan, *The Early History of the Don Navigation*. New York: Augustus M. Kelley. 1968, 3. (First published Manchester University Press 1965.)

<sup>85</sup> *Ibid.*

<sup>86</sup> Rotuli Parliamentorum V., 44. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, 1 (1938), 1-22, 3.

<sup>87</sup> Raine J. 'The Fabric rolls of York Minster.' *Surtees Society* Vol. 35 (1859), 10, 32, 41, 134. Cited in M.L. Faull and S. Moorhouse, *West Yorkshire: an archaeological survey to AD 1500. Volume III*. Wakefield: West Yorkshire Metropolitan County Council. 1981, 197.

<sup>88</sup> M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *The Architectural & Archaeological Society of the County of Lincoln*. New Series, Vol. 1, (1936), 17.

suggesting that the ship had come from a port there. Knottingley on the Aire in the adjacent township, continued to function as a port and ship-building centre throughout the Middle Ages and until the nineteenth century.<sup>89</sup> Fairburn is 4 km up-river from Knottingley.

1218. 'S fell from a boat and was drowned. Let the village of Ferrybridge answer.'<sup>90</sup>

1218. 'Three men fell from a boat and were drowned. Let the Clerk of Pontefract to answer.'<sup>91</sup>

1245. The Constable of Pontefract was asked to send lime by water for the re-fortification of York Castle.<sup>92</sup>

1274. Pontefract was listed as a port for the export of wool.<sup>93</sup>

14<sup>th</sup> C. Goods were taken by ship from Pontefract and Snaith to Scarborough.<sup>94</sup>

14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup> C. Stone was taken from Wheldale, Snaith and Pontefract by water to York Minister.<sup>95</sup>

1340. A grant of pontage provided for the men of Ferrybridge 'on things for sale brought to their town as well by land as by water.'<sup>96</sup>

1346. A grant of pontage for three years was granted at Ferrybridge 'on wares coming to the town by land as well as water.'<sup>97</sup>

1359. A grant of pontage was made 'on things for sale passing by the water of Eyre from Kelynglay to Queldale as well as by the bridge of Ferybrigge.'<sup>98</sup> Wheldrake is 2 miles up-river of Ferrybridge, near Fairburn and Kellingley 3 miles down-river, near Beal.

See River Hull 1361. The River Aire was subject to a number of surveys.

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<sup>89</sup> *Rolls of the Justices in Eyre for Yorkshire in 3 Henry III (1218-1219)*. Editor D.M. Stenton. Selden Society, Vol. 56, 1937.

T. Spencer, 'Knottingley's maritime history' in D. Blanchard, Ed., *Knottingley: its origins and industries. II*. Knottingley. 1977, 72-133.

R.W. Unwin, 'The Aire and Calder navigation.' *Bradford Antiq.* 11, New series 9. pp. 53-85, 151-86, 214-45. Cited in M.L. Faull and S. Moorhouse, *West Yorkshire: an archaeological survey to AD 1500. Volume I*. Wakefield: West Yorkshire Metropolitan County Council. 1981, 197.

<sup>90</sup> *Rolls of the Justices in Eyre for Yorkshire in 3 Henry III (1218-1219)* Editor Doris M. Stenton. Selden Society, Vol. 56. 1937, 219..

<sup>91</sup> *Ibid.* page 221.

<sup>92</sup> Calendar of Liberate Rolls, 1240-45, 300.

<sup>93</sup> Calendar of Close Rolls, 1272-79, 125.

<sup>94</sup> TNA, E 372/207 m. 46. Cited in Bryan Wailes, 'The Medieval Ports and Trade of North-East Yorkshire.' *Mariners Mirror*, Vol. 63, (1977) 143.

<sup>95</sup> Raine, J., *Fabric Rolls of York Minster* (Surtees Society). Cited in Douglas Knoop and G.P. Jones, 'The English Medieval Quarry.' *The Economic Review*, Vol. IX No.1 November 1938, 17-25, 20.

<sup>96</sup> Calendar of Patent Rolls, 1338-40, 432.

<sup>97</sup> Calendar of Patent Rolls, 1345-48, 197.

<sup>98</sup> Calendar of Patent Rolls, 1358-61, 296.

1367. A ship was sunk at Brotherton co. York 'loaded with lime worth 20 l.'<sup>99</sup>

1384. There was a grant of pontage 'for three years for repair of "Engeweybrigges" over the Eyre [Aire] by Skipton in Crave, to be taken upon things for sale passing by that river between Cononlaye and Conyston.'<sup>100</sup>

1392. The jurors of York said that a bridge called Tunbridge across the water of Dyke by Cowick is made so low that no ship can pass beneath it towards York and that the men of Cowick, Rawcliffe, Snaith and Hook ought to raise and mend it.'<sup>101</sup>

1420. A boat was bought for 33s. 4d. for carrying stones from 'Snaythland, a now-lost name,' to repair a weir at Knottingley.<sup>102</sup>

## Y 8 River Calder

Lower limit.	River Aire.			
B.	Wakefield.	9 miles.		
RLU.	Wakefield.	9 miles.	20 m <sup>3</sup> s <sup>-1</sup> .	< 10 m.

Early 11<sup>th</sup> C. A log-boat from the early 11<sup>th</sup> century was found in the bed of the river in 1838 at Stanley Ferry.<sup>103</sup>

'The medieval Bridge Chapel [at Wakefield] ... is also recorded as serving as guide to travellers both on the road and river.'<sup>104</sup>

## Y 9 River Yorkshire Derwent

Tidal limit.	Barmby.				
Edwards.	Stamford Bridge.	21 Miles.			
A.	Malton.	39 miles.	15 m <sup>3</sup> s <sup>-1</sup> .	0.3	Canalised.
B.	East Ayton.	59 miles.			Not now usable.
RLU.	Ganton.	56 miles.	n/a.	0.2	Canalised.

Records of use downstream of Stamford Bridge have not been quoted as it was the historic tidal limit.

The names East and West Ayton indicate that the settlements had to 'keep the river open for navigation'.<sup>105</sup>

Barley showed the River Derwent as being navigable to Malton in the Middle Ages.<sup>106</sup>

<sup>99</sup> Calendar of Patent Rolls, 1367-70, 48.

<sup>100</sup> Calendar of Patent Rolls, 1381-85, 414.

<sup>101</sup> *Public Works in Mediaeval Law, Volume II*. Editor C.T. Flower. Selden Society, Vol. 40. 1923, 358.

<sup>102</sup> M.L. Faull and S.A. Moorhouse, Eds., *West Yorkshire: an Archaeological Survey to A.D. 1500*.

Wakefield: West Yorkshire Metropolitan County Council. 1981, 716.

<sup>103</sup> Sean McGrail, 'A Medieval Logboat from the R. Calder at Stanley Ferry Wakefield, Yorkshire.' *Medieval Archaeology*, Vol. XXV, (1981), 160-164.

<sup>104</sup> John Ogden, *Yorkshire's River of Industry*. Lavenham: Terence Dalton Limited. 1972, 121.

<sup>105</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, Ed. *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

In a case in the High Court in 1988 it was held that there was a public right of navigation to Sutton but that historically only small boats at rare states of the tide went as far as Stamford Bridge and so there was no public right of navigation between Sutton and Stamford Bridge.<sup>107</sup> When the case came to the Appeal Court it was stated that the parties were agreed that there was a public right of navigation from Sutton to Stamford Bridge. No reasons were recorded.<sup>108</sup>

1218. 'R was drowned from a boat in the Derwent.' The heading of the section of the Roll is 'Adhuc of Bukros'.<sup>109</sup> This implies that R was drowned between Sherborn [Sherburn] and Skertenbok [Skirpenbeck]. This is a non-tidal section of the river.

1332. An inquisition stated that 'Ships and boats, laden with victuals and other goods, used to pass by the water of Derwent to Staynfordbrig and elsewhere along the banks of the said water from time beyond memory.' The record lists twelve weirs which obstructed the river between the mouth of the Derwent and Stamford Bridge. It continues 'Consequently ships and boats cannot in these days pass to the parts of the East Riding, co. York, and the adjacent parts to the damage of [named persons] and their tenants having lands on the banks of the said water, of 100l., and to the nuisance and impoverishment of all the people of those parts and of merchants wishing to pass with their goods. Floods are caused yearly by the weirs and sewers and several men have been drowned. Cf. *Patent Roll Calendar*, p. 290. C. Inq. Misc. File 121. (21.)'<sup>110</sup>

1340-61. Surveys of obstructions of Yorkshire rivers were carried out. The rivers included the Ouse, Ayre, Done, Wherf, Nidde and Derwent Co. York, and sometimes the Yore, Swale and Hull.<sup>111</sup>

1341. Complaint was made about obstructions in the area of Stamford Bridge 'so that ships and boats laden with merchandise cannot pass for the common good of the men of those parts, as they used to do.'<sup>112</sup>

1391. 'Writ of *supersedeas omnino* in respect of any process against John Godard then sheriff of York, appointed with others by letters patent of 23 August 13 Richard II to make inquisition in Yorkshire what waste was committed in manors lands, houses, woods and gardens in Bolton, Hoton and New Malton, and by other letters patent of 9 March following to survey all weirs, mills, stanks, stakes and kiddles set up in the river

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<sup>106</sup> M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural and Archaeological Society Reports and Papers*, Vol. I. Part I. 1936, 1-22, 22.

<sup>107</sup> *Yorkshire Derwent Trust Ltd and another v Brotherton and Others* (1988) 59 P & CR 60, 84.

<sup>108</sup> *Yorkshire Derwent Trust Ltd and another v Brotherton and Others* (1990) 61 P & CR 198, 201.

<sup>109</sup> *Rolls of the Justices in Eyre for Yorkshire in 3 Henry III (1218-1219)*. Editor Doris M. Stenton. Selden Society, Vol. 56. 1937, 346.

<sup>110</sup> Calendar of Inquisitions Miscellaneous, 1307-49, 320-321.

<sup>111</sup> Calendar of Patent Rolls, 1350-54, 542.

Calendar of Patent Rolls, 1354-58, 400.

Calendar of Patent Rolls, 1358-61, 422.

Calendar of Patent Rolls, 1358-61, 583.

Coram Rege Roll, Mich., 36 Edward III. Rex 36d. Cited in *Public Works in Mediaeval Law, Volume II*. Editor C.T. Flower. Selden Society, Vol. 40. 1923, 251-267.

Calendar of Patent Rolls, 1388-92, 266-267. Staynfordbrigg to Ouse.

Calendar of Patent Rolls, 1388-92, 351. Staynfordbrigg to Ouse.

Calendar of Close Rolls, 1389-92, 508.

<sup>112</sup> Calendar of Patent Rolls, 1340-43, 311-312.

Derwent, and to make inquisition by men of the counties thereto adjacent which and how many were set up in and after the time of King Edward I, and order to release any distress upon him made, proceeding nevertheless against others who did meddle therein;  
 ...<sup>113</sup>

## Y 10 River Rye

Lower limit. River Derwent.

A.	Rievaulx.	22 miles.	$2.2 \text{ m}^3 \text{ s}^{-1}$ .	2.5	P&R, C.
RLU.	1 mile above Helmsley.	20 miles.	$2.2 \text{ m}^3 \text{ s}^{-1}$ .	2.5	P&R, C.

c1145 and c1205. Two canals were dug at Rievaulx Abbey.<sup>114</sup> The evidence relating to the canals was reconsidered by Bond.<sup>115</sup>

1601. 'The only hope of achieving large sales [of iron] was by breaking through to the London market, and it was Rutland's success in doing this, thanks to ready water transport from Rievaulx to Hull and from Hull to London, which brought him his high profits in the early seventeenth century.'<sup>116</sup>

## Y 11 River Wharfe

Tidal limit. Ulleskef. 3 miles downstream of Tadcaster.

Edwards.	Tadcaster.	10 miles.			
A.	Tadcaster.	10 miles.	$17 \text{ m}^3 \text{ s}^{-1}$ .	< 10 m.	
RLU.	Bolton Abbey.	51 miles.	$14 \text{ m}^3 \text{ s}^{-1}$ .	2.5	
Difficult upstream.					

1219. 3 men and 2 women were drowned having fallen from a boat into the River Wharfe. Some of the men came from Tadcaster.<sup>117</sup>

14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup> C's. Stone was sent from quarries at Thevesdale and Bramham near Tadcaster by water for the building of York Minster.<sup>118</sup>

1333. Stone was sent by water from near Tadcaster.<sup>119</sup>

1338. Wool was sent in carts to Tadcaster and then by ship to Hull.<sup>120</sup>

1361. The Wharfe was subject to a number of surveys. See River Hull 1361.

<sup>113</sup> Calendar of Close Rolls 1389-92, 508.

<sup>114</sup> *Carrularum Abbathiae De Rievallie*. Editor Rev. J.C. Atkinson. Surtees Society, Vol. 83, 1889 for 1887, lxxiii.

<sup>115</sup> James Bond, 'Canal Construction: An Introductory Review.' In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 193, 195.

<sup>116</sup> Lawrence Stone, *Family and Fortune*. Oxford: Clarendon. 1973, 194.

<sup>117</sup> *Rolls of the Justices in Eyre for Yorkshire in 3 Henry III (1218-1219)* Editor Doris M. Stenton. Selden Society, Vol. 56. 1937, 236.

<sup>118</sup> Raine, J., *Fabric Rolls of York Minster* (Surtees Society). Cited in Douglas Knoop and G.P. Jones, 'The English Medieval Quarry.' *The Economic Review*, Vol. IX. No.1 November 1938, 17-25, 20.

<sup>119</sup> Calendar of Close Rolls, 1333-37, 35.

<sup>120</sup> J.F. Willard, 'Inland Transportation in England during the Fourteenth Century.' *Speculum* Vol. 1. (1926), 373.

1362. An obstruction to the passage of boats was created when a stake was set in the river at Kirkby Wharfe. In defence the archbishop of York claimed that ‘he and his predecessors were lords of the whole river so far as the said lordship extended and no stakes were set there to the hindrance of the passage’.<sup>121</sup>

#### Y 12. Bolton Percy Foss.

Lower limit. River Wharfe. (near Bolton Percy.)

A. Hornington. 2 miles. n/a.

1224. Men came to the mill at Hornington and took the mill stones away in the miller’s boat.<sup>122</sup>

#### Y 13. York Foss. (Flows into the Yorkshire Ouse at York.)

Lower limit. Yorkshire Ouse.

Edwards. Strensall. 6 miles.

A. Strensall. 6 miles. n/a.

1323. A complaint was made that at Strensall the King’s ‘keeper ought not to mow grass in the lands or meadows adjoining thereto, and that neither the King nor his Keeper ought to receive any other profit except from so much grass or rushes (*cirpis*) as the Keeper can mow from his boat in the summer time by having one foot in the boat and one on shore.’<sup>123</sup>

1586. ‘The Fosse (a slow stream yet able to beare a good vessel) ...’<sup>124</sup>

#### Y 14 River Nidd

Lower limit. Yorkshire Ouse.

Edwards. Knaresborough. 23 miles.

A. Knaresborough. 23 miles.  $8 \text{ m}^3 \text{ s}^{-1}$ . 0.73 S. 10

B. Birstwith. 32 miles.

RLU. Ripley. 28 miles.  $5.0 \text{ m}^3 \text{ s}^{-1}$ . 2.5 P&R, B&C.

The name ‘Birstwith’ may be derived from ‘landing place of the fort’. Ann Coles thinks this may be doubtful ‘in view of the difficulties of navigating the Nidd’.<sup>125</sup>

Nun Monkton is at the junction of the Nidd and the Yorkshire Ouse. ‘Goods were brought up the Ouse to an unloading-point at Nun Monkton and then taken inland on

<sup>121</sup> Coram Rege Roll, Trin., 36 Edward III. Rex 33d. Cited in *Public Works in Mediaeval Law, Volume. II*. Editor C.T. Flower. Selden Society, Vol. 40. 1923, 293.

<sup>122</sup> *Select Cases of Procedure Without Writ under Henry III*. Editor H.G. Richardson. Selden Society, Vol. 60. 1941, 1-2.

<sup>123</sup> Calendar of Patent Rolls, 1321-24, 379.

<sup>124</sup> Raphael Holinshed, William Harrison *et al*, *The First and Second Volumes of Chronicles*. 2<sup>nd</sup> Edition. London: J. Johnson *et al*. 1807, 159.

<sup>125</sup> Ann Cole, ‘The Place-Name Evidence for Water Transport in Early Medieval England.’ In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 75.



pack-saddles and carts. The river side is now deserted, but a small toll-house survives from the days when tolls were levied upon river traffic.’<sup>126</sup>

14<sup>th</sup> Century. ‘Lead was regularly sent from Nidderdale to York and thence to Hull entirely by water.’<sup>127</sup>

It is clear that the River Nidd was navigable at other times as several surveys were carried out of this and other rivers. See River Hull 1361 above.

## Y 15 River Swale

Lower limit. Yorkshire Ouse.

Edwards. Morton-on-Swale. 32 miles.

A. Morton-on-Swale. 32 miles.  $14 \text{ m}^3 \text{ s}^{-1}$ . 0.37 S. 45

B. Easby Abbey. 50 miles.

RLU Catterick. 45 miles.  $13 \text{ m}^3 \text{ s}^{-1}$ . 3 P&R, B&C.

*Edwards* reference to the relationship between ‘The King’s bailiffs of the city of Lincoln’ and ‘men of the honor of Richemond’ is considered here to refer the part of Boston known as ‘the honour of Richmond’ rather than to the town on the Swale.<sup>128</sup> It is not accepted here.

During the medieval period timber was regularly shipped from Topcliffe to York.<sup>129</sup>

It is thought that boats used to supply Easby Abbey.<sup>130</sup> The maps show an inlet at Easby Abbey which has the form of an artificial backwater for a dock.

13<sup>th</sup> C. ‘Fountains Abbey had ‘free passage’ on the river Swale.’<sup>131</sup>

1218. A man fell from a boat and was drowned at Maunby.<sup>132</sup>

14<sup>th</sup> century. Barley considers that the presence of Flemish or German brasses of the fourteenth century at Topcliffe may indicate that sea going boats reached this town.<sup>133</sup>

1317. There was a ‘*passagium* of the water of Swale at Morton-on-Swale.’<sup>134</sup> It is perhaps significant that it was a *passagium* referring to a ‘passage way or path’ as opposed to a *passuagium* a ‘ferry or means of transport over water.’

<sup>126</sup> M.W. Beresford & J.K.S. St Joseph, *Medieval England. 2<sup>nd</sup> Edition*. Cambridge: Cambridge University Press. 1979, 10.

<sup>127</sup> TNA, E 372/207, m. 46. Cited in B. Waites, ‘The Medieval Ports and Trade of North-East Yorkshire.’ *Mariners Mirror*. Vol 63, (1977), 143.

<sup>128</sup> Pishey Thompson, *The History and Antiquities of Boston. Division VII*. Boston: John Noble, Jun. 1856. 311 – 319. Reprinted Sleaford: Heritage Lincolnshire. 1997.

<sup>129</sup> M.W. Barley, ‘Lincolnshire Rivers in the Middle Ages.’ *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, 1 (1938), 1-22, 17.

<sup>130</sup> Chris Hawkesworth. Personal communication. 29 November 2009.

<sup>131</sup> R.A. Donkin, *The Cistercians*. Toronto: Pontifical Institute of Mediaeval Studies. 1978, 142.

<sup>132</sup> *Rolls of the Justices in Eyre. Yorkshire. 13 Henry III (1218-19)*. Editor Doris Mary Stenton. Selden Society, Vol. 56. 1937, 388.

<sup>133</sup> M.W. Barley, ‘Lincolnshire Rivers in the Middle Ages.’ *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, 1 (1938), 1-22, 19.

<sup>134</sup> Calendar of Close Rolls, 1313-18, 496.

1353. The River Swale was one of the rivers referred to concerning obstructions. See River Derwent 1353 above.

1357. Mention is made of a boat on the River Swale at Myton on Swale.<sup>135</sup>

## Y 16 River Ure

Lower limit. Yorkshire Ouse.

Edwards.	Boroughbridge.	3 miles.	n/a.		
A.	Boroughbridge.	3 miles.	$22 \text{ m}^3 \text{ s}^{-1}$ .	< 15 m.	
B.	West Tanfield.	19 miles.			
RLU.	Wensley.	42 miles.	$15 \text{ m}^3 \text{ s}^{-1}$ .	1.4	P&R, C.

Records of use are not quoted below Boroughbridge.

Beresford states that ‘Boroughbridge was the head of the Ouse navigation in the late twelfth and thirteenth centuries.’<sup>136</sup>

John Richmond former mayor of Ripon states that “flat bottomed boats (before the canal was built) were pulled upstream at least as far as West Tanfield.”<sup>137</sup>

13<sup>th</sup> C. Lead was regularly shipped from Boroughbridge to York.<sup>138</sup>

1218. The jurors at the eyre of Boroughbridge in 1218-19 declared that ‘No ship can pass without payment.’<sup>139</sup>

1275. ‘The bailiffs of Boroughbridge had taken to levying tolls, taking from every man or woman coming down stream 1d and upstream  $\frac{1}{2}$  d ....’<sup>140</sup> From this it appears that the boats were coming from, or going to, places upriver from Boroughbridge.

1322. It would seem from the statement that ‘ships could not pass for fear of the King’s enemies’ that boats went up-river of Boroughbridge.<sup>141</sup>

1508. Boats travelling downstream would be unloaded upstream of Boroughbridge in order to avoid the toll. The goods were transported by carts round the town and then placed back on the boats.<sup>142</sup>

<sup>135</sup> Calendar of Patent Rolls, 1354-58, 557.

<sup>136</sup> Maurice Beresford, *New Towns of the Middle Ages*. London: Lutterworth Press. 1967, 524.

<sup>137</sup> Personal communication Chris Hawksworth. 23/4/2010.

<sup>138</sup> M.W. Barley, ‘Lincolnshire Rivers in the Middle Ages.’ Lincolnshire Architectural & Archaeological Society Reports and Papers, New Series, 1 (1938), 1-22, 17.

<sup>139</sup> *Rolls of Justices in Eyre for Yorkshire in 3 Henry III (1218-19)*. Editor Doris M. Stenton. Selden Society, Vol. 56. 1937, nos 1076-77, 1108.

<sup>140</sup> Rotuli Hundredorum, i. 105, 119. Cited in L.F. Salzman, *English Trade in the Middle Ages*. Oxford: Clarendon Press. 1931, 213.

<sup>141</sup> Calendar of Inquisitions Miscellaneous, 1307-49, 121.

<sup>142</sup> Duchy of Lancaster and Palatinate of Lancaster: Chanceries: Enrolments 1354-1509. DL 37/63 m. 71 d. Cited in Robert Somerville, *History of the Duchy of Lancaster. Volume 1. 1265-1603*. London: The Chancellor and Council of the Duchy of Lancaster. 1953, 313.

## **Rivers of the Trent Basin**

### **Tr 1 River Trent**

Tidal limit.	Collingham. (5 miles downstream of Newark-on Trent.)			
Edwards.	Swarkestone.	51 miles.		
A.	Tame confluence.	72 miles.		Confluence.
B.	Abbey Hulton,	117 miles.		
	Stoke on Trent.			
RLU.	Trentham.	111 miles.	$0.65 \text{ m}^3 \text{ s}^{-1}$ .	1 Modified.

Records of use of the river downstream of Nottingham are not quoted. *Edwards* gives 38 quotations of records of the use of the river downstream from Nottingham from the 14<sup>th</sup> century alone.

‘The river traffic on the Trent is singularly ill-documented.’<sup>143</sup>

‘Primitive boats preserved in river silt have been found along the length of the Trent from the Humber Ferry to Abbey Hulton in Stoke-on-Trent.’<sup>144</sup>

Salisbury suggests that there was a medieval port at Hemington.<sup>145</sup>

‘An unusual feature of the gravel pit at Hemington is a spread of large stones of Triassic and Carboniferous sandstone over the Medieval river bed. These have an average weight of 19 kilograms, although there is great variation in size, with the largest approaching 100 kilograms. ... They comprise a mixture of ancient stone quarry waste, millstones, querns and unfinished or re-used building stones, some of which are Roman. And include the arm of a ninth century Saxon cross and another carved stone of the same period. Known quarries upstream of Hemington and close to the Trent occur at Castle Donington, of Triassic sandstone, and at Melbourne, of Carboniferous millstone grit. Carboniferous sandstone is also found in the catchment area of the Dewent. In Saxo-Norman times hardcore could have been shipped to Hemington both from these quarries and from abandoned buildings in former Roman towns such as Derby and Leicester. At Hemington the hardcore was used to form an armoured bed or as bank revetments to stabilise a very mobile river.’<sup>146</sup>

‘It is probable that from Chellaston the material [Alabaster] was conveyed down the River Trent, which flows not far away from the quarries, to Nottingham.’<sup>147</sup>

‘Yet the principal materials used in the manufacture of pottery, ... The flints were brought by sea to Hull. ... From Hull the materials were brought up the Trent to Willington.’<sup>148</sup>

<sup>143</sup> W.G. Hoskins, *The Age of Plunder King Henry's England 1500-1547*. London: Longman. 1976, 198.

<sup>144</sup> Richard Stone, *The River Trent*. Chichester: Phillimore. 2005, 4.

<sup>145</sup> C.R. Salisbury, ‘The archaeological evidence for palaeochannels in the Trent valley.’ In Stuart Needham and Mark G Macklin, *Alluvial Archaeology in Britain*. Oxbow Monograph 27. 1992, 161.

<sup>146</sup> *Ibid.* page 159.

<sup>147</sup> <http://www.nottshistory.org.uk/fellows1907/introduction.htm>. Accessed 28/10/07.

<sup>148</sup> J.H. Ingram, *The River Trent*. London: Cassell and Company Limited. 1955, 26.

c1400 BC 'A large log-boat was stranded ... in an unstable reach of the River Trent. ... [It] was carrying several large blocks of locally hewn Bromsgrove Sandstone.'<sup>149</sup>

874. The Viking fleet overwintered at Repton.<sup>150</sup> Presumably they were with their sea going boats as their camp was D shapped against the bank of the river.<sup>151</sup>

c1155. A charter of Henry II 'gave the burgesses of Nottingham the right to levy tolls on boats using the river between Thrumpton and Newark.'<sup>152</sup>

1313. A boat was stolen from Barton 6 miles up river of Nottingham.<sup>153</sup>

1338. 'Grant to the good men of Swerkeston of pontage for four years, .... on things for sale coming to the town as well by land as by water for the repair of their bridge.'<sup>154</sup> The bridge is where the Derby to Melbourne road crosses the Trent, 18 miles up river of Nottingham and above the confluence of the Soar and the Derwent. It is 9 miles from Burton-upon Trent.

1383. A commission stated that the waters of Trent 'has been used and ought to hold it's course from the place where it takes it's source to the castle and town of Nottingham' and from thence to the sea.<sup>155</sup>

16<sup>th</sup> C. '[At Colwick] There was also channel improvements for coal barges during the 16<sup>th</sup> century.'<sup>156</sup>

1545. Four people were drowned from a boat at Barton in Fabis.<sup>157</sup>

1549. A man was drowned trying to get out of a small boat into a big ferry.<sup>158</sup>

1549. A man fell from 'a lytyll bott' into the Trent at Colwick and was drowned.<sup>159</sup>

1550. A man fell from a small boat into the Trent at Radcliffe on Trent and was drowned.<sup>160</sup>

<sup>149</sup> From Knight, D., Howard, A.D., *Trent Valley Landscapes*. Heritage Marketing and Publications Ltd. King's Lynn. 2004. Cited in A.G. Brown, 'Geoarchaeology, the four dimensional (4D) fluvial matrix and climatic causality.' *Geomorphology*. Vol. 101. (2008), 278-297.

<sup>150</sup> *The Anglo-Saxon Chronicles*. Editor Michael Swanton. London: Phoenix Press. 2000, 73.

<sup>151</sup> Martin Biddle and Birthe Kjølbye-Biddle, 'Repton and the Vikings.' *Antiquity*. Vol. 66. (1992), 36-51, 40.

<sup>152</sup> Richard Stone, *The River Trent*. Chichester: Philimore. 2005, 12.

<sup>153</sup> Calendar of Patent Rolls, 1313-17, 72.

<sup>154</sup> Calendar of Patent Rolls, 1338-40, 22.

<sup>155</sup> 'Royal Commission to inquire into Obstructions of the course of the Trent at Colwick.' (1383) In *Records of the Borough of Nottingham. Volume I*. Editor W.V. Steveson. Nottingham: Corporation of Nottingham. 1882.

<sup>156</sup> A.G. Brown, *et al*, 'Late Holocene channel changes of the Middle Trent: channel response to a thousand-year flood record.' *Geomorphology*. Vol. 39, (2001), 69 – 82, 78.

<sup>157</sup> *Calendar of Nottinghamshire Coroners' Inquests 1495 – 1558*. Editor R.F. Hunnisett. *Thoroton Society Record Series*, Vol. XXV. 1969, 117.

<sup>158</sup> *Ibid.* page 134.

<sup>159</sup> *Ibid.* page 136.

<sup>160</sup> *Ibid.* page 138.

1592-3. The inhabitants of 39 villages organised ‘a great and unlawful assembly’ to pull down a weir at Shelford which ‘interfered with navigation and so straitened the passage that boats were lost and lives endangered’. ‘The privy council and the court of star chamber were both called in to adjudicate before the storm blew over.’<sup>161</sup>

1611. The river is shown as divided into four streams at Nottingham.<sup>162</sup>

1637. ‘There was a project for making the former [Derwent] navigable as early as 1637.’<sup>163</sup> This implies that the Trent was usable to the confluence at that date.

1738. It was held that there was an ancient public right of navigation through Nottingham and so also upstream of Nottingham.<sup>164</sup>

## **Tr 2 River Eau**

Lower limit. River Trent.

Edwards.	Scotter.	3 miles.	
A.	Scotton.	5 miles.	n/a.

1375. The abbot of Peterborough was accused of causing obstructions ‘by a weir called Fiss ... at Scotter on the east side of the Trent where he set piles and stakes lower than he ought in two “roumes” containing thirty-two feet, and set no beacon or “wyte” there, so that passing ships have no notice thereof ...’<sup>165</sup> Since goods were to be taken upstream of Scotter they must have been taken at least as far as Scotton.

## **Tr 3 River Idle/Poulter**

Lower limit. River Trent

Edwards.	Elkesley.	25 miles.	
A.	Bawtry.	10 miles.	n/a.
B.	Elkesley.	25 miles.	n/a.
RLU.	Retford.	20 miles.	n/a.

The dedication of the parish church to St Nicholas would seem to indicate that Bawtry was an inland port.<sup>166</sup>

Cole states that the name Eaton indicates that the settlement had to ‘keep the river open for navigation’.<sup>167</sup>

<sup>161</sup> *Acts of the Privy Council*, 1592, pp. 16, 148; 1592-3, pp. 201, 243, 440. Cited in A.C. Wood, ‘The History of Trade and Transport on the River Trent.’ *Transactions of the Thoroton Society*. Vol. 54. 1950. 1 – 44, 7.

<sup>162</sup> John Speed, *Theatre of the Empire of Great Britaine. Volume IV, 1<sup>st</sup> Edition 1611*. Facsimile London: Phoenix House Limited. 1954, Map 2.

<sup>163</sup> T.S. Willan, ‘Yorkshire River Navigation.’ *Geography*. 22 (1937), 189-199, 190.

<sup>164</sup> *The Mayor and Burgesses of the Town of Nottingham v Richard Lambert*. (1738) Willes, 111-119.

<sup>165</sup> *Public Works in Medieval Law*. Editor C.T. Flower. Selden Society, Vol. 32, 1915, 294.

<sup>166</sup> David Hey, Ed., *The Oxford Companion to Local and Family Names*. Oxford: Oxford University Press. 1996, 85.

<sup>167</sup> Ann Cole, ‘The Place-Name Evidence for Water Transport in Early Medieval England.’ In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

12<sup>th</sup> C. Beresford, in his description of the foundation of Bawtry states that the Idle was navigable upstream into Nottinghamshire and downstream to the Trent. Since the boundary of Yorkshire stops at the south of the town and not at the bridge where the great north road crosses the river, Beresford considers that the town was founded as a river port.<sup>168</sup>

1260-70. Much wool was shipped from Bawtry and Torksey.<sup>169</sup>

1267. The sheriff of York was 'to receive 60 fothers of lead to be delivered at Bawtry' by the sheriff of Nottingham and Derby, and carry it by water to Westminster without delay and without fail.<sup>170</sup>

1298. The Sheriff of Lincolnshire transported 86 quarters of grain and 29 quarters of malt from Bawtry to Hull by water for onward shipping to the army at Berwick.<sup>171</sup>

14<sup>th</sup> C. Ships went from Bawtry to Scarborough.<sup>172</sup>

1322. Thomas de Donestable was granted land fisheries and 'his passage over or within the water, in the town and territory of Scaftworth and Marrissey near Everton, co Nottingham.'<sup>173</sup> Scaftworth and Mattersey (Marresey) and Everton are situated up-river from Bawtry.

1337. Various persons were accused of diverting the course of the Idle at Sutton, which is 3 miles north of Retford.<sup>174</sup>

1341. Wool and lead were shipped from Bawtry to Grimsby.<sup>175</sup>

1363. Various persons were instructed 'to make inquisition in the county of Nottingham touching the water of Idel descending by the towns of Elkeslay, Gamelston, Eton, Ordesdale, Estretford, Westretford, Bolum, Tilne, Sutton, Estretford, Westretford, Scoby, Skaftworth, Claworth, Everton, Harwell and Hayton, which as the King is given to understand, is so obstructed by weeds and other dirt ....'<sup>176</sup> While this commission does not refer to navigation as opposed to obstruction causing flooding, it seems more likely that as long a reach as this would refer to navigation.

1373. A similar commission was appointed.<sup>177</sup>

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<sup>168</sup> M. Beresford, *New Towns of the Middle Ages*. London: Lutterworth Press. 1967, 522.

<sup>169</sup> *Frost, Notices*, 100; *Rotuli Hundredorum*, I, 345. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, 1 (1938) 1-22, 20.

<sup>170</sup> Calendar of Liberate Rolls, 1260-67, 256.

<sup>171</sup> TNA, E/101/597/3. Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 270.

<sup>172</sup> Bryan Waites, 'The Medieval Ports and Trade of North-East Yorkshire.' *Mariners Mirror* Vol. 63, (1977) 147.

<sup>173</sup> Calendar of Close Rolls, 1318-23, 528.

<sup>174</sup> *Public Works in Mediaeval Law, Volume II*. Editor C.T. Flower. Selden Society Vol. 40, 1923, 106.

<sup>175</sup> Calendar of Inquisitions Miscellaneous, 1307-49, 437.

<sup>176</sup> Calendar of Patent Rolls, 1361-64, 449-450.

<sup>177</sup> Calendar of Patent Rolls, 1370-74, 395.

1380. Henry Marchant of Retford was given licence to 'load one last of hides at each of the ports of Newcastle-upon-Tyne, Hertilpool, Whiteby and Scardeburgh and take them to Bautre, co. York.'<sup>178</sup>

1396. A commission was appointed 'to inquire who have placed kidels, bridges, nuisances and other obstructions in the river Edelle on the borders of the counties of York and Nottingham flowing into the water of Bekerdyk and thence to the Trent, thereby hindering the common passage of ships and boats to Bautre and other towns on the said river.'<sup>179</sup>

1397. A similar commission was appointed.<sup>180</sup>

1548. A man was drowned from a boat in a small river called 'le hiegh dyke' between Everton and Misson.<sup>181</sup>

1574. Six barrels of (Spanish) 'steele' were delivered to Bawtry.<sup>182</sup> Other records show that 'this import trade was possibly a regular one'.<sup>183</sup>

1585. Lord George exported 100 tons of lead from Bawtry.<sup>184</sup>

1715. Goods were sometimes transhipped to smaller boats which could reach Bawtry.<sup>185</sup>

#### **Tr 4 River Till**

Lower limit. River Trent.

A. Stow. 8 miles. n/a.

13<sup>th</sup> century. In a 'survey of the manor of Stow, the services of ten of the villain tenants included going "to Misson (on the River Idle) and Axholme for timber and turf with the ship of the lord bishop within their work all at their own proper cost, and to carry the said timber and turf to the dry land at the will of the sergeant."' <sup>186</sup>

<sup>178</sup> Calendar of Patent Rolls, 1377-81, 486.

<sup>179</sup> Calendar of Patent Rolls, 1391-96, 730.

<sup>180</sup> Calendar of Close Rolls, 1396-99, 98.

<sup>181</sup> *Calendar of Nottinghamshire Coroners' Inquests 1495 – 1558*. Editor R.F. Hunnisett. *Thoroton Society Record Series*, Vol. XXV. 1969, 132.

<sup>182</sup> Sheffield Central Library, Archives Department. MD 192. Cited in David Hoy, *Packmen, Carriers and Packhorse Roads*. Leicester University Press. 1980, 108.

<sup>183</sup> David Hoy, *Packmen, Carriers and Packhorse Roads*. Leicester: Leicester University Press. 1980, 108.

<sup>184</sup> *Ibid.* page 109.

<sup>185</sup> Letter John Watts of Kirkstall to Richard Sykes. Sheffield Central Library MD 3483. Cited in D. Hey, *Packmen, carriers and packhorse roads*. Leicester: Leicester University Press. 1980, 134.

<sup>186</sup> Ass. Arch. Soc., V. 24, 325. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, 1 (1938), 1-22, 15.

#### Tr 4A Foss Dyke

An artificial cut, 10 miles long, first made by the Romans from the River Witham at Lincoln to the River Trent at Torksey.<sup>187</sup>

‘The cutting of this channel would present no great difficulties. It passes through low-lying land liable to flooding; and for the first four miles of its 11-mile course from Lincoln the engineers were able to use and perhaps to straighten the bed of the Witham’s tributary river the Till, which now runs into the canal.’<sup>188</sup>

1086. Domesday Book records that the channel was navigated in 1086.<sup>189</sup> However it appears it may have been partly obstructed.<sup>190</sup>

1121. ‘At this period, king Henry having, by digging, made a long trench from Torksey as far as Lincoln, by turning into it the river Trent made a passage for shipping.’<sup>191</sup>

1273. ‘Robert of Donham, ..., was levying, wrongly, it was complained, a toll of a halfpenny (more or less) per ship passing from Lincoln by Fossdyke to Dunham, a village on the Trent above Torksey, and in one year his receipts amounted to half a mark; this suggests 160 ships in the year, and the figure would not include ships passing downstream from Torksey.’<sup>192</sup>

1299-1316. The Durham Account Rolls show that a large purchase of cloth and provisions was taken from Boston to Lincoln by water, by cart to Torksey and there transferred to boats. This may indicate that the Foss Dyke was not navigable at this time or that it was only navigable by small boats.<sup>193</sup>

1329. The batellage charge for wine transported from Boston to Saxilby was 1s. 8d. per ton.<sup>194</sup>

1335. The channel was obstructed.<sup>195</sup>

1335. It was claimed that the channel had been cleared but that some of the money collected had been converted to the use of certain men.<sup>196</sup>

1365. A commission was appointed to compel the clearing of the dyke.<sup>197</sup>

<sup>187</sup> W.G. Hoskins, *English Landscapes*. (1<sup>st</sup> Edition 1955) London: Book Club Associates, 1977, 39.

<sup>188</sup> J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 13-14.

<sup>189</sup> Dr Ann Williams and G.H. Martin, *Domesday Book*. London: Penguin Books. 2002, 884.

<sup>190</sup> H.C. Darby, *Domesday England*, Cambridge: Cambridge University Press. 1977, 301.

<sup>191</sup> *The Annals of Roger de Hoveden. Volume I. Part 1*. Translator Henry T. Riley. London. 1853, 216. (Copy consulted:- Facsimile reprint, Felenfach, Llanerch Publishers. 1994.)

<sup>192</sup> *Rotuli Hundredorum*, I, 320a. Cited in J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 311.

<sup>193</sup> ‘Extracts from the Account Rolls of the Abbey of Durham, Volume II’ Surtees Society, Vol. 100. (1898), 2, 495.

<sup>194</sup> TNA, Exchequer, King’s Remembrancer: Accounts, Various: Butlerage and presage. Cited in Margery Kirkbride James, Ed., Elspeth M. Veale, *Studies in the Medieval Wine Trade*. Oxford: Clarendon Press. 1971, 156.

<sup>195</sup> Calendar of Patent Rolls, 1334-38, 148.

<sup>196</sup> Calendar of Patent Rolls, 1334-38, 203.



1375. The channel was obstructed.<sup>198</sup>

1395. The city of Lincoln asked to be exempt from certain payments and taxes due to the cost incurred in 'scouring of a canal whereby boats come to the city with divers victuals in greater numbers that they used to do ...'<sup>199</sup> This shows that the dyke was cleared at this time.

1518. It was agreed that 110 marks should be collected so that the dyke could be cleared and the bishop of Lincoln issued an indulgence to all those who would assist.<sup>200</sup>

1571. 'The City Council considered that an Act of Parliament should be obtained for the river ... but no action was taken.'<sup>201</sup>

1586. 'At Lincolne also this noble river meeteth with the Fosse dike, whereby in great floods vessels may come from the Trents side to Lincolne.'<sup>202</sup>

1600. John Taylor took a boat along Fossdyke.<sup>203</sup>

1622. 'A Ditch is a kind of current of Waters in *infimo gradu*. ... (Fossdyke) is at this day a current and passage for Boats of small burthen in Winter, but in Summer none at all'<sup>204</sup>

1672. The canal was re-opened shortly after 1672.<sup>205</sup>

## Tr 5 North Beck

Lower limit. River Trent.

A. East Drayton. 3 miles. n/a.

1316. Protection was granted for one year to Walter de Chaumberlayn for 'carrying corn and other victuals to the city of York by water from the Church of Estdraiton, co Nottingham, for the sustenance of ...'

The Church of East Drayton is situated by the North Beck 5km upstream of the junction with the River Trent, 5km upstream of Torksey.<sup>206</sup>

<sup>197</sup> Calendar of Patent Rolls, 1364-67, 138.

<sup>198</sup> Ancient Indictments File 59 m. 3. Cited in *Public Works in Mediaeval Law. Volume I*. Editor C.T. Flower. Selden Society, Vol. 32, 1915, 292.

<sup>199</sup> Calendar of Close Rolls, 1392-96, 413-414.

<sup>200</sup> Hist. Mss. Comm., Rep. VIII, App. XIV, 26. Regist. Ant., II, 135-6. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, 1 (1938), 1-22, 11.

<sup>201</sup> Hist. Mss. Comm., 65. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, 1 (1938), 1-22, 11.

<sup>202</sup> Holinshed, Raphaell, Harrison, William, and others, *The First and Second Volumes of the Chronicles*. 2<sup>nd</sup> Edition. Editor, John Hooker. London: J. Johnson et al. 1807, 170.

<sup>203</sup> John Taylor, 'A very Merry Wherry-Ferry-Voyage.' In *Works of John Taylor. The Folio Edition of 1630 Part I*. Spencer Society. 1869. Reprinted 1967, page of this section 11.

<sup>204</sup> *The Reading of the Famous and Learned Robert Callis, Esq; Upon the Statute of 23 H. 8. cap. 5. of Sewers: As it was delivered by him at Gray's Inn, in August, 1622. 2<sup>nd</sup> Edition*. London. 1685, 81.

<sup>205</sup> M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, 1 (1938), 1-22, 11.

<sup>206</sup> Calendar of Patent Rolls, 1313-17, 383.

**Tr 6 River Devon**

Lower limit. River Trent.

A. Belvoir. 15 miles. n/a.

At Hawton there was a fish weir in which ‘there is a statutory two perches gap at the apex. When not in use this would allow navigation.’<sup>207</sup>

1510. Twelve people were drowned from a boat in the river.<sup>208</sup>

1539. Bargemen were employed at Belvoir Castle.<sup>209</sup>

**Tr 7 River Greet**

Lower limit. River Trent.

B. Southwell. 4 miles.  $0.32 \text{ m}^3 \text{ s}^{-1}$ . 2

1580. ‘The Willoughby’s had their own fleet of open barges or “lighters” and distribution warehouses at Gainsborough. Coal was delivered to Southwell ...’<sup>210</sup>

**Tr 8 River Soar**

Lower limit. River Trent.

A. Leicester. 25 miles.  $2.8 \text{ m}^3 \text{ s}^{-1}$ . 0.61 Canalised.

RLU. Leicester. 25 miles.  $2.8 \text{ m}^3 \text{ s}^{-1}$ . 0.61 Canalised.

*Edwards* considered that an order of 1318 that ‘certain customs were to be paid from goods for sale passing by the bridge of Keggeworth for the repair of the bridge’ was evidence of the use of the river.<sup>211</sup> It is not accepted here as the order may only have referred to goods passing over the bridge.

Frere. (1967.) “The Raw Dykes at Leicester have sometimes been taken for an aqueduct, but the shape of the earthwork is that of a navigable canal, leading perhaps to docks.”<sup>212</sup>

Frere. (1987.) “The Raw Dyke at Leicester is also taken to be an aqueduct.”<sup>213, 214</sup>

<sup>207</sup> C.R. Salisbury, ‘Primitive British fishweirs.’ G.L. Good, *et al.* *Waterfront Archaeology*. CBA Research Report No. 74. 1991, 76 – 87, 78.

<sup>208</sup> *Calendar of Nottinghamshire Coroners’ Inquests 1495 – 1558*. Editor R.F. Hunnisett. Thoroton Society Record Series, Volume XXV. 1969, 28.

<sup>209</sup> W.G. Hoskins, *Midland England*. London: B.T. Batsford Ltd. 1949, 53.

<sup>210</sup> Richard Stone, *The River Trent*. Chichester: Phillimore. 2005, 32.

<sup>211</sup> *Calendar of Close Rolls*, 1313-18, 545.

<sup>212</sup> Sheppard Frere, *Britannia: a history of Roman Britain*. London: Routledge & Kegan Paul. 1967, 245.

<sup>213</sup> Sheppard Frere, *Britannia: a history of Roman Britain*. 3<sup>rd</sup> Edition. London: Routledge & Kegan Paul. 1987, 235-6.

<sup>214</sup> Note:- Bond only refers to the 1<sup>st</sup> edition. James Bond, ‘Canal Construction: An Introductory Review.’ In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 169.

c1340. Higden wrote that ‘the city of Leicester is in the middle place of England on the water of Soar, and on Foss a royal highway’.<sup>215</sup> It appears that the river was as important for the city as the road.

1325. The Receiver of Leicester’s Accounts show money spent for the Repair of Boats (Batell’) including the purchase of pitch, cobbler’s wax (code), tallow, “flocke”. (fn. Perhaps flockwool for caulking seams, iron nails and payment of the carpenter’s salary.)<sup>216</sup>

1325. The accounts of the Borough of Leicester include ‘And 2s. 7½d. for seven workmen on Monday, Tuesday and Wednesday next after the feast, digging turves and carrying them by boat, 1½d. per day.’<sup>217</sup>

1431. There was an agreement to submit to arbitration the question as to whether a toll was payable at Torksey by residents of Leicester on goods ‘sold or bought ... or driven or carried by land or by water or through the middle of the town (of Torksey)’.<sup>218</sup> Torksey is downstream of Leicester.

### **Tr 8A River Leen.**

Lower limit. River Trent.

1830. There is ‘watercolour done by Turner about 1830 ... showing crowded sailing-boats on the River Leen.’<sup>219</sup>

### **Tr 9 River Derbyshire Derwent**

Lower limit. River Trent.

Edwards.	Belper.	24 miles.			
A.	Belper.	24 miles.	17 m <sup>3</sup> s <sup>-1</sup> .	1.1	P&R, C.
RLU.	Hathersage Bridge.	53 miles.	5 m <sup>3</sup> s <sup>-1</sup> .	2.7	P&R, C.

1204. King John gave a charter to the town of Derby including the right to use the ‘Darent, navigable from ancient times.’<sup>220</sup>

1229. A charter to the burgesses of Derby gave them ‘all the greet customs which the King’s burgesses of Nottingham have and had in the time of King Henry I and King Henry II that is to say, tol and them, and infangenethef, and toll from Dunebrug up to the bridge of Cordy, and thence to the bridge of Bradford, and thence to the bridge of Estweit, and of all men crossing the Derwent, as fully as in the borough of Derby; ...’

<sup>215</sup> *Polychonicon Ranulphi Higden Monachi Cestrensis. Volume II.* Editor Churchill Babington. HMSO 1869, 63.

<sup>216</sup> *Records of the Borough of Leicester. Volume 1 1103-1327.* Editor Mary Bateson. London: C.J. Clay and Sons 1899, 350.

<sup>217</sup> *Ibid.* page 350-351.

<sup>218</sup> *Ibid.* page 244-245.

<sup>219</sup> Geoffrey Trease, *Nottingham*. London: Macmillan & Co. Ltd. 1970, 7.

<sup>220</sup> H.M. Colville, ‘Dale Abbey, Granges, Mills and other Buildings.’ Derby Archaeological Society, 1936. Cited in C. Hadfield, *The Canals of the East Midlands*. Newton Abbot: David & Charles. 1966, 31.

It also stated that 'the Derwent shall be open to navigation by the length of a pole on each side of the mid-stream.'<sup>221</sup>

1268 and 1270. Simon, the Abbot of Dale built mills at Borrowash, between Derby and the Trent, and obstructed the river with weirs. In 1281 the river was so obstructed that no boat could pass. However Edward I appears to have ended this interference.<sup>222</sup>

1281. 'One man fell from a boat into the river Derwent and was drowned.'<sup>223</sup>

1322. During the reign of Edward II there were lead mines in the vicinity of Wirksworth and Hartington. The accounts of William of Birchover show that he received £143 for 65 barge loads of lead which he had sold.<sup>224</sup> *Edwards* points out that this is 44s per barge load. Thus he claims that lead must have been loaded onto the barges near the mines as otherwise it would have been cheaper to take the lead the whole way to Nottingham by road.

1325. The king ordered that as much lead be delivered 'as might be needed for covering certain houses in Nottingham castle at the price contained in their commission, viz. 44s the barge load'.<sup>225</sup>

1378. The citizens of Derby were charged with the making of a balinger for the crown.<sup>226</sup>

1500-1640. 'The corn market at Derby served a similar function for the miners and quarrymen of Derbyshire, and was furnished with corn principally by way of the river Trent.'<sup>227</sup>

1783. 'The Derby Boat Co. advertised the sale of six craft, two of 30 tons, two of 20 tons, and two lighters.' Prior to this date no major works had been carried out on the river.<sup>228</sup>

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<sup>221</sup> Calendar of Charter Rolls, 1226-57, 96.

<sup>222</sup> C. Hadfield, *The Canals of the East Midlands*. Newton Abbot: David & Charles. 1966, 31.

'A Village Remembered' <http://home.att.net/~derekporter/spondonlad/derwent.html>. Accessed 09/04/2005.

<sup>223</sup> *The Rolls of the 1281 Derbyshire Eyre*. Editor Aileen M. Hopkinson. Derbyshire Record Society, Vol. XVIII, (2000), 166.

<sup>224</sup> Victoria County History, Derbyshire, Vol. II, 328.

<sup>225</sup> Calendar of Memoranda Rolls, 1326-27, 43.

<sup>226</sup> Calendar of Patent Rolls, 1377-81, 147-148.

<sup>227</sup> SP 16, 187, 51; cf SP 14, 113, 17 and 90. Cited in Alan Everitt, 'The Marketing of Agricultural Produce'. In Joan Thirsk, Ed., *The Agrarian History of England and Wales, Volume IV*. Cambridge: University Press, 493.

<sup>228</sup> Charles Hadfield, *The Canals of the East Midlands*. Newton Abbot: David & Charles. 1966, 33.

**Tr 10 River Dove**

Lower limit.	River Trent.		
B.	Clifton Bridge.	30 miles.	n/a.
RLU.	Clifton Bridge.	30 miles.	n/a.

1653. 'The river Dove ... is swelled before it falls into Trent, ... to such a breadth and depth as to be in most places navigable, were not the passage frequently interrupted with fords and weirs.'<sup>229</sup> Isaac Walton used to fish at Alstonefield 5 miles upstream of Ashbourne.<sup>230</sup> At an earlier date there would have been fewer fords and weirs and so the river was possibly used by boats.

**Tr 11 River Tame**

Lower limit.	River Trent.			
A.	Tamworth.	10 miles.	n/a.	Confl.
RLU.	Water Orton.	25 miles	n/a.	

See River Anker 1221.

'I suspect, however, that the Danes were mostly traders, and sailed up the rivers Trent and Tame from Derby and the Five Boroughs long after the subjection of the Danelaw.'<sup>231</sup>

'The Tame is in general shallow and slow ... while the Ancher is deep, narrow and winds considerably.'<sup>232</sup>

**Tr 12 River Anker**

Lower limit.	River Tame at Tamworth.				
A.	Amington.	2 miles.	2.8 m <sup>3</sup> s <sup>-1</sup> .	0.6	Not now usable.
RLU.	Polesworth.	7 miles.	3 m <sup>3</sup> s <sup>-1</sup> .	0.6	Not now usable.

Cole states that the name Nuneaton indicates that the settlement had to 'keep the river open for navigation'.<sup>233</sup>

1221. A man fell from a boat and drowned at Amington.<sup>234</sup>

<sup>229</sup> Isaac Walton, *The Compleat Angler*. Edited by Richard le Gallienne. London: John Lane. 1904, 295-296.

<sup>230</sup> Martin Stapleton, *Izaak Walton and his friends*. London: Chapman & Hall Ltd. 1903, 59.

<sup>231</sup> Comdr. Isaiah C. Wedgewood, 'Early Staffordshire History.' *Collections for a History of Staffordshire*. Volume for 1916. 1918, 138-208, 149.

<sup>232</sup> Charles Ferrers Palmer, *The History of the Town and Castle of Tamworth*. Tamworth: Jonathon Thompson. 1845, 8.

<sup>233</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

<sup>234</sup> *Rolls of the Justices in Eyre, for Gloucestershire, Warwickshire, and Shropshire, 1221, 1222*. Editor Doris M. Stenton. Selden Society, Vol. 59. 1940, 374.

**Tr 13 River Sow**

Lower limit. River Trent.

B.	Stafford.	5 miles.	$1.2 \text{ m}^3 \text{ s}^{-1}$ .	n/a.	Canalised.
RLU.	Stafford.	5 miles.	$1.2 \text{ m}^3 \text{ s}^{-1}$ .	n/a.	Canalised.

'The Sow and Penk affected its lower part and so continually overflowed their banks as to reduce it to the condition of a marsh (*mariscum*).'<sup>235</sup>

Coles considers that the name 'Stafford' is derived from 'ford at a landing place'.<sup>236</sup>

**Tr 14 River Penk**

Lower limit. River Sow.

A.	Penkridge.	8 miles.	$2.3 \text{ m}^3 \text{ s}^{-1}$ .	0.91	G. 15
B.	Water Eaton.	10 miles.	n/a.		
	(1 mile ESE of Stretton.)				
RLU.	Penkridge.	8 miles.	$2.3 \text{ m}^3 \text{ s}^{-1}$ .	0.91	P&R, CandG.

Cole states that the name Water Eaton indicates that the settlement had to 'keep the river open for navigation'.<sup>237</sup>

1563. Grant was made of a 'licence to make cole from timber in Haye Chistelin alias Chistlin Haye parcel of the possessions of Ambrose, earl of Warwick.'<sup>238</sup> 'Cheslyn Hay was a division of the Royal Forest of Cannock and passed from the King to Bishop Alexander Stavensby in 1236. By 1250 the King had recovered the land and retained the lordship until 1550 when he granted Cheslyn Hay to John Dudley, Earl of Warwick and his heirs. In 1569 Ambrose Dudley granted land to John Leveson.'<sup>239</sup> It seems most likely that the river 'commonly used by boats' within 14 miles of Haye Chistelin was the Penk at Penkridge.

<sup>235</sup> T.J. de Mazzinghi, 'History of the Manor and Parish of Castre or Castle Church.' *Collections for a History of Staffordshire*. Vol. VIII, Part II. 1887, 20.

<sup>236</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 75.

<sup>237</sup> *Ibid.* page 81.

<sup>238</sup> Calendar of Patent Rolls, 1560-63, 478.

<sup>239</sup> [http://website.lineone.net/~web\\_presence/FRAMES.HTM](http://website.lineone.net/~web_presence/FRAMES.HTM). Accessed 14/3/08.

## **Rivers of Lincolnshire Coast**

### **L 1 River Ancholme/Rase**

Tidal limit. River Humber.  
 Edwards. Market Rasen. 25 miles.  
 A. Market Rasen. 25 miles.  $0.45 \text{ m}^3 \text{ s}^{-1}$ . < 20 m. Modified.

‘Scandinavian *Bryggja*, ... originally meant “jetty, quay”, as in Brigg, Lincolnshire.’<sup>240</sup>

A log-boat 48 ft 6 in long was found at Brigg in 1886. It was classified as a high-density cargo carrier.<sup>241</sup>

A log-boat was found near Appleby in 1943.<sup>242</sup>

1288. Complaints were made that the river was obstructed.<sup>243</sup>

1290. Instructions were given ‘to clear of obstructions the water of Ancolne from Bishop’s Bridge to the Humbre, at the cost of those who will benefit by such clearance, the sheriff having certified that if this is done ships and boats laden with corn and other merchandise might then go from Humbre to the parts of Lindeseye, as they were wont to do.’<sup>244</sup>

13<sup>th</sup> -14<sup>th</sup> C. There are ten similar references to obstructions during the following 75 years.<sup>245</sup>

1375. A commission stated that the water of Ancholme should be ‘40 feet wide from its head to the Humbre.’<sup>246</sup>

1533. The Court of Sewers fined the abbot of Roche for failing to cleanse and scour part of the river ‘from the bridges called Byshoppe Brygges ... to the water of Humber’ and other offenders were ‘punished in like proportion’.<sup>247</sup>

<sup>240</sup> Kenneth Cameron, *English Place Names. New Edition*. London: B.T. Batsford. 1996.

<sup>241</sup> Sean McGrail, *Logboats of England and Wales, Part i*. BAR British Series 51(i). National Maritime Museum, Greenwich Archaeological Series No. 2. 1978, 166-172.

<sup>242</sup> *Ibid.* page 147.

<sup>243</sup> Esc.16 E. I. n, 47. Cited in William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes. 2<sup>nd</sup> Edition*. London: Richard Geast. 1772, 150.

<sup>244</sup> Calendar of Patent Rolls, 1281-1292, 400.

<sup>245</sup> Calendar of Patent Rolls, 1292-1301, 113.

Calendar of Patent Rolls, 1292-1301, 161.

Calendar of Patent Rolls, 1307-13, 536.

Calendar of Patent Rolls, 1313-17, 57.

Calendar of Patent Rolls, 1327-30, 427.

Calendar of Patent Rolls, 1330-34, 141.

Calendar of Patent Rolls, 1343-45, 506.

Calendar of Patent Rolls, 1348-50, 322.

Calendar of Patent Rolls, 1354-58, 450.

Calendar of Patent Rolls, 1361-64, 213.

<sup>246</sup> Calendar of Patent Rolls, 1374-77, 145.

Ancient Indictments File 179 m. 105, 106. Cited in *Public Works in Mediaeval Law, Volume I*. Editor C.T. Flower. Selden Society Vol. 32. 1915, 301-302.

<sup>247</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII, Volume 6, 315.

## **Great Eau**

Edwards includes the following record:-

1347. A commission was required to survey and clear the river 'which runs from the bridge of Wythern as far as Herleholm, thence to Thedelbrigge, thence to Salthaven and so the sea. For the safety of the parts adjacent, the said water has of ancient time been ordained to be of a breadth and depth defined by certain limits but is now so obstructed ... that the lands and holdings adjoining the same are inundated.'<sup>248</sup>

This record is not accepted here as the clearance appears to have been for the purpose of drainage.

## **L 2 Anderby Creek**

Tidal limit.	Coast.		
A.	Huttoft.	4 miles.	n/a.

c1543. 'At Mutetost Marsch 4 miles of cum shippes yn from divers places and discharge.'<sup>249</sup> Toulmin Smith states that this reference refers to Huttoft.

## **L 3 River Steeping**

Tidal limit.	2.5 km upstream from the coast.		
Edwards.	Wainfleet.	5 miles.	
A.	Toynton All Saints.	10 miles.	n/a.

1240. A agreement limited the extraction of water for the watering of cattle to alternate periods of three weeks from Easter to Michaelmas in order to preserve the port of Wainfleet.<sup>250</sup>

1286. Corn was taken by water from Sturbridge to Wainfleet, Lincs.<sup>251</sup>

1301. Various provisions were taken by ship from Wainfleet up the river to Lincoln as provisions for parliament.<sup>252</sup> Presumably the ships went first to Boston.

1428-30. 'At Toynton All Saints pleas between villagers concerned the sale of a boat on one occasion and a contract to repair a boat on another'.<sup>253</sup>

c1543. 'Waynefflete a praty market standing on a creke nere to the se. To this toune long smaull vessels'.<sup>254</sup>

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<sup>248</sup> Calendar of Patent Rolls, 1345-48, 378.

<sup>249</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume Five.* Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 35.

<sup>250</sup> TNA, D.L. 36/2, No 83. Edited and translated A.E.B., Owen, 'Agricultural History Review.' Vol. xiii (1965), 46 and 43. Cited in Harry Rothwell, *English Historical Documents 1189-1327*. London: Routledge. 1975, 804.

<sup>251</sup> *Select Bills in Eyre, 1292-1333.* Editor W.C. Bollard. Selden Society Vol. 30. 1914, 80.

<sup>252</sup> TNA, E/101/568/4 Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 263.

<sup>253</sup> Lincolnshire RO, Anc 3/18/55/1-3; 3/18/56/3. Cited in Christopher Dyer, *Everyday Life in Medieval England*. London: Hambledon. 1994, 273.



**L 4    Wrangle Drain**

Tidal Limit.    Coast.  
A.                Wrangle.                2 miles.                n/a.

1189-1206.    Simon le Bret gave the Abbey of Waltham permission to build a bridge over *Essewiam meam de estea* in Wrangle. But he specified that it should be built '*ita ut nauicule que turbam portant: subtus pontem transire possint*'.<sup>255</sup>

**Wapentake of Skirbeck.**

1202.    S was accused because 'he tallaged ships which came through the marsh'.<sup>256</sup>

**L 5.    River Witham.**

Tidal limit.    Boston.  
Edwards.    Claypole.                49 miles.  
A.                Claypole.                49 miles.                1.8 m<sup>3</sup>s<sup>-1</sup>.                0.43    S. 5  
B.                South Witham.                71 miles.  
RLU.                Grantham.                61 miles.                0.8 m<sup>3</sup>s<sup>-1</sup>.                0.0017    Modified

Note:- *Hydrological Data UK* p 76 states that 'above Claypole there are material transfers at low flow' and 'above Grantham there is a material reduction on natural flow.'

Records of the use of the river downstream of Lincoln have not been recorded. Lincoln was a major port.<sup>257</sup>

'From near South Witham, past Grantham to Lincoln and thence to Boston, was the Witham. ... And it seems almost certain that drains made to carry off the water in the low districts were often used for the carriage of corn and merchandise. We can now see how well the principal places of trade in the county, and especially Lincoln and Boston, were provided with water communication.'<sup>258</sup>

(At Lincoln) 'What the common level of the valley was is illustrated by the survival to the west of High Street of the Brayford pool, which in the Middle Ages reached as far south as St Peter at Gowts parish, and to the south-west of it the Swanpool; and place-names such as the Holmes, Spike Island, Hartsholme, recall that there was a chain of pools stretching towards the Trent. In times of flood these pools united to form one vast mere, and many pictures exist that show the Minster from the southwest with Boultham parish under water in the foreground. When in 1795 the Trent bank broke at Spalford, and the flood-water found its way to Lincoln, ...'<sup>259</sup>

<sup>254</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume Five.* Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 35.

<sup>255</sup> British Museum Library Cottonian Tiberius C ix, ff. 97d, 98. Cited in H.E. Hallam, *Settlement & Society*. Cambridge: Cambridge University Press. 1965, 171.

<sup>256</sup> *Select Pleas of the Crown. Volume I. A.D. 1200-1225.* Editor F.W. Maitland. Selden Society, 1887, 19.

<sup>257</sup> J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 306-307.

<sup>258</sup> VHC Lincolnshire. Vol. II. 1906, 383.

<sup>259</sup> J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 11.

1141. There was an almost impassable marsh to the south of Lincoln.<sup>260</sup>

1217. After a battle in Lincoln, 'Many of the women took to small boats with their children and their goods, but the boats, being over-loaded and ill-handled, capsized and their occupants perished.'<sup>261</sup>

1225. A licence was granted for charging a toll on all vessels entering Lincoln, 'every large ship 8d.; every middle-sized ship 4d.; every boat 2d.'<sup>262</sup> This toll for ships may be compared with that for every cartload ½ d. or 1d.; every pack-horse load ¼ d.

1265. Complaint was made that the priory of St Katharine's without Lincoln 'had turned the course of the Witham and narrowed it, so that vessels that used to bring down turf and faggots and other things for the city's use, were no longer able to pass.'<sup>263</sup>

1328. A commission was asked to enquire 'on information that the water of Wythum and certain dykes and places through which divers waters in the moorland district in the Wapentakes of Lovedon, Newark, Bobby, Grafhou, Flaxwell and Langhou, in the counties of Lincoln and Nottingham, flow from Claypol as far as Lincoln into the said water of Wythum, are so narrowed and obstructed with earth, sand and gravel that on that account, as well as on account of certain wears and mill-ponds on the Wythum between these points, inundations frequently occur, and that bridges and causeways are so broken up that in winter scarcely any passage is open - to survey the premises, remove obstructions and, where necessary, enlarge the channel, so that it is made 40 or 30 feet wide and 10 feet deep.' This implies that there was a passage at least as far as Claypole.<sup>264</sup>

1336. Protection was granted to men of Beckyngham to go with a ship to York.<sup>265</sup> Beckingham is 4 miles down river from Claypole.

1363. A commission was appointed to clear the river downstream of Claypole because there were 'bridges and causeways in the same parts, which are broken down so that there is hardly any safe passage.'<sup>266</sup>

1375. A commission was appointed 'to enquire into obstructions on Divers waters in the counties of Nottingham and Lincoln from Cleypole to the city of Lincoln ... and to widen to a breadth of 40 or 30 feet and to the depth of 10 feet.'<sup>267</sup>

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<sup>260</sup> Henry of Huntingdon, *The History of the English People 1000-1154*. (Written c.1150.) Translated by Diana Greenway. Oxford: Oxford University Press. 1996, 75.

<sup>261</sup> Roger of Wendover, *Chronica* (R.S.), II, 218. Cited in J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 205.

<sup>262</sup> Calendar of Patent Rolls, 1225-32, 171.

<sup>263</sup> Cole, 'Prior of St Katharine without Lincoln.' in *Reports and papers of the Associated Architectural and Archaeological Societies*, xxvii (1904), pp. 277-8.

*Rotuli Hundredorum. I*, 285-6, 311-27. Cited in J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 347.

<sup>264</sup> Calendar of Patent Rolls, 1327-30, 349.

<sup>265</sup> Calendar of Patent Rolls, 1334-38, 220.

<sup>266</sup> Calendar of Patent Rolls, 1361-64, 371.

<sup>267</sup> Calendar of Patent Rolls, 1374-77, 151.

1382. A commission was appointed 'to survey the rivers Wytham and Brant and certain dykes between Cleypole and Lincoln, in the counties of Nottingham and Lincoln, running into the Witham, remove obstructions therein and cleanse and widen them between banks so that there a width of 40 or 30 feet and a depth of 10 feet.'<sup>268</sup>

1415. Commission was appointed 'on the water of Wythum in the counties of Lincoln and Nottingham from the town of Claypole to Lincoln and the water of Brant in the county of Lincoln touching offences against the statutes in Parliament of 25 and 43 Edward III and 1 Henry IV concerning the erection of weirs, mills, stanks, poles and kiddles.'<sup>269</sup>

1450-1600. Barley considered that, 'The Witham seems to have remained open to traffic throughout the middle ages, though boats on it must have encountered many difficulties.'<sup>270</sup> He lists obstructions by Norman Darcey of half the width of the river,<sup>271</sup> by the lay brothers of St. Catherine's, Lincoln,<sup>272</sup> the abbot of Kirkstead, the abbots of Peterborough and Barlings, the abbess of Stainfield, the earl of Warenne and other laymen.<sup>273</sup>

1491. 'There seems to have been no general complaint about the river below Lincoln until 1491. In that year ...(named men)... were appointed justices of sewers, for the removal of obstructions from the river, "to survey the water and the great river called "le Brayford" which extends from the town of Waryngton" (*rectius* Waddington) "to the city of Lincoln, and the great river passing through the city of Lincoln; also the great river called "le Wethom" extending from the city of Lincoln to the water of Dokdyke, in Lyndesey and Kesteven.'<sup>274</sup>

16<sup>th</sup> C. 'These "half-amphibious beings" as Macaulay described them, lived in their wooden huts erected on the isolated oozy mounds among the chain of meres surrounded by dense crops of reeds, and communicated with each other by means of crude canoes, or mounted on stilts.'<sup>275</sup>

1528. All frontagers to the Sincil Dyke from East Bargate to the Stamp were ordered 'to raise their banks before St Martin in winter (11 November), and every farmer to cut sedges and other things growing in the stream at the usual time of the year after the king's proclamation.'<sup>276</sup> Sincil Dyke is a channel, apparently artificial, through south Lincoln which leads the water past Brayford Pool.

1585. The river divides at Lincoln. 'The bigger arme is well able to beare their fisher botes, so the lesser is not without his severall commodities. At Lincolne also this noble

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<sup>268</sup> Calendar of Patent Rolls, 1381-85, 202.

<sup>269</sup> Calendar of Patent Rolls, 1413-16, 347.

<sup>270</sup> M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, Vol. 1, Part 1 (1938), 1-22, 11.

<sup>271</sup> Cal. Inqu., IX, 399.

<sup>272</sup> Rot. Hun., I, 311, 319.

<sup>273</sup> Rotuli Hundredorum, I, 317.

<sup>274</sup> Calendar of Patent Rolls, 1485-94, 394.

<sup>275</sup> M.R. Lambert and R. Walker, *Boston, Tattershall & Croyland*. Oxford: Basil Blackwell. 1930, 7.

<sup>276</sup> J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 353-354.

river meeteth with the Fosse dike, whereby in great floods vessels may come from the Trents side to Lincolne.'<sup>277</sup>

1762. The preamble to an Act claimed that formerly the river was navigable for lighters, barges, boats and other vessels from the sea through to Boston to the High-bridge, in the city of Lincoln.<sup>278</sup>

The western two arches of the 'great bridge at Bracebridge' have been filled in. (Out of the original seven arches.)<sup>279</sup>

## **L 6     Hammond Beck or Newdike**

Lower limit.     River Witham.

A.                     Northorpe.                     10 miles.                     n/a.

1281-84. In a case regarding '*un estank*' at Swineshead it was reported that the lords and free men had agreed 'that all the ways which there were in this common marsh should be stopped up, so that no boat should in future carry peat through these ways and this was for the common good as some people who had not a foot of land within the eight villages had been accustomed to sell ten marks of peat a year and the community was aggrieved by this.'<sup>280</sup> It would seem that this amount of peat must have been sold in Boston.

1295. It was claimed that the Beck 'ought to be kept three feet in depth'.<sup>281</sup>

1301. Goods were taken from Bridge End to Lincoln by water. This would seem to have been along drainage ditches and the Hammond Beck.<sup>282</sup>

1336. Provisions were taken from Bridge End to Boston for onward shipping to the army at Berwick.<sup>283</sup>

1571. Commissioners instructed that new bridges should be built upon the sewer called Newdike at Rusgate Ee and Surflete 'of such heights as boats might well pass under'. They also instructed that the bridges over the sewer at Kyrfton fen, another at Frampton fen, and another at Lichfeld end should be reformed 'to be of xii feet in breadth, and of height sufficient for boats to pass under'.<sup>284</sup>

<sup>277</sup> Raphaell Holinshed, William Harrison *et al.* *The First and Second Volumes of the Chronicles*. 2<sup>nd</sup> Edition. Editor John Hooker. London: J. Johnson *et al.* 1807, 170

<sup>278</sup> 2 George III, c. 32.

<sup>279</sup> J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 358.

<sup>280</sup> *Roger of Huntingford v John of Brittany and others*. Lincoln's Inn MS 174, f. 47r. Cited in *The Earliest English Law Reports. Volume III. Eyre reports of 1285*. Editor Paul A. Brand. Selden Society Vol. 122. 2005, 90.

<sup>281</sup> Pishey Thompson, *The History and Antiquities of Boston and the Hundred of Skirbeck*. Boston: John Noble Jun. 1856, 264. (Reprint 1997.)

<sup>282</sup> TNA, E/101/568/4 Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 265.

<sup>283</sup> TNA, E/101/569/3 Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 269.

and J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 314.

<sup>284</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 241-242.

1856. Within the memory of many persons now living, the inhabitants of Holland Fen used to bring their dairy and other produce down the Hammond-beck to market.<sup>285</sup>

### **L 7 River Sleas or Kyme Eau or Old Sleas**

Lower limit. River Witham.

Edwards. Sleaford. 12 miles.

A. Sleaford. 12 miles.  $0.53 \text{ m}^3 \text{ s}^{-1}$ . < 15 m.

The Ancaster stone quarries lie close to the river. One of the quarries was situated at Wilsford, directly on the river 4 miles up-river from Sleaford. It seems that stone would have been transported from the quarry by water. (*Edwards.*)

1301. Wheat was taken from Sleaford to Lincoln by water for a meeting of parliament.<sup>286</sup>

1342. 'By a petition of Gilbert de Unframvyll, earl of Anegos, it is shewn that there is a passage by the water called 'le Ee' of Kyme, passing through the lordship of his manor of Kyme, between Dokdyk and Brentfen, as far as the water of Wytham on both sides, very convenient for ships and boats of those parts, but in the channel thereof mud and sedge (*paludes*) have increased to such an extent that ships cannot pass unless it be cleansed, and the banks are fallen in, so that when the water is swollen by rain, there is no adequate passage for it, and that he will cleanse the said water and raise and keep in repair the banks for the common good if the King will grant to him and his heirs certain customs for their expenses herein, and the King, out of consideration for the earl, who has many times held a good place in his affairs and for the public good, after inquisition *ad quod damnum*, has granted to him and his heirs, lords of the said manor, for ever, certain specified customs on ships and boats laden with goods and merchandise passing by the said water through the lordship of the manor from Dokdyk to Brantfen.'<sup>287</sup>

1375. A presentment was made that a toll was charged on wool, wine, corn, herrings, cattle and other goods for twelve years past at Homemyln dyke in Kyme.<sup>288</sup>

1393. A jury was told that an unjust course of common water had been made between Haverholme and Sleaford which had flooded the common pasture of Evedon.<sup>289</sup>

1479. Stone was carried by water from Appletreeness to Dogdyke near Tattershall.<sup>290</sup>

<sup>285</sup> Pishey Thompson, *The History and Antiquities of Boston and the Hundred of Skirbeck*. Boston: John Noble Jun. 1856, 264. (Reprint 1997.)

<sup>286</sup> R.A. Pelham, 'The Provisioning of the Lincoln Parliament of 1301.' *University of Birmingham Historical Journal*. Vol. 3. (1951), 16 – 32, 25.

<sup>287</sup> Calendar of Patent Rolls, 1340-43, 576.

<sup>288</sup> Coram Rege Roll, Trin., 50 Edward III. Rex 15. Cited in *Public Works in Mediaeval Law, Volume 1*. Editor C.T. Flower. Selden Society Vol. 32. 1915, 295.

<sup>289</sup> *Public Works in Mediaeval Law, Volume 1*. Editor C.T. Flower. Selden Society Vol. 32. 1915, 297-298.

<sup>290</sup> Jennifer S. Alexander, 'Building Stone from the East Midlands Quarries: Sources, Transportation and Usage.' *Medieval Archaeology*. Vol. 39. (1995), 107-135, 125.

1500-24. Ancaster stone, for the church at Louth, was carried on the River Slea to the Car Dyke.<sup>291</sup>

**L 7A River Apeltrenesse** (This river has not been located.)

1316. A commission stated that the 'Apiltrenesse' was 'the common passage from Kesteven unto the river of Wihum.'<sup>292</sup>

1374. 'Apeltrenesse we know was a navigable stream.' A barrel of herrings was broken open on the river.<sup>293</sup>

**L 8 River Bain**

Lower limit. River Witham.

Edwards. Coningsby. 2 miles.

A. Horncastle. 11 miles.  $0.9 \text{ m}^3 \text{ s}^{-1}$ . 1.8 Canalised.

'The medieval ship was small and adaptable, and seagoing vessels could once be found as far inland as Lincoln, Horncastle and Gainsborough.'<sup>294</sup>

'According to their [Edwards and Hindle.] reading of medieval documents most of the rivers of Lincolnshire were partially navigable with the exception of the Bain. ... The distribution of pottery also suggests that the Bain was used to transport pottery from Tattershall up to Horncastle.'<sup>295</sup>

1200. Geoffrey the Fisherman of Coningsby, received the grant of a toft, in return for which he was to carry William of Keal or his men by boat, 'as far as the sweet water (of Witham) extends its course.'<sup>296</sup>

1457-58. Lord Cromwell had his own boats which were used to bring building materials, tiles, timber and stone, for the building of Tattershall castle.<sup>297</sup>

1500-15. Building materials were taken by boat for the building of the collegiate church of Tattershall.<sup>298</sup>

<sup>291</sup> Rev. Reginald C. Dudding, Trans. and Ed.. 'First Churchwardens' book of Louth.' Cited in Donovan Purcell, *Cambridge Stone*. London: Faber and Faber. 1967, 54.

<sup>292</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 228-229.

<sup>293</sup> Sillem, Some Sessions of the Peace in Lincs., 200. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, Vol. 1, Part 1. (1938) 1-22, 20.

<sup>294</sup> Simon Pawley, 'Maritime Trade and Fishing in the Middle Ages.' In Stewart Bennett and Nicholas Bennett, Eds., *An Historical Atlas of Lincolnshire*. Hull: The University of Hull Press. 1993, 56.

<sup>295</sup> Leigh Andrea Symonds, 'Landscape and Social Practice.' *BAR*. British Series 345. (2003), 23 and 128.

<sup>296</sup> F.M. Stenton, Danelaw Charters, 358. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, Vol. 1, Part 1. (1936) 1-22, 15.

<sup>297</sup> Printed in Hist. Mss. Comm., Mss of Lord De L'Isle & Dudley, v. 1. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, 1 (1936), 1-22, 18

And Cited in J.W.F. Hill, *Medieval Lincoln*. Cambridge: University Press. 1948, 314.

<sup>298</sup> *Ibid*.

## **L 9     River Brant**

Lower limit.     River Witham.

B.                     Brant Broughton.             7 miles.

1382. A commission was appointed 'to survey the rivers Wytham and Brant and certain dykes between Cleypole and Lincoln, in the counties of Nottingham and Lincoln, running into the Witham, remove obstructions therein and cleanse and widen them between banks so that there a width of 40 or 30 feet and a depth of 10 feet.'<sup>299</sup>

1415. Commission was appointed 'on the water of Wythum in the counties of Lincoln and Nottingham from the town of Claypole to Lincoln and the water of Brant in the county of Lincoln touching offences against the statutes in Parliament of 25 and 43 Edward III and 1 Henry IV concerning the erection of weirs, mills, stanks, poles and kiddles.'<sup>300</sup> [Note 43 should be 45.] These Acts refer to keeping a passage clear for boats.

## **Rivers of the Fen Country**

### **Fenland**

Records of use in Fenland have not been recorded.

'This survey of the Fenland cannot take us beyond the ordinary activity to and fro between the fenland settlements themselves, which kept in touch, one with another, by the numerous streams that intersected the fens in every direction.'<sup>301</sup>

'One extremely important factor for settlements that are required to act as towns in this environment [Medieval Fenland] is the additional point of *access*, which invariably means 'access by water'.<sup>302</sup>

'Fenland communities knew the river systems, and had actual and legal access to them. The water, rather than isolating island communities, became a conduit for economic contact and advancement, not just within the Fenland basin, but with towns and communities throughout the east midland river systems.'<sup>303</sup>

Lynn was of little account in 1095, 'Yet only a century later, ... Boston stood revealed as very probably the second port in the land, after London, and Lynn was not far behind it.' ... 'Thus the trade of Boston and Lynn suffered a severe setback in the mid fifteenth, as in the mid fourteenth century. To some extent it revived at the turn of the fifteenth and sixteenth century, but it remained as much diminished in volume as it was changed in character, compared with the high peak of the late thirteenth century.'<sup>304</sup>

<sup>299</sup> Calendar of Patent Rolls, 1381-85, 202.

<sup>300</sup> Calendar of Patent Rolls, 1413-16, 347.

<sup>301</sup> H.C. Darby, *The Medieval Fenland*. (1<sup>st</sup> Edition 1940.) Newton Abbot: David & Charles. 1974, 93-94.

<sup>302</sup> Paul Spoerry, 'Town and Country in the Medieval Fenland.' In Kate Giles and Christopher Dyer, Eds., *Town and Country in the Middle Ages*. Leeds: Maney Publishing. 2007, 93.

<sup>303</sup> *Ibid.* page 94.

<sup>304</sup> Eleanor Carus-Wilson, 'Medieval Trade of the Ports of the Wash.' *Medieval Archaeology*. Vol. 6-7. (1962-3), 182-201, 182 and 200.

These changing levels of trade must have affected the amount of goods transported on the rivers.

‘So much has been done by man and by natural processes to alter and remodel the waterways of the Fenland that not a single river now flows along the same bed and in the same direction as it did when the Conqueror invested Hereward and his English followers on the island of Ely. ... I have tried to convey a picture of an area of meres, rivers and dykes and of marshy ground which must often have been flooded to a navigable depth; an area through which the native fenman of five centuries ago could guide his boat, rowing, poling or sailing as opportunity offered, by ways no longer accessible and difficult even to imagine. Among the most important links in the chain were the meres, the shallow reed-fringed lakes which used to lie along the margin of the fens.’<sup>305</sup>

## F 1 River Welland

Tidal limit.	North Spalding.				
Edwards.	Stamford.	15 miles.			
A.	Rockingham.	33 miles.	$1.4 \text{ m}^3 \text{ s}^{-1}$ .	1.1	S.
RLU.	Duddington.	21 miles.	$2.0 \text{ m}^3 \text{ s}^{-1}$ .	0.89	S.

‘In the manorial records of Crowland Abbey ‘there is evidence, in the payment of “rowyngsilver” and “menyngpeni and schiphire” in the manors of a system of carrying services by water.’<sup>306</sup>

‘Abbot Litlington of Crowland had five new bells cast in London and brought to the monastery by water.’<sup>307</sup>

The Deepings. ‘In the Middle Ages...The Welland served as a route for traffic and trade.’ At Market Deeping a reeve ‘kept the market-tolls, for the village was an important centre for boats coming from the “mainland” of Kesteven.’ Another reeve ‘accounted for the carriage of timber.’<sup>308</sup>

14<sup>th</sup> C. ‘At Boston, wine importers supplied the royal butler with wine for delivery to the Bishop’s palace at Lincoln or for Newark, Spalding, Stamford, and Rockingham, from whence it could be taken on overland to Leicester or alternatively it could be carried south-ward to Huntingdon and St Ives.’<sup>309</sup> Rockingham is 3 km north of Corby.

14<sup>th</sup> C. Stone was shipped from Barnack to Ely.<sup>310</sup>

<sup>305</sup> Donovan Purcell, *Cambridge Stone*. London: Faber and Faber Ltd. 1967, 96-97.

<sup>306</sup> Page, Estates of Crowland Abbey, 11. Cited in M.W. Barley, ‘Lincolnshire Rivers in the Middle Ages.’ *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, Vol. 1, Part 1. (1938), 1-22, 15.

<sup>307</sup> V.C.H. Lincolnshire, II, 115.

<sup>308</sup> Reeve’s Accounts: TNA, S.C. 6/909/16. Cited in M.W. Beresford & J.K.S. St Joseph, *Medieval England*. 2<sup>nd</sup> Edition. Cambridge: Cambridge University Press. 1979, 102.

<sup>309</sup> Margery Kirkbride James, *Studies in the Medieval Wine Trade*. Edited by Elspeth M. Veale. Oxford: Clarendon Press. 1971, 181.

<sup>310</sup> S. Evans, *A Short History of Ely Cathedral*. Cambridge: The Dean and Chapter. 1933, 6.



1332. There was a claim that some men had wrongfully arrested six boats on the river near Crowland.<sup>311</sup>

1334. A commission was appointed to, 'survey divers lodes leading from the towns of Peterborough, Yakesle and Spaldying, in the great march of the county of Huntingdon, as far as the town of Lynn, whereby men, merchants, and others of that county and the counties of Norfolk, Cambridge and Northampton time out of mind have used to navigate their ships in winter, which are now so obstructed that navigation on them is impossible at any season of the year to the great loss of persons passing with ships by the waters of Ramesmere, Ubmere and Wytlesmere, to make inquisition as the persons who should cleanse and repair these lodes, and by whose default the obstructions have been allowed to form, and to compel the persons who should contribute to the removal of the same, whether on account of lands which they hold, or of a right in the common pasture or fishery there, to have the work done.'<sup>312</sup>

1336. The Sheriff of Lincolnshire's Accounts show that 500 quarters of grain were shipped from Crowland to Boston for onward shipping to the army at Berwick.<sup>313</sup>

1337. A commission recommended that the abbot of Crowland should construct a causeway from Croyland to Spalding. The abbot wrote that, 'since the bank is liable to be flooded in winter, the land whereon it would be made is at such times greatly loosened as well by the passing of sailors and boatmen as by the force of the wind.' He also wrote that bridges would also have to be 'high enough for laden ships and boats to pass under them.'<sup>314</sup>

1349. Replying to a complaint about a road between Brotherhouse and Crowland, the abbot stated that, there was no King's road from the Brotherhouse to Crowland except by the river Welland for persons travelling by ships or boats. Brotherhouse is about 4 miles down-river from Crowland and 5 miles upriver from Spalding.<sup>315</sup>

1390. 'When the servants, also, of the said abbot came to the market of Depyng ... throwing them from their boats into the water, ... they were unable to enjoy any benefit whatever of carriage by water to the said abbey.'<sup>316</sup>

1432. The prior of Spalding granted permission to the abbot of Crowland to take from Spalding Fen as much earth, sand and clay as 100 boats could carry on the River Welland, each containing six cart-loads.<sup>317</sup>

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<sup>311</sup> Calendar of Patent Rolls, 1330-34, 297-298.

<sup>312</sup> Calendar of Patent Rolls, 1334-38, 70.

<sup>313</sup> TNA, E101/569/3. Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 269.

<sup>314</sup> Calendar of Patent Rolls, 1334-38, 449-450.

<sup>315</sup> Coram Rege Roll, Hil., 24 Edw. III, m. 34. Cited in *Public Works in Mediaeval Law*. Editor C.T. Flower. Selden Society, Vol. 32, 1915, 311.

<sup>316</sup> *Ingulph, Contin.* P 338. Cited in H.C. Darby, *The Medieval Fenland*. Newton Abbot: David & Charles. 1974. (1<sup>st</sup> Edition 1940), 103.

<sup>317</sup> William Dugdale, *The History of Imbanking and Draining of divers fens and marshes*. 2<sup>nd</sup> Edition, Revised and corrected by Charles Nalson Cole. London: Richard Guest. 1772, 216.

1570. That the river had once been navigable at least to Stamford is implied by the preface to 'An Act for making the River Welland, in the county of Lincoln, navigable' which states 'The town had formerly been inhabited by many opulent merchants, whose wealth had been advanced by the navigation of the River Welland, and its connexion with Boston, Lynn, and other ports.'<sup>318</sup>

1571. 'An Act of Parliament was passed for making the Welland navigable from Stamford to the sea. ... The staple of wool had been lost because of the making of cloth and the ancient course and passage of the river had been altered and diverted for the erection of six or seven watermills between Stamford and Market Deeping.'<sup>319</sup>

1586. Camden wrote that the inhabitants of Crowland 'have their cattaile a great way from the Towne, and when they are to milke them, they goe in little punts or boats that will carry but two a peece.'<sup>320</sup>

1587. Harrison describes how the Welland divides into two branches. One of these branches joins with the River Nene. Another is 'ceased, whereupon the inhabitants susteine manie grievous flouds, because the mouth is stanchd, by which it had accesse before into the sea.'<sup>321</sup>

1603. The commissioners of sewers were required by a writ of *ad quod dampnum*, to ensure that in the draining of some fens the work should not be prejudicial 'either to the navigation [of the rivers Weland and Glene], or to the common-wealth, &c. requiring them to take care thereof.'<sup>322</sup>

1630. The Lynn Law provided that 'every the navigable rivers within the limits of this commission, as namely the river of Ooze, Grant, Nean, Welland and Glean, shall be likewise preserved. ... provision was made for the redress of any possible interference with the navigation; and these rights were safeguarded in successive ordinances.'<sup>323</sup>

1731. 'A note in Bowen's edition of Olgiby's *Road Book* states that Crowland was built 'on piles like Venice (if we may make ye comparison) consisting of 3 Streets which have communication by a Triangular bridge: it is so remote from Pasture that ye Inhabitants are obliged to goe milking by water in little boats called Skerrys wch carry 2 or 3 persons at a time.'<sup>324</sup>

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<sup>318</sup> 13 Elizabeth I c 1. Cited in W.G. Hoskins, *The Age of Plunder, King Henry's England, 1500-1547*. London: Longman. 1976, 196.

<sup>319</sup> 13 Eliz. No. 26 Private Act (House of Lords Record Office). Cited in T.S. Willan, *The Inland Trade*. Manchester: Manchester University Press. 1976, 23.

<sup>320</sup> William Camden, *Britain*. Trans. Philemon Holland. London: Joyce Norton, and Richard Whitaker. 1637, 531B.

<sup>321</sup> Raphael Holinshed, William Harrison *et al.* *The First and Second Volumes of the Chronicles*. 2<sup>nd</sup> Edition. Editor John Hooker. London: J. Johnson *et al.* 1807, 171.

<sup>322</sup> William Dugdale, *The History of Imbanking and Draining of divers fens and marshes*. 2<sup>nd</sup> Edition, Revised and corrected by Charles Nalson Cole. London: Richard Guest. 1772, 205.

<sup>323</sup> Cited in H.C. Darby, *The Draining of the Fens*. Cambridge: University Press. 1940, 53.

<sup>324</sup> E. Jervoise, *The Ancient Bridges of Mid and Eastern England*. Westminster: The Architectural Press. 1932, 68.

## F 2 River Glen/West Glen

Lower limit. River Welland.

Edwards. Catebridge. (1 km north-west of Baston.) 5 miles.

A. Little Bytham. 10 miles.  $0.2 \text{ m}^3 \text{ s}^{-1}$ . 2 Not now usable.

RLU. Little Bytham. 10 miles.

14<sup>th</sup> C. 'Even quite small rivers, like the Glen, a tributary of the Welland, which happens to flow within a few miles of Holywell and Clipsham, [where there were quarries] were brought into service: records exist of its use for the movement of stone in the fourteenth century.'<sup>325</sup> [Little Bytham is the nearest point on the Glen from Clipsham.]

1311. Grain was shipped from Catebridge to Boston via the Glen, the Welland, the Wash and the Witham for provisions for the army at Berwick.<sup>326</sup> At Catebridge the Market Deeping to Bourne road crosses the river near Boston. It is also the point where the Car Dyke from Lincoln the Peterborough cuts across the river.

1336. Grain was shipped from Catebridge to Boston via the Glen, the Welland, the Wash and the Witham for provisions for the army at Berwick.<sup>327</sup>

1360's. Stone was taken from Catebridge to Windsor by water.<sup>328</sup>

1603 and 1630. See Welland above.

## F 3 River Nene

Tidal limit. Whittlesey. B1040 bridge.

Edwards. Wansford. 16 miles.

A. Higham Ferrers 48 miles. n/a. Canalised.

B. Northampton. 65 miles.

RLU. Northampton. 65 miles. n/a. Canalised.

Records of Historic Use are not given for Yaxley, Peterborough, Ramsey, Sawtry, Water Newton and places downstream. See *Edwards*; Masschaele.<sup>329</sup>

'The wealthiest villages being situated along the routes of the two main rivers flowing through the county, the Ouse and the Nene.'<sup>330</sup>

There are many references to goods being taken by boat from Northamptonshire to King's Lynn. Wansford lies on the county boundary, 9 miles upstream from Peterborough. It seems that the boats went beyond Wansford.

<sup>325</sup> Alec Clifton-Taylor and A.S. Ireson, *English Stone Building*. London: Victor Gollancz Ltd. 1983, 72.

<sup>326</sup> TNA, E101/568/30. Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 268.

<sup>327</sup> TNA, E101/569/3. Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 269.

<sup>328</sup> Jennifer S. Alexander, 'Building Stone from the East Midlands Quarries: Sources, Transportation and Usage.' *Medieval Archaeology*. Vol. 39. (1995), 107-135, 126.

<sup>329</sup> James Masschaele, *Peasants, Merchants, and Markets*. New York: St. Martins's Press. 1997, 191.

<sup>330</sup> *Ibid.* page 165.

‘As the river became navigable higher up, Wansford seems to have become the usual loading point for stone from Weldon, King’s Cliffe and Ketton; but once the main river was left the route may have varied from year to year and from season to season, the choice depending on the level of the waters and on the draught and size of the boats used.’<sup>331</sup>

c1000. Eaton considers that stone was taken from the Roman site at Water Newton to Peterborough. Water Newton is about 4 miles upstream of Peterborough.<sup>332</sup>

1184. ‘Thomas Bardolf began a voyage to Normandy from Wansford.’<sup>333</sup>

1201. The burgesses of Northampton in a legal challenge over the levying of tolls at Woodston admitted that they used to carry the goods by river direct to Yaxley but had changed to unloading them at Woodston.<sup>334</sup>

1222-6. ‘Among the Precentor’s Registers of Peterborough there is a confirmation without warranty by Abbot Alexander (1226-6) and the convent of a grant ... of free carriage by the public road from Barnack to the water, and of the right to transport marble and any other stone or anything else bought for their own use by the river Nene between Alwalton and Peterborough.’<sup>335</sup>

1227. The king granted the toll of ships at Alwalton, mid-way between Wansford and Peterborough, together with two ships in Bitlemare.<sup>336</sup>

1228. ‘Yaxley’s emergence as the inland head of the Nene is well attested in contemporary sources. When provisioning his estates in Northamptonshire in 1228, for example, Henry III sent wine purchased in Boston by ship to Yaxley and then by cart to the manors and towns he intended to visit.’<sup>337</sup>

1252. ‘It could be assumed that Northampton would be provisioned ... with firewood and sea fish by boat.’<sup>338</sup>

1268-1591. There are ‘nearly a thousand instances in the rolls [of Ramsey, Hepmangrove and Bury] dealing with the blockage, narrowing or otherwise impeding of the several watercourses in the town.’<sup>339</sup>

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<sup>331</sup> Donovan Purcell, *Cambridge Stone*. London: Faber and Faber Ltd. 1967, 98-99.

<sup>332</sup> Tim Eaton, *Plundering the Past*. Stroud: Tempus Publishing Ltd. 2000, 127.

<sup>333</sup> Stenton, Gilbertine Charter, xiv, 143. Cited in M.W. Barley, ‘Lincolnshire Rivers in the Middle Ages.’ *Lincolnshire Architectural and Archaeological Society Reports and Papers*. New Series. Vol. 1, Part 1. (1936), 19.

<sup>334</sup> *Curia Regis Rolls*, vol.1, pp 449-50. Cited in James Masschaele, *Peasants, Merchants, and Markets*. New York: St. Martins’s Press. 1997, 214-215.

<sup>335</sup> Donovan Purcell, *Cambridge Stone*. London: Faber and Faber Ltd. 1967, 71.

<sup>336</sup> Calendar of Charter Rolls, 1226-57, 20.

<sup>337</sup> James Masschaele, *Peasants, Merchants, and Markets*. New York: St. Martins’s Press. 1997, 191. Referring to *Calendar of Liberate Rolls, 1226-1240*, pp. 89,91, 107-8.

<sup>338</sup> *Records of the Borough of Northampton, 1*, pp, 41-43. Cited in Edward Miller & John Hatcher, *Medieval England, Towns and Commerce, 1086-1348*. London: Longman. 1995, 144.

<sup>339</sup> *The Court rolls of Ramsey, Hepmangrove, and Bury. 1268-1600*. Editor Edwin Brezette DeWindt. Toronto: Pontifical Institute of Mediaeval Studies. c1990, 49.

1270. The toll of ships at Halwalton (Alwalton) was granted to the religious foundation at Burgh.<sup>340</sup>

1300. The toll of ships at Alewalton was granted to a religious foundation at Peterborough.<sup>341</sup>

Early 14<sup>th</sup> century. ‘The change in direction in the flow of the main Fenland rivers at about the same period also limited the supply of Barnack stone to Cambridge.’<sup>342</sup>

1314. ‘Commission to John Butehurte, Robert de Maddingle and Walter de Mollesworthe, as the King has heard that a certain river by which merchants were accustomed to pass from Lenne to Welle, and thence to divers parts of the counties of Cambridge, Huntingdon and Northampton with their ships laden with victuals, goods, wares and other necessities, to the great gain of the men of those parts, and especially of the King’s town of Holm, situated upon that river, and of his market and fair there, has lately been obstructed at the town of Welle by some men of those parts, so that no ship can pass beyond that town, to the great injury of the town, market, and fair of Holm. The commissioners are to view the obstructions, and to enquire by oath of good men of the counties on the confines of which the obstruction was made touching the same, and the persons by whom it was erected.’<sup>343</sup>

1331. ‘There were lengthy complaints from juries of several Fenland counties to the effect that an obstruction at Outwell, south east of Wisbech, had stopped the usual water route to Lynn. The common passage of boats from the places in the western fens such as Crowland, Peterborough, Holme and Yaxley, had been along South Eau or the Nene to Outwell, and from there along Well Creek to the Ouse at Salters Lode; this passage was no longer possible and boats were compelled to go from Outwell up the Oldcroft River by Welney to the Ouse at Littleport – fifty leagues further than necessary. The result, according to the verdict of Norfolk, was a rise in the price of the commodities which used to go by water – corn, timber, fish, turves, stone, etc.’<sup>344</sup>

1331. Graz records that boats also went to Glatton and Ramsey, Walton, Sawtry and Conington.<sup>345</sup>

1331. A jury referred to, ‘men who wanted to go from Lynn to “Peterborough and elsewhere to parts higher up” (that is, higher up the Nene).’<sup>346</sup>

After 1331. Besides the Nene itself, there seem to have been, a few years later, “divers lades and trenches in the towns of Walton, Sawtry, and Conington” [in

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<sup>340</sup> Calendar of Charter Rolls, 1257-1300, 142.

<sup>341</sup> Calendar of Charter Rolls, 1257-1300, 485.

<sup>342</sup> J.M. Goodwin, *The Book of Barnack*. Buckingham: Barracuda Books Limited. 1983, 74.

<sup>343</sup> Calendar of Patent Rolls, 1313-17, 241-242.

<sup>344</sup> Cart. Mon. de Rameseia (Rolls Series) III, 142-6. Cited in M.W. Barley, ‘Lincolnshire Rivers in the Middle Ages.’ *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, Vol. 1, Part 1. (1936), 1-22, 8-9.

<sup>345</sup> N.S.B. Gras, *The Evolution of the English Corn Market*. New York: Russell & Russell. 1915 reissue 1967, 62.

<sup>346</sup> *Cartularium Monasterii de Rameseia*, iii, p. 144. Cited in N.S.B. Gras, *The Evolution of the English Corn Market*. New York: Russell & Russell. 1915 reissue 1967, 62.

Huntingdonshire] used “for the ships and boats of any men wishing to lad and carry corn.”<sup>347</sup>

1342. With reference to dykes off the main river. ‘Commission to ... to survey certain ancient lodes and trenches in Walton, Sautre and Conyngton, co Huntingdon, made for the preservation of the lands, pastures and meadows in those parts as well as for the passage of ships and boats to and from the sea which are said to be at the present time so narrowed and obstructed by some persons of those towns, that the ships and boats cannot pass, ...’<sup>348</sup>

16<sup>th</sup> century. ‘The Nen itself was navigable to Peterborough, which was ‘beautified with a “portable” river to bring and carry all merchantable commodities to five sundry shires adjoining it.’<sup>349</sup>

1502. A grant of land was made for a wharf at Gunwade.<sup>350</sup>

1580’s. Seven tons of freestone were transported from Gunwade to Cambridge by water for Corpus Christi College.<sup>351</sup>

1586. ‘From the West side of the Shire, [Northamptonshire] holdeth on his course with many reaches of his bankes, after a sort through the middle part of this Shire; and all the way along it doth comfortable service. A notable River, I assure you, ...’<sup>352</sup>

1586. ‘The cattle are kept far from the town, so that when the owners milk them, they go in boats (that will carry but two) call’d by them *Skerrys*.’<sup>353</sup>

1587. Harrison wrote that ‘(the Nene) goeth to ... and so to Peterborow, where it divideth it selfe into sundrie armes, and those into severall branches and draines, among the fennes and medowes, not possible almost to be numbred, before it meet with the sea on the one side of the countrie, and fall into the Ouze on the other.’<sup>354</sup>

1630. See Glen 1630 above.

1648. ‘a Boat of 3. Tun laden with Cheese was brought from *Peterborow* to *Higham Ferrers* at Michaelmas Faires the wayes that wet season being unpassable: and though the owner was forced to hire two men to unlade his Boat at every Mill shote, and after lift the Boat to the Dam, and laid her again, which he did sixteen time; yet he brought

<sup>347</sup> *Cartularium Monasterii de Rameseia*, iii, p. 146 (1331). Cited in N.S.B. Gras, *The Evolution of the English Corn Market*. New York: Russell & Russell. 1915 reissue 1967. 62.

<sup>348</sup> Calendar of Patent Rolls, 1340-43, 552.

<sup>349</sup> Historic Monuments Commission Salisbury, xv, 107. Cited in T.S. Willan, *The Inland Trade*. Manchester: Manchester University Press. 1976, 18.

<sup>350</sup> Chan. Inq. P.m. (ser.2), xx, 148. Cited in VCH Northants, II, 476.

<sup>351</sup> R. Willis and J.W. Clark, *The Architectural History of the University of Cambridge*. 3 Vols. (Cambridge, 1886) II, 327-31. Cited in Jennifer S. Alexander, ‘Building Stone from the East Midlands Quarries: Sources, Transportation and Usage.’ *Medieval Archaeology*. Vol. 39. (1995), 107-135, 127.

<sup>352</sup> William Camden, *Britain*. Trans. Philemon Holland. London: Ioyce Norton and Richard Whitaker. 1637, 519.

<sup>353</sup> William Camden, *Camden’s Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 462.

<sup>354</sup> Raphaell Holinshed, William Harrison *et al.* *The First and Second Volumes of the Chronicles*. 2<sup>nd</sup> Edition. Editor John Hooker. London: J. Johnson *et al.* 1807, 172.

his Cheeses at an easier rate, then at the most seasonable time he could have done byland: (*viz.*) under 12 d. the hundred weight, he having first offered (2 s. 6 d.) per hunded. ... who there sold his boat for the price he paid for it at *Peterborow*.<sup>355</sup>

1657. 'We saw the old passage of the River *Nene*, which is still made use of by Boats and Barges, for Coales and other Commodities.'<sup>356</sup>

1721. The channel at the mouth of the Nene 'changed its course a full mile from west to east, in two years' time from June 1721.'<sup>357</sup>

1724. [1724 was the date of the construction of the navigation] 'There was limited traffic before this with small 1-3 ton boats that were unloaded and then dragged over land each time there was an obstacle.'<sup>358</sup>

### Car Dyke

Car Dyke was an artificial channel from Waterbeach in Cambridgeshire to the River Witham a few miles below Lincoln. There has been much discussion as to whether it was built for drainage, transport or both.

'Trollope recorded that it (Car Dyke) was some times called Bell Dyke, from a tradition that the original Great Tom of Lincoln was taken by boat or raft from Peterborough to Lincoln.'<sup>359</sup>

A boat-load of dressed stone was discovered in the bed of the dyke at Morton, 3 miles to the north of Bourne.<sup>360</sup> Hence part of it was used at times for transport.

J.M. Steane points out that the link between the Welland and the Nene would greatly have shortened the distance between Stamford and Cambridge.<sup>361</sup>

Simons claims that in the northern section the Dyke was not level and that the roads went through it not over it.<sup>362</sup> Frere and St Joseph state that 'The canal has usually been credited with a dual function. One was water management involving the control and diversion of flood-waters; the other was to provide a continuous navigation link, enabling barges carrying meat or corn from the farmlands of Cambridgeshire and the Fens to be towed to Lincoln and thence via the Foss Dyke (another canal) to the river Trent.' They question the quality of Simons work but conclude that 'For the present,

<sup>355</sup> Anon. 'Some Considerations of the River Nine, running from Northampton to Peterborow, and so to the Sea; shewing the Fesability and convenience of making it Navigable.' Pamphlet. Cambridge University Library. Bb\*.11.50'(E). c.1653, 2.

<sup>356</sup> *Sir William Dugdale's Diary, 1657*. British Library, Lansdowne MS 722, ff 29-38. Cited in H.C. Darby, *The Draining of the Fens*. Cambridge: University Press. 1940, 277.

<sup>357</sup> N. Kinderley's pamphlet of 1751. Cited in H.C. Darby, *The Draining of the Fens*. Cambridge: University Press. 1940, 137.

<sup>358</sup> Robert Simper, *Rivers to the Fens*. Lavenham: Creekside Publishing. After 1998, 69.

<sup>359</sup> Trollope, Sleaford, 65. Phillips in *Antiquity*, V, 106-8. Cited in M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, Vol. 1, Part 1. (1936), 1-22, 17.

<sup>360</sup> M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural & Archaeological Society Reports and Papers*, New Series, Vol. 1, Part 1. (1936), 1-22, 17.

<sup>361</sup> J.M. Steane, *The Northamptonshire Landscape*. London: Hodder. 1974, 137.

<sup>362</sup> B.B. Simmons, 'The Lincolnshire Car Dyke: Navigation or Drainage?' *Britannia*, 10 (1979), 183-196.

the possibility that the Car Dyke was used for long-distance haulage must be regarded as dubious.<sup>363</sup>

1230. The Dyke is mentioned in a disafforestation grant of 1230.<sup>364</sup>

1500-24. Ancaster stone was carried from the River Slea to Appletreeness along the Car Dyke.<sup>365</sup>

#### **F 4    Great Ouse**

Tidal limit.	King's Lynn.				
Edwards.	Lavendon.	115 miles.			
A.	River Ouzel.	126 miles.	$9.2 \text{ m}^3 \text{ s}^{-1}$ .	0.47	S.
B.	Confl. Tove.	135 miles.			
RLU.	Buckingham.	147 miles.	$2.5 \text{ m}^3 \text{ s}^{-1}$ .	0.75	S.

Records of Use are not quoted for St Ives and places downstream. See:- *Edwards; Summers*.<sup>366</sup>

'In the thirteenth and fourteenth centuries, the two rivers [Nene and Ouse] joined their courses via Well Creek, about ten miles inland from the port. Within Huntingdonshire, the two rivers were joined by a series of channels and inland lakes running between Earith on the Ouse and Peterborough on the Nene. Elizabethan cartographers drew this linkage as a fairly substantial waterway running via Ramsey Mere - then a substantial inland lake situated to the north and west of the town of Ramsey - and Whittlesea Mere - then the largest inland lake in the country. Feeding into these two lakes and their connecting channel were numerous smaller channels, some natural and some constructed. Many villages that appear on a modern map as being situated at a considerable remove from a navigable waterway were in fact well integrated into medieval riverine routes via these smaller channels.'<sup>367</sup>

The town of Eaton is close to the boundary with Huntingdonshire. This may indicate that the river needed maintaining for navigation.<sup>368</sup>

Willard, in an early, influential article, stated that Huntingdon stood at the head of the navigation of the Ouse.<sup>369</sup> His references to the Close Rolls and the Patent Rolls are incorrect in that there is no mention of Huntingdon on the pages to which he refers.<sup>370</sup>

<sup>363</sup> S.S. Frere, J.K.S. St Joseph, *Roman Britain from the Air*. Cambridge: Cambridge University Press. 1983, 208-211.

<sup>364</sup> Calendar of Charter Rolls, 1226-57, 122.

<sup>365</sup> Rev. Reginald C. Dudding, Trans. and Ed. 'First Churchwardens' book of Louth.' Cited in Donovan Purcell, *Cambridge Stone*. London: Faber and Faber. 1967, 54.

<sup>366</sup> D. Summers, *The Great Ouse. The History of a River navigation*. Newton Abbot: David & Charles. 1973.

<sup>367</sup> James Masschaele, *Peasants, Merchants, and Markets*. New York: St. Martins's Press. 1997, 190.

<sup>368</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 79.

<sup>369</sup> James Field Willard, 'Inland Transportation in the England during the Fourteenth Century.' *Speculum* Vol. 1. (1926) 361-374, 372.

<sup>370</sup> Calendar of Close Rolls, 1313-15, 355;

Calendar of Patent Rolls, 1317-21, pp, 212, 311.

These are all references to Safe Conduct for men and mariners of the Bishop of Ely.



‘A public barge quay was built in Brook Street.’ This is 600 feet from the present river.<sup>371</sup>

10<sup>th</sup> C. The Danes constructed ‘docks’ at Willington 5 miles east of Bedford.<sup>372</sup> Summers claims that these boats would have had a draught of 2 to 3 feet.<sup>373</sup>

13<sup>th</sup> C. ‘Cathedrals and abbeys like Ramsey, Bury St Edmunds, Ely, Spalding, Peterborough and Crowland owed their lavish size to the easy availability by water transport of the celebrated freestone from quarries on the edge of the Fens at Barnack in Northamptonshire. The majority of the ancient Fenland churches are constructed from the same material.’<sup>374</sup>

1247. ‘Wil. Fil. Ric. drowned from a boat in the Water of the Use.’<sup>375</sup> This happened in Bedfordshire.

1247. ‘Ric. Molendinarius drowned from a boat in the Water of the Use.’<sup>376</sup> This happened in Bedfordshire.

1251. ‘Eustace de Tornes had land in Soham for which he owed a rent of 5s. and the duty of sailing the bishop’s baggage from Soham to Ely; and John le Steresman had a messuage in Ely for ‘navigating the bishop’.<sup>377</sup> John was probably a descendant of that Engelram, steersman of Bishop Nigel, who was given a fishery for 2 s. annual rent and “pro servicio suo de esnecca”, a description of his office similar to that found in connection with the king’s boatman about the same time.’<sup>378</sup>

1267. ‘R fell from a boat and was drowned at Wyboston, Bedfordshire.’<sup>379</sup> Wyboston is 3 miles upstream of St Neots.

1268. Robert of Wyboston fell from a boat and was drowned at Wyboston. There were four persons in the boat with Robert.<sup>380</sup>

1272-1307. Summers commenting on the navigability of the river in the reign of Edward I wrote ‘It is not easy to clarify the exact position, and this supposition [that the

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<sup>371</sup> C.F. Tebbutt, ‘Excavations at St. Neots, Huntingdonshire.’ *Cambridge Antiquarian Society Proceedings*. 49, (1955). 79 – 87, 81.

<sup>372</sup> B. Wadmore, *The Earthworks of Bedfordshire*. (1920), 72. Cited in D. Summers, *The Great Ouse. The History of a River navigation*. Newton Abbot: David & Charles. 1973, 25.

<sup>373</sup> D. Summers, *The Great Ouse. The History of a River navigation*. Newton Abbot: David & Charles. 1973, 24.

<sup>374</sup> *Ibid.* page 31.

<sup>375</sup> *Calendar of the Roll of the Justices of Eyre, 1247*. Editor G. Herbert Fowler. Bedfordshire Historical Record Society, Vol. XXI. Published by the Society. 1939, 163.

<sup>376</sup> *Ibid.* page 166.

<sup>377</sup> Caius 485/489. f 21 d. Cited in E. Miller, *The Abbey and Bishopric of Ely*. Cambridge: Cambridge University Press. 1951, 125.

<sup>378</sup> Liber M, f. 158; Delisle-Berger, *Recueil des Actes de Henri II*, I, no 26; Poole, *Exchequer in the Twelfth Century*, p. 157. Cited in E. Miller, *The Abbey and Bishopric of Ely*. Cambridge: Cambridge University Press. 1951, 125.

<sup>379</sup> *Select Cases from the Coroner’s Rolls. 1265-1413*. Editor Charles Gross. Selden Society, Vol. 9. 1895, 10.

<sup>380</sup> *Ibid.* page 10.

river was only navigable to St Ives] is contradicted in other sources which appear to indicate that the river was fully navigable up to Huntingdon.<sup>381</sup>

1275-78. It was claimed that 'ships which were wont to come with their merchandise to the borough of Huntingdon from Lynn and other ports' were no longer able to do so.<sup>382</sup>

1277. A man had carrying services by land and by water to Llyn, Cambridge, Willingham, Ditton, Ely, Somersham, Downham, Littleport, Welles, Dunnington, Benwick, Chatteris, Feltwell, Brandon, Hockwold and the like.<sup>383</sup>

1279. 'A jury complained that a mill built by the Bishop of Lincoln in Offord Cluny restricted navigation between the two towns [of Huntingdon and Bedford].'<sup>384</sup>

1286. 'The boundary between the shires of Cambridge and Huntingdon ran in some of the meres just "as far as a man might reach with his barge-pole to the shore".'<sup>385</sup>

1287. The men of the borough of Huntingdon complained that, 'the water of the great river (*aqua magne riparie*) between the said borough and the town of St. Ives is so diminished by reason of watercourses, therefrom and obstructions in the said stream, that ships and boats laden with merchandise can no longer pass as they were wont.'<sup>386</sup>

1291. 'In 1291 wax and tallow from Lynn, rice and sugar from Bury St Edmunds, wheels and axles from Barnwell and wine from Boston' was taken by water to Ely.<sup>387</sup>

14<sup>th</sup> C. 'In the early fourteenth century, ships or boats could get as far as Yaxley, Holme, Glatton, and Ramsey; and 'divers lodes and trenches' brought water traffic as far up as Walton, Sawtrey, and Connington. (Fn. Gras, *Evolution of the English Corn Market*, p. 62.)' The medieval references are dated 1331-42. There is no reason to think these small ports had been abandoned by the sixteenth century: we know that Yaxley was still active. Similarly, the Cam developed a number of river-ports reached by artificial cuts or lodes from the main river. Of these, Burwell is the best example where the numerous docks can still be traced behind the houses on the main street. Another old river-port was Reach, anciently a market town. Several of these little river-ports lay on or very near the Old North Road (the present A1) and it seems most likely that they were deliberately chosen to be transshipment points from water to a great

<sup>381</sup> D. Summers, *The Great Ouse. The History of a River navigation*. Newton Abbot: David & Charles, 1973, 28.

<sup>382</sup> W. Illingworth & J. Caley, *Rotuli Hundredorum*, Vol 1 (1812) p 198. Cited in D. Summers, *The Great Ouse. The History of a River navigation*. Newton Abbot: David & Charles. 1973, 28.

<sup>383</sup> O.C. Pell, 'On the Domesday geldable Hide.' *Proceedings of the Cambridge Antiquarian Society*, vi, 166 (1891). Cited in H.C. Darby, *The Medieval Fenland*. Newton Abbot: David & Charles. 1974. (1<sup>st</sup> Edition 1940), 101-102.

<sup>384</sup> *Rotuli Hundredorum*, ed. W. Illingworth and J. Caley (London, 1812-18), vol. 2. p. 685. Cited in James Masschaele, *Peasants, Merchants, and Markets*. New York: St. Martins's Press. 1997, 191.

<sup>385</sup> *Ramsey Cartulary*, I, 201. Cited in H.C. Darby, *The Medieval Fenland*. Newton Abbot: David & Charles. 1974. (1<sup>st</sup> Edition 1940), 75.

<sup>386</sup> Calendar of Patent Rolls, 1281-92, 270.

<sup>387</sup> F.R. Chapman, *The Sacrist Rolls of Ely*. (1907), Vol II, p 3. Cited in D. Summers, *The Great Ouse. The History of a River navigation*. Newton Abbot: David & Charles. 1973, 35.

through road. Indeed, we can generalize and say that everywhere east of the Old North Road rivers and lodes were the normal means of carriage for goods.<sup>388</sup>

1338. A large quantity of wool was sent from Huntingdon to St. Ives in boats, and then transferred to shutes and shipped on to King's Lynn.<sup>389</sup>

1339. The abbot of Lavendon, near Olney, complained that various persons had 'buried a boat with nets and other instruments for taking fish in his fishery in the sand, whereby he lost the profits of the fishery for a long time.' A 'fishery' is considered to be in the river as opposed to 'fishponds'. Lavendon is 20 miles up river of Bedford.<sup>390</sup>

1342. 'The Abbot of Ramsey adjudicated a dispute involving the villages of Walton, Sawtry, and Conington, the record of which mentions various ditches used by ships and boats to carry "grain, turves and other goods of certain men to various places within and beyond the country." As these references indicate, villages with access to navigable waterways did not hesitate to make the most of them.'<sup>391</sup>

Mid 14<sup>th</sup> C. Large stones were imported to Cottenham by barge.<sup>392</sup>

1370. A commission was set up to look into complaints, 'by merchants and others of the counties of Leicester, Derby, Northampton, Bedford and Huntingdon that very many weirs, mills and stanks have been newly placed and erected in the water of Husee between the towns of Huntingdon and St. Ives, through which ships and boats used to pass with victuals and other merchandise, so that by the erection thereof the stream is totally turned aside and obstructed'. ... and to have all such removed which have been 'erected in and after the time of the late king's grandfather.'<sup>393</sup>

1373. 'Lynn was constituted a staple port, on the ground that various streams ran through the counties of Warwick, Leicester, Northampton, Rutland, Bedford, Buckingham, Huntingdon, and Cambridge, by which wool and other goods could be conveyed to Lynn more easily and cheaply than to any other port.'<sup>394</sup>

1386. Three men were found lying dead in the R. Ouse. They 'went in a boat worth 12d. near Ravenstone Mill to fetch turves to make [repair?] the mill (*ad molend' faciend'*). On Fyscher's instructions they put so many turves in the boat that it sank about the hour of vespers, and they were drowned.'<sup>395</sup>

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<sup>388</sup> W.G. Hoskins, *The Age of Plunder, King Henry's England, 1500-1547*. London: Longman. 1976, 196.

<sup>389</sup> J.F. Willard, 'Inland Transportation in England during the Fourteenth Century.' *Speculum* 1 (1926), 372.

<sup>390</sup> Calendar of Patent Rolls, 1338-40, 284-285.

<sup>391</sup> James Masschaele, *Peasants, Merchants, and Markets*. New York: St. Martins's Press. 1997, 191.

Referring to *Cartularium Monasterii de Rameseia*, ed. Hart and Lyons, vol. 1, p. 432.

<sup>392</sup> Cambridge University Library Queens' Cd 39. Cited in J.R. Ravensdale, *Liable to Floods*.

Cambridge: Cambridge University Press. 1974, 56.

<sup>393</sup> Calendar of Patent Rolls, 1370-74, 35.

<sup>394</sup> *Rotuli Parliamentorum* ii, 319. Cited in L.F. Salzman, *English Trade in the Middle Ages*. Oxford: Clarendon Press. 1931, 209.

<sup>395</sup> *Inquests and Indictments from Late Fourteenth Century Buckinghamshire*. Editor Lesley Boatwright. Buckinghamshire Record Society. No. 29. 1994, 70.

1430. ‘This water-traffic, on some of the feeder canals at least, seems to have been seasonal. In the demesne leases for Oakington and Cottenham by the abbot of Crowland in 1430, the malt rent has to be delivered on the Feast of the Purification to the abbot’s barges (*naviculae* = narrow barges of the Fens?) at Cottenham. The delivery must be made “in sufficient time while there was plenty of water” (“*tempore competanter dum aqua habunderaverit fieri poterit*”). There is a penalty clause so that if delivery were late “so that the Abbot’s own transport should be upset and delayed by the falling of the water in part or in whole ...” (“*ita quod Cariagium ipsius abbatis per decrementum aque perturbatur et aretro fuerit in parte vel in toto.*”) then the tenant would have to be responsible for the whole carriage right to Crowland at his own cost.’<sup>396</sup>

1476. The Abbot of Ramsey granted to Huntingdon and Godmanchester limited rights of passage round his mills. Summers states that ‘this seems to be inconsistent with the existence of a public right [of navigation].’<sup>397</sup> It might equally be suggested that this shows that the abbot was obstructing a public right and had to grant the right to go over the weir in order to reduce the complaints.

1500-1547. ‘The Great Ouse was navigable right up to Bedford for ships of 15 tons., and its tributary the Cam up to Cambridge.’<sup>398</sup>

c1543. ‘Newenham a howse of chanons a myle benethe Bedford apone the ryver. Ther be many holmes, otharwyse little isles, in the river betwixt Bedforde and Newham.’<sup>399</sup>

1586. Harrison wrote ‘Finallie, the maine streame spreading abroad into the Fennes, I cannot tell into how manie branches, neither how manie Ilets are inforced by the same; ... after it hath thus delited it selfe with ranging a while about the pleasant bottoms & lower grounds, it meeteth with the Granta, from whence it goeth with a swift course unto Downeham.’<sup>400</sup>

1586. Stony-Stratford ‘standeth upon the publike Street commonly called *Watlingstreet*, which was *Militarie* high way made by the Romanes, and is evidently to be seene yet beyond the Towne with the banks or causey thereof, and hath a fourd but now nothing shallow, and hardly passable.’<sup>401</sup>

1611. ‘The rivers [of Huntingdonshire] ferrying Coale, as the Moores Turffe, for fuell.’<sup>402</sup>

<sup>396</sup> J.R. Ravensdale, *Liable to floods*. Cambridge: Cambridge University Press. 1974, 32-33.

<sup>397</sup> D. Summers, *The Great Ouse. The History of a River navigation*. Newton Abbot: David & Charles. 1973, 28.

<sup>398</sup> W.G. Hoskins, *The Age of Plunder, King Henry’s England, 1500-1547*. London: Longman. 1976, 194.

<sup>399</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume Four*. Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 33.

<sup>400</sup> Raphaell Holinshed, William Harrison *et al.* *The First and Second Volumes of the Chronicles*. 2<sup>nd</sup> Edition. Editor John Hooker. London: J. Johnson *et al.* 1807, 173.

<sup>401</sup> William Camden, *Britain*. Trans. Philemon Holland. London: Ioyce Norton and Richard Whitaker. 1637, 397.

<sup>402</sup> John Speed, *Theatre of the Empire of Great Britaine. Ist Edition 1611*. F 53-54. Facsimile *John Speed’s England. Part III*. London: Phoenix House Limited. 1954, Folio 53.

1611. ‘To this Shire-Towne, [Huntingdon] and benefit of the neighbour Countries, this river was navigable, until the power of *Grey*, a minion of the time, stopt that passage, and with it all redresse, either by law or Parliament.’<sup>403</sup>

1618. Willan writes that ‘The River Ouse had been navigable during the middle ages, (fn. I.E. Griffith, *A collection of ancient records relating to the borough of Huntingdon* p. 20) but when it was surveyed by Sir Clement Edmondes in 1618 it was found to be “generally foul and overgrown with weeds” and “stopped with weirs” between Huntingdon and Eley. (fn. Report of SCE dated 30 September 1618 in “Acts of the Privy Council, 1618-19, pp 293-299)”<sup>404</sup>

1630. See Glen 1630 above.

## **F 5    Nar**

Lower limit.	Great Ouse.		
Edwards.	Castle Acre.	15 miles.	
A.	Castle Acre.	15 miles.	n/a.
RLU.	Narborough.	12 miles.	n/a.

A canal, 200 m. long, was built from the river Nar to Castle Acre Priory for boats.<sup>405</sup>

1070’s. ‘The River Nar, which in those days was certainly navigable by boat, at least as far as here. [Castle Acre.]’<sup>406</sup>

A riverside location was attractive both for defence, and for river-borne supplies coming up the Nar from Bishop’s Lynn, now King’s Lynn.<sup>407</sup>

1275. An inquisition was told that, ‘If the great hithe of Secheth was completely cleansed of wreck, rubbish and siltings there would be a wider watercourse towards the sea, ... the weirs in the said hythe should be removed.’<sup>408</sup> Setchey is 5 miles up-river from the confluence with the Great Ouse.

1350-1550. The priory at Castle Acre transported sacks of grain and barrels of beer down the River Nar to King’s Lynn.<sup>409</sup>

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<sup>403</sup> *Ibid.* Folio 54.

<sup>404</sup> T.S. Willan, ‘The navigation of the Great Ouse between St Ives and Bedford in the seventeenth century.’ *Bedfordshire Historical Society Publications*. Vol. 24 (1946), 2.

<sup>405</sup> James Bond, ‘Canal Construction in the Early Middle Ages: An Introductory Review.’ In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 191.

<sup>406</sup> Jonathan Coad and Glyn Coppack, *Castle Acre Castle and Priory*. London: English Heritage. 1998, 14.

<sup>407</sup> *Ibid.* page 17.

<sup>408</sup> Calendar of Inquisitions Miscellaneous, 1219-1307, 304.

<sup>409</sup> Excavations at the Cluniac priory of Castle Acre, Norfolk, England. [www.btinternet.com/~ron.wilcox/onlinetexts/cap.htm](http://www.btinternet.com/~ron.wilcox/onlinetexts/cap.htm). Accessed 06/02/2006.

**F 6    Wissey/Oxborough River**

Lower limit.	Great Ouse.		
Edwards.	Oxborough.	11 miles.	
A.	Oxborough.	11 miles.	n/a.
B.	Northwold.	14 miles.	
RLU.	Hilborough.	25 miles.	n/a.

The name Stoke Ferry, 'A secondary settlement with a ferry' dates from 1286. Previously the name was simply Stoches in 1086.<sup>410</sup>

1291. 'Stoke Ferry Bridge was the subject of an enquiry in the year 1291, at which it was stated that "between the piles in the middle of the bridge at Stoke Ferie there ought to be a space of 16 feet, now narrowed by 7 feet in breadth."<sup>411</sup>

1325. 136 quarters of divers grains were transported by boat from Oxborough to King's Lynn to supply the army in Gascony.<sup>412</sup> Oxborough is 2 miles up a tributary of the river which joins the Wissey 2 miles upstream from Stoke Ferry.

1406. 'The lord of Oxborough was failing to provide a boat for the use of travellers between Oxborough and Northwold.'<sup>413</sup>

'The river Wissey was navigable to Northworld at least.'<sup>414</sup>

1436. It was recommended 'that two jetties 18 feet distant each from the other, be set upon the said river, within 200 feet of the said river Ouse'.<sup>415</sup>

Late 15<sup>th</sup> C. 'Joanna Dutton, was to transport her barley from Methwold to Stoke Ferry, from where it was probably carried down the rivers Wisney, Ouse, and Cam to the college [in Cambridge].'<sup>416</sup>

1801. It was held that there was an ancient right of navigation due to historic use on the river at Northwold.<sup>417</sup>

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<sup>410</sup> Victor Watts, *The Cambridge Dictionary of English Place names*. Cambridge: Cambridge University Press. 2004, 577-578.

<sup>411</sup> E. Jerviose, *Ancient Bridges of Mid and Eastern England*. Westminster: The Architectural Press. 1932, 113.

<sup>412</sup> TNA, E101/574/33. Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 276.

<sup>413</sup> TNA, DL30.104/1480, court held May 1406. Cited in Mark Bailey, *A Marginal Economy*. Cambridge: Cambridge University Press. 1989, 155. TNA, DL30.104/1480, court held May 1406.

<sup>414</sup> TNA, DL29.291/4791. Cited in Mark Bailey, *A Marginal Economy*. Cambridge: Cambridge University Press. 1989, 153. TNA, DL29.291/4791.

<sup>415</sup> William Dugdale, *The History of the Imbanking and Draining of divers Fens and Marshes*. Richard Geast: London. 1772, 295.

<sup>416</sup> Trinity College Cambridge, King's Hall accounts, XVI, fo. 120. Cited in John S. Lee, 'Feeding the colleges: Cambridge's food and fuel supplies, 1450-1560.' *Economic History Review*, LVI, 2 2003, 243-264, 259.

<sup>417</sup> *Simpson v Scales* (1801) 2 Bos & Pul 496-499.

## F 7 Little Ouse or Brandon

Lower limit. Great Ouse.

Edwards. Thetford. 21 miles.

A. Thetford. 21 miles.  $3 \text{ m}^3 \text{ s}^{-1}$ . n/a. Canalised.

B. Redgrave Fen. 38 miles.

RLU. Knettishall. 33 miles.  $0.45 \text{ m}^3 \text{ s}^{-1}$ . 0.53 Not now usable.

Thetford was a port in Saxon times.<sup>418</sup>

Norfolk is described as an island, bounded on the south by the rivers Waveney and Little Ouse, and on the north by the ‘main sea’; consequently, on all quarters the county had an abundance of ‘havens and hithes’.<sup>419</sup>

‘Before Denver Sluice was built, Brandon, like Thetford, “was a water town, the inhabitants gaining their livelihood by water traffic.”’<sup>420</sup>

‘Before the fens were drained it is believed that navigation was possible across the deeper fenland meres into the Ouse, and thence past Thetford into the river system of Broadland.’<sup>421</sup>

Mr Dewhurst wrote: ‘It is hardly the case that prior to the Act of 1670 constituting the Thetford Navigation, the Little Ouse had been used by vessels erratically before then; on the contrary, there is ample documentary evidence that the subsequent Thetford Navigation was only the remnant of an extensive navigation which, before the blockage of the tidal flow in 1653 by the erection of Denver Sluice, reached back into early medieval days at least; and that it had operated right into Thetford without any staunches.’<sup>422</sup>

‘Concerning Thetford: Barnack stone was used on a vast scale in building the twelfth century Priory here, and blocks of the same stone are found worked into walls all over, and even outside the town. There was thus heavy traffic in stone up the Little Ouse in and after the twelfth century.’<sup>423</sup>

12<sup>th</sup> century. ‘Lynn deprived Thetford of a great deal of river and road trade. Access to Lynn improved, and the difficult navigation of the shallow and winding Little Ouse became an unattractive proposition; once the upgrading and straightening of the Fenland water-ways had commenced, ... This additionally benefited towns such as Wisbech and

<sup>418</sup> D. Summers, *The Great Ouse. The History of a River navigation*. Newton Abbot: David & Charles. 1973, 13.

<sup>419</sup> J. Thirsk and J.P. Cooper, Eds., *Seventeenth-century Economic Documents*. Oxford: Clarendon Press. 1972, 343.

<sup>420</sup> L. Gaches, ‘Drainage of the Great Level.’ *Fenland Notes and Queries*. 6, (1906), 353 – 362. Cited in Michael Chisholm, ‘Re-assessing the navigation impact of draining the Fens.’ Unpublished at October, 2005.

<sup>421</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 80.

<sup>422</sup> P.C. Dewhurst in correspondence relating to Clark, R.H. ‘The staunches and navigation of the Little Ouse River.’ *Transactions of the Newcomen Society*, 30 (1960 for 1955-57), 207-219, 218.

<sup>423</sup> A.K. Astbury, *The Black Fens*. Cambridge: Golden Head Press Ltd. 1958, 196.

Ely, which were on major waterways, leaving Thetford a disadvantaged, awkwardly-placed and remote river port.’<sup>424</sup>

12<sup>th</sup>, 13<sup>th</sup> centuries. ‘Only one river of any size, the Little Ouse, flowed past Lynn, connecting the town with Brandon and Thetford.’<sup>425</sup>

1294-1348. The purveyance accounts show that goods were taken by water downstream from Santon Downham.<sup>426</sup>

1330. Robert Gopayn claimed that another peasant had illegally removed his boat from its mooring at Gopaynesshythe.’<sup>427</sup>

1529. ‘A commission of 1529 was told that among the problems of the town [Thetford] was that the river was “stopped, turned and apayed” to the hindrance of trade.’<sup>428</sup>

c1550. ‘In the mid-sixteenth century, vessels carrying between 12 and 16 loads (c. 12-16 tons) could pass from Thetford to the ‘main sea’.<sup>429</sup>

1555. ‘A petition stated that Thetford was “invyroned with a goodly freshwater river, the which transporteth to and from the mayne sea by vessels of xii or xvi lodes burthern”.’<sup>430</sup>

1555. ‘Manorial accounts note that wool merchants had free passage by boat on the Little Ouse as far as Thetford.’ A petition stated that vessels of twelve or sixteen loads burden could reach the town.<sup>431</sup>

1611. ‘Northfolke is an Iland inclining to an Ovall forme, closed on the South part with the Rivers of *Waveney* and the lesser *Ouse*, which divide it from *Suffolke*.’<sup>432</sup>

1651. Edmond Russel stated that about 60 years previously he had travelled by boat from Thetford to Lyn with ten Chaldron of coals. Francis Ruderham, aged 66,

<sup>424</sup> Alan Crosby, *A History of Thetford*. Chichester: Phillimore & Co. Ltd. 1986, 28.

<sup>425</sup> Vanessa Parker, *The Making of Kings Lynn*. London and Chichester: Phillimore. 1971, 5.

<sup>426</sup> John Langdon, ‘Inland water transport in medieval England.’ *Journal of Historical Geography*, 19, 1 (1993) 1-11, 5.

<sup>427</sup> Mark Bailey, *A Marginal Economy*. Cambridge: Cambridge University Press. 1989, 155. Quoting TNA, SC2.203/95.

<sup>428</sup> Martin, T. *The History of the Town of Thetford in the Counties of Norfolk and Suffolk from the earliest accounts to the present time*. (1779), Appendix XXX. John Nichols. Cited in Alan Crosby, *A History of Thetford*. Chichester: Phillimore & Co. Ltd. 1986, 79.

<sup>429</sup> A. Crosby. *A History of Thetford*. Chichester: Philmore. 1986, 79.

<sup>430</sup> Martin, T. *The History of the Town of Thetford in the Counties of Norfolk and Suffolk from the earliest accounts to the present time*. (1779), Appendix XXXIV. John Nichols. Cited in Alan Crosby, *A History of Thetford*. Chichester: Phillimore & Co. Ltd. 1986, 79.

<sup>431</sup> TNA, DL29.291/4791 and Crosby, *Thetford*, p. 79. Cited in Mark Bailey, *A Marginal Economy*. Cambridge: Cambridge University Press. 1989, 153.

<sup>432</sup> John Speed, *Theatre of the Empire of Great Britaine. First Edition 1611*. Facsimile reprint London: Phoenix House. 1953, Part II, Folio 35.



remembered Barges loaden with 14 or 15 Chaldron of Coals coming up to Christopher's Bridge in Thetford.<sup>433</sup>

1668. 'A notable storm blew sand for 5 miles from Lakenheath Warren to Santon Downham, ... obstructing the navigation of the Little Ouse.'<sup>434</sup>

## **F 8     River Lark**

Lower limit.     Great Ouse.

Edwards.     Mildenhall.     13 miles.

A.     Bury St Edmunds.     25 miles.     n/a.     Canalised.

RLU.     Bury St Edmunds.     25 miles.     n/a.     Canalised.

Throughout the period under consideration there was a port at Isleham.<sup>435</sup> The volume of trade passing through this quay is emphasised by the large sixteenth-century stone warehouse which stands in the grounds of Hall Farm.<sup>436</sup>

'Similar cargoes of building stone have been recovered from fenland waterways very much further from Barnack such as Upware and Prickwillow.'<sup>437</sup> Prickwillow is three miles upstream from the Great Ouse.

'The Lark [was navigable] to Mildenhall and Worlington.'<sup>438</sup>

There was barge access via a Millstream to Tuddenham.<sup>439</sup>

Bailey in his section on transport by water wrote 'There is evidence of an agreement ... to deliver goods at a Bury residence.'<sup>440</sup>

1078-95. An order of King William I commanded the abbot of Peterborough to 'take a sufficient amount of stone for his church as he has done so far, and you shall course him no more hindrance in the transportation of stone by water than you did previously.'<sup>441</sup>

1253. Various persons, 'came on the Friday night before St. Bartholomew's to the park of Edmund de Sardelowe in Middehal and carried away his hay in boats (*cum navigiis*).'<sup>442</sup>

<sup>433</sup> Thomas Badeslade, *A History of the Ancient and Present State of the Navigation of the Port of King's Lyn and of Cambridge and the rest of the trading Towns in those parts*. London. 1766, 53.

<sup>434</sup> R.R. Clarke, 'The Breckland, Historical and Economic Background.' In H.C. Darby, Ed., *A Scientific Survey of the Cambridge District*. London: British Association. 1938, 208.

<sup>435</sup> Susan Oosthuizen, 'Isleham: a medieval port.' *Landscape History*, Vol 15. (1993), 29 – 35.

<sup>436</sup> 'List of Suffolk Monuments.' Department of the Environment. List 24, monument 9/34, p14.

<sup>437</sup> Sir Harry Godwin, *Fenland: its ancient past and uncertain future*. Cambridge: Cambridge University Press. 1978, 100.

<sup>438</sup> TNA, DL29.291/4791. Cited in Mark Bailey, *A Marginal Economy*. Cambridge: Cambridge University Press. 1989, 153.

<sup>439</sup> S. M. Haslam, *The Historic River*. Cambridge: Cobden of Cambridge Press. 1991, 123.

<sup>440</sup> Mark Bailey, *A Marginal Economy*. Cambridge: Cambridge University Press. 1989, 155.

<sup>441</sup> Bury St. Edmunds Feudal Docs., no. 11 p 57 *Regesta i*, no 369. Cited in *English Lawsuits from William I to Richard I, Volume I*. Editor R.C. Van Caenegem. Selden Society, Vol. 106. 1990, 112.

<sup>442</sup> Calendar of Inquisitions Miscellaneous, 1219-1307, 558.

13<sup>th</sup> century. 'We know that Normandy stone was brought to Bury St Edmunds ... via Lynn for ecclesiastical buildings in the twelfth century, and that the river was later the means for exporting woollen cloth.'<sup>443</sup>

1379. 'The royal council saw fit to authorize the burgesses (of Bury St Edmunds), along with their comrades from Thetford, another inland town, to build a ship to be incorporated into the royal navy.'<sup>444</sup>

1411. 'A cutting at Mildenhall was occasionally dredged to ensure that laden craft could reach the annual fair from the river Lark.'<sup>445</sup>

1450. '(King's Lynn) stood on the wash, at the headwaters of the River Ouse, into which the Lark and the Linnet flowed, and proved a convenient *entrepot* for heavy goods, such as raw wool and hides. The lack of quantifiable evidence makes definitive statements impossible, but it is likely that by 1450 about half of all of Bury's exports were shipped through Lynn.'<sup>446</sup>

## **F 9     River Kennett.**

Lower limit.    River Lark.

A.                Kennett.                5 miles.                n/a.

13<sup>th</sup> and 14<sup>th</sup> C. The river was navigable at least until the early 14<sup>th</sup> century connecting the parish [of Kennett] to the fenland waterways.<sup>447</sup>

In 1995 the river had ceased to flow.<sup>448</sup>

## **F 10    River Snail / Soham River**

Lower limit.    River Cam.

A.                Soham.                5 miles.                n/a.

Soham was a port throughout the period 1200-1600. Soham Mere was 500 ha.<sup>449</sup>

c.1140. William of Malmesbury wrote that the lake was 'once dangerous to boats wanting to reach Ely, but in his day a road had been made across the marsh so that it could be crossed on foot.'<sup>450</sup>

<sup>443</sup> P. Bishop, *The Sacred and Profane History of Bury St Edmunds*. London: Unicorn. 1998, 80. Cited in Michael Chisholm 'Re-assessing the navigation impact of draining the Fens.' Unpublished at October, 2005.

<sup>444</sup> C.C.R., Edwards II, 1311, p. 358; C.P.R., Henry VI, 1436, pp. 548-581; *ibid.*, 1454, p. 160. Cited in R.S. Gottfried, *Bury St. Edmunds and the Urban Crisis, 1290-1539*. Princeton: Princeton University Press. 1982, 92.

<sup>445</sup> British Library Additional Roll 53129. Cited in Mark Bailey, *A Marginal Economy*. Cambridge: Cambridge University Press. 1989, 154.

<sup>446</sup> R.S. Gottfried, *Bury St. Edmunds and the Urban Crisis, 1290-1539*. Princeton: Princeton University Press. 1982, 92.

<sup>447</sup> 'Kennett [Cambridge] Description of Officer: Reeve.' 23 Ed. I. TNA, SC6/768/18. Cited in VCH *County of Cambridge and the Isle of Ely: Vol. 10*, 458-61.

<sup>448</sup> *Ibid.*

<sup>449</sup> David Hall and John Coles, *Fenland Survey*. English Heritage Archaeological Report 1. 1994, 138.

<sup>450</sup> Victor Watts, *English Place Names*. Cambridge: Cambridge University Press. 2004, 558.

14<sup>th</sup> C. Turf and sedges were taken from Soham for sale in Cambridge.<sup>451</sup>

c.1300. Two millstones bought by the Earl Marshall of Cambridgeshire were transported by water to Soham and then by land to Kennett.<sup>452</sup>

## F 11 River Cam

The tributary flowing from Saffron Walden and river downstream of Grantchester are called the ‘Cam’.

The tributary flowing from Ashwell is called the Rhee.

The tributary flowing from Linton is called the ‘Granta’.

Lower limit. Great Ouse.

Edwards. Grantchester. 16 miles.

A. Great Chesterford. 28 miles.  $0.6 \text{ m}^3 \text{ s}^{-1}$ . 1.7 S.

B. Saffron Walden. 32 miles.

RLU. Audley End Station. 33 miles.  $0.6 \text{ m}^3 \text{ s}^{-1}$ . 1.9 S.

Records of Use are not given for Cambridge and places downstream. See *Edwards, Lee*.<sup>453</sup>

Dr S.M. Haslam states that ‘R. Cam proper has a good stone wharf at the upstream end of Saffron Walden.’<sup>454</sup>

12<sup>th</sup> century. At Walden Abbey there was found ‘mid-late 12<sup>th</sup> century chevron ornament in Barnack stone, and mouldings and ornament of the 13<sup>th</sup>, 14<sup>th</sup>, and 15<sup>th</sup>/16<sup>th</sup> centuries, in a variety of stone including Purbeck marble, Ketton, Barnack, Reigate and clunch. ... Walden seems to lie at the limit of distribution southwards (of Collyweston stone slates).’<sup>455</sup>

c1200. The River Cam and the King’s Slade at Walden Abbey were described as *aquis irriguus* which would seem to imply that they were swampy rivers at that point.<sup>456</sup>

1120’s. An undated charter of Henry I states that, ‘“I forbid that any boat shall unload at any hithe (*litus*) in Cambridgeshire except at the hithe of my borough of Cambridge, nor shall barges be laden except in the borough of Cambridge, nor shall any one take toll elsewhere, but only there.”’ However the sentence was not repeated in later Cambridge charters. It was a very unusual privilege even in the twelfth century, and is

<sup>451</sup> Public Record Office, DL 30/1/11,m. 2. Cited in Andrew Wareham, ‘Water management and the economic environment in Eastern England, the Low Countries and China c. 960-1650: comparisons and consequences.’ In Hilde Greefs & Marjolein ’t Hart, Eds., *Jaarboek voor Ecologische Geschiedenis. 2005/2006*. Gent: Academia Press. 2006, 9-34, 21.

<sup>452</sup> TNA, SC6/768/7. Cited in Edward Miller & John Hatcher, *Medieval England, Towns, Commerce and Crafts. 1086-1348*. London: Longman. 1995, 145.

<sup>453</sup> John S. Lee, *Cambridge and its Economic Region, 1450-1560*. Studies of Regional and Local History. Vol. 3. Hatfield: University of Hertfordshire Press. 2005.

<sup>454</sup> S.M. Haslam, Personal letter 2.4.2006.

<sup>455</sup> S.R. Bassett, *Saffron Walden excavations and research 1972-80*. Chelmsford Archaeological Trust Report 2, Council for British Archaeology Report 45. London: CBA. 1982, 101.

<sup>456</sup> Dianna Greenway and Leslie Watkins, *The Book of the Foundation of Walden Abbey*. Oxford: Clarendon Press. 1999, 6.

unlikely to have been of any practical significance by the later thirteenth. In general burgesses could control trade only within the immediate proximity of their market place.<sup>457</sup>

1271. From Chesterford a boat from and to Littleport and Southwood cost 1 s.<sup>458</sup>

15<sup>th</sup> C. 'The river formed a waterway from the barns and kilns and threshing-floors of Grantchester almost (for I suppose the mills of Cambridge would interrupt navigation) to the very precinct of the College. In the Mundum Books I have found traces of a College barge, perhaps we may imagine this craft passing and repassing on the upper River, each year in autumn, carrying down wheat or flour for the College bakehouse, malt for the brewery and hay for the stables.'<sup>459</sup>

1481. A stone wall was built on the west side of Peterhouse which is upstream of the King's Mills. The wall was built *juxta aquam* and there is a gate in the wall, now blocked up, with the arms of John Hotham, Bishop of Ely (1316-1337) above the gate on the outside and of John Alcock, Bishop of Ely (1486-1500) on the inside. The gateway appears to be part of the original construction. This would seem to imply that boats used the river above the mills at times between 1316 and 1500.<sup>460</sup>

16<sup>th</sup> C. There is a brick Water Gate at Walden Abbey, 'apparently of the 16<sup>th</sup> century'.<sup>461</sup>

1628. There is a reference to *Freshman's Boate* upstream of King's mills. Stokes considers that this refers to a 'Pool' but this meaning is not recorded in the Oxford English Dictionary.<sup>462</sup>

1630. See Glen 1630 above. 'Grant' is an early name for the Cam.

## F 12 River Bourn

Lower limit. Cam.

Edwards. Great Eversden 4 miles.

A. Great Eversden 4 miles. n/a.

1397. An inquisition of the property of William Castelacre in Great and Little Eversdon, Co. Cambridge recorded a boat worth 20s.<sup>463</sup> Great Eversden is 4 miles upstream of Granchester.

<sup>457</sup> Words of the charter:- *The Charters of the Borough of Cambridge*, Editor F.W. Maitland. Cambridge: Cambridge University Press. 1901, pp. 1-2. Rest of quotation from [www.dur.as.uk.r.h.britnell/articles/Grain.htm](http://www.dur.as.uk.r.h.britnell/articles/Grain.htm). Dated 22/3/2005.

<sup>458</sup> James E. Rogers, *A History of Agriculture and Prices in England. Volume II.* Oxford: Clarendon Press. 1882, 600.

<sup>459</sup> John Saltmarsh, 'A College Home-Farm in the 15<sup>th</sup> Century.' *Economic History*. Vol. III, No. 11 (1936), 155-172, 158.

<sup>460</sup> T.A. Walker, *Peterhouse. 2<sup>nd</sup> Edition.* Cambridge: W. Heffer & Sons Ltd, 1935, 10.

Robert Willis, *The Architectural History of the University of Cambridge. Volume I.* Cambridge: Cambridge University Press. 1886, reprint 1988, 14.

<sup>461</sup> Royal Commission on Historical Monuments, *An Inventory of the Historical Monuments in Essex. Volume I.* HMSO 1916, 359.

<sup>462</sup> Rev. Dr. Stokes, 'The Old Mills of Cambridge.' *Proceedings of the Cambridge Antiquarian Society*. Vol. XIV (New Series VIII) (1909-1910), 180-233, 201.

**F 13 River Rhee**

Lower limit. Cam.  
 B. Barrington. 5 miles.  
 RLU. Guilden Morden. 15 miles. n/a.

Parker considers that blocks of stone may have been used for 'a small wharf or landing-stage' at Barrington.<sup>464</sup>

'There is a tale sometimes told in the village [Barrington] that a landing stage once existed at the bottom of the garden of Orchard House. Barges from Cambridge were supposedly unloaded there.'<sup>465</sup>

'The quarries at Eversden, Barrington and Haslingfield were also near to the upper reaches of the river, and may well have made use of it. ... for "white stone from Haslingfield and Barrington" and "stone from Barnewell" costs are recorded only as "digging and carriage". This suggests that the clunch from the Southern group of quarries came by road; but it is not conclusive evidence that this was normal.'<sup>466</sup>

The copious manuscript accounts for Peterhouse, the only college backing onto the river above King's Mills, have not been examined.

1923. Conybeare suggested that it was impossible to take a canoe upstream of Wendy, some four miles from the source, due to the 'reeds and weeds and rushes and bushes'.<sup>467</sup>

**Granta**

RLU. Babraham. 3 miles. 0.23 m<sup>3</sup>s<sup>-1</sup>. Weir downstream.

**F 14 River Ivel / Flit / Hiz**

Lower limit. Great Ouse.  
 A. Flitton. 17 miles. n/a.  
 RLU. Hitchen. 20 miles. n/a.

1324. Timber was taken from Chicksands in Bedfordshire and Stourbridge to Ely.<sup>468</sup>

c1640. The inhabitants of Fletton [Flitton] complained about the loss of navigable rivers due to the works carried out to drain the fens.<sup>469</sup>

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<sup>463</sup> Calendar of Inquisitions Miscellaneous, 1392-99, 98.

<sup>464</sup> R. Parker, 'Riverside Moated Sites at Barrington and Malton.' In Elsie M. Widdowson, *Cam or Rhee*. Cambridge. 1973, 30.

<sup>465</sup> D.H. Steven, 'Barrington and The River.' In Elsie M. Widdowson, *Cam or Rhee*. Cambridge. 1973, 36.

<sup>466</sup> Donovan Purcell, *Cambridge Stone*. London: Faber and Faber Ltd. 1967, 98.

<sup>467</sup> Rev. Edward Conybeare, *Highways and Byways in Cambridge and Ely*. London: Macmillan and Co. Limited. 1910, 262.

<sup>468</sup> F.R. Chapman, *The Sacrist Rolls of Ely*. (1907), Vol II, pp 29, 51. Cited in D. Summers, *The Great Ouse. The History of a River navigation*. Newton Abbot: David & Charles. 1973, 35.

<sup>469</sup> BL Additional MS. 5813, f 113. Cited in Keith Lindley, *Fenland Riots and the English Revolution*. London: Heinemann Educational Books. 1982, 19.

**F 15 River Ouzel or Lovat**

Lower limit. Great Ouse.

A. Eaton Bray. 20 miles. n/a. Now not usable.

RLU. Leighton Buzzard. 15 miles. n/a.

1271. William Whiteside fell from a boat and was drowned at Eaton, Bedfordshire.<sup>470</sup>

c1540. Less than half of a small river boat was found at Caldecotte.<sup>471</sup> 'In the Middle Ages the surrounding area was marshland.'<sup>472</sup>

**F 16 River Tove**

Lower limit. Great Ouse.

B. Towcester. 10 miles.

RUL. Towcester. 10 miles. 1 m<sup>3</sup>s<sup>-1</sup>. 1.3 S. 8

'The large mixing bowls called *mortaria* made near Peterborough are believed to have travelled by river.'<sup>473</sup>

**Rivers of the East Anglian Coast****EA 1 Babingley River**

Tidal limit. Coast.

A. Flitcham. 10 miles. n/a.

'[Castle Rising] was once a seaport.'<sup>474</sup> It is 7 miles from the sea.

1301. The port of Flitcham was ordered to send ships to Berwick on Tweed.<sup>475</sup>  
Flitcham is 10 miles from the sea.

1595-1607. A lease was assigned of 'the toll of boats and carts with fish from the sea to Stourbridge Fair passing by the liberty of Rising Chase in Babingley and Newton near Broade Water'.<sup>476</sup>

<sup>470</sup> *Select Cases from the Coroners' Rolls, 1265-1413*. Editor Charles Gross. Selden Society, Vol. 9. 1895, 16.

<sup>471</sup> Gillian Hutchinson, 'Boatfind at the Caldecotte Lake Site.' *Archaeology in Milton Keynes*. 1982, 7-8. Milton Keynes, Development Corporation archaeology Unit. Reference in Gillian Hutchinson, *Medieval Ships and Shipping*. London: Leicester University Press. 1994, 195.

<sup>472</sup> *Ibid.* page 127

<sup>473</sup> Charmian Woodfield, 'Prehistoric and Roman Towcester.' In Towcester Local History Society, *Towcester*. Towcester: The Towcester & District Local History Society. 1995, 27.

<sup>474</sup> Bernard E. Dorman, *Norfolk*. London: B.T. Batsford Ltd. 1972, 110.

<sup>475</sup> Trevor Ashwin and Alan Davison, Eds., *An Historical Atlas of Norfolk*. 3<sup>rd</sup> Edition. Chichester: Phillimore. 2005, 79.

<sup>476</sup> Howard (Castle Rising) Collection. Norfolk Record Office. How 147 342 x 6 date: 1595-1607. Entry in A2A Index.

**EA 2 River Heacham**

Tidal limit.	Coast.		
A.	Heacham.	1 miles.	n/a.
B.	Eaton.	2 miles.	
	(1 mile SE of Heacham.)		

Barley shows Osnettisham as the upper limit of navigation on the river.<sup>477</sup>

Speed shows Hacham Haven which because of the nature of the coast must now be above the tidal limit.<sup>478</sup>

Cole states that the name 'Eaton' indicates that the town was to 'keep the river open for navigation.'<sup>479</sup> Eaton is 2km south-east of Heacham.

**EA 3 River Stiffkey**

Tidal limit.	Coast.				
A.	Little Walsingham.	8 miles.	0.4 m <sup>3</sup> s <sup>-1</sup> .	1.8	Not now usable.

Brooker's Dock in Walsingham is shown on Ordnance Survey maps.

Walsingham is stated to be a port in two lists of ports from the second half of the 16<sup>th</sup> century.<sup>480</sup>

1565. Referring to a list of ports Hoskins writes, 'The inclusion of Walsingham in at least two lists (1565 and 1575) sets a problem in itself. It is difficult to believe that the Stiffkey river was ever navigable, even for barges, as far up as this, but the possibility certainly needs to be examined carefully on the large-scale map and on the ground.'<sup>481</sup>

**EA 4 River Bure**

Tidal limit. 1 mile downstream of Wroxham

Edwards.	Wroxham.	1 mile.		
A.	Aylsham.	15 miles.	1.1 m <sup>3</sup> s <sup>-1</sup> .	Canalised.
RLU.	Aylsham.	15 miles.	1.1 m <sup>3</sup> s <sup>-1</sup> .	Canalised.

It is thought that in medieval times the Thurne, and possibly the Bure, drained north-east to the sea.<sup>482</sup>

<sup>477</sup> M.W. Barley, 'Lincolnshire Rivers in the Middle Ages.' *Lincolnshire Architectural and Archaeological Society Reports and Papers*. Vol. I. Part I. 1936, 1-22, 22.

<sup>478</sup> John Speed, *Theatre of the Empire of Great Britaine. Part II. 1<sup>st</sup> Edition 1611*. Facsimile London: Phoenix House Limited. 1953, Number 7.

<sup>479</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 80.

<sup>480</sup> TNA, SP12/135 dated 1575.

Raphaell Holinshed, William Harrison and others, *Holinshed's Chronicles of England, Scotland and Ireland*. (1<sup>st</sup> Edition 1587) Editor John Hooker. London: J. Johnson *et al.* 1807, 179.

<sup>481</sup> W.G. Hoskins, *Fieldwork in local History*. London: Faber and Faber Limited. 1967, 63.

<sup>482</sup> Tom Williamson, *The Norfolk Broads*. Manchester: Manchester University Press. 1997, 76.

1291. There was a court case concerning a boat on the River Bure between Burgh and Aylsham.<sup>483</sup>

1437. 100½ quarters of barley were taken by water from Wroxham to Great Yarmouth.<sup>484</sup>

1500-1547. 'The Bure was navigable for lighters of up to 30 tons as far as Aylsham.'<sup>485</sup>

1611. 'The whole county aboundeth with Rivers and pleasant Springs, of which the *Ouse* is chiefest, ... The next is *Hierus* or *Yare*, passing from *Norwich* to *Yarmouth*, where it receiveth the *Bure* comming from *Aylsham*, both of them of great service for water carriages. ... The *Waveney* and the lesser *Ouse* are also Navigable & of great use. The residue I omit.'<sup>486</sup>

1611. On his diagram of *Norwiche* Speed shows small boats upstream of the bridges which implies that they had come from upstream of the city.<sup>487</sup>

## **EA 5 Pickerill Holme**

Lower limit. River Bure. 3km west of the coast.

A. Caister. 3 miles. n/a.

1432. 'Goods [for the building of Caister Castle] were conveyed from Yarmouth to the castle by the river Bure, Pickerill Fleet, and the Barge Ditch.'<sup>488</sup>

1432. In the Caister Castle accounts is an entry 'In repairing boats £1. 9s. 7d.'<sup>489</sup>

1760. 'By this ditch [Caister Castle Barge ditch] goods, etc. were more easily convey'd to and from Yarmouth than by land. ... This ditch is entirely useless (except as a common drain to the adjoining lands) and almost choked up.'<sup>490</sup>

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<sup>483</sup> *Select cases in the exchequer of Pleas*. Editors Hilary Jenkinson and Beryl E.R. Formoy. Selden Society, Vol. 48. 1931, 136.

<sup>484</sup> James E. Thorold Rogers, *A History of Agriculture and Prices in England. Volume III*. Oxford: Clarendon Press. 1882, 666.

<sup>485</sup> W.G. Hoskins, *The Age of Plunder, King Henry's England, 1500-1547*. London: Longman. 1976, 199.

<sup>486</sup> John Speed, *Theatre of the Empire of Great Britaine 1<sup>st</sup> Edition 1611*. Facsimile edition Part II. Phoenix House Ltd. 1953, Folio 35.

<sup>487</sup> John Speed, *Theatre of the Empire of Great Britaine 1<sup>st</sup> Edition 1611*. Facsimile edition Part II. Phoenix House Ltd. 1953, Map 8.

<sup>488</sup> H.D. Barnes, W. Douglas Simpson, 'Caister Castle.' *Antiquaries Journal*. Vol. 32. (1952) 35 – 51, 38.

<sup>489</sup> H.D. Barnes and W. Douglas Simpson, 'The Building Accounts of Caister Castle. A.D. 1432-1435.' *Norfolk Archaeology*. Vol. XXX. (1952), 178-188, 180.

<sup>490</sup> 'Swindon's Plan, 1760.' Cited in *ibid*. 178.



**EA 6 Dobb's Beck**

Lower limit. River Bure  
 B. Rackheath. 3 miles.

Ann Cole considers that the name is derived from *hyo* a landing place.<sup>491</sup>

**EA 7 River Ant**

Tributary of the River Bure.

Tidal limit.	1 km upstream of junction with the River Bure.			
Edwards.	East Ruston.	9 miles		
A.	East Ruston.	9 miles.	0.3 m <sup>3</sup> s <sup>-1</sup> .	Canalised.
RLU.	Spa Common.	13 miles.	n/a.	

A logboat was found between Smallburgh and Stalham.<sup>492</sup>

1290. Complaint was made that the Abbot of Hulme had erected a barrier of timber between Ludham and Irsted. It was agreed that boats had a right to pass though the bridge at Warthford [Wayford].<sup>493</sup>

1360. It was claimed that 'the river fell out of use at the time of the pestilence and nothing was carried on it so that weeds continually grew in it from that time until the present time; that it was not known who ought to clean it because none had cleaned it since the memory of man; that the towns that had advantage and profit from the said river were Stalham, Sutton, Catfield, Ludham, Smallburgh, Barton Turf and Irstead.'<sup>494</sup> Thus there was traffic at least as far as Smallburgh 7 miles upstream of the confluence with the river Bure.

1360 It was claimed that, 'The Abbot of St. Benet Holme ... has stopped and reversed the course of a water called Smale Ee for twenty years past between Ludham and his several fishery and the town of Horning and refuses to amend it, though many presentments have been made.'<sup>495</sup>

1367. Complaints were made that the Prior of Bromholme had 'stopped and diverted a common watercourse ... between Ridlington and Witton.'<sup>496</sup> Both these places are to the east of North Walsham. It appears that the watercourse was a navigable channel leading to the River Ant.

<sup>491</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 69.

<sup>492</sup> Sean McGrail, *Logboats of England and Wales, Part i*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 272-273.

<sup>493</sup> *Abbreviatio Placitorum*, 222.

See also Tom Williamson, *The Norfolk Broads*. Manchester: Manchester University Press. 1997, 74-77.

<sup>494</sup> Coram Rege Roll, Mich., 37 Edward III. Rex 21d. Cited in *Public Works in Medieval Law*, Editor C.T. Flower. Selden Society 40 (1923), 88-90.

<sup>495</sup> *Public Works in Medieval Law*. Editor C.T. Flower. Selden Society 40. 1923, 88.

<sup>496</sup> *Ibid.* page 97.

1374. Two boats were damaged and 8 boats taken away at Eslriston. East Ruston is between Smallburgh and North Walsham.<sup>497</sup>

1812. In 1812 an Act was passed for making a navigable Canal from Wayford Bridge to Antingham. This would seem to imply that prior to 1812 barges could reach Wayford Bridge.

### **Borough of Yarmouth**

1257. It was claimed that R and W seized a boat in a marsh where J had the right of mowing grass.<sup>498</sup>

### **EA 8 River Yare**

Tidal limit.	Norwich.			
RLU.	Bawburgh.	8 miles.	n/a.	

Referring to the export of goods through Yarmouth Adams wrote 'It is hardly surprising that there are few entries for the villages along the Yare and none for the Wensum above Norwich as the Norwich men must have virtually monopolised the trade.'<sup>499</sup>

1316. Norwich Cathedral Priory purchased 400,000 peat turves, many of which would undoubtedly have been delivered by water.<sup>500</sup>

1671. It was claimed that in the City of Norwich 'every vessel passing thro' the same river by the said key, should pay a certain sum.' 'It was held a void custom as to those vessels which did not unlade at the said key, nor any other place in the city; ... they only passing by, and were bound for another place, and therefore could have no imposition upon them.'<sup>501</sup> The wharfage monopoly existed in 1379.<sup>502</sup>

### **EA 9 River Wensum**

Lower limit.	River Yare.			
Edwards.	Tavenham.	7 miles.		
A.	Morton.	12 miles.	nk.	< 10 m.
RLU.	Ringland.	10 miles.	4.0 m <sup>3</sup> s <sup>-1</sup> .	< 10 m.,

1281. There were carrying services to Morton.<sup>503</sup>

<sup>497</sup> Calendar of Patent Rolls, 1370-74, 491.

Calendar of Close Rolls, 1374-77, 220-221.

<sup>498</sup> *Select Cases of Procedure Without Writ under Henry III.* Editor H.G. Richardson. Selden Society Vol. 60. 1941, 84.

<sup>499</sup> Terence R. Adams, 'Aliens, Agriculturalists and Entrepreneurs: Identifying the Market-Makers in a Norfolk Port from the Water-Bailiff's Account, 1400-1600.' In Dorothy J. Clayton *et al.* Eds., *Trade, Devotion and Governance*. Stroud: Alan Sutton. 1994, 153.

<sup>500</sup> Bernard E. Dorman, *Norfolk*. London: B.T. Batsford Ltd. 1972, 69.

<sup>501</sup> *Haspurt v Wills*, (1671), 1 Vent, 71. 1 Sid. 454; 1 Mod. 47, 104, 231; 2 Keb. 624, 665; Raym. 232.

<sup>502</sup> W. Hudson & J.C. Tingley, *The Records of the City of Norwich, Volume 2*. 1910, 233-6. Cited in A. Carter, 'Norwich.' In Gustav Milne and Brian Hobley, Eds., *Waterfront Archaeology in Britain and Northern Europe*. CBA Research Report No. 41, 1981, 139.

<sup>503</sup> *Abbreviato Placitorum*, 200.

1295. Part of the hundred of Taverham, 7 miles above Norwich, was included in a list of 'maritime' places.<sup>504</sup>

1375. The Bishop's Bridge in Norwich was blocked by a boat which had sunk. Normally a sunk boat would only block a bridge if it had been operating upstream of the bridge.<sup>505</sup>

1611. Speed shows boats both upstream and downstream of New Mills.<sup>506</sup>

1671. The City of Norwich claimed a custom that inasmuch as it maintained a common quay for the unloading of vessels, every vessel *passing through the river* should pay a toll, *whether it unloaded at the quay or not*.<sup>507</sup> The wharfage monopoly existed in 1379.<sup>508</sup>

#### **EA 10 River Tud**

Lower limit. River Wensum.

A.	Honingham.	6 miles.	0.25 m <sup>3</sup> s <sup>-1</sup> .	0.86	C&G. 7
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1216. A boat was stolen at Honingham.<sup>509</sup>

#### **EA 11 River Waveney**

Tidal limit. Ellingham.

Edwards.	Mendham.	13 miles
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A.	Mendham.	13 miles.	1.9 m <sup>3</sup> s <sup>-1</sup> .	0.57	S.
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B.	Redgrave Fen.	31 miles.
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RLU.	Diss Bridge.	26 miles.	0.7 m <sup>3</sup> s <sup>-1</sup> .	0.57	Not now usable.
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Diss Bridge is not used for the analysis as it is usable only in spate.

An anchor was found in the bed of a tributary of the river at Weybread.<sup>510</sup>

1306. Boats were apparently stolen from Mendham, near Harleston.<sup>511</sup>

1444. A crowd of about 500 gathered at Ellingham Mill and demolished the sluices. Pluck states that 'As the majority of these persons came from Bungay it appears that

<sup>504</sup> Calendar of Patent Rolls, 1292-1301, 169.

<sup>505</sup> *The Leet Jurisdiction in the City of Norwich*. Editor Rev W. Hudson. Selden Society, Vol. 5. 1892, 67.

<sup>506</sup> John Speed, *Theatre of the Empire of Great Britaine, Part II. 1<sup>st</sup> Edition 1611*. Facsimile London: Phoenix House Limited. 1953-4, Fo 35-36.

<sup>507</sup> *Haspurt v Wills*, (1671), 1 Vent, 71. 1 Sid. 454; 1 Mod. 47, 104, 231; 2 Keb. 624, 665; Raym. 232.

<sup>508</sup> W. Hudson & J.C. Tingley, *The Records of the City of Norwich, Volume 2*. 1910, 233-6. Cited in A. Carter, 'Norwich.' In Gustav Milne and Brian Hopley, *Waterfront Archaeology in Britain and Northern Europe*. CBA Research Report No. 41, 1981, 139.

<sup>509</sup> *Introduction to the Curia Regis Rolls, 1199-1230 AD*. Editor C.T. Flower. Selden Society, Vol. 62. London: Bernard Quaritch. 1944, 124.

<sup>510</sup> Douglas R. Pluck, *The River Waveney, Its Watermills and Navigation*. Bungay: Morrow & Co. 1994, 15.

<sup>511</sup> Calendar of Patent Rolls, 1307-13, 123.

there might well have been a shortage of water in the Bungay area making navigation difficult if not impossible.<sup>512</sup>

1500-1547. 'The Waveney could take 20-ton barges or keels as far up as Bungay.'<sup>513</sup>

1500-1547. 'A survey of Mettingham Castle, just outside Bungay, in 1562 says that timber growing locally could be sold at high prices because it could be conveyed to London by water.'<sup>514</sup>

1562. According to an Elizabethan survey of Mettingham the river, 'wyll beare a kele or barge of xx<sup>ti</sup> tunne.'<sup>515</sup>

c1631

1. 'The county of Norfolk is an island enclosed on the south side towards Suffolk with the river of Waveney running to Yarmouth, and the lesser Ouse passing by Lynn, on the north side with the main sea; and aboundeth by these means with havens and hithes, places of exportation and importation.'

2. That part of it towards the sea, and much of the rest westward is champion, the other part towards Suffolk woodland and pasture ground. ...

15. ... it hath been the custom of these parts for many hundreds of years past, to utter their corn at the havens, hithes, and landing places upon the sea and rivers' sides, as the proper market there; and this custom is to this day testified by another notorious custom of this country.

16. 'That because the venting of the corn is by sea and water carriage, whereby it suffers hurt and diminution; therefore according to the censure of St. Gregory Epist. Lib. 1, cap. 42 *Nantae iuxta consuetudinem super accipiunt quod minui ipsi in navibus attestantur*. The seller is tied to deliver 21 coomb for the 20 coomb and vi coombs for every six score to recompense the hurt and diminution. ...

21. If they of the woodland will (as the patriarchs did) fetch it constantly where it is to be had at the market of the champion, it will no doubt be brought thither abundantly; but they shall find the carriage of it so chargeable from thence (if the quantity be much) as that they will rather fetch it 40 or 50 miles by water, than 12 or 15 by land.'<sup>516</sup>

Post 1600. 'Wherries might be trapped for days on end above the bridge [at Beccles] when the river was running high, for the headroom was very limited. Floodwater held up by the bridge would spread far across the marshes on the Norfolk side of the river and travellers would have to be ferried by boat across Gillingham Dam, and this gave some wherry-men a way round the obstruction. Masters of small wherries returning

<sup>512</sup> Douglas F. Pluck, *The River Waveney, Its Watermills and Navigation*. Bungay: Morrow & Co. 1994, 16.

<sup>513</sup> W.G. Hoskins, *The Age of Plunder, King Henry's England, 1500-1547*. London: Longman. 1976, 199.

<sup>514</sup> per Mr John Ridgard. Cited in W.G. Hoskins, *The Age of Plunder, King Henry's England, 1500-1547*. London: Longman. 1976, 199.

<sup>515</sup> 'Mettingham College and Castle, 1562.' *Proceedings of the Suffolk Institute of Archaeology*. xi, 315. Cited in J. Webb, *Great Tooley of Ipswich*. Published by Suffolk Record Society, 1962, 102.

<sup>516</sup> Walter Rye, *State Papers relating to Musters, Beacons, Shipmoney, etc. in Norfolk*, Norwich, 1907, pp. 180-7. Cited in J. Thirsk and J.P. Cooper, Eds., *Seventeenth-Century Economic Documents*. Oxford: Clarendon Press. 1972, 343 - 345.

downstream without cargo would sail across the flooded marshes, regaining the river below Beccles.’<sup>517</sup>

Pre 1670. ‘Although an Act was passed in 1670<sup>518</sup> for making the river navigable it is said to have been navigable in former times for lighters, keels and other boats of considerable burthen. It was at that time so obstructed as to be unnavigable above Beccles, causing great poverty to the inhabitants of the surrounding district.’<sup>519</sup>

#### **EA 12 River Blythe or Dunwich**

Tidal limit.	Walberswick			
A.	Dunwich.	1 mile.	n/a.	

1463-67. Expenses were incurred in a dispute between the lord of the manor and the town of Dunwich about a boat for ‘the rivers and other waters of the lord’.<sup>520</sup>

#### **EA 13 River Deben**

Tidal Limit.	Melton.	
B.	Debenham	16 miles.

‘According to the early Victorian *White’s Dictionaries* there was once navigation on the Deben right up to Debenham and an anchor was even found in the river bed in the Gull just above the town. ... It is quite possible that early medieval people did use the Deben to move bulk goods. Once the river was dammed to create mill ponds this would have been impracticable.’<sup>521</sup>

#### **EA 14 River Rattleden/Gipping / Orwell**

Tidal limit.	Ipswich.				
A.	Stowmarket.	16 miles.	0.6 m <sup>3</sup> s <sup>-1</sup> .	1.7	Canalised.
B.	Rattlesden.	21 miles.			
RLU.	Stowmarket.	16 miles.	0.6 m <sup>3</sup> s <sup>-1</sup> .	1.7	Canalised.

11<sup>th</sup>C. ‘It was said that Caen stone for the abbey church at Bury St Edmunds had been carried by water as high up as Rattlesden, 5 miles beyond Stowmarket along this now tiny stream, to be carted the last 8 or 9 miles by road.’<sup>522</sup>

12<sup>th</sup> or 13<sup>th</sup> century. The River Gipping ‘unites with another stream coming from Rattlesden, and it then becomes broader, deeper, and in the 12<sup>th</sup> or 13<sup>th</sup> centuries was unquestionably navigable for vessels of some burden, or boats from Ipswich to a bridge near Rattlesden. The navigation appears to have been neglected after serving the

<sup>517</sup> Robert Malster, *Wherries and Waterways*. Lavenham: Terence Dalton Limited. 1971, 49.

<sup>518</sup> (1670) 22 Charles II. c. 16.

<sup>519</sup> Robert Malster, *Wherries and Waterways*. Lavenham: Terence Dalton Limited. 1971, 23.

<sup>520</sup> Blois Family Archives. ‘Compotus Roll of John Hoo, bailiff.’ Suffolk Record Office, Ipswich Branch. HA30/314/18/4. A2A Index.

<sup>521</sup> Robert Simper, *The Deben River*. Suffolk: Creekside Publishing. 1992, 1.

<sup>522</sup> W.G. Hoskins, *The Age of Plunder, King Henry’s England 1500-1547*. London: Longman. 1976, 197.

purposes of the abbey at Bury. ... The inhabitants of the town do not appear to have employed it, except on very rare occasions.’<sup>523</sup>

1530’s. Richard Cavendish of Trimley said that before the erection of certain mills at Ipswich, ‘bottis, barges and othere vesselles might passe and carye be the water into the countre far above the saide towne to the grete profet and comoditie of all the inhabitantis of the said counter and to the comone welth of the same’.<sup>524</sup>

1586. Harrison stated that there was a port at Sproten [Sproughton] 3km above the tidal limit.<sup>525</sup>

17<sup>th</sup> century. The inhabitants of Stowmarket ‘brought in the 17<sup>th</sup> century some of the bells for the church, which had been recast in at Ipswich, by boats to Stowmarket.’<sup>526</sup>

## EA 15 River Suffolk Stour

Tidal limit. Lawford.

A.	Sudbury.	20 miles.	2.2 m <sup>3</sup> s <sup>-1</sup> .	0.63	S. 17
RLU.	Stoke by Clare.	32 miles.	1.2 m <sup>3</sup> s <sup>-1</sup> .	1.1	S. 15

‘It is likely that the River Stour has been used to a limited extent from the earliest days of human habitation in the area, although there are few records before the 17<sup>th</sup> century.’<sup>527</sup>

‘Manningtree, I should imagine, came into use chiefly as a transit port for Dedham and Sudbury during the wool days. I think that, generally speaking, after the great church building era of the 13<sup>th</sup> and 14<sup>th</sup> centuries when stone was hauled up the higher reaches by barge and lighter, these shallow waterways were largely disused except by an occasional trader. By the end of the 17<sup>th</sup> century, they had become almost completely choked, hence the schemes at the Stour, Gipping and even the Deben, to re-open them.

...

... The stone bridges built across the head of the river were another factor leading to its disuse. Cattawade, Stoke and Wilford, with their low arches, effectively barred the upper reaches to anything but the lightest barges.’<sup>528</sup>

1412-13. Alice de Bryene Acton regularly purchased three and half pipes of red wine and two hogsheads of white from Ipswich. ‘A pipe at 105 imperial gallons contained double the quantity of a hogshead. ... Richard Mody once claimed 18d. in expenses for going with a cart and seven horses to Colchester to collect a pipe of red wine.’ When

<sup>523</sup> Rev A.G.H. Hollingsworth, *The History of Stowmarket*. London: Longman & Co. 1844, 217. (2002 Edition by Mike Durrant.)

<sup>524</sup> Star Chamber Proceedings, I. 17/133. Cited in J. Webb, *Great Tooley of Ipswich*. Suffolk Record Society. 1962, 101

<sup>525</sup> Raphael Holinshed, William Harrison and others, *Holinshed’s Chronicles of England, Scotland and Ireland*. (1<sup>st</sup> Edition 1586) Editor John Hooker. London: J. Johnson *et al.* 1807, 182.

<sup>526</sup> ‘Town Chest M.S.’ Referred to in Rev A.G.H. Hollingsworth, *The History of Stowmarket*. London: Longman & Co. 1844, 217. (2002 Edition by Mike Durrant.)

<sup>527</sup> River Stour Navigation Partnership, ‘River Stour Navigation Feasibility Study. Final Report.’ Peterborough: Scott, Wilson, Kirkpatrick & Co Ltd. 2001, 6.

<sup>528</sup> W.G. Arcott, *Orwell Estuary*. Ipswich: Norman Adlard & Co. Ltd. 1954, 104-105.

wine was purchased from Ipswich the delivery cost was 3s.<sup>529</sup> 'The distance from her home at Acton to Ipswich was about 32 miles, and from Acton to Colchester about 32 miles, so these charges work out at roughly 0.3d and 2.7d per tun mile respectively, suggesting that the carriage from Ipswich must have been largely by water, probably along the coast to the Stour estuary and then via the Stour to Sudbury, only 3 or 4 miles from Acton.'<sup>530</sup>

1500-47. 'The Stour, ... tapped the richest cloth-making region in England, up past Manningtree to Nayland, Bures and Sudbury, with Lavenham, Kersey and Hadleigh not far away. It is inconceivable that it was not used for many miles as a route to London. We know it was used up to Manningtree at least, though much Suffolk cloth went to London directly by road.'<sup>531</sup>

1586. Harrison stated that there was a port at Dedham 3 km upstream of the tidal limit.<sup>532</sup>

## EA 16 River Colne

Tidal limit. Colchester.

A. Chappel. 10 miles.  $0.9 \text{ m}^3 \text{ s}^{-1}$ . 1 G.

14<sup>th</sup> Century. The purveyance accounts include transport on the River Colne.<sup>533</sup> Chappel appears to be the first place at which such goods could be purchased.

1353. Complaints were made on behalf of the burgesses of Colecestre of 'the obstruction of the king's river there by wears, mills, stanks, palings and kiddles contrary to the act of 25 Edward III [stat. 3, caps 3 and 4] and to punish pursuant to the act such as are found guilty herein.'<sup>534</sup> It would seem that the burgesses wished to travel above the tidal limit.

1365. Complaint was made about 'divers purprestures, stoppages and obstructions by raising weirs, driving stakes, enclosures and other works in the arms of the sea, waters and fleets of the Swyn, Southgedenege, Parrokflete and Skybhoke and in other waters flowing down to the port of Colcestre.'<sup>535</sup>

1474. The Curia Regis Rolls record that an indenture was arranged 'to make a brigge of Stone or Tymbyr, or of bothe, over the said Haven, Rever, and Water for men, hors, and carte to passe there over to and fro for ever, with a Draughte (drawbridge) in the

<sup>529</sup> Ffiona Swabey, *Medieval Gentlewoman*. Stroud: Sutton Publishing. 1999. 87 - 88.

<sup>530</sup> Mirand Threlfall- Holmes, *Monks and Markets. Durham Cathedral Priory 1460-1520*. Oxford: Oxford University Press, 2005, 185.

<sup>531</sup> W.G. Hoskins, *The Age of Plunder, King Henry's England, 1500-1547*. London: Longman. 1976, 197.

<sup>532</sup> Raphaell Holinshed, William Harrison and others, *Holinshed's Chronicles of England, Scotland and Ireland*. (1<sup>st</sup> Edition 1586) Editot John Hooker. London: J. Johnson *et al*. 1807, 182.

<sup>533</sup> James Masschaele, 'Transport costs in medieval England.' *Economic History Review*, XLVI, 2. (1993), 266-279, 272.

<sup>534</sup> Calendar of Patent Rolls, 1350-54, 509.

<sup>535</sup> Calendar of Close Rolls, 1364-68. 156-157.

same, that Sippez, boytez and oder Water-vessellez shall mowe passé there, if the Water will serve therefore.<sup>536</sup> This appears to refer to a bridge in Colchester.

#### EA 17 Rivers Pant/Blackwater

Tidal limit.	Maldon.				
A.	Kelvedon.	8 miles.	$1.2 \text{ m}^3 \text{ s}^{-1}$ .	1.2	G.
B.	Radwinter.	31 miles.			
RLU.	Kelvedon.	8 miles.	$1.2 \text{ m}^3 \text{ s}^{-1}$ .	1.2	G.

1294. ‘Tenants of Westminster Abbey owed a customary payment called “ship-hire” (*shipur*) in lieu of carrying quantities of grain and malt from Kelvedon to Salcott, Heybridge or Maldon, presumably down-river along the Blackwater.’<sup>537</sup>

14<sup>th</sup> C. The purveyance accounts include transport on the River Blackwater.<sup>538</sup>

1586. Harrison, vicar of Radwinter<sup>539</sup> wrote of the brook Pant, ‘Certes by the report of common fame it hath been a pretty water and of such quantity that boats have come in time past from Beeleigh Abbey beside Maldon unto the moors in Randwinter for corn. I have heard also that an anchor was found there near to a red willow, when the watercourses by act of Parliament were surveyed and reformed throughout England which maketh not a little with the aforesaid relation.’<sup>540</sup>

1768. Morant wrote of the previous record ‘I leave it to the Reader’s judgement, whether it is credible, that there could ever be sufficient water to bring Boats from Maldon to Radwinter. Tho’ certainly the face of the country hath in many places been altered by Time. There are signs of a strong Tide, or an arm of the Sea, having at some time or other, come as far as Brandon, in the river Ouse, between Suffolk and Norfolk.’<sup>541</sup>

#### EA 18 River Chelmer

Tidal limit.	Maldon.				
A.	Boreham.	6 miles.	$1.9 \text{ m}^3 \text{ s}^{-1}$ .	< 15 m.	
RLU.	Little Waltham.	15 miles.	$0.9 \text{ m}^3 \text{ s}^{-1}$ .	1.1	S.

1586. Harrison states that there was a port at Borow. This is placed between Goldanger [Goldhanger] and Maldon which Speed shows to be on the south side of the

<sup>536</sup> E. Jervoise, *The Ancient Bridges of Mid and Eastern England*. Westminster: The Architectural Press. 1932, 131.

<sup>537</sup> Cambridge University Library, MS Kk. 5.29, fos. 114v, 115v. Cited in John Blair, ‘Introduction.’ In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 14, fn 45.

<sup>538</sup> James Masschaele, ‘Transport costs in medieval England.’ *Economic History Review*, XLVI, 2. (1993), 266-279, 272.

<sup>539</sup> William Harrison, Ed. Georges Edelen, *The Description of England*. (1<sup>st</sup> Edition 1968). Washington: The Folger Shakespeare Library and New York: Dover Publications Inc. 1994, 3.

<sup>540</sup> Raphael Holinshed, William Harrison and others, *Holinshed’s Chronicles of England, Scotland and Ireland*. (1<sup>st</sup> Edition 1586) Editor John Hooker. London: J. Johnson *et al.* 1807, 179.

<sup>541</sup> Rev. Philip Morant, *The History and Antiquities of the County of Essex. Volume II*. London: T. Osbourne *et al.* 1768, 557.



river. The only place with a similar name now is Boreham which is 9 km upstream of the tidal limit.<sup>542</sup>

### **EA 19 River Roach**

Tidal limit.	Rochford.		
B.	Rayleigh.	5 miles.	n/a.

1267. The king's cook, was given permission to transport 50 quarters of corn from the parts of Wallingford by the water of the Thames to his house at Rayleigh.<sup>543</sup>

### **River Thames Basin**

#### **Th 1 River Thames**

Tidal limit.	Teddington.				
Edwards.	Radcot Bridge.	120 miles.			
A.	Lechlade.	128 miles.	$8 \text{ m}^3 \text{ s}^{-1}$ .	0.34	Canalised
B.	Waterhay Bridge.	142 miles.	$1.4 \text{ m}^3 \text{ s}^{-1}$ .	0.71	Canalised
RLU.	Cricklade.	139 miles.	$1.4 \text{ m}^3 \text{ s}^{-1}$ .	0.4	Canalised.

The records for the Thames are divided into three sections. Use upstream of Oxford; Use Oxford to Henley; Obstructions Oxford to Henley. Records of use downstream of Henley are not recorded. Blair wrote in 2007 'The navigability of the lowest stretch is not in doubt, while that of the highest has not been seriously considered.'<sup>544</sup>

### **Use of the River Thames at and above Oxford**

'The concentration of four such names on the uppermost Thames (Water Eaton and Castle Eaton below Cricklade, Eaton Hastings below Lechlade, Eaton below Newbridge), and two more on the lower Cherwell (Woodeaton and Water Eaton below Islip), therefore suggests a local concern for what she [Ann Cole] calls "keeping the narrower reaches of rivers open for navigation, and for maintaining fords in a fit state to allow both road and river traffic to pass.' (fn. As Cole observes on p.80 above, the concentration of Eaton names on the upper but not the lower Thames supports a particular association with river routes which - being narrow and liable to obstruction by silt, weeds, and debris - required regular maintenance.)<sup>545</sup>

In the late middle ages there was a canal from Black Bourton to Bampton and Shifford.<sup>546</sup>

<sup>542</sup> Raphaell Holinshed, William Harrison and others, *Holinshed's Chronicles of England, Scotland and Ireland*. (1<sup>st</sup> Edition 1586) Editor John Hooker. London: J. Johnson *et al.* 1807, 182.

<sup>543</sup> Calendar of Patent Rolls, 1266-72, 26.

<sup>544</sup> John Blair, 'Transport on the Upper Thames.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 257.

<sup>545</sup> *Ibid.* page 261.

<sup>546</sup> *Ibid.* page 272 – 278.

‘There must have been a great deal of coming and going around the mill [at Faringdon] with grain-laden boats, belonging both to tenants obliged to grind here and to other landowners who found it a convenient mill to patronize.’<sup>547</sup> ‘Our texts refer to “ships” (“naves”) at Abingdon and Dorchester, “ships and little ships” (“cum navibus et navicellis”) at *Kyndelwere* [Faringdon].’<sup>548</sup>

Durham considered that The Hythe was upstream of Castle Mill.<sup>549</sup>

1016. Cnut came with 160 ships, and Ealdorman Eadric with him, over the Thames into Mercia at Cricklade, ... and Cnut travelled towards London with all his ships.<sup>550</sup>

1020. King Canute ‘travelled up the Thames in the royal barge as far as Buscot.’<sup>551</sup>

12<sup>th</sup>–16<sup>th</sup> C. At Cirencester ‘Huge outbuildings adjoined the abbey, and here the abbot stored anything up to twenty thousand bales of wool - he, as Lord of the Manor, having the sole right to weigh it and control its sale and profits. Lively fairs were held to which merchants commuted from London, and the bales they bought were taken in torchlight procession to Lechlade, where they were loaded on to barges for transport to the capital. From early in the thirteenth to the end of the eighteenth centuries Cirencester maintained a great commerce in wool, and the Thames as continually bearing laden wool-barges downstream to London.’<sup>552</sup>

1199-1216. King John allowed merchandise to be shipped down-river from Radcot to London.<sup>553</sup>

1271. ‘The boat wherein Gilbert son of Walter le Messer was lately drowned by misadventure in the Thames at a place called ‘La Juresherd’ within the said Matthias’s liberty of Radecote, with 5½ quarters of whet, an iron chain, a lock and eleven sacks found in the said boat.’<sup>554</sup>

1279. ‘A cartulary of Beaulieu Abbey (which held Faringdon) reveals that the barges of grain merchants were using Radcot Wharf.’<sup>555</sup>

1282. There was a wharf by Hythe Bridge in Oxford.<sup>556</sup>

1299. In 1299 and 1331 stone was brought from Eynsham to Oxford.<sup>557</sup>

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<sup>547</sup> *Ibid.* page 282.

<sup>548</sup> *Ibid.* page 284.

<sup>549</sup> B.G. Durham, ‘Oxford.’ In Gustav Milne and Brian Hobley, Eds., *Waterfront Archaeology in Britain and Northern Europe*. CBA Research Report. No. 41. (1981), 142-143.

<sup>550</sup> *The Anglo-Saxon Chronicles*. Editor Michael Swanton. London: Phoenix Press. 2000, 146, 148.

<sup>551</sup> Alan Wykes, *An Eye on the Thames*. London: Jarrolds Publishers (London) Ltd. 1966, 43.

<sup>552</sup> *Ibid.* page 44.

<sup>553</sup> British Library, MS Cotton Nero A. xii ff. 48v-50 Faringdon Cartulary. Cited in John Blair, *Anglo-Saxon Oxfordshire*. Stroud: Sutton Publishing. 1994, 121.

<sup>554</sup> Calendar of Patent Rolls, 1266-72, 610.

<sup>555</sup> *The Oxfordshire Hundred Rolls of 1279*. Editor E. Stone. Oxfordshire Record Society, 1968. Cited in David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. 1987, 17.

<sup>556</sup> H.E. Salter, *The Cartulary of Oseney Abbey, Volume II*. 6 Volumes, Oxford Historical Society. 1929-36, 349-350. Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 110.

<sup>557</sup> J.E. Thorold Rogers, Ed., *Oxford City Documents*. Oxford Historical Society. 1891, 206-207. Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 110.

c.1300. Two documents confirm the right of the monks at Faringdon to ship grain down river in vessels (*naves*), potentially as far as London.<sup>558</sup>

1302. N. 'fell out of a boat crossing from Botley Mead to Wyke' and was drowned.<sup>559</sup>

1305. 'Robert was found dead in the water of the Thames at the Hithe, in the parish of St. Thomas-the-Martyr. ... (Robert and Hugh) were after dinner in a boat with turves for the use of the said monks; and because the boat was too much laden with turves, it began to sink in deep water; and the said Hugh scarce escaped, and the said Robert was drowned by misfortune.'<sup>560</sup>

1317. Grain was regularly shipped from Bampton to Oxford.<sup>561</sup>

1329. A grant of pontage was made on 'every boat which comes by water laden with mechanize, etc.' to Oxford.<sup>562</sup>

1334. 'Radcot stood on the Thames and its inhabitants are thought to have prospered by the trade of the river.'<sup>563</sup>

1345. N. 'was navigating a boat on the Thames between Seacourt ("Seukworth") mill and Oxford, and by misfortune fell from the boat into the Thames, and so was drowned. ... the boat belonged to the said mill.'<sup>564</sup>

1350-1369. Three Commissions were appointed to survey and remove all weirs, mills, stanks, palings and kiddles that have been erected since the time of Edward I and obstructed the passage in the river between Rotecote ... and London.'<sup>565</sup>

1350. 'The watercourse of the Thames in the suburb of Oxford used to be common for fishery and the passage of boats; the abbot and convent of Oseney two years past and more built two mills and obstructed the watercourse; they have also made two new weirs.'<sup>566</sup>

1439. A grant for life was made of the office of searcher of nets in the 'river of Thames, its streams and members between the bridge of Stanes and the town of

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<sup>558</sup> John Blair, 'Transport on the Upper Thames.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 260.

<sup>559</sup> The Rev. H.E. Salter, *Records of Mediaeval Oxford. Coroners' Inquests, the Walls of Oxford, Etc.* Oxford: The Oxford Chronicle Company, Ltd. 1912, 10.

<sup>560</sup> *Ibid.* page 13-14.

<sup>561</sup> Exeter Cathedral, Dean and Chapter Archives MS 2931 (labour services of the tenants of Chimney). Cited in John Blair, *Anglo-Saxon Oxfordshire*. Stroud: Sutton Publishing. 1994, 121.

<sup>562</sup> The Rev. H.E. Salter, *Records of Mediaeval Oxford. Coroners' Inquests, the Walls of Oxford, Etc.* Oxford: The Oxford Chronicle Company, Ltd. 1912, 58.

<sup>563</sup> Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 111.

<sup>564</sup> The Rev. H.E. Salter, *Records of Mediaeval Oxford. Coroners' Inquests, the Walls of Oxford, Etc.* Oxford: The Oxford Chronicle Company, Ltd. 1912, 33.

<sup>565</sup> Calendar of Patent Rolls, 1350-54, 204.

Calendar of Patent Rolls, 1367-70, 346-347.

Calendar of Patent Rolls, 1369-74, 11.

<sup>566</sup> Calendar of Inquisitions Miscellaneous. (Chancery.) Volume III. 1348-77, 20.

Surcestre, [Cirencester] and in all weirs, lokkes, marquettes, and other engines belonging thereto.<sup>567</sup>

16<sup>th</sup>C. Hay, wood and stone were unloaded at a wharf at Hythe Bridge.<sup>568</sup>

16<sup>th</sup>C. Many of the portions in Bullstake Mead could best be reached by water, and we assume that when the hay was made it was conveyed in punts to the hithe at Hithe Bridge, and thence by cart to the spot where a rick was made.<sup>569</sup>

1572. The mayor and his party when perambulating the city of Oxford made part of the journey by boat on the Thames.<sup>570</sup>

1581. St John's College paid for the carriage of five loads of timber from Eaton to 'high bridge' Oxford by water.<sup>571</sup> This could have been from Water Eaton on the Cherwell or Eaton Hastings upstream of Oxford on the Thames.

1581/2. St John's College paid for the carriage of two boatloads of wood 'from Bablock hyve to Hye bridge' Oxford by water.<sup>572</sup>

1583. Having recently obtained possession of a wharf, Oxford City Council resolved that every freeman unloading 'haye, woode, stone, slate, or other carriage whatsoever,' at their wharf should pay a fee 'towards the mayntenaunce of the bancks and scowringe of the ryver theare, which by suche carige and unlodinge theare is fflowndered.'<sup>573</sup> The wharf was upstream of High Bridge and there was a charge of 3s. 4d. for every load which should pass under the bridge.

1583. 'The first boatman was admitted a freeman of the city of Oxford.'<sup>574</sup> It seems that he was from the community of Fisher Row and would have worked upstream of Oxford.

1592. 'Most of the monarchs barged it in their royal vehicles as far as Lechlade and then were entertained by the nobles or citizens of Cirencester as the town nearest the head of the river. One of them, Elizabeth I, fortunately arriving in the dry summer of 1592, commanded that she be borne in her litter the whole way along the river bank from Lechlade to "the very first trickly of my jyne Thames before going on to Cirencester.'<sup>575</sup>

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<sup>567</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 34.

<sup>568</sup> City Records 433-434. Cited in V.C.H.Oxfordshire.Vol. IV. 1979, 291-293.

<sup>569</sup> The Rev. H.E. Salter, *Medieval Oxford*. Oxford: At the Clarendon Press for the Oxford Historical Society. 1936, 75.

<sup>570</sup> *Ibid.* page 66 -67.

<sup>571</sup> Stevenson and Salter, *St. John's*, 230. Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 116.

<sup>572</sup> *Ibid.* page 116.

<sup>573</sup> Oxford City Archives, A.5.5, fo. 260; Cited in Turner, *Records*, 433-4. Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 116.

<sup>574</sup> Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 105.

<sup>575</sup> Alan Wykes, *An Eye on the Thames*. London: Jarrolds Publishers (London) Ltd. 1966, 44.

17<sup>th</sup> C. ‘The river above Oxford, however, remained passable and in the 16<sup>th</sup> century hay, stone, and slate were unloaded at the wharf owned by the city at Hythe Bridge.<sup>576</sup> ... The nature of the bulk of the trade at the wharf is revealed by the name Timber Wharf, which it acquired in the 17<sup>th</sup> century.’<sup>577</sup> Wood wrote that Hythe bridge obtained its name ‘because of an “hith” here, that is (it being a Saxon word) a petit haven to land wares out of vessels and botes, as is used here to this day at this end of the towne as at the south where the wharf is.’<sup>578</sup>

1607. The Oxford-Burcott Authority fixed Cricklade as the upper limit of their proposed improvements. ...<sup>579</sup>

1623. ‘The river was navigable for many miles west of Oxford.’<sup>580</sup> There is no record that the river had been modified prior to this date.

1627. Twyne wrote ‘Free and open passage by water then [1329] was between Oxford and London, as we are able to prove by good records, and there is good hope that ere long it is likely to be so again.’<sup>581</sup>

1641. John Taylor rowed a boat from London to Cricklade and then, with difficulty, up the River Churn to within a mile of Cirencester.<sup>582</sup>

1644. In the Civil War Parliamentary soldiers crossed the Thames at Newbridge in boats.<sup>583</sup>

1661-66. Wood wrote ‘For (if wee may believe antient scripts) the rivers and rivulets were farre deeper formerly then now; and that the river running by Oxon to Greeklade [Cricklade] was navigable at all times in the yeare.’<sup>584</sup>

1751. The Thames and Isis Navigation Act 1751 stated that ‘the Rivers of Thames and Isis have, Time out of Mind, been navigable from the City of London to ... beyond Lechlade ...’<sup>585</sup>

In the early 20th century there were people who could remember the Thames being open for barges as far as Waterhay Bridge due to the riverbed having being dragged by horses in a dry summer.<sup>586</sup>

<sup>576</sup> City Arch. D.5.6, F. 63. Cited in V.C.H. Oxfordshire. Vol. 4. 291.

<sup>577</sup> V.C.H. Oxfordshire. Vol. 4. 291.

<sup>578</sup> Andrew Clarke, Ed., “*Survey of the Antiquities of the City of Oxford*,” composed in 1661-6, by Anthony Wood. Oxford: Oxford Historical Society. 1889, 434.

<sup>579</sup> Fred S. Thacker, *The Thames Highway. Volume II: Locks and Weirs*. 1<sup>st</sup> Edition. Kew: Fred S. Thacker. 1920. New impression. Newton Abbot: David & Charles. 1968, 21.

<sup>580</sup> (1624) 21 James I. c. 32.

<sup>581</sup> Twyne MS., vol. 24, pp.443-460. Cited in The Rev. H.E. Salter, *Records of Mediaeval Oxford. Coroners’ Inquests, the Walls of Oxford, Etc.* Oxford: The Oxford Chronicle Company, Ltd. 1912, 58.

<sup>582</sup> John Taylor, *John Taylor’s last Voyage*. London: John Taylor. 1641. Contained in *Works of John Taylor. Second Collection*. The Spencer Society 14. 1873. New York: Burt Franklin. 1967, 12.

<sup>583</sup> *Mercurius Aulicus*. 23 Weeks, ending June 8. 1644. Sunday. 2 June 2. p. 1007. Cited in M.R. Toynbee, ‘Radcot Bridge and Newbridge.’ *Oxoniensia*. Vol. 14. (1949) 46-53, 52.

<sup>584</sup> Anthony Wood, “*Survey of the Antiquities of the City of Oxford*,” composed in 1661-6 by Anthony Wood. Edited by Andrew Clarke. Oxford: Clarendon Press. 1889, 408.

<sup>585</sup> (1751) 24 George II c2. The Thames and Isis Navigation Act.

### **Evidence of the use of the River from Oxford to London**

c.1050. At Abingdon 'In the time of Abbot Ordric (1052-66) the river ran on the other side of the church's land (which the inhabitants call Barton) close by the hamlet of Thrupp. This caused the oarsmen no little difficulty, for the land below rose more steeply than the land above, often causing the river to dry. For this reason the citizens of the city of Oxford (for it was their shipping which made the passage most often) besought that the course of the river should be diverted through the church's meadow, which lies below it on the south, on condition that for the rest of time 100 eels should be paid as custom to the monks' cellarer by each one of their boats. This request was granted, the terms agreed, and the promised custom is paid to this day.'<sup>587</sup>

1066. 'King Edward had ... and they who dwelt there [Borough of Wallingford] did service for the king with horses or by water as far as Blewbury, Reading, Sutton Courtenay [and] Benson [Oxon], ...'<sup>588</sup>

1110-11. Boatmen were sued before the King's sheriffs in Oxford for non-payment of the toll granted in c. 1050 and the custom was confirmed.<sup>589</sup>

1163. There was a dispute between the Abbott and the men of Oxford at Wallingford about a right of market. It was held that the Abbott 'could have the fullest type of market, except that it could not be used by the freight barges which plied the Thames (*navibus onerariis per aquam Tamisiae currentibus*) though he could use his own boats for his own affairs.'<sup>590</sup>

Pre.1205. An Andrew of the Exchequer was granted a patent 'to have a ship carrying *blada* [corn, grain (esp. wheat)<sup>591</sup>] and victuals, and other necessities for him and his, from Abingdon to London, unmolested by any toll going and returning as long as he remained at the Exchequer.'<sup>592</sup>

1205. 'Letters Patent were granted to William, son of Andrew, to have one ship going and returning upon the Thames between Oxford and London, and the Governors of Wallingford and other river ports were to give him free passage.'<sup>593</sup> The letter patent referred to 'any toll and exaction which belongs to us; and that he might freely and without hindrance load that vessel wherever on the Thames he desired between Oxford and London.'<sup>594</sup>

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<sup>586</sup> Leigh Hatts, *The Thames Path*. Milnthorpe: Cicerone. C1998, 20. Accessed at <http://www.thamespath.org.uk/route/cricklade-source/>. 17/7/08.

<sup>587</sup> *Chronicon Monasterii de Abingdon*, I, 480-1. Cited in R.H.C. Davis, 'The Ford, The River and The City.' *Oxoniensis*. Vol. 38. (1973), 258-267, 263.

<sup>588</sup> Dr. Ann Williams, G.H. Martin, Eds., *Domesday Book*. London: Penguin Books. 2002, 135.

<sup>589</sup> *Ibid.*, II, 119.

<sup>590</sup> *Ibid.*, II, 229.

<sup>591</sup> R.E. Latham, *Revised Medieval Latin Word-list*. London: The British Academy. 1999, 51.

<sup>592</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 16.

<sup>593</sup> *Rotuli Literarum Patentium*. Editor T.D. Hardy. (London, 1835.), I, pt. i. 38, 52. Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 108.

<sup>594</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 15-16.

1205. ‘Madox, in his *History of the Exchequer* [1711] explains that there were at that time duties payable to the Crown on Thames borne merchandise. “The duty paid for trafficking along the Thames, or at one sort of that duty, was called *Avalagum Thamisiae*.”<sup>595</sup>

1210-11. ‘Brightwell, Harwell, Wargrave, and West Wycombe hired boats to carry 1,130 qr of grain to Southwark.’<sup>596</sup>

After 1210. In later years, the bishop of Winchester sent a great deal of timber and firewood by river directly from Wargrave to Southwark.<sup>597</sup>

After 1210. ‘The Harwell virgaters had the duty of carrying grain the seven miles to Wallingford. ... The vergaters of Wargrave (berks) and its sub-manors had to load grain in the bishop’s boats moored by the bank.’<sup>598</sup>

1234. Henry III built a hospital in Oxford and commanded that all riparian owners should facilitate the passage of men bringing timber by boat from Reading.<sup>599</sup>

1253. The sheriff of Middlesex had all weirs destroyed for the whole length of the river to the west of London.<sup>600</sup> This may have only referred to the river downstream of Staines, the normal limit of his responsibility.

1253. The Constable of Windsor Castle stated that vessels which passed Bray ‘without making stay’ were allowed to do so without charge but that a charge was made for those that ‘fix a stake or load there’.<sup>601</sup>

1301-2. ‘Officers of the bishop of Winchester transported 900 pieces of tall-wood and 20 quarters of charcoal by boat from Wargrave.’<sup>602</sup>

1338. ‘Part of the Oxfordshire wool production was collected at Oxford, carried to Henley overland and then shipped to London in “shutes”.’<sup>603</sup>

1343. Timber was carried by water from Byfleet to Wallingford Castle.<sup>604</sup>

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<sup>595</sup> *Ibid.* page 16.

<sup>596</sup> Pipe Roll of Winchester, ed Holt, pp. 57, 61, 80. Cited in Joan Thirsk, Ed., *The Agrarian History of England and Wales. Volume III 1348-1500*. Cambridge: Cambridge University Press, 1991, 354.

<sup>597</sup> Joan Thirsk, Ed., *The Agrarian History of England and Wales. Volume III 1348-1500*. Cambridge: Cambridge University Press, 1991, 354.

<sup>598</sup> BL, Egerton Ms 2418. Cited in Joan Thirsk, Ed., *The Agrarian History of England and Wales. Volume III 1348-1500*. Cambridge: Cambridge University Press, 1991, 354.

<sup>599</sup> Calendar of Patent Rolls, 1232-37, 51.

<sup>600</sup> *De Antiquis Legibus*, Editor Thomas Stapleton. (Camden Soc., 1846), 20. Cited in R.H.C. Davis, ‘The Ford, The River and The City.’ *Oxoniensis*. Vol. 38. (1973), 258-267, 264-5.

<sup>601</sup> TNA, KB 26/150. Cited in David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. 1987, 23-24.

<sup>602</sup> ., *The Pipe Roll of the Bishopric of Winchester 1301-2*. Editor M. Page. (Hants Rec. Soc. XIV), 177. Cited in R.B. Peberdy, ‘Navigation on the River Thames between London and Oxford in the Late Middle Ages: a Reconsideration.’ *Oxoniensis*, 61. (1996), 311-340, 325.

<sup>603</sup> TNA, PIPE Roll no 183 (12 Edward III) M. 47. Cited in David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. 1987, 25.

<sup>604</sup> H.M. Colvin, *A History of the King’s Works*. Cited in David Gordon Wilson, *The Making of the Middle Thames*. Bourne End: Spurbrooks. 1977, 25.

1344. John Waleraund was appointed 'to arrest on the river Thames between Graveshende and Henle as many punts for stone and other necessities ... as shall be required' to carry goods to Windsor.<sup>605</sup>

1359. Faggots were carried downriver from Nuneham Park to Reading.<sup>606</sup>

1383. Two men were killed when a shout was being pulled through Hambleden Lock where two winches were being used.<sup>607</sup>

1405. An agreement was made about the passage of shouts and boats from the Thames to the centre of Reading along the River Kennet.<sup>608</sup>

1432. The countess of Warwick travelled by barge and boats from Brentford to Caversham.<sup>609</sup>

1448-9. '(Stone) from Taynton was carried by road as far as Culham, and then transferred to barges which brought it to Eton. This route was not adopted until Keys had personally inspected the river between Abingdon and Eton from a barge, a task which occupied him for eight days. (fn. John Keys accounts.) Owing to weirs and other obstructions it did not prove satisfactory, and later consignments of Taynton stone were carried by land as far as Henley before being put onto barges.'<sup>610</sup>

1456. Stone which was transported from Taynton (near Burford) to Eton was carted overland to Henley and shipped from there.<sup>611</sup>

1459. 'The manor of Wooburn in Buckinghamshire was granted freedom of access to its wharf and exemption from tolls and customs payable to the Crown on goods to and from the wharf and from obligatory conveyance of goods for the King's use.'<sup>612</sup>

1460. Peberdy considers that Elmes may have traded from Oxford downstream before his death in 1460 but that the trade then stopped due to insufficient demand.<sup>613</sup>

1496. After a dispute between Magdalen College and St. Frideswides Priory a free passage by water was reserved to Magdalen College.<sup>614</sup>

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<sup>605</sup> Calendar of Patent Rolls, 1343-45, 283.

<sup>606</sup> Alan Wykes, *An Eye on the Thames*. London: Jarrolds Publishers (London) Ltd. 1966, 149.

<sup>607</sup> TNA, JUST 2/9 membrane 4 recto. Cited in R.B. Peberdy, 'Navigation on the River Thames between London and Oxford.' *Oxoniensia*. Vol. 61 (1996) 311-340, 326.

<sup>608</sup> Slade, 'Documents Concerning Relations between Town and Abbey.' 49-50. Cited in R.B. Peberdy, 'Navigation on the River Thames between London and Oxford in the Late Middle Ages: A Reconsideration.' *Oxoniensia*. Vol. 61 (1996) 311-340, 326.

<sup>609</sup> Harvey, *Gothic England*, 176. Cited in R.B. Peberdy, 'Navigation on the River Thames between London and Oxford.' *Oxoniensia*. Vol. 61 (1996) 311-340, 326.

<sup>610</sup> R.A. Brown and H.M. Colvin, 'The Kings Works 1272-1485'. In H.M. Colvin, Ed., *The History of the King's Works. Volume I The Middle Ages*. London: Her Majesty's Stationery Office. 1963, 282.

<sup>611</sup> Douglas Kemp and G.P. Jones, 'The Building of Eton College, 1442-60.' *Transactions of the Quatuor Coronati Lodge*, XLVI (1933), 84. Cited in R.H.C. Davis, 'The Ford, The River and The City.' *Oxoniensis*. Vol. 38. 1973. 258-267, 264.

<sup>612</sup> David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. 1987, 29.

<sup>613</sup> R.B. Peberdy, 'Navigation on the River Thames between London and Oxford in the Late Middle Ages: A Reconsideration.' *Oxoniensia* Vol. 61 (1996) 311 – 340, 327.



c.1535. Sir Walter Stonor wrote to Cromwell 'The king has certain weirs in Oxfordshire and Berkshire, which I have commanded the hundreds to pluck up, but they want to know who shall give them meat and drink and wages. They desire that certain barges and bargemen may be at the locks, to the intent that such 'gynnys' as must be used may stand on the barge to winch up the great timber. On Monday they will be at one of the king's weirs, called North Stoke. I beg I may be excused from plucking up every weir, for every owner who ought to pluck them up at his own charge now waits to have it done at the charge of the country.' North Stoke mill probably stood on the little stream that enters the Thames there.<sup>615</sup>

1552. Grant was made of 'the passage and "fery barge" of Caversham, ... "the mill barge" and "le loke" called Caversham Locke.'<sup>616</sup>

1555. Barges were carrying stone from Reading Abbey and lead from Abingdon and Wallingford to Windsor.<sup>617</sup>

1555. Wykes states that there was a pleasure boat cruise from Abingdon to Oxford.<sup>618</sup> However when asked he could not recall the reference for this event.<sup>619</sup>

1562. Abingdon Corporation paid for the carriage of wine from London to Culham in a barge.<sup>620</sup>

1567. Thomas West had to carry his portable winch from Wallingford to Caversham by road as his barge could not travel without it at Easter.<sup>621</sup> From his accounts it is clear that by 1562 traffic could move as far as Culham near Abingdon, whilst at Burcot goods could be trans-shipped for Oxford. His outstanding debts at his death related to 40% wood and timber, 20% coal, over 20% corn and malt, 6% fish and the balance of about 15% small goods.<sup>622</sup>

1573. 'Talle wood' was transported by water from Whitchurch.<sup>623</sup>

1574. A complaint was made that the river was being blocked by the 'castynge of trees into the same river and stoppynge of the passage of bargemen travelynge unto this

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<sup>614</sup> *The Cartulary of the Monastery of St. Frideswide at Oxford, Volume I* Editor S.R. Wigram. (OHS xxviii, 1894), 268. Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 110.

<sup>615</sup> Letters and Papers, Foreign and Domestic, of the Reign of Henry VIII. Volume 9, 170.

<sup>616</sup> Calendar of Patent Rolls, 1550-53, 344.

<sup>617</sup> David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. 1987, 30.

<sup>618</sup> Alan Wykes, *An Eye on the Thames*. London: Jarrolds Publishers (London) Ltd. 1966, 114-118.

<sup>619</sup> David Gordon Wilson, *The Thames: Record of a Working Waterway*. London: B.T. Batsford. 1987, 30.

<sup>620</sup> A.E. Preston, *The Church and Parish of St. Nicholas, Abingdon*. (OHS, xcix, 1935), 307. Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 113.

<sup>621</sup> MS. Wills Berks. 220 (inventory and account of Thomas West). Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 113.

<sup>622</sup> Mary Prior, 'The Accounts of Thomas West of Wallingford, a Sixteenth-Century Trader on the Thames.' *Oxoniensia*, Vol. XLVI, (1981), 73-93, 73 and 76.

<sup>623</sup> P.G. Preece, 'Medieval Woods in the Oxfordshire Chilterns.' *Oxoniensia*, lv (1990), 69-70. Cited in R.B. Peberdy, 'Navigation on the River Thames between London and Oxford in the Late Middle Ages: A Reconsideration.' *Oxoniensia*, 61, (1996), 311-340, 325.

cyttye above the Towne of Stanes.<sup>624</sup> It seems that rafts of timber or firewood were being floated down the river.

1578/9. John Strype in his enlargement of John Stow's *Survey of the Cities of London and Westminster* wrote

About the Year 1578, or 1579, there were Three and twenty Locks, Sixteen Mills, Sixteen Floud-gates, Seven Wears between *Maidenhead* and *Oxford*. Whereof one *John Bishop* made a Complaint to the Lord Treasurer *Burleigh*. To whom he shewed, how by these Stoppages of the Water, several Persons, to the Number of 15 or 16, in four Years only, had been drowned, and their Goods lost; having been Persons belonging to Barges and Vessels using the River. But notwithstanding these Complaints, about the Year 1584 or 1585, there were above Seventy Locks and Wears (that is, Thirty more at least than there was but Six Years before.) And whereas before there were not above Ten or Twelve Barge employed to and fro, now the number was encreased to Fourscore; and were of much greater Build and Bigness than before was used. Some of these Locks were extraordinary dangerous in passing. The going up the Locks were so steep, that every Year Cables had been broken that cost 400*l.* and Bargemen and Goods drowned. And in coming down, the Waters fell so high, that it sunk the Vessels, and destroyed Corn and Malt wherewith they were laden.<sup>625</sup>

1580 and 1585. Bishop made a two petitions concerning the obstruction to the river. The second petition was in verse and contained 43 quatrains. The petition states that due to the condition of many of the 'Mylls, weares and locks' many people are drowned. However the weirs were still being used.<sup>626</sup> Bishop does not differentiate between the weirs upstream of Abingdon, where many commentators consider the river was unusable, and the weirs below Burcot where they consider that the river was used at this time. Bishop listed the names of 20 men who had drowned.

Strype wrote that the mills and locks were ancient, and that they were necessary for grinding corn and for the passage of boats. He continued

The causes of the increased peril of the passage was that the Barges were become of greater burthen; almost double what they used to be; that they laded them beyond reason; that they used partly to unload below the lock and reshup again above, even when they used to bring but seven or eight Loads. Now they came with twenty they would unload nothing; they employed people of no skill; they travelled so late & so early as to be unable to see what they were doing; they commonly spared neither the Sabbath Day nor others. And lastly it was likely there would be more accidents, as the number of Barges was increased from ten or twelve to fourscore.<sup>627</sup>

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<sup>624</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 44.

<sup>625</sup> Cited in Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 45-46.

<sup>626</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 52.

<sup>627</sup> Cited in Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 53.

1586. Harrison wrote 'the more that this river is put by of hir right course, the more the water must of necessitie swell with the white waters which run downe from the land: bicause the passage cannot be so swift and readie in the winding as in the streight course. These landflouds also doo greatlie straine the finesse of the streame, in so much that after a great landfloud, you shall take haddocks with your hands beneath the bridge, as they flote aloft upon the water, whose eies are so blinded with the thicknesse of that element, that they cannot see. ...'<sup>628</sup>

'... beside those huge tideboats, tiltbotes, and barges, which either carrie passengers, or bring necessarie provision from all quarters of Oxfordshire, Barkeshire, Buckinghamshire, Bedfordshire, Herfordshire, Midlesex, Essex, Surrie, and Kent, unto the citie of London.'<sup>629</sup>

He wrote of Henley 'The Inhabitants whereof be for the most part Watermen, who make their chieftest gaine by carrying downe in their Barges wood and Corne to London.'<sup>630</sup>

1586. 'Polydore saith that this river is seldom increased or rather never over-floweth her banks by landfloods, (fn. Polydore Vergil, *English History*, Camden Society Soc. XXXVI, 20.) but he is herein very much deceived, as it shall be more apparently seen hereafter.'<sup>631</sup>

1586. 'The inhabitants whereof [Henley upon Tamis] be for the most part Watermen, who make their chieftest gaine by carrying downe in their Barges wood and Corne to London.'<sup>632</sup>

1586. There are on the River Thames 'two thousand wherries and small boats, whereby three thousand poor watermen are maintained through the carriage and recarriage of such persons as pass or repass from time to time upon the same, beside those huge tide boats, tilt boats, and barges which either carry passengers or bring necessary provision from all quarters of Oxfordshire, Berkshire, Buckinghamshire, Bedfordshire, Hertfordshire, Middlesex, Essex, Surrey, and Kent unto the city of London.'<sup>633</sup>

1586. 'The North part of the river ... running with a winding channel full of reaches, but carrying a very gentle streame.'<sup>634</sup> 'As soon as Isis and Cherwell have join'd their

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<sup>628</sup> Raphaell Holinshed, William Harrison, and others, *Holinshed's Chronicles of England, Scotland and Ireland. Volume 1. England*. (First published 1586.) Editor John Hooker. London: J. Johnson *et al.* 1807, 81.

<sup>629</sup> *Ibid.* page 82.

<sup>630</sup> *Ibid.* page 389.

<sup>631</sup> William Harrison, edited by Georges Edelen, *The Description of England*. Washington: The Folger Shakespeare Library and New York: Dover Publications Ltd. 1968, 1994, 421.

<sup>632</sup> William Camden, *Britannia*. Trans. Philemon Holland. London: Ioyce Norton and Richard Whitaker. 1637, 389.

<sup>633</sup> William Harrison, edited by Georges Edelen, *The Description of England*. Washington: The Folger Shakespeare Library and New York: Dover Publications Ltd. 1968, 1994, 422.

<sup>634</sup> William Camden, *Britannia*. Trans. Philemon Holland. London: Ioyce Norton and Richard Whitaker. 1637, 279.

streams below Oxford, the Isis with a swift and deeper current passes on to the south.<sup>635</sup>

1595. 'To prevent accidents, arrangements had been made, for the masters of the Watermen's Company to examine all candidates for admission, before permitting them to ply for hire; a provision which was further strengthened in the first year of James I by an Act (I Jac. I, c. 16 1603-4) regulating the apprenticeship of watermen by reason "that divers and sundrie people passage by water upon the River of Thames, betweene Windsore and Gravesend, have byn put in greate hazarde and danger."<sup>636</sup>

1606. An Act was passed for 'Clearing the Passage by Water from London to and beyond the Citye of Oxforde.'<sup>637</sup> In the preamble it was stated that 'The river Thames is from the Citye of London till within a fewe miles of the Citye of Oxforde verie navigable and passeable with and for Boates and Barges of great Content and Carriage, and whereas it is conceived that by the remooving rectifying and amending of some fewe Letts Impediments and Obstruptions in or about the Channell of the saide River, the same would be made also passable both unto the Citye of Oxon, and from thence into some parte of the Counties of Oxon Berkes Wiltes and Gloucester.'

1623. An Act was passed for 'making of the Ryver Thames navyable from Burcott to Oxford.'<sup>638</sup> The preamble to an Act stated that 'whereas the said River of Thames for many miles beyond the Citie of Oxford Westward, is already navigable and passable for Boates of good Burthens and Contents, and likewise is alreadie navigable for Barges from London to the Village of Bercott in the Countie of Oxford, being within sixe or seven myles of the City of Oxford.'

1634. Cartwright, a Christ Church man, wrote about the frost of 1634 'Our ships stand all as planted, we may swear / They are not born up only but grow there.'<sup>639</sup>

1635. Madan wrote 'the Thames was made navigable up to Oxford itself'; 'and the first barge reached the city on August 31, 1635.'<sup>640</sup>

### **Evidence of the obstruction of the river between Oxford and London**

1197 and 1199. A charter was 'granted and steadfastly commanded that all kydealls that are in the Thames be removed wheresoever they shall be within the Thames.' In 1199 this Charter was extended to the Medway.<sup>641</sup>

1215. *Magna Carta* stated that 'Henceforth all fish-weirs shall be completely removed from the Thames and the Medway and throughout all England except on the sea coast.'<sup>642</sup>

<sup>635</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 262-3.

<sup>636</sup> Joan Parkes, *Travel in England in the Seventeenth Century*. Oxford: Clarendon Press. 1925, 102.

<sup>637</sup> (1606) 3 James I c. 20.

<sup>638</sup> (1624) 21 James I c32.

<sup>639</sup> William Cartwright, 'On the Great Frost, 1634'. In William Hicks, Ed. *Oxford Drollery* Oxford, 1671, 166. Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 127.

<sup>640</sup> M.F. Madan, *Oxford Books, Volume II*. Cited in Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 72.

<sup>641</sup> William Sharp McKechnie, *Magna Carta. 2<sup>nd</sup> Edition*. New York: Burt Franklin. 1958, 345.

1227. Henry III issued a patent 'to inspect and measure all weirs which to the hindrance of vessels passing through them had been heightened or increased in the counties of Oxford and Berkshire, etc., ... so that vessels could pass over them without hindrance or damage as before (1209)',<sup>643</sup>

1235. 'It was ordered that weirs should be made to stand at that height, and width of opening between the posts, as in the reigns of Henry II, Richard I, and John.'<sup>644</sup>

1256. Henry III had 30 tuns of wine sent by river to Henley and then carried by road to Woodstock.<sup>645</sup>

1275. 'The sheriff of Oxford and Berks. Order to cause the water of Thames in his bailiwick to be so widened that ships and great barges may ascend from London to Oxford with victuals and other necessities, and may descend from Oxford without any hindrance from any weirs, so conducting himself in the execution of this order as to merit the king's commendation, as the king understands that the water of Thames between London and Oxford is so narrowed in divers places by weirs made in it, that ships and barges with goods and victuals are unable to pass by it.'<sup>646</sup>

Davis records 'complaints and injunctions were made in 1278, 1281, 1294, 1316, 1320, 1351, 1352, 1358, 1364, 1371, 1376, 1377, 1388, 1391, 1399 and on into the 15<sup>th</sup> century concerning obstructions to the river.'<sup>647</sup>

1285. There was an inquisition for purprestures regarding a *gurgitem* raised by the praeceptor or master and brethren of the Holy Temple of Temple Cowley within two miles of Oxford.<sup>648</sup>

1290. A load of grain was taken from South Warwickshire to Henley by road and then transferred to a boat.<sup>649</sup>

1294. A court ruled that where a person has a right in another person's water, if the river channel changes due to the work of a man or naturally the right follows the water wherever it run.<sup>650</sup>

Early 14<sup>th</sup> century. The river was used 'perhaps as late as about the time of Edward I or II [1272-1327] when the merchants who frequented [*hauntent*] the water between

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<sup>642</sup> J.C. Holt, *Magna Carta. 2<sup>nd</sup> Edition*. Cambridge: Cambridge University Press. 1992, 458-461.

<sup>643</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 18.

<sup>644</sup> *Ibid.* page 19.

<sup>645</sup> Calendar of Liberate Rolls, iv, p 300.

<sup>646</sup> Calendar of Close Rolls, 1272-79, 216.

<sup>647</sup> R.H.C. Davis, 'The Ford, The River and The City.' *Oxoniensis*. Vol. 38. (1973), 258-267, 265.

<sup>648</sup> Anthony Wood, "*Survey of the Antiquities of the City of Oxford*," composed in 1661-6 by Anthony Wood. Edited by Andrew Clarke. Oxford: Clarendon Press. 1889, 429.

<sup>649</sup> B.F. Harvey, Ed., *Documents Illustrating the Rule of Walter de Wenlock, Abbot of Westminster, 1283-1307*. Camden 4<sup>th</sup> Series, (ii), p. 178. Cited in R.B. Peberdy, 'Navigation on the River Thames between London and Oxford in the Late Middle Ages: A Reconsideration.' *Oxoniensia*, 61, (1996), 311-340, 328.

<sup>650</sup> 22 Ass 6. *Liber Assisarum*. Le livre des Assises et Pleas del' Corone ... Entemps du roy Edward le Tiers. London: Richard and Edward Atkins. 1679, 62.

Oxford and London complained that their common passage for ships of merchandise was obstructed.<sup>651</sup>

1302. 'The river was soe stopped that a petition was put up in parliament.'<sup>652</sup>

1316. A charge was made that 'the abbot of Abingdon and others, who have weirs on the river Thames between Oxford and Wallingford, have reconstructed them of such height that the lands on each bank are flooded; and have constructed certain obstacles on the weirs, called "lokes," by which ships and boats are obstructed.'<sup>653</sup>

1327. It was claimed that 'Divers men of riverside counties have kidels along the banks of the River; have made weirs in the same River; and fixed piles and pales along its course, and tied the cords of their nets athwart the stream, contrary to divers charters of the citizens, and more especially to Magna Charta.'<sup>654</sup>

1327. A charter was granted which gave permission for the removal of 'all weirs in the water of Thames and Medway.'<sup>655</sup>

1338. Commission appointed "on complaint of the counties of Oxford, Berks, Surrey and Middlesex" to investigate and remedy obstructions by "fishermen in the river Thames, keepers of weirs, sluices and piles fixed across the river, and millers of the mills on or near the river ... that, the stream is so narrowed by these weirs, sluices and piles that the passage of ships and boats with victuals for London and other places is greatly impeded."<sup>656</sup>

1348. A petition to Parliament claimed that 'ships can pass to London and other good towns of the realm only in time of extreme abundance of water [*outrageous cretin de ewe*] ... so the common carriage of victuals by ship is greatly impeded and victuals daily grow dearer.'<sup>657</sup> Although mentioned there is no complaint about the obstruction of the other three great rivers, Severn, Ouse and Trent.

1350. The first of seven Acts of Parliament against the inhancing of gorges, mills, weirs, stanks, stakes and kidels.<sup>658</sup>

1350-1369. Several Commissions were appointed to survey and remove all weirs, mills, stanks, palings and kiddles that have been erected since the time of Edward I and obstructed the passage in the river between Rotecote [Radcot] ... and London.'<sup>659</sup>

<sup>651</sup> 'Parliamentary Petitions Relating to Oxford.' Editor Lucy Toulmin Smith. In *Collectanea, IIIrd Series* (OHS xxxii, 1896), 109. Cited in Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 109.

<sup>652</sup> Twyne XXIII p. 41 et warff. Cited in Andrew Clarke, Ed., "*Survey of the Antiquities of the City of Oxford*," composed in 1661-6, by Anthony Wood. Oxford: Oxford Historical Society. 1889, 429.

<sup>653</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 22.

<sup>654</sup> *Ibid.* page 23.

<sup>655</sup> *Ibid.* page 24.

<sup>656</sup> Calendar of Patent Rolls, 1338-40, 149.

<sup>657</sup> Fred S. Thacker, *The Thames Highway. Volume I: General History*. (First published 1914.) Newton Abbot: David & Charles. 1968, 26.

<sup>658</sup> (1350) 25 Edward III s. 4 c. 4; (1371) 45 Edward III c. 2; (1399) 1 Henry IV c. 12; (1402) 4 Henry IV c. 11; (1413) 1 Henry V c. 2; (1472) 12 Edward IV c. 7; (1531) 23 Henry VIII c. 5.

<sup>659</sup> Calendar of Patent Rolls, 1350-54, 204, and 276.  
Calendar of Patent Rolls, 1367-70, 346-347.

Pre 1369. The men of Oxford broke down the locks of Standford.<sup>660</sup>

1369. A Commission *de kidellis* was appointed for the waters of Thames between Henle and Rotecote.<sup>661</sup>

1383. A Commission of oyer and terminer was appointed concerning the erection of certain 'weirs, mills, mill-ponds, stakes and kiddles in the Thames between Wallingford and Goring.'<sup>662</sup>

1388. Inquisition in Oxfordshire and Berkshire 'concerning those who set weirs, mills, stanks, stakes and kiddles in the river Thames between Walyngforde and Goryng to hinder the passage of ships and boats and the flow of water.'<sup>663</sup>

1391. This inquisition was still continuing.<sup>664</sup>

1395. 'Presentment by jurors of the hundred of Langtree that there were 18 locks which caused the land to flood and which were 'so narrow and dangerous from the force of the water flowing through it that men with shouts, bargets and kiddles cannot pass there towards Oxford as they were wont to do of old,' and that the locks had been so kept since the time of Edward III. [1327-1377]'<sup>665</sup>

1395. 'Presentment by jurors of the town of Henley that William Dreyton, knight, and his ancestors from time immemorial had a sewer called a lock and a machine called a winch built on the said lock in the Thames at Rotherfield Peppard by Meedmelle so that boats and shouts coming from London to Oxford with victuals, wine and other merchandise might be drawn along by ropes and other means since the water in midstream is too shallow for the navigation of the said boats and shouts without the said engine, and that he ought to repair the said lock and winch, as his ancestors have ever done, so that the said boats and shouts could be drawn there with ropes, without his making any profit thereby, and that the said lock is now stopped up with sand, gravel and the increase of the water, and the winch altogether taken away so that boats and shouts cannot be drawn or navigated there to the hurt of all the country and the towns by which the river flows.'<sup>666</sup>

1574. There was a complaint that bargemen had pulled down mill weirs.<sup>667</sup>

1584. A plan shows a Fulling Mill at Wallingford with no weir.<sup>668</sup>

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Calendar of Patent Rolls, 1369-74, 11, and 266.

<sup>660</sup> Anthony Wood, "*Survey of the Antiquities of the City of Oxford*," composed in 1661-6 by Anthony Wood. Edited by Andrew Clarke. Oxford: Clarendon Press. 1889, 429.

<sup>661</sup> Calendar of Patent Rolls, 1367-70, 266.

<sup>662</sup> Calendar of Patent Rolls, 1381-85, 250 and 351.

<sup>663</sup> Calendar of Close Rolls, 1385-89, 485.

<sup>664</sup> Calendar of Close Rolls, 1389-92, 510-511.

<sup>665</sup> *Public Works in Mediaeval Law. Volume II.* Editor C.T. Flower. Selden Society Vol. 40, 1923, 125-127.

<sup>666</sup> *Ibid.* page 125-127.

<sup>667</sup> British Library Lansdowne MS 18, fo. 137 (no. 62). Cited in John Langdon, 'Inland water transport in medieval England.' *Journal of Historical Geography*, Vol. 19, 1. (1993), 1-11, 1-2.

<sup>668</sup> M.W. Beresford & J.K.S. St Joseph, *Medieval England. 2<sup>nd</sup> Edition.* Cambridge: Cambridge University Press. 1979, 197.

1586. 'The river at Weybridge is 'scarce six foote deepe.'<sup>669</sup>

In 1619 Drayton recorded that there was an ancient tradition that the Thames used to flow through St Albans.<sup>670</sup> Salter (1905), Sherlock (1924) and Woodbridge (1927),<sup>671</sup> and A.G. Brown and twenty other geologists,<sup>672</sup> also suggested that the Thames flowed through St Albans to Chelmsford.

## Th 2 Mar Dyke

Tidal limit.	Coast.		
B.	Orsett.	2 miles.	n/a.

'There is a tradition that the tide used to flow so strong by Purflete up the brook, that Boats could sail up to Orset-hall, or higher.'<sup>673</sup>

## Th 3 River Darent

Lower limit.	River Thames.	
B.	Riverhead.	13 miles.

Ann Coles considers that the name 'Riverhead' is derived from 'cattle hythe'.<sup>674</sup>

## Th 4 River Ingrebourne

Lower limit.	River Thames.			
Edwards.	Havering.	8 miles.		
A.	Havering.	8 miles.	0.33 m <sup>3</sup> s <sup>-1</sup> .	n/a.

1266. Timber was cut at Havering and taken on the Ingrebourne and Thames to Westminster.<sup>675</sup>

1351-52. There was a dispute about cleansing the river between Havering and Rainham.<sup>676</sup>

<sup>669</sup> William Camden, *Britain*. Trans. Philemon Holland. London: Ioyce Norton and Richard Whitaker. 1637, 296.

<sup>670</sup> Michael Drayton, *Poly-Olbion*. 1<sup>st</sup> Edition 1612, 1619. Oxford: Shakespeare Head Press. 1961, 314.

<sup>671</sup> C.P. Green and D.F.M. McGregor, 'Quaternary evolution of the River Thames.' In David K.C. Jones, *The Shaping of Southern England*. London: Academic Press. 1980, 177-202, 181.

<sup>672</sup> A.G. Brown, 'Geoarchaeology, the four dimensional (4D) fluvial matrix and climatic causality.' *Geomorphology*. Vol. 101. (2008), 278-297, 292.

<sup>673</sup> Philip Morant, *The history and antiquities of the county of Essex. Volume 1*. London: T. Osborne. 1768, 221.

<sup>674</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 71.

<sup>675</sup> Calendar of Liberate Rolls, 1260-67, 203.

<sup>676</sup> Coram Rege Roll, Easter, 26 Edward III, rex 12. *et al.* Cited in *Public Works in Mediaeval Law Volume I*. Editor C.T. Flower. Selden Society, Vol. 32. (1915), 77-82.



## Th 5 River Roding

Lower limit. River Thames.

B. Wanstead. 3 miles.  $1.6 \text{ m}^3 \text{ s}^{-1}$ . < 10 m.

‘The little River Roding [is navigable] as far as Ilford bridge (formerly only to Barking).’<sup>677</sup>

1670-80. There was a presentment for not repairing a wharf at Wanstead.<sup>678</sup>

1774. The map produced by Chapman and Andre shows a short cutting off the river near Chigwell which appears to be a hythe.<sup>679</sup> Barrett seems to have described the same cutting in 1893. ‘A little backwater here – how formed it is difficult to say, runs back a short distance into the meadow.’<sup>680</sup>

## Th 6 River Lea

Lower limit. River Thames.

Edwards. Hertford. 28 miles.

A. Hertford. 28 miles.  $2.7 \text{ m}^3 \text{ s}^{-1}$ . 0.9 Canalised.

RLU. Not in *BCU Guide* due to land owners’ objections. Assumed 28 miles.

Records are not given for use of the river to Watford. See Burnby and Parker.<sup>681</sup>

1066. There were nine mills in Stratford. ‘The various channels along this stretch of the Lea probably had their origin as mill streams.’<sup>682</sup>

1408. ‘Ware or Wayre *de Cataractis* of the wayres and water stoppes near it, ... It was drowned in anno 1408, by the great inundation of waters that from the upland passe by the town, and since, and before, there was great provision made by wayres and sluces, for the better preservation of the town, and the grounds belonging to the same.’<sup>683</sup>

1585. ‘Angry road carriers stated that “threescore thowsand quarters of mault” were carried to London every year by the bargemen.’<sup>684</sup>

1588. There were 150 boats on the River Lea owned by 44 people. The great barge laden draweth 16 inches; the least also 16 inches.<sup>685</sup>

<sup>677</sup> V. C. H. Essex. 2, 334.

<sup>678</sup> Essex Record Office. Essex Quarter Sessions. Q/SBa 1-9. A2A Index.

<sup>679</sup> John Chapman & Peter Andre, *A Map of the County of Essex*. London: John Chapman & Peter Andre. 1777.

<sup>680</sup> C.R.B. Barrett, *Essex: Highways, Byways and Waterways*. London: Lawrence & Bullen. 1893, 192.

<sup>681</sup> J.G.L. Burnby and M. Parker, ‘The Navigation of the River Lee (1190 – 1790). *Edmonton Hundred Historical Society Occasional Paper*. New Series No. 36. (1978).

<sup>682</sup> Stephen Pewsey, *Stratford A Pictorial History*. Chichester: Phillimore & Co. Ltd. 1993, 1.

<sup>683</sup> John Norden, *Speculi Britanniae, the description of Hartfordshire*. (1<sup>st</sup> Edition 1598.) Amsterdam: Theatrum Orbis Terrarum. 1971, 26.

<sup>684</sup> TNA, S.P. 12/177, no. 10. Cited in Keith Fairclough, ‘The River Lea before 1767: an adequate flash lock navigation.’ *Journal of Transport History*, 3<sup>rd</sup> Series, 10 (1989), 128 – 144, 134.

<sup>685</sup> MSS held at Hertfordshire County Record Office. Cited in Martyn Denney, *London’s Waterways*. London: B.T. Batsford Ltd. 1977, 39.

1598. The River Lee ‘used to take boats and ships to Hartford though now and [for] many years past affording only access for small boates or barges to Wayre.’<sup>686</sup>

### Th 7 River Stort

Lower limit.	River Lea.			
A.	Stanstead.	16 miles.	n/a.	
RLU.	Bishop’s Stortford.	14 miles.	n/a.	Canalised.

The Stort flowed through an area which was described in the Domesday Book as ‘*inter pratum et marese*’, half meadow, half marsh. The ancient trackways avoided it.<sup>687</sup>

1485. A few years earlier a legal representative of the churchwardens had travelled on a ‘bote to ffulham to speke with my lord of London about chantry lands’.<sup>688</sup>

1584. Lord Burghley wrote ‘all those of London who wished to send anything by water to Stanstead, Ware or Hertford ... and by this all the smiths and eight or nine mills beyond do daily save in their coals and iron.’<sup>689</sup>

1586. Some bargemen came from Stanstead.<sup>690</sup>

### Th 8 River Rib

Lower limit.	River Lea.			
B.	Standon.	8 miles.	0.4 m <sup>3</sup> s <sup>-1</sup> .	1.7

There was a wharf at Standon. ‘Standon is, after all, the upstream village before (from a navigation viewpoint) the river splits into two half-size channels, much less suitable for navigation.’<sup>691</sup>

### Th 9 River Beane

Lower limit.	River Lea.		
A.	Cromer.	13 miles.	n/a.

896. The remains of Viking ships were found in the River Beane near Hertford.<sup>692</sup>

<sup>686</sup> John Norden, *Speculi Britanniae, the description of Hartfordshire. (1<sup>st</sup> Edition 1598.)* Amsterdam: Theatrum Orbis Terrarum. 1971, 4.

<sup>687</sup> John Boyes and Ronald Russell, *The Canals of Eastern England*. Newton Abbot: David & Charles. 1977, 39.

<sup>688</sup> Jacqueline Cooper, *Bishop’s Stortford*. Chichester: Phillimore. 2005, 27.

<sup>689</sup> British Library Lansdowne MS 32/105. Cited in J.G.L. Burnby and M. Parker, ‘The Navigation of the River Lee (1190 – 1790). *Edmonton Hundred Historical Society Occasional Paper*. New Series No. 36. 1978, 6.

<sup>690</sup> *Calendar of Assize Records. Surrey Indictments. Elizabeth I.* Editor J.S. Cockburn. London: HMSO. 1980, 112.

<sup>691</sup> S.M. Haslam, *The Historic River*. Cambridge: Cobden of Cambridge Press. 1991, 27.

<sup>692</sup> Thacker, F S, *The River Lee*. MSS held at Hertfordshire County Record Office. Cited in Martyn Denney, *London’s Waterways*. London: B.T. Batsford Ltd. 1977, 35.

1292. 50 quarters of wheat were sent by water from Weston in Hertfordshire to London.<sup>693</sup>

### **Th 10    River Fleet**

Lower limit.    River Thames.

Edwards        Holborn.                      1 miles.

A.                Holborn.                      1 miles.                      n/a.

B.                Camden Town.                3 miles.                      n/a.

An anchor was found just north of Camden Town so the river may have been navigable for small boats as far as this.<sup>694</sup>

1110-1133.    Stones were carried on the river for the rebuilding of St Paul's cathedral.<sup>695</sup>

1306.    A petition was presented to Parliament which stated that 'the water-course under Holbourn and Fleet bridges used to be wide and deep enough to carry 10 or 12 boats up to Fleet bridge ... and some of them passed under that bridge to Holbourn bridge.'<sup>696</sup>

1307.    A commission was set up to investigate this complaint and to cause the obstructions to be removed.<sup>697</sup>

1355.    'The Fleet ditch ought of right be ten feet wide and to run in such volume towards the east and back towards the west that boats laden with a tun of wine can float thereon.'<sup>698</sup>

### **Th 11    River Tyburne**

Lower limit.    River Thames.

B.                Claridge's Hotel.                2 miles.                      n/a.

c1585.    'In Brook Mews, below Claridge's Hotel, a 'pier wall was laid bare with iron rings for mooring boats.'<sup>699</sup>

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<sup>693</sup> James E. Thorold Rogers, *A History of Agriculture and Prices in England. Volume II.* Oxford: Clarendon Press. 1882, 662.

<sup>694</sup> N.J. Barton, *The Lost Rivers of London.* London: Phoenix House Press Ltd. 1962, 27.

<sup>695</sup> *Ibid.* page 74.

<sup>696</sup> E. Jervoise, *The Ancient Bridges of Mid and Eastern England.* Westminster: The Architectural Press. 1932, 143.

<sup>697</sup> 4 June, Calendar of Patent Rolls, 1301-07, 548.

8 November, Calendar of Patent rolls, 1307-13, 38.

<sup>698</sup> Coram Rege Roll, Hil., 30 Edward III. Rex 24. Cited in *Public Works in Mediaeval Law, Volume II.* Editor C.T.Flower. Selden Society Vol. 40 (1923), 32-36.

<sup>699</sup> E. Jervoise, *The Ancient Bridges of Mid and Eastern England.* Westminster: The Architectural Press. 1932, 144.

**Th 12 River Effra**

Lower limit. River Thames.

Edwards.	Brixton.	2 miles.	
B.	Brixton.	2 miles.	n/a.

King Canute in the 11<sup>th</sup> century and Queen Elizabeth in the 16<sup>th</sup> century sailed to Brixton.<sup>700</sup>

**Th 13 River Brent**

Lower limit. River Thames.

A.	Brentford.	1 mile.	1.3 m <sup>3</sup> s <sup>-1</sup> .	n/a.
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1443. Grant 'to freely carry goods from the wharf of "le Brieke ooste" as far as the water of Thames for the abbess of the monastery by Brayntford, co Middlesex.'<sup>701</sup> The Augustinian monastery of St. Saviour, St. Mary, St. Bridget Syon, was in Brentford.

**Th 14 River Mole**

Lower limit. River Thames.

A.	Dorking.	30 mile.	5.4 m <sup>3</sup> s <sup>-1</sup> .	1.1	
RLU.	Horley.	45 miles.	1.35 m <sup>3</sup> s <sup>-1</sup> .	0.8	S.

c1300. The manor of Thorncroft [in Leatherhead] on the River Mole purchased a boat to transport grain.<sup>702</sup>

1235. 'William de Cruce was drowned from a certain boat in the Hundred of Wotton.'<sup>703</sup> Dorking is at about the northern limit of the Hundred of Wotton.

**Th 15 River Wey**

Lower limit. River Thames.

A.	Godalming.	20 miles.	5.5 m <sup>3</sup> s <sup>-1</sup> .	1	Canalised.
RLU.	Farnham.	36 miles.	0.7 m <sup>3</sup> s <sup>-1</sup> .	1	S&G.

'A logboat was found in 1907 ½ mile NNE of Wisley Bridge.'<sup>704</sup>

1128. It is claimed that the stone for Waverley Abbey was transported on rafts on the river.<sup>705</sup>

<sup>700</sup> Martyn Denney, *London's Waterways*. London: Batesford. 1977, 11.

<sup>701</sup> Calendar of Patent Rolls, 1441-46, 159.

<sup>702</sup> TNA, MR 5745. Cited in Bruce M.S. Campbell, *et al.* *A Medieval Capital and its Grain Supply: Agrarian Production and Distribution in the London Region c 1300*. Historical Geography Research Series No 30, 1993, 59.

<sup>703</sup> C.A.F. Meekings and David Crook, Eds., *The 1235 Surrey Eyre*. Surrey Record Society, Vol. XXXII. Guildford: Surrey Record Society. 1983, 409.

<sup>704</sup> Sean McGrail, *Logboats of England and Wales, Part i*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 301-302.

<sup>705</sup> [www.anglersnet.co.uk/forums/Navigation-Rights-t24529.html](http://www.anglersnet.co.uk/forums/Navigation-Rights-t24529.html). Accessed 12.10.09.

1177-83. For the building of Waltham Abbey 'Timber was brought from the Surrey woods by road to Weybridge and thence by the rivers Wey, Thames, and Lea to Essex.'<sup>706</sup>

1540. A small boat dating from 1540 was found 8ft down when a sewer was being dug in a meadow (or in a riverbank) near Weybridge.<sup>707</sup>

1547. Thomas Seymour was granted five hundreds and the moiety of three hundreds in Sussex including 'Fysshergate, Suss., and the amercements and other profits (including passage of the water of Wele), pertaining to the said hundred and river, late of the said duke; [Thomas duke of Norfolk].'<sup>708</sup>

Harrison in 1577 and 1586 used the spelling Weie for the River Wey. It appears that there was an error either by the writer of the Patent Roll or the editor of the printed edition in replacing the i with an l.<sup>709</sup>

1558. A statute provided that 'no timber tree of Oak, Beech or Ash ... growing within fourteen miles of the Sea, or of any Part of the Rivers of *Thames, Severn, Wye, Humber, Dee, Tine, Teese, Trent* or any other River, Creek or Stream, by the which Carriage is commonly used by Boat or other Vessel to any Part of the Sea.' Exception was made for the County of *Sussex*, the Weild of *Kent*, and the *Parishes of Charlewood, Newdigate and Ligh* in the Weild of the county of *Surrey*.<sup>710</sup>

This implies that either the Wey or the Mole was commonly used by boats. Also that one or more of the rivers of Kent and of the rivers of Sussex were commonly used by boats more than 14 miles from the sea. Due to the sink on the Mole it is most likely that this refers to the Wey.

1560. A licence was granted for the use of wood from Wotton, otherwise Wodton, and also from Abynger, Capell and Ockle, otherwise Ockley otherwise Ocklegh, for the smelting and working of iron ; 'notwithstanding stat. 1 Eliz.'<sup>711</sup>

Since Wotton is more than 15 miles from the River Thames either the River Wye or the River Mole must have been considered to be navigable otherwise no licence would have been required.

16<sup>th</sup> C. 'The Thames, Lea, Wey and associated systems formed a massive source for London's barley and malt, even in the sixteenth century.'<sup>712</sup>

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<sup>706</sup> Austin Lane Poole, *From Domesday Book to Magna Carta. 1087-1216. 2<sup>nd</sup> Edition*. Oxford: Oxford University Press. 1998, 80. (1<sup>st</sup> Edition 1951.)

<sup>707</sup> Gillian Hutchinson, *Medieval Ships and Shipping*. London: Leicester University Press. 1994, 198.

<sup>708</sup> Calendar of Patent Rolls, Edward VI, 1547-48, 27.

<sup>709</sup> Raphaell Holinshed, William Harrison, *et al. The First and Second Volumes of the Chronicles. 2<sup>nd</sup> Edition*. Editor John Hooker. London: J. Johnson *et al.* 1807, 86

Harrison Will., *The Description of Britaine*. In Holinshed's Chronicle, 1577. Second ed. 1586. Cited in Eilert Ekwall, *English River-Names*. Oxford: Clarendon Press. 1968, 451.

<sup>710</sup> (1558) 1 Elizabeth I. c. 15.

<sup>711</sup> Calendar of Patent Rolls, 1558-60, 340.

<sup>712</sup> J.A. Chartres, *Internal Trade in England 1500 – 1700*. London: Macmillan Press Ltd for The Economic History Society. 1977, 18.

**Th 16    River Middlesex Colne**

Lower limit.    River Thames.

A.	Uxbridge.	10 miles.	n/a. divided river.
B.	St Albans.	30 miles.	n/a.
RLU.	West Drayton.	7 miles.	n/a. divided river.

c960. 'Hard by the bank they happen'd upon certain oaken planks, which had nails sticking in them, and were covered over with pitch, as also some other shipping-tackle, particularly, Anchors half eaten with rust, and Oars of fir.'<sup>713</sup>

11thC. 'The first use of Caen stone in England seems to have been at St. Albans, where Paul of Caen was appointed fourteenth Abbot in 1077.' It seems likely that the stone would have been transported by water.<sup>714</sup>

1433. A commission *de kidellis* was appointed 'pursuant to the statutes of 25 Edward II and of 1 Henry IV to ...(names) ... for the water and great river called 'Colneystreme' between the towns of Woxebrigge and Stanes, in the counties of Buckingham and Middlesex.'<sup>715</sup>

1593. Norden wrote of this river 'Though this river as some affirme have passed shipping to Saint Albans. *Minima credendum*.'<sup>716</sup>

1598. If any boates in former times, came thither, [to St Albans] they came from Stanes and up the Colne river to *Rickmansworth* to *Watforde* and so the *S. Albans*, but in no sense to the place where the anchor was founde ... There is indeed a field below *S. Albans* called *keyfeyld*, and below *Rickmansworth* called *Westhythe*, which may in some sort argue some such passage for boates' Norden continues by giving possible alternative derivations for these names.<sup>717</sup>

1613. Drayton wrote of the Colne:-

Thou saw'st great-burthen'd Ships through these thy valleyes pass,  
Where now the sharp-edg'd Sithe sheeres up the spyring grasse.<sup>718</sup>

Selden considered it more likely that the anchors that have been found were left 'of fish-boats in large pooles'.<sup>719</sup>

<sup>713</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 299.

<sup>714</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 23 fn 1.

<sup>715</sup> Calendar of Patent Rolls, 1429-36, 303.

<sup>716</sup> John Norden, *Speculum Britanniae, an historical and chorographical description of Middlesex*. (1593) London: D. Browne and J. Woodman. 1723, 19.

<sup>717</sup> John Norden, *Speculi Britanniae, the description of Hartfordshire*. (1<sup>st</sup> Edition 1598.) Amsterdam: Theatrum Orbis Terrarum. 1971, 11.

<sup>718</sup> Michael Drayton, *Poly-Olbion*. London: Mathew Lowndes. 1613, 314. (Reprinted Shakespeare Head Press 1961)

<sup>719</sup> *ibid.* 324.

**Th 17    River Bulbourne/Gade**

Lower limit.    River Clone.  
 B.                    Berkhamsted.                    11 miles.

12<sup>th</sup> C. Hutchinson states that stone for the building of Berkhamsted Castle was transported by water.<sup>720</sup>

**Th 18    River Loddon**

RLU.                    Swallowfield Bridge. 13 miles.

**Th 19    River Kennet**

Lower Limit.    River Thames.  
 A.                    Hungerford. 30 miles.                    4.0 m<sup>3</sup>s<sup>-1</sup>.                    1.3                    Divided river.  
 B.                    Marlborough. 40 miles.  
 RLU. Not in *BCU Guide* due to perceived legal objections. Assumed 30 miles.

Selkirk quotes a report of a Roman villa beside the River Og, a few miles north of the Roman town of Cuetio on the River Kennet. It was reported that the villa had jetties and that a boat-hook was found.<sup>721</sup>

During the excavation of the 1<sup>st</sup>/4<sup>th</sup> century villa complex at Littlecote, near Ramsbury, two water-filled dykes, cut at right angles to the River Kennet, were identified by Bryn Waters as boat-channels used by shallow-draught barges.<sup>722</sup>

Ann Cole considers that 'Hidden' was a dry valley running down to the Kennet at Kintbury where a landing place would have been.<sup>723</sup>

1452. A commission *de kidellis* was issued to certain people 'in the waters called Kenett, Aldeburne and Lambornestrem between Hungerford and Reading'.<sup>724</sup>

1673. Bourne stated that the river was 'large and navigable for Barges'.<sup>725</sup> At this time the river had not been modified.

<sup>720</sup> Gillian Hutchinson, *Medieval Ships and Shipping*. London: Leicester University Press. 1994, 126.

<sup>721</sup> The Daily Telegraph 25.4.97. Cited in Raymond Selkirk, *Chester-Le Street & its place in history*. Durham: Casdec Printcentre. 2001, 143

<sup>722</sup> James Ellis Jones, *The Maritime and Riverine Landscape of the West of Roman Britain*. BAR British Series 493. 2009, 54.

<sup>723</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 71.

<sup>724</sup> Fred S. Thacker, *Kennet Country*. Oxford: Basil Blackwell. 1932, 307.

<sup>725</sup> Richard Blome, *Britannia*. London: Tho. Roycroft. 1673, 39. Cited in T.S. Willan, 'Navigation of the Thames and Kennet 1600 – 1750.' *Berkshire Archaeological Journal*. Vol. 40: 2. (1936), 146–156, 151.

**Th 20 Badford's Brook**

Lower limit. River Thames.

B. 2 miles west of Wallingford. 2 miles.

17thC. 'Navigation on the system westward from the western edge of Wallingford occurred from the late 17<sup>th</sup> century but would have been equally possible in medieval times.'<sup>726</sup>

**Th 21 River Thame**

Lower limit. River Thames.

A. Wheatley. 17 miles. 3.9 m<sup>3</sup>s<sup>-1</sup>. 0.45 P&R. G.

RLU. Aylesbury. 31 miles. n/a.

1241. 'Four men of Rycote were drowned from a boat in the river Thame.'<sup>727</sup>

1241. 'One man fell from a boat into the water at Harpeford [in Wheatley] and was drowned there.'<sup>728</sup>

**Th 22 River Ock**

Lower limit. River Thames.

A. Stanford-in-the-Vale. 2 miles. n/a.

1581. Re traffic on the Thames above Burcot in 1581 and the River Ock. 'The churchwardens of Stanford-in-the-Vale, Berkshire, paid 4d 'for bringing leade from Oxforde by botte'. This implies that a boat could pass from Oxford to Abingdon and then up the river Ock.'<sup>729</sup>

**Th 23 River Cherwell**

Lower limit. River Thames.

Edwards. Islip. 7 miles.

A. Islip. 7miles. n/a.

RLU. Aynho. 20 miles. n/a.

See River Ray. Usable to the confluence at Islip.

1398. It was presented that a bridge called Shutpulche at Marston was broken. Flower considered that the real name was Shutpusche and that it was a manual drawbridge. This would have enabled boats to navigate on the river Cherwell.'<sup>730</sup>

1496. 'There was a hythe on the Cherwell, probably above Magdalen Bridge.'<sup>731</sup>

<sup>726</sup> A.J. Grayson, 'Bradford's Brook.' *Oxoniensia*. Vol. 69. (2004), 29-44, 29 and 43.

<sup>727</sup> *The Oxfordshire Eyre 1241*. Editor Janet Cooper. Oxfordshire Record Society, Vol. 56. 1989, 125.

<sup>728</sup> *Ibid.* page 146.

<sup>729</sup> W. Haines, 'Stanford churchwardens' Accounts 1552-1662.' *The Antiquary*, xvii (1888), 172.

<sup>730</sup> Coram Rege Roll, Easer, 21 Richard II. Rex 11. Cited in *Public Works in Mediaeval Law, Volume 1*. Editor C.T. Flower. Selden Society Vol. 32. 1915, 123 and page xxii..



1535. Sir Walter Stoner pulled up a weir at Water Eyton.<sup>732</sup>

1572. The mayor proceeded 'by boat down the Cherwell to Magdalene Bridge.'<sup>733</sup>

#### **Th 24    River Ray**

Lower limit.    River Cherwell.

Edwards.        Ot Moor.                      2 miles.

A.                Fencott.                      4 miles.        1.6 m<sup>3</sup>s<sup>-1</sup>.        Flat.    Canalised.

1260. 'The toponyms of people who were accused of attacking a mill-dam at Islip may imply that men from Chalton-on-Otmoor via Merton, Arncott, Blackthorn, Piddington, [Steeple?] Claydon were involved.' Blair implies that this may have been because their transport interests were obstructed.<sup>734</sup>

1294. A commission was appointed to view and remove the 'gorces and weirs in the Thames, in the counties of Middlesex, Surrey, Berks, Buckingham and Oxford, as it appears that divers magnates and others having tenements by the river Thames and the river of the moor of Ottermor, between the city of London and the said moor, have erected gorces and weirs where they were not want to be, and have straitened and raised the height of others, ... by reason whereof vessels cannot pass ass they were wont.'<sup>735</sup>

1375. A commission was set up to 'survey the hythe called La Ree of Ottemore, co Oxford, which is said to be so choked in divers places by the planting of trees and making of sluices of timber, stone and earth therein ....'<sup>736</sup>

#### **Th 25    River Evenlode**

Lower limit.    River Thames.

A.                Bladon.                      8 miles.        3.7 m<sup>3</sup>s<sup>-1</sup>.        1.1        S.

RLU.            Charlbury.                    15 miles.        n/a.

1241. 'One man was drowned from a boat in the river Bladon. [Evenlode.]'<sup>737</sup>

#### **Th 26    River Windrush**

Lower limit.    River Thames.

A.                Taynton.                      15 miles.        2.2 m<sup>3</sup>s<sup>-1</sup>.        1.2        C&G.

RLU.            Bourton-on-the-water.    23 miles.        0.73 m<sup>3</sup>s<sup>-1</sup>.        1.9        Modified.

Pre 1549. Some of the stone for St Mary's Church Reading 'was transported by river from the Taynton quarry on the Windrush valley, Oxfordshire.'<sup>738</sup>

<sup>731</sup> Mary Prior, *Fisher Row*. Oxford: Clarendon Press. 1982, 110.

<sup>732</sup> Letters and Papers, Foreign and Domestic, of the Reign of Henry VIII. Volume 9, 170.

<sup>733</sup> H.E. Salter, *Medieval Oxford*. Oxford: Clarendon Press. 1936, 67.

<sup>734</sup> John Blair, 'Transport on the Upper Thames.' In John Blair, Ed., *Waterways and Canal-building in Medieval England*. Oxford: Oxford University Press. 2007, 268.

<sup>735</sup> Calendar of Patent Rolls, 1292-1301, 114.

<sup>736</sup> Calendar of Patent Rolls, 1374-77, 157.

<sup>737</sup> *The Oxfordshire Eyre 1241*. Editor Janet Cooper. Oxfordshire Record Society, Vol. 56. 1989, 150.

17thC. Much of the Reigate stone used in Westminster Abbey was 'replaced by Taynton oolite from Oxfordshire, brought by river from Burford.'<sup>739</sup>

1641. John Taylor rowed from Burford to Oxford in August in a year of 'great drought'.<sup>740</sup>

### **Th 27 River Churn**

Lower limit. River Thames.  
B. Cirencester. 7 miles.

1641. John Taylor rowed upstream to Cirencester in July in a year of 'great drought'.<sup>741</sup>

## **Rivers of the South East**

### **SE 1 River Medway**

Lower limit.	Allington.			
Edwards.	Maidstone	2 miles.		
A.	Tonbridge.	19 miles.	n/a.	Canalised.
B.	Penshurst.	25 miles.		
RLU.	Balls Green.	35 miles.	n/a.	
	(Nr Withyham Stn.)			

References to the use of the river downstream of Maidstone are not quoted. See the Act of 1423 below and 'The river is tidal nearly to Maidstone, and has been navigable up to the town from time immemorial for craft up to 50 tons.'<sup>742</sup>

*Edwards* quotes a reference to timber felled in Tonbrugge forest and then carried by 'land and water' to Rochester. It is not stated where the timber was placed on the river. This is not accepted here as a record of the use of the river to Tonbridge.

'Nowadays we are accustomed to seeing a river consisting of one main current with firm banks defining its course. In the fifteenth century, however, the Medway looked very different. Doubtless in some places it did have a recognisable main course, especially where the river valley narrowed or the water was channelled for strategic purposes at Tonbridge or Maidstone. But in Hadlow the floodplain was, and still is, wide and a multitude of subsidiary streams wound their way alongside. Farmers having land hereabouts naturally altered the course of the streams to suit themselves and where

<sup>738</sup> [www.oxford-ougs.fsnet.co.uk/Fieldnotes/Reading.htm](http://www.oxford-ougs.fsnet.co.uk/Fieldnotes/Reading.htm). Dated 19/03/2005.

<sup>739</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 117.

<sup>740</sup> John Taylor, *John Taylor's last Voyage*. London: John Taylor. 1641, 22. Contained in *Works of John Taylor. Second Collection*. The Spencer Society 14. 1873. New York: Burt Franklin. 1967.

<sup>741</sup> *Ibid.*

<sup>742</sup> Charles Hadfield, *The Canals of South and South East England*. Newton Abbot: David and Charles. 1969, 60.

our survey touches on the Medway we are aware that the sluices and weirs controlling the watercourses are an important and integral part of daily lives.’<sup>743</sup>

‘Additional details about the condition of the river in 1627-1629 make it clear that occupiers of land on the banks had been accustomed for centuries past to do what they liked with their own stretch of water. Intelligent self-interest and common sense obliged them to clear away trees and shrubs from the banks and pull out fallen logs, but individuals had freely constructed bays to make use of the flowing water for washing and watering animals as well as other jobs, and had erected weirs to catch goodly quantities of fish for themselves and for sale.’<sup>744</sup>

‘Several logboats were found in c 1720 in the marshes near the R. Medway above Maidstone.’<sup>745</sup> The fact that one of them was used as a boat after excavation may indicate that they were used in the period 1200-1600.

1284. There was a landing place from boats at Hadlow Stair.<sup>746</sup>

1423. Commission to ... (names) ... to hold inquisition as to weirs, stakes and kiddells ... Thames and Medeweie, from a place called Reculver to Yendale, and thence to the bridge of Maydeston, to the impediment of navigation, contrary to the statutes of 25 Edward III and 45 Edward III.<sup>747</sup>

1460. ‘The Stair was the wharf and landing place on the Medway where most goods for Hadlow were loaded and unloaded. It is usual to say that the Medway was not made a navigable river until the 1740’s, but that was for larger vessels of 4 tons and more. Before that the river was constantly used by small, flat-bottomed craft plying up and down on local errands carrying small goods. Hadlow people were sufficiently satisfied to make no loud complaints. It was not until the second half of the sixteenth century when commercial traffic intensified, that an agitation began to move larger vessels down the river, resulting in the early seventeenth century in a survey of all the obstructions, and endeavours to clear them.’<sup>748</sup> There was a ‘lane to the Medway’ leading to the Stair, or wharf.<sup>749</sup>

c1567. In a survey of 1627-29 it is stated that ‘David Willard, who had occupied the forge at Postern some 50 to 60 years previously, was blamed for having turned the course of the Medway “for his own use for the passage of his iron boats from thence down to Fishall.”’<sup>750</sup>

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<sup>743</sup> Joan Thirsk, Ed., *Hadlow Life Land and People in a Wealden Parish 1460 – 1600*. Kings Lynn: Heritage Marketing & Publications Ltd. 2007, 54.

<sup>744</sup> *Ibid.* page 49.

<sup>745</sup> Sean McGrail, *Logboats of England and Wales, Part i*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). (1978), 237.

<sup>746</sup> Joan Thirsk, Ed., *Hadlow Life Land and People in a Wealden Parish 1460 – 1600*. Kings Lynn: Heritage Marketing & Publications Ltd. 2007, 97.

<sup>747</sup> Calendar of Patent Rolls, 1422-29, 123.

<sup>748</sup> Joan Thirsk, Ed., *Hadlow Life Land and People in a Wealden Parish 1460 – 1600*. Kings Lynn: Heritage Marketing & Publications Ltd. 2007, 8-9.

<sup>749</sup> *Ibid.* page 52.

<sup>750</sup> *Ibid.* page 55.

1570. 'Kent hath also sundrie fresh rivers and pleasaunt streames, especially Derent, Medway, and Stowre, of the which, Medway is more navigable then the rest, for which cause, and (for that it crosseth the Shyre almost in the midst) it is the most beneficiall also.'<sup>751</sup>

1580. 'From at least 1580 small boats could intermittently travel upstream from Maidstone for six miles to Yalding.'<sup>752</sup>

1586. The river divided into five streamlets at Tonbridge.<sup>753</sup>

1627. 'When another attempt was made by the Sewer Commissioners to clear the river from Penshurst to Maidstone, and the locals protested at new restrictions which seemed to them to prevent them fishing from their boats and taking their friends on board with them.'<sup>754</sup>

1635. 'By taking down the wears and one foot bridge, and cutting down some wood on the banks, boats have passed since Hallowtide last, five miles up the river [from Maidstone] with two tons and brought down six tons and a half. The chief hindrance arises from undertenants who oppose the towing of boats upon the bank sides.'<sup>755</sup>  
Note:- the objection was to the towing, not to the boats on the river.

### **River Len**

Lower limit. River Medway.  
Edwards. Leeds Castle.

*Edwards* quoted a record that in 1359 'Timber, stone, iron, boards, tiles, charcoal and all other necessities' were taken to that place [Ledes' Castle] 'by land and water'.<sup>756</sup> If the order of 'land' and 'water' is correct then the final part of the journey would have been up the River Len. This record is not accepted here.

### **SE 2 River Beult**

Lower limit. River Medway.  
B. Headcorn. 12 miles.  
RLU. Headcorn. 12 miles. n/a. Modified. Weirs.

1634. James Farrance was indicted for erecting a dam at Headcorn. There is no obvious reason for this unless the dam obstructed the use of the river.<sup>757</sup>

<sup>751</sup> William Lambarde, *A Perambulation of Kent*. (1<sup>st</sup> edition 1570.) Chatham: Baldwin, Cradock, and Joy. 1826, 5.

<sup>752</sup> B.M. Add, MS. 34218, ff. 37-57. Cited in C.W. Chalkin, 'Navigation Schemes on the Upper Medway, 1600-1665.' *The Journal of Transport History*, Vol. V, (1961-1962), 105-115, 107.

<sup>753</sup> William Camden, *Britain*. Ed. and Trans. Philemon Holland. London: Ioyce Norton and Richard Whitaker. 1637, 330.

<sup>754</sup> Joan Thirsk, Ed., *Hadlow Life Land and People in a Wealden Parish 1460 – 1600*. Kings Lynn: Heritage Marketing & Publications Ltd. 2007, 48-49.

<sup>755</sup> Calendar of State Papers, Domestic Series, of the Reign of Charles I. 1635-1636, 64.

<sup>756</sup> Calendar of Patent Rolls, 1358-61, 187.

<sup>757</sup> *Calendar of Assize Records. Kent Indictments. Charles I.* Editor J.S. Cockburn. London: HMSO. 1995, 231, no 1123.

**SE 3 River Kentish Stour**

Tidal Limit.	Fordwich.				
Edwards.	Canterbury.	2 miles.			
A.	Wye.	14 miles.	$2.2 \text{ m}^3 \text{ s}^{-1}$ .	1.6	C.
B.	Great Chart.	20 miles.			
RLU.	Ashford.	18 miles.	$2.1 \text{ m}^3 \text{ s}^{-1}$ .	0.85	Confl.

Roman. A Roman Quay was found 18-20 feet below the present ground level on the River Stour in Canterbury.<sup>758</sup>

Roman. A riverside Roman port has been found at Sturry.<sup>759</sup>

An anchor was found at Chilham, six miles upstream of Canterbury.<sup>760</sup>

During excavations it was found that 13 ft. 6ins. below the present ground level there was the bed of an early river, possibly Anglo-Saxon. The present river level is 7 ft. below ground level and the bed of the river about 3 ft below this. It appears that there was no river at this point in Roman times.<sup>761</sup>

1264. In August 1264 the Minor Friars of Canterbury received a licence to build a bridge "over the water of Stour between the site of their house and their place called Brokmede," on condition that "little ships (*navicule*) may pass under without impediment.",<sup>762</sup> Brokmede was an island between two branches of the River Stour in Canterbury.

1309. A licence was granted to the Minor Friars of Canterbury to build a bridge for the benefit of persons wishing to attend their church, and this bridge also had to be of sufficient height to allow 'a clear passage for boats underneath'.<sup>763, 764</sup> It would appear that this bridge led to an island site and so it was one branch of the divided river which was used by boats.<sup>765</sup>

1311-12. Oats were transported from Great Chart, Little Chart, Hollingbourne and Appledore to Canterbury. This would normally only have been economically viable if river transport was used.<sup>766</sup>

<sup>758</sup> H.T. Mead and K.H. Jones, 'Roman Site and Finds, Stour Street, Canterbury.' *Archaeologia Cantiana*, Vol. 48. (1936), 219-224, 219.

<sup>759</sup> F. Jenkins, 'Recent Excavation in the Canterbury District. Sturry.' *Archaeologia Cantiana*. Vol. 62. (1949), 145-146.

<sup>760</sup> D. Gardiner, *Canterbury*. London: The Sheldon Press. 1923, 9.

<sup>761</sup> Frank Jenkins, 'Archaeological Notebook, Canterbury 1949-51.' *Archaeologia Cantiana*, Vol. 64. (1951), 63-73, 68.

<sup>762</sup> Calendar of Patent Rolls, 1258-66, 342.

<sup>763</sup> E. Jervoise, *The Ancient Bridges of the South of England*. Westminster: The Architectural Press. 1930, 42.

<sup>764</sup> Calendar of Patent Rolls, 1307-13, 178.

Inquisitions *Ad Quod Damnum* file **73, No 8**. Cited in VHC Kent. Vol. II. 191.

<sup>765</sup> D. Gardiner, *Canterbury*. London: The Sheldon Press. 1923, 79.

<sup>766</sup> Bruce M.S. Campbell *et al.*, *A Medieval Capital and its Grain Supply*. Historical Geography Research Series Number 30. 1993, 152.

16<sup>th</sup> C. Sixteenth-century records show boats reaching as high up the river as Wye, at least on occasions.<sup>767</sup>

1515. An Act was passed for making the River Stour navigable to Great Chart.<sup>768</sup> The Act did not create a right of navigation. It seems the right must have existed, and been used by small boats, prior to the passing of the Act.

1592. ‘The Privy Council ordered the Kentish justices of the peace to put in present execution an Act of 6 Henry VIII, 1515 for making the Kentish Stour ‘navigable or portable for craiers, boats and lighters to pas to the towne of Fordwich in such sort as they presently do from Fordwich to the towne of Sandwich.’ As Canterbury could not bear the whole cost, it was to be levied on the county as a whole.’<sup>769</sup> [It seems that the first reference to ‘Fordwich’ should be to ‘Canterbury’ or a place further upstream.]

1628. ‘A wooden bridge crossed the Stour in the fourteenth century. The present stone bridge dates from 1628.’<sup>770</sup> Hence prior to 1628 the bridge may have been high enough to allow boats to pass under it.

18<sup>th</sup> century. ‘In the museum is an interesting collection of engravings and etchings which show views of the city during the eighteenth century. Westgate and Blackfriars Bridges are depicted with pointed arches, as is also one shown alongside a large mill. This last one is difficult to identify.’<sup>771</sup> The bridges may have been pointed to make it possible for boats to pass under or because it made construction easier.

1770. Lambarde refers to the river at Ashford as an example of ‘a great river’.<sup>772</sup>

#### SE 4 Little Stour

Tidal limit.	West Stourmouth.			
A.	Bekesbourne.	6 miles.	n/a.	
B.	Bridge.	7 miles.		
RLU.	Seaton	3 miles.	n/a.	Modified.

Bekesbourne was one of the non-corporate members of the Cinque Ports.<sup>773</sup> This statement proves that the manor had the privileges of the Cinque Ports not that it necessarily had navigable waters.

‘Lyon in his “History of Dover” says, “The fruitful valley in which we now find the villages of Littlebourne, Beakesbourne, Patricksbourne and Bridge, at the time of Julius Caesar’s expedition was a considerable branch of the large estuary, leading through the

<sup>767</sup> W.G. Hoskins, *Fieldwork in Local History*. London: Faber and Faber Limited. 1967, 60

Raymond Selkirk, *On the Trail of the Legions*. Ipswich: Anglia Publishing. 1995, 56.

<sup>768</sup> (1514) 6 Henry VIII c 17.

<sup>769</sup> Acts of the Privy Council, 1591-92, 535.

<sup>770</sup> Paul Burnham and Maureen de Saxe, *A New History of Wye*. Wye: Wye Historical Society. 2003, 15.

<sup>771</sup> E Jervoise, *The Ancient Bridges of the South of England*. Westminster: The Architectural Press. 1930, 42

<sup>772</sup> William Lambarde, *A Perambulation of Kent*. (1<sup>st</sup> edition 1570.) Chatham: Baldwin, Cradock, and Joy. 1826, 260.

<sup>773</sup> Reverend John Lyon, *The History of the Town and Port of Dover. Volume 1*. Dover: The Author. 1813, iii.

central vale from Rutupiae (Sandwich) to Ashford. In the reign of Edward III this branch had a sufficient depth of water to float one of their ships of war.<sup>774</sup>

1327-1377. ‘Philippott (*Villare Cantianum*, 1776, p. 62) stated, that in the reign of Edward the Third “there was a small navigation out of the river Stour up to this place, referring to Bekesbourne. In fact, Bekesbourne was at one time a non-corporate member of the Cinque Ports, attached, curiously enough, to Hastings as head port (Boys, *Collections for History of Sandwich*, 1792, p. 770).’<sup>775</sup>

## SE 5 River Dour

Tidal limit. The coast at Dover.

B. ½ mile upstream from the coast.

A boat dating from around 1550 BC was found up a side creek of the river. ‘The valley floor was marshy along the course of the river with grassland around it.’<sup>776</sup>

## SE 6 Eastern Rother

Tidal limit. Scots Float.

Edwards. Etchingham. 20 miles.

A. Etchingham. 20 miles.  $1.5 \text{ m}^3 \text{ s}^{-1}$ . 1.6 S.

RLU. Etchingham. 20 miles.  $1.5 \text{ m}^3 \text{ s}^{-1}$ . 1.6 S.

‘The Rother was made navigable at a very early period by means of “shuts,” probably a primitive form of lock, remains of which have been found at Appledore.’<sup>777</sup>

‘There was formerly an erection across the Rother, opposite Bodiam Castle, called the shuts, which was built for the purpose of penning back the water to bring canons down from the foundry at Robertsbridge.’<sup>778</sup>

‘At Udiam, ... there were “Iron Houses for storage pending shipment.”’<sup>779</sup>

‘It has long been known from documentary sources that Small Hythe was one of the most important shipbuilding centres of medieval England.’<sup>780</sup>

150-300. Iron was taken from Bodiam by boat.<sup>781</sup>

<sup>774</sup> William Holloway, *The History of Romney Marsh*. London: John Russell Smith. 1849, 96. The text Cited has not been found in the original work.

<sup>775</sup> George M. Meyer, ‘Early water-mills in relation to changes in the rainfall of East Kent.’ *Quarterly Journal of the Royal Meteorological Society*. Vol. 53. (1927), 407-419, 409.

<sup>776</sup> [www.dover.gov.uk/museum/boat/lab.asp](http://www.dover.gov.uk/museum/boat/lab.asp). Accessed 01/05/2006.

<sup>777</sup> Ernest Straker, *Wealden Iron*. 2<sup>nd</sup> Edition. Newton Abbot: David & Charles. 1969, 189.

<sup>778</sup> William Holloway, *The History of Romney March*. London: John Russell Smith. 1849, 82.

<sup>779</sup> Ernest Straker, *Wealden Iron*. 2<sup>nd</sup> Edition. Newton Abbot: David & Charles. 1969, 189.

<sup>780</sup> Peter S. Bellamy and Gustav Milne, ‘An Archaeological Evaluation of the Medieval Shipyard Facilities at Small Hythe.’ *Archaeologia Cantiana*. Vol. CXIII. (2003), 353-382, 379.

<sup>781</sup> Henry Cleere and David Crossley, *The Iron Industry of the Weald*. 2<sup>nd</sup> Edition. Cardiff: Merton Priory Press Ltd. 1995, 56, 63, 83.

1272-1307. 'An action was started by the Abbott of Robertsbridge against the lord of the Manor of Knell for enclosing salt marshes from the sea, whereby barges and boats were hindered from bring up provisions and merchandize, to the market at Robertsbridge.'<sup>782</sup>

1287. A 16<sup>th</sup> century boat was found in an old channel of the river.<sup>783</sup>

'This ancient ship was 64 ft long, by 15 ft beam, 9 ft depth, and was when discovered, over 10 ft *below* the present ground level, buried in *sea sand* and mud.'<sup>784</sup>

14<sup>th</sup> C. 'Records exist of the carriage by water of stone for the building of Bodiam Castle in the 14<sup>th</sup> century.'<sup>785</sup>

1300-1420. 'Large areas of woodland in the Weald were an important source for firewood, timber and tan. Wood was cut either side of the River Rother in Kent and Sussex for export, particularly to Flanders, and also for shipment to elsewhere in England. There were wharves on the Rother in Kent at Reading Street, Maytham and Newenden, and in Sussex at Bodiam, on the River Brede at *Damme* and *Sloghdam* near Winchelsea and in the Combe Haven valley at Bulverhythe. Land transport was used to reach the ports from woods, such as those in Battle not within reach of the Rother, and the presence of wood-merchants at Cranbrook and elsewhere in the Kent Weald suggest that it was moved similar distances from the north to the quays on the Rother.'<sup>786</sup>

1326. Timber was carried from Tonebrugge 'to Newendon'.<sup>787</sup>

1327 '(x) Hire of 3 scows (*shoutarum*) and 1 ship for carriage of the timber from Newynden to Dover, viz. 2 scows each carrying 40 tons (*pondus quadraginta doliorum vini*) for 3 trips, 1 carrying 30 tons for 1 trip; and the ship carrying 50 tons for a trip ....'

(xii) carriage from Newenden to Dover castle of 32 bloms (*blomarum*) of iron.<sup>788</sup>

1331. Commissioners were appointed to investigate the blockage of the river by the throwing out of ballast [at Bodiam] and were ordered to appoint places where ballast was to be discharged.<sup>789</sup>

1337 An old trench was 'so obstructed by shingle and sand that ships can no longer pass by it to Romeneye as they used to do, as there is another trench made by the sea

<sup>782</sup> William McPherson Rice, 'Account of an Ancient Vessel recently found under the old bed of the river Rother in Kent.' *Archaeologia*, Vol. XX. (1790), 553-565, 564.

<sup>783</sup> Valerie Fenwick, *Graveney Boat*. BAR British Series 53. Nautical Museum, Greenwich, Archaeological Series No. 3. 1978.

<sup>784</sup> Harold Sands, 'Bodiam Castle' *Sussex Archaeological Collection*. Vol. 46. (1903), 114-133, 118.

<sup>785</sup> P.A.L. Vine, *Kent & East Sussex Waterways*. Midhurst: Middleton Press. 1989, text above map XXII.

<sup>786</sup> Mark Gardiner, 'The geography and peasant rural economy of the eastern Sussex High Weald, 1300-1420.' *Sussex Archaeological Collection*. Vol. 134. (1996), 125-139, 133.

<sup>787</sup> Calendar of Memoranda Rolls, 1326-27, 95, 339.

<sup>788</sup> Calendar of Memoranda Rolls, 1326-27, 339-40.

<sup>789</sup> Rotuli Parliamentorum, 12 May, 1 Henry IV. Quoted in Mark Anthony Lower, 'Bodiam and its Lords.' *Sussex Archaeological Collection*. Vol. 9. (1857), 275-302, 296.



better adapted for the passage of ships.’<sup>790</sup> The new trench was 2.5 km long and 100m. broad.<sup>791</sup>

1345 Provisions were transported from Newenden to Portsmouth by ship.<sup>792</sup>

1348 A commission was set up to investigate the building of a sluice and a wall across the river. It was claimed that ‘it will be to the great damage of the King and the petitioner (James de Echyngham) especially as by it the passage of ships and boats with victuals from divers .. manors .. to (the) manor of Echyngham will be hindered, as well as to the destruction of his market town of Salehurst, situated on that water and his market there.’<sup>793</sup>

1354 It was claimed that ships from France, Flanders, Zeeland, Estland and elsewhere were loading their ships higher up the river than at Sloghdam with wool and covering it with firewood and so avoiding dues. The king instructed that boats should only load at Sloghdam and so pay dues.<sup>794</sup>

1357 Men of Cranebrok and other towns and places within La Welde, co. Kent claimed that in times past they used to sell their firewood at their will at Rethyng, Bodyam, Maythame, Newenden and elsewhere in those parts and that ‘there was no abundant growth of wood in those in la Welde’. They asked to be allowed to continue selling wood from the river bank. The king allowed their petition.<sup>795</sup>

1382 Certain persons alleged ‘that divers goods of the King’s enemies in ships, some belonging to the king’s friends and some to his enemies, captured by them in war in the year 46 Edward III (1373) and taken to Dover, Rye and Apoldre, were unjustly taken from them by Richard Lyons, now deceased, and that no restitution has been made by him or his executors.’<sup>796</sup>

14<sup>th</sup> C. Even smaller streams, like the Lymne in Kent or the Welland in Northamptonshire, could be described as ‘the king’s highroad’.<sup>797</sup> Limene or Lymne was another name for the River Rother.

15<sup>th</sup> C. Stone for the walls of Bodiam came up to the castle dock from Wadhurst quarries.<sup>798</sup>

<sup>790</sup> Calendar of Patent Rolls, 1334-38, 457.

<sup>791</sup> Jill Edison, ‘The Purpose, Construction and Operation of a 13<sup>th</sup> Century Watercourse: The Rhee, Romney Marsh, Kent.’ In Anthony Long, *et al. Romney Marsh. Coastal and Landscape Change through the Ages*. Oxford University School of Archaeology. Monograph 56. 2002, 135.

<sup>792</sup> Exchequer K.R. Accounts, 566/20; 588/17, 18, 22 Cited in R.A. Pelham, ‘Fourteenth-Century England.’ In Darby H.C., Ed., *An Historical Geography of England before 1800*. Cambridge: The University Press. 1936, 262.

<sup>793</sup> Calendar of Patent Rolls, 1348-50, 80, 177-78.

William Dugdale, *The History of Imbanking and Draining of Diverse Fens and Marshes.*, 2nd Edition. London: Richard Geast. 1772, 84.

<sup>794</sup> Calendar of Patent Rolls, 1354-58, 70.

Calendar of Close Rolls, 1354-60, 37.

<sup>795</sup> Calendar of Patent Rolls, 1354-58, 578-79.

<sup>796</sup> Calendar of Patent Rolls, 1381-85, 144.

<sup>797</sup> Edward Miller and John Hatcher, *Medieval England: Towns, Commerce and Crafts 1086 – 1348*. London: Longman. 1995, 146

<sup>798</sup> Randall, *Wealden Waterways*. Undated typescript in Sussex Archaeological Society Library.

1400 A commission was set up, 'to survey the port of Wynchelse from a place called Comer to Bodyham and appoint certain convenient places where stones, sand and other ballast may be shot and to proclaim that such shall not be shot in the channel, which in this manner been filled up and blocked, and to certify to the King.'<sup>799</sup>

1540-1569. John Biddenden was contracted to carry 18 tons of iron from 'The Oke' above Bodiam Bridge to Rye. In the 1560's cast-iron plates were shipped to Rye from Cardiff and carried up the Rother to Bodiam.<sup>800</sup>

1541. The Robertsbridge works were able to ship iron from Bodiam Bridge.<sup>801</sup>

1542-74. 'Robertsbridge iron only had to go by cart as far as Bodiam bridge, whence it was carried by barge down the Rother.'<sup>802</sup>

'Bodiam bridge was the collecting point for iron from elsewhere.'<sup>803</sup>

Hence it seems that Bodiam was the upper limit of navigation for barges carrying iron in the 1560s.

1553. Iron was shipped in smaller barges from Udiam Bridge.<sup>804</sup>

1573-90. Fish was sent up river in lighters.<sup>805</sup>

1574. J fell out of an old small boat on the stream that runs between Kent and Sussex at Northiam and was drowned. The boat was worth 5s.<sup>806</sup>

1586. 'The Rother dividing his water into three channels, passeth under Roberts bridge.'<sup>807</sup>

1623. A stop was made in the navigation at Thorney-Wall. Lightermen were allowed a tonnage for carrying goods over the stop.<sup>808</sup>

1634. 'I and F were "towinge certaine tymber from" Scots Float to Rye "at a cockes sterne"'. The cocke overturned and they were drowned.'<sup>809</sup>

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<sup>799</sup> Calendar of Patent Rolls, 1399-1401, 346.

<sup>800</sup> Henry Cleere and David Crossley, *The Iron Industry of the Weald*. 2<sup>nd</sup> Edition. Cardiff: Merton Priory Press Ltd. 1995, 143.

<sup>801</sup> Holloway's Rye, p. 52. Cited in Ernest Straker, *Wealden Iron*. 2<sup>nd</sup> Edition. Newton Abbot: David & Charles. 1969, 189.

<sup>802</sup> Henry Cleere and David Crossley, *The Iron Industry of the Weald*. 2<sup>n</sup>.Edition. Cardiff: Merton Priory Press Ltd. 1995, 159.

<sup>803</sup> *Ibid.* page 159.

<sup>804</sup> Holloway's Rye, p. 52. Cited in Ernest Straker, *Wealden Iron*. 2<sup>nd</sup> Edition. Newton Abbot: David & Charles. 1969, 189.

<sup>805</sup> A.J.F. Duley, 'The Early History of the Rye Fishing Industry.' Sussex Archaeological Collection. Vol. 107. (1969), 36-64, 53.

<sup>806</sup> *Sussex Coroners' Inquests 1558-1603*. Editor R.F. Hunnisett. Kew: PRO Publications. 1996, 27.

<sup>807</sup> William Camden, *Britain*. Transl. Philemon Holland. London: Joyce Norton, and Richard Whitaker. 1637, 320C.

<sup>808</sup> William McPherson Rice, 'Account of an Ancient Vessel recently found under the old bed of the river Rother in Kent.' *Archaeologia*, Vol. XX. 1824, 553-565, 561.

<sup>809</sup> R.F. Hunnisett, Ed., *Sussex Coroners' Inquests 1603-1688*. Kew: PRO Publications. 1998, 82.

1635. The Mayor and Jurats of Rye stated that the iron from Robertsbridge, Echingham and Hawkhurst would cost £100 per annum more if sent by road, besides spoiling the highways.<sup>810</sup>

## **SE 6A River Tillingham**

Tidal limit. Rye.

1750-1770. Iron was taken from Beckley to Rye by water this may have been on the Tillingham or Eastern Rother.<sup>811</sup>

18<sup>th</sup> C. The tidal reaches had been used for water traffic since the 18<sup>th</sup> century, and in 1786 a navigational sluice was erected above Strand Quay to prevent the tide flowing up and to improve the scouring of the Strand Channel. The navigation was used by narrow barges from Rye servicing the farms in the Tillingham Valley. Wharves were established at Ferry Bridge, Leasam Farm, Marshall's Farm and Marley Farm. (two miles from Rye), and there may have been occasional traffic further upstream. Navigation above Rye ceased in 1928.<sup>812</sup>

## **SE 7 River Brede**

Tidal limit. Rye.

A. Sedlescombe. 10 miles. n/a.

'At ... Brede Bridge... there were "Iron Houses for storage pending shipment."<sup>813</sup>

140-150. 'The Nodal point of all these communications would therefore appear to be the head of the Brede estuary, and it would seem to be justifiable to postulate a port installation somewhere in that area.'<sup>814</sup>

1287 A storm rendered the old port of Winchelsea uninhabitable.<sup>815</sup>

1300-1420. There were wharfs at *Damme* and *Sloghdam*.<sup>816</sup>

1344 'The men of the town of Ihamme near Wynshelse have shown the King that although they and their predecessors from time out of mind have had free access and egress by the port of water leading from their town to the sea, with their ships and boats, for fishing and other affairs and to return to that town at will, yet the bailiffs strive to prevent them from doing so by putting stakes in the water and iron chains, wherefor those men have besought the King to provide a remedy: the King therefore orders the

<sup>810</sup> E.P.D., Charles I, Vol 307. Cited in Ernest Straker, *Wealden Iron*. 2<sup>nd</sup> Edition. Newton Abbot: David & Charles. 1969, 189.

<sup>811</sup> Jeremy Spencer Hodgkinson, 'The Iron Industry in the Weald in the period of the Severn Years War.' MA Unpub. MA thesis, Univ. of Brighton. 1993, 63, 90.

<sup>812</sup> P.A.L. Vine, *Kent & East Sussex Waterways*. Midhurst: Middleton Press. 1989, text above photo 62.

<sup>813</sup> Ernest Straker, *Wealden Iron*. 2<sup>nd</sup> Edition. Newton Abbot: David & Charles. 1969, 189.

<sup>814</sup> Henry Cleere and David Crossley, *The Iron Industry of the Weald*. 2<sup>nd</sup> Edition. Cardiff: Merton Priory Press Ltd. 1995, 63.

<sup>815</sup> P. Brandon. *The Sussex Landscape*. London: Hodder and Stoughton. 1974, 218.

<sup>816</sup> Mark Gardiner, 'The geography and peasant rural economy of the eastern Sussex High Weald, 1300-1420.' *Sussex Archaeological Collection*. Vol. 134. (1996), 125-139, 133.

bailiffs to desist from such impediment, and to permit those men to come and go as they and their predecessors have been wont to do.’<sup>817</sup>

1357. Works were ordered to be carried out at so that ‘the sea water might flow swiftly by its ancient course to the town of Battle’.<sup>818</sup>

1360s. There was a quay at the *Damme*.<sup>819</sup>

15<sup>th</sup> C. In the 15<sup>th</sup> century lead purchased in London was being shipped up the tidal river from Rye to Sedlescombe for the Lady Chapel of Battle Abbey.<sup>820</sup>

1419-1442. ‘(An artificial ditch was dug) about 150 m wide and at least 7.5 km long and flanked by walls. Its intention was clear, to allow an increased quantity of sea water to ebb and flow in the Brede valley in a new broad course, and so scour the bed of the river, enable access to the port at Winchelsea and the free draining of water from the marshes either side.’<sup>821</sup>

1456. A commission *de walliis et fossatis* was appointed for the area ‘between “Sedlescombebregge” in the parish of Sedlescombe on the west side to Snaylham and “le Pyke” in Brede and Gestlyng on the east, on either side of the common watercourse running between Sedlyscombe and Wynchelsee, co. Sussex.’<sup>822</sup>

Late 1520s. Goods for Battle Abbey were brought by boat to *Bredbregge*.<sup>823</sup>

1573-1787 Cleere and Crossley consider that iron was taken from Westfield forge to Rye by boat.<sup>824</sup>

1574. There was a wharf at the Strand at the foot of Winchelsea Hill. ‘The flowing watercourse of the haven of Winchelsea’ formed one boundary of a plot of land.<sup>825</sup>

## SE 8 Reading Sewer

Lower limit. River Rother.

A. Small Hythe. 2 miles. n/a.

15<sup>th</sup> C. ‘Small Hythe was known to be functioning as a ship repair yard in the fifteenth century.’<sup>826</sup>

<sup>817</sup> Calendar of Close Rolls, 1343-46, 446.

<sup>818</sup> Calendar of Close Rolls, 1354-60, 315.

<sup>819</sup> Mark Gardiner, ‘Medieval Farming and Flooding in the Brede Valley.’ In J. Eddison, Ed., *Romney Marsh: the Debatable Ground*. Oxford University Committee for Archaeology. Monograph No. 41. 1995, 132.

<sup>820</sup> P.A.L. Vine, *Kent & East Sussex Waterways*. Midhurst: Middleton Press. 1989, text below photo 57.

<sup>821</sup> Mark Gardiner, ‘Medieval Farming and Flooding in the Brede Valley.’ In J. Eddison, Ed., *Romney Marsh: the Debatable Ground*. Oxford University Committee for Archaeology. Monograph No. 41. 1995, 132.

<sup>822</sup> Calendar of Patent Rolls, 1459-61, 300.

<sup>823</sup> E. Searle, and B. Ross, Eds., *Accounts of the Cellarers of Battle Abbey. 1275-1513*. Sussex Record Society. Vol. 65. 1967, 22.

<sup>824</sup> Henry Cleere and David Crossley, *The Iron Industry of the Weald. 2<sup>nd</sup> Edition*. Cardiff: Merton Priory Press Ltd. 1995, 193 and 365.

<sup>825</sup> East Sussex Record Office. Winchelsea Corporation Records. WIN/53. A2A Index.

**SE 9 Combe Haven**

Tidal limit. The coast.

A. ½ mile from coast. ½ mile.  $0.33 \text{ m}^3 \text{ s}^{-1}$ . < 5 m.

The name Combe Haven means ‘A short, broad valley forming a place of safety for boats’. The river’s name changes to Furnace Stream at Bine’s Farm where the gradient becomes steeper.<sup>827</sup>

13<sup>th</sup> C. Combe Haven was a place where ships sheltered from the SW winds.  
Bulverhythe was a landing-place on a river.<sup>828</sup>

1300-1420. Wood was exported from *Damme* and *Sloghdam*.<sup>829</sup>

**SE 10 Waller’s Haven**

Tidal limit. Coast.

See Ashbourne Stream. 5 miles. n/a.

Puddledock is a farm at TQ 665100

**SE 11 Ashbourne Stream**

Lower limit. Waller’s Haven

A. Ashburnham Forge. 2 miles.  $0.24 \text{ m}^3 \text{ s}^{-1}$ . < 5 m.

16<sup>th</sup> century. Iron was shipped from Penhurst Docks.<sup>830</sup>

1579. Thomas Ashborneham of Ashburnham was to deliver 6 tons of English iron at Buttolphs Wharf near Thames Street, London.<sup>831</sup>

1667. A deed conveyed the right, ‘of carrying iron in boats, down what is now but little more than a ditch, from the forge to Boreham Bridge, through other owners’ property, including the power to cleanse and scour and cast the slub, mud, etc., on the banks, also to set up bayes and pens to stay the water.’<sup>832</sup>

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<sup>826</sup> T. Taylor, *Behind the Scenes at Time Team*. (London, 1998), 126-7. Cited in Ann Cole, ‘The Place-Name evidence for Water Transport in the Early Medieval England.’ In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 62.

<sup>827</sup> Kenneth Cameron, *English Place Names, New Edition*. London: B.T. Batsford Ltd. 1996.

<sup>828</sup> Kenneth Cameron, *English Place Names, New Edition*. London: B.T. Batsford Ltd. 1996.

<sup>829</sup> Mark Gardiner, ‘The geography and peasant rural economy of the eastern Sussex High Weald, 1300-1420.’ *Sussex Archaeological Collection*. Vol. 134. (1996), 125-139, 133.

<sup>830</sup> Personal Comment: Keith Datcher, Estate Manager, Beech Farm, Nr Battle, Sussex.

<sup>831</sup> East Sussex Record Office. Lavington Estate Archives. LAVINGTON/833. A2A Index.

<sup>832</sup> Close Roll 4215. Cited in Ernest Straker, *Wealden Iron. 2<sup>nd</sup> Edition*. Newton Abbot: David & Charles. 1969, 190.

**SE 12    Nunningham Stream**

Lower limit.    Waller's Haven

A.                    Bodle Street Green.    2 miles.            0.19 m<sup>3</sup>s<sup>-1</sup>.    < 5 m.

1607. 'The Pelham accounts mention both Pevensey and The Sluice, and in either case the iron was stored to await a vessel. The iron was brought down the marsh channels in the winter time; Lord Dacre of Hurstmonceux hired out his boats to convey it. A likely spot at which the barges may have been loaded is Chilthurst Bridge on the Nunningham Stream. Colonel D. MacLeod has found here brick abutments which possibly belonged to a hatch for raising the water-level, with remains of camp-shedding, and there is a raised causeway containing iron slag, which leads to Bodle Street Green.'<sup>833</sup>

**SE 13    Pevensey Haven**

Tidal limit.    The coast.

A.                    Northeye.                    3 miles.            n/a.  
(3km SE of Hailsham. )

Pevensey Haven flows from Rickney to Pevensey.

Hurst Haven flows from Hailsham to Rickney.

Iron Stream flows down from Herstmonceaux. TQ 633106.

13<sup>th</sup> C. Northeye was a non-corporate member of the Cinque Ports under Hastings.<sup>834</sup>

1438. There were 'Two dokkes near the port of Pevensey made for boats to land at and lie in.'<sup>835</sup> Salzmann refers to this record and states that 'Docks of the kind here mentioned, little bays cut in the side of the dykes, are to be seen in many places in the marsh, especially near the sea, to the present day, though for the most part they have been long disused.'<sup>836</sup>

1580. 'About 1580 Herbert Pelham and Mr Stolion had started bringing iron, the principal export of the district, down the ditches in barges in the winter when the "tuggs" or wagons were unable to use the marsh roads. This water-borne iron was stored close to Pevensey Bridge and exported from the haven.'<sup>837</sup>

1607. See Nunningham Stream, 1607.

1644. 'There is more than one receipt for carriage of iron in "my lord' lighter at Pemsie;" so in March, 1645, 15s was received for the carriage of 30 tons.'<sup>838</sup>

<sup>833</sup> Ernest Straker, *Wealden Iron. 2<sup>nd</sup> Edition*. Newton Abbot: David & Charles. 1969, 190.

<sup>834</sup> Rev Edward Turner, 'The Lost Towns of Northeye & Hydneye.' *Sussex Archaeological Collection*. Vol. 19, (1867), 1-35.

<sup>835</sup> L.F. Salzmann, 'The Inning of Pevensey Levels.' *Sussex Archaeological Collection*. Vol. 53. (1910) 32-60, 59.

<sup>836</sup> *Ibid.* page 53.

<sup>837</sup> *Ibid.* page 59.

<sup>838</sup> T. Barrett Lennard, 'Extracts from the Household Account Book of Herstmonceux Castle.' *Sussex Archaeological Collection*. Vol. 48, (1905), 104-137, 112.

**SE 14    Middle Sewer**

Tidal limit.    The coast.  
 A.                Hampden Park.                4 miles.                n/a.

13<sup>th</sup> C. Hydneye [in Hampden Park.] was a non-corporate member of the Cinque Ports under Hastings.<sup>839</sup>

1396. A Commission stated that the sewer to Wyllindonstrow from Pevensey should be 2 perches wide, 3 feet deep.<sup>840</sup>

**SE 15    River Cuckmere**

Tidal limit.    Milton Lock.  
 A.                Upper Dicker.                5 miles.                1.2 m<sup>3</sup>s<sup>-1</sup>.                < 10 m.

About 13<sup>th</sup> C. Caen stone was used in the construction of Michelham Priory. Pelham considered that it would have been transported by river.<sup>841</sup>

1587. In a Survey of the Coast of Sussex it is noted that 'No ships now enter it' implying that previously ships did enter it.<sup>842</sup>

**SE 16    Sussex Ouse**

Tidal limit.    Barcombe Mills.  
 A.                Lindfield.                10 miles.                n/a.                Modified.

'Lower down, between Fletching bridge and Gold-bridge, comes in a small tributary from Nutley, and yet lower a bifurcated stream, one branch of which passes Ford Green and Maresfield Park, the other coming from Oldland, the seat of the Roman iron works, and Maresfield village and pond. In the bed of one of these streams the Rev. E. Turner some years since discovered an ancient British canoe, hewn, like that described in a former volume of these Collections [Vol X, page 149] out of a solid oak-tree.'<sup>843</sup>

'There is a section of the Ouse above Lewes, near Isfield, called the Iron River; although the Ouse was not canalised until 1790 it was doubtless navigable for a considerable distance.'<sup>844</sup>

1405-09 *Edwards* considered that entries in the *Calendar of Close Rolls* may indicate that the river was navigable to Ifelde.

<sup>839</sup> Rev Edward Turner, 'The Lost Towns of Northeye & Hydneye.' *Sussex Archaeological Collections*. Vol. 19. (1867), 1-35.

<sup>840</sup> L.F. Salzmann, 'The Inning of Pevensey Levels.' *Sussex Archaeological Collections*. Vol. 53. (1910) 32-60, 47.

<sup>841</sup> R.A. Pelham, 'Studies in the Historical Geography of Medieval Sussex.' *Sussex Archaeological Collections*. Vol. 72. (1931), 157-184, 176.

G.W. Harrison, Curator Michelham Priory, Letter 25 March 1985.

<sup>842</sup> Mark Anthony Lower, Ed.. *A Survey of the Coast of Sussex Made in 1587*. Lewes: W.E.Baxter. 1870.

<sup>843</sup> Mark Anthony Lower, 'The Rivers of Sussex. Part I.' *Sussex Archaeological Collection*. Vol. 15. (1863), 148-164, 160.

<sup>844</sup> Ernest Straker, *Wealden Iron*. 2<sup>nd</sup> Edition. Newton Abbot: David & Charles. 1969, 190-191.

‘Certain persons were instructed “to make inquisition by whose default the walls, dikes, gutters, sewers, bridges, causeways, weirs and leats on either hand between Ifelde and the sea upon the river of Lewes and between Pulberowe ferry and the sea on the river of Arundell in Sussex are burst.”’<sup>845</sup>

1577. A ferry carrying a man, a boy and 58 sheep sank at Southease. The boat was worth 10s.<sup>846</sup>

1579. ‘J was in a “bote” on the common stream at South Malling’ the quant pole he was using became stuck and threw him out of the boat and into the stream and so he was drowned. The quant was worth 1d.<sup>847</sup>

1586. In Holinshed’s *Chronicles* it is stated, ‘The fift [tributary of the Ouse] riseth about Storuelgate, and meeteth also with the maine streame aboue Linfield, and these are knownen to lie upon the right hand as we rowed up the river.’<sup>848</sup>

1724. It should be noted that the ‘Copy of a map of the Maresfield Forge in 1724’<sup>849</sup> showing boats on the stream leading to Maresfield is fictitious.<sup>850</sup>

1724. Budgen’s map of Sussex shows what appears to be a boat crossed through on the west bank of the river near Isfield.<sup>851</sup> It seems that this is the limit point for either barges or boats but it does not indicate which.

## SE 17 River Adur

Tidal Limit. Shermanbury Place and 1km above Bines Bridge.

A.	Henfield.	1 miles.	n/a.
B.	Shipley.	4 miles.	

It is certain that so small a stream as the Adur in Sussex floated barges up to the boundaries of Shipley parish.<sup>852</sup>

1583. ‘J and A were getting into a small boat worth 2s in a pond at Cuckfield to enjoy the water, by misadventure, the boat being weighed down, water entered into it, it immediately sank in the depths of the pond and J and A were drowned.’<sup>853</sup>

1598. ‘R and R were crossing the Adur at Henfield by a “troughe boat”, by misadventure the boat suddenly drowned them. The boat is worth 3s 4d.’<sup>854</sup>

<sup>845</sup> Calendar of Close Rolls, 1399-1402, 186.

Calendar of Close Rolls, 1405-09, 78.

<sup>846</sup> *Sussex Coroners’ Inquests 1558-1603*. Editor R.F. Hunnisett. Kew: PRO Publications. 1996, 37.

<sup>847</sup> *Ibid.* page 49.

<sup>848</sup> Raphael Holinshed, William Harrison and others, *Holinshed’s Chronicles of England, Scotland and Ireland*. (1<sup>st</sup> Edition 1587) Editor John Hooker. London: J. Johnson *et al.* 1807, 93.

<sup>849</sup> Ernest Straker, *Wealden Iron. 2<sup>nd</sup> Edition*. Newton Abbot: David & Charles. 1969, 401.

<sup>850</sup> The Late P.B.S. Andrews, ‘A Fictitious Purported Historical Map.’ *Sussex Archaeological Collections*. Vol. 112. (1974), 165 – 167.

<sup>851</sup> Richard Budgen, ‘Sussex Map’. 1724. Accessed at [theweald.org/m00.asp](http://theweald.org/m00.asp). 19/06/2009. I am grateful to Mr Christopher Stevens for drawing my attention to this reference.

<sup>852</sup> Hilaire Belloc, *The Historic Thames*. 1<sup>st</sup> edition 1907. London: J.M. Dent & Sons Ltd. No Date, 15.

<sup>853</sup> *Sussex Coroners’ Inquests 1558-1603*. Editor R.F. Hunnisett. Kew: PRO Publications. 1996, 65-66.

<sup>854</sup> *Ibid.* page 126



**SE 17A River Arun**

Tidal limit. Previously Ford,<sup>855</sup> now Pallingham Lock.

11 logboats have been found between Arundel and Pulborough. Two have been dated to 295AD and 640AD.<sup>856</sup>

1086. Arundel is described as a port.<sup>857</sup>

14<sup>th</sup> C. A log-boat, reported to be of the 14<sup>th</sup> C, was found at North Stoke.<sup>858</sup>

About 14<sup>th</sup> C. It was written in about 1636 that 'It anciently began at a place in the River call's Turning-stream some three Furlongs beneath Stopham Bridge, ... But at this Day it begineth at Pallingham Key, some two Miles below [?above] Stopham Bridge, the River being cleared, from the said Bride to the said Key, about the beginning of the Reign of Queen Elizabeth.'<sup>859</sup>

1405-09 The river was navigable to Arundel.<sup>860</sup>

1405-09 See River Ouse, 1405-09.

16<sup>th</sup> C. The River Arun was made navigable to Stopham Bridge during the reign of Queen Elizabeth I.<sup>861</sup>

1550. 'Timber was being exported from the newly built wharves. (At Arundel)',<sup>862</sup>

1569. A man fell from a ship of 'about 60 "toonnes" in capacity ...into the salt water called the Tarrant at "Arundell Key" in Arundel and was drowned'.<sup>863</sup>

1573. 'A trowhebote loaded with wood on the "Amberley river" sank. The boat remained with the bailiff of Amberley. The boat was worth 2d.'<sup>864</sup>

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<sup>855</sup> 'About 1300 there was no great tide at Ford.' A. Hadrian Allcroft, *Waters of Arun*. London: Methuen & Co. Ltd. 1930, 108.

P.A.L. Vine, *London's Lost Route to the Sea. 3<sup>rd</sup> Edition*. Newton Abbot: David & Charles. 1973, 20-21.

<sup>856</sup> Sean McGrail, *Logboats of England and Wales, Part i*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978.

<sup>857</sup> 'Now between the borough and the port of the river and ship-dues it renders £12' *Domesday Book*. Editors Ann Williams and G.H. Martin. London: Penguin Books. 2002, 55.

See also quotation, 'The town is referred to as a port in Domesday Book time (*portum aquae et consuetudinem navium*)' P.A.L. Vine, *London's Lost Route to the Sea. 3<sup>rd</sup> Edition*. Newton Abbot: David & Charles. 1973, 21.

<sup>858</sup> Edward Turner, 'British Boat found at North Stoke.' *Sussex Archaeological Collections*. Vol. 12. (1860), 261.

<sup>859</sup> Joseph Fowler, Ed., *A Description of the High Stream of Arundel*. Hertford: Simson & Co. Ltd. 1929, 20-21.

<sup>860</sup> Calendar of Close Rolls, 1405-09, 305.

<sup>861</sup> P.A.L. Vine, *West Sussex Waterways*. Midhurst: Middleton Press. 1985. Text above photo 99.

<sup>862</sup> P.A.L. Vine, *London's Lost Route to the Sea. 3<sup>rd</sup> Edition*. Newton Abbot: David & Charles. 1973, 21.

<sup>863</sup> *Sussex Coroners' Inquests 1558-1603*. Editor R.F. Hunnisett. Kew: PRO Publications. 1996, 13-14.

<sup>864</sup> *Ibid.* page 25.

1578 & 1580. There were ships at Arundel. In 1572 there was a bargeman of Amberley. It would appear that at this time ships sailed up river to Arundel where goods were transhipped into barges for transport upriver.<sup>865</sup>

## **SE 18    Western Rother**

Tidal limit.	Hardham.				
A.	Fittleworth.	2 miles.	$5 \text{ m}^3 \text{ s}^{-1}$ .	< 10 m.	Modified.
RLU.	Midhurst.	13 miles.	$2.2 \text{ m}^3 \text{ s}^{-1}$ .		Modified.

About 13<sup>th</sup> C. Caen stone was used in the construction of Shulbrede Priory which is near a tributary of the river Rother. R.A. Pelham considered that it would have been transported by river.<sup>866</sup>

1615. At Fittleworth, 'Close to the mill stood a wharf supported by timber piles and near this wharf was a "close used for sales"'.<sup>867</sup>

## **SE 18A   River Lavant**

1586. The city of Chichester 'had certainly been much frequented and very rich, had not the haven been a little too far off, and less commodious'.<sup>868</sup>

1695. Gibson recorded that 'the course of this river's stream [the Lavant's] is very unaccountable, sometimes being quite dry, but at other times, and that very often too in the midst of Summer, it is so full as to run very violently'.<sup>869</sup>

## **SE 19    River Itchen**

Tidal limit.	Woodmills.				
Edwards.	Winchester.	16 miles.			
A.	Winchester.	16 miles.	$4.2 \text{ m}^3 \text{ s}^{-1}$ .	1.7	C.
B.	New Alresford.	26 miles.			
RLU.	New Alresford.	26 miles.	$3.5 \text{ m}^3 \text{ s}^{-1}$ .	2	Confl.

*Edwards* gives the upper limit of New Alresford but his references are now considered doubtful.<sup>870</sup>

Rogers in his study of the History of Agriculture and Prices states that 'The Thames, the Severn, the Ouse on which Bristol was built, the Cambridgeshire Ouse, the Humber, the

<sup>865</sup> *Calendar of Assize Records, Sussex Indictments. Elizabeth I.* Editor J.S. Cockburn. London: HMSO. 1975, 85, 140, 153.

<sup>866</sup> R.A. Pelham, 'Studies in the Historical Geography of Medieval Sussex.' *Sussex Archaeological Collection*. Vol. 72. (1931), 157-184, 176.

<sup>867</sup> The Hon Lady Maxse, *The Story of Fittleworth*. London: The National Review. 1935, 50.

<sup>868</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 167.

<sup>869</sup> Editor's amendment in William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 167.

<sup>870</sup> James Bond, 'Canal Construction: An Introductory Review.' In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 197-199.

Itchin, the Test, the Stour, the Wye and many other rivers, were navigable and commonly navigated.’<sup>871</sup>

Biddle wrote in 1976 ‘Godfrey de Lucy was responsible for the foundation of New Alresford. The tradition that he had the artificial pond at Alresford constructed as a reservoir for a waterway extending to Winchester and thence to the sea may therefore be correct. (fn. M.W. Beresford, *New Towns of the Middle Ages* (London, 1967), 442. For the tradition, see Milner i. 173-4.) The Itchen canal does not seem to have continued in use, for by 1275 its course was obstructed by a number of mills belonging to the bishop, (fn. *VCH Hants* v. 451 and PRO, C143/3/11.) and this state of affairs persisted into the seventeenth century. (fn. E. Course, ‘The Itchen Navigation’, *Proc. Hants FC* 24 (1967), 113-26)’<sup>872</sup>

Roberts in 1985 claimed that the Alresford Pond was a fishery, mill pond and causeway but not a reservoir for a canal.<sup>873</sup> A canal would have required pound locks which were unknown in England before the 16<sup>th</sup> century. However he does not consider whether the river was used as a navigation. He claims that the charter granted by King John to Godfrey de Lucy was a forgery.

Currie in 1995, in an article concerned mainly with a potential Saxon channel at the tidal limit of the river, reviewed the evidence for the use of the River Itchin for navigation in the medieval period. He concluded that the river may well have been used for navigation as far as Bishopstoke but considered that it would not have been used for navigation above that point.<sup>874</sup>

In an article published in 2007 Currie again concluded that ‘the navigation ... was unlikely to have extended further than Bishopstoke. Edward Robert’s argument against the existence of the de Lucy canal to Winchester and Alresford remains convincing.’<sup>875</sup>

10<sup>th</sup> & 11<sup>th</sup> C. The erection of mills and the cutting of the leats associated with them in the late Saxon period probably modified the course of the main stream to a considerable extent.<sup>876</sup>

10<sup>th</sup> & 11<sup>th</sup> C. There seems to have been even more extensive works on the river some miles to the south of Winchester in the tenth or eleventh centuries, for the Anglo-Saxon boundaries of land at Stoneham included both the old and new courses of the Itchen. The new waterway may have been cut to improve navigation, but there is no other

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<sup>871</sup> James E. Thorold Rogers, *A History of Agriculture and Prices in England. Volume I.* Oxford: Clarendon Press. 1882, 663.

<sup>872</sup> Martin Biddle, Ed., *Winchester in the Early Middle Ages.* Oxford: Clarendon Press. 1976, 271.

<sup>873</sup> Edward Roberts, ‘Alresford Pond, a Medieval Canal Reservoir: a Tradition Assessed.’ *Proceedings of the Hampshire Field Club and Archaeological Society.* Vol. 41. (1985.) 127-138.

<sup>874</sup> Christopher K. Currie, ‘A Possible Ancient Water Channel around Woodmill and Gater’s Mill in the Historic Manor of South Stoneham.’ *Proceedings of the Hampshire Field Club and Archaeological Society.* Vol. 52. (1997.) 89 – 106.

<sup>875</sup> Christopher K. Currie, ‘Early Water Management on the Lower Itchen in Hampshire.’ In John Blair, *Waterways and Canal-building in Medieval England.* Oxford: Oxford University Press. 2007, 253.

<sup>876</sup> Martin Biddle, Ed., *Winchester in the Early Middle Ages.* Oxford: Clarendon Press. 1976, 270.

evidence for this use of the river before the episcopate of Godfrey de Lucy (1189-1204).<sup>877</sup>

11<sup>th</sup> C. 'At that time, the Itchen is said to have been navigable through to Bishop Sutton.' (Bishop Sutton is upstream of Alresford.)<sup>878</sup>

1042-66. A reference to a New River in a charter from the time of Edward the Confessor.<sup>879</sup>

12<sup>th</sup> C. It is believed that stone for Winchester Cathedral was transported by water right up to the city since this would be far easier than trying to carry it overland.<sup>880</sup>

12<sup>th</sup> C. 'Round the coast it [the Purbeck marble] travelled, and up the rivers, to Exeter, Salisbury and Winchester (for the church of St. Cross).'<sup>881</sup>

12<sup>th</sup> C. 'Stone for the cathedral had to be imported. ... It would be brought up the river Itchen by barge.'<sup>882</sup>

c.1189. 'Bishop Godfrey appears to have enjoyed rights over the passage of water in the Itchen (fn. In 1446 Bishop Beaufort ratified a charter of de Lucy dated 1202 allowing Hugh de Chikehull, lord of the manor of Wollston, free passage on the river Itchen by Southampton: WCL, Register of the Common Seal, vol. I, fo. 71) similar to those of his successors, who in the later Middle Ages controlled the entire flow of water from Alresford pond to Itchen Ferry by Southampton.' (fn. In the sixteenth century the bishops appointed an officer who had the custody of the pond and of the river down to Itchen Ferry, eg. WCL, Register of the Common Seal, vol. ii, fo 95<sup>v</sup>.)<sup>883</sup>

1199-1216. 'King John confirmed to Bishop Godfrey the duties on certain articles of merchandise coming to or going from Winchester to the sea *per trencheam quam dictus Wintoniensis Episcopus fecit fieri.*' *Reg Pontissara*, 741-743. This charter is not entirely above suspicion.<sup>884</sup>

1199. 'The Bishop of Winchester controlled the Itchen and took all tolls from traffic on the river by virtue of a charter of 1199.'<sup>885</sup> The amount of goods taken up the Itchen is therefore not recorded in any Southampton records.

'In recognition of the bishop's enterprise King John conferred upon him by charter (fn Charter Roll 1 John, m. 10) licence to levy tolls on all hides, leather and other goods entering the river by the trench or canal (*per trancheam*) he had made.'<sup>886</sup>

<sup>877</sup> Sawyer, *Of paere ealdan Icenan on ufwyrd ponae orcerd on pa niwan ea*, 1012. Cited in Martin Biddle, Ed., *Winchester in the Early Middle Ages*. Oxford: Clarendon Press. 1976, 270.

<sup>878</sup> Noreen O'Dell, *The River Itchen*. Southampton: Paul Cave Publications Ltd. Pre 1991, 24.

<sup>879</sup> [www.whitenap.plus.com/itchen/itchen\\_hist.htm](http://www.whitenap.plus.com/itchen/itchen_hist.htm). Accessed 05/01/2005.

<sup>880</sup> [www.whitenap.plus.com/itchen/itchen\\_hist.htm](http://www.whitenap.plus.com/itchen/itchen_hist.htm). Accessed 05/01/2005.

<sup>881</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 180.

<sup>882</sup> <http://home.clara.net/reedhome/winchester/exterior.htm>. Accessed 28/10/07.

<sup>883</sup> Martin Biddle, Ed., *Winchester in the Early Middle Ages*. Oxford: Clarendon Press. 1976, 270-271.

<sup>884</sup> *Ibid.* page 270.

<sup>885</sup> *The Brokage Book of Southampton 1443-1444*. Editor Olive Coleman. Southampton: At the University. 1960, xxv, fn 5.

<sup>886</sup> *VCH. Hampshire and the Isle of Wight, Vol. V.* 451.

End 12<sup>th</sup> C. The Bishop of Winchester, Godfrey de Lucy, ‘developed Alresford pond, making it into a reservoir of two hundred acres, built a dam across, largely at his own expense, and made the river navigable right through to the port nearly thirty miles away. Much of the canal remained open for many centuries, but difficulties arose during the late seventeen hundreds when England was building up her Navy, for barges became a prime target for the press gangs, so that they were issued with a special certificate which forbade the gangs to take them. Even so, the last barge was towed up the river around 1865.’<sup>887</sup>

13<sup>th</sup> C. ‘The only Winchester manor to sell them (faggots) with any frequency in the thirteenth century was Twyford.’<sup>888</sup> Twyford is on the River Itchen between Winchester and Southampton and it would have been possible to transport the faggots by river transport rather than the more expensive road transport.

1200. The river was made navigable to New Alresford by Bishop de Lucy.<sup>889</sup> In recognition of this King John conferred on him the right to levy tolls ‘on all hides, leather and other goods entering the river by the canal he had made’.<sup>890</sup>

1276. ‘The jurors summoned on an Inquisition *ad quod damnum* (4 Edw. I) said that they did not think the citizens of Winchester would be able to bring the flood and ebb of the sea as far as their city. They might, however, be allowed by the king to bring it to Stoke, distant 4 leagues from Southampton, on the way to Winchester. The jurors also said that this must harm the bishop, because it would be necessary to remove a mill called the Wodemilne, worth £5 a year, and a salmon fishery of the annual value of 10 marks, and ... [six other named mills of given value]. Finally, the jury also declared that it would not be necessary to widen the water-course, but rather to make it more narrow and deepen it in various places.’<sup>891</sup>

1313. It was held that the tenants of the Bishop of Winchester should not pay toll on all goods bought in Southampton whether for their own use or for sale. Thus the movement of their goods on the Itchin would not be recorded in the Port Books.<sup>892</sup>

1344. Forst and Sampson were charged with concealing ‘the custom of wines and other customable things (taken out) of the town [Southampton] by water, by merchants of London, men of Winchelsea and Yarmouth, and servants of the bishop of Winchester, the prior and citizens of Winchester and the abbots of Netley, Titchfield and Bearulieu Regis.’ The accused’s reply was that all these men were free of such custom in Southampton and this plea was also confirmed by a jury at Winchester in 1345.’<sup>893</sup>

<sup>887</sup> Noreen O’Dell, *The River Itchen*. Southampton: Paul Cave Publications Ltd. Pre 1991, 74.

<sup>888</sup> Richard H. Britnell and Bruce M.S. Campbell, *A Commercialising Economy*. Manchester: Manchester University Press. 1995, 124.

<sup>889</sup> Rev. J. Milner, *Survey of the Antiquities of Winchester, Vol 1*, p 229.

Also Inq.a.q.d. file 4 No 11 (4 Edw I). Cited in Dugdale, Mon. Angl. I, 196. Cited in *VHC Hampshire and the Isle of Wight*. Vol. V. 451.

<sup>890</sup> Charter Ri. John m. 10. Cited in *VHC of Hampshire and the Isle of Wight*. Vol. V. 451.

<sup>891</sup> TNA, Inq.a.q.d. file 4 No 11 (4 Edw I). *VHC Hampshire and the Isle of Wight*, Vol. V, 451-452.

<sup>892</sup> *Cooper v Shirley and others*. 1313.

*Year Book Series, Volume XIV, Part II. Year Books of Edward II (A.D. 1313.)* Editor W.C. Bolland. Selden Society, Vol. 43, 60.

<sup>893</sup> *The Local Port Book of Southampton for 1439-40*. Editor Henry S. Cobb. Southampton: At the University. 1961, xiii-xiv.

1617. 'The Itchin navigation had not outlived its reputation in 1617, when it was styled, in a petition to the Commissioners of Sewers, that 'most famous and profitable river. (fn Hants N. and Q. ix, 100)'<sup>894</sup>

## SE 20 River Alre

Lower limit. River Itchen.

B. Bishops Sutton. 1 mile.  $1.5 \text{ m}^3 \text{ s}^{-1}$ . n/a.

1208. There is a entry in the Bishop of Winchester's Pipe Roll recording 'carriage of wool *'per aquam'* between Bishops Sutton and ... Beaulieu.'<sup>895</sup>

## SE 21 River Test

Tidal limit. Totton.

Edwards. Romsey. 5 miles.

A. Romsey. 12 miles.  $11.01 \text{ m}^3 \text{ s}^{-1}$ . Divided.

B. Longstock. 15 miles.

No RLU due to perceived legal objections.

Longstock above Stockbridge. 'At the riverside dock the Viking longboats were overhauled and repaired.'<sup>896</sup>

A log-boat was found at Bossington before 1829. The log was only partly hollowed out.<sup>897</sup>

971-975. 'The earliest record of the (Middle Bridge) site appears in a charter of King Edgar, 971-975, defining the boundaries of Romsey Abbey. The charter mentions 'the street where the Test runs' suggesting that the road now known as Middlebridge Street ran down to the water's edge without actually crossing it. At this date the site could have been a landing place, for in Anglo-Saxon times the Test must have been an important waterway and a landing place here would have served the small, growing settlements of Romsey, Romsey Abbey and neighbouring villages.'<sup>898</sup>

1339. Romsey was the collection centre for grain and oats which, it appears, were sent down the river.<sup>899</sup>

1358 A grant of pontage was made 'on things passing over or under the bridge of Rudbrigge'.<sup>900</sup>

<sup>894</sup> VCH Hampshire and the Isle of Wight, Vol. V, 452.

<sup>895</sup> H. Hall, Ed., *The Pipe Roll of the Bishopric of Winchester, 1208-9*. London, 1903 p.xix. Cited in James Bond, 'Canal Construction: An Introductory Review.' In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 198.

<sup>896</sup> Noreen O'Dell, *The River Test*. Southampton: Paul Cave Publications Ltd. 1979, 35.

<sup>897</sup> Sean McGrail, *Logboats of England and Wales Part i*. National Maritime Museum, Greenwich Archaeological Series No. 2. British Archaeological Reports British Series 51 (1) Oxford. 1978, 163.

<sup>898</sup> Anne W. Mason, 'The History of Middle Bridge, Romsey.' *Proceedings of the Hampshire Field Club and Archaeological Society*. Vol. 32, (1975), 49.

<sup>899</sup> TNA, E101/561/13. Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 274.

<sup>900</sup> Calendar of Patent Rolls, 1358-61, 29.

1697. The inventory of 'John Moody (Mowdy) of King's Somborne, Hampshire, Tailor' included 'Two Boats £1 – 1 – 0.'<sup>901</sup> King's Somborne is about 8 km upstream of Romsey.

## SE 22 Salisbury Avon

Tidal limit.	Christchurch.				
Edwards.	Salisbury.	35 miles.			
A.	Salisbury.	35 miles.	14.5 m <sup>3</sup> s <sup>-1</sup> .	0.82	Modified.
B.	Manningford Bruce.	62 miles.			
RLU.	Scales Bridge.	60 miles.	1.48 m <sup>3</sup> s <sup>-1</sup> .	1.2	G.

John Chandler states that 'The River Avon .... is not in its natural state a navigable river for any but the slightest of sea-going vessels.' This seems to imply that it is, in its natural state, navigable by small sea-going vessels and by craft designed for river transport.<sup>902</sup>

It seems likely that the Blue Stones at Stonehenge were transported up the river.

Bryn Waters considers that the Roman Villas at Manningford Bruce, Netheravon and Amesbury were supplied by river transport.<sup>903</sup>

Crane Street in Salisbury was named after an inn. It would seem likely that the inn was named after a crane on a wharf beside the River Avon.<sup>904</sup>

'There is a tradition that the stone of the Cathedral of that city (Salisbury) was transported thither by barges.'<sup>905</sup>

'Round the coast it [the Purbeck marble] travelled, and up the rivers, to Exeter, Salisbury ...'<sup>906</sup>

1220. 15,000 tons of Purbeck marble were carried up the river from Worth Matravers near Poole to build the cathedral.<sup>907</sup>

1220. 60,000 tons of stone were quarried or mined at Tisbury or Chilmark and taken down the Nadder valley by cart or raft for the building of Salisbury Cathedral.

400 tons of lead were brought to Salisbury for the roof of the cathedral.<sup>908</sup>

<sup>901</sup> Hampshire Record Office. 1697A/099. Will, Inventory of John Moody (Mowdy) of King's Somborne, Hampshire, Tailor.

<sup>902</sup> John Chandler, *Endless Street*. Salisbury: The Hobnob Press. 1983, 128.

<sup>903</sup> James Ellis Jones, *The Maritime and Riverine Landscape of the West of Roman Britain*. BAR British Series 493. 2009, 54.

<sup>904</sup> John Chandler, *Endless Street*. Salisbury: The Hobnob Press. 1983, 300. Chandler states that 'The suggestion that there was a wharf in Crane Street (hence the name) – see Hammond, 1910, 371-372 – cannot be sustained. The road is named after an inn.' He did not consider why the inn was named 'The Crane'.

<sup>905</sup> Reginald Hannen, *A History of Fordingbridge. Fourth Edition*. Fordingbridge: J.G. & D.L. Fredericks Limited. 1978, 46.

<sup>906</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 180.

<sup>907</sup> Noreen O'Dell, *The River Avon*. Southampton: Paul Cave Publications Ltd. 1991, 56.

<sup>908</sup> Roy Spring, *Salisbury Cathedral*. London: Unwin Hyman. 1987, 14.

1220. Oak timbers were brought to Salisbury from Ireland for the construction of the roof of the cathedral.<sup>909</sup>

1339 It appears from the Sheriff's Accounts for 'Southampton Provisions to King Overseas' that grain was taken by river from Fordingbridge and Avon to Christchurch and then by the sea to Southampton.<sup>910</sup> Unlike some other Sheriff's Accounts these do not state the mode of transport but only the total cost including transport.

1372. The King ordered that a barge 'be made at Salisbury ... to resist the malice of his enemies of France'.<sup>911</sup>

1378. 'The mayor, bailiffs, and good men of Salisbury' were given exemption from 'making a small barge, called a "balinger" for the King's fleet now at sea.' As the earl of Salisbury had undertaken to 'provide the same in their stead'.<sup>912</sup>

1402. Certain persons were ordered 'to make inquisition by whose default the passage of ships and boats in the rivers of Wiltesir was hindered'.<sup>913</sup>

1408. The bailiffs of Gloucester were ordered to set free one John Milbourne who had been imprisoned for obstructing the Avon because 'certain pales were set by him in the bed of the river at New Sarum'.<sup>914</sup>

1419. A ship, the Catherine of Salisbury, is mentioned in a will.<sup>915</sup>

1422. 'It is also recorded that, in the reign of Henry VI, Salisbury played a part in the Hundred Years war since "the river Avon was navigable from Christchurch to Salisbury until the reign of Elizabeth I, the city was technically a seaport and as such it had built and manned a ship "The Trout", which helped in the defence of the Kent coast." (This initial statement is surprising in view of later history!)'<sup>916</sup>

1428. The Southampton Port Books record the arrival of one boat loaded with teasels for wool processing in Salisbury.<sup>917</sup>

1455. In an accounts book there is an entry for rental of *le Crane*, which appears to be an inn. This may have been adjacent to a wharf.<sup>918</sup>

<sup>909</sup> Bruce Purvis, *Salisbury*. Derby: Wiltshire County Council and Breedon Books. 2003, 30.

<sup>910</sup> TNA, E101/561/13. Transcribed in Sharon G. Uhler, 'English Customs Ports 1275-1343.' Unpub. B. Phil thesis Univ. of St Andrews. 1977, 274.

<sup>911</sup> Calendar of Patent Rolls, 1370-74, 219.

<sup>912</sup> Calendar of Patent Rolls, 1377-81, 108.

<sup>913</sup> Calendar of Close Rolls, 1399-1402, 518.

<sup>914</sup> Calendar of Patent Rolls, 1405-09. 332.

<sup>915</sup> John Chandler, *Endless Street*. Salisbury: The Hobnob Press. 1983, 300.

<sup>916</sup> Don Cross, *When Salisbury was a Seaport*. Salisbury: Wessexplore. 2001, 3. Referring to Shortt, Hugh (ed) (1957) *City of Salisbury*, 49.

<sup>917</sup> *Ibid.* page 3.

<sup>918</sup> Rev R. Nevill, 'Salisbury in 1455.' *The Wiltshire Archaeological and Natural History Magazine*. Vol. XXXVII. (1927), 70.

Allen Mawer and F.M. Stenton, *The Place Names of Wiltshire*. English Place Names Society. Vol. XVI. Cambridge: University Press. 1939, 20.



1535. 'The Commission for the River Avon was established and the Commissioners, as in other areas, were appointed to remove all weirs and obstructions on the Avon. This suggested plans for opening the river further for navigation and the improvement of Christchurch port, but nothing more is known of these plans.'<sup>919</sup>

1535. [Sir] Peter Philpot wrote to Cromwell

'Your commandment for the weirs of Kyrcheche [fn Christchurch, Hants] shall be accomplished as soon as possible. Mills, weirs and fishgarths are being plucked down, and by Whitsuntide next every man that hath any ground adjoining this river shall cut the trees away, "and the shelpis to score," so that a boat may have free passage.'<sup>920</sup>

1535. John Husee wrote to Lord Lisle

'And likewise for the Bishop of Winchester's weirs in Hampshire and those that 'long to Christchurch shall be pulled down, so that the king, as all others, from the highest to the lowest, pass all one way, and none excuse will be heard. ... there is no redemption but pull them down, although the same weirs have stood since 500 years before the Conquest.'<sup>921</sup>

1538. John Salcot, Bishop of Bangor, and also Abbot of Hyde, wrote to Cromwell about the effect of pulling down all the weirs in Hampshire.<sup>922</sup> There was an abundance of salmon and every man came to fish for them.

1590-1591. An order for the regulation of the River Avon made at the Salisbury Quarter Sessions states that the free passage of boats have been let [obstructed] and stopped and provides for the river to be kept open.<sup>923</sup>

1592. An Order of the Commissioners of Sewers refers to the obstruction of 'the ffee passage of ffishe swannes and boates' on the river between Harnham Bridge, Salisbury and Christchurch.<sup>924</sup>

1604. 'From time immemorial, the river Avon had been subject to commissioners of sewers, to preserve various rights of fishery and passage. The antient custom of this part of the river was, that a passage was to be left free, fifteen feet wide, and twelve feet distant from either bank. This custom was confirmed by the commissions, in the third year of James the First, 1604, and the eighth of Charles the First, 1632.'<sup>925</sup>

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<sup>919</sup> Don Cross, *When Salisbury was a Seaport*. Salisbury. 2001, 3.

<sup>920</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 9, 286.

<sup>921</sup> *The Lisle Letters*. Volume 2. Editor Muriel St. Clare Byrne. Chicago and London: The University of Chicago Press. 1981, 628.

<sup>922</sup> *The Lisle Letters*. Volume 5. Editor Muriel St. Clare Byrne. Chicago and London: The University of Chicago Press. 1981, 82.

<sup>923</sup> Hampshire Record Office. 24M82/PZ3.

<sup>924</sup> Order of the Commissioners of Sewers for the Avon. Wiltshire and Swindon Record Office, PR/Salisbury St Martin/1899/223 - date 1592.

<sup>925</sup> Henry Hatcher, *The History of Modern Wiltshire. Old and New Sarum, or Salisbury*. London: The Author. 1843, 460.

1623. John Taylor and his companions rowed a wherry upstream to Salisbury.<sup>926</sup>

1632. The inventory of Joseph Warne of Bisterne, Ringwood, Yeoman, included '2 boats and Netts @ 1£'.<sup>927</sup>

## **Rivers of the South West**

### **SW 1 Dorset Stour**

Tidal limit.	Christchurch.		
B.	Sturminster Newton.	42 miles.	
RLU.	Marnhull.	46 miles.	n/a.

'An inland navigation map of England and Wales, published in 1808, shows a cut known as the Dorset and Somerset Canal running northwards from the Stour at Sturminster Newton to Bradford on Avon in Wiltshire. Yet the Stour itself is not marked as being navigable.'<sup>928</sup> There were several maps published at about this date which showed canals which were planned but never built. They nearly always showed the canal starting at a point where a river was legally and physically navigable.

### **SW 2 Dorset Frome**

Tidal limit.	Wareham.			
B.	Maiden Newton.	42 miles.		
RLU.	Dorchester.	23 miles.	3.0 m <sup>3</sup> s <sup>-1</sup> .	2.4 G.

The river from Maiden Newton to Notton was used by the Romans for the transport of wood, bricks and stone. These were then taken by canal to Dorchester.<sup>929</sup>

### **SW 3 Devon Axe**

Tidal limit.	Colyford.	
B.	Axminster.	6 miles.

1339. Tenants of a manor at Branscombe were required to take two loads of corn to either the Exe River or the Axe River, presumably so that it could be transported further.<sup>930</sup>

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<sup>926</sup> John Taylor, *All The Works of John Taylor the Water Poet. A Discovery by Sea from London to Salisbury*. London. 1630.

<sup>927</sup> Hampshire Record Office 1632AD/87. Inventory of Joseph Warne of Bisterne, Ringwood, Hampshire, Yeoman.

<sup>928</sup> Monica Hutchings, *Dorset River*. London: Macdonald. 1956, 155.

<sup>929</sup> Major Phillip Foster, 'The Roman Aqueduct at Dorchester.' *Proceedings of the Dorset Natural History and Archaeological Society*. XLVI. (1925), 1 – 13.

<sup>930</sup> Exeter Cathedral Library, D&C 3683, fol. 8 (dated 1339). Cited in Maryanne Kowaleski, 'The Grain Trade in Fourteenth-Century Exeter,' In Edwin Brezette DeWindt, Ed., *The Salt of Common Life*. Medieval Institute Publications, Western Michigan University, Kalamazoo, Michigan. 1995, 44-45.

**SW 4 River Exe**

Tidal limit.	South Exeter.		
Edwards	Exeter.	1 miles.	
A.	Exeter.	1 miles.	n/a.
RLU.	Tiverton.	20 miles.	n/a.

1290. Two weirs were built out from each shore at Topsham leaving a gap for boats. Then the gap was blocked by the Earl of Devon. An inquisition ordered that an opening should be made in the weir to enable boats to continue to pass. 'Between 1317 and 1327 this passage was, however, blocked by Hugh Courtenay, Earl of Devon.' It was said that 'such was their power and authoritie and such was the iniquitie of those daies as no justice could take place, nor lawe have his dewe course.'<sup>931</sup>

1566. A canal was built from Exeter to the sea for boats of 15-16 tons.<sup>932</sup>  
'And now by this time, *Isc* or *Ex* growing bigger, and sporting himselfe, as it were, with spreading into many streames, very commodious for mils, ...'<sup>933</sup>

1586. 'But Excester received not so great damage at these enemies hands, as it did by certaine dames, which they call *Wears*, that Edward Courtney Earle of Denshire, taking high displeasure against the Citizens, made in the river *Ex*, which stop the passage so, that no vessel can come up to the Citie; but since that time all merchandize is carried by land from Topesham three miles off. And albeit it hath beene decreed by Act of Parliament, to take away these Weares, yet they continue there still.'<sup>934</sup>

1695. The dames at Topsham were removed in the time of King Charles 'to such advantage that Lighters of the greatest burden come up to the city-key.'<sup>935</sup>

**SW 5 River Teign**

Tidal limit.	Newton Abbot.		
B.	Confluence with Bovey.	3 miles.	

See SW6 River Bovey.

**SW 6 River Bovey**

Lower limit.	River Teign.		
B.	Bovey Heath.	2 miles.	n/a.
	(2 km downstream of Bovey Tracey.)		

A logboat was found at Bovey Heathfield 2 km downstream of Bovey Tracey.<sup>936</sup>

<sup>931</sup> John Vowell *alias* Hooker, *The Description of the Citie of Excester, c1600*. Exeter: Devon and Cornwall Record Society. 1919, 33.

<sup>932</sup> Charles Hadfield, *The Canals of South West England*. Newton Abbot: David & Charles. 1967, 19-20.

<sup>933</sup> William Camden, *Britain*. Trans. Philemon Holland. London: Ioyce Norton and Richard Whitaker. 1637, 203.

<sup>934</sup> *Ibid.* page 205.

<sup>935</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 40.

<sup>936</sup> Sean McGrail, *Logboats of England and Wales, Part i*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 163.

**SW 7 Tory Brook**

Tidal limit. East of Plymouth.  
 B. Plympton. 3 miles. n/a.

A logboat was found at Newnham Park, Plympton before 1839. Newnham Park is 4km above the tidal limit.<sup>937</sup>

**SW 7A River Fowey**

Tidal limit. Tywardreath.  
 Edwards. Lostwithiel. Tidal.  
 A. Lostwithiel. Tidal.

Norden wrote of Lostwithiel (Lostuthiel) that 'It is reported, that *Foath* water flowed up as farr as this town, and conveyed boates; now farr unlike.'<sup>938</sup>

1326. Lostwithiel was listed as a port.<sup>939</sup>

1586. Camden wrote 'Now it (Lestuthiell) is a little town and not at all populous; for the channel of the river *Fawey*, which in the last age us'd to carry the tide up to the very town, and bring vessels of burthen; is now so stope up by the sands coming from the *Lead-mines*, that it is too shallow for barges; and indeed all the havens in this County are in danger of being choak'd up by these sands.'<sup>940</sup>

**SW 8 River Red**

Tidal limit: Coast.  
 B. Tuckingmill. 5 miles.  
 (Nr Camborne.)

A logboat was found at Tuckingmill, nr Camborne, 8 km upstream of the tidal limit.<sup>941</sup>

**SW 9 River Tresillian**

Tidal limit: Tresillian.  
 B. Probus. 3 miles.

Norden wrote about Probus that 'nere unto this place hath a braunche of *Foye* haven come with boates; and belowe *Probus* churche is a rock, called *Hayle-boate rocke*,

<sup>937</sup> *Ibid.* page 253.

<sup>938</sup> John Norden, *Speculi Britanniae Pars. A Topographicall & Historical description of Cornwall*. London. 1728. Reprinted 1966, 41.

<sup>939</sup> Calendar of Close Rolls, 1323-27, 640-42.

<sup>940</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: Edmund Gibson. 1695, 8.

<sup>941</sup> Sean McGrail, *Logboats of England and Wales, Part i*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 280.

wherin to this day are many great Iron rynges whereunto Boates haue bene tyed: Now noe show of a haven, but a little brooke runneth in the valley.’<sup>942</sup>

### SW 10 River Torridge

Tidal limit.	Landcross.			
A.	Monkleigh.	2 miles.	16 m <sup>3</sup> s <sup>-1</sup> .	< 10 m.
RLU.	Hele Bridge. (North of Hatherleigh.)	16 miles.	n/a.	1.4

1348-1500. ‘From the mouth of the Taw and Torridge sand was loaded onto barges to be taken upstream to Tawstock and Monkleigh, thence by pack-horse into mid-Devon.’<sup>943</sup>

1440s. ‘John Scotte of Monkleigh was a barge builder.’<sup>944</sup>

### SW 11 River Taw

Tidal Limit.	Tawstock.			
B.	Confl. River Bray.	12 miles.		
RLU.	Newnham Barton Bridge. ¼ mile above confl. Bray.	12 miles.	n/a.	

1383. A commission of ‘oyer and terminer’ was set up to inquire into ‘the construction of divers weirs, mills, pools, stakes and kiddles in the river Towe between Brastaple and Mollond, co Devon, contrary to statute of 25 Edward III’.<sup>945</sup>

The inclusion of mills and the reference to 25 Edward III imply that Mollond was upstream of the tidal limit. Its position has not been found.

1535. The Basset weir at Umberleigh was destroyed under the provisions of 23 Henry VIII c.5.<sup>946</sup>

### SW 12 River Bray

Lower limit.	River Taw.			
B.	Filleigh.	10 miles.	n/a.	

1535. A weir described as ‘Fortescue’s of Filleigh’ was destroyed under the provisions of 23 Henry VIII c.5.<sup>947</sup>

<sup>942</sup> John Norden, *Speculi Britanniae Pars. A Topographicall & Historical description of Cornwall*. London: The Editor. 1728. Reprinted 1966, 43.

<sup>943</sup> TNA, C 136/69/1. Devon RO, CR 1131-3, and Nottingham Univ. Library, Middleton Ms M 149/3. Cited in H.S.A. Fox, ‘Farming Practice and Techniques’. In Edward Miller, *The Agrarian History of England and Wales. Volume III 1348-1500*. Cambridge: Cambridge University Press, 1991, 311.

<sup>944</sup> Joan Thirsk, Ed., *The Agrarian History of England and Wales. Volume III 1348-1500*. Cambridge: Cambridge University Press, 1991, 311

<sup>945</sup> Calendar of Patent Rolls, 1381–85, 355.

<sup>946</sup> *The Lisle Letters. Volume 2*. Editor Muriel St. Clare Byrne. Chicago and London: The University of Chicago Press. 1981, 622-623 *et al.*

<sup>947</sup> *The Lisle Letters. Volume 5*. Editor Muriel St. Clare Byrne. Chicago and London: The University of Chicago Press. 1981, 37.

### **Rivers of the Somerset Levels**

Most details of the use of rivers on the Somerset Levels are not recorded. See :- Helm,<sup>948</sup> Williams,<sup>949</sup> Russett,<sup>950</sup> and Rippon.<sup>951</sup>

1547. There were botes on Le Meere, Somerset.<sup>952</sup>

### **SW 13 River Parrett**

Tidal limit.	3 miles downstream of Langport.			
Edwards.	Langport.	3 miles.		
A.	Kingsbury Episcopi.	7 miles.	2.4 m <sup>3</sup> s <sup>-1</sup> .	n/a.
B.	Norton Sub Hamdon	11 miles.		

‘Probably the most important river of the Levels was the Parrett, winding up from the sea to Bridgewater and then continuing far into the flat lands of Somerset, the tide travelling some twenty miles inland, almost to the town of Langport. From early times, river traffic took place to Langport Bridge, where any goods destined for the wharves of Thorney, three miles upstream on the Parrett, or Ilchester, on the tributary River Yeo, had to be transhipped, because the bridge totally obstructed the navigation.’<sup>953</sup>

13thC. ‘There was a bridge over the River Parrett at Langport as early as the 13<sup>th</sup> century and although it restricted the passage of anything but the smallest boats heading further inland the associated works helped to reclaim useful land and create river-side unloading places. In the 15<sup>th</sup> century the 9-arch Great Bow Bridge was damaged by flood waters several times and its restrictive water depths and clearances continued to hinder trade beyond Langport and on up the Parrett, Yeo (Ivel) and Isle rivers. ...

Until the end of the 17<sup>th</sup> century the river trade was still the province of small boat owners, merchants and carriers who specialised in buying commodities like salt at Bridgewater and then acted as chapmen in meeting local demand in mid-Somerset.’<sup>954</sup>

‘Ham Hill’s only traditional waterbourne route was to the north-west by way of the River Parrett passing through Langport and Bridgewater. Exactly how it was used is not clear.’<sup>955</sup>

1280. ‘The burgesses of Bridgewater complained that Acton had stopped them “towing their boats on the waterway of Peret, along the moorlands and meadows between Bruewat’ and Langport.”’<sup>956</sup>

<sup>948</sup> P. Helm, ‘The Somerset Levels in the Middle Ages.’ *Journal of the British Archaeological Association*. Vol. 12. (1949.)

<sup>949</sup> Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970.

<sup>950</sup> V.E.J. Russett, ‘Hythes and bows: aspects of river transport in Somerset.’ In G.L. Wood, *et al.*

‘Waterfront Archaeology.’ *CBA Research Report Number 74*. 1991, 60 – 75.

<sup>951</sup> Stephen Rippon, ‘Making the Most of a Bad Situation? Glastonbury Abbey, Meare, and the Medieval Exploitation of Wetland Resources in the Somerset Levels.’ *Medieval Archaeology*. Vol. XLVIII. (2004), 91 – 130.

<sup>952</sup> Calendar of Patent Rolls, 1547-1548, 118.

<sup>953</sup> Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 23.

<sup>954</sup> Geoffrey Body and Roy Gallop, *Parrett River Trade*. Bristol: Fiducia Press. 2006, 3 – 4.

<sup>955</sup> Richard Durman, *Ham Hill: Portrait of a Building Stone*. Reading: Spire Books Ltd. 2006, 54.

1633. 'From Ivechester the river passeth under Pillbridge, whither are brought up boates and crayes from Langport and Bridgewater.'<sup>957</sup>

1633. Gerard wrote that 'The moors at Kingsbury Episcopi, Muchelney, Aller and around Burrow Bridge, were "soe covered with water you would rather deeme them Sea than land"', and the inhabitants of the uplands surrounding Aller Moor were forced to come to church in boats "and in them also carry their dead corpses to burieall".<sup>958</sup>

1633. Thomas Gerrard wrote of Langport 'The river then [King Henry the first's time] being large enough noe doubt to bring up vessels of some burthen as it doth barges at this day.'<sup>959</sup>

#### **SW 14 River Cary**

Tidal limit. Dunball.  
B. Somerton. 15 miles.

Pre 1780. 'It was said that "in wet winters people have been known to come from the Parrett in boats to the very doors' of houses in Somerton," presumably sailing from an overflowing River Parrett, across a flooded King's Sedgemoor, and up the River Cary.'<sup>960</sup>

#### **SW 15 River Tone**

Lower limit. River Parrett.  
Edwards. Taunton. 10 miles.  
A. Taunton. 10 miles. 4 m<sup>3</sup>s<sup>-1</sup>. n/a

'The River Tone seems to have been improved for navigation as early as the 14<sup>th</sup> century. ... The Dean and Chapter [of Wells] received numerous complaints regarding the building of Ham Mill in the early 16<sup>th</sup> century. ... the navigation to Taunton previously enjoyed by the inhabitants and merchants of that town was stopped.'<sup>961</sup>

Pre 1250. The abbey of Athelney collected one boat-load of brushwood daily from Michaelmas to Holeday from Stan Moor.<sup>962</sup>

<sup>956</sup> 'Somersetshire Pleas', ed. Landon, No. 763, Publications of the Somerset Record Society, XLIV. Cited in Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 62.

<sup>957</sup> Thomas Gerard, *Particular Description of the County of Somerset*. Cited in Charles Hadfield, *The Canals of South West England*. Newton Abbot: David & Charles. 1967, 83.

<sup>958</sup> *A Particular Description of the county of Somerset, Drawn up by Thomas Gerard of Trent, 1633*. Editor E.H. Bates. *Somerset Record Society*, Vol. XV, (1900.) 220, 215 and 63.

<sup>959</sup> *Ibid.* page 131.

<sup>960</sup> Anon. [Sullivan, R.J.] *Observations made during a Tour thro' part of England, Scotland and Wales*. 1780, 43. Cited in Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 153.

<sup>961</sup> Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 24.

<sup>962</sup> W.H.B. Bird, Ed., *The Calendar of the Manuscripts of the Dean and Chapter of Wells*. Volume 1, 317-318. Cited in Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 30.

1364. The abbot of Glastonbury was accused of maintaining ‘in Monkton trees hanging over the Tone right across it, so that boats cannot pass as they were wont.’ Monkton is 3 km downstream of Taunton. He responded that the copse had recently been removed. He was further accused of owning a fulling mill recently erected so that the passage of boats and fish between Bridgewater and Taunton was prevented.<sup>963</sup>

1414. The abbot of Glastonbury was accused of building a water-gate ‘across the middle of the King’s deep river running from Taunton to the town and port of Bridgewater that boats and small ships called ‘botes’ and ‘trowys’ suitably laden with divers wares called ‘avoir de poirs’ and other necessities, viz. wood for fuel, timber, coal, pitch, salt, iron, lime, grain, malt, wine and other victuals, for the King’s people in the town of Taunton and the country adjoining, which used to be brought up from to Taunton from Bridgewater by the force of the water from time immemorial, ...’<sup>964</sup>

1490. ‘The Chapter of Wells erected a mill at Ham on the Tone, which was said to cause severe flooding upstream and to be a hindrance to navigation. In answer to the latter point the chapter gave some interesting details about the flow of the Tone: “and all the somer season the water is so lowe and so meny shelpes and bayes in the ryver between our myll and Taunton, that it is not possible to convey eny bote that way; and in the winter season the medewes be so filled and replenysshed with water, that the bootes may go over at every place, so that they shall not be lett by the myll.”<sup>965</sup>

1505. ‘The men of Taunton complained of a new mill which prevented their having “course recourse and free passage upon the water of Toon [Tone], Bathepolemyll and Brigewater for all maner of marchaundyses, corne, cole, stones and all other stuff”, water carriage being “in every ton better chepe by ijs”.’<sup>966</sup>

## **SW 16 River Yeo or Ivel**

Lower limit. River Parrett.

B. Ilchester. 6 miles.

‘There is evidence of two Roman wharves at Ilchester, (fn. Information given by Mr J. Stevens of Ilchester.) but in modern times it is likely that boats only reached Ilchester wharf - on the left bank, below the bridge - at times of flood.’<sup>967</sup>

‘From early times, river traffic took place to Langport Bridge, where any goods destined for the wharves of Thorney, three miles upstream on the Parrett, or Ilchester, on the tributary River Yeo, had to be transhipped, because the bridge totally obstructed the navigation.’<sup>968</sup>

<sup>963</sup> Calendar of Patent Rolls, 1381-85, 511.

<sup>964</sup> Calendar of Inquisitions Miscellaneous, 1399-1422, 259.

<sup>965</sup> W.H.B. Bird, Ed., *The Calendar of the Manuscripts of the Dean and Chapter of Wells. Volume II*, 184-190. Cited in Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 82.

<sup>966</sup> Hist MSS Com. Rep. Wells MSS., ii. 187. Cited in L.F. Salzman, *English Trade in the Middle Ages*. Oxford: Clarendon Press. 1931, 209

<sup>967</sup> Charles Hadfield, *The Canals of South West England*. Newton Abbot: David & Charles. 1967, 83.

<sup>968</sup> Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 23.



1633. 'Two miles below Ilchester the River Yeo is crossed by a pack-horse bridge known as Pill Bridge. ... Thomas Gerard (c. 1633) stated that "the River (Parrett) passeth under Pillbridge, whither are brought upp boates and crayes from Lamport and Bridgewater.'<sup>969</sup>

## SW 17 River Brue

Tidal Limit.	Highbridge.			
Edwards.	Glastonbury.	13 miles.		
A.	Glastonbury.	13 miles.	n/a.	
B.	Baltonsborough.	18 miles.	2 m <sup>3</sup> s <sup>-1</sup> .	n/a.

Four hythes near Butleigh are mentioned in a charter.<sup>970</sup>

Two logboats have been found at Glastonbury, and one each at Meare, Shapwick and Woolavington.<sup>971</sup>

Medieval times. Williams states that the interpretation of the complicated system of inter-connected watercourses of the Brue valley 'are further complicated by the deliberate attempt to maintain even water-levels, for water transport was widespread in this area in medieval times in order to overcome the great obstacle of the marsh.'<sup>972</sup>

Medieval period. Rooksbridge was the port at which goods were transferred from sea-going ships into smaller barges which took goods to Glastonbury.<sup>973</sup> Rooksbridge is on the Mark Yeo or Pilrow Cut from the River Axe to the River Brue.

'The (Pilrow) Cut certainly contributed little to the drainage of the moors through which it passed, being excavated on slightly higher ground than the more badly drained areas on either side; once again, like other medieval cuts in this area of the Levels, its purpose would seem to be primarily one of navigation, being a connecting link between the four coastal manors of the Brents, Lympsham and Berrow, with the Abbey of Glastonbury.' Evidence for the existence of the cut goes back perhaps to the early thirteenth century and certainly to the early fourteenth century.<sup>974</sup>

Rippon states that boats reached to Baltonsborough from Glastonbury.<sup>975</sup>

<sup>969</sup> E. Jervoise, *The Ancient Bridges of the South of England*. Westminster: The Architectural Press. 1930, 92.

<sup>970</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 74.

<sup>971</sup> Sean McGrail, *Logboats of England and Wales, Part (i)*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978.

<sup>972</sup> Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 64.

<sup>973</sup> *Ibid.* page 65.

<sup>974</sup> *Ibid.* page 68.

<sup>975</sup> Stephen Rippon, 'Water and wetlands in medieval estate management: Glastonbury Abbey, Meare and the Somerset Levels in South West England.' In Jan Klapste, Ed., *Water Management in medieval rural economy*. Prague: Institute of Archaeology, Academy of Sciences of the Czech Republic. 2003, 93-112, 93.

**SW 18 River Whitelake**

Lower limit Brue.

A. Piltown. 7 miles. n/a.

Early 13<sup>th</sup>C. Robert Malerbe 'ought to provide a boat that can carry eight men, and be the steersman, and carry the lord abbot where he wishes ... and all his men, and the cook, the hunter with his dogs, and all those who can or ought to be carried by water ... He ought to be responsible for the Abbot's wine at Pilton, after it has been put in the boat and until it has been brought to Glastonbury ... To look after all waters between Clewer and Street bridges, and between Mark bridge and Glastonbury.'<sup>976</sup>

**SW 19 River Axe**

Tidal limit: Brean.

Edwards. Panborough. 15 miles.

A. Bleadney. 15 miles. 0.6 m<sup>3</sup>s<sup>-1</sup>. n/a.  
(1 km downstream of Henton.)

B. Wells. 20 miles.

Ann Coles claims that the name 'Bleadney' is derived from *hyo*, a hythe.<sup>977</sup>

'From Rackley, as it is now called, barges carried goods right up to the great abbey of Glastonbury. There was indeed a considerable system of watercourses in these northern Somerset Levels, comparable with that round the Tone and Parrett in the southern levels.'<sup>978</sup>

'Not far from Rackley is Hythe, now less than a hamlet, which was a similar little port. Here the grass-covered wharves can still be seen; and there are other small loading and unloading places.'<sup>979</sup>

'Small craft could work higher up [than Rackley] to Panborough and Bleadney. The abbots of Glastonbury had their own port lower down, at Rooksbridge near East Brent, on a tidal pill of the old river, whence the Pilrow Cut ran for some 6 miles south across the moor to Mark, and then south-eastwards to join the Brue opposite Burtle. Thence goods were taken up the Brue, through Meare Pool, and so the mill stream near Glastonbury.'<sup>980</sup>

'The Axe also provided access between the important minster, later the cathedral, at Wells and the sea.'<sup>981</sup>

<sup>976</sup> Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 71.

<sup>977</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 71.

<sup>978</sup> W.G. Hoskins, *Fieldwork in Local History*. London: Faber and Faber Limited. 1976, 61.

<sup>979</sup> *Ibid.* page 61.

<sup>980</sup> Charles Hadfield, *The Canals of South West England*. Newton Abbot: David & Charles. 1967, 76.

<sup>981</sup> Charles and Nancy Hollinrake, 'The Water Roads of Somerset.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 232.

Early 12<sup>th</sup> C. 'There was a port on the Axe at Rackley, the tidal limit, which sea-going vessels could reach to transfer their cargoes to smaller barges. These would then proceed to Wells, returning with lead from the Mendip mines.'<sup>982</sup>

1178. 'One such old river port is Rackley, on the former course of the Axe in Somerset, about 2½ miles west of Axbridge, now a mere hamlet on a quite insignificant stream (see the O.S. 2½-inch sheet, ST35). It has long since ceased to figure on the one-inch map. Lying under a bank of red marl, where the Cheddar Water comes nearest to the road from Axbridge, it was originally called *Radeclive* ('red cliff') and is first referred to in a Wells Episcopal record of 1178 as *portus de Radeclive* in the parish of Compton Episcopi.'<sup>983</sup>

13<sup>th</sup> C. 'By the thirteenth century there were a series of small ports and landing places in the Axe valley, suggesting that the amount of traffic was not inconsiderable (Bleadney, Northlode near Wedmore, Clewer, Brinscombe, Hythe near Cheddar, Axbridge, Lower Weare, Rackley, and Rooksbridge).'984

13<sup>th</sup>C. 'In the thirteenth century ... Sea-going ships could reach up the Axe to Wells.'<sup>985</sup>

1200. 'Richard the Lionheart approved the construction of a wharf at Rackley, near Axbridge.'<sup>986</sup>

Early 13<sup>th</sup> C. See:- SW18 River Whitelake.

1242. 'The Abbott of Glastonbury (was) accused of breaking three fisheries with his boats in the Axe river between Rackley and Glastonbury.'<sup>987</sup>

1273. It is recorded that the Axe was 'adequate for the Abbot to take stone and lime and corn from his manors and from other places in those parts to his abbey at Glastonbury'<sup>988</sup> and that it was so used.<sup>989</sup>

1275. 'A document states that the watercourse between Nyland, in the Axe valley, and Bleadney "was adequate for the Abbot to take stone and lime and corn from his manor

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<sup>982</sup> Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 22.

<sup>983</sup> W.G. Hoskins, *Fieldwork in Local History*. London: Faber and Faber Limited. 1976, 60-61.

<sup>984</sup> Stephen Rippon, 'Waterways on Coastal Marshlands.' In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 217.

<sup>985</sup> Robin and Romey Williams, *The Somerset Levels*. Bradford on Avon: Ex Libris Press. Revised Edition 2003, 65.

<sup>986</sup> *Ibid.* page 64.

<sup>987</sup> 'Somerset Pleas', Ed. Chadwyck-Healey, No. 237 (1242), Somerset Record Society XI. Cited in Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 65.

<sup>988</sup> P.J. Helm, 'The Somerset Levels in the Middle Ages.' *Journal of the British Archaeological Association* Vol. 12. (1949), 37.

<sup>989</sup> C.E. Chadwyck-Healey, Ed., *Somerset Pleas*. Somerset Records Society XI, (Taunton, 1897-1929). no 818. Cited in Stephen Rippon, 'Waterways on Coastal Marshlands.' In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 215.

and from other places in those parts to his Abbey of Glastonbury and [they] were used to go from their Abbey to the manor of Andredesye [Nyland] in their boats.”<sup>990</sup>

1303. ‘Another tributary canal of the Axe is suggested by the place name “Northlode” in Theale.’<sup>991</sup>

1347. The sheriff of Somerset was ordered to announce that no ship or boats were to be loaded with wool, hides and merchandise in the water of Radecliff except at the quay of Bridgewater or Bristol.<sup>992</sup>

## **SW 20 Cheddar Yeo**

Lower limit. River Axe.

B. Hythe. 5 miles.  
(2km downstream of Cheddar.)

‘Imported potsherds have been found at ... Cadbury Congresbury, a reused hillfort by the Congresbury Yeo, a navigable river.’<sup>993</sup>

1212. Hythe (meaning landing place) was first recorded.<sup>994</sup>

## **SW 21 River Sheppey**

Lower limit. River Axe.

A. Mondenmede Hurn. 1 mile.  $1.10 \text{ m}^3 \text{ s}^{-1}$ . n/a.  
(3 miles downstream of Coxley.)

1326. Two bridges on the waterway from Monkenmede (Hurn) to Bleadney bridge were to be high enough for boats to pass underneath.<sup>995</sup>

## **SW 22 River Banwell**

Lower limit. Coast.

B. Eton. 8 miles.  
(0.5 mile south of J21 on M5.)

Cole considered that the name Eton indicates that the settlement had to ‘keep the river open for navigation’.<sup>996</sup> Eton is now only represented by Eton Lane.

<sup>990</sup> T. Hearne, Ed., *Joannis confratris et monachi Glastoniensis chronica, sive historia de rebus Glastoniensibus. Volume II.* 337-348. Cited in Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 65.

<sup>991</sup> Stephen Rippon, ‘Waterways on Coastal Marshlands.’ In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 217.

<sup>992</sup> Calendar of Close Rolls, 1346-49, 242.

<sup>993</sup> Charles and Nancy Hollinrake, ‘The Water Roads of Somerset.’ In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 232.

<sup>994</sup> Stephen Rippon, ‘Waterways on Coastal Marshlands.’ In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 216

<sup>995</sup> A. Watkin, Ed., ‘The Great Chartulary of Glastonbury Abbey. Volume 1’, *Somerset Record Society*, LIX, (1944). Cited in Michael Williams, *The Draining of the Somerset Levels*. Cambridge: At the University Press. 1970, 67.

**SW 23 Bristol Avon**

Tidal limit: Bristol.

Edwards.	Bath.	16 miles.		
A.	Bath.	16 miles.	20 m <sup>3</sup> s <sup>-1</sup> .	Canalised.
RLU.	Chippenham.	42 miles.	n/a.	

1276. 'To cause the banks of the water of Avene ... to be widened and opened by the view and trestimony of two men of Bath and two of Bristol specially elected by the men of those parts, so that boats and ships may freely pass without hindrance or danger throughout the whole water in those parts.'<sup>997</sup>

1365. The river between Bath and Bristol was obstructed by 'weirs, piles and palings and land raised on both sides of it that the adjacent lands, meadows and pastures are flooded and the passage of crayers and boats with victuals impeded.'<sup>998</sup>

1372. *Plea*. 'Also, the commons of the counties of Somerset and Wiltshire pray: concerning the river called Avon between the city of Bath and the town of Bristol, which runs for part of its course between the counties of Somerset and Gloucester, and by which victuals necessary to the said commonalty have to be brought in vessels and boats rather than by land; as a result of obstacles placed in the marshes, weirs of stone and straw set and built in the said river, and the raising of the land on either side of the said river, the water has been stopped, restrained and constricted, the adjacent lands, meadows and pastures are flooded, the said lands, meadows and pastures are often destroyed and the passage of the said vessels and boats with victuals and other necessities for the said commonalty is disturbed between the aforesaid places, to the damage and grievance of the said commonalty. Wherefore they pray remedy, that the said weirs might be knocked down or removed so that the vessels and the boats can pass between the two towns, in ease of the aforesaid commonalty.

*Answer*. He who shall feel himself aggrieved shall pursue this, and justice will be done to him according to the form of the statute ordained in this case.'<sup>999</sup>

1383. The river was again obstructed so that boats could not pass.<sup>1000</sup>

c1543. 'A 2. miles above Bristow [Bristol] was a commune *trajectus* by bote.'<sup>1001</sup>

1641. John Taylor rowed from Bristol to Bath and back crossing four or five mills and weirs.<sup>1002</sup>

<sup>996</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

<sup>997</sup> Calendar of Close Rolls, 1272-79, 354.

<sup>998</sup> Calendar of Patent Rolls, 1364-67, 140-141.

<sup>999</sup> The Parliamentary Rolls Of Medieval England. 1372 Edward III, Membrane 312, 24. X.

<sup>1000</sup> Calendar of Patent Rolls, 1381-85, 259.

<sup>1001</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume I*. Editor Lucy Toulmin Smith, Carbondale: Southern Illinois University Press. 1964, 136.

<sup>1002</sup> John Taylor, *John Taylor's last Voyage*. London: John Taylor. 1641, 19. Contained in *Works of John Taylor. Second Collection*. The Spencer Society 14. 1873. New York: Burt Franklin. 1967.

**SW 24 Bristol Frome**

Tributary of the Bristol Avon.

A. Stapleton. 1 mile.  $1.7 \text{ m}^3 \text{ s}^{-1}$ . <10m

1221. Richard Palmer fell into the River Frome out of a boat and was drowned. Value of the boat 10 s. A second man also drowned in the river for reasons unknown.<sup>1003</sup>

c.1450. William of Worcester records that *bosco* [wood] was carried on the Frome into Bristol.<sup>1004</sup>

**SW 25 River Stroud**

Lower limit. River Severn.

B. Stonehouse. 5 miles.

1641. John Taylor rowed from Stonehouse to the Severn in July in a year of 'great drought'.<sup>1005</sup>

**Rivers of the Severn Basin.****Se 1 River Severn**

Tidal limit: Gloucester.

Edwards. Montford Bridge. 97 miles.

A. Welsh Border. 116 miles.

RLU. Welsh Border. 116 miles.

Most reports of the use of the river are not recorded. See Green,<sup>1006</sup> also Acts of 1430 and 1503 below.

1221. J was struck on the head by a stake at the Tewkesbury dam as he was in a ship going up towards Hanley.<sup>1007</sup> (Dam for *Gurgitem*. Ship for *navi*.)

1256. A man was drowned having fallen from a boat into the River Severn in the Hundred of Pimhill.<sup>1008</sup> This is upstream of Shrewsbury.

1284. The Sheriff of Shropshire was granted the power to fine rafts of firewood or timber which damaged the Montford Bridge which is 16 km upstream of Shrewsbury.<sup>1009</sup>

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<sup>1003</sup> *Pleas of the Crown for the Hundred of Swineshead and the Township of Bristol*. Editor Edward James Watson. Bristol: W. Crofton Hemmons. 1902, 137, 123.

<sup>1004</sup> *Itineraria Symonis Simeonis et Willelmi de Worcestre*. Editor Jacobus Nasmith. Cambridge. 1778, 238.

<sup>1005</sup> John Taylor, *John Taylor's last Voyage*. London: John Taylor. 1641, 22. Contained in *Works of John Taylor. Second Collection*. The Spencer Society 14. 1873. New York: Burt Franklin. 1967.

<sup>1006</sup> Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999.

<sup>1007</sup> *Select Pleas of the Crown. Volume 1. A.D. 1200-1225*. Editor F.W. Maitland. Selden Society Vol. 1. 1887, 84.

<sup>1008</sup> *The Shropshire Eyre Roll of 1256*. Editor Alan Harding. Selden Society Vol. 96. 1980, 287.

1285, 1318, 1328, 1381, 1412. Charters show that trading vessels were required to pay tolls at Montford Bridge.<sup>1010</sup> These vessels must have started upstream .

1386-7. 'Earnwood (Salop) made 60,000 "*talwode*" [Faggots] for £9, spent a further £5 12s. 6d. in carrying them to the Severn, and sold them there for £36.'<sup>1011</sup>

1387. 'Anslem said that the Severn had from time immemorial been a river in which many weirs (*gurgites*) were built, a space of eighteen feet in breadth being always reserved for the passage of boats, and that he and his ancestors, ... had had from time immemorial a weir, which the king's attorney supposed to be a sewer (*seweram*), pertaining to the said manor, eighteen feet being left for the passage of boats on the west side of the river, which he and his ancestors had always been wont to maintain and repair and which he himself so repaired, without hindering the course of the said river, except as had always been customary.'<sup>1012</sup>

1427. The commons complained that people had attacked boats, floats and drags carrying 'all kinds of goods and merchandise and other things whether timber or other wood and fuel ... both in Wales and other privileged places'.<sup>1013</sup>

1430. An Act was passed confirming free passage on the River Severn.<sup>1014</sup>

1500-1700. 'During the sixteenth and seventeenth centuries the river was usable nominally above Shrewsbury as far as Welshpool. But it had its own interruptions - low water in summer and floods in winter - and the bargemen were certainly as undependable as the carriers.'<sup>1015</sup>

1503. An Act was passed confirming the right of free passage on the River Severn except for tolls for which lawful title could be shown. The Act also provided that, when people haling or drawing boats caused damage, then fair compensation should be paid to the riparian owner.<sup>1016</sup>

c1535. 'To this bridge resorte many flat and longe vessels to cary downe and up all maner of marchandise to Bewdley and above Beudeley.'<sup>1017</sup>

1543. A 'picardes' is described as a boat carrying 15 to 36 tons.<sup>1018</sup>

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<sup>1009</sup> Calendar of Patent Rolls, 1281-92, 116.

<sup>1010</sup> T. Rowley, *The Shropshire Landscape*. London: Hodder & Stoughton. 1972, 236.

<sup>1011</sup> David L. Farmer, 'Marketing the Produce of the Countryside.' In Edward Miller, *The Agrarian History of England and Wales. Volume III 1348-1500*. Cambridge: Cambridge University Press, 1991, 413.

<sup>1012</sup> *Public Works in Mediaeval Law, Volume I*. Editor C.T. Flower. Selden Society Vol. 32. 1915, 155.

<sup>1013</sup> Parliamentary Rolls of Medieval England. Henry VI, 1427 October, XV, 42, iv-332-333.

<sup>1014</sup> 1430. 9 Henry VI, c 5.

<sup>1015</sup> T.C. Mendenhall, *The Shrewsbury Drapers and the Welsh Wool Trade in the XVI and XVII centuries*. Oxford: Oxford University Press. 1953, 36.

<sup>1016</sup> 1543. 19 Henry VII, c 18.

<sup>1017</sup> *The Itinerary of John Leland. Volume II*. Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 86.

<sup>1018</sup> *Select Pleas of the Court of Star Chamber, 1509-1544. Volume II*. Editor I.S. Leadam. Selden Society Vol. 25. 1910, 266.

1570-1700. 'Of the 600 adult males (living in Broseley and Madeley) between 1570 and 1700 whose occupations are known, ... 23 per cent were workers on the river.'<sup>1019</sup>

c1575. Lord Burleigh's map of Shrewsbury shows a timber raft coming downstream and three rafts on the bank by Welsh Bridge.<sup>1020</sup>

1577. Harrison wrote of the Severn 'As the said stream, in length of course, bountie of water, and depth of chanel commeth farre behind the Thames, so for other commodities, as trade of merchandize, plenty of carriage ... it is nothing at all inferiour to or second to the same.'<sup>1021</sup>

1586. 'Hereabouts are those old-fashion'd boats, call'd in Latin *Rates*, i.e. *Flotes*, made of rough timber planks, joyn'd together with light ribs of wood, which with the stream convey burthens.'<sup>1022</sup>

1599. A barge coming downstream collided with Welsh Bridge in Shrewsbury.<sup>1023</sup>

## Se 2 Warwickshire Avon

Lower limit. River Severn.

Edwards. Evesham. 28 miles.

A. Alveston. 47 miles. n/a.

B. Bretford. 82 miles.

RLU. Ashow. 68 miles.  $5.6 \text{ m}^3 \text{ s}^{-1}$ . 0.57 S&G.

*Edwards* quotes a record that barges were taken from Chester to Kenilworth in 1266 to launch an attack across the lake. This is not accepted here as evidence that the barges were taken up the Warwickshire Avon.

1196. (Stratford upon Avon's) prime advantage was its position at the junction of these roads with the navigable Avon, then a part of the great waterway system of the Severn valley.<sup>1024</sup>

1199. Bretford was founded only a short way down the Foss Way but at the more advantageous situation where land and water routes meet.<sup>1025</sup>

1221. In Pathelawe Hundred, 'Roger Dun fell from a boat so that he is drowned.'<sup>1026</sup> Part of the Arrow and the Warwickshire Avon from the confluence with the Arrow to Bishops Hampton are in Barlichwaye Hundred.

<sup>1019</sup> Malcolm Wanklyn, 'The impact of water transport facilities on the economies of English river ports, c.1660-c.1760.' *Economic History Review*, Vol. XLIX. I, (1996), 20-34, 27.

<sup>1020</sup> A.S. Davies, 'The river trade and craft of Montgomeryshire and its borders.' *Montgomeryshire Collections*, Vol. 44. (1935), 46-56, 54.

<sup>1021</sup> William Harrison, *Description of the Sauerne*. 1577. Cited in Edwin A. Pratt, *A History of Inland Transport and Communication in England*. London: Kegan Paul, Trench, Trubner & Co., Ltd. 1912, 114.

<sup>1022</sup> William Camden, *Camden's Britannia*. Trans. and Ed. Edmund Gibson. London: F. Collins. 1695, 548.

<sup>1023</sup> David Harrison, *The Bridges of Medieval England*. Oxford: Clarendon Press. 2004, 79.

<sup>1024</sup> Maurice Beresford, *New Towns of the Middle Ages*. London: Lutterworth Press. 1967, 501.

<sup>1025</sup> *Ibid.* page 499.



1221. Siwate of Alveston fell from a boat and was drowned.<sup>1027</sup> Alveston is 3 km upstream of Stratford-upon-Avon.

1221. In Kynton Hundred H broke one boat of the abbot of Bordesley.<sup>1028</sup>

1275. 'Stephen Hanz of Cropthorne fell into the water and drowned as he was trying to cross the river Avon.'<sup>1029</sup>

'Richard Fisher of Eckington fell into the water and drowned as he was trying to cross the river Avon.'<sup>1030</sup>

'Simon Miller of Ryall was trying to cross the Avon in a boat when he fell into the water and drowned.'<sup>1031</sup>

c. 1400. 'The Avon carried Bredon's grain to Tewkesbury.'<sup>1032</sup>

1413-1422. At Kenilworth Castle. 'By far the most conspicuous part of the remains, however, is a very substantial excavation, 100ft. wide and 270 ft. long, leading from the former edge of the mere and crossing the outer moat into the enclosure, which was evidently a canal or harbour allowing the Pleasance to be entered by boat.'<sup>1033</sup>

15<sup>th</sup> C. Rogers considered that the monastery accounts show that goods were taken by water from Tewkesbury and Evesham to Pershore.<sup>1034</sup>

1636. Sir William Russel, Sheriff of Worcestershire, confiscated a boat sent to survey a portion of the river adjoining his estate.<sup>1035</sup> This shows that the river could be used by boats before it was made navigable.

1641. John Taylor rowed upstream to Evesham and apparently could have rowed further but he wished to return to London.<sup>1036</sup>

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<sup>1026</sup> *Rolls of the Justices in Eyre for Gloucester, Warwickshire, and Shropshire, 1221, 1222.* Editor Doris M. Stenton. Selden Society Vol. 59. 1940, 347.

<sup>1027</sup> *Ibid.* page 346.

<sup>1028</sup> *Ibid.* page 361.

<sup>1029</sup> *The Worcester Eyre of 1275.* Editor Jens Röhrkasten. Worcestershire Historical Society. New Series Vol. 22. 2008, 381.

<sup>1030</sup> *Ibid.* page 438.

<sup>1031</sup> *Ibid.* page 452.

<sup>1032</sup> Worcs. RO, BA 2636/009; 1/158/92020. David L. Farmer, 'Marketing the Produce of the Countryside.' In Edward Miller, *The Agrarian History of England and Wales. Volume III 1348-1500.* Cambridge: Cambridge University Press, 1991, 354

<sup>1033</sup> M.W. Thompson, 'Reclamation of Waste Ground for the Pleasance at Kenilworth Castle, Warwickshire.' *Medieval Archaeology.* Vol. 8. (1964), 222-223, 222.

<sup>1034</sup> James E. Thorold Rogers, *A History of Agriculture and Prices in England. Volume IV.* Oxford: Clarendon Press. 1882, 696.

<sup>1035</sup> Grahame Farr, 'Severn Navigation and the Trow.' *Mariners' Mirror* Vol. 32, Number 2, (1946), 66-95, 71.

<sup>1036</sup> John Taylor, *John Taylor's last Voyage.* London: John Taylor. 1641, 22. Contained in *Works of John Taylor. Second Collection.* The Spencer Society 14. 1873. New York: Burt Franklin. 1967.

### Se 3 River Teme

Lower limit. River Severn.

A. Bringewood. 47 miles.  $14 \text{ m}^3 \text{ s}^{-1}$ . 1.8 Weirs.  
(3 miles upstream of Ludlow.)

B. Confl. River Onny. 49 miles.

RLU. Ludlow. 44 miles.  $14 \text{ m}^3 \text{ s}^{-1}$ . 1.8 Weirs.

See River Onny below.

Green has summarised the information available although as he states 'Navigation on the River Teme is shrouded in mystery.'<sup>1037</sup> Twenty five miles upstream of Ludlow there is a pub called *The Wharf* at Felindre, which in Welsh means 'Three Mills'. Lead may have been shipped down the river and corn brought back up.

In the 14<sup>th</sup> century stone was brought from Caen for the mill at Ashford Carbonel, three miles downstream of Ludlow, using water transport all the way.<sup>1038</sup> In the 15<sup>th</sup> century there were problems with Ludlow's trade because there was not viable connection to the navigable Severn.<sup>1039</sup>

1275. 'Richard le Hoppere fell out of a boat into the Teme and drowned.'<sup>1040</sup>

'William Fisher of Ankerdine Hill was trying to cross the Teme in a boat; he fell in and drowned.'<sup>1041</sup>

17<sup>th</sup> C. There was a wharf at Bringewood Forge which is three miles upstream of Ludlow.<sup>1042</sup> It is at least possible that this wharf was in use at the end of the 16<sup>th</sup> century.

A late 18<sup>th</sup> C lithograph shows a trow on the river.<sup>1043</sup>

### Se 4 River Onny

Lower limit. River Teme.

B. Eaton. 10 miles.

Cole considered that the name Eaton indicates that the settlement had to 'keep the river open for navigation'.<sup>1044</sup>

<sup>1037</sup> Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 33.

<sup>1038</sup> *Ibid.*.

<sup>1039</sup> *Ibid.*

<sup>1040</sup> *The Worcester Eyre of 1275*. Editor Jens Röhrkasten. Worcestershire Historical Society. New Series Vol. 22. 2008, 434.

<sup>1041</sup> *Ibid.* page 540.

<sup>1042</sup> Richard and Nina Muir, *Rivers of Britain*. London: Guild Publishing. 1986, 127-128.

<sup>1043</sup> Samuel Ireland, *Picturesque Views on the Severn*. Reproduced in Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 34.

<sup>1044</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

**Se 5 Eaton Brook**

Lower limit. River Onny.  
 B. Eaton. 5 miles.

Cole considered that the name Eaton indicates that the settlement had to 'keep the river open for navigation'.<sup>1045</sup>

**Se 6 River Salwarpe**

Lower limit. River Severn  
 Edwards. Droitwich. 5 miles.  
 A. Droitwich. 5 miles.  $1.3 \text{ m}^3 \text{ s}^{-1}$ . n/a.

1378. Richard II granted the bailiffs of Droitwich the right to levy tolls on the river.<sup>1046</sup>

**Se 7 Worcestershire Stour**

Lower limit. River Severn.  
 A. Kidderminster. 5 miles.  $2.8 \text{ m}^3 \text{ s}^{-1}$ . n/a.

Donkin states that 'Buildwas had convenient access to the forest of Kinver along the Severn where it possessed a place "for loading and unloading boats". Since Kinver is on the bank of the River Stour it seems more likely that the boats were on this river.<sup>1047</sup>

Paget-Tomlinson states that the Stour navigation was authorized by an Act of 1662 from the Severn to the Stourbridge collieries. ... The section from Kidderminster to Stourbridge was completed in 1667. ... Boats used this section, but lack of money prevented further improvement downstream, although the river was navigable down to the Severn.<sup>1048</sup>

**Se 8 Cound Brook**

Lower limit. River Severn.  
 B. Cantlop. 3 miles.

Cole considers that the name Eaton Mascott, a place just downstream of Cantlop, indicates that the settlement had to 'keep the river open for navigation'.<sup>1049</sup>

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<sup>1045</sup> *Ibid.* page 81.

<sup>1046</sup> L.T.C. Rolt, *The Inland Waterways of England*. London: George Allen and Unwin Ltd. 1950, 52.

<sup>1047</sup> R.A. Donkin, *The Cistercians: Studies in the Geography of Medieval England and Wales*. Toronto: Pontifical Institute of Mediaeval Studies. 1978, 129.

<sup>1048</sup> Edward Paget-Tomlinson, *The Illustrated History of Canal & River Navigations*. Sheffield: Sheffield Academic Press Ltd. 1993, 195.

<sup>1049</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

**Se 9     River Tern**

Lower limit. River Severn.

B. Oakley Park. 23 miles.  
(1 mile up stream of Market Drayton.)

RLU. Stoke upon Tern. 15 miles.  $1.3 \text{ m}^3 \text{ s}^{-1}$ . 0.6 S.

A logboat was found at Oakley Park.<sup>1050</sup>

Cole considers that the name Eaton upon Tern indicates that the settlement had to 'keep the river open for navigation'.<sup>1051</sup>

1256. A man was drowned having fallen from a boat into the River Tern.<sup>1052</sup>

**Se 10     River Perry**

Lower limit. River Severn.

B. Bagley. 9 miles.

RLU. Wykey. 8 miles.  $1.2 \text{ m}^3 \text{ s}^{-1}$ . 1.4 S.

Logboats have been found at Ellesmere and Bagley.<sup>1053</sup>

Cole considered that the name Yeaton indicates that the settlement had to 'keep the river open for navigation'.<sup>1054</sup>

**Se 11     River Vyrnwy**

Lower limit. River Severn.

A. Llanymynech. 8 miles. (Border with Wales.)

RLU. Llanymynech. 8 miles.

'Llanymynech is on the navigable portion of the Vyrnwy'.<sup>1055</sup>

<sup>1050</sup> Sean McGrail, *Logboats of England and Wales, Part (i)*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 246-248.

<sup>1051</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.  
<sup>1052</sup> *The Shropshire Eyre Roll of 1256*. Editor Alan Harding. Selden Society Vol. 96. 1980, 247.

<sup>1053</sup> Sean McGrail, *Logboats of England and Wales, Part (i)*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 153, 188-190.

<sup>1054</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

<sup>1055</sup> A.S. Davies, 'The river trade of Montgomeryshire and its borders.' *Montgomeryshire Collections*. Vol. 44. (1934 for 1933-34), 33-46' 35.

**Se 12     Herefordshire Wye**

Tidal limit:-	Bigsweir Bridge.		
Edwards.	Hereford.	54 miles.	
A.	Hay-on-Wye.	83 miles.	42 m <sup>3</sup> s <sup>-1</sup> .
RLU.	Hay-on-Wye.	83 miles.	42 m <sup>3</sup> s <sup>-1</sup> .
	(Border.)		

There was a Roman quay at Kenchester 6 miles upstream of Hereford.<sup>1056</sup>

‘During the last thirteen centuries Hereford is mentioned among abundant evidence of the growth of towns and trading centres along navigable rivers. ... it is certain that forges at Bicknor, Lydbrook, Monmouth and Carey Mills must have used the river for transportation of their products downstream from the 13<sup>th</sup> century onwards.’<sup>1057</sup>

12<sup>th</sup> and 13<sup>th</sup> C. Stone for the cathedral was taken from Howe Caple to Hereford by boat.<sup>1058</sup>

1228, 1241, 1245. Wine was taken in barges to Munemuthe (Monmouth).<sup>1059</sup>

1240. ‘The Magor Pill boat represents the type of craft engaged in such activities [trading from the Bristol channel ports], at a period when ... the River Wye was navigable as far as Hereford.’<sup>1060</sup>

1301. A commission was appointed to survey the river between Hereford and Monemuth ‘as it appears that ships and boats cannot pass as they were wont.’<sup>1061</sup>

1312. A weir was built at Gayeshom (Wyesham) ‘so that they cannot carry their victuals and merchandise by the said river to Monmouth and elsewhere in the march.’<sup>1062</sup> Wyesham is downstream of Monmouth.

1315. ‘The people of Gloucestershire and Herefordshire complained that “the river Wye is the King’s highway where ships ... were wont, from time without mind, to pass from Bristol up to Monmouth with all manner victuals and merchandise without disturbance, until Earl Gilbert of Gloucester raised a weir in his land of Trellech across the said river so that no ship, barge, boat, can pass there ...”’<sup>1063</sup>

<sup>1056</sup> H.C. Moore, ‘The supposed Roman Bridge in the grounds of the New Weir, Kenchester.’ *The Transactions of the Woolhope Naturalists Field Club for 1893-4.* 1896, 56-60.

<sup>1057</sup> Victor Richard Stockinger, *The Rivers Wye and Lugg Navigation. A Documentary History. 1555-1951.* Hereford: Eyre & Strahan Limited, and Almeley: Logaston Press. 1996, 7.

<sup>1058</sup> Herefordshire and Worcestershire Earth Heritage Trust, *Explore Hereford Cathedral.* Leaflet. Undated.

<sup>1059</sup> Calendar of Liberate Rolls, 1226-40, 96; 1240-65, 65 and 317.

I. Waters, *The Port of Chepstow.* Chepstow. 1977, 7. Cited in Edwards.

<sup>1060</sup> Nigel Nayling, Ed., *The Magor Pill medieval wreck.* Council for British Archaeology Research Report 115. 1998, 150.

<sup>1061</sup> Calendar of Patent Rolls, 1292-1301, 627.

<sup>1062</sup> Calendar of Inquisitions Miscellaneous, 1307-49, 48-49.

<sup>1063</sup> Calendar of Ancient Petitions Relating to Wales, ed Rees, p 67. Cited in ‘Marketing the Produce of the Countryside.’ In Edward Miller, Ed., *The Agrarian History of England and Wales. Volume III 1348-1500.* Cambridge: Cambridge University Press, 1991, 358.

1331, 1334. Enquiries were made to determine if eight weirs between Chepstow and Monmouth had been raised and enhanced and to investigate if ‘certain openings which used to stand open in all the weirs ... to the disturbance of men with boats and ships wishing to pass.’<sup>1064</sup>

1528. Four mills in Hereford were destroyed with permission of Henry VIII.<sup>1065</sup> Moore considered that this must have been by persons ‘interested in the unobstructed navigation of the river past the city.’<sup>1066</sup> The river would have been unobstructed from 1528 till after 1555.

1622. An unsuccessful attempt was made to remove the weir at Monmouth, which had been built in the reign of Mary Tudor just below the Wye Bridge, so that barges could sail upstream beyond it. The weir was 11 feet high on the foundation of loose stones and was said to be impassable to boats which had to be hauled ashore and then dragged by oxen a hundred yards upstream. The verdict of the commissioners was that the weir should be removed but the owner appealed and it was not until the 18<sup>th</sup> century that the weir was removed.<sup>1067</sup>

1662. ‘Provided also that it shall and may bee lawfull to and for any person or persons to use, occupy or imploy any boate, barge, Leighter or other vessel upon the said Rive of Wye for the carrying, transporting or conveying of any passengers, goods or any other things whatsoever, as freely to all intents and purposes as is or hath beene used or accustomed.’<sup>1068</sup>

### Se 13 River Monnow

Lower limit. Herefordshire Wye.

A.	Skenfrith.	10 miles.	$6.0 \text{ m}^3 \text{ s}^{-1}$ .	1.9	P&R. B.
RLU.	Pontrilas.	19 miles.	$6.0 \text{ m}^3 \text{ s}^{-1}$ .	1.9	P&R. B.

c.1186-1193. A stone wharf and slipway were built at Skenfrith.<sup>1069</sup>

### Se 14 River Lugg

Lower limit. Herefordshire Wye.

B.	Leominster.	26 miles.	$5.6 \text{ m}^3 \text{ s}^{-1}$ .		
RLU.	Leominster.	26 miles.	$5.6 \text{ m}^3 \text{ s}^{-1}$ .	0.63	Canalised.

Cole considered that the name Eaton, to the south-east of Leominster, indicates that the settlement had to ‘keep the river open for navigation’.<sup>1070</sup>

<sup>1064</sup> Calendar of Close Rolls, 1330-33, 370-371.

Calendar of Patent Rolls, 1330-34, 201 & 572.

Calendar of Close Rolls, 1333-37, 304-305.

<sup>1065</sup> The Hereford Mills Act 1555. 1555. 2&3 Philip & Mary, c.14.

<sup>1066</sup> H.C. Moore, ‘The Navigation of the Wye.’ Paper presented to the Woolhope Naturalists Field Club 31<sup>st</sup> August 1905. *Transactions of the Woolhope Naturalists Field Club for the years 1905, 1906, 1907.* 1911, 216-224, 218.

<sup>1067</sup> Joan Fleming-Yates, *The River Running By*. Weddenburn Art Ltd. Undated, 96.

<sup>1068</sup> (1662) 14 Charles II. c. 14, 11.

<sup>1069</sup> Phil Evans and Kevin Trott, ‘Excavations at Skenfrith Castle, 2003.’ Report of a CADW sponsored excavation. Paper unpublished at July 2008.

## **Rivers of the North West**

### **NW 1 River Dee**

Tidal limit.	Chester.	
Edwards.	Welsh Border.	12 miles.
A.	Welsh border	12 miles.
RLU.	Welsh Border.	12 miles.

Medieval period. 'There were many fishing boats on the Dee both above and below Chester Bridge, and some of these may have been used for transport. There are, however, only scanty references to traffic on the river, and it is probable that the traffic was very little. ... There was little occasion for traffic in the middle course of the Dee, and beyond an occasional quantity of timber sent down from Overton to Chester (even this may have been floated down), there is no certainty of any other goods having been borne along the river.'<sup>1071</sup>

'Despite the difficulties posed to navigation on the upper reaches of the river once mills had been constructed at Chester, a short boat trip might have carried any surplus to the market.'<sup>1072</sup>

1304. 'Timber was brought from Overton to Chester on Dee by water.'<sup>1073</sup>

1304. Licence fees were paid for one boat with '2 stalnettes' and seven free boats.<sup>1074</sup>

1558. A statute provided that 'no timber tree of Oak, Beech or Ash ... growing within fourteen miles of the Sea, or of any Part of the Rivers of ... *Dee*, ... or any other River, Creek or Stream, by the which Carriage is commonly used by Boat or other Vessel to any Part of the Sea.'<sup>1075</sup>

1611. Speed shows boats on the river upstream of the weir at Chester.<sup>1076</sup>

### **NW 2 River Weaver**

Tidal limit.	Runcorn.		
Edwards.	Frodsham.	4 miles.	
A.	Frodsham.	4 miles.	n/a.
B.	Chorley.	50 miles.	n/a.
RLU.	Ashtree Farm.	36 mile.	n/a
	(3 miles upstream of Nantwich.)		

<sup>1070</sup> Ann Cole, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 81.

<sup>1071</sup> H.J. Hewitt, *Medieval Cheshire*. Manchester: Chetham Society, Vol. 88 NS. (1929), 75.

<sup>1072</sup> N.J. Higham, *A Frontier Landscape*. Macclesfield: Windgather Press. 2004, 49.

<sup>1073</sup> *Accounts of the Chamberlains and other Officers of the County of Chester, 1301-1360*. Editor R. Stewart-Brown. Record Society of Lancashire and Cheshire, Vol. 59, 1910, 42.

<sup>1074</sup> *Ibid.* page 73-75.

<sup>1075</sup> 1558. 1 Elizabeth I. c. 15.

<sup>1076</sup> John Speed, *Theatre of the Empire of Great Britaine. Volume IV*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1954, Map 4.

A logboat was found at Cholmondeley Castle.<sup>1077</sup>

1280. 'Frosham is properly on the Weaver rather than on the Mersey, but it is only three miles from the confluence. ... Occasionally a small merchant vessel passed up the Mersey to Frodsham.' In 1280 £10 was received from the tolls for ships.<sup>1078</sup>

1309. 'The Lord of the manor of Frodesham has the navigation (*navigium aque*) from the bridge of Wevere to Squartesclore so that nobody ought to unload goods there without satisfying the lord. Irish ships with corn had been coming and unloading without giving satisfaction.'<sup>1079</sup>

1324. Frodsham was included in a list of ports from which ships capable of carrying 40 tuns were ordered to be prepared for the King's service.<sup>1080</sup>

### NW 3 River Mersey

Tidal limit. Warrington.

Edwards. See River Irwell. 3 miles.

A. Warburton. 8 miles.  $36 \text{ m}^3 \text{ s}^{-1}$ . < 10 m.

Eleven logboats have been found at Warrington of which at least two were above the tidal limit. Logboats have also been found at Irlam and Barton, on the Western boundary of Salford.<sup>1081</sup>

1364. Stone, lime and other things for building a bridge at Warburton were taken there by boat.<sup>1082</sup>

1367. On the petition of John Danyel, Knight, showing that he has three boats often loaded with ... goods, passing on the water of Merse between Lacheford and Weryngton.<sup>1083</sup>

1476. A weir on the river was widened to allow the passage of eight-oared boats with 8 ft. oars.<sup>1084</sup> Most weirs are on the non-tidal part of the river.

<sup>1077</sup> Sean McGrail, *Logboats of England and Wales, Part (i)*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 177.

<sup>1078</sup> H.J. Hewitt, *Medieval Cheshire*. Manchester: Chetham Society, Vol 88 NS. 1929, 76.

<sup>1079</sup> Calendar of Inquisitions Miscellaneous, 1307-49, 15.

<sup>1080</sup> Calendar of Close Rolls, 1323-27, 183.

<sup>1081</sup> Sean McGrail, *Logboats of England and Wales, Part (i)*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978.

<sup>1082</sup> Calendar of Patent Rolls, 1361-64, 518.

<sup>1083</sup> Calendar of Patent Rolls, 1364-67, 379

<sup>1084</sup> TNA, DL 37/51, m. 2. Cited in Robert Somerville, *History of the Duchy of Lancaster. Volume 1*. London: The Chancellor and Council of the Duchy of Lancaster. 1953, 313.



**NW 4    River Irwell**

Lower limit.    River Mersey.

Edwards.        Barton.                    3 miles.

B.                Barton Moss.            3 miles.             $18 \text{ m}^3 \text{ s}^{-1}$ .            < 20 m.

A logboat has been found at Barton Moss in silty sand.

c1543.    'Irwel is not navigable but in sum places for vadys and rokkes. [Vadys, i.e., fords.],<sup>1085</sup>

**NW4A   River Bollin**

Lower limit.    Warrington.

A.                Warrington.            1 mile.

1367.    The Patent Rolls include a reference to 'The boats often loaded with victuals, timber and stone for the construction of the bridge between Weyngton and Lacheford.'<sup>1086</sup> There is no reason to assume that these boats were only used downstream of the bridge.

**NW 5    River Ribble**

Tidal limit.    Preston.

B.                Ribchester.        10 miles.         $33 \text{ m}^3 \text{ s}^{-1}$ .

RLU.            Settle.            45 miles.         $7 \text{ m}^3 \text{ s}^{-1}$ .        1.7        P&R. C.

An old British canoe was discovered at Settle.<sup>1087</sup>

There were several ferries between Settle and Ribchester.<sup>1088</sup>

A logboat was found in the bed of the river at Ribchester.<sup>1089</sup>

At Anchor Hill near to the Roman fort at Ribchester there have been discoveries of 'anchors and great quantities of iron pins of all sizes for ships or barges.'<sup>1090</sup>

1476.    A weir was opened up to allow the passage of eight-oared boats with 8 ft. oars.<sup>1091</sup> Most weirs are on the non-tidal part of the river.

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<sup>1085</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume Four.* Editor Lucy Toulmin Smith. Carbondale: Southern Illinois University Press. 1964, 6.

<sup>1086</sup> E. Jervoise, *The Ancient Bridges of Wales and Western England.* Wakefield: EP Publishing Limited. 1976, 5.

<sup>1087</sup> Frederic Riley, *The Ribble from its Source to the Sea.* Manchester: John Heywood Ltd. 1914, 55.

<sup>1088</sup> *Ibid.* pages 125, 127, 133, 155.

<sup>1089</sup> Sean McGrail, *Logboats of England and Wales, Part (i).* National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 264.

<sup>1090</sup> James Ellis Jones, *The Maritime and Riverine Landscape of the West of Roman Britain.* BAR British Series 493. 2009.

<sup>1091</sup> TNA, DL 37/51 ms. 3. Cited in Robert Somerville, *History of the Duchy of Lancaster. Volume 1.* London: The Chancellor and Council of the Duchy of Lancaster. 1953, 313.

### **Cockerham Marsh**

‘The documentary source at Cockersand ... suggests that the Abbey should be considered from a coastal perspective and access to it was over the marsh and, presumably, by boat. This appears to be a recurring theme through the lowland archaeology of Lancashire.’<sup>1092</sup>

### **River Douglas.**

It has been suggested that during the Roman period goods were transferred from water to land transport at Wigan.<sup>1093</sup>

### **NW 6    River Lune**

Tidal limit:	Lancaster.				
Edwards.	Kirkby Lonsdale.	17 miles.			
A.	Kirkby Lonsdale.	17 miles.	19 m <sup>3</sup> s <sup>-1</sup> .	1.6	P&R.B.
RLU.	Sedbergh.	28 miles.	17 m <sup>3</sup> s <sup>-1</sup> .	3.6	P&R.B.

A Roman inscription found at Halton-on-Lune mentions a ‘*numerus barcariorum*’ (unit of bargemen).<sup>1094</sup>

1365. The vicar of Kirkeby in Lonsdale was granted pontage on all goods passing by or under the bridge between the priory of Horneby and Gratrehals.<sup>1095</sup> Jervoise considered this to be the bridge in Kirkby Lonsdale.<sup>1096</sup>

The collection of reeds is mentioned from Lytham Moss in the sixteenth century.<sup>1097</sup>

### **NW 7    River Condor**

Tidal limit.	Condor Green.			
B.	Galgate.	2 miles.	n/a.	

Cole considered that the name Hubbersty is derived from ‘a landing place’.<sup>1098</sup> Hubbersty used to be near Galgate.

<sup>1092</sup> R. Middleton *et al*, *The Wetlands of North Lancashire*. North West Wetlands Survey 3. Lancaster: Lancaster University Archaeological Unit. 1995, 129.

<sup>1093</sup> James Ellis Jones, *The Maritime and Riverine Landscape of the West of Roman Britain*. BAR British Series 493. 2009, 139.

<sup>1094</sup> Fiona Edmonds, ‘Barrier or Unifying Feature? Defining the Nature of Early Medieval Water Transport in the North-West.’ In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 26.

<sup>1095</sup> Calendar of Patent Rolls, 1364-67, 129.

<sup>1096</sup> E. Jervoise, *The Ancient Bridges of the North of England*. Westminster: The Architectural Press. 1931, 131.

<sup>1097</sup> R. Middleton *et al*, *The Wetlands of North Lancashire*. North West Wetlands Survey 3. Lancaster: Lancaster University Archaeological Unit. 1995, 207.

<sup>1098</sup> Ann Cole, ‘The Place-Name Evidence for Water Transport in Early Medieval England.’ In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 75.

**NW 8    River Wenning**

Lower limit.    River Lune.

B.                Wennington.                3 miles.                 $4.5 \text{ m}^3 \text{ s}^{-1}$ .A logboat was found at Wennington Hall.<sup>1099</sup>**NW 9    River Kent**

Tidal limit.    Leasgill.

A.                2 miles above Kendal.    7 miles.                 $8.8 \text{ m}^3 \text{ s}^{-1}$ .    Rocky downstream.

B.                Kentmere.                17 miles.                n/a

1320. A log boat was found in Kentmere which dated from A.D.  $1320 \pm 130 \text{ yr}$ .<sup>1100</sup>

c1543. 'Kent river is of a good depthe, not wel to be occupied with botes for rowllyng stones and other moles. ... A ii myles abowt Kendale they cum to one good bottom, and so to Kentdale towne.'<sup>1101</sup>

**NW 10    River Duddon**

Tidal limit.    Flookburgh.

A.                Cartmel.                2 miles.                 $5 \text{ m}^3 \text{ s}^{-1}$ .                < 10m.1323. Cartmel was included in a list of English ports at which customs duty was collected..<sup>1102</sup>**NW 11    River Annas**

Tidal limit.    1 mile downstream from Annaside.

B.                Old Hyton.                2 miles.                < 10m.  
(1 mile upstream from Annaside.)Phythian-Adams considered that the name 'Old Hyton' indicates that this location was used as a landing place for goods brought inland during the early medieval period.<sup>1103</sup>

<sup>1099</sup> Sean McGrail, *Logboats of England and Wales, Part (i)*. National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 198.

<sup>1100</sup> David M. Wilson, 'A Medieval Boat from Kentmere, Westmorland.' *Medieval Archaeology*, Vol. X, (1966). 81.

<sup>1101</sup> *The Itinerary of John Leland in or about the years 1535-1543. Volume Five* Editor Lucy Toulmin Smith., Carbondale, Southern Illinois University Press. 1964, 46.

<sup>1102</sup> Calendar of Close Rolls, 1323-27, 147-148.

<sup>1103</sup> C. Phythian-Adams, *Land of the Cumbrians*. (Aldershot, 1996), 13. Referred to in Fiona Edmonds, 'Barrier or Unifying Feature? Defining the Nature of Early Medieval Water Transport in the North-West.' In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 34.

**NW 12 Cumberland Derwent**

Tidal limit.	Workington.				
Edwards.	Cockermouth.	9 miles.			
A.	Cockermouth.	9 miles.	22 m <sup>3</sup> s <sup>-1</sup> .	2.5	P&R, B&C.

1323. Workington and Cockermouth were instructed to prepare ships capable of carrying 40 tuns of wine and upwards.<sup>1104</sup>

1394. An inquisition was informed that the lord of Cockermouth had the liberty 'of every ship coming within the precinct of the manor they have had an anchorage-due called 'yeveltol', and no ship may unload there without leave of the lord or his ministers.'<sup>1105</sup> The manor included the Derwent and Frewater 'from the sea to the head of those waters'.

1724. Defoe reported that the River Derwent was navigable to Cockermouth.<sup>1106</sup>

**NW 13 River Marron**

Lower limit.	River Derwent.			
B.	Branthwaite.	4 miles.		0.9 m <sup>3</sup> s <sup>-1</sup> .

A logboat was found at Branthwaite.<sup>1107</sup>

**NW 14 River Waver**

Tidal limit.	1 mile downstream of Abbey Town.			
Edwards.	Holm Cultram.	1 mile.		
A.	Abbey Town.	1 mile.		n/a.

1322. A safe conduct was granted to a ship of Holm sailing to the south of the realm.<sup>1108</sup> Abbey Town was previously called Holm Cultram.

**NW 15 River Eden**

Tidal limit:	1 mile downstream of Beaumont.				
Edwards.	Carlisle.	3 miles.			
A.	Wetheral.	13 miles.	52 m <sup>3</sup> s <sup>-1</sup> .	0.62	C&G.
RLU.	Kirkby Stephen.	61 miles.	2.5 m <sup>3</sup> s <sup>-1</sup> .	3.1	Modified.

13<sup>th</sup> C. 'It has been noted that barges were able to reach the city [of Carlisle] during the thirteenth century.'<sup>1109</sup>

<sup>1104</sup> Calendar of Close Rolls, 1323-27, 183-184.

<sup>1105</sup> Calendar of Inquisitions Miscellaneous, 1392-99, 23-24.

<sup>1106</sup> Daniel Defoe, *A Tour Through the whole Island of Great Britain. Volume II.* (First published 1724.) London: Peter Davies. 1927, 684.

<sup>1107</sup> Sean McGrail, *Logboats of England and Wales, Part (i).* National Maritime Museum, Greenwich Archaeological Series No. 2, BAR British Series 51 (i). 1978, 163-174.

<sup>1108</sup> Calendar of Patent Rolls, 1321-24, 107.

<sup>1109</sup> C. Phythian-Adams, *Land of the Cumbrians.* (Aldershot, 1996), 13. Referred to in Fiona Edmonds, 'Barrier or Unifying Feature? Defining the Nature of Early Medieval Water Transport in the North-West.'

1373. Two boats were destroyed at Beaumont.<sup>1110</sup>

14<sup>th</sup> C. For the building of Carlisle Cathedral good stone was available 'instead of (probably) the inferior Wetheral stone from the Eden valley, preferred because it entailed no more than a five-mile river journey.'<sup>1111</sup>

#### **NW 16 River Esk**

Tidal limit. A74 road bridge.

B. Netherby. 5 miles.  $26 \text{ m}^3 \text{ s}^{-1}$ .

'In the case of the River Esk, ... Roman vessels seem to have travelled several miles upriver ... to the fort at Netherby. In the late sixteenth and early seventeenth centuries, antiquaries remarked upon the relics of a port which had existed by Netherby's Roman buildings.'<sup>1112</sup>

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In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 24.

<sup>1110</sup> Calendar of Patent Rolls, 1370-74, 311.

<sup>1111</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 126

<sup>1112</sup> Fiona Edmonds, 'Barrier or Unifying Feature? Defining the Nature of Early Medieval Water Transport in the North-West.' In John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 24.

## Appendix B

### Mean Discharge Estimations

The purpose of Appendix B is to investigate under what conditions it is acceptable to estimate the value of mean discharge on the assumption that discharge is proportional to catchment area. Data have been taken from *Hydrological Data UK*.

Data have been selected from the following areas:-

1. Southern Region - the catchments used in determining the discharge at the mills in East Sussex.
2. The Wye Catchment - the catchments used in determining the discharge at the mills in the Lower Wye valley.
3. The North West Region - relatively high precipitation.
4. The North East Region - high variability of precipitation between source and outlet.
5. The Anglian Region - relatively low precipitation.

Line 1&2.	1.	River.
	2.	Place.
	3.	Catchment Area. (km <sup>2</sup> )
	4.	Mean annual runoff. (mm)
	5.	Maximum annual runoff. (mm)
	6.	Minimum annual runoff. (mm)
	7.	Recorded Mean Discharge (m <sup>3</sup> s <sup>-1</sup> )
Line 3.	1.	Ratio of increase in area.
	2.	Ratio of estimated mean discharge to recorded mean discharge.

$$\text{Estimated Mean Discharge} = \text{Mean Discharge at A} \times \frac{\text{Catchment Area at B}}{\text{Catchment Area at A}}$$

Sites at which the estimated discharge is not within the range 80% - 125% of the recorded discharge are printed in italics.

‘Area’ indicates that the ratio of the catchment areas was greater than 2.

‘R.O.’ indicates that the ratio of the runoff’s at the two points is greater than 125%.

‘Abs’ indicates that there is artificial abstraction or augmentation on the river.

‘Eph’ indicates that the river is ephemeral.

**Southern Region**

Darent.	Otford.	100	186	460	80	0.59	
	Lullingstone.	118	176	351	61	0.66	
		1.18					1.05
	<i>Hawley.</i>	<i>191</i>	<i>100</i>	<i>198</i>	<i>17</i>	<i>0.61</i>	
		<i>1.91</i>					<i>1.75</i> Abs.
'Base discharges were greatly reduced by increasing ground water abstractions.'							
Medway.	<i>Weir Wood Res.</i>	<i>27</i>	<i>195</i>	<i>312</i>	<i>88</i>	<i>0.17</i>	
	<i>Chafford Weir.</i>	<i>255</i>	<i>381</i>	<i>626</i>	<i>161</i>	<i>3.08</i>	
		<i>9.81</i>					<i>0.52</i> Area
	<i>Teston.</i>	<i>1256</i>	<i>278</i>	<i>562</i>	<i>150</i>	<i>11.09</i>	
		<i>4.93</i>					<i>1.37</i> Abs.
'Small net export.'							
Great Stour.	Wye.	230	303	475	166	2.21	
	Horton.	345	289	483	151	3.16	
		1.50					1.05
Cuckmere.	Cowbeech.	19	358	872	84	0.21	
	Sherman Bridge.	134	319	691	105	1.36	
		7.05					1.09
Ouse.	Gold Bridge.	181	387	721	163	2.22	
	Barcombe Mills.	396	321	652	123	4.03	
		2.19					1.21
Arun.	Alfoldean.	139	394	645	134	1.74	
	Pallingham Quay.	379	323	717	111	3.88	
		2.73					1.22
Rother.	Princes Marsh.	37	428	837	244	0.50	
	Iping Mill.	154	452	858	204	2.21	
		4.16					0.94
	Hardham.	346	461	750	226	5.05	
		2.25					0.98
Ems.	<i>Walderton.</i>	<i>41</i>	<i>56</i>	<i>146</i>	<i>0</i>	<i>0.07</i>	
	<i>Westbourne.</i>	<i>58</i>	<i>239</i>	<i>631</i>	<i>39</i>	<i>0.44</i>	
		<i>1.41</i>					<i>0.22</i> Eph.
A ephemeral river over much of its length.							
Itchen.	Easton.	237	562	762	384	4.22	
	Highbridge.	360	465	670	317	5.30	
		1.52					1.21
	Riverside Park.	415	410	515	321	5.40	
		1.15					1.13

Test.	Chilbolton.	453	379	484	253	5.45	
	Broadlands.	1040	334	487	200	11.01	
		2.30					1.14
Eastern Yar.	Budbridge.	22	300	470	226	0.21	
	Alverstone Mill.	57	260	311	164	0.47	
		2.59					1.16
	Burnt House.	60	214	371	123	0.41	
		1.05					1.21

### **Welsh Region Wye Catchment**

Wye.	<i>Pant Mawr.</i>	27	1927	2439	1351	1.66	
	<i>Rhayader.</i>	167	1169	1613	909	6.18	
		6.18					1.66 Area
	Ddol Farm.	174	1212	1918	780	6.69	
		1.05					0.96
	<i>Erwood.</i>	1282	914	1400	536	37.16	
		7.37					1.33 Area
	Belmont.	1896	788	1284	453	47.37	
		1.48					1.16
	<i>Redbrook.</i>	4010	582	976	314	74.06	
		2.11					1.35 Area
Ithon.	Llandewi.	111	741	996	480	2.62	
	Disserth.	358	717	960	444	8.14	
		3.23					1.04
Irfon.	Abemant.	73	1463	1917	927	3.38	
	Climery.	244	1321	2074	795	10.23	
		3.34					1.10
Lugg.	<i>Byton.</i>	203	624	877	360	4.02	
	<i>Butts Bridge.</i>	371	478	776	263	5.62	
		1.83					1.31 R.O.
	Ludwardine.	886	394	691	175	11.07	
		2.39					1.21
Frome.	Bishops Frome.	78	284	470	130	0.70	
	Yarkhill.	144	261	406	147	1.19	
		1.85					1.09

### **North West Region**

Douglas.	<i>Rivington Res.</i>	39	307	800	119	0.38	
	<i>Wigan.</i>	55	669	973	426	1.17	
		1.41					0.46 Abs.
	Wanes Blades Br.	198	636	1018	495	3.99	
		3.60					1.06

There was apparently extraction from the Rivington Reservoir.



Ribble.	Arnford.	204	1125	1520	710	7.28	
	Henthorn.	456	948	1471	613	13.71	
		2.24					1.19
	Jumbles Rock.	1053	1004	1452	617	33.51	
		2.31					0.94
Darwen.	Samlesbury.	1145	915	1381	598	33.23	
		1.09					1.10
	Ewood.	39	953	1299	680	1.19	
	Blue Bridge.	128	1007	1436	696	4.09	
		3.28					0.95
Wyre.	Garstang.	114	924	1475	571	3.34	
	St. Michaels.	275	741	1217	448	6.46	
		2.41					1.25
Lune.	Lunes Bridge.	141	1391	1881	865	6.24	
	Killington.	219	1456	2171	931	10.11	
		1.55					0.96
	<i>Caton.</i>	983	1142	1621	732	35.61	
		4.49					1.27 Area
Kent.	Halton.	995	1069	1474	778	33.71	
		1.01					1.07
	Burneside.	74	1678	2132	1100	3.92	
Leven.	Sedgwick.	209	1351	1923	905	8.96	
		2.82					1.24
	<i>Newby Bridge.A.</i>	247	1773	2788	1174	13.89	
	<i>Newby Bridge.B.</i>	241	1634	1934	1208	12.49	
	The different values are due to the different dates of operation of the gauges. Newby Bridge A 1939 – 2000 and Newby Bridge B 1970 -1976.						
Duddon.	Ulpha.	48	2055	2822	1620	3.12	
	Duddon Hall.	86	1776	2210	1234	4.82	
		1.79					1.16
<i>Ehen.</i>	<i>Bleach Green.</i>	44	1768	2752	1173	2.48	
	<i>Braystones.</i>	125	1295	1794	995	5.16	
		2.84					1.37 Abs.
‘Low discharges dominated by compensation from Ennerdale Water.’							
Derwent.	Portinscale.	235	1620	2279	946	12.07	
	Ouse Bridge.	363	1457	2125	825	16.77	
		1.54					1.11
<i>Cocker.</i>	<i>Scalehill.</i>	64	1834	3218	1216	3.72	
	<i>Southwaite Br</i>	117	1439	2017	848	5.32	
		1.83					1.28 R.O.

Eden.	<i>Kirkby Stephen.</i>	69	1168	1646	763	2.57	
	<i>Temple Sowerby</i>	616	738	1044	444	14.42	
		8.93					1.59 Area
	Warwick Bridge.	1367	785	990	459	34.04	
		2.22					0.94
	Sheepmount.	2286	716	1000	389	51.91	
		1.67					1.10
Eamont.	<i>Pooley Bridge.</i>	145	1711	2357	861	7.87	
	<i>Udford.</i>	396	1208	1955	550	15.18	
		2.73					1.42 Area

**North East**

Coquet.	Bygate.	59	637	889	352	1.20	
	Rothbury.	346	519	741	264	5.69	
		5.86					1.24
	Morwick.	570	470	664	206	8.50	
		1.65					1.10
North Tyne.	Kielder temp.	27	952	1256	642	0.81	
	Ugldub.	241	1012	1270	798	7.75	
		8.90					0.93
	Tarset.	285	886	1220	537	8.01	
		1.18					1.14
	<i>Reaverhill.</i>	1007	657	906	354	20.99	
		3.53					1.34 Area
	Barrasford.	1044	537	653	486	17.78	
		1.04					1.22
South Tyne.	Alston.	118	1128	1751	864	4.24	
	Featherstone.	322	1039	1324	703	10.61	
		2.73					1.09
	<i>Haydon Bridge.</i>	751	771	1073	489	18.37	
		2.33					1.35 Area
Tyne.	<i>Riding Mill.</i>	2174	499	643	387	34.41	
	<i>Bywell.</i>	2176	653	971	375	45.06	

The different values are due to the different dates of operation of the gauges. Riding Mill 1989-2000, Bywell 1956-2000.

Derwent.	Eddys Bridge.	118	284	742	95	1.06	
	Rowlands Gill.	242	332	726	146	2.55	
		2.05					0.85
Ouse Burn.	<i>Woolsington.</i>	9	228	413	147	0.06	
	<i>Crag Hall.</i>	55	167	295	120	0.29	
		6.11					1.26 Area

Wear.	<i>Burnhope Res.</i>	20	903	1389	455	0.59	
	<i>Stanhope.</i>	172	681	1029	404	3.71	
		8.60					1.37 Area
	Witton Park.	455	544	799	349	7.84	
		2.65					1.25
	Sunderland Br.	658	541	822	294	11.28	
		1.45					1.01
	Chester le Street.	1008	460	693	271	14.70	
		1.53					1.18
Browney.	Lanchester.	45	392	585	209	0.55	
	<i>Burn Hall.</i>	178	302	491	139	1.71	
		3.96					1.27 Area
Tees.	<i>Cow Green Res.</i>	58	1547	2012	901	2.86	
	<i>Dent Bank.</i>	217	1114	1517	776	7.68	
		3.74					1.39 Area
	Middleton.	242	1163	1468	794	8.93	
		1.12					0.96
	<i>Barnard Castle.</i>	509	858	1238	558	13.85	
		2.10					1.36 Area
	<i>Broken Scar.</i>	818	651	925	362	16.89	
		1.60					1.32 Abs.
	<i>Low Moor.</i>	1264	469	780	284	18.79	
		1.55					1.39 Abs.
'Augmentation by Keilder Transfer in drought years.'							
Skerne.	Bradbury.	70	171	301	50	0.38	
	Preston le Skerne.	147	177	324	57	0.83	
		2.10					0.96
	South Park.	250	199	336	75	1.58	
Leven.		1.70					0.89
	<i>Easby.</i>	15	405	650	177	0.19	
	<i>Leven Bridge.</i>	196	297	540	94	1.85	
		13.06					1.34 Area

### **East Anglia**

Bure.	Ingworth.	164	210	285	144	1.10	
	Horstead Mill.	313	217	278	160	2.15	
		1.91					0.98
Wensum.	Fakenham.	162	169	264	79	0.87	
	Swanton Morley.	398	208	297	109	2.62	
		2.46					0.82
	Cotessey Mill.	571	220	318	105	3.98	
		1.43					0.94

Waveney.	Billingsford Br.	149	155	281	41	0.73	
	Needham Mill.	370	150	287	46	1.75	
		2.48					1.04
	<i>Ellingham Mill.</i>	670	27	38	7	0.57	
		1.81					5.55 Abs.
‘Between 1972 and 1996, when the Ellingham Mill gauge was operating, there was very considerable extraction from above the gauge.’							
Gipping.	Stowmarket.	129	150	279	36	0.61	
	Bramford.	298	122	211	28	1.15	
		2.31					1.22
	Constantine Wr.	311	137	223	92	1.35	
		1.04					0.89
Stour.	Kedington.	76	351	8360	156	0.85	
	Westmill.	224	186	305	90	1.32	
		2.95					1.90
	Lamarsh.	480	158	276	65	2.41	
		2.14					1.17
	Langham.	578	160	279	78	2.94	
		1.20					0.99
	<i>Stratford St Mary.</i>	844	115	267	37	3.09	
		1.46					1.39 R.O.
Brett.	Cockfield.	26	148	333	16	0.12	
	Hadleigh.	156	135	257	27	0.67	
		6.00					1.07
Colne.	Poolstreet	65	130	245	14	0.27	
	Earls Colne.	154	142	287	48	0.69	
		2.36					0.93
	Lexden.	238	136	242	48	1.03	
		1.55					1.04
Blackwater.	Stisted.	139	184	279	131	0.81	
	Appleford Bridge.	247	161	246	105	1.26	
		1.78					1.14
	Langford.	337	128	248	37	1.37	
		1.36					1.25
Chelmer.	Churchend.	73	153	292	39	0.35	
	Felstead.	132	159	232	56	0.67	
		1.81					0.94
	Springfield.	190	171	285	58	1.03	
		1.44					0.94

## **Discussion**

It is stated in *Hydrological Data UK 1996-2000* that

River discharges in the United Kingdom are often difficult to measure precisely – particularly in flood or drought condition – and can be substantially affected by artificial influences. These influences range from a large diminution in discharges caused by a major abstraction immediately upstream of the gauging station to the often subtle impact of land use change on river discharge patterns. ... An appreciation of these effects is necessary to exploit the archived data most effectively.

Estimates of naturalised river discharges (the discharge which would occur if there were no abstraction or augmentation of discharge) are slowly becoming available. They would be more suitable for work on the historic use of the rivers. However they are difficult to access and have not been used in this thesis.

When estimating areas of catchments it has been assumed that the hydrologic divide is mid-way between rivers. Topographic and phreatic (hydrological) divides have not been used.

The above data implies that where the following conditions were observed the estimated discharge was within 25% of the observed discharge provided:-

1. The ratio of the catchment areas is less than 2.
2. There is no significant abstraction or augmentation of the discharge.
3. The river is not ephemeral.
4. The variation along the river in precipitation is not so great that the runoff varies by 25%.

The annual variation of discharge of rivers varies. The ratio of the mean runoff to the maximum and minimum runoffs as given in the above data indicate that it is always greater than 25%. It is thus considered appropriate to estimate discharges providing the above four conditions apply.

## Appendix C

### Transport of Stone for Cathedrals and Colleges

This appendix is an initial listing of the form of transport used and distances over which stone was transported when the pre-17<sup>th</sup> century cathedrals and colleges were constructed. Records are only included for significant amounts of stone. This may be taken to be more than 20 tonnes or 20 horse-drawn cart loads.

In the table where part of the route was by one form of transport and part by another the relative distances are entered in each column. Where the first and last parts of the route were both by land or both by river the two separate distances are given with a plus sign between. Distances of less than one mile are ignored.

Distances by sea are approximate. Distances by river have been measured along the river. Distances by land are the straight distance since the land routes are in general not known. Where a type of stone came from a region rather than one quarry an average distance has been given. Where there is doubt as to which form of transport was used alternatives are given in italics.

The reuse of Roman stone as at Canterbury,<sup>1111</sup> Carlisle,<sup>1112</sup> London,<sup>1113</sup> Peterborough and Ripon<sup>1114</sup> has not been listed.

The range of dates used in this appendix is from 1080 to 1600, wider than in the remainder of the thesis. However it is considered that no rivers went out of use between 1080 and 1189.

Only one reference has been given for each source of stone.

### Particular Notes

A. Bethersden is six miles west of Ashford where there is a usable river with mean discharge of  $2.2 \text{ m}^3 \text{ s}^{-1}$ . It is not known if the stone was transported from Ashford to Canterbury by land or river.

Also it is not known how the stone was taken to Rochester. Bethersden is close to the source of the Beult. The stone may have been taken by land to Headcorn or Yalding or Maidstone and then by river or it may have been taken the whole distance by land.

B. Merstham and Reigate are both close to the Mole. There is documentary evidence that for use in the London area the stone was moved from Reigate to Battersea, stored there and then distributed to many places in London normally by water transport. Stone for Canterbury was also supplied from Battersea. Tatton Brown states that 'Battersea

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<sup>1111</sup> Francis Woodman, *The Architectural History of Canterbury Cathedral*. London: Routledge & Kegan Paul. 1981.

<sup>1112</sup> Nikolaus Pevsner and Priscilla Metcalf, *The Cathedrals of England. Middle, Eastern and Northern England*. Harmondsworth: Viking. 1985, 41.

<sup>1113</sup> Sir William Dugdale, *The History of St. Paul's Cathedral in London*. London: Tho. Warren. 1658, 6.

<sup>1114</sup> Tim Eaton, *Plundering the Past. Roman Stonework in Medieval Britain*. Stroud: Tempus Publishing Ltd. 2000, 127.

lies about 24-5 km due north of the Reigate quarry area, and all the stone must have been carted this distance by horse- (oxen-) drawn carts over the North Downs.<sup>1115</sup>

Local boaters consider that it would have been possible to transport the stone down the Mole and Thames to Battersea.<sup>1116</sup> This would have been possible in winter with the river having a discharge in excess of  $3 \text{ m}^3 \text{ s}^{-1}$ . It would not normally have been possible in summer when part of the flow of the river is underground. There are few other records of the storage of stone for later distribution. It is possible that stone was stored because the transport to Battersea by water was only seasonal.

C. The Earl of Devon built a weir across the Exe between 1317 and 1327. Previously the stone may have been taken closer to the cathedral by boat.

D. It is assumed that Kentish Rag came from near Maidstone and that it was transported by river.<sup>1117</sup>

E. The Taynton group of quarries are close to the Windrush. It is known that some of the stone was taken direct to Oxford by land and that some was taken to Eynsham by land and then to Oxford by river.<sup>1118</sup> It is not known whether some of the stone was transported on the Windrush. However with a mean discharge of  $2.4 \text{ m}^3 \text{ s}^{-1}$  and gradient 1.2 it seems that this would have been possible especially in winter.

F. It is assumed that stone was transported upstream on the Salisbury Avon.

G. The Tisbury quarries are adjacent to the Nadder. With a mean discharge of  $2.5 \text{ m}^3 \text{ s}^{-1}$  and gradient  $2 \text{ m km}^{-1}$  boats could have been used to transport the stone to Salisbury. There are now no building accounts at Salisbury from before the 15<sup>th</sup> century.<sup>1119</sup>

H. The evidence in Appendix A shows that the Itchen was probably usable when the cathedral was built.

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<sup>1115</sup> Tim Tatton-Brown, 'The Quarrying and Distribution of Reigate Stone in the Middle Ages.' *Medieval Archaeology*. Vol. XLV. (2001), 189-202, 194.

<sup>1116</sup> Kevin East. Personal comment. 4/8/08.

<sup>1117</sup> Rod Ugear, 'Underground Ragstone Quarries in Kent. A Brief Overview.' *Archaeologia Cantiana*. Vol. CCXVII. (2007), 407-419.

<sup>1118</sup> W.J. Arkell, *Oxford Stone*. London: Faber & Faber. 1947, 61.

<sup>1119</sup> Tim Tatton-Brown, 'The Building Stone for Salisbury Cathedral.' In 'Building with Stone in Wessex over 400 Years.' *The Hatcher Review*. Vol. V, Number 45. 1998, 39-47, 43.

Cathedral Colleges	Source of Stone	Sea Miles	River Miles	Land Miles	Note
Bristol.	Bath. <sup>1120</sup> Dundry. <sup>1121</sup> Felton. <sup>1122</sup> Purbeck. <sup>1123</sup>	420	19	5 7	
Canterbury.	Flint. <sup>1124</sup> Bethersden. <sup>1125</sup> Either or. Caen. <sup>1126</sup> Merstham. <sup>1127</sup> Either or. Purbeck. <sup>1128</sup> Quarr. <sup>1129</sup> Tournai. <sup>1130</sup>	Local.  290  220 140 40	  16 22 60 106 22 22 50+22	20 6 2 16+5 5 2 2 2	A   B
Carlisle.	Wetherall. <sup>1131</sup>		5	5	
Chester.	Red sandstone. <sup>1132</sup>	Local.			
Chichester.	Caen. <sup>1133</sup> Purbeck. <sup>1134</sup> Quarr. <sup>1135</sup> Sussex Marble. (Petworth) <sup>1136</sup> Ventnor. <sup>1137</sup>	170 80 40  40		2 2 2  12	

<sup>1120</sup> [http://en.wikipedia.org/wiki/Bristol\\_Cathedral](http://en.wikipedia.org/wiki/Bristol_Cathedral). 19/11/07.

<sup>1121</sup> *Ibid.*

<sup>1122</sup> *Ibid.*

<sup>1123</sup> *Ibid.*

<sup>1124</sup> North wall of the North Eastern Transept. Personal observation.

<sup>1125</sup> Francis Woodman, *The Architectural History of Canterbury Cathedral*. London: Routledge & Kegan Paul. 1981.

<sup>1126</sup> *Ibid.*

<sup>1127</sup> T.W.T. Tatton-Brown, 'Building Stone in Canterbury c 1070-1525.' In David Parsons, *Stone*.

*Quarrying and Building in England. AD 43-1525*. Chichester: Phillimore in association with The Royal Archaeological Institute. 1990, 70-82, 78-79.

<sup>1128</sup> Francis Woodman, *The Architectural History of Canterbury Cathedral*. London: Routledge & Kegan Paul. 1981.

<sup>1129</sup> *Ibid.*

<sup>1130</sup> *Ibid.*

<sup>1131</sup> Alec Clifton-Taylor, *The Pattern of English Building*. London: Faber and Faber Limited. 1972, 126.

<sup>1132</sup> *Ibid.* 122.

<sup>1133</sup> Tim Tatton-Brown, 'The Medieval Fabric.' In Mary Hobbs, Ed., *Chichester Cathedral*. Chichester: Phillimore. 1994, 25-46.

<sup>1134</sup> *Ibid.*

<sup>1135</sup> *Ibid.*

<sup>1136</sup> *Ibid.*

<sup>1137</sup> *Ibid.*



		Sea	River	Land	
Durham.	White Church. <sup>1138</sup>	Local.			
	Durham. <sup>1139</sup>	Local.			
	Frosterly. <sup>1140</sup>		33		
	Purbeck. <sup>1141</sup>	600	24		
Ely.	Barnack. <sup>1142</sup>		30	4	
	Purbeck. <sup>1143</sup>	400	32		
Exeter.	Barley Stone. <sup>1144</sup>	Local.			
	Beer. <sup>1145</sup>	22		(3)	C
	Branscombe. <sup>1146</sup>	21		(3)	
	Caen. <sup>1147</sup>	170		(3)	
	Corfe. <sup>1148</sup>	75		(3)	
	Heavitree. <sup>1149</sup>	Local.			
	Portland. <sup>1150</sup>	55		(3)	
	Purbeck. <sup>1151</sup>	67		(3)	
	Salcombe Regis. <sup>1152</sup>	20		(3)	
Gloucester.	Painswick. <sup>1153</sup>			6	
Hereford.	Howe Caple. <sup>1154</sup>		20		

<sup>1138</sup> C.J. Stanks, *This Sumptuous Church*. London: SPCK. 1973, 6.

<sup>1139</sup> *Ibid.*

<sup>1140</sup> *Ibid.* page 22.

<sup>1141</sup> 'Marble pillars brought from far.' Sir William Dugdale, *The history of St. Paul's Cathedral in London, ... whereunto is added, a continuation ... to ... 1685. Likewise the northern cathedrals of York Durham and Carlisle*. London: Edward Maynard. 1716, 74.

'Brought by sea.' C.J. Stanks, *This Sumptuous Church*. London: SPCK. 1973, 14.

<sup>1142</sup> Eric Fernie, 'Architecture and Sculpture in the Norman Period.' In Peter Meadows & Nigel Ramsey Ed. *A History of Ely Cathedral*. Woodbridge: Boydell Press. 2003, 110.

<sup>1143</sup> John Maddison, 'The Gothic Cathedral.' In Peter Meadows & Nigel Ramsey, Ed. *A History of Ely Cathedral*. Woodbridge: Boydell Press. 2003, 121.

<sup>1144</sup> *The accounts of the Fabric of Exeter Cathedral. 1279-1353. Part 1 1279-1326*. Editor Audrey M. Erskine. *Devon and Cornwall Record Society*. New Series. Vol. 24, (1981), 9.

<sup>1145</sup> Deryck Loming, 'The Building Stone and its Quarry.' In Michael Swanton, *Exeter Cathedral*. Exeter: Dean and Chapter of the Exeter. 1991, 65.

<sup>1146</sup> *The accounts of the Fabric of Exeter Cathedral. 1279-1353. Part 1 1279-1326*. Editor Audrey M. Erskine. *Devon and Cornwall Record Society*. New Series. Vol. 24, (1981), 9.

<sup>1147</sup> *Ibid.*

<sup>1148</sup> *Ibid.* 61.

<sup>1149</sup> John Allan, 'A Note on the Building Stones of the Cathedral.' In Francis Kelly, Ed., 'Medieval Art and Architecture at Exeter Cathedral.' *The British Archaeological Association Conference Transactions*. Vol. XI for the year 1985. 1991, 15.

<sup>1150</sup> *The accounts of the Fabric of Exeter Cathedral. 1279-1353. Part 1 1279-1326*. Editor Audrey M. Erskine. *Devon and Cornwall Record Society*. New Series. Vol. 24, (1981), 33.

<sup>1151</sup> Deryck Loming, 'The Building Stone and its Quarry.' In Michael Swanton, *Exeter Cathedral*. Exeter: Dean and Chapter of the Exeter. 1991, 65.

<sup>1152</sup> *The accounts of the Fabric of Exeter Cathedral. 1279-1353. Part 1 1279-1326*. Editor Audrey M. Erskine. *Devon and Cornwall Record Society*. New Series. Vol. 24, (1981), 34.

<sup>1153</sup> [www.sherpavan.com](http://www.sherpavan.com). Accessed 29/2/2008.

<sup>1154</sup> Herefordshire and Worcestershire Earth Heritage Trust, *Explore Hereford Cathedral*. Leaflet.

		Sea	River	Land	
Lichfield.	Red sandstone. <sup>1155</sup>	Local.			
Lincoln.	Limestone. <sup>1156</sup>	Local.			
	Alwalton. <sup>1157</sup>	2	25+31		
	Purbeck. <sup>1158</sup>	67	31		
London.	Caen. <sup>1159</sup>	420			
	Reigate. <sup>1160</sup> Either		5	16	B
	or		51		
Norwich.	Barnack. <sup>1161</sup>	100	30+30	4	
	Caen. <sup>1162</sup>	420	30		
	Clipsham. <sup>1163</sup>	120	30+30	7	
	Purbeck. <sup>1164</sup>	320	30		
Peterborough.	Alwalton. <sup>1165</sup>			3	

<sup>1155</sup> Richard Durman, *Ham Hill: portrait of a building stone*. Reading: Spire Books Ltd. 2006, 45-46.

<sup>1156</sup> G.H. Varah, *Lincoln Cathedral Stone*. George Hugh Varah. 1987, 4.

<sup>1157</sup> Jennifer S. Alexander, 'Building Stone from the East Midland Quarries: Sources, Transportation and Usage.' *Medieval Archaeology*. Vol. 39. (1995), 107-135, 112.

<sup>1158</sup> G.H. Varah, *Lincoln Cathedral Stone*. George Hugh Varah. 1987, 4.

<sup>1159</sup> John Stow, *A Survey of London. Volume 1. (1<sup>st</sup> Edition 1603)*. Oxford: Clarendon Press. 1908, 325.

<sup>1160</sup> Tim Tatton-Brown, 'The Quarrying and Distribution of Reigate Stone in the Middle Ages.' *Medieval Archaeology*. Vol. XLV. (2001), 189-202, 189.

<sup>1161</sup> Eric Fernie, 'The Building: An Introduction.' In Ian Atherton *et al.* *Norwich Cathedral*. London: The Hambledon Press. 1996, 50.

<sup>1162</sup> *Ibid.*

<sup>1163</sup> Francis Woodman, 'The Gothic Campaigns.' In Ian Atherton *et al.* *Norwich Cathedral*. London: The Hambledon Press. 1996, 170.

<sup>1164</sup> *Ibid.*

<sup>1165</sup> Jennifer S. Alexander, 'Building Stone from the East Midland Quarries: Sources, Transportation and Usage.' *Medieval Archaeology*. Vol. 39. (1995), 107-135, 119.

		Sea	River	Land	
Rochester.	Bethersden. <sup>1166</sup>			22	A
	Boulogne. <sup>1167</sup>	120			
	Caen. <sup>1168</sup>	400			
	Maidstone. <sup>1169</sup>		13		
	Reigate. <sup>1170</sup>	Either	60	16	B
		or	106		
	Purbeck. <sup>1171</sup>	300			
Salisbury.	Taynton. <sup>1172</sup>	Either	192	8	E
		or	200		
Salisbury.	Purbeck. <sup>1173</sup>		45		F
	Tisbury. <sup>1174</sup>	Either		12	G
		or	12		
Wells.	Chilcote. <sup>1175</sup>			3	
	Doulton. <sup>1176</sup>			6	
	Keinton Mandeville. <sup>1177</sup>		13		
	Street. <sup>1178</sup>		6		

<sup>1166</sup> Bernard C. Worssam, 'The Building Stones of Rochester Cathedral Crypt.' *Archaeologia Cantiana*. Vol. 120. (2000), 1-22, 18,19.

<sup>1167</sup> Bernard C. Worssam 'The Building Stones of Rochester Castle and Cathedral.' In Tim Ayers and Tim Tatton-Brown, Eds. *Medieval Art, Architecture and Archaeology at Rochester*. The British Archaeological Association Conference Transactions. XXVIII. 2006, 238-249, 242.

<sup>1168</sup> Rev. Greivle M. Livett, 'Early Norman Churches in and near the Medway Valley.' *Archaeologia Cantiana*. Vol. XX. (1893), 137 – 154, 153, 154.

<sup>1169</sup> Bernard C. Worssam 'A Guide to the Building Stones of Rochester Cathedral.' *Friends of Rochester Cathedral*. 1994/5. Report for 1995. 23-33, 23.

<sup>1170</sup> Rev. Greivle M. Livett, 'Early Norman Churches in and near the Medway Valley.' *Archaeologia Cantiana*. Vol. XX. (1893), 137 – 154, 153, 154.

<sup>1171</sup> Bernard C. Worssam, 'The Building Stones of Rochester Cathedral Crypt.' *Archaeologia Cantiana*. Vol. 120. (2000), 1-22, 18,19.

<sup>1172</sup> Tim Tatton-Brown, 'The Building Stone for Salisbury Cathedral.' In 'Building with Stone in Wessex over 4000 years.' *The Hatcher Review*. Vol. V. No 45. (1998), 39-47, 45.

<sup>1173</sup> *Ibid.*

<sup>1174</sup> Tim Tatton-Brown, 'The Archaeology of the Spire of Salisbury Cathedral.' In Laurence Keen and Thomas Cocke, *Medieval Art and Architecture at Salisbury Cathedral*. The British Archaeological Association Conference Transactions. Vol. XVII. 1996, 63.

<sup>1175</sup> Warwick Rodwell, *Wells Cathedral Excavations and Structural Studies. 1978-93*. English Heritage Archaeological Report 21. 2001.

<sup>1176</sup> *Ibid.*

<sup>1177</sup> *Ibid.*

<sup>1178</sup> *Ibid.*

		Sea	River	Land	
Winchester.	Bath. <sup>1179</sup>	480	20+16		H
	Beer. <sup>1180</sup>	100	16		
	Caen. <sup>1181</sup>	200	16		
	Carr. <sup>1182</sup>	35	16		
	Purbeck. <sup>1183</sup>	60	16		
	Quarr. <sup>1184</sup>	16	16		
	Selbourne. <sup>1185</sup>			20	
Worcester.	Alveley. <sup>1186</sup>		25		
	Bridgnorth. <sup>1187</sup>		32		
	Cradley, Herefordshire. <sup>1188</sup>			9	
	Cutsdean. <sup>1189</sup> Either			25	
	or		53	9	
	Highley. <sup>1190</sup>		25		
	Hollington. <sup>1191</sup>		50		
	Holt. <sup>1192</sup>			5	
	Ombersley. <sup>1193</sup>			5	
	Purbeck. <sup>1194</sup>	420	30		
	Shelsey. <sup>1195</sup>			9	
York.	Tadcaster. <sup>1196</sup>		15		

<sup>1179</sup> Tim Tatton-Brown, 'Building Stones of Winchester Cathedral.' In John Crook, Ed., *Winchester Cathedral: Nine Hundred Years*. Chichester: Phillimore. 1993, 37 – 46.

<sup>1180</sup> *Ibid.*

<sup>1181</sup> *Ibid.*

<sup>1182</sup> *Ibid.*

<sup>1183</sup> *Ibid.*

<sup>1184</sup> *Ibid.*

<sup>1185</sup> *Ibid.* page 43.

<sup>1186</sup> Canon Wilson, 'Some Notes on the Building Stones used in Worcester Cathedral, and on the quarries from which they were brought.' *Reports and Papers of the Associated Architectural Societies*. Vol. XXXI. (1911-12), 259-70, 267.

<sup>1187</sup> R.D.H. Gem, 'Bishop Wulfstan and the Romanesque Cathedral Church of Worcester.' In *Medieval Art and Architecture at Worcester Cathedral*. The British Archaeological Association Conference Transactions. 1978, 21.

<sup>1188</sup> Canon Wilson, 'Some Notes on the Building Stones used in Worcester Cathedral, and on the quarries from which they were brought.' *Reports and Papers of the Associated Architectural Societies*. Vol. XXXI. (1911-12), 259-70, 267.

<sup>1189</sup> *Ibid.*

<sup>1190</sup> *Ibid.* page 262.

<sup>1191</sup> *Ibid.* page 268.

<sup>1192</sup> *Ibid.* page 267.

<sup>1193</sup> *Ibid.* page 267.

<sup>1194</sup> *Ibid.* page 267.

<sup>1195</sup> *Ibid.* page 263.

<sup>1196</sup> Nikolaus Pevsner and Priscilla Metcalf, *The Cathedrals of England. Middle, Eastern and Northern England*. Harmondsworth: Viking. 1985, 335.

		Sea	River	Land	
Cambridge.	Barnack. <sup>1197</sup>		c70	3	
	Barrington. <sup>1198</sup>			7	
	Burwell. <sup>1199</sup>		12		
	Cherryhinton. <sup>1200</sup>			4	
	Clipsham. <sup>1201</sup>		c70		
	Eversden. <sup>1202</sup>			8	
	Haslingfield. <sup>1203</sup>			5	
	Isleham. <sup>1204</sup>		28		
	Ketton. <sup>1205</sup>		c70		
	Reach. <sup>1206</sup>		11		
	Tadcaster. <sup>1207</sup>	98	60		
	Weldon. <sup>1208</sup>		c60		
Oxford.	Barrington, Burford, Taynton. <sup>1209</sup>	All land.		18	E
		Part river.	8	12	
		All river.	23		
	Headington. <sup>1210</sup>			3	
	Wheatley. <sup>1211</sup>			5	

<sup>1197</sup> Donovan Purcell, *Cambridge Stone*. London: Faber and Faber. 1967, 34.

<sup>1198</sup> *Ibid.* page 26.

<sup>1199</sup> *Ibid.* page 26.

<sup>1200</sup> *Ibid.* page 26.

<sup>1201</sup> *Ibid.* page 40.

<sup>1202</sup> *Ibid.* page 26.

<sup>1203</sup> *Ibid.* page 26.

<sup>1204</sup> *Ibid.* page 26.

<sup>1205</sup> *Ibid.* page 50.

<sup>1206</sup> *Ibid.* page 26.

<sup>1207</sup> *Ibid.* page 39.

<sup>1208</sup> *Ibid.* page 39.

<sup>1209</sup> W.J. Arkell, *Oxford Stone*. London: Faber & Faber. 1947, 61.

<sup>1210</sup> *Ibid.* page 46.

<sup>1211</sup> *Ibid.* page 37.

## Appendix D

### Rivers made navigable by Act of Parliament

The data in this appendix is an amended version of an appendix to D.J.M. Caffyn, 'The Right of Navigation on Non-tidal Rivers and the Common Law'. Dissertation for the Degree of Master of Laws by Research, Kent Law School, The University of Kent. August 2004.

In this appendix every river for which a Navigation Act has been found is listed. The date of the first Act referring to each river is stated. Evidence of use is given in Appendix A or implied in the wording of the Act as stated below.

The two rivers which were made navigable but for which no prior evidence of use has been found are listed at the end. Seven rivers for which an Act was passed but on which no work was carried out, or the work was never completed, are also listed at the end.

### Rivers for which evidence of prior use has been found

<b>Adur.</b>	1807. <sup>1212</sup>	An Improvement Act implying previous use.
<b>Aire.</b>	1698. <sup>1213</sup>	
<b>Alcholme.</b>	1767. <sup>1214</sup>	
<b>Arun.</b>	1785. <sup>1215</sup>	
<b>Avon. Hampshire.</b>	1664. <sup>1216</sup>	
<b>Avon. Warwick.</b>	1751. <sup>1217</sup>	An Act for the better regulating the Navigation.
<b>Avon. Bristol.</b>	1699. <sup>1218</sup> 1711. <sup>1219</sup>	
<b>Axe.</b>	1802. <sup>1220</sup>	An Act to alter and improve.
<b>Beverley Beck.</b>	1726. <sup>1221</sup>	
<b>Blyth.</b>	1757. <sup>1222</sup>	
<b>Bourn Eau.</b>	1781. <sup>1223</sup>	Preamble to the Act, 'An Act for improving the Navigation of the River called Bourn Eau.'
<b>Brandon. (Little Ouse.)</b>	1670. <sup>1224</sup>	
<b>Bure.</b>	1773. <sup>1225</sup>	
<b>Calder and Hebble.</b>	1698. <sup>1226</sup>	
<b>Cam.</b>	1702. <sup>1227</sup>	An Act for making the River more navigable.
<b>Chelmer &amp; Blackwater.</b>	1766. <sup>1228</sup>	

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<sup>1212</sup> 47 George III c 117.

<sup>1213</sup> 10 William III c 25.

<sup>1214</sup> 7 George III c 98.

<sup>1215</sup> 25 George III c 100.

<sup>1216</sup> 16&17 Charles II c 22.

<sup>1217</sup> 24 George II c 39.

<sup>1218</sup> 11 & 12 William III c 23.

<sup>1219</sup> 10 Anne c 2.

<sup>1220</sup> 42 George III c 58.

<sup>1221</sup> 13 George I c 4.

<sup>1222</sup> 30 George II c 47.

<sup>1223</sup> 21 George III c 22.

<sup>1224</sup> 22 Charles II c 16.

<sup>1225</sup> 13 George III c 37.

<sup>1226</sup> 10 William III c 25 and 31 George II c 72.

<sup>1227</sup> 1 Anne s 2 c 11.

<b>Colne.</b>	1623. <sup>1229</sup>	
<b>Dee.</b>	1698. <sup>1230</sup>	
<b>Derwent. Derbyshire.</b>	1720. <sup>1231</sup>	
<b>Derwent. Yorkshire.</b>	1702. <sup>1232</sup>	
<b>Don.</b>	1726. <sup>1233</sup>	
<b>Eden.</b>	1721. <sup>1234</sup>	Preface states previous use.
<b>Exe.</b>	1539. <sup>1235</sup>	
<b>Frome.</b>	1699. <sup>1236</sup>	Act for better preserving the Navigation.
<b>Gipping.</b>	1790. <sup>1237</sup>	
<b>Humber.</b>	1531. <sup>1238</sup>	
<b>Idle.</b>	1720. <sup>1239</sup>	
<b>Irwell.</b>	1720. <sup>1240</sup>	
<b>Itchin.</b>	1664. <sup>1241</sup>	
<b>Ivel.</b>	1757. <sup>1242</sup>	
<b>Kennet.</b>	1715. <sup>1243</sup>	Prior use is stated in the Act.
<b>Larke.</b>	1698. <sup>1244</sup>	
<b>Lea.</b>	1425. <sup>1245</sup>	
<b>Lune.</b>	1749. <sup>1246</sup>	An Act for improving the Navigation.
<b>Medway.</b>	1664. <sup>1247</sup>	
<b>Mersey.</b>	1720. <sup>1248</sup>	
<b>Narr.</b>	1751. <sup>1249</sup>	
<b>Nene, Nyne, Nen.</b>	1714. <sup>1250</sup>	
<b>Ouse. Bedford.</b>	1601. <sup>1251</sup>	
<b>Ouse. Sussex.</b>	1790. <sup>1252</sup>	Act to improve part of the navigation
<b>Ribble.</b>	1806. <sup>1253</sup>	Act to improve implying previous use.
<b>Rother. Western.</b>	1791. <sup>1254</sup>	
<b>Severn.</b>	1503. <sup>1255</sup>	

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<sup>1228</sup> 6 George III c 101.

<sup>1229</sup> 21 James I c 34.

<sup>1230</sup> 11 William III c 24.

<sup>1231</sup> 6 George I c 27.

<sup>1232</sup> 1 Anne c 14.

<sup>1233</sup> 12 George I c 38.

<sup>1234</sup> 8 George I c 14.

<sup>1235</sup> 31 Henry VIII c 4.

<sup>1236</sup> 11 & 12 William III c 23.

<sup>1237</sup> 30 George III c 57.

<sup>1238</sup> 23 Henry VIII c 18.

<sup>1239</sup> 6 George I c 30.

<sup>1240</sup> 7 George I s 1 c 15.

<sup>1241</sup> 16 & 17 Charles II c 12.

<sup>1242</sup> 30 George II c 62.

<sup>1243</sup> 2 George I s 2 c 24.

<sup>1244</sup> 11 William III c 22.

<sup>1245</sup> 3 Henry VI c 5.

<sup>1246</sup> 23 George II c 12.

<sup>1247</sup> 16 & 17 Charles II c 23.

<sup>1248</sup> 7 George I s 1 c 15.

<sup>1249</sup> 24 George II c 19.

<sup>1250</sup> 13 Anne c 19.

<sup>1251</sup> 43 Elizabeth I c 11.

<sup>1252</sup> 30 George III c 52.

<sup>1253</sup> 46 George III c 121.

<sup>1254</sup> 31 George III c 56.

<b>Salwerp.</b>	1662. <sup>1256</sup>	
<b>Slea.</b>	1794. <sup>1257</sup>	
<b>Soar.</b>	1766. <sup>1258</sup>	
<b>Stort.</b>	1759. <sup>1259</sup>	
<b>Stour Kentish.</b>	1514. <sup>1260</sup>	
<b>Stour Suffolk.</b>	1705. <sup>1261</sup>	
<b>Stour Worcester.</b>	1662. <sup>1262</sup>	
<b>Swale.</b>	1767. <sup>1263</sup>	
<b>Tees.</b>	1808. <sup>1264</sup>	An Act to improve implying previous use.
<b>Thames.</b>	1423. <sup>1265</sup>	
<b>Tone.</b>	1698. <sup>1266</sup>	
<b>Trent.</b>	1698. <sup>1267</sup>	
<b>Ure and Ouse.</b>	1767. <sup>1268</sup>	
<b>Waveney.</b>	1670. <sup>1269</sup>	The Act implies previous use.
<b>Wear.</b>	1716. <sup>1270</sup>	An Act for the Preservation and Improvement.
<b>Weaver.</b>	1720. <sup>1271</sup>	The Act states that a section was previously a public navigation.
<b>Welland.</b>	1570. <sup>1272</sup>	
<b>Wey.</b>	1671. <sup>1273</sup>	An Act for preserving the Navigation.
<b>Witham.</b>	1671. <sup>1274</sup>	
<b>Wye and Lugg.</b>	1662. <sup>1275</sup>	
<b>Yare and Wensum.</b>	1827. <sup>1276</sup>	

#### **Rivers for which evidence of prior use has not been found**

Douglas. (Asland.)	1720. <sup>1277</sup>	It has been suggested that the river was used during the Roman period. <sup>1278</sup>
Wreak and Eye.	1791. <sup>1279</sup>	

<sup>1255</sup> 19 Henry VII c 18.

<sup>1256</sup> 14 Charles II c 13.

<sup>1257</sup> 32 George III c 106.

<sup>1258</sup> 6 George III c 94.

<sup>1259</sup> 32 George II c 42.

<sup>1260</sup> 6 Henry VIII c 17.

<sup>1261</sup> 4 Anne c 15.

<sup>1262</sup> 14 Charles II c 13.

<sup>1263</sup> 7 George III c 96.

<sup>1264</sup> 49 George III c 48.

<sup>1265</sup> 2 Henry VI c 9.

<sup>1266</sup> 10 William III c 8.

<sup>1267</sup> 10 & 11 William III c 20.

<sup>1268</sup> 2 Edward IV Charter, The Lord Protector 1657, 7 George III c 93.

<sup>1269</sup> 22 Charles II c 16.

<sup>1270</sup> 3 George I c 3.

<sup>1271</sup> 7 George I s 1 c 10.

<sup>1272</sup> 13 Elizabeth I c 26.

<sup>1273</sup> 22 & 23 Charles II c 32.

<sup>1274</sup> 22 & 23 Charles II c 25.

<sup>1275</sup> 14 Charles II c 14.

<sup>1276</sup> 7 & 8 George IV c 42.

<sup>1277</sup> 6 George I c 28.

<sup>1278</sup> James Ellis Jones, *The Maritime and Riverine Landscape of the West of Roman Britain*. BAR British Series 493. 2009, 139.

<sup>1279</sup> 31 George III c 77.



**Rivers on which work was not completed or no work was carried out.**

Codbeck Brook.	1767. <sup>1280</sup>	Work not completed. <sup>1281</sup>
Dane.	1720. <sup>1282</sup>	No work carried out. <sup>1283</sup>
Effra.	1664. <sup>1284</sup>	No work carried out. <sup>1285</sup>
Fal.	1678. <sup>1286</sup>	No record of any work being carried out.
Mole.	1664. <sup>1287</sup>	No record of any work being carried out. <sup>1288</sup>
Ravensbourne.	1664. <sup>1289</sup>	No record of any work being carried out
Worsley Brook.	1737. <sup>1290</sup>	No work carried out <sup>1291</sup>

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<sup>1280</sup> 7 George III c 95.

<sup>1281</sup> Baron F. Duckham, *The Yorkshire Ouse* Newton Abbott: David & Charles. 1967, 68

<sup>1282</sup> 7 George I c 17.

<sup>1283</sup> Joseph Priestly, *Historical Account of the Navigable Rivers, Canals, and Railways of Great Britain*. London: Longman, Rees, Orme, Brown & Green. 1831, 183.

<sup>1284</sup> 16 & 17 Charles II c 16.

<sup>1285</sup> N.J. Barton, *The Lost Rivers of London*. London: Phoenix House Ltd. 1962, 79

<sup>1286</sup> 30 Charles II c 11.

<sup>1287</sup> 16 & 17 Charles II c 12.

<sup>1288</sup> The reference in T.S. Willan, *River Navigation in England 1600 – 1750*. London: Frank Cass & Co Ltd. 1964, 29 to the River Mole being improved refers not to work carried out but to the First Reading of the Bill to make the river navigable, *Seventh Report of the Royal Commission on Historical Manuscripts, Part I*. (London: Her Majesty's Stationery Office, 1879), 179

<sup>1289</sup> 16 & 17 Charles II c 12.

<sup>1290</sup> 10 George II c 22.

<sup>1291</sup> Preface to 32 George II c 2.

## Appendix E

### Legislation relating to weirs

#### Introduction

In law ‘A purpresture cannot be made legal by prescription.’ That is to say, although an obstruction may have been placed in a road or river on which there is a public right of passage, it is never made legal by the passage of time.

In this Appendix petitions to parliament and the legislation relating to the use of rivers are quoted. The Acts include *Magna Carta* and some of the Acts confirming it, seven General Navigation Acts, the Statutes relating to Sewers and those concerning individual rivers. Some Acts were passed to make rivers more usable, some to improve drainage, some to preserve fish and some for more than one purpose. Only those relating to navigation are considered. The Acts, in general, required obstructions in the rivers to be removed and they also prohibited the construction or enlargement of new obstructions. The evidence considered is the wording of the Acts, the petitions which initiated the Acts and the commissions which were appointed to enforce the legislation.

The original text of the statutes is taken from *Statutes of the Realm* which is considered to be the principal edition of the pre 1713 Acts.<sup>1292</sup>

#### Magna Carta

Chapter 33 of the original charter and chapter 23 of the reissued charters state that:-

*Omnes Kidelli deponantur decetero penitus de Tamisiam & Medeweyam, & per totam Angliam, nisi per costeram maris.*

The editors of *Statutes of the Realm*,<sup>1293</sup> and of *Statutes at Large*<sup>1294</sup> and the National Archives<sup>1295</sup> translate this as

All Wears from henceforth shall be utterly put down by Thames and Medway, and through all England, but only by the Sea-coasts.

McKechnie,<sup>1296</sup> Thompson,<sup>1297</sup> Dickinson,<sup>1298</sup> Holt<sup>1299</sup> and Howard<sup>1300</sup> translate the last phrase ‘except on the sea coast’, ‘except upon the sea shore’ or an equivalent.

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<sup>1292</sup> Sir Carleton Kemp Allen, *Law in the Making. Sixth Edition.* Oxford: Clarendon Press. 1958, 428. footnote 2.

<sup>1293</sup> (1297) 25 Edward I. *Magna Carta.* c23.

<sup>1294</sup> (1225) 9 Henry III c. 23.

<sup>1295</sup> <http://www.nara.gov/exhall/charters/magnacarta/magtrans.html>. Accessed 16/10/01.

<sup>1296</sup> Eg. William Sharp McKechnie, *Magna Carta. Second Edition.* New York: Burt Franklin. 1958, 343.

<sup>1297</sup> Faith Thompson, *Magna Carta.* Minneapolis: The University of Minnesota Press. 1948, 23.

<sup>1298</sup> J.C. Dickinson, *The Great Charter.* London: The Historical Association. 1955, 23.

<sup>1299</sup> J.C. Holt, *Magna Carta. Second Edition.* Cambridge: Cambridge University Press. 1992, 461.

<sup>1300</sup> A.E. Dick Howard, *Magna Carta. Revised Edition.* Charlottesville: University Press of Virginia. 1998, 44.

*Nisi* had in Classical Latin the meaning ‘if not or unless’.<sup>1301</sup> In Medieval Latin *Nisi* could have the meaning ‘only’.<sup>1302</sup> The first of these translations seems to be excessively verbose. It seems extraordinary that the authors of the charter would have used the words ‘through all England, but only on the coast’ unless one is using the word ‘but’ in the sense of ‘except’.

It would seem strange to have banned kydells on the estuaries but to have allowed them in the rivers. But there is good reason for banning them in the rivers where they would have obstructed ships and boats. On the coast ships and boats could sail round the obstructions.

There are four extant copies of the charter, all in Latin.<sup>1303</sup> There is no contemporary translation into English. The copy of the confirmation of the charter sent to Dublin on 12 November 1216 by Henry III is of no help. In this the relevant chapter was ‘*Et omes kydelli deponant<sup>r</sup> do ceto p totam Auenlich & p totam Hybm nisi p costeram Maris*’.<sup>1304</sup>

There is however a vernacular French text, apparently dating from 1215, in the cartulary of the lepers’ hospital of S. Giles at Pont-Audemer in Normandy. In this the relevant phrase was given as ‘*fors par la costiere de la mer*’.<sup>1305</sup> In medieval French ‘*fors*’ had the meaning ‘*dehors*’ or ‘*excepte*’.<sup>1306</sup> This seems to establish that the second translation is the correct one.

*Magna Carta* was, in general, the confirmation of earlier laws. This clause was an extension of two charters which had been purchased by the Corporation of London from Richard I and John for the right to destroy *kydelli* in the Thames and, for the second charter, in the Medway. In the two centuries after 1215 the charter was confirmed at least 44 times.<sup>1307</sup>

### **General Navigation Acts**

In 1302 a petition was made to Edward I by the merchants travelling by river between London and Oxford asking for the reissuing of a commission for the removal of obstructions. They stated that the commissions used to be appointed every seven years but that no commission had been appointed in the past twenty years.<sup>1308</sup>

In 1348 the commons prayed ‘that whereas the four great rivers of England, that is to say, the Thames, Severn, Ouse and Trent, since antiquity used to be open and free to every ship passing with various merchandises, in aid of the realm and of the cities and good towns adjoining the said rivers, recently, and from day to day, the aforesaid rivers *estopez et transversez par goors, molins, piles et pales* placed by each lord on his own

<sup>1301</sup> Charlton T. Lewis, *A Latin Dictionary*. Oxford: Clarendon Press. 1879, 1209.

<sup>1302</sup> R.E. Latham, *Revised Medieval Latin Word-list*. London: Oxford University Press for the British Academy. 1980, 313.

<sup>1303</sup> J.C. Holt, *Magna Carta. Second Edition*. Cambridge: Cambridge University Press. 1992, 441.

<sup>1304</sup> Statutes of the Realm. Vol. 1, 16, fn. 1.

<sup>1305</sup> J.C. Holt, *Magna Carta and Medieval Government*. London: The Hambledon Press. 1985, 238, 239 253.

<sup>1306</sup> R. Grandsaignes d’Hauterive, *Dictionnaire D’Ancien Francais*. Paris: Librairie Larousse. 1947, 299.

<sup>1307</sup> Faith Thompson, *Magna Carta*. Minneapolis: The University of Minnesota Press. 1948, 10.

<sup>1308</sup> [PROME = Parliamentary Rolls of Medieval England. CD version. 2005.]  
PROME, Edward I, 1302, Petition 3, para. 90, i - 474.

land, so that no ship can pass except in great floods of water or at the great peril of the said ships ...' and requested that justices be appointed to remove the obstructions. The king replied that as many commissions should be granted as were needed.<sup>1309</sup>

In 1351 an Act was passed which stated that:-

Whereas the common Passage of Boats and Ships in the great Rivers of England be oftentimes annoyed by the inhansing of [Gorces, Mills, Wears,<sup>9</sup>] Stanks, Stakes, and Kiddles, in great damage of the People; It is accorded and established, That all such [Gorces, Mills, Wears,<sup>1</sup>] Stanks, Stakes, and Kiddles, which be levied and set up in the Time of King [Edward] the King's Grandfather, and after, (<sup>2</sup>) whereby the said Ships and Boats be disturbed, that they cannot pass [in such River<sup>4</sup>] as they were wont, shall be out and utterly pulled down, without being renewed; and thereupon Writs shall be sent to the Sheriffs of the Places where need shall be, to survey and inquire, and to do thereof Execution; and also the Justices shall be thereupon assigned at all Times that shall be needful.<sup>1310</sup>

Footnotes:      <sup>9</sup> Wears, Mills,  
                          <sup>1</sup> Wears, Mills  
                          <sup>2</sup> in such Rivers *MS. Tr. 2.*  
                          <sup>4</sup> *MS. Tr. 2.* omits these Words here.  
                          (The misnumbering is in the original.)

Before discussing the 'great rivers' consideration is given to the 'great highways' of England. In the, so called, Laws of Edward the Confessor it is stated that there is a special peace belonging to the four roads: Watling Street, Foss Way, Icknield Way and Ermine Street.<sup>1311</sup> The laws of William the Conqueror provided that killing or assaulting a man travelling on any of these roads was a breach of the king's peace.<sup>1312</sup> The Laws of Henry I stated that a royal highway was one which was always open and which leads into a city or fortress or castle or royal town.<sup>1313</sup>

Pollock wrote

First, only the four roads are the king's; then every common road which leads to the king's city, borough, castle, or haven; and as most roads of any importance must, sooner or later, answer this description if followed far enough, the king's highway came to be, as it now is, merely a formal or picturesque name for any public road whatever.<sup>1314</sup>

<sup>1309</sup> PROME, Edward III, 1348, para. 34, ii - 169

<sup>1310</sup> (1350) 25 Edward III, Stat. 3. c 4.

<sup>1311</sup> Laws of Edward Confessor, c. 12; cf. c. 27. Cited in Sir Frederick Pollock, *Oxford Lectures*. London: Macmillan and Co. 1890, 75.

<sup>1312</sup> Will. 1. 26. Cited in Sir Frederick Pollock, *Oxford Lectures*. London: Macmillan and Co. 1890, 80.

<sup>1313</sup> *Leges Henrici Primi. Special Edition 1996*. Editor L.J. Downer. Oxford: Clarendon Press. 1972, 249.

<sup>1314</sup> Sir Frederick Pollock, *Oxford Lectures*. London: Macmillan and Co. 1890, 82.

The only cases or petitions in which these roads are referred to are those in which the road is named in order to locate a certain place.<sup>1315</sup> No petition or case has been found where the fact that some event occurred on one of the four named highways has affected the outcome of a case or the punishment inflicted.

Also in the 'Laws of Edward the Confessor' it is stated that 'another [peace is] held by the bodies of water on which victuals are brought by ship to cities and boroughs from various places.'<sup>1316</sup>

Flower stated that 'At the date of the Great Charter the Yorkshire Ouse, the Severn, the Thames and the Trent were recognised as the four great rivers of England.'<sup>1317</sup> Some may think that the Ouse referred to the Great Ouse and not the Yorkshire Ouse. More recently Mark Ormrod, in considering the petitions at the November 1372 Parliament, wrote

In one sense the matter raised here [obstructions on the river Avon in Wiltshire and Somerset] could be said to have been of concern to more than merely those county communities, especially if the guarantee of free traffic upon rivers was extended to the country as a whole (as it was by Magna Carta and by various re-assertions of the principle in fourteenth-century statutes, including one made in the parliament immediately preceding this, in 1371.)<sup>1318</sup>

In 1352 the Commons stated that 'it was ordained at the last parliament that [all obstructions in the rivers] would be destroyed, yet still nothing is done.' They requested that 'the same statute shall be strictly put into execution. And that no man shall take anything for passage on the same water, in going or returning, except to places accustomed of right, and no more than is due of right.' The reply was that 'It pleases the king that it shall be so.'<sup>1319</sup>

Where the 1351 Act had referred to 'the great rivers' the Commons used the phrase 'the Thames, and in other rivers where ships and boats are accustomed to pass'. It seems that they considered the two terms to be equivalent. Thus it would seem that the use of the names of the four rivers in the petition of 1302 and the description of the rivers to which the 1351 Act applied were 'picturesque names' for all the rivers which were used for the transport of victuals and other goods to the towns and cities. The later petitions and statutes confirm this interpretation.

### **Petitions and Commissions**

A commission was appointed in 1355 to enforce the statute of 25 Edward III for the removal of obstruction in the waters of Leye [Lea].<sup>1320</sup> A similar commission also referring to the 1355 Act was appointed in 1357 for 'the rivers in the county of

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<sup>1315</sup> Eg. A commission *de wallis et fossatis* refers to the king's highway called 'Watlyngstrete' which leads from Ferebrige to Worsop and the common way from Wossop to Dunham and from Dunham to the Ouse. Calendar of Patent Rolls, 1429-36, 280.

<sup>1316</sup> 'The Laws of Edward the Confessor'. In Bruce R. O'Brien, *God's Peace and the King's Peace*. Philadelphia: University of Philadelphia Press. 1999, 168 - 171.

<sup>1317</sup> *Public Works in Mediaeval Law. Volume II*. Editor C.T. Flower. Selden Society Vol. 40. 1923, xxiii.

<sup>1318</sup> PROME. Mark Ormrod. 'Introduction to the Parliament of November 1372.'

<sup>1319</sup> PROME. Edward III, 1352, January. 30, XX. ii - 240.

<sup>1320</sup> Calendar of Patent Rolls, 1354-58, 127.

Somerset'.<sup>1321</sup> No river in Somerset, other than the Bristol Avon, would be considered great unless all rivers used for transport were considered great.

At the October 1363 parliament the Commons prayed

That whereas gorges and weirs are made in waters throughout the land, so that ships and boats cannot come to cities, boroughs and other towns in order to carry various victuals, as they were previously accustomed to do; may it please the said council to ordain that remedy be made thereon, and that justices shall be assigned in various counties where necessary to remove such gorges and weirs, in the manner which it used to be done in times past.

The reply was 'The statute made thereon shall be upheld, observed and duly executed'.<sup>1322</sup>

In 1371 the commons prayed 'that all the rivers of the land by which the victuals of the country can be carried are blocked by mills, weirs or fisheries, to the great distress of the commonalty; ...' The petition was accepted and an Act passed confirming the 1351 statute and providing for a penalty for those who breached the statute.<sup>1323</sup>

In 1372 the 'commons of Somerset and Wiltshire' petitioned that weirs on the River Avon between Bath and Bristol should be 'knocked down or removed so that the vessels and the boats can pass between the two towns'. The reply was that 'He who shall feel himself aggrieved shall pursue this, and justice will be done to him according to the form of the statute ordained in this case'.<sup>1324</sup>

In 1376 the people of London complained that a new 'loke' called 'Hamelden Lok' [Hambleton Lock] had been newly built which was dangerous and that a man had died there.<sup>1325</sup>

In 1377 and 1378 there were complaints about the obstructions on the Severn.<sup>1326</sup>

In 1390 complaint was made about obstructions in the great rivers of England.<sup>1327</sup>

In 1397 the preceding two Acts were confirmed and provision made for commissioners to be appointed to enforce the statutes and the penalty for breach of the statute was increased.<sup>1328</sup>

In 1399 the new king Henry IV again confirmed the two Acts of Edward III and provided that 'sufficient Persons to be Justices in every County of England, where Need

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<sup>1321</sup> Calendar of Patent Rolls, 1354-58, 547.

<sup>1322</sup> PROME, Edward III, 1363 October, 17, ii-277.

<sup>1323</sup> 1371, 45 Edward III, c. 2.

<sup>1324</sup> PROME. Edward III. 1372. November. 24. X, ii-312.

<sup>1325</sup> PROME. Edward III. 1376. April. 134. LXXV. ii – 346.

<sup>1326</sup> PROME. Edward III. 1377. January. 72. LV. ii – 372

PROME. Richard II. 1378. October. 65. iii – 46.

<sup>1327</sup> PROME. Richard II. 1390. November. 34. iii – 282.

<sup>1328</sup> 1397, 21 Richard II, c. 19.

shall be, to survey and keep the Waters and great Rivers there, and to correct and amend the Defaults, and to ...'<sup>1329</sup>

In 1401 complaints were made about obstructions on the great rivers.<sup>1330</sup>

In 1402 the statutes were again confirmed and provision made for the payment of expenses to the commissioners.<sup>1331</sup>

In 1410 the Commons on behalf of the counties of Somerset, Bristol, Wiltshire and Gloucestershire complained that the river was so obstructed that the cost of carriage had increased from 8d. per ten miles to 8s. It was agreed that a commission should be appointed in accordance with the statutes.<sup>1332</sup>

In 1413 Henry V again confirmed the previous statutes.<sup>1333</sup>

In 1415 a commission was appointed on the water of Wythum in counties of Lincoln and Nottingham from the town of Claypole to Lincoln and the water of Brant in the county of Lincoln touching offences against the statutes in Parliament of 25 and 43 Edward III and I Henry IV concerning the erection of weirs, mills stanks, poles and kiddles.<sup>1334</sup>

In 1416 a similar commission was appointed for 'La Lye'[Lea].<sup>1335</sup>

In 1421 complaint was made about obstructions in the Thames near the city of London and the mayor was instructed to observe his duty to keep the river clear.<sup>1336</sup>

In 1423 provision was made for the removal of weirs in the 'Water of Thames' in the counties of Surrey, Kent and Surrey outside the Franchise of London.<sup>1337</sup>

In 1423 a commission was appointed to remove obstructions in the River Ley[Lea].<sup>1338</sup>

In 1425 the Chancellor of England was authorised to grant new commissions.<sup>1339</sup>

In 1427 the Commons again asked for action with regard to the obstructions.<sup>1340</sup> (There were many other similar commissions at about this time for the River Lea.)

In 1424 a commission was appointed 'pursuant to the statutes of 25 and 45 Edward III and I Henry IV for the taking away of kidells and other obstructions in rivers to survey and keep the waters and great rivers in the county of Salop.' 'Rivers' is in the plural.

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<sup>1329</sup> 1399, 1 Henry IV, c. 12.

<sup>1330</sup> PROME. 1401. January. 97. iii – 475.

<sup>1331</sup> 1402, 4 Henry IV, c. 11.

<sup>1332</sup> PROME, Henry IV, 1410 January, 58, iii-641.

<sup>1333</sup> 1413, 1 Henry V, c 2.

<sup>1334</sup> Calendar of Patent Rolls, 1413-16, 347.

<sup>1335</sup> Calendar of Patent Rolls, 1416-22, 78.

<sup>1336</sup> PROME. Henry V. 1421 May. 16. iv – 132.

<sup>1337</sup> 1423, 2 Henry VI, c 12.

<sup>1338</sup> PROME, Henry VI, 1423, October, 57, iv-259,260.

<sup>1339</sup> 1425, 3 Henry VI c. 5.

<sup>1340</sup> PROME, Henry VI, 1427, October, XIII, 40, iv-332.

In 1427 the Commons complained that people travelling on the Severn in ‘Wales and other privileged places’ were being attacked and their boats destroyed. They asked that the malefactors should pay damages of £40.<sup>1341</sup> In 1429 there were two complaints one by the men of Tewkesbury the other by the Commons<sup>1342</sup> and an Act was passed as a remedy for the inhabitants of Tewkesbury for the maintenance of the Severn navigation.<sup>1343</sup> In 1431 yet another complaint was made<sup>1344</sup> and another Act passed.<sup>1345</sup>

In 1431 a commission *de kidellis* was appointed ‘pursuant to the statute of I Henry V [c.2] and previous statutes to ...[names] ... for the river in the county of Norfolk by the town of Bishop’s Lenn, extending from the bridge of Wygenhale called ‘Maudeleyn brygge’ to the high sea.’<sup>1346</sup> (Wiggenhall is about 4 km south of King’s Lynn.)

In 1431 the Commons asked that commissioners should be appointed to remove ‘a large number of ‘shelps’ in the river Lea’. It was claimed that these sand banks had been formed by the force and flow of the river. It was agreed that there should be a toll of ‘4 *d.* for every freight-ship and boat passing or going along the same river’.<sup>1347</sup> This is the first occasion that has been found when commissioners were authorised to charge the users of a river.

In 1433 a commission *de kidellis* was appointed ‘pursuant to the statutes of 25 Edward II and of 1 Henry IV to ...[names] ... for the water and great river called ‘Colneystreme’ between the towns of Woxebrigge and Stanes, in the counties of Buckingham and Middlesex.’<sup>1348</sup>

In 1463 the Commons claimed that ‘the common passage of ships and boats in the great rivers of England’ was hindered by obstructions. They stated that ‘the passage of ships boats and other vessels in many of the common rivers of this realm is completely hindered and neglected, to the general inconvenience of the common people.’ They then stated that particularly the line way on the Severn was obstructed. They requested that the earlier statutes should be enforced. This petition refers for the first time to the common rivers. The reply was ‘The king will consider it further.’ It seems that this may be taken as a refusal.<sup>1349</sup>

In 1472, after the restoration of Edward IV, the Commons again prayed

that where by the laudable statute of Magna Carta, amonges other, it is ordeyned, that all kidels by Thamys, Medewey, and by all this reame, shuld be put downe, but by the coostes of the see, which statute was made for grete wele of all this land, in avoiding the <sup>stre</sup>ytenes of all ryvers, so that shippes and bootes shuld have thryn their freee and large passage, ...

<sup>1341</sup> PROME, Henry VI, 1427, October, XV, 42, iv-332,333.

<sup>1342</sup> PROME, Henry VI, 1429, September, 30, iv-345. and 44, iv-351.

<sup>1343</sup> 1329. 8 Henry VI c. 27.

<sup>1344</sup> PROME, Henry VI, 1431, January, XI, 38, iv-379.

<sup>1345</sup> 1431. 9 Henry VI c. 5.

<sup>1346</sup> Calendar of Patent Rolls, 1429-36, 132.

<sup>1347</sup> PROME, Henry VI, 1431 January, XVI, 43, iv-381.

<sup>1348</sup> Calendar of Patent Rolls, 1429-36, 303.

<sup>1349</sup> PROME, Edward IV, 1463, April, 60, v-569-570.



... for asmoche as commen passages of shippes and bootes in the gr<sup>ete</sup> ryvers of Englund, were so often tymes distourbed by rearing of, in grete hurt of the people, it was accorded and stablished, that all such weres, milles, pondes, stakes and kidelx which weere reised and sette in the tyme of Kyng Edward, son of Kyng Henry, and after, in such ryvers, by which shippes and bootes were destourbed, that they might not passe as they were wont, shuld be put away ...

...that the said statut of Magna Carta, and all other statutes concernying the premysses, be duely observed and kept; ...<sup>1350</sup>

In response an appropriate Act was passed.<sup>1351</sup>

There seems in this Act to be no implication that the preceding Acts applied only to a few rivers. Rather it seems that they applied to all rivers which were used by ships or boats.

In 1503 an Act was passed confirming the right of free passage on the River Severn except for tolls for which lawful title could be shown. The Act also provided that, when people haling or drawing boats caused damage, then fair compensation should be paid to the riparian owner.<sup>1352</sup>

In 1531 an Act was passed for the 'pullinge downe and avoiding of Fisshegarthes, piles, stakes, heckes & other ingins sett in the Ryver & Water of Ouse and Humbre.'<sup>1353</sup>

In 1531 the Statute of Sewers provided for the appointment of commissioners to repair rivers, river banks and sea walls because of flooding and because the passage of 'Ships, Balengers and Boats in the Rivers, Streams, and other Flouds' was obstructed.<sup>1354</sup>

In 1535, a commission was appointed with the instructions that

'All weirs noisome to the passage of ships or boats, to the hurt of passages or ways and calceys [causeys] shall be pulled down; and those that be occasion of drowning of any lands or pastures, by stopping of waters, and also those that are the destruction of the increase of fish, by the discretion of the Commissioners; so that if any of the before-mentioned depend or may grow by reason of the same weir, then is there no redemption but pull them down, although the same weirs have stood since 500 years before the Conquest.'<sup>1355</sup>

The only defence against having one's weir destroyed seems to have been that boats did not pass that way.<sup>1356</sup>

<sup>1350</sup> PROME. Edward IV, 1472, October, 53, vi-158-159.

<sup>1351</sup> (1472) 12 Edward IV, c. 7.

<sup>1352</sup> (1503) 19 Henry VII, c. 18.

<sup>1353</sup> (1531) 23 Henry VIII, c. 18.

<sup>1354</sup> (1531) 23 Henry VIII, c. 5

<sup>1355</sup> *The Lisle Letters. Volume 2*. Editor Muriel St Clare Byrne. Chicago: The University of Chicago Press, 1981, 628.

<sup>1356</sup> *Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 9*, 299, 892.

Weirs were destroyed on the Avon at Christchurch,<sup>1357</sup> the Severn,<sup>1358</sup> the Wye,<sup>1359</sup> the Exe,<sup>1360</sup> the Thames,<sup>1361</sup> and in the counties of Wiltshire,<sup>1362</sup> Lancashire,<sup>1363</sup> Somerset and Devonshire,<sup>1364</sup> and Hampshire.<sup>1365</sup>

In 1537 letters were sent into Kent touching weirs.<sup>1366</sup>

In 1538 weirs were destroyed at Umberleigh on the Taw,<sup>1367</sup> Filleigh on the Bray,<sup>1368</sup> Yealding on the Medway,<sup>1369</sup> and also at 'Calabear, Exweke, Thorverton, Upexe, Bicklegh, Beawford and Hedde.'<sup>1370</sup> The river between Winchester and Southampton was also partially scoured.<sup>1371</sup>

In 1539 an Act was passed to authorise the removal of obstructions in the River Exe from Exeter to the sea.<sup>1372</sup>

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<sup>1357</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 9, 285,850. and *The Lisle Letters. Volume 2*. Editor Muriel St Clare Byrne. Chicago: The University of Chicago Press, 1981, 628.

<sup>1358</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 9, 49, 166, and 50, 169.

<sup>1359</sup> *Ibid.* pages 103, 302.

<sup>1360</sup> *Ibid.* pages 128, 384.

<sup>1361</sup> *Ibid.* pages 170, 519.

<sup>1362</sup> *Ibid.* pages 123, 364.

<sup>1363</sup> *Ibid.* pages 130, 393.

<sup>1364</sup> *Ibid.* pages 162, 498.

<sup>1365</sup> *Ibid.* pages 190, 571.

and *The Lisle Letters. Volume 2*. Editor Muriel St Clare Byrne. Chicago: The University of Chicago Press, 1981, 599.

<sup>1366</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 12.1, 409, 1151.

<sup>1367</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 13.1, 193, 515.

<sup>1368</sup> *Ibid.* and *The Lisle Letters. Volume 5*. Editor Muriel St Clare Byrne. Chicago: The University of Chicago Press, 1981, 37.

<sup>1369</sup> Letters and Papers Foreign and Domestic of the Reign of Henry VIII. Volume 13.1, 5, 12.

<sup>1370</sup> *Ibid.* pages 166, 454.

<sup>1371</sup> *Ibid.* pages 458, 1240.

<sup>1372</sup> 1539, 31 Henry VIII, c. 4.

**Appendix F****The gradients of the Thames**

<b>Contour height metres</b>	<b>Place</b>	<b>Grid Reference</b>	<b>Distance km</b>	<b>Gradient m km<sup>-1</sup></b>
90	Kemble Mill.	40131951		
	Cotswold Water Park.		3	1.7
85	W. of Ashton Keynes.	40401942		
	Waterhay Bridge.		3.75	1.3
80	1km NW Cricklade.	40901946		
	Cricklade.		7	0.71
75	Castle Eaton.	41431958		
	Lechlade.		12.5	0.4
70	N of Buscott.	42331982		
	Radcot.		14.75	0.34
65	1kmW of Duxford.	43521996		
			19	0.26
60	2km E of Eynsham.	44552094		
	Oxford.		12.5	0.44
55	S of New Hinksey.	45222039		
			10	0.5
50	Abingdon Weir.	45051972		
			18.5	0.27
45	Shillingford Bridge.	45971920		
			19.75	0.25
40	Pangbourne Weir.	46331768		
	Reading.		15.25	0.33
35	Sonning.	47561759		
	Henley.		16.25	0.31
30	Medmenham.	48051836		
			12.5	0.4
25	Cookham Lock.	49041855		
			12	0.42
20	Eton Wick.	49491779		
	Windsor.			

## Appendix G

### The 1334 Lay Subsidy and River Transport

The table lists the 100 places with the highest 1334 Lay Subsidy Assessments and whether the places were ports, in the Fens, on a usable river, on a non-usable river, or away from any river. The list of places and the valuation figures are taken from R.E. Glasscock, 'England *circa* 1334',<sup>1373</sup> except that the figures of Lyn and South Lynn have been combined into one entry.

#### Use of Rivers in 1334

2 <sup>nd</sup> Column.	County. (Lincoln. H = Lincolnshire Holland.)			
3 <sup>rd</sup> Column.	Valuation for Lay Subsidy 1334.			
4 <sup>th</sup> Column.	River on which the town lies:- F = Fenland settlement. P = Port. N = Not on a river.			
5 <sup>th</sup> Column.	Historic Use as Appendix A.	R = Record of use. X = No record of use.		
6 <sup>th</sup> Column.	Classification in 20 <sup>th</sup> C.	U = Usable. X = Not usable.		

1. London.	Middlesex.	£11,000	P		
2. Bristol.	Gloucester.	£1,900	P		
3. York.	Yorkshire.	£1,620	P		
4. Newcastle-u-T.	Northumb.	£1,333	P		
5. Boston.	Lincolnshire.	£1,100	P		
6. Norwich.	Norfolk.	£1,100	P		
7. Yarmouth.	Norfolk.	£1,000	P		
8. Bampton.	Oxfordshire.	£969	Thames.	R	U
9. Oxford.	Oxfordshire.	£914	Thames	R	U
10. Lincoln.	Lincolnshire.	£900	Witham.	R	U
11. Coventry.	Warwickshire.	£750	Sowe.	X	X
12. Lynn.	Norfolk.	£770	P		
13. Salisbury.	Wiltshire.	£750	Avon.	R	U
14. Shrewsbury.	Shropshire.	£700	Severn.	R	U
15. Pinchbeck.	Lincoln. H	£675	F		
16. Spalding.	Lincoln. H	£630	F		
17. Winchester.	Hampshire.	£625	Itchen.	R	U
18. Terrington.	Norfolk.	£607	F		
19. Canterbury.	Kent.	£599	Kentish Stour.	R	U
20. Wighenhall.	Norfolk.	£555	F		

<sup>1373</sup> R.E. Glasscock, 'England *circa* 1334.' In H.C. Darby, Ed., *A New Historical Geography of England*. Cambridge: Cambridge University Press. 1973, 181-182.

21. Hereford.	Herefordshire	£550	Wye.	R	U
22. Walpole.	Norfolk.	£533	F		
23. Southampton.	Hampshire.	£511	P		
24. Gloucester.	Gloucester.	£510	P		
25. Ipswich.	Suffolk.	£500	P		
26. Beverley.	Yorkshire.	£500	Hull.	R	U
27. Cambridge.	Cambridge.	£500	Cam.	R	U
28. Holbeach.	Lincoln. H	£495	F		
29. Whaplode.	Lincoln. H	£480	F		
30. Moulton.	Lincoln. H.	£465	F		
31. Gosberton.	Lincoln. H.	£450	F		
32. Tilney.	Norfolk.	£450	F		
33. Kirton.	Lincoln. H	£413	F		
34. Newbury.	Berkshire.	£412	Kennet.	X	U
35. Wisbech.	Cambridge.	£410	F		
36. Plymouth.	Devon.	£400	P		
37. Penrith.	Cumberland.	£398	Eamont	X	X
38. Walsoken	Norfolk.	£396	F		
39. Newark.	Nottingham.	£390	Trent.	R	U
40. Sutton St James.	Lincoln. H	£375	F		
41. Nottingham.	Nottingham.	£371	Trent.	R	U
42. Bury St. Edmunds.	Suffolk	£360	Lark.	R	U
43. Stamford.	Lincolnshire.	£360	Welland.	R	U
44. Leverington.	Cambridge.	£360	F		
45. Exeter.	Devon.	£350	P		
46. Northampton.	Northampton.	£350	Nene.	R	U
47. Luton.	Bedfordshire.	£349	N		
48. West Walton.	Norfolk.	£345	F		
49. Barking.	Essex.	£341	P		
50. Cottingham.	Yorkshire.	£330	Hull.	R	U
51. Sutterton.	Lincoln. H	£320	F		
52. Ely.	Cambridge.	£315	Ouse.	R	U
53. Old Leake.	Lincoln. H	£315	F		
54. Surfleet.	Lincoln. H	£315	F		
55. Derby.	Derbyshire.	£300	Derwent.	R	U
56. Hull.	Yorkshire.	£300	P		
57. Scarborough.	Yorkshire.	£300	P		
58. Worcester.	Worcester.	£300	Severn.	R	U
59. Swaffham.	Norfolk	£300	N		
60. Bramley.	Surrey.	£298	Wey.	R	U
61. Leicester.	Leicester.	£294	Soar.	R	U
62. Fulbourn.	Cambridge.	£293	F		
63. Grantham.	Lincolnshire.	£293	Witham.	X	U
64. Reading.	Berkshire.	£293	Thames.	R	U
65. Swineshead.	Lincoln. H.	£285	F		
66. Snettisham.	Norfolk.	£285	P		
67. Sudbury.	Suffolk.	£281	Essex Stour.	R	U
68. Castor.	Northampton.	£276	Nene.	R	U
69. Peterborough.	Northampton.	£275	Nene.	R	U
70. Huntingdon.	Huntingdon.	£270	Great Ouse.	R	U

71. Marshfield.	Gloucester.	£270	N		
72. Pontefract.	Yorkshire.	£270	Aire.	R	U
73. Fleet.	Lincoln. H	£270	F		
74. Abingdon.	Berkshire.	£269	Thames.	R	U
75. Barnack.	Northampton.	£269	Welland.	R	U
76. Banbury.	Oxfordshire.	£267	Cherwell.	X	U
77. Writtle.	Essex.	£267	Can.	X	U
78. St Albans.	Hertfordshire.	£266	Colne.	X	X
79. Waltham Abbey.	Essex.	£263	Lea.	R	U
80. Bridgewater.	Somerset.	£260	P		
81. Harrow.	Middlesex.	£257	N		
82. Campden.	Gloucester.	£255	N		
83. Doncaster.	Yorkshire.	£255	Don.	R	U
84. Frampton.	Lincoln. H	£255	F		
85. Paston.	Northampton.	£251	Nene	R	U
86. Cirencester.	Gloucester.	£250	Churn.	X	U
87. Colchester.	Essex.	£250	P		
88. Donington.	Lincoln. H	£250	F		
89. Leighton-Buzzard	Bedfordshire.	£249	Ouzel	R	U
90. Godalming.	Surrey.	£248	Wey.	R	U
91. Heacham.	Norfolk.	£248	P		
92. Barton-on-Humber.	Lincolnshire.	£246	P		
93. Bridgnorth.	Shropshire.	£244	Severn.	R	U
94. Tewkesbury.	Gloucester	£243	Severn.	R	U
95. Sleaford.	Lincolnshire.	£240	Slea.	R	U
96. Wyberton.	Lincoln. H	£240	F		
97. Wainfleet.	Lincolnshire.	£233	Steeping.	R	U
98. Louth.	Lincolnshire.	£230	Lud.	X	X
99. Yaxley.	Cambridge.	£227	Nene.	R	U
100.					
North Walsham.	Norfolk.	£225	Ant.	R	U

## Appendix H

### Dates of Obstructions of Rivers

This table lists the obstructions of rivers which have been found. Repeated reports of the same or similar obstructions on one river are not included. It has prepared from the same sources as the 'Records of Use' in Appendix A but data for the 'well used' sections are included. References are only given when the corresponding entry is not in Appendix A.

Commenced	Period	River	Place	Cause
		Obstructed		
pre1189	All	Cam	Cambridge.	Wier.
pre1189	All	Dee.	Chester.	Weir.
pre1189	All	Kentish Stour.	Fordwich.	Weir
13 <sup>th</sup> C.	All	Parrett.	Langport.	Bridge.
1227.	All	Thames.	Oxford, etc.	Weir. <sup>1374</sup>
1242.	nk	Axe.	Rackley.	Fishnets, Kiddles.
1260	115	Thame.	Islip.	Weirs.
1265.	27	Trent.	Thorkese.	Weirs. <sup>1375</sup>
1268.	<30	Hull.	nk	Fishnets, Kiddles.
1268-1591	nk	Nene watercourses.		Weeds, Dirt.
1268	>4	Derbyshire	Borrowash.	Weirs.
		Derwent.		
1272.	35	Eastern Rother.	nk	Sluice.
1275.	325	Great Ouse.	Nr Huntingdon.	Weirs.
1275.	nk	Nar.	Setchey.	Weirs, Weeds, Dirt.
1290.	105	Ancholme.	Bishop's Bridge.	Dirt, Weeds.
1290.	310	Exe	Topsham	Weirs.
1290.	nk	Ant	Ludham/Irsted.	Wooden barrier.
1291.	nk	Wissey.	Stoke Ferry.	Bridge.
1299.	17	Trent.	Colwyck.	Weirs. <sup>1376</sup>
1301.	nk	Wye.	Hereford.	Not known.
1314.	c20	Nene.	Welle.	Weirs.
1322.	nk	Ure.	Boroughbridge.	King's enemies.
1326.	56	Don	Thorne.	Bridge, Weirs. <sup>1377</sup>
1331.	nk	Eastern Rother.	Bodiam.	Ballast.
1334.	nk	Fens.	Wide area.	Dirt, Weeds.
1338.	nk	Hedon.	Bondebrustewyk.	River diversion.
[c.1340.	c.1391	Yorkshire Ouse.	nk	Fishnets, Kiddles, Weirs.

<sup>1374</sup> For other obstructions on the Thames see Appendix A.

<sup>1375</sup> Calendar of Patent Rolls, 1258-66, 480.

Calendar of Inquisitions Miscellaneous, 1219-1307, 442.

Calendar of Patent Rolls, 1281-92, 520.

<sup>1376</sup> Calendar of Patent Rolls, 1292-1301, 476-77, 555.

Calendar of Patent Rolls, 1301-07, 94, 269.

Calendar of Patent Rolls, 1313-17, 431.

<sup>1377</sup> Calendar of Patent Rolls, 1324-27, 291.

Calendar of Patent Rolls, 1343-45, 91.

Calendar of Patent Rolls, 1381-85, 193.

[do		Hull. Aire. Derwent. Wharfe.		
[do		Ure. Swale. Nidd. Don.		
1342.	nk	Slea.	Dokdyk.	Dirt, Weeds.
1348.	nk	Eastern Rother.	nk	Sluice.
1351	nk	Ingrebourne.	Havering.	Dirt, Weeds.
1353.	12	Colne.	Colchester.	Weirs, Mills, Fishing.
1360	11	Ant	Stalham.	Dirt, Weeds.
1363.	>10	Idle.	Hayton.	Dirt, Weeds.
1364.	nk	Tone.	Monkton.	Trees
1365.	18	Bristol Avon.	Bath.	Weirs.
1367.	nk	Nene.	Deepings.	Floodgates, mills, pools. <sup>1378</sup>
1367.	nk	Welland.	Deepings.	Floodgates, mills, pools. <sup>1379</sup>
1371.	nk	Tyne.	Prudhowe.	Weirs.
1375.	nk	Wensum.	Norwich.	Sunk boat.
1375.	nk	Eau.	Scotter.	Weirs.
c.1377.	nk	Witham.	Hildike.	Dirt, Weeds. <sup>1380</sup>
1383.	nk	Taw.	Mollond.	Weirs, Fishing.
1396.	>1	Idle.	nk.	Bridge, Fishing.
1400.	nk	Eastern Rother.	Winchelsea.	Ballast
1414.	nk	Tone.	Below Taunton.	Weirs.
1423.	nk	Medway.	Maidstone.	Weirs, Fishing.
1427.	nk	Severn.	Bewdley.	Attacks
1452.	nk	Kennet.	Hungerford.	Fishnets, kiddles.
1490.	nk	Tone.	Ham.	Mills.
1529.	nk	Little Ouse.	Nr Thetford.	Dirt, Weeds.
pre1530.	nk	Gipping.	Ipswich.	Mills.
pre1535.	nk	Cherwell.	Water Eyton.	Weirs.
pre1535.	nk	Salisbury Avon.	Hampshire.	Weirs.
pre1535.	nk	Bray.	Filleigh.	Weirs.
1570.	nk	Welland.	Stamford.	Mills.
1586	nk	Welland.	Estuary.	Dirt, Weeds.
1592.	nk	Trent.	Shelford.	Weirs.
1592.	nk	Salisbury Avon.	Downstream. of Salisbury.	Not known.

<sup>1378</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 196.

<sup>1379</sup> *Ibid.* page 196.

<sup>1380</sup> W.H. Wheeler, *History of the Fens of South Lincolnshire*. Boston: J.M. Newcomb. 1868, 42.



## Appendix I

### Depth of Fords

There were various types of ford, swine-fords, sheep-fords, ox-fords, foot-fords, carriage-fords, horse-fords, fords beside footbridges. Possibly on the road from Norfolk to London there were goose-fords and turkey-fords. Except where otherwise stated the fords considered in this appendix are those used by people walking.

When the river stage increased many fords became impassable. It has been said that in Yorkshire the fords used by sheep could only be crossed at the end of the summer but that this was satisfactory as that was the season when the shepherds wished to move the sheep to market.<sup>1381</sup> Thetford is at the confluence of two rivers. There were fords over both the tributaries and over the river downstream of the meeting point. Since the position of Thetford seems to have depended on these fords it would seem that the ford downstream of the confluence was a seasonal ford, but that the upper two fords could be used for much of the year.

There are two depths which are relevant when considering fords, (a) the maximum depth at which the ford could be crossed in comfort, (b) the maximum depth at which the ford could be crossed in safety. At fords where there was a causeway this would be the depth of the water above the firm surface. At fords where there were stepping stones it would seem that if the depth of water over the stones was not insignificant then the ford would be unusable.

In the coroners' enquiries as reported in the Eyre Courts' records of the 13<sup>th</sup> and 14<sup>th</sup> centuries there are a remarkable number of records including words to the effect that 'A was thrown from his horse into the waters of B and drowned.' It would seem that these accidents occurred not when the road ran alongside the river but at places where the rider was trying to ford the river.

The maximum depth for a person walking across a river in comfort was where the depth of water was less than that which would reach to a lady's knees.

(Cryrus) was so offended, that one of his knights whom he loved deerlie, was drowned and borne awaie with the water in his passage over the (Euphrates), that he sware a deepe oth yer long to make it so shallow that it should not wet a woman to the knees.<sup>1382</sup>

Illustrations of St Christopher normally show him crossing a river with the water reaching to just below his knees. He carries a child on his shoulders and a stave in his right hand. His cloak seems to be gathered up to keep it dry.<sup>1383</sup> John Constable's *The Haywain* shows the water in the ford about 0.3 m deep. Bewick shows men wading through water reaching to their mid-thigh and waist deep. A lady following one of the

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<sup>1381</sup> Personal comment: Chris Hawkesworth, British Canoe Union Facilities Officer.

<sup>1382</sup> Raphaell Holinshed, William Harrison *et al.* *The First and Second Volumes of the Chronicles*. 2<sup>nd</sup> Edition. London: J. Johnson *et al.* 1807, 89.

<sup>1383</sup> See for example:- Syndicates of Cambridge University Library. Illustrated in *Cam No 45* Easter Term 2005, 15; Erasmus, In Praise of Folly: A German Woodcut of the 15<sup>th</sup> century: both illustrated in Robert Bartlett, Ed., *Medieval Panorama*. London: Thames & Hudson. 2001, 10 and 67.

men has her ankle-length skirt raised to her knees with the water apparently much deeper ahead of her.<sup>1384</sup>

In films when horses are ridden into the sea or across rivers the water very seldom reaches the feet of the rider of the horse. On the other hand it would appear that cattle were often driven across a river with only their heads above the water. For a packhorse the maximum comfortable depth would have been less than the height of the base of the saddle bags.

Martin Cook wrote 'In the nineteenth century it was generally considered that the depth of fording for foot passengers should not exceed three feet, with an extra foot permitted for horse riders.'<sup>1385</sup>

Gordon *et al.* state that 'It is a well-known rule of thumb that the depth (in metres) times the velocity (in metres per second) should not exceed 1.0 for safe wading.'<sup>1386</sup> Few small rivers flow at more than 2 mph (0.89 ms<sup>-1</sup>).<sup>1387</sup> Thus it seems that a ford more than 1.1 m deep could have been dangerous because people could have been swept away.

In Scotland there were shallows between Loch Dubh and Loch Fionn. It was reported that when the water was knee deep it was considered to be a ford. Sometimes people walked across when the water came up to their middle. But it seems that if the water was deeper then they walked round one of the lochs.<sup>1388</sup>

In the regulations for Romney March it was provided that 'it shall not be lawful for any man, thenceforth, to make any dams or fords, or other impediment, in any land-eas, water-gangs, ditches, or common water-courses, in the said marsh, whereby the right course of the waters may in any sort be hindered.'<sup>1389</sup> This implies that all fords were constructed by laying stones in the bed of the river which restricted the flow of the water.

There are records of fords being removed when the rivers were made usable by barges. It seems likely that this was because the bed of the river had been raised by depositing stones and gravel in the bed of the river. At these points where proprietors created a navigation by making a river deeper, and so not conveniently fordable, bridges were normally required to be constructed.

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<sup>1384</sup> Thomas Bewick, *A History of British Birds*. Newcastle: Longman and Co., London. 1832, Volume I, 170, 285; Volume II, 186.

<sup>1385</sup> Martin Cook, *Medieval Bridges*, Princes Risborough: Shire Publications Ltd. 1998, 7.

<sup>1386</sup> Nancy D. Gordon, *et al.*, *Stream Hydrology. 2<sup>nd</sup> Edition*. Chichester: John Wiley & Sons, Ltd. 2004, 75.

<sup>1387</sup> Mike Davies-Shiel, *Watermills of Cumbria*. Clapham: Dalesman Publishing Company Ltd. 1978, 15.

<sup>1388</sup> *Mackenzie v Bankes* (1878) 3 A.C. 1324-1352, 1332.

<sup>1389</sup> William Dugdale, *The History of Imbanking and Draining of Divers Fens and Marshes. 2<sup>nd</sup> Edition*. London: Richard Guest. 1772, 32.

## Appendix J

### Mills in the Wye Valley and East Sussex

#### Present day discharge at 14<sup>th</sup> century Mills of the Middle Wye Valley

Source of location of mills.: William Rees, *Map of South Wales and the Border in the fourteenth Century*. Ordnance Survey 1932. Quoted in S.D. Coates and D.G. Tucker, *Water-mills of the Middle Wye Valley*. Monmouth: Monmouth District Museum Service. 1983.

Assumed runoff 350 mm.a<sup>-1</sup>.

Hadnach.	Now only sinks.
Ganerew	Now no stream.
Whitchurch A.	0.09 m <sup>3</sup> s <sup>-1</sup> .
Whitchurch B.	0.05 m <sup>3</sup> s <sup>-1</sup> .
Marstow.	1.03 m <sup>3</sup> s <sup>-1</sup> .
Michaelchurch.	0.01 m <sup>3</sup> s <sup>-1</sup> .
Tretire.	0.29 m <sup>3</sup> s <sup>-1</sup> .
Lenastone.	0.17 m <sup>3</sup> s <sup>-1</sup> .
Lydbrook.	0.11 m <sup>3</sup> s <sup>-1</sup> .
Walford.	0.34 m <sup>3</sup> s <sup>-1</sup> .
Weston under Penyard.	0.17 m <sup>3</sup> s <sup>-1</sup> .
Rosss.	0.28 m <sup>3</sup> s <sup>-1</sup> .
Rudhall.	0.16 m <sup>3</sup> s <sup>-1</sup> .
Burton.	0.07 m <sup>3</sup> s <sup>-1</sup> .
Netherton.	0.06 m <sup>3</sup> s <sup>-1</sup> .
Near Foy.	? On divided river.
Sellack.	Now no stream.
Dinedor.	0.07 m <sup>3</sup> s <sup>-1</sup> .
Aconbury.	0.01 m <sup>3</sup> s <sup>-1</sup> .
Hampton Bishop.	On river bank.
Bullinghope.	River bank or small stream.
Hereford.	Now no stream.
Eaton Bishop A.	0.25 m <sup>3</sup> s <sup>-1</sup> .
Eaton Bishop B.	0.17 m <sup>3</sup> s <sup>-1</sup> .
Eaton Bishop C.	0.17 m <sup>3</sup> s <sup>-1</sup> .
Near Sugwas.	River bank or no stream.
Preston on Wye.	0.21 m <sup>3</sup> s <sup>-1</sup> .
Near Byford.	River bank.
Yarsop.	0.03 m <sup>3</sup> s <sup>-1</sup> .
Newchurch.	Small stream.
Bredwardine.	Small stream.
Eardisley.	0.16 m <sup>3</sup> s <sup>-1</sup> .
Clifford.	0.09 m <sup>3</sup> s <sup>-1</sup> .
Middlewood.	0.08 m <sup>3</sup> s <sup>-1</sup> .
Clyro.	0.08 m <sup>3</sup> s <sup>-1</sup> .
Clifford A.	0.08 m <sup>3</sup> s <sup>-1</sup> .
Clifford B.	0.12 m <sup>3</sup> s <sup>-1</sup> .
Hay. (3 mills.)	0.18 m <sup>3</sup> s <sup>-1</sup> .

**Present day discharge at Mills East Sussex**

The list of mills is taken from Derek Stidder & Colin Smith, *Watermills of Sussex. Volume I – East Sussex*. Baron Birch. 1997.

**River Ouse**

Sheffield Mill.	0.08 m <sup>3</sup> s <sup>-1</sup> .	
Fletching Mill.	2.1 m <sup>3</sup> s <sup>-1</sup> .	1 <sup>st</sup> recorded 1574.
Sharp's Paper Mill.	2.24 m <sup>3</sup> s <sup>-1</sup> .	Established 1813-16.
Boringwhell Mill.	0.04 m <sup>3</sup> s <sup>-1</sup> .	
Maresfield Mill.	0.1 m <sup>3</sup> s <sup>-1</sup> .	
Shortbridge Mill.	0.2 m <sup>3</sup> s <sup>-1</sup> .	
Isfield Paper Mill.	0.26 m <sup>3</sup> s <sup>-1</sup> .	
Isfield Old Mill.	0.37 m <sup>3</sup> s <sup>-1</sup> .	
Plumpton Place Mill.	Spring fed.	Discharge not available.
Plumpton Upper Mill.	Spring fed.	Discharge not available.
Plumpton Mill.	Spring fed.	Discharge not available.
Barcombe Oil Mill.	4.03 m <sup>3</sup> s <sup>-1</sup> .	Post 1700.
Barcombe Mill.	4.03 m <sup>3</sup> s <sup>-1</sup> .	No record before 16 <sup>th</sup> C.
Germany Mill, Lewes Paper Mill.	Now no water supply.	

**River Uck**

Stone Mill.	0.05 m <sup>3</sup> s <sup>-1</sup> .	
Huggett's Furnace Mill.	0.12 m <sup>3</sup> s <sup>-1</sup> .	
High Hurstwood Mill.	0.07 m <sup>3</sup> s <sup>-1</sup> .	
Buxted Mill.	0.35 m <sup>3</sup> s <sup>-1</sup> .	
Pounsley Mill.	0.07 m <sup>3</sup> s <sup>-1</sup> .	
Tickerage Mill.	0.15 m <sup>3</sup> s <sup>-1</sup> .	
Upton's Mill.	0.15 m <sup>3</sup> s <sup>-1</sup> .	
Hempstead Mill.	0.50 m <sup>3</sup> s <sup>-1</sup> .	
Uckfield Mill.	0.53 m <sup>3</sup> s <sup>-1</sup> .	
Isfield Mill.	1.17 m <sup>3</sup> s <sup>-1</sup> .	Appears not to be ancient.
Halland Mill.	Spring fed.	Discharge not available.

**Cuckmere Basin**

Rushlake Mill.	0.03 m <sup>3</sup> s <sup>-1</sup> .	
Twissell's Mill	0.04 m <sup>3</sup> s <sup>-1</sup> .	
Cralle Mill	0.08 m <sup>3</sup> s <sup>-1</sup> .	
Waldron Mill	0.06 m <sup>3</sup> s <sup>-1</sup> .	
Horam Mill	0.015 m <sup>3</sup> s <sup>-1</sup> .	
Hellingly Mill	0.4 m <sup>3</sup> s <sup>-1</sup> .	
Stream Mill	0.18 m <sup>3</sup> s <sup>-1</sup> .	
Horsebridge Mill	0.9 m <sup>3</sup> s <sup>-1</sup> .	
Michelham Mill	1.0 m <sup>3</sup> s <sup>-1</sup> .	Divided river.
Sessingham Mill	0.01 m <sup>3</sup> s <sup>-1</sup> .	

**Pevensey Haven**

Wannock Mill.	Chalk catchment. Discharge not available.
Polegate Lower Mill.	Chalk catchment. Discharge not available.

**Wallers Haven**

Bucksteep Mill.	0.07 m <sup>3</sup> s <sup>-1</sup> .
Ashburnham Mill.	0.24 m <sup>3</sup> s <sup>-1</sup> .

**Powdermill Stream**

Farthing Mill.	0.02 m <sup>3</sup> s <sup>-1</sup> .
Battle Powder Mills.	0.04 m <sup>3</sup> s <sup>-1</sup> .
Peppering Eye Powder Mill.	0.05 m <sup>3</sup> s <sup>-1</sup> .
Peppering Eye Lower Powder Mill.	0.05 m <sup>3</sup> s <sup>-1</sup> .
Crowhurst Powder Mill.	0.33 m <sup>3</sup> s <sup>-1</sup> .

**Watermill Stream**

Potman's Mill.	0.06 m <sup>3</sup> s <sup>-1</sup> .
Catsfield Mill.	0.08 m <sup>3</sup> s <sup>-1</sup> .

**River Brede**

Sedlescombe Powder Mill.	0.33 m <sup>3</sup> s <sup>-1</sup> .
Brede Powder Mill.	0.05 m <sup>3</sup> s <sup>-1</sup> .
Pickham Mill.	0.03 m <sup>3</sup> s <sup>-1</sup> .

**River Line**

Beech Mill.	0.03 m <sup>3</sup> s <sup>-1</sup> .
Whatlington Mill.	0.15 m <sup>3</sup> s <sup>-1</sup> .

**River Tillingham**

Beckley Mill.	0.05 m <sup>3</sup> s <sup>-1</sup> .
Conster Mill.	0.15 m <sup>3</sup> s <sup>-1</sup> .

**River Rother**

Mayfield Old Mill	0.15 m <sup>3</sup> s <sup>-1</sup> .	
Moat Mill.	0.30 m <sup>3</sup> s <sup>-1</sup> .	
Potten's Mill.	0.36 m <sup>3</sup> s <sup>-1</sup> .	
Merryweathers Mill.	0.08 m <sup>3</sup> s <sup>-1</sup> .	
Mousehall Mill.	0.09 m <sup>3</sup> s <sup>-1</sup> .	
Wadhurst Mill.	0.2 m <sup>3</sup> s <sup>-1</sup> .	
Witherenden Mill.	0.8 m <sup>3</sup> s <sup>-1</sup> .	
Bugsell Mill.	1.65 m <sup>3</sup> s <sup>-1</sup> .	Supplied by leat.
Robertsbridge Mill.	2.1 m <sup>3</sup> s <sup>-1</sup> .	Supplied by leat.

**River Dudwell**

Cox's Mill.	0.02 m <sup>3</sup> s <sup>-1</sup> .
Park Mill.	0.30 m <sup>3</sup> s <sup>-1</sup> .
Dudwell Mill.	0.31 m <sup>3</sup> s <sup>-1</sup> .

**Darwell Stream**

Darwell Mill.	0.02 m <sup>3</sup> s <sup>-1</sup> .
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**Brightling Stream**

Brightling Saw Mill.	0.01 m <sup>3</sup> s <sup>-1</sup> .
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**Kent Ditch**

Bodiam Mill.	0.31 m <sup>3</sup> s <sup>-1</sup> .
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## **Appendix K**

### **The Watermills of Cambridgeshire 1086-1600**

[The data for this appendix was collated by Suzanne Wilkins, 2006.]

In this appendix rivers unnamed on the Ordnance Survey maps have been identified by the name of a town on the river.

It has been assumed that the mills were on the largest available river consistent with the information available.

Numbers in brackets refer to the rental in 1086 as recorded in the Domesday Book.

#### **Cambridge.**

Domesday Book records that Picot built 3 mills (£9 a year) and in so doing destroyed 1 mill of the Abbot of Ely and another of Count Alan.<sup>1390</sup>

#### **Wetherley Hundred**

Barrington: Rhee.

The Domesday Book states that there were 2.5 mills in Barrington in 1086. Of these, one and a half were held by the Church of Chatteris (32s.) and the other one by Robert Gernon (25s. 4d.). It has been suggested that the half-mill at Harlton was shared with one of the mills in Barrington, although it seems that this cannot be proved.<sup>1391</sup> Cecil Chapman states that it is “almost certain that the Harlton half-mill was on the main river in Barrington parish.”<sup>1392</sup>

Grantchester: Cam.

It is uncertain how many mills there were in Grantchester in 1086. The Domesday Book accredits two to Count Alan, (100s.), one to Count Eustace (40s.) and one to Robert Fafiton (40s.). The VCH does not mention those supposedly owned by Count Alan. Darby states that: “We cannot be certain that these were at Grantchester”.<sup>1393</sup>

Harlton: Rhee.

See Barrington.

Haslingfield: Rhee.

Picot of Cambridge owned one mill in Haslingfield in 1086 (2s.). Chapman states that its most likely site as 413523.<sup>1394</sup>

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<sup>1390</sup> See also Rev. Dr. Stokes, ‘The Old Mills of Cambridge.’ *Proceedings of the Cambridge Antiquarian Society*. Volume XIV. (New Series VIII.) (1909-1910), 180-233.

<sup>1391</sup> H.C. Darby, *The Domesday Geography of Eastern England. Third Edition*. Cambridge: Cambridge University Press. 1971, 309.

<sup>1392</sup> Cecil Chapman, ‘Watermills’. In Elsie M. Widdowson, Ed., *Cam or Rhee Barrington Local History and Conservation Society*. c 1973, 40.

<sup>1393</sup> H.C. Darby, *The Domesday Geography of Eastern England. Third Edition*. Cambridge: Cambridge University Press. 1971, 307.

<sup>1394</sup> Cecil Chapman, ‘Watermills’. In Elsie M. Widdowson, Ed., *Cam or Rhee Barrington Local History and Conservation Society*. c 1973, 44.

Shepreth: Rhee.

The Church of Chatteris (5s. 4d.) and Hardwin Scalers (7s. less 2d.) both owned a mill in Shepreth in 1086, whilst Geoffrey de Mandeville owned two (10s. 8d.). However, there is also an anomalous 1/6<sup>th</sup> of a mill owned by Count Alan. This is not mentioned in the VCH, but it is suggested by Cecil Chapman that “the other five sixths was incorrectly listed as one mill”.<sup>1395</sup>

**Childford Hundred**Babraham: Granta.

One mill is listed in the Domesday Book from 1086 (5s. 4d.), belonging to Count Alan. The VCH notes “the course of the river Granta as it runs through the parish has frequently been changed.”<sup>1396</sup>

Linton (incorporating Barham): Granta.

Count Alan owned five mills in 1086, two in Great Linton (1s.), one in Little Linton (8s.) and two mills in Barham (5s. and 2s.).

Great and Little Abington: Granta.

Both Great and Little Abington had one mill listed in 1086, owned by Aubrey de Vere (9s.) and Count Alan respectively (6s. 8d.).

Hildersham: Granta.

Aubrey de Vere owned a mill (10s.) in 1086, and its location apparently did not move. The VCH states that the river Granta: “follows a winding course, occasionally dividing into branches, notably downstream near Hildersham mill”.<sup>1397</sup> A further clue to its location is also given: “East of the village a tongue of Linton parish penetrates between two channels of the river to include the former Hildersham mill.”<sup>1398</sup>

Pampisford: Cam.

The Abbot of Ely held one watermill in 1086 (20s.) and its location apparently did not alter until it became disused in the 20<sup>th</sup> century. Its location is stated as being on the River Cam/Granta.<sup>1399</sup>

**Radfield Hundred**Balsham: None.

The Abbot of Ely held one watermill in Balsham (4s.). The VCH states that its location was probably outside the parish.<sup>1400</sup>

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<sup>1395</sup> *Ibid.* page 40.

<sup>1396</sup> VCH, Cambridgeshire and the Isle of Ely, Vol. 6, 19.

<sup>1397</sup> *Ibid.* page 81.

<sup>1398</sup> *Ibid.* page 60.

<sup>1399</sup> *Ibid.* page 109.

<sup>1400</sup> *Ibid.* page 132.

### **Whittlesford Hundred**

Duxford: Cam.

There were three mills listed in 1086: two belonging to Robert de Tosny (20s.), and one to Count Eustace, which is listed as being broken (12s.).

Hinxton: Cam.

There were three mills in 1086, one owned by the Bishop of Lincoln (8s.) and two by the Picot of Cambridge (21s. 4d.).

Ickleton: Cam.

There are two mills listed in 1086, belong to Count Eustace (30s.). However, the VCH suggests that one was situated in Brookhampton, whilst the other was in Ickleton itself.<sup>1401</sup>

Sawston: Cam.

There are four mills listed in 1086. One was owned by the Count of Mortain (26s. 2d.), one by Geoffrey de Mandeville (26s. 2d.) and the other two by Eudo FitzHerbert (30s. 8d.). It is possible that one of these was “mill at ‘Dereforda’ given with the vill of Stapleford by King Eadred to Ely abbey, c.955”<sup>1402</sup>

Whittlesford: Cam.

There were three mills, all belonging to Countess Judith (60s.) in 1086. Of these, only one survived to 1279.<sup>1403</sup>

### **Armingford Hundred**

Bassingbourn: Bassingbourn.

In 1086 there were four mills listed as being in Bassingbourn, although one of these was possibly in Kneesworth. Two were owned by Count Alan (20s.), the other two by the Bishop of Winchester (20s.). They are all listed as being on tributaries in Cecil Chapman’s article. One watermill was situated at 327443<sup>1404</sup>.

Guilden Morden: Rhee.

One mill (4s.) in the Domesday Book belonged to the Picot of Cambridge in 1086. Cecil Chapman suggests that this was Hooks Mill, situated at 271453. He also states “It is not on the main river but on an artificial loop which incorporated a large storage pond.”<sup>1405</sup>

Meldreth and Melbourn: Mel.

There are some discrepancies regarding the mills in these two places. The Domesday Book lists 8.5 mills in Meldreth and 0.5 in Melbourn, whilst the Darby places 1.5 in Melbourn and 8 in Meldreth. Cecil Chapman states “these mills were almost certainly all on the Mel”. He also places one as possibly being situated at 380449.<sup>1406</sup> The

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<sup>1401</sup> *Ibid.* page 241.

<sup>1402</sup> *Ibid.* page 255.

<sup>1403</sup> *Ibid.* page 270.

<sup>1404</sup> Cecil Chapman, ‘Watermills’. In Elsie M. Widdowson, Ed., *Cam or Rhee* Barrington Local History and Conservation Society. c 1973, 44.

<sup>1405</sup> *Ibid.* page 43.

<sup>1406</sup> *Ibid.* page 45-46 .



owners and rentals are as follows: Abbey of Ely, 1 mill (2s. 8d.), Earl Roger, 2 mills (15s. 4d.), Count Alan, 2 mills (18s.), Hardwin de Scalers, 1 mill (5s. 4d.), Guy de Raimbeaucourt, 2 mills (10s. 8d.), Guy de Raimbeaucourt, 0.5 mills (2s. 8d.) and the Abbey of Ely, 1 mill (3s.).

Shingay: Rhee.

The VCH states that “there was a mill at Shingay in 1086, and a water mill was recorded in 1279 and in 1338 when there was also a windmill, not recorded later. The water mill stood where the road to Croydon crosses an artificially straightened branch of the river Rhee”<sup>1407</sup>. This mill was owned by Earl Roger in 1086 (10s.). Cecil Chapman also states that this mill was placed at 318476 on the main river<sup>1408</sup>.

Steeple Morden: Cheney Water.

There are five mills listed in the Domesday Book from 1086. Cecil Chapman states that “The main river does form part of the parish boundary, but so far away from the village centre that it is much more likely that all five mills were strung along Cheney Water between its source at Upper Galley Farm and Browse Wood on the parish boundary.” Of the five mills one was owned by the Bishop of Winchester (16d.), two others by Hardwin de Scalers (2 orae) and the other two by the Bishop of Winchester in a separate listing (32d.).

Tadlow: Rhee.

In 1086 there was one mill owned by the Picot of Cambridge (10s.). The VCH suggests that “it probably stood close to the bridges over the river, for the miller’s misconduct could flood the common meadows”.<sup>1409</sup> Cecil Chapman agrees giving the location of the mill as at the current Tadlow Bridge at 283464.<sup>1410</sup>

Wendy: Rhee.

Two mills were recorded in the Domesday Book in 1086. These were both owned by Count Alan (45s.). Possible sites for these are at 321477 and 322479.<sup>1411</sup>

Whaddon: Rhee.

One mill in 1086 owned by Count Alan (12d.).

**Thriplow Hundred**

Fowlmere: Fowl.

There was one mill in 1086 owned by Robert Gernon (10s. 8d.). However, it is unlikely to have been at the site of Fowlmere Mill at 403460.<sup>1412</sup>

<sup>1407</sup> VCH, Cambridgeshire and the Isle of Ely, Vol. 8, 126.

<sup>1408</sup> Cecil Chapman, ‘Watermills’. In Elsie M. Widdowson, Ed., *Cam or Rhee* Barrington Local History and Conservation Society. c 1973, 43.

<sup>1409</sup> VCH, Cambridgeshire and the Isle of Ely, Vol. 8, 132.

<sup>1410</sup> Cecil Chapman, ‘Watermills’. In Elsie M. Widdowson, Ed., *Cam or Rhee* Barrington Local History and Conservation Society. c 1973, 43.

<sup>1411</sup> *Ibid.* page 43.

<sup>1412</sup> *Ibid.* page 46.

Foxton: Rhee.

In 1086 the mill was shared between the Abbot of Chatteris and Geoffrey de Mandeville, rendering them 10s. 8d. each.

Great Shelford: Cam.

There were two mills in 1086, both owned by the Abbot of Ely and paying a combined rental of 45s. The VCH states: "By 1086 the two rivers (Cam/Granta and Rhee) were turning at least one water-mill in each parish (of Thriplow)." <sup>1413</sup>

Harston: Rhee.

There was one mill in Harston in 1086 (30s.), owned by the Picot of Cambridge, which according to Cecil Chapman is "almost certainly at the site of the existing Harston Mill". <sup>1414</sup>

Hauxton: Cam.

In 1086 there were three mills in Hauxton, two belonging to the Abbey of Ely (50s.) and one to Hardwin de Scalers (20s.). The VCH gives the location of one of these as "far to the west on a bend in the Rhee and a mile north of Harston." It also adds: "from the 14<sup>th</sup> century to the 16<sup>th</sup> its miller was regularly accused of flooding Harston's meadows to its south by raising his mill dam too high." <sup>1415</sup>

Trumpington: Cam.

William de Warenne held one mill in 1086 (20s.). The VCH gives its possible location as south-west of the village. <sup>1416</sup>

### **Papworth Hundred**

Lolworth: None.

Lolworth is listed as having one mill in 1086, owned by the Picot of Cambridge, but it was worth nothing. There is no other information available for this mill.

Swavesey: Great Ouse.

Swavesey had one mill owned by Count Alan in 1086. This was worth 40s., which as the VCH points out, was higher than average. <sup>1417</sup>

### **Staploe Hundred**

Badlingham: Kennett.

Count Alan owned two mills in 1086, one of which rendered 6s., the other milling for the demesne.

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<sup>1413</sup> VCH, Cambridgeshire and the Isle of Ely, Vol. 8, 154

<sup>1414</sup> Cecil Chapman, 'Watermills'. In Elsie M. Widdowson, Ed., *Cam or Rhee* Barrington Local History and Conservation Society. c 1973, 44.

<sup>1415</sup> VCH, Cambridgeshire and the Isle of Ely, Vol. 8, 201.

<sup>1416</sup> *Ibid.* page 261.

<sup>1417</sup> VCH, Cambridgeshire and the Isle of Ely, Vol. 9, 390.

Burwell: Burwell Lode.

There were two mills in 1086, one owned by Count Alan, the other by the Church of Ramsey. They were both worth 6s. 8d. The VCH states "A Ramsey mill near the Holms ceased working, 1130 x 1150, for lack of water."<sup>1418</sup>

Fordham: Snail Lode.

King William held two mills in 1086, which rendered 16s.

Isleham: Lark.

King William held three and a half mills (22s. 8d.), the other half being held by the Bishop of Rochester (2s. 8d.).

Kennett: Kennett.

William de Warenne held one mill in 1086, although it rendered nothing.

Snailwell: Snail.

The Domesday Book states that there were four mills in 1086; all owned by Hugh de Port and rendering 14s. 4d. The VCH, however, states that there were only three mills here which "were presumably watermills powered by the Snail."<sup>1419</sup>

Soham: Soham Lode.

In 1086 King William held two mills in Soham (24s.).

Wicken: New River.

In 1086 Count Alan held three watermills worth 28s.

### **Staine Hundred**

Bottisham: Swaffham Bulbeck Lode.

Walter Giffard held four mills in 1086 (14s.). One of these "stood c1365-80 on the stream north-east of the village" whilst another "was near Goose green."<sup>1420</sup>

Great Wilbraham: Little Wilbraham.

There were two mills in 1086, one owned by King William and worth 10s, the other by Count Alan and worth 5s 4d.

Stow cum Quy: Quy Water.

The VCH states of the four mills here in 1086 "Two belonged to Quy manor, which shared a third with Stow manor, the fourth mill to the Richmond fee."<sup>1421</sup> However, the Domesday Book states that 0.5 mills were owned by the Abbey of Ely worth 40d. with the half being made up in the 2.5 mills owned by the Picot of Cambridge worth 22s. The final mill was owned by Count Alan and was worth 18s.

Swaffham Bulbeck: Swaffham Bulbeck Lode.

Five mills are placed here in the Domesday Book; three owned by Walter Giffard and worth 30s. less 4d. and one owned by Count Alan worth 4s. 4d. Aubrey de Vere is

<sup>1418</sup> VCH, Cambridgeshire and the Isle of Ely, Vol. 10, 347-56.

<sup>1419</sup> *Ibid.* page 482-85.

<sup>1420</sup> *Ibid.* page 205-14.

<sup>1421</sup> *Ibid.* page 238-42.

listed as owning one mill in Swaffham Prior in Chevely hundred, worth 7s., however the VCH lists all these mills as in same entry.<sup>1422</sup>

### **Flendish Hundred**

Cherry Hinton: None.

There were 4 mills here in 1086, owned by Count Alan (25s.).

Fulbourn: Tributary of the Little Wilbraham.

There was one mill in 1086, held by Count Alan (20s.). The VCH gives its location as: "It stood south-east of the village, between Mill yard and Mill pen, on a watercourse running off the Great Wilbraham river."<sup>1423</sup>

Horningsea: Cam.

The Abbey of Ely held one mill in 1086 (10s.). The VCH states that by c.1540, there were two mills in the parish, one at Horningsea, the other at Clayhithe.<sup>1424</sup>

### **Chevely Hundred**

Little Wilbraham: Little Wilbraham.

Aubrey de Vere held one mill in 1086 (22s.).

Swaffham Prior: Reach Lode.

See Swaffham Bulbeck.

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<sup>1422</sup> *Ibid.* page 258-65.

<sup>1423</sup> *Ibid.* page 143-49.

<sup>1424</sup> *Ibid.* page 165-67.

**Appendix L****Grants of Pontage 1229-1600**

This appendix is a list of the first grant of pontage for each bridge as recorded in the Calendar of Patent Rolls.<sup>1425</sup>

Bridges over tidal sections of rivers are not included.

- A. Category A evidence of use.
- B. Category B evidence of use.
- N. No evidence of use found.

			<b>Record of Historic Use</b>
1228.	Ferrybridge.	Aire.	A
1228.	Staines.	Thames.	A
1252.	Fordingbridge.	Salisbury Avon.	A
1256.	Evesham.	Warwick Avon.	A
1257.	Nantwich.	Weaver.	B
1259.	Shrewsbury.	Severn.	A
1284.	Montford.	Severn.	A
1279.	Huntingdon.	Great Ouse.	A
1286.	Wheatley, Oxon.	Thames.	A
1295.	Malton.	Yorkshire Derwent.	A
1297.	Maidenhead.	Thames.	A
1300.	Carlisle.	Eden.	A
1301.	Holland.	Witham.	A
1302.	Walton-le-Dale.	Ribble.	B
1306.	Cockermouth.	Cumberland Derwent.	A
1307.	Windsor.	Thames.	A
1310.	Marlow.	Thames.	A
1307.	Wychnor, Staffs.	Trent.	A
1310.	Nr. Waltham Cross.	Lea.	A
1311.	Nottingham.	Trent.	A
1311.	Doncaster.	Don.	A
1312.	Radcot.	Thames.	A
1315.	Attingham, Salop.	Severn.	A
1316.	Kegworth.	Soar.	A
1316.	Wetherby.	Wharfe.	N
1318.	Buildwas.	Severn.	A
1322.	Pershere.	Warwick Avon.	A
1322.	Longford, Salop.	Severn.	A
1323.	Burford, Oxon.	Windrush.	A
1324.	Bridgnorth.	Severn.	A
1325.	Swarkeston, Derbys.	Trent.	A
1325.	Cosford by Snifnal, Salop.	Worfe.	N
1325.	Derby.	Derbyshire Derwent.	A
1327.	Corbridge.	Tyne.	A
1328.	Wisbech.	Nene.	A
1328.	Stone.	Trent.	B

<sup>1425</sup> Records prior to 1399 are extracted from Alan Cooper, *Bridges, Law and Power in Medieval England. 700-1400*. Woodbridge: The Boydell Press. 2006, Appendix 2.

1328.	Oxford.	Thames.	A
1330.	Brandon. Suffolk/Norfolk.	Little Ouse.	A
1330.	Leicester.	Soar.	A
1331.	Cossington.	Soar.	A
1331.	Sudbury.	Suffolk Stour.	A
1331.	Saltersford, (Holmes Chappel)		
	Cheshire.	Dane.	N
1332.	Atherstone, Warwicks.	Anker.	N
1333.	Wansford.	Nene.	A
1333.	Croft on Tees.	Tees.	B
1334.	Peterborough.	Nene.	A
1334.	Hereford.	Wye.	A
1335.	Northampton.	Nene.	B
1335.	Nuneaton.	Anker.	N
1336.	Haydon Bridge, Northumb.	Tyne.	B
1336.	Appleby in Westmorland.	Eden.	N
1337.	Newcastle under Lyme.	Trent.	B
1338.	Lechlade.	Thames.	A
1344.	Wallingford.	Thames.	A
1345.	Wakefield.	Calder.	B
1346.	Bolton upon Dearne.	Dearne.	N
1346.	Kelham, Notts.	Trent.	A
1346.	Tadcaster.	Wharfe.	A
1349.	Bedford.	Great Ouse.	A
1349.	Stony Stratford.	Great Ouse.	N
1350.	Bradford upon Avon.	Bristol Avon.	N
1351.	Stafford.	Trent.	B
1352.	Oundle.	Nene.	A
1358.	Northallerton.	Wiske.	N
1358.	Ripon.	Ure.	N
1359.	Ferriby, Lincs.	Ancholme.	A
1362.	Taunton.	Tone.	A
1364.	Kirkby Lonsdale.	Lune.	A
1369.	Thrapston.	Nene.	A
1372.	Biggleswade.	Ivel.	A
1372.	Darlaston, Staffs.	Trent.	B
1374.	Warwick.	Warwick Avon.	B
1375.	Chippenham.	Bristol Avon.	N
1376.	Kendal.	Kent.	N
1376.	Newark.	Trent.	A
1377.	Alnwick.	Aln.	N
1377.	Yedingham.	Yorkshire Derwent.	B
1379.	Stangerthwaite.	Lune.	N
1379.	Lowther and Eamont Bridge.	Eamont.	N
1380.	Newport Pagnell.	Great Ouse.	B
1380.	Walshford.	Nidd.	A
1380.	Wolseley	Trent.	B
1381.	Dorchester, Oxon.	Thames.	A
1383.	Fenny Stratford.	Ouzel.	A
1383.	Brigg.	Ancholme.	A

1384.	Aylesbury.	Thame.	N
1384.	Skipton.	Swale/Aire.	A
1385.	Retford.	Idle.	B
1388.	Wilton, Wilts.	Nadder.	N
1390.	Newbury.	Kennet.	A
1394.	Burton upon Trent.	Trent.	A
1399.	Stopham, Sussex.	Arun.	A
1399.	Cambridge to Barton.	Cam.	A
1399	Hulbrigge.	Hull.	A <sup>1426</sup>
1402	York.	Foss.	A <sup>1427</sup>
1403	Holandbrigge to Donyngton.	Hammond Beck	A <sup>1428</sup>
1405	Attlebrig.	Wensum.	A <sup>1429</sup>
1408	Weybrigge in Fleg, co Norfolk.	Bure or Ant.	A <sup>1430</sup>
1410	Walton by Aylesbury.	Thame.	N <sup>1431</sup>
1442	Tamworth.	Tame.	A <sup>1432</sup>
1444	Walmesford. [Wansford.]	Nene.	A
1451	Hareford Bridge by Whatle co Oxford.		
	[Wheatley.]	Thame.	A <sup>1433</sup>

1402 Gretford. Although the name Gretford (Lincolnshire) was used 1178-1613<sup>1434</sup> the ford is not on a major road and the location seems to be uncertain.<sup>1435</sup>

<sup>1426</sup> Calendar of Patent Rolls, 1399-1401, 85.

<sup>1427</sup> Calendar of Patent Rolls, 1401-05, 166.

<sup>1428</sup> Calendar of Patent Rolls, 1401-05, 235.

<sup>1429</sup> Calendar of Patent Rolls, 1405-08, 84.

<sup>1430</sup> Calendar of Patent Rolls, 1405-08, 461.

<sup>1431</sup> Calendar of Patent Rolls, 1408-13, 195.

<sup>1432</sup> Calendar of Patent Rolls, 1441-46, 104.

<sup>1433</sup> Calendar of Patent Rolls, 1446-51, 413.

<sup>1434</sup> Victor Watts, *The Cambridge Dictionary of English Place-Names*. Cambridge: Cambridge University Press. 2004, 260.

<sup>1435</sup> Calendar of Patent Rolls, 1401-05, 181.

## Appendix M

### Level of the Kentish Stour in Canterbury

In 1640 Somner wrote that the river seldom flooded because

the City lies higher now than at the first, having in all parts of it been much raised at several times, as Cellar-diggers, and such like, who are much hindred in their Work by old Foundations which they meet with in their digging, daily find; occasioned (as I conceive) by the many vastations of the City in the *Danes* time, and lastly about the Year of our lord 1160, by casual Fire.<sup>1436</sup>

In 1703 Battely wrote that 'Roman Antiquities are to be searched for from 6 to 9 Foot under Ground',<sup>1437</sup> indicating that the ground level of the city had risen since the Roman times. This change in height is visible at Waterstone's bookshop in St Margaret's Street where the foundations of a Roman bathhouse are visible in the basement.

Sea level in East Kent has been rising at an average rate of about 0.3 m a century for the last 2,000 years.<sup>1438</sup> It has not been possible to assess the effect which this has had on the non-tidal section of the river. The present 10 m contour crosses the river just to the west of Canterbury. Both in the city and downstream the river has been so modified that any natural changes which would have occurred over the last two thousand years are not easily recognisable.

Mead and Jones claimed that in 1935 they found a Roman quay 18-20ft below the present ground level off Stour Street. They say that it was composed of a large number of baulks of oak timber and that other material on the site indicated an occupation which 'began about A.D. 70 and continued steadily till about A.D. 300, when it ceased.'<sup>1439</sup> This identification has since been questioned by Jenkins who wrote 'From our latest evidence it would appear that this structure was not, as once thought, a Roman jetty, but something of more recent date. If it is not a medieval wharf it might perhaps be the first bridge erected in the late 13<sup>th</sup> century, to give access to the Grey Friars establishment on the opposite bank.'<sup>1440</sup> It must be considered doubtful that a large number of baulks of timber would have been needed for a footbridge. Jenkins has noted that 'today the Roman levels are much water-logged, a condition which apparently did not prevail in Roman times.'<sup>1441</sup> Detailed consideration of the use of the river in Roman times is outside the scope of this thesis.

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<sup>1436</sup> William Somner, *The Antiquities of Canterbury*. 2<sup>nd</sup> Edition enlarged by Nicolas Battely. (1<sup>st</sup> Edition 1640.) London. 1703, (Republished 1977), 21.

<sup>1437</sup> *Ibid.* page 192.

<sup>1438</sup> J.A. Steers, *The Coastline of England and Wales*. Cambridge: Cambridge University Press. 1964, 649.

<sup>1439</sup> H.T. Mead and K.H. Jones, 'Roman Site and Finds, Stour Street, Canterbury.' *Archaeologia Cantiana*, Vol. 48 (1936), 219.

<sup>1440</sup> Frank Jenkins, 'Archaeological Notebook, Canterbury 1949-51.' *Archaeologia Cantiana*, Vol. 64 (1951), 71.

<sup>1441</sup> *Ibid.* 67.



During excavations in the city centre in 1951 it was found that the medieval river bed lies 13 ft. 6in. below present day ground level, that is 3 ft below the present river bed and 5 ft. 6in. below the Roman land surface.<sup>1442</sup>

There were in the city in c.1135 twelve mills which caused the usual disputes about water rights. In the time of Henry II (1154-1189) a complaint was made that the mills belonging to the monks of Christ Church were harmed by the raising of other mills since the time of Henry I (1100-1135) and it was ordered that the mills 'within and without the city' should be lowered to the height which they were at in the time of Henry I.<sup>1443</sup>

The present layout of Canterbury dates back to at least the 12<sup>th</sup> century. However 'The only points where medieval streets correspond with those of the Roman period are just within and just without the gates which, of Roman origin, force the streets for a short distance into an ancient axis.'<sup>1444</sup> Thus the present street layout tells us nothing of the river's course before the 12<sup>th</sup> century.

In 1244-1278 Archbishops Boniface and Kilwarby diverted part of the river for the bettering of their mill at Westgate. 'The Channel to Westgate then (it seems) became enlarged.'<sup>1445</sup> In 1275 an inquisition found that the Black Friars had enlarged their island to the injury and hindrance of King's mills.<sup>1446</sup>

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<sup>1442</sup> Frank Jenkins, 'Archaeological Notebook, Canterbury 1949-51.' *Archaeologia Cantiana*, Vol. 64 (1951), 68.

<sup>1443</sup> William Somner, *The Antiquities of Canterbury*. 2<sup>nd</sup> Edition enlarged by Nicolas Battely. (1<sup>st</sup> Edition 1640.) London. 1703, 23. (Republished 1977.)

<sup>1444</sup> William Urry, *Canterbury under the Angevin Kings*. London: The Athlone Press. 1967, 185.

<sup>1445</sup> William Somner, *The Antiquities of Canterbury*. 2<sup>nd</sup> Edition enlarged by Nicolas Battely. (1<sup>st</sup> Edition 1640.) London. 1703, 21. (Republished 1977.)

<sup>1446</sup> Robert H. Goodsall, *The Kentish Stour*. London: Cassell and Company Ltd. 1953, 135.

## Appendix N

### Official Reports since 1973

In this appendix the actions taken by official bodies to clarify the law relating to access on rivers since 1973 is described.

In 1977 the Severn-Trent Water Authority commissioned research which was based on the concept that the law of navigation 'is essentially a right to pass and re-pass, akin to the right of passage over highways on land'.<sup>1447</sup> An assumption held to be incorrect by the House of Lords in 1989.<sup>1448</sup> In the analysis of the right of navigation on five rivers it was concluded that there was a statutory right of navigation on two rivers, the Derbyshire Derwent and the Soar. On the Trent it was considered that from Kings Mills to Burton the river was 'possibly navigable at common law but not proven' and that it was 'very unlikely' that there was any public right of navigation upstream of Burton. On the Warwickshire Avon it was considered that there was 'a possible right of navigation' upstream of the junction of the Sowe and on the Teme a similar possible right downstream of Powick Bridge. Thus on the unregulated rivers there was no certainty as to the limits of the right of navigation.

Between 1980 and 1982 there was an investigation funded by the Sports Council and Water Space Amenity Commission which was published in 1985.<sup>1449</sup> This was a detailed study of sections of seventeen rivers considering the evidence of historic use on them. There is space here to consider their findings on only two Hampshire rivers. On the Salisbury Avon they considered that there was a statutory right of navigation downstream of Salisbury. This right has consistently been denied by several riparian owners since then.<sup>1450</sup> The authors of the report failed to consider how marble was taken from Purbeck, stone from Tisbury or timber from Ireland in the 13<sup>th</sup> century to the cathedral. More seriously they made no reference to the requirement at the end of the 16<sup>th</sup> century by the Quarter Sessions and the Commissioners of Sewers for the river to be kept open for boats.<sup>1451</sup> On the Itchen they found that '(ii) on the balance of probabilities, there is a common law right of navigation from Woodmill to Winchester over the original course of the river; (iii) there is a common law right of navigation from Winchester to near Alresford either from time immemorial or by virtue of implied dedication.'<sup>1452</sup> Again the riparian owners have not accepted this opinion.

The Countryside and Rights of Way Act 2000 explicitly excluded the use of vessels and swimming from the provisions of the Act.<sup>1453</sup>

In 2001 a report commissioned by the Department for Environment, Food and Rural Affairs (DEFRA) into the availability of water for recreation.<sup>1454</sup> The report defined

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<sup>1447</sup> A.E. Telling, and Sheila Foster, *The Public Right of Navigation*. Report for the Severn Trent Water Authority. 1977.

<sup>1448</sup> *A-G ex rel Yorkshire Derwent Trust v Brotherton* [1992] AC 425.

<sup>1449</sup> Arthur Telling and Rosemary Smith, *The Public Right of Navigation*. London: English Sport Council. Study 27. 1985.

<sup>1450</sup> Various personal correspondence.

<sup>1451</sup> For references see Appendix A.

<sup>1452</sup> Arthur Telling and Rosemary Smith, *The Public Right of Navigation*. London: English Sport Council. Study 27. 1985, 23.

<sup>1453</sup> Countryside and Rights of Way Act 2000. Ch 37. Schedule 2, 1. (b) and (i).

major rivers as those wider than 4 metres and considered that their total length in England is 14, 862 km (9,288 miles) and considered these to be suitable for recreational boating. It has not been possible to obtain the details of these rivers in order to compare them with the data in this thesis.

In 2003 the Scottish Parliament provided that there is to be a public right of access on all rivers in Scotland.<sup>1455</sup>

In 2004 the Brighton University Consortium were commissioned to negotiate access agreements on four rivers with a total length of 76.6 km at a budgeted cost of £911,000.<sup>1456</sup> Agreements were successfully negotiated on the Waveney, where there had been an earlier agreement, and the Mersey where there had been no angling due to pollution. No agreement was negotiated on the Wear or Teme.<sup>1457</sup>

On 16 June 2010, the Sustainability Committee of the National Assembly for Wales reported on the provision of access to rivers in Wales.

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<sup>1454</sup> Brighton University Consortium, *Water-Based Sport and Recreation: the facts*. 2001.

<sup>1455</sup> Land Reform (Scotland) Act 2003, 2003 asp2.

<sup>1456</sup> The Countryside Agency, 'A feasibility study on improving access for canoeing by voluntary agreement.' Research Notes CRN 79. 2004.

<sup>1457</sup> Neil Ravenscroft, *et al.* 'Putting Pilot Canoe Access Agreements in Place.' Eastbourne, University of Brighton. 2006.

## Appendix O

### Roads – An invisible feature in the landscape?

#### Introduction

The extent to which river transport was used depended partly on other available means of transport. If these were quick, cheap and efficient river transport would seldom be used. If they were expensive, slow and inconvenient, where suitable river transport was available, it would be used. Flower wrote ‘There was in the Middle Ages little provision for communication by road where water transit was available, and rivers played a far more important and useful part in this direction than they do now.’<sup>1458</sup>

It is unfortunate that so few modern historians or geographers have had the opportunity to walk, ride horses or travel in wheeled vehicles across country where there were no roads. The challenges are the same today as in the 12<sup>th</sup> century - rivers, marshes, forests and steep slopes.

Once again it is necessary to define the terms used. A road is defined here as ‘a path beaten by use, or paved, of fixed width usually one wide enough to admit of the passage of vehicles as well as of horses or travellers on foot.’ People using a road would normally have been constrained by fences. The word ‘fence’ is used to refer to fences, walls, hedges and ditches any of which might be used to fix the boundaries of a road.

Where journeys were regularly made from one place to another, this is referred to here as a ‘way’. But the way might be as much as a mile wide or it might divide. The route taken from Eastbourne to Lewes might be along the ridge of the Downs in winter, along the foot of the scarp in summer and both in spring and autumn. A way is equivalent to Taylor’s medieval ‘zone of communication’ which was ‘made up of countless trackways criss-crossing each other, quite unlike what survives today.’<sup>1459</sup> The word ‘route’ is used of the actual line followed by an individual or group on one journey. Drove roads are not considered here. It was always cheaper to drive animals rather than to use river transport, except in the Fens and other places where there was no land way which could be used by the animals.

Hindle has written recently:-

The nature of these new medieval roads differed from that of Roman or modern roads; essentially the road was not a physical entity, a thin strip of land with definite boundaries; rather it was a right of way, an ‘easement’, with both legal and customary status, leading from one village or town to the next.<sup>1460</sup>

This statement seems to be correct. But another statement in the same book may be challenged. He wrote ‘The various itineraries of the medieval period provide evidence of the movement of individual people, and by implication, of the simple physical

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<sup>1458</sup> *Public Works in Mediaeval Law*. Editor C.T. Flower. Selden Society Vol. 32. 1915, xxvi.

<sup>1459</sup> W.G. Hoskins, Editor and Commentary Christopher Taylor. *The Making of the English Landscape*. (1<sup>st</sup> Edition 1955.) London: Hodder and Stoughton. 1988, 196.

<sup>1460</sup> Paul Hindle, *Medieval Roads and Tracks*. Princes Risborough: Shire Publications Ltd. 2002, 6.

existence of roads.’<sup>1461</sup> Land travel does not require roads. Stenton in one of the first articles on the Road System of Medieval England described where people went. It is only subsequent authors who have assumed that people only went where there was a road.<sup>1462</sup> Willard first demonstrated the frequent use of carts but he did not consider whether they were used on roads or for cross-country transport.<sup>1463</sup>

Webb and Webb wrote ‘We may perhaps date from the opening of the seventeenth century the beginning of any considerable use of the roads by wheeled vehicles.’<sup>1464</sup> Taylor claimed that coaches were first introduced in 1564.<sup>1465</sup> In the period 1189-1600 men who were rich would normally travel on horseback and those who could not afford a horse would walk.<sup>1466</sup> Ladies either rode horses or travelled in wagons.<sup>1467</sup> Goods were carried on people’s backs, on pack-horses or in carts or wagons.

Saul has compared the combined royal itineraries of John, Henry III, Edward I and II with the ‘road system shown on the Gough map’. He wrote ‘It is remarkable how little the two overlap. The road system linked towns, the kings’ itineraries centered on palaces and hunting lodges.’<sup>1468</sup> He seems to have assumed that there were many long-distance roads and that they were a conspicuous feature in the landscape for those travelling.<sup>1469</sup> It is claimed here that the first assumption is only partly true and the second false. There were fixed points like fords or bridges which had to be used. Between these points travellers could, in unfenced country, choose the most convenient and safest route for their journey.

### **Unfenced Ways**

At a hunt when the riders travel across open country they do not follow one route. They vary their route according to their ability at jumping obstacles, their assessment of the state of the ground and their wish to avoid other riders.<sup>1470</sup> Cobbett described a journey across unfenced country in 1825. ‘Our point of destination was this village of Burghclere, which lies close under the north side of the lofty hill at Highclere, ... We saw this hill as soon as we got on Winchester downs; and without any regard to *roads*, we *steered* for it, as sailors do for a land-mark.’<sup>1471</sup> On the main road between Sleaford

<sup>1461</sup> Paul Hindle, *Medieval Roads and Tracks*. Princes Risborough: Shire Publications Ltd. 2002, 21.

<sup>1462</sup> F.M. Stenton, ‘The Road System of Medieval England.’ *The Economic History Review*. Vol. VII. Part 1. 1 – 21.

<sup>1463</sup> James F. Willard, ‘The Use of Carts in the Fourteenth Century.’ *History*. Vol. XVII. (1932-3,) 246 – 250.

<sup>1464</sup> Sidney and Beatrice Webb, *The Story of the King’s Highway*. London: Longman’s Green and Co. 1913, 69.

<sup>1465</sup> John Taylor, ‘The World runnes on Wheels.’ In John Taylor, *Works of the John Taylor. Part II. The Folio Edition of 1630*. The Spencer Society 43. New York: Burt Franklin. 1967, 240.

<sup>1466</sup> Edwin A. Pratt, *A History of Inland Transport and Communication*. (1st edition Kegan Paul Trench Truber & Co Ltd. 1912.) Newton Abbot: David & Charles. 1970, 16.

<sup>1467</sup> Janet Backhouse, *Medieval Rural Life*. London: The British Library. 2000, 54, 43.

<sup>1468</sup> Nigel Saul, *Historical Atlas of Britain*. Stroud: Sutton Publishing Ltd. 1997, 156.

<sup>1469</sup> Eg: J.J. Jusserand, *English Wayfaring Life in the Middle Ages*. (1<sup>st</sup> published Ernest Benn Ltd 1889.) London: Methuen & Co Ltd. 1961, 17

<sup>1470</sup> Personal observation.

<sup>1471</sup> William Cobbett, *Rural Rides*. London: J.M. Dent & Sons Ltd. 1912, Volume 1, 293.

and Lincoln is an inland lighthouse 'built in 1751 to guide travellers across what was then an empty open and desolate countryside.'<sup>1472</sup>

Some examples may be given of ways used today which are not roads. In southern Algeria and in the Sinai people riding camels down a valley or across a plain spread out each taking their own route. In Tibet in many places there are no tracks to be followed yet people move from place to place. In the period 1965-75 in Kenya the white settlers' estates and the Africans' smallholdings were fenced and people did not walk through them. Elsewhere outside of the towns people walked freely across the country.<sup>1473</sup> Huxley wrote of Kenya in 1913 that 'The road was not a thing that had been made, it had simply arisen from the passage of wagons.'<sup>1474</sup>

In England, prior to the use of motor transport, horse or ox drawn-carts were used to collect corn from the fields. They used to go to all parts of the fields which were as rough as unenclosed pasture.<sup>1475</sup> They did not need tracks to travel on as they were strong enough, and their wheels were large enough, to enable them to go on most surfaces. In earlier times carts of similar design would have been capable of travelling over much of the country. There were three types of country where carts could not go. The areas of permanent or seasonal marsh were avoided by carts but where a way was flooded or muddy due to lack of maintenance of the drains the local people were required to repair and cleanse them.<sup>1476</sup> After 1285 there was a statutory requirement to maintain a way four hundred foot wide through forests and woodlands.<sup>1477</sup> In mountainous areas pack-horses were used for transport rather than carts.<sup>1478</sup>

It is claimed that there were zones of communication, ways, not roads, in the unfenced areas of England from 1189-1600.

### **Fenced Roads**

Some fenced roads did exist in the medieval period. In towns the area between the fronts of the houses formed a road or street. Where fields were ploughed farm tracks led to the pasture, waste or open country beyond. Close to bridges, fords, man-made tracks up hillsides and at a natural narrowing of the way people would pass over one strip of land making it into a road. There were causeways across swampy ground which could be substantial. Maud's Heath causeway near Chippenham in Wiltshire was 3 metres broad, 2.4 metres high and 7 km long.<sup>1479</sup>

Some Roman roads survived but in many places later roads developed alongside the remains of the Roman roads because travellers shunned the hard surface for the softer

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<sup>1472</sup> W.G. Hoskins, *The Making of the English Landscape*. (1<sup>st</sup> Edition 1955.) Editor and Commentary Christopher Taylor. London: Hodder and Stoughton. 1988, 202.

<sup>1473</sup> All personal observation. Malmberg is misleading on this point. Torsten Malmberg, *Human territoriality*. The Hague: Mouton Publishers. 1980, 76.

<sup>1474</sup> Elspeth Huxley, *The Flame Trees of Thika*. London: Chatto & Windus. 1959, 7.

<sup>1475</sup> Personal observation.

<sup>1476</sup> *Public Works in Mediaeval Law. Volume I*. Editor C.T. Flower. Selden Society Vol. 32. 1915, 7, 8, 9, and many other references, see index.

<sup>1477</sup> (1285) 13 Edward I. s. II. c. 5.

<sup>1478</sup> David Hey, *Packmen, Carriers and Packhorse Roads*. Leicester: Leicester University Press. 1980.

<sup>1479</sup> Paul Hindle, *Medieval Roads and Tracks*. Princes Risborough: Shire Publications Ltd. 2002, 45.

ground alongside<sup>1480</sup> as on the way between Alconbury and Wansford where there were two ways alternative to the Roman road.<sup>1481</sup> Some Roman roads may have continued in use but they did not form a national network as in the Roman era.

Masschaele records the names of four roads which passed through or alongside the village of Great Gidding in 1541. They had the names 'the waye to Huntingeton', 'waye from Stamforde', 'waye from Yaxley' and 'Oundle Waye'.<sup>1482</sup> Close to the village these roads may even have been maintained by the villagers tired of going to their fields through a quagmire. Away from the village they must have become wider.

There were parts of the country which had always been enclosed and where passage was limited to enclosed roads. Emery showed that the areas which were over 70% enclosed by 1600 were in the south-east, south-west and north of the country.<sup>1483</sup> It would seem that it would normally be fairly easy to move between enclosures where less than 70% of the total area was enclosed. However Everitt wrote that common land was 'most extensive in those parts of England where the classic common-field system, ... did not exist.'<sup>1484</sup> Thus it seems the greater the area of enclosure the greater the area of commons. Thus ways could be found in most areas over the commons.

Hoskins wrote of rural Devon that 'Practically all the thousands of farm names printed on the modern map would have been on the earlier map, could it have been drawn; and nearly all the thousands of miles of lanes and by-roads would have existed also.'<sup>1485</sup> Taylor described such roads where they ran over heavy clay.

Here we can see exactly what a main medieval route looked like on heavy clay land. It consists of a holloway over six feet deep, four feet wide across the bottom and some thirty-five feet across the top running obliquely down the valley side. Today it looks pleasant enough, covered with fine short turf, but in Edward's time it would have been extremely difficult to traverse, especially when wet weather turned the bottom into a quagmire and made it quite impossible for travellers actually to pass each other.<sup>1486</sup>

Rye Hill in Sussex was described as being nothing more than a deep ravine, furrowed out between two high hills by the waters, which, in wet seasons, found their way down it to the sea.<sup>1487</sup> On the Weald 'The first piecemeal clearances led to an irregular pattern of small fields and winding, minor lanes.' These lanes are described as 'notorious for the difficulties and discomforts of travelling in winter and other wet periods.'<sup>1488</sup> In

<sup>1480</sup> Paul Hindle, *Medieval Roads and Tracks*. Princes Risborough: Shire Publications Ltd. 2002, 33-34.

<sup>1481</sup> Christopher Taylor, *Roads & Tracks of Britain*. London: J.M. Dent & Sons Ltd. 1979, 121.

<sup>1482</sup> James Masschaele, *Peasants, Merchants, and Markets*. New York: St. Martin's Press. 1997, 193-194.

<sup>1483</sup> F.V. Emery, 'England circa 1600'. In H.C. Darby, *A New Historical Geography of England*. Cambridge: University Press. 1973, 256.

<sup>1484</sup> Alan Everitt, 'Common Land.' In Joan Thirsk, Ed., *The English Rural Landscape*. Oxford: Oxford University Press. 2000, 214.

<sup>1485</sup> Cited in Christopher Taylor, *Roads and Tracks of Britain*. London: J.M. Dent & Sons Ltd. 1979, 109.

<sup>1486</sup> *Ibid.* page 116.

<sup>1487</sup> William Holloway, *The History and Antiquities of the Ancient Town and Port of Rye*. London: John Russel Smith. 1847, 456.

<sup>1488</sup> Peter Brandon and Brian Short, *The South East from AD 1000*. London: Longman. 1990, 55 and 13.

Derbyshire a track was already so worn by the first decade of the 13<sup>th</sup> century that the hamlet alongside it had taken the name of Holloway.<sup>1489</sup>

There were certainly areas where the only routes were along enclosed roads. There is no evidence that these were good roads.

### **Contemporary Descriptions of Roads**

Leland travelled widely around England in c.1535-43.<sup>1490</sup> He noted every bridge that he passed or crossed, always counting the number of arches. The bridges were recorded with reference to the rivers flowing under them. He normally did not note where the route over the bridge came from or went to. He often recorded the names of rivers on a certain stretch of his journey or in a county.<sup>1491</sup> Thus he noted the River Sherbourne at Coventry a town which is often said to have no river flowing through it. He never listed the roads in any area.

He often described the country he travelled through, 'The soyle is sandy, better for wood and pasture then corne',<sup>1492</sup> 'enclosyd ground',<sup>1493</sup> 'champaine ground',<sup>1494</sup> 'by the medowes on Charwelle'.<sup>1495</sup> Only two statements about the state of the roads have been found, 'in dede a pore thrwghe' and 'a meane thorough fare'.<sup>1496</sup> References to streets in towns are not uncommon.<sup>1497</sup> Leland portrayed the country prior to enclosure. The structure was provided by the rivers. These were crossed in places by bridges, ferries or fords. He only once recorded that his route joined another way, that from Dorchester to Weymouth.<sup>1498</sup>

Further evidence of the lack of roads comes from descriptions of England. Harrison in *Holinshed's Chronicles* wrote one hundred and seven pages about the rivers and three and a half pages about the roads and these only for their antiquarian interest, the four Ancient Royal Highways.<sup>1499</sup> William Camden in his description of Britain wrote a chapter for each county. Within almost every county he followed the valleys of the rivers from source to the sea or the county boundary. He wrote 'Now let us treat of the Promontories, Cities, and Rivers, whereof ancient writers have made mention: For, this is my principall project.' No case has been found where his description of a county followed roads.<sup>1500</sup>

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<sup>1489</sup> David Hey, *Packmen, Carriers and Packhorse Roads*. Leicester: Leicester University Press. 1980, 20.

<sup>1490</sup> All references to Leland's journey refer to Lucy Tomlin Smith, Ed., *The Itinerary of John Leland in or about the years 1535-45. Volumes I, II, IV, V*. Carbondale: Southern Illinois University Press. 1964.

<sup>1491</sup> Volume IV, Richmondshire, 30, Volume V, Buckinghamshire, 7; Worcestershire, 9; Warwickshire, 11; Shropshire, 16;

<sup>1492</sup> Volume II, near Tamworth, 105.

<sup>1493</sup> Volume II, near Meriden, 106.

<sup>1494</sup> Volume II, near Banbury, 109.

<sup>1495</sup> Volume II, near Islip, 110.

<sup>1496</sup> Volume V, near Caer Sws, 9; from Stanford to Bitchfield, 33.

<sup>1497</sup> Volume II, Banbury, 39; Stratford-upon-Avon, 48-49.

<sup>1498</sup> Volume I, Dorchester to Weymouth, 249.

<sup>1499</sup> Raphaell Holinshed, William Harrison *et al.* *Holinshed's Chronicles of England, Scotland and Ireland. Volume I. (1st Edition 1586.)* London: J. Johnson *et al.* 1807, 74-181, 189-192.

<sup>1500</sup> William Camden, *Britain*. Trans.Philemon Holland, London: Ioyce Norton and Richard Whitaker. 1637, 187.



Lambarde in the first English County History gave a full description of the Medway and Kentish Stour and their tributaries. He described Watlingstreete as an antiquity but mentioned no other road.<sup>1501</sup> Speed was more explicit 'we will dissect and lay open the particular Members, Veins & Joynts, (I mean the Shires, Rivers, Cities and Townes).<sup>1502</sup> The veins were the rivers not the roads.

The courts have held that when fences have been erected with reference to a highway then it may be assumed that the highway extends from one fence to the other.<sup>1503</sup> Recently it was stated that 'Where a right of way crosses open land and no evidence is available as to the width habitually used, then there is no presumption that the way has any defined lateral limits on the ground.'<sup>1504</sup> In 1679 it was held that 'if a way be so foul as is not passable, I may then justify the going over another man's close next adjoining.'<sup>1505</sup> Thus the width of the right of way was not just the distance between the fences but, if the way was impassable, it included also the nearest section of a close.

### **Road Repairs**

Blair wrote recently of 'The improvement of roads, bridges, and haulage in and around the thirteenth century, which recent research has demonstrated very clearly and convincingly.'<sup>1506</sup> There was certainly improvement in bridges<sup>1507</sup> and haulage.<sup>1508</sup> As his authority for the improvement of the roads Blair refers to Hindle who wrote 'There was to be no more large-scale road maintenance [from the end of the Roman era] until 1555.'<sup>1509</sup> It seems that Blair's opinion about the improvement of roads may be challenged.

The records show that the 'persons who had to come to the aid of the King in time of war and on other occasions, were allowed for travelling twenty miles a day. ... For persons walking, this would be an easy rate, even where there was no track at all; and for persons riding on horseback, it would seem to indicate that there must have been great delays on the route.'<sup>1510</sup> In addition 'on at least three occasions in the fourteenth century, Parliament had to adjourn because, owing to the state of the roads, not a sufficient number of members were present to go on with the business.'<sup>1511</sup> 'It was the prelates, earls, barons, and other lords and knights of the shires, as well as the citizens

<sup>1501</sup> William Lambarde, *A Perambulation of Kent*. (1<sup>st</sup> Edition 1570.) Chatham: Baldwin, Cradock and Joy. 1826, 198-9, 260-1, 241 ff.

<sup>1502</sup> John Speed, *The Theatre of the Empire of Great Britaine*. London. 1627, 1.

<sup>1503</sup> *A-G v Benyon* (CA) [1970] Ch 1, [1969] 2 All ER 263.

<sup>1504</sup> *Secretary of State for Defence v Percy* (Ch D) [1999] 1 All ER 732.

<sup>1505</sup> *Absor v French* (1679) 2 Show. K.B. 28.

<sup>1506</sup> John Blair, 'Introduction.' John Blair, Ed., *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 1.

<sup>1507</sup> See:- David Harrison, *The Bridges of Medieval England*. Oxford: Clarendon Press. 2004.

Alan Cooper, *Bridges, Law and Power in Medieval England. 700-1400*. Woodbridge: The Boydell Press. 2006.

<sup>1508</sup> John Langdon, 'A Revolution in Vehicle Transport in Twelfth- and Thirteenth-Century England?' *Past and Present*. Number 103. (1984), 37-66.

<sup>1509</sup> Paul Hindle, *Roads and Tracks for Historians*. Chichester: Phillimore & Co. Ltd. 2001, 7.

<sup>1510</sup> W.T. Jackman, *The Development of Transportation in Modern England. Third Edition*. London: Frank Cass & Co. Ltd. 1966, 9 fn. Referring to *Rot. Parl.*, VI, p. 525.

<sup>1511</sup> Price, *Leeds and its Neighbourhood*, p. 114. Cited in W.T. Jackman, *The Development of Transportation in Modern England. Third Edition*. London: Frank Cass & Co. Ltd. 1966, 9 fn.

and burgesses of cities and boroughs who were unable to travel.<sup>1512</sup> Jackman sums up his opinion of the roads in medieval times by writing 'There probably were all over the kingdom quite passable bridle-paths, but we must not mistake these for good roads.'<sup>1513</sup>

There are few descriptions of the surface of the roads or ways. In 1642 Abbot Rucellai described the excellent [*buonissime*] roads of Lombardy 'which, because they have not been flattened by anyone passing along them on account of any war, are full of grass and barely distinguishable.'<sup>1514</sup> Later in 1868 Wheeler wrote of the 'reclaimers of the fens of our generation, who deemed it sufficient to leave a wide space and call it a road.'<sup>1515</sup> It is suggested here that ways were no more than wide strips of open country at their best when covered in grass.

After a study of public works in the medieval period Flowers deduced that 'a road could be left to itself or to unregulated local effort.'<sup>1516</sup> Masschaele found only evidence of drainage and the removal of obstacles from the roads of Huntingdonshire.<sup>1517</sup> Webb and Webb wrote 'The idea of road maintenance in the Middle Ages, and indeed, down to much later times, did not include anything in the nature of construction of a special road surface.'<sup>1518</sup> There is evidence that ways had to be kept clear.<sup>1519</sup> The abbot of Chertsey was in court for allowing two wells to exist in the road between Egham and Staines, not because he failed to maintain the road, 'but because a hapless man had drowned in one of the holes, and the Abbot had claimed his goods.'<sup>1520</sup>

Rogers mostly studied prices. However his understanding of transport seems to have been weak. He wrote 'Water carriage is by sea, as from Newcastle to Durham, by sea and river as from Norwich to Yarmouth, by river as from London to Henley, the farthest point to which, before locks were erected, the Thames was ordinarily navigable.'<sup>1521</sup> Two errors and a doubtful statement in three lines should be unusual for an author of his standing. From his study of prices he concluded that 'that the cost of carriage was low, and that the roads were therefore, *prima facie*, good.' In his records of prices there is no mention of a road being repaired except for New College Lane, Oxford, which is a town road and the date of the repair probably after 1600.<sup>1522</sup>

<sup>1512</sup> Rolls of Parliament, ii. p. 107. Quoted in J.J. Jusserand, *English Wayfaring Life in the Middle Ages*. (1<sup>st</sup> published Ernest Benn Ltd 1889.) London: Methuen & Co Ltd. 1961, 44.

<sup>1513</sup> W.T. Jackman, *The Development of Transportation in Modern England. Third Edition*. London: Frank Cass & Co. Ltd. 1966, 9 fn.

<sup>1514</sup> Un'Ambasciata, *Diario dell'abbate G.F. Rucellai*, p. 32. Quoted in Antoni Maczak, *Travels in Early Modern Europe*. Cambridge: Polity Press. 1995, 5.

<sup>1515</sup> W.H. Wheeler, *History of the Fens of South Lincolnshire*. Boston: J.M. Newcomb. 1868, 12.

<sup>1516</sup> *Public Works in Mediaeval Law, Volume I*. Editor C.T. Flower. Selden Society Vol. 42. 1915, xxv.

<sup>1517</sup> James Masschaele, *Peasants, Merchants, and Markets*. New York: St. Martin's Press. 1997, 193-195.

<sup>1518</sup> Sidney and Beatrice Webb, *English Local Government, The Story of the King's Highway*. London: Longmans, Green and Co. 1913, 6-7.

<sup>1519</sup> G.D.G. Hall, *The Treatise on the Law and Customs of the Realm of England commonly called Glanvill*. Oxford: Clarendon Press. 1965, 113-114.

<sup>1520</sup> Paul Hindle, *Roads and Tracks for Historians*. Chichester: Phillimore. 2001, 41.

<sup>1521</sup> James E. Thorold Rogers, *A History of Agriculture and Prices in England. Volume IV. 1401-1582*. Oxford: The Clarendon Press. 1882, 692-694.

<sup>1522</sup> James E. Thorold Rogers, *A History of Agriculture and Prices in England. Volume V. 1583-1702*. Oxford: The Clarendon Press. 1887, 761.

There are many records of bridges and causeways being maintained by bequests and at the expense of the local people. No reference has been found of expenditure on the repair of roads between towns. The streets in some towns were repaired by the income from pavage.<sup>1523</sup> In some villages the tenants were required to mend the road 'next to his land'.<sup>1524</sup> When a land owner dug a ditch beside a road he was responsible for clearing the ditch so that the road did not become flooded.<sup>1525</sup> But, in general, outside of the towns there is no evidence that roads were repaired. 'We can say at once that in most places (upkeep and repair) was negligible or nonexistent.'<sup>1526</sup>

Before Parliament made arrangements to repair rural roads it gave authority to move them. An Act of 1523 authorised the rerouting of roads in the Weald of Kent which were 'so depe and noyous by wearyng and Course of Water and other occasions that people cannot have their Cariages or Passages by Horses upon or by the same but to their great paynes parill and jeopdie.'<sup>1527</sup> These provisions were extended to the whole of Sussex in 1534.<sup>1528</sup>

The first legislation relating to the repair of rural roads was passed in 1555.<sup>1529</sup> Most authors have failed to see the link between enclosure and the start of road maintenance. In 1586 Harrison complained that some highways

within these five and twenty years have been in most places 50 foot broad according to the law, whereby the traveller might either escape the thief or shift the mire or pass by the loaden cart without danger of himself and his horse, now they are brought into 12 or 20 or 26 at the most, which is another cause also whereby the ways be the worse and many an honest man encumbered in his journey.<sup>1530</sup>

'Such comments were echoed by Camden, Speed, Pepys, Thoresby and Fiennes, among many others.'<sup>1531</sup>

There is little or no evidence that the condition of the roads improved between 1555 and the end of the century. The first text which describes the duties of the Surveyors of Highways, which has been found, was written in 1591<sup>1532</sup> and the next in 1660.<sup>1533</sup> The first text describing the highways was printed in 1655<sup>1534</sup> and the first description as to how they should be repaired in 1695.<sup>1535</sup> An Act of 1691 required that every cartway

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<sup>1523</sup> W.T. Jackman, *The Development of Transportation in Modern England*. 3<sup>rd</sup> Edition. London: Frank Cass & Co. Ltd. 1966, 10-11.

<sup>1524</sup> Warren O. Ault, *Open-Field Farming in Medieval England*. London: George Allen and Unwin Ltd. 1972, 117.

<sup>1525</sup> *Public Works in Mediaeval Law Volume I*. Editor C.T. Flower. Selden Society Vol. 32. 1915.

<sup>1526</sup> Christopher Taylor, *Roads and Tracks of Britain*. London: J.M. Dent & Sons Ltd. 1979, 150.

<sup>1527</sup> (1523) 14 & 15 Henry VIII c.6.

<sup>1528</sup> (1534) 26 Henry VIII c. 7.

<sup>1529</sup> (1555) 2 & 3 Philip and Mary c.8

<sup>1530</sup> William Harrison, *The Description of England*. Edited by Georges Edelen. Washington: The Folger Shakespeare Library and New York: Dover Publications, Inc. 1994, 444.

<sup>1531</sup> Paul Hindle, *Roads and Tracks for Historians*. Chichester: Phillimore. 2001, 49.

<sup>1532</sup> William Lambarde, *The duties of Constables ...* London: Ralph Newberie. 1591.

<sup>1533</sup> Edmund Wingate, *The exact constable ...* London: H. Brome. 1660.

<sup>1534</sup> W. Burton, *An almanack for the yeare 1655*. Oxford: Hen. Hall. 1655.

<sup>1535</sup> W. Mather, *Of repairing and mending the highways*. London: Samuel Clark. 1696.

leading to a market was required to be 8 feet wide and every horse causey 3 feet wide.<sup>1536</sup> The ways were very different from modern highways.

It is suggested here that once land was enclosed the width of the ways was limited by permanent fences and the traffic was forced into a narrow path and could no longer 'maintain itself'. In the first extant book about roads, written in 1610, there is a description of 'great hurt and spoil of fences and grounds, with riding and going over the corn and such like, by shifting and seeking the best way diversely.'<sup>1537</sup> It seems that people were used to spreading out across the land when travelling and initially rebelled against being forced to use a floundering way. This seems to receive support from Coke's Reports which surprisingly seem to have been ignored by most historians of transport. Coke wrote in c.1630 that the owner of land beside a highway had a responsibility for cleansing the ditches but not for repairing the way except where there was a customary duty. However Fraser in his commentary on Coke's Reports written in 1826 quoted subsequent cases in which it was held that when a person enclosed a highway he thereby became responsible for maintaining the road and further that if he enclosed one side where there was ancient enclosure on the other side he must then maintain the whole road.<sup>1538</sup>

In Ghana in 1954 it was considered that if a trail was used by 5 vehicles a day it needed to be drained, if used by 30 vehicles a day it needed a good gravel surface, and if by over 150 vehicles a day a bitumen seal.<sup>1539</sup> Similar figures are not available for England but the basic fact remains that it is impossible in most places, and especially in winter and on clays, for a road to be narrow, heavily used, have no surface maintenance and to have a good surface.

### **The Evidence from Maps**

It is possibly useful to start with an analogy. If a biologist wishes to study the habits of ants she may place some small piles of food on a clean plate and observe how an ant moves. She will observe the routes the ant takes. A map or plan of these routes would not imply that there is any physical feature on the plate corresponding to the routes. Some geographers have mapped the routes of the medieval kings or bishops and then assumed that these routes implied that there were roads along the routes. The fact that a route is passable does not imply that there is a road. Delano-Smith and Kain wrote of the maps of the time of Henry VIII. 'One would expect a topographical map showing towns and villages, ... We would not expect it to show roads, for the army, like all travellers at that time, was expected to make its way from one place to the next by whichever of the local tracks the army's scouts [or travellers' guides] advised should be used.'<sup>1540</sup>

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<sup>1536</sup> (1691) 3 & 4 William and Mary c. 12.

<sup>1537</sup> Thomas Proctor, *A Profitable Work to this Whole Kingdom concerning the Mending of all the Highways*. 1610. Quoted in Sidney and Beatrice Webb, *English Local Government: The Story of the King's Highway*. London: Longmans, Green and Co. 1913, 6.

<sup>1538</sup> John Henry Thomas and John Farquhar Fraser, Eds. *The Reports of Sir Edward Coke*. London: Joseph Butterworth and Son. 1826, 433-437.

<sup>1539</sup> H.P. White and M.L. Senior, *Transport Geography*. London: Longman. 1983, 23.

<sup>1540</sup> Catherine Delano-Smith & Rover J. P. Kain, *English Maps: A History*. London: The British Library. 1999, 159-160.

Edson wrote 'Until the recent revolution in the history of cartography, medieval maps were looked upon as quaint, amusing, and quite simply WRONG.'<sup>1541</sup> It was not that they were wrong but rather as Taylor said '(the diagrammatic character of mediaeval maps) is not always, even by geographers, and certainly not by historians, fully understood. We know that the modern map has to be interpreted according to a number of rigid conventions, but the same is true of the mediaeval map also. ... (The mediaeval mapmaker) was putting on to a sheet of parchment the things he wanted to express.'<sup>1542</sup>

The history of maps gives an insight into how people saw the country at different times. The early world maps showed an outline of the countries, the location of a few towns<sup>1543</sup> and in the case of the Hereford Map about 14 rivers.<sup>1544</sup> In c.1250 Matthew Parris drew in his commonplace book a diagram showing the 'four pre-Roman paved roads built, as related by Geoffrey of Monmouth (History of the Kings of England, c.1136), by King Belinus'.<sup>1545</sup> This shows the roads intersecting at one point, which they do not. However his four maps of Great Britain show an itinerary from Dover to Newcastle with the remainder of the country sketched in. They show towns and rivers. On only one of the four maps is the road to be followed shown as a line and even that for only part of its length.<sup>1546</sup> There are no other roads shown on the maps.

It used to be considered that the map of Great Britain known as the Gough Map from c.1360 showed roads.<sup>1547</sup> More recently these red lines on the map are described as 'a selection of routes' or 'distance lines'.<sup>1548</sup> The red lines are sometimes drawn across the rivers. Sometimes the lines have a gap at the river crossing. There are no signs for fords, bridges or ferries. The line joining London to Norwich passes through a marsh at the source of the River Tud. The red lines are all straight between towns. They never have a bend where some obstruction needed to be avoided. Harvey notes that 'the distances from one place to another are in local (and very variable) customary miles, but the lengths of the roads on the map itself bear no fixed relation either to these figures or to the distances expressed by a standard measure.'<sup>1549</sup> It is as if the maker of the map said 'You need to stop at these places. You need to travel these distances. Find the most suitable route.'

<sup>1541</sup> Evelyn Edson, *Mapping Time and Space*. London: The British Library. 1997, vii.

<sup>1542</sup> Professor E.G.R. Taylor, in 'Early Maps of Great Britain: Discussion.' *The Geographical Journal*, Vol. 81, No 1. 1933, 43-45, 44.

<sup>1543</sup> Anonymous World Map. c1000; *Giraldus Camrensis*. c.1200. In Royal Geographical Society, *Early Maps of the British Isles. A.D. 1000 – A.D. 1579*. London: Royal Geographical Society. 1961.

<sup>1544</sup> Richard of Haldingham. c 1300. In Royal Geographical Society, *Early Maps of the British Isles. A.D. 1000 – A.D. 1579*. London: Royal Geographical Society. 1961.

<sup>1545</sup> Catherine Delano-Smith & Rover J. P. Kain, *English Maps: A History*. London: The British Library. 1999, 17.

<sup>1546</sup> *Four Maps of Great Britain designed by Matthew Paris about A.D. 1250*. London: British Museum. 1928.

<sup>1547</sup> E.J.S. Parsons, *The Map of Great Britain circa A.D. 1360 known as the Gough Map*. Oxford: Oxford University Press. 1958, 10.

Also see works like: Michael Aston, *Interpreting the Landscape*. London: B.T. Batsford. 1985, 143.

<sup>1548</sup> Catherine Delano-Smith & Rover J. P. Kain, *English Maps: A History*. London: The British Library. 1999, 48, 159.

<sup>1549</sup> P.A. Harvey, 'Local and Regional Cartography in Medieval Europe.' In J.B. Harvey and David Woodward, *The History of Cartography. Volume One*. Chicago: The University of Chicago Press. 1987, 496.

A plan of the Isle of Thanet also from the late 14<sup>th</sup> century is in the style of the Gough map.<sup>1550</sup> It shows the coastline, thirteen ecclesiastical buildings, a *cursus cerve* (the course of a hind), 12 king's highways, a small boat carrying two people across the Wensum, a man carrying a monk across the Wensum and a few other features. The names of all the ecclesiastical buildings are entered as are the names of other communities. The *cursus cerve* is a green line from north to south of the island with about 46 corners, mostly right-angled, and about 1/3 of the length being curved. The cartographer wrote 'the green line indicates the running of the deer, turning hither and thither across the ground, which line contains three feet in breadth without break and is wholly preserved.' It was described as a 'linch' which is a ridge or an unploughed strip serving as a boundary between fields. The line was, in fact, the boundary between the land of St Augustine's Abbey and Christ Church, Canterbury.

One of the red lines indicating the king's highway follows the foreshore. The other red lines joining ecclesiastical buildings or communities are mostly straight but they are curved when they pass round intermediate churches. The red lines differ from those on the Gough map in that where there are three buildings roughly in line the road is shown as passing round the middle one whereas the Gough map shows two lines joining 1<sup>st</sup> - 2<sup>nd</sup> and 2<sup>nd</sup> - 3<sup>rd</sup>. One road has the name Dunstret written against it four times. The other roads are unnamed. In four short sections the green and red lines coincide. The difference between the green and red lines may be one of convention. The property boundary was the main subject of the map and the highways may only have been indicated as straight lines for convenience.

The Andrews and Herberts' map of Kent of 1769 shows the straight 'Old Roman Road' from Ickham to Richborough on the mainland but no straight roads on the island. The map drawn by Andrews and Herbert shows no bypasses round the towns and the lanes are more sinuous even than the modern roads.<sup>1551</sup>

On the 14<sup>th</sup> century map some of the ecclesiastical buildings have no highway leading to them which indicates that the red lines were not a complete record of all the rights of way. Whether those which were omitted were local rights as opposed to the king's highway or whether they were omitted because they were less used is not known. Whether the red lines represent a track three feet wide like the green line or a wide band of land over which people were free to move seems to be impossible to establish. No other map has been found which uses straight lines to show the distance between towns before the map of John Adams printed in 1692.<sup>1552</sup>

A map of Sherwood Forest of c.1400 shows four rivers as wide bands. About six road names are entered on the map, *royde of Boluel*, *Rede Royde Hil*, etc. but there are no lines to show where the roads went to or from.<sup>1553</sup> A map of Dartmoor of c.1500 shows the rivers as bands about 15 mm wide and roads at most 3 mm wide. It appears that of the six bridges three have roads leading to and from them and three have not. From

<sup>1550</sup> F. Hull, 'Isle of Thanet, Kent, late 14<sup>th</sup> century x 1414.' In R.A. Skelton and P.D.A. Harvey, Eds. *Local Maps and Plans from Medieval England*. Oxford: Clarendon Press. 1986, 122, Plate 8.

<sup>1551</sup> In Andrews and Dury & Wm Herbert, *A Topographical-Map of the County of Kent. 1769*. Reproduced by Harry Margary, Lympne Castle, Kent. 1968.

<sup>1552</sup> R.V. Tooley, *Maps and Map-makers*. (6<sup>th</sup> Edition.) London: B.T. Batsford Ltd. 1978, 50.

<sup>1553</sup> M.W. Barley, 'Sherwood Forest, Nottinghamshire, late 14<sup>th</sup> or early 15<sup>th</sup> century.' In R.A. Skelton and P.D.A. Harvey, Eds. *Local Maps and Plans from Medieval England*. Oxford: Clarendon Press. 1986, 131-140, Plate 10.

these maps it is clear that to the cartographers rivers were of greater importance than the roads.<sup>1554</sup>

During the 15<sup>th</sup> and early 16<sup>th</sup> centuries the depiction of the line of the coast and of the rivers on national maps became closer to reality.<sup>1555</sup> From the middle of the 16<sup>th</sup> century an increasing number of county maps were produced at first some were very rough sketches<sup>1556</sup> but their accuracy rapidly improved and the amount of detail increased. In c.1574 Saxton started a survey to produce maps of each of the counties.<sup>1557</sup> Harvey has written of these maps 'There was, however, room for improvement - the maps did not show roads.'<sup>1558</sup> There can be little doubt that Saxton was capable of surveying anything which existed on the ground. Either he chose not to show roads or the roads were not then well defined on the ground.

The first cartographer to show some roads on some of his county maps was John Norden who started work in c.1590.<sup>1559</sup> However the roads were omitted when his maps were used to illustrate Camden's *Britannia* and Speed's *Theatre of the Empire of Great Britaine*. It was not until after the publication of Ogilby's strip maps in 1675<sup>1560</sup> that roads began to be shown regularly on county maps.<sup>1561</sup> Ogilby was also the first person to show which roads were fenced on both sides, one side or neither.

The most notable feature of the pre-1650 national maps is their emphasis on the rivers. This is also the case with maps and plans of smaller areas. Leland in his sketch of 'Parts of East Yorkshire and Lincolnshire' showed only rivers.<sup>1562</sup> Skelton and Harvey have reproduced 26 medieval maps and plans. Several are plans of rivers. On most of the maps the rivers are much more prominent than the roads.<sup>1563</sup>

<sup>1554</sup> J.V. Somers Cocks, 'Dartmoor, Devonshire, late 15<sup>th</sup> century or early 16<sup>th</sup> century.' In R.A. Skelton and P.D.A. Harvey, Eds. *Local Maps and Plans from Medieval England*. Oxford: Clarendon Press. 1986, 293, Plate 26.

<sup>1555</sup> See for example:- Totius Britanniae Tabula Chorographica c 1400; Pietro Coppo 1520; Claudius Ptolemaeus 1513; Angliae Figura 1534-1546; Sebastian Munster 1552; George Lily 1546; Abraham Ortelius 1570; Humphrey Lhuyd 1573; Saxton 1579. In Royal Geographical Society, *Early Maps of the British Isles. A.D. 1000 – A.D. 1579*. London: Royal Geographical Society. 1961.

<sup>1556</sup> Laurence Nowell, Parts of Sussex and Kent, c1562. In Royal Geographical Society, *Early Maps of the British Isles. A.D. 1000 – A.D. 1579*. London: Royal Geographical Society. 1961.

<sup>1557</sup> Sarah Tyacke & John Huddy, *Christopher Saxton and Tudor map-making*. London: The British Library. 1980.

<sup>1558</sup> P.D.A. Harvey, *Maps in Tudor England*. London: The Public Record Office and The British Library. 1993, 60.

<sup>1559</sup> Eg. Included: Essex, 1594, John Norden, *Speculi Britanniae Pars; Historical and Chorographical description of the county of Essex*. London: Camden Society. 1840.

Excluded: Hampshire, c1595, *Two Hundred and Fifty Years of Map-making in the county of Hampshire*. Lympne Castle: Harry Margary. 1976, Map 5a.

<sup>1560</sup> John Ogilby, *Britannia, Volume the First: or, an illustration of the kingdom of England*. (1<sup>st</sup> Edition 1675.) London: The Author. Republished by Osprey Publications Ltd, Reading. 1971.

<sup>1561</sup> A.B. Craven, *Surveyors and Map Makers*. Leeds: Yorkshire Branch of the Royal Institution of Chartered Surveyors and Leeds City Libraries. 1955, 15.

<sup>1562</sup> *The Itinerary of John Leland in or about the years 1535-45. Volume IV*. Editor Lucy Tomlin Smith. Carbondale: Southern Illinois University Press. 1964, opposite page 180.

<sup>1563</sup> R.A. Skelton and P.D.A. Harvey, Eds. *Local maps and plans from medieval England*. Oxford: Clarendon Press. 1986.

## **Conclusion**

In 1752 Carter stated that 'it is as rare to see a coach at Littleport as a ship at Newmarket'.<sup>1564</sup>

It is only in the last ten years that it has been suggested that:

In early centuries, it was by no means always clear on the ground precisely which was 'the road'. Before enclosure and the 'privatisation' of land, the laws of the ancient common-field farming system could accord travellers way-leave over manorial land, and the tracks which eventually became our 'roads' were in essentials only the most commonly trodden strip of ground. Travellers might deviate from the track, especially where it became impassable in bad weather, or elect to pick their way over the fields - along the headlands and between the furlongs of cultivated openfield - a practice permissible provided no damage was done to the land or to crops.<sup>1565</sup>

It is an error to assume that where people travelled on land there was a road. People could walk, horses could be ridden, carts and wagons could be pulled across most areas of unfenced ground. Thus until the construction of turnpike roads during the second half of the 17<sup>th</sup> century it seems that rural roads were an insignificant feature in the landscape.

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<sup>1564</sup> Rev Edward Conybeare, *Highways and Byways in Cambridge and Ely*. London: Macmillan and Co., Limited. 1910, 389.

<sup>1565</sup> Catherine Delano-Smith & Roger J.P. Kain, *English Maps: A History*. London: The British Library. 1999, 172.



## Appendix P

### Natural and Given Rights

#### Introduction

While there has been considerable discussion in Scots law<sup>1566</sup> as to the history of the law of trespass to land with regard to ‘implied licence’, a given right, and ‘customary access’, a natural right, little has been found which relates to these subjects under English Law. It is considered that there has been considerable misunderstanding of the historic public rights in England. In studying the sources of rights of access to land it is convenient to divide these rights into three types. The ‘statutory rights’ all post-date 1600 and are not considered here. A ‘given right’ is a right given by the owner of the land called here ‘a right *donatus*’. A right which exists because of the nature of the land is called ‘a right *in principio*’.

For a property owner the rights *donati* may include easements and prescriptive rights and licences. The rights *in principio* include the right of support and flow of water and the negative right not to have polluting smoke blowing across the property.<sup>1567</sup>

The current legal texts consider that the public rights *donati* over land include rights of way, rights of common and rights of village green, although this opinion is disputed in this thesis. The standard legal texts scarcely consider the public rights *in principio*. Simpson wrote of them ‘It is true that the distinction between such natural rights and servitudes *stricto sensu* is already [at the time of Bracton] appreciated - natural rights arise through operation of law, they are ‘of common right’, and do not depend upon express grants or prescription.’<sup>1568</sup>

Blackstone wrote ‘the law of England ... has treated every entry upon another’s lands, (unless by the owner’s leave, or in some very particular cases) as an injury or wrong, for satisfaction of which an action of trespass will lie.’ Rights *donati* correspond to Blackstone’s ‘by the owner’s leave’ and rights *in principio* to the ‘very particular cases’.<sup>1569</sup>

It is considered that a clearer perspective is obtained by placing the rights of the public on rivers in the context of the history of the other six rights *in principio*. The public rights *in principio* considered are access to:-

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<sup>1566</sup> eg Jeremy Rowan-Robinson and Andrea Ross, ‘The Freedom to Roam and Implied Permission.’ *Edinburgh Law Review*, Vol. 2, (1998) 225-233.

Alan Blackshaw, ‘Implied Permission and the Traditions of Customary Access.’ *Edinburgh Law Review*, Vol. 3, (1999), 368-380.

Alan Blackshaw, ‘Customary Freedoms of Scottish Access.’ *John Muir Trust Journal* Winter 2003. [www.jmt.org/news/2003/34/34\\_access.html](http://www.jmt.org/news/2003/34/34_access.html). Dated 07/04/2006.

Scottish Parliament Justice 2 Committee. Monday 14 January 2002 (Afternoon). Reported at [www.scottish.parliament.uk/business/committees/historic/justice2/or-02j202-0](http://www.scottish.parliament.uk/business/committees/historic/justice2/or-02j202-0). Dated 07/04/2006.

<sup>1567</sup> E.H. Burn, *Modern Law of Real Property*. London: Butterworths. 2000, 580.

Possibly better defined in Australian Law: Peter Butt, *Land Law*. Pyrmont: Thomson Legal and Regulatory Group. 2005, 420.

<sup>1568</sup> A.W.B. Simpson, *A History of the Land Law*. 2nd Edition. Oxford: Clarendon Press. 1986, 107.

<sup>1569</sup> Sir William Blackstone, *Commentaries on the Laws of England. Book the Third. Chapter 12*. 11<sup>th</sup> Edition. London: T. Dadell. 1791, 209-210.

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|-----------------------|--|
| 1. Air                | Never lost.  |
| 2. Tidal waters       | Never lost.  |
| 3. The foreshore      | Restored. Marine Act 2009 (c.23). 296 - 309                                      |
| 4. River Banks        | Apparently lost 1789 due to impossibility of use. <sup>1570</sup>                |
| 5. Lakes              | Apparently never lost.   |
| 6. Non-tidal rivers   | Disputed.  |
| 7. The Right to Roam. | Restored. Countryside and Rights of Way Act 2000 (c.37). (Considered in Part 3.) |

Since these are public rights they can only be claimed in the name of the Attorney General who sets strict rules as to which cases he will allow to be brought in his name. However if a person is accused of trespass then a land-owner needs no permission to commence an action in the courts.

Public rights can only be extinguished in three ways:- (1) by statute, (2) by statutory authority, (3) by it becoming impossible for the right to be exercised, as when a river changes its form and becomes unusable. Public rights are not lost by lack of use for a long period of time.

## 1 Air

It was said in 1588 that the maxim *cuius est solum eius est usque ad coelum et ad inferos* (the owner of the land owns everything from the heavens to Lower World) was known from the time of Edward I.<sup>1571</sup> This maxim has never been rejected. However it has been held that the right of ownership is subject to the public right to pass through the air above a person's land. In 1815 it was held that balloons may fly over a person's land<sup>1572</sup> and in 1978 it was held that aircraft may fly through the space above owned land.<sup>1573</sup>

Thus there is, and always has been, a right *in principio* to fly through space, air, owned by another.

## 2 Tidal Waters

With regard to tidal waters Schultes wrote in 1811:

The early writers on the common law of England agree with the institutions; and subsequent writers on the common law, civil, and feudal law, justify this inference, that the supreme dominion or jurisdiction of the sea belongs to the sovereign, as head and representative of his people; and that the free and universal right of fishing and navigation, ... belongs to the subject.<sup>1574</sup>

In 1830 and 1851 Woolrych wrote 'that the sea, in a word, is open and common to all for the accomplishment of lawful and useful undertakings, is so familiar to every one, as

<sup>1570</sup> *Ball v Herbert* (1789) 3 TR 253.

<sup>1571</sup> *Bury v Pope*, (1588) Cro Eliz 118.

<sup>1572</sup> *Pickering v Rudd*, (1815) 4 Camp 219.

<sup>1573</sup> *Berstein of Leigh (Baron) v Skyviews & General Ltd.*, [1978] Q.B. 479.

<sup>1574</sup> Henry Schultes, *An Essay on Aquatic Rights*. London: W. Clarke and Sons. 1811, 5.

to need no further confirmation nor authority.<sup>1575</sup> This was the traditional understanding of the law whether the soil of the land under the water was owned by the crown on behalf of the people or by an individual.<sup>1576</sup>

In 1604 Grotius claimed that the sea was always a public place.<sup>1577</sup> In 1635 Selden claimed that a country could have ownership of the high seas.<sup>1578</sup> In 1761 Bathurst praised Selden's work and implied that his policy meant that all places could be enclosed.<sup>1579</sup> Further consideration of this dispute is outside the scope of this thesis but it is significant that for the period 1189-1600 no suggestion has been found that either seas or rivers could be enclosed.

### 3 The Foreshore

The foreshore is a strange place. It moves due to accretion and dereliction. Its ownership has often been disputed.<sup>1580</sup> When the tide is in there is a public right of navigation on the water<sup>1581</sup> but it was held in 1821 that when the tide is out there is no right to walk on the foreshore.<sup>1582</sup>

Bracton wrote 'Of natural right all these things are common: flowing water, air and sea, and the shores of the sea, as being as it were approaches to the sea. For no one is prohibited from approaching to the sea provided he abstains from the villas and buildings, for the shores are by the right of nations common, like the sea.'<sup>1583</sup> Lord Chief Justice Parker said 'As to the authority of Bracton, ... there is no colour to say, that it was not law at that time.'<sup>1584</sup>

Holdsworth wrote:

Both the MSS. and the text-books written on the law of England show us that "for a century or thereabouts our English lawyers were steeped in Bracton." Thus is it ultimately to Bracton and to Bracton alone that we must look for an

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<sup>1575</sup> Humphrey W. Woolrych, *A Treatise on the Law of Waters and of Sewers*. London: Saunders and Benning. 1830, 4. 2<sup>nd</sup> Edition 1851, 4.

<sup>1576</sup> (1349) 22. ass. 93.

(1619) *Da. Piscar. Ban.* 56.

Henry Rolle, *Un Abridgment des Plusieurs Cases et Resolutions del Common Ley*. London: A. Crooke and others, 1668, 2. 169, para 5.

Lord Chief-Justice Hale, *De Jure Maris*. Contained in Hargrave, Francis. Ed. *A Collection of Tracts relative to the Law of England* London: T. Wright, 1787, 36.

<sup>1577</sup> Hugo Grotius, 'Mare Liberum' in *De Domino Maris*. 1604.

<sup>1578</sup> John Selden, *Mare Clausum*. Londini. 1635.

See Thomas Wemyss Fulton, *The Sovereignty of the Sea*. Edinburgh and London: William Blackwood and Sons. 1911. Reprinted New York: Kraus Reprint Co. 1976.

<sup>1579</sup> (1654w) in *Literary Remains* ed. T. Warton (1761) p. 292. Quoted in James Turner, *Politics of Landscape*. Cambridge, Massachusetts: Harvard University Press. 1979, 128.

<sup>1580</sup> See:- Stuart A. Moore, *A History of the Foreshore*. London: Stevens & Haynes. 1888.

<sup>1581</sup> *Fitzhardinge (Lord) v Purcell*, (1908) 72 J.P. 276.

*Denaby and Cadeby Main Colliers v Anson*, [1911] 1 K.B. 171.

<sup>1582</sup> *Blundell v Catterall*, (1821) 5 B. & Ald. 268.

<sup>1583</sup> *Henrici de Bracton de Legibus et Consuetudinibus. Volume I*. Editor Sir Travers Twiss. London: Longman & Co. 1878, 57.

<sup>1584</sup> (Lord Chief Justice 1710-18.) Fortescue, p. 408. Quoted by Best J. in *Blundell v Catterall*, (1821) 5 B. & Ald. 268, 282.

account of this period of the vigorous growth of the common law. In his works it is summed up and passed on to future generation.<sup>1585</sup>

Best J. in a minority opinion in *Blundell v Catterall* said ‘The shore of the sea is admitted to have been at one time the property of the King. From the general nature of this property, it could never be used for exclusive occupation. It was holden by the King, like the sea and the highways, for all his subjects. The soil could only be transferred, subject to this public trust; and general usage shews that the public right has been excepted out of the grant of the soil.’<sup>1586</sup>

However the opinion of the majority of the judges was that there had been no previous case relating to access to the foreshore and so they should consider the ‘public good’ in determining the case. They considered that the most important factor was the importance of ensuring that bathing by males and females was discreetly supervised and separated and that land-owners were the people most suited to ensure the morality of the bathers. Thus the legal right of access to the foreshore was lost.

Since 1821 the public have regularly accessed the foreshore. Howarth wrote ‘walking, bathing, beachcombing and an infinite variety of other coastal recreations are generally tolerated by the Crown and other owners of the foreshore, they continue to be exercised in the absence of any legal rights possessed by the public.’<sup>1587</sup> Lord Justice Harman said ‘It is notorious that many things are done on the foreshore by the public which they have no right to do.’<sup>1588</sup>

Only one medieval map has been found where the cartographer states that ‘the red lines (*rubee linee*) show the king’s highway of the island from one parish to another...’ This is the c.1400 map of the Isle of Thanet.<sup>1589</sup> On this map there is a red line along the shore all around the island. This seems to be strong confirmation that the foreshore was a public place at that time.

No evidence has been found relating to the period 1189-1600 which would imply that there was not a public right of access to the foreshore during that period and so it is considered that there was right *in principio* to walk on the foreshore during that period.

It seems that the provisions of the Marine Act 2009 when implemented will effectively restore this public right.

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<sup>1585</sup> W.S. Holdsworth, *A History of English Law. Volume II.* 3<sup>rd</sup> Edition. (1<sup>st</sup> Edition 1903.) London: Methuen & Co. Ltd. 1923, 286-287.

<sup>1586</sup> *Blundell v Catterall*, (1821) 5 B. & Ald. 268, 287.

<sup>1587</sup> William Howarth, ‘Access to the Foreshore: *Blundell v. Catterall* reconsidered.’ *Rights of Way Law Review*. (1992), 11-15.

<sup>1588</sup> *Alfred F. Beckett v Lyons*, [1966] 2 W.L.R. 421, 430.

<sup>1589</sup> F. Hull, ‘Isle of Thanet, Kent, late 14<sup>th</sup> century x 1414.’ In R.A. Skelton and P.D.A. Harvey, Eds. *Local Maps and Plans from Medieval England*. Oxford: Clarendon Press. 1986, 122, Plate 8.

#### 4 River Banks

Bracton wrote in c.1260:

All rivers and ports are public, ... The use of the banks is also public by the right of nations, as of the river itself. It is free to every person to moor ships there to the banks, to fasten ropes to the trees growing upon them, to land cargoes and other things upon them, just as to navigate the river itself, but the property of the banks is in those whose lands they adjoin, ... and this is to be understood of perennial rivers, because streams, which are temporary, may be property.<sup>1590</sup>

Callis said in 1622:

The ownership and property of the Sea Bank and Banks of great Rivers, be to them whose grounds are next thereto adjoining, ... but the use of the Banks is common to all the King's liege people, as to tie the ships and Boats to the Trees, and to tow them to and fro, and to lade and unlade their merchandizes thereon, ... I cannot more aptly compare a Bank of the Sea, or of a navigable River, than to a High-way, for that the property thereof is to him whose ground is next adjoining, and the use thereof is common to all men.<sup>1591</sup>

In about 1660 Hale wrote that there was a right to tow on the banks of all rivers and creeks. In some places the right was by custom and so free of charge and in others places *sub modo* and so a charge could be made for damage done.

A similar right to tow from the bank of the Severn was confirmed by statute in 1528 with provision for 'reasonable recompense and satisfaccion for such hurtes and offenses as he or they having such londis or medes adjoynnyng to the seid Streame or Water shall susteyne by reason of eny such goyng or drawing of any such Trow Bote or Vessell.'<sup>1592</sup> In 1532 the law was reviewed and the charge removed.<sup>1593</sup>

In the Statutes passed prior to 1600 no provision was made for creating tow paths. It appears that it was assumed that there was a right to pass on the banks of the rivers.<sup>1594</sup> In 1280 it was held that there was a right to tow from the bank of the Parrett between 'Brugewat' and Langport'.<sup>1595</sup> In 1704 Chief Justice Holt stated that 'if one have land

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<sup>1590</sup> *Henrici de Bracton de Legibus et Consuetudinibus Angliae. Volume I.* Editor Sir Travers Twiss. London: Longman & Co. 1878, 58-59.

<sup>1591</sup> Robert Callis, *The Reading of the Famous and Learned Robert Callis, Esq; Upon the Statute of 23 H.8. cap. 5. of Sewers: As it was delivered by him at Gray's Inn in August 1622.* 2<sup>nd</sup> Edition. London: Thomas Basset. 1685, 73-74.

<sup>1592</sup> (1528) 19 Henry VIII c. 18.

<sup>1593</sup> (1532) 23 Henry VIII c. 12.

<sup>1594</sup> (1423) 2 Henry VI c. 9. Thames.

(1425) 3 Henry VI c. 5. Lea.

(1503) 19 Henry VII c. 18. Severn.

(1514) 6 Henry VIII c. 17. Kentish Stour.

(1570) 13 Elizabeth I c. 26. Welland.

<sup>1595</sup> *Somerset Record Society*, xlv: 'Somersetshire Pleas from the Roll of the Itinerant Justices', p. 119. Quoted in P. Helm, 'The Somerset Levels in the Middle Ages.' *Journal of the British Archaeological Association.* Number 12. (1949), 47.

adjoining on a *navigable river*, everyone that uses that river has, if occasion be, a right of way by the brink of the water over that land, or farther in if necessary.’<sup>1596</sup>

Thus it seems that there was a right *in principio* of access on both banks of all usable rivers prior to 1600.

### **A Note on the general Law relating to Inland Waters.**

Inland areas of water are regarded by the law as areas of land covered with water.<sup>1597</sup> With regard to rivers ‘the general rule in relation to the ownership of the bed of non-tidal rivers is that the riparian owners of the banks are presumed each to own half the bed of the river *usque ad medium filum*’.<sup>1598</sup>

While these statements correspond to entries in other law commentaries they scarcely do justice to the subject. While in Scotland and England the material of the bed of a lake belongs to the riparian owner in Scotland it has been held that the right to use a boat on the surface is common to all who have the right to use any part of the lake.<sup>1599</sup> It seems that this is also the law in England. If this is correct it would seem also that if one has the right to use a boat on one side of a river one has the right to use it on both sides. Certainly in Scotland, and probably in England, an angler may cast ‘his fly or lure as far as he could in accordance with ordinary practice even if this meant that the fly went across the *medium filum*’.<sup>1600</sup> The law relating to access to inland waters is not the same as for land.

Trespass on water would normally be ‘simple trespass’ since a boat does not even leave footprints and rivers can not be enclosed and were never included in the Inclosure Acts.<sup>1601</sup>

## **5 Lakes**

There were many more lakes in 1600 than there are now. John Speed’s maps show them especially in the Fens, Somerset and Cheshire. Boats travelling to Peterborough would have crossed Ramsey Meere, Ugg Meere and Wittlesey Meere on their way upstream.<sup>1602</sup> In 1769 Pennant noted that ‘The East Fen is quite in a state of nature and gives a specimen of the country before the introduction of drainage: it is a vast tract of morass, intermixed with numbers of lakes from half a mile to two or three miles in circuit, communicating with each other by narrow reedy straits.’<sup>1603</sup>

<sup>1596</sup> *R v The Inhabitants of Culworth*, (1704) 6 Mod 163; Holt 339.

<sup>1597</sup> Nigel P. Gravells, *Land Law*. London: Sweet & Maxwell. 1999, 6.

<sup>1598</sup> William Howarth, *Wisdom’s Law of Watercourses*. 5<sup>th</sup> Edition. Crayford: Shaw & Sons Limited. 1992, 17.

<sup>1599</sup> *Per* Lord Blackburn, *Mackenzie v Bankes*, (1878) 3 A.C. 1324, H.L.

<sup>1600</sup> *Fotheringham v Kerr or Passmore and Another*. (1984) 48 P. & C.R. 173.

But see also *Lovett and Another v Fairclough*, (1990) *The Times*. 10 March 1990.

<sup>1601</sup> See eg. *Ecroyd v Coulthard*, [1897] 2 Ch. 554-573; [1898] 2 Ch. 358-377.

And *Simpson v Scales*, (1801) 2 Bos. & Pul. 496.

<sup>1602</sup> Thomas Badeslade, *History of the Ancient and Present State of the Navigation of the Port of King’s Lynn* .... London: J. Roberts. 1725, 72.

<sup>1603</sup> Thomas Pennant, ‘Tour in Scotland,’ 1774, p. 10. Quoted in H.C. Darby, ‘The Human Geography of the Fenland Before the Drainage.’ *Royal Geographical Society Journal*. Vol. 80, Number 5. (1932), 420-435, 421.

Paul Spoerry wrote of the Fenland communities in the Middle Ages ‘The water, rather than isolating island communities, became a conduit for economic contact and advancement, not just within the Fenland basin, but with towns and communities throughout the east midland river systems.’ He described the Fenland as ‘the motorway of the age’.<sup>1604</sup> This waterway system was not neatly divided into rivers and lakes. In winter parts of the country were covered by water. The extent of the meres varied with the seasons of the year. It is difficult now to know which water bodies were natural meres and which resulted from peat extraction.<sup>1605</sup>

It is recorded that when the land was flooded boats went over the land. Dugdale wrote of Lincolnshire in 1625:

not only in winter, but even in the summer times, boats laden with plaister have passed over that part thereof, called Hatfield chase, to a place called Hollen brigge, near Hatfield Woodhouse, the water upon the drowned grounds being about three foot deep. ... Neither was Haxey carr less over-whelmed, large boats laden with xx quarters of corn, usually passing over it, from the river of Idle to Trent bank; men rowing also with lesser boats ...<sup>1606</sup>

In 1505 at North Curry, in Somerset, it was said that ‘in winter season the medewes be so filled and replenysshed with water, that the bootes may go over at every place.’<sup>1607</sup> In 1613 boats went ‘direct over the soil from Lynne to Terington.’<sup>1608</sup> Malster records that on the Waveney ‘Masters of small wherries returning downstream without cargo would sail across the flooded marshes, regaining the river below Beccles.’<sup>1609</sup>

The distribution of logboats which have been found indicate that they were used on lakes, ponds and meres as well as on rivers.<sup>1610</sup> Three medieval logboats have been found in the meres in the Mersey basin at Astbury, Cholmondley and Oakmere.<sup>1611</sup> Hadfield wrote about the Somerset Levels ‘There was, of course, also local traffic in corn, fish, wine and other needs of the abbey, not only on the Cut, but on the network of minor drainage and navigation waterways round Meare Pool [in Somerset].’<sup>1612</sup>

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<sup>1604</sup> Paul Spoerry, ‘Town and Country in the Medieval Fenland.’ In Kate Giles and Christopher Dyer, Eds. *Town and Country in the Middle Ages*. The Society for Medieval Archaeology Monograph 22. 2007, 94, 101.

<sup>1605</sup> Sir Harry Godwin, *Fenland: its ancient past and uncertain future*. Cambridge: Cambridge University Press. 1978, 116.

<sup>1606</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. (1<sup>st</sup> Edition 1662.) London: Richard Geast. 1772, 143.

<sup>1607</sup> Wells MSS. Chapter Act Book, ff. 115 et seq. Quoted in P. Helm, ‘The Somerset Levels in the Middle Ages.’ *Journal of the British Archaeological Association*. Number 12. (1949), 48.

<sup>1608</sup> William Dugdale, *The History of the Imbanking and Draining of Divers Fens and Marshes*. 2<sup>nd</sup> Edition. London: Richard Geast. 1772, 277.

<sup>1609</sup> Robert Malster, *Wherries and Waterways*. Lavenham: Terence Dalton Limited. 1971, 49.

<sup>1610</sup> Sean McGrail, *Logboats of England and Wales. Part ii*. National Maritime Museum, Greenwich Archaeological Series No. 2. BAR British Series 51 (ii). (1978), figure 207.

<sup>1611</sup> Sean McGrail and Roy Switsur, ‘Medieval Logboats of the River Mersey-A Classification Study.’ In Sean McGrail, Ed. *The Archaeology of Medieval Ships and Harbours in Northern Europe*. National Maritime Museum, Greenwich, Archaeological Series No. 5. BAR International Series 66. 1979, 102.

<sup>1612</sup> Charles Hadfield, *The Canals of South West England*. Newton Abbot: David & Charles. 1967, 76.

Under Roman law there was a public right of navigation on all permanent lakes.<sup>1613</sup> With regard to Ullswater Lake it was found in 1863 that ‘as far back as human memory went, all persons having property on the lake, or having lawful access to it, were accustomed to use the privilege of going and being conveyed on the lake in boats, with or without goods and landing where they may.’<sup>1614</sup> On Hickling Broad it was found in 1892 that there was a public right of way over the whole of the Broad.<sup>1615</sup> However the legal commentaries are unanimous in their opinion ‘the public do not have a right to navigate on non-tidal lakes, but a right to navigate thereon may be acquired by dedication, immemorial use or under statute.’<sup>1616</sup>

It seems that there was from 1189-1600 a right *in principio* to passage on all natural lakes to which the public had access. The loss of that right, if it was ever lost, occurred after 1600. The close relationship between the rivers and lakes would seem to indicate that the law relating to access was the same on lakes and rivers.

## 6 Inland Rivers

The law relating to the right of passage on non-tidal rivers before 1600 has been considered previously by the present author.<sup>1617</sup> The contemporary writings of historians and lawyers, Magna Carta and other statutes, the State records, the use made of many rivers and the lack of opposition to the use of the rivers which are discussed elsewhere in this thesis all indicate that there was a legal right of navigation on all rivers which were physically navigable.

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<sup>1613</sup> Digest Book 39, Title 3, Section 24, Paragraph 3. Quoted in Eugene F. Ware, *Roman Water Law*. St. Paul, Minnesota: West Publishing Co. 1905, 72.

<sup>1614</sup> *Marshall v Ulleswater Steam Navigation Company Limited*, (1863) 3 B.& S. 732, 739-740.

<sup>1615</sup> *Micklethwait v Vincent*, (1892) 67 L.T. 225, 230.

<sup>1616</sup> William Howarth, *Wisdom's Law of Watercourses*. 5<sup>th</sup> Edition. Crayford: Shaw & Sons Limited. 1992, 22-23.

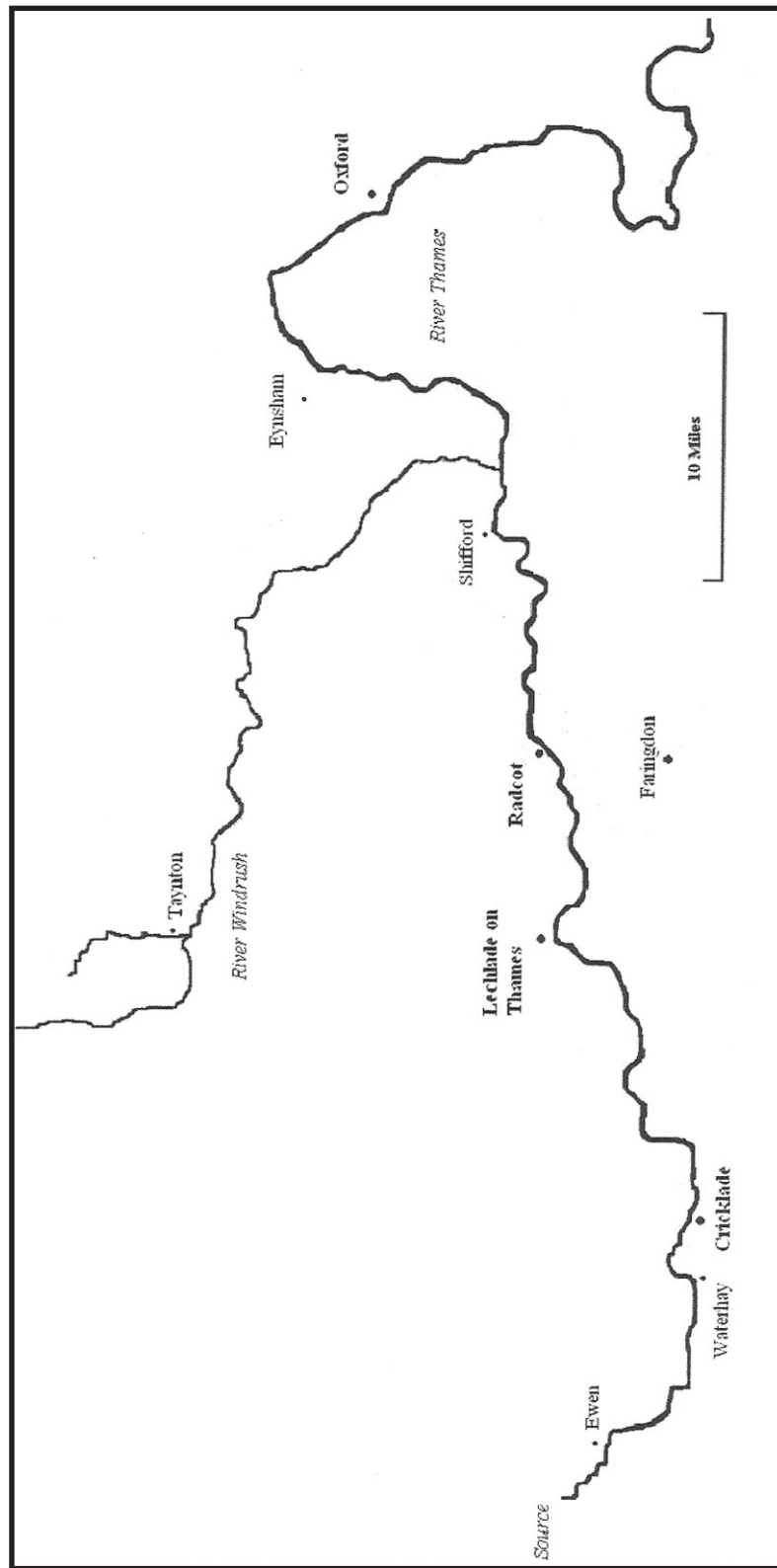
<sup>1617</sup> Douglas Caffyn, ‘The Right of Navigation on Non-tidal Rivers and the Common Law.’ LLM Dissertation, Univ. of Kent. 2004.



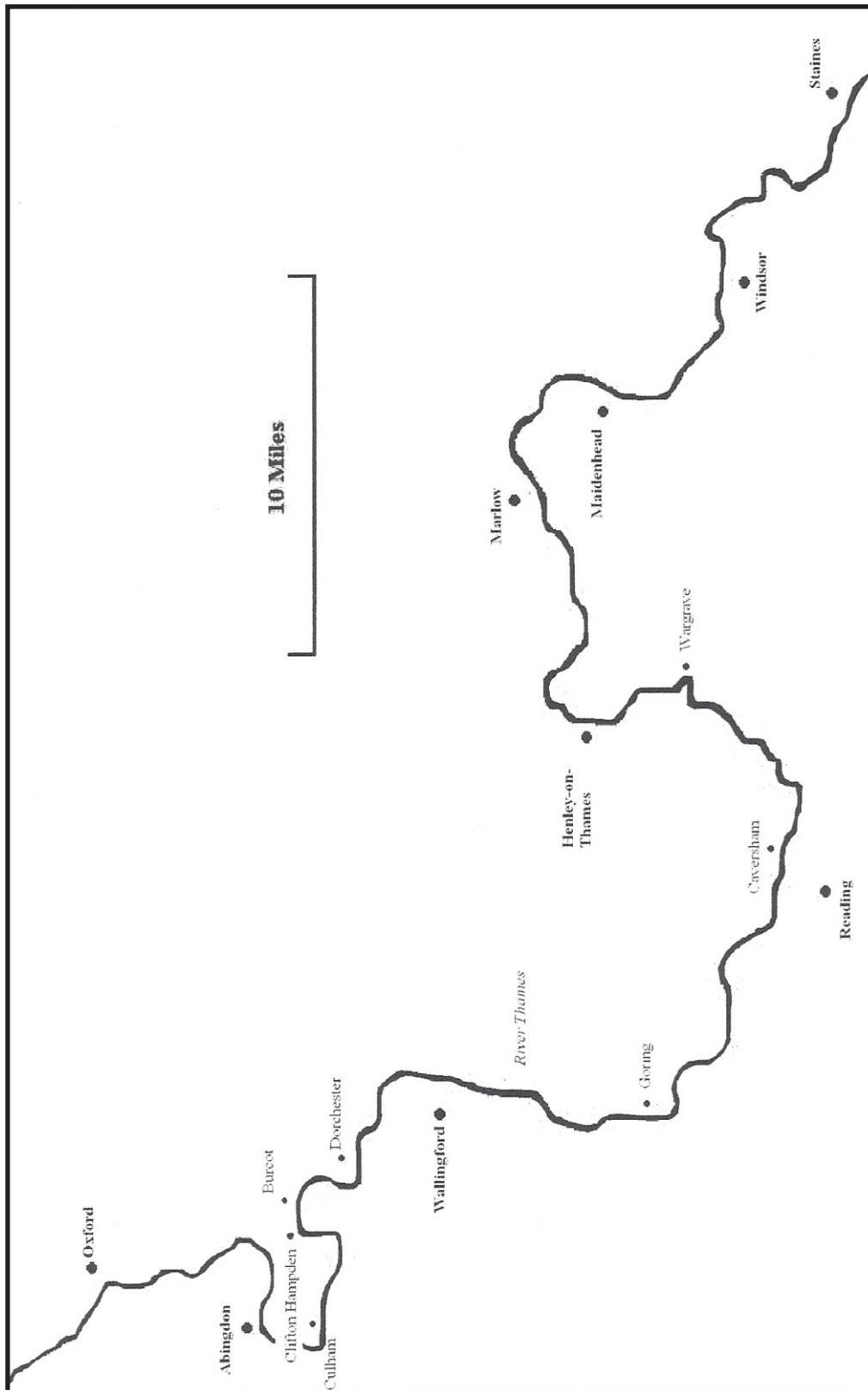
**Appendix Q****Maps**

Maps of rivers:-

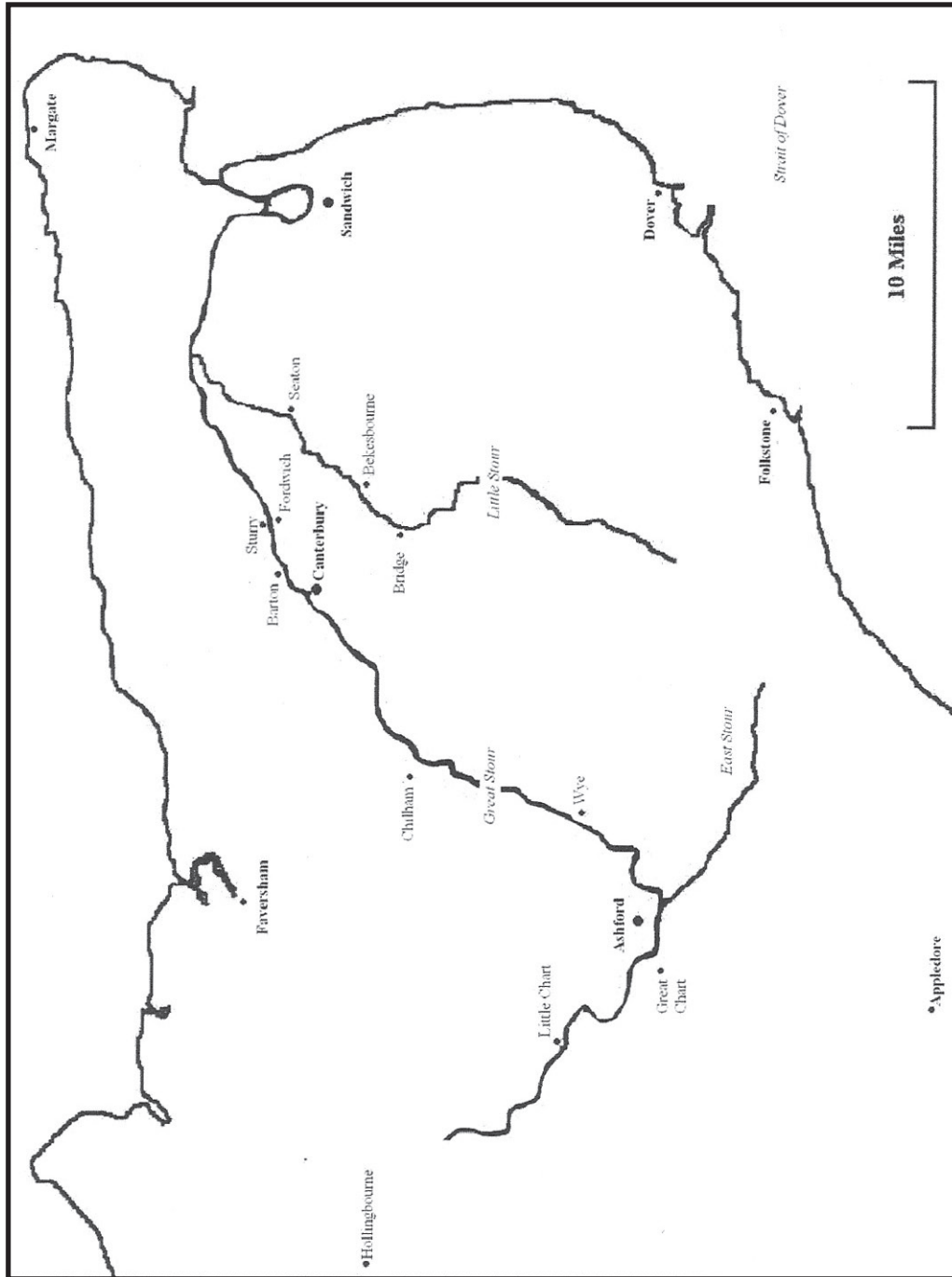
	<u>Page</u>
1. Upper Thames	505
2. Middle Thames	506
3. Kentish Stour	507
4. Wear	508
5. Teme	509
6. Salisbury Avon	510



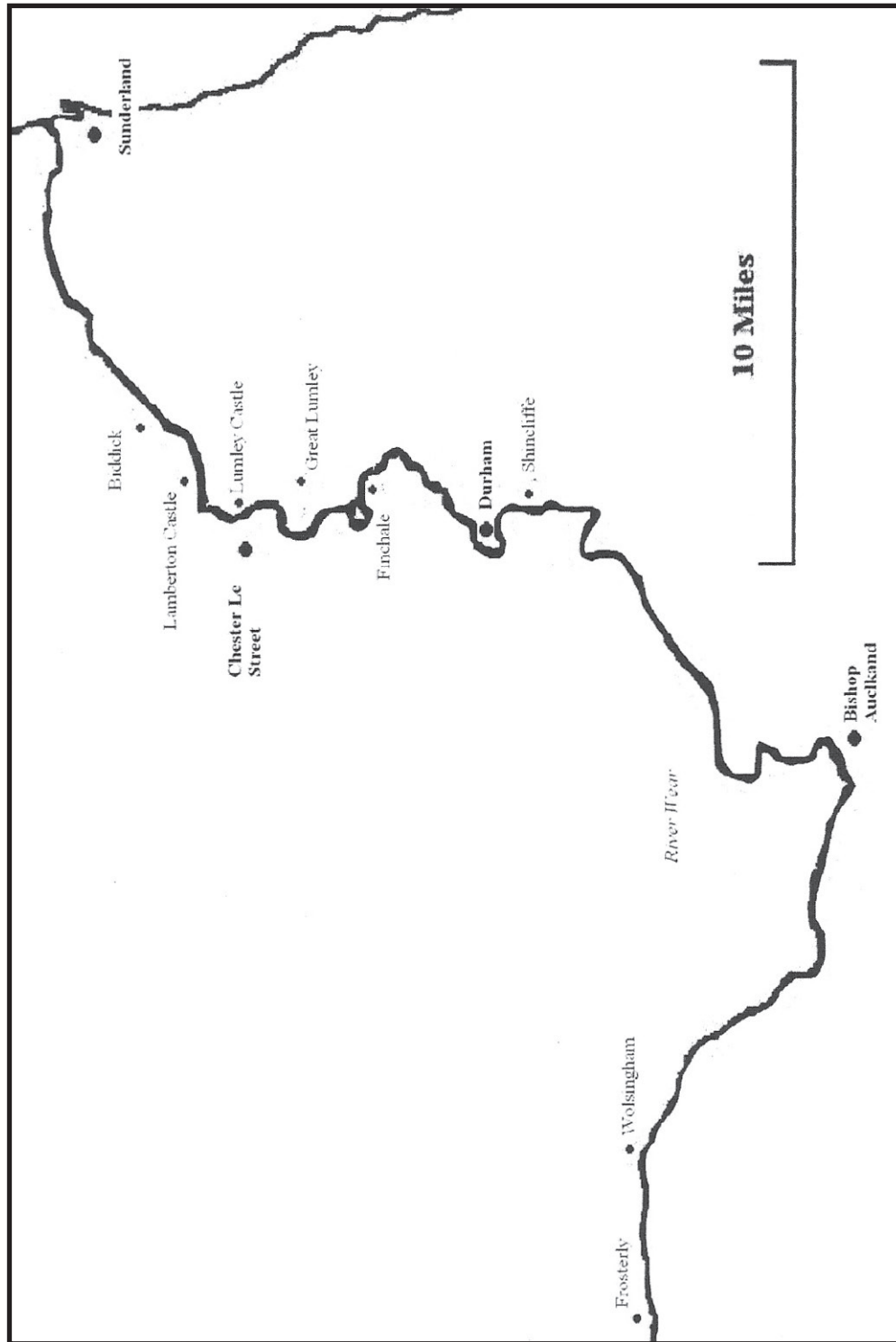
Map 1. Upper Thames



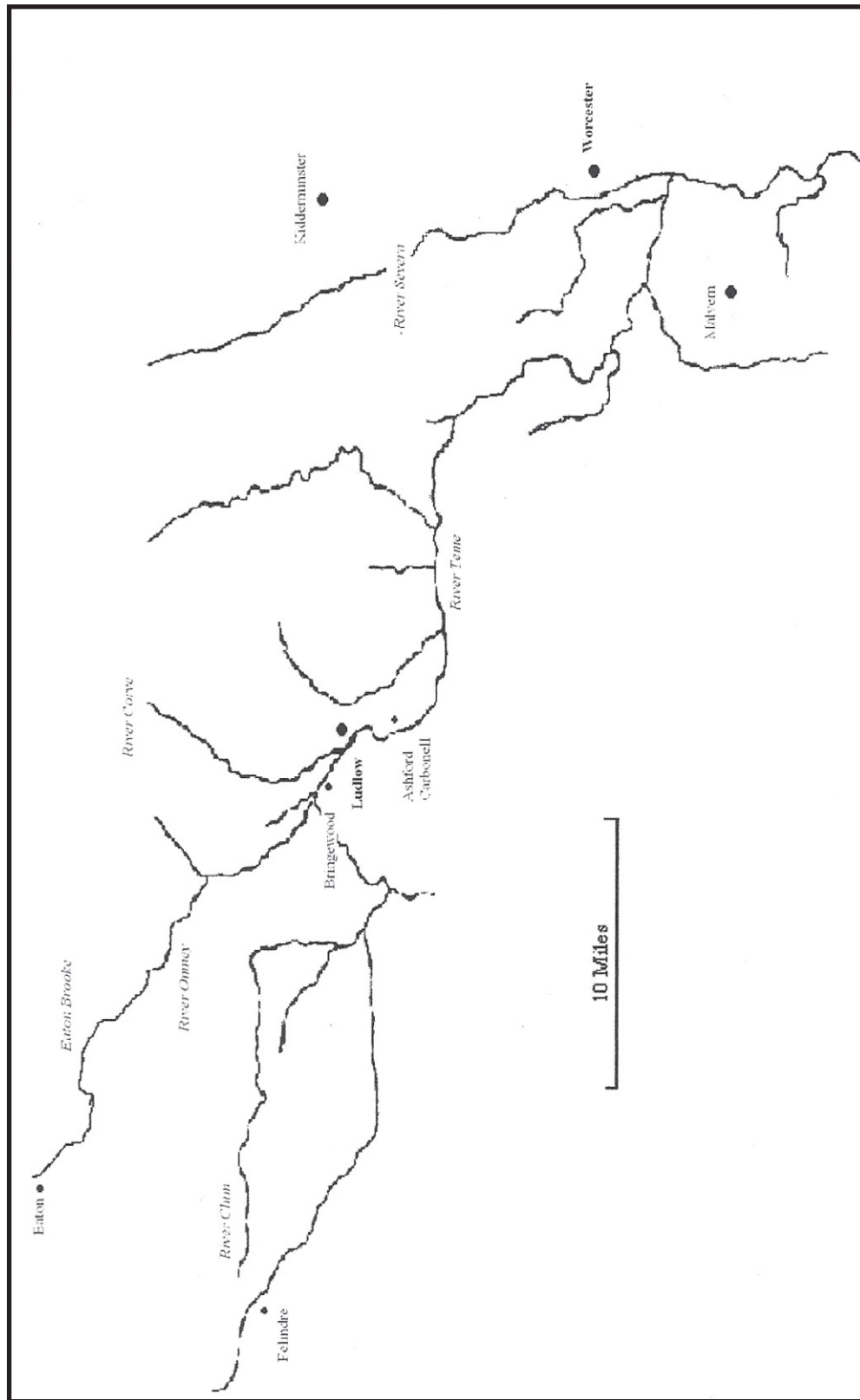
Map 2. Middle Thames



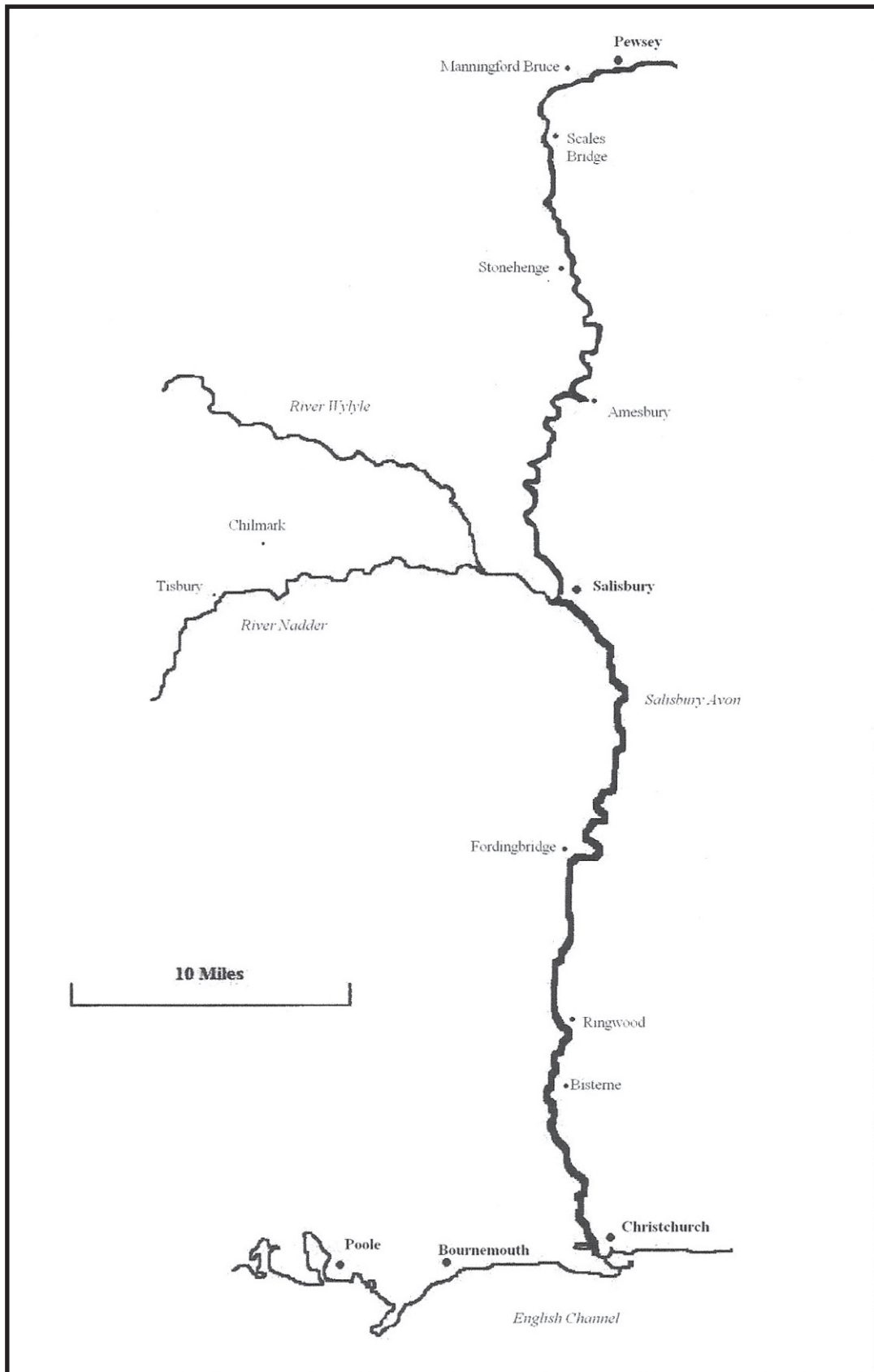
Map 3. Kentish Stour



Map 4. River Wear



Map 5. River Teme



Map 6. Salisbury Avon

## Appendix R

### Illustrations.

**(The illustrations are not included in the electronic edition of the thesis.)**

- |                |  |
|----------------|--|
| Illustration 1 | Page iiiA.   |
| Title:         | “Shrewsbury. Late 16 <sup>th</sup> century.”   |
| Source:        | P.D.A. Harvey, <i>Maps in Tudor England</i> . London: The Public Record Office and The British Library. 1993, 70-71.               |
| Copyright:     | © British Library Board. Royal MS 18. D. iii, ff.89v-90.   |
| Note:          | Showing various sizes of barges, boats and rafts at Shrewsbury.  |
|                |  |
| Illustration 2 | Page 5A  |
| Title:         | “Transport as illustrated in the Luttrell Psalter. 14 <sup>th</sup> century.”  |
| Source:        | <i>The Luttrell Psalter</i> . Commentary by Michelle P. Brown. London: The British Library. 2006, 160, 162r, 173v, 181v-182r, 186v |
| Copyright:     | © British Library Board. Add. MS 42130.  |
| Note:          | Showing a wagon and carts with studded wheels and a boat.  |
|                |  |
| Illustration 3 | Page 5B  |
| Title:         | “Boats being paddled. Early 15 <sup>th</sup> century.”   |
| Source:        | Janet Backhouse, <i>The Sherbourne Missal</i> . London: The British Library. 1999. 23, 34.   |
| Copyright:     | © British Library Board. Add. MS 74236.  |
| Note:          | Showing the use of two boats on inland waters in the early 15 <sup>th</sup> century.   |
|                |  |
| Illustration 4 | Page 7A  |
| Title:         | “John Constable. <i>The Valley Farm</i> . 1835.”   |
| Source:        | Download from Tate Gallery website.  |
| Copyright:     | © Tate Gallery Board. N 00327.   |
| Note:          | Showing a man punting a boat with a lady passenger on a shallow river.   |
|                |  |
| Illustration 5 | Page 7B  |
| Title:         | “John Constable. <i>The White Horse</i> . 1819.”   |
| Source:        | Michael Rosenthal, <i>Constable. The painter and his landscape</i> . New Haven and London: Yale University Press. 1983, 118.       |
| Copyright:     | © Frick Collection. New York.  |
| Note:          | Showing a barge carrying the tow horse on a narrow river.  |
|                |  |
| Illustration 6 | Page 7C  |
| Title:         | “W Milne Black. <i>Crannog and logboat use</i> .”  |
| Source:        | Robert J.C. Mowat, <i>The Logboats of Scotland</i> . Oxbow Monograph 68. From Scots Pictorial, 29 October 1898.                    |
| Copyright:     | © Trustees of the National Library of Scotland. NLS shelf mark CB.2/13(10-).   |
| Note:          | Showing a small logboat being used to transport a hog.   |



## Illustration 7 Page 16A

Title: "Part of John Norden's map of Surrey c.1580."  
 Source: William Camden, *Britain*. Translator Philemon Holland, London: Joyce Norton and Richard Whitaker. 1637, 294.  
 Note: Showing the Mole as flowing underground from Dorking to Norbury.

## Illustration 8 Page 81A

Title: "Part of the 'Gough Map'. Mid 14<sup>th</sup> century."  
 Source: The Map of Great Britain *circa* A.D. 1360 *known as* The Gough Map.  
 Copyright: © The Bodleian Libraries, University of Oxford. MS. Gough gen. Top. 16.  
 Note: Showing rivers, including the Thames, as having their sources in ponds or lakes.

## Illustration 9 Page 81B

Title: "Part of Christopher Saxton's map of Gloucestershire. c.1580."  
 Source: William Camden, *Britain*. Translator Philemon Holland. London: Joyce Norton and Richard Whitaker. 1637, 356.  
 Note: Showing a pond at the source of the Thames in 1590.

## Illustration 10 Page 81C

Title: "Part of John Speed's map of Suffolk. c.1607."  
 Source: John Speed, *Theatre of the Empire of Great Britaine, Parts III*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1953-4.  
 Note. Showing a ford between the Little Ouse and Waveney.

## Illustration 11 Page 81D

Title: "The River Ouzel at Eaton Bray, Beds."  
 Source: Photograph by the author.  
 Note: Showing the river which is now normally not more than 15 cm deep into which in 1271 William Whiteside fell from a boat and was drowned.

## Illustration 12 Page 88A.

Title: "Part of Christopher Saxton's map of Northamptonshire. c.1580."  
 Source: William Camden, *Britain*. Translator Philemon Holland. London: Joyce Norton and Richard Whitaker. 1637, 504.  
 Note: Showing Kelmarsh separating the Avon from Avona (River Nene). Distance approximately half a mile.

## Illustration 13 Page 92A

Title: "Part of Richard Budgen's map of Sussex. 1724-5."  
 Source: Peter Barber and Tom Harper, *Magnificent Maps*. London: The British Library. 2010, 131  
 Copyright: © British Library Board. Maps K. Top 43.3.8 TAB END  
 Note: Showing Etchingham 'Essential for use in 1348' and Bodiam 'Limit of navigation in 1720.'

- Illustration 14            Page 120A  
 Title:            "Collecting sedges."  
 Source:           The National Trust, *Wicken Fen*. London: National Trust (Enterprises) Ltd. 2002, 6, 25  
 Copyright:       © National Trust.  
 Note:            Showing sedges transported on boats.
- Illustration 15            Page 122A.  
 Title:            "The 1334 Lay Subsidy. Places with assessed wealth of £225 and over."  
 Source:           R.E. Glasscock, 'England *circa* 1334.' In H.C. Darby, Ed., *A New Historical Geography of England*. Cambridge: Cambridge University Press. 1973, 180.  
 Copyright:       © Cambridge University Press.  
 Note:            Showing the concentration of places with high assessed value around the Wash.
- Illustration 16            Page 146A.  
 Title:            "Part of Matthew Paris *Abbreviatio Chronicorum Angliae*, St Albans, 1250-59."  
 Source:           *Four Maps of Great Britain designed by Matthew Paris about A.D. 1250*. London: Trustees of the British Museum. 1928.  
 Copyright:       © British Library Board. Cotton Claudius MS D. VI, 12v.  
 Note:            Showing rivers depicted as bands and no roads shown in a 13<sup>th</sup> century map."
- Illustration 17            Page 146B.  
 Title:            "Part of the Gough map. Mid 14<sup>th</sup> century. Thames to Wash / Severn to East coast."  
 Source:           The Map of Great Britain *circa* A.D. 1360 *known as The Gough Map*.  
 Copyright:       © The Bodleian Libraries, University of Oxford. MS. Gough gen. Top. 16.  
 Note:            Showing rivers depicted as bands and no roads shown in a 14<sup>th</sup> century map."
- Illustration 18            Page 146C  
 Title:            "John Leland, *Map of part of East Yorkshire*, c. 1550."  
 Source:           Lucy Toulmin Smith, *The Itinerary of John Leland in or about the years 1535-1543. Volume 4*. Carbondale: Southern Illinois University Press. 1964, 180.  
 Note:            Showing rivers depicted as bands and no roads shown in a 16<sup>th</sup> century map."
- Illustration 19            Page 146D.  
 Title:            "Part of John Norden's map of Essex. c. 1584."  
 Source:           John Norden, *Speculi Britanniae Pars: Essex*. (1<sup>st</sup> Edition 1594.) London: Camden Society. 1840.  
 Note:            Showing the River Pant depicted as being wide.

## Illustration 20            Page 148A

Title:            "Places with 'ea-tun' names."

Source:        Cole, Ann, 'The Place-Name Evidence for Water Transport in Early Medieval England.' In John Blair, *Waterways and Canal-Building in Medieval England*. Oxford: Oxford University Press. 2007, 55-84, 79.

Copyright:    © Oxford University Press. 2007.

Note:           Showing the distribution of places with 'ea-tun' names some of which were located on small rivers.

## Illustration 21            Page 149A.

Title:            "Armoured Knights Jousting. 1325-53."

Source:        Joe Flatman, *Ships & Shipping in Medieval Manuscripts*. London: The British Library. 2009, 79.

Copyright:    © British library. Queen Mary's Psalter, England, c.1325-53; BT, Royal MS 2 B. VII, f.159r

Note:           Showing recreation on a river in the 14<sup>th</sup> century.

## Illustration 22            Page 149B.

Title:            "Recreation. Late 16<sup>th</sup> century."

Source:        Joe Flatman, *Ships & Shipping in Medieval Manuscripts*. London: The British Library. 2009, 55.

Copyright:    © British Library. Book and Hours and Calendar. Bruges or Ghent, c 1500; BL, Add MS 35313, f.3v. Hours of William, Lord Hasting. Bruges or Ghent? C.1480; BL, Add MS 54782, f.54r.

Note:           Showing recreation on a river in the late 15<sup>th</sup> century.

## Illustration 23            Page 172A

Title:            "Samuel Ireland. *Picturesque View on the Severn*. Late 18<sup>th</sup> century."

Source:        Colin Green, *Severn Trader*. Lydney: Black Dwarf Publications. 1999, 34.

Copyright:    © Ironbridge Gorge Museum Trust.

Note:           Showing a boat leaving the River Teme in the 18<sup>th</sup> century.

## Illustration 24            Page 176A

Title:            "William Smith, *View of London from the south, showing the River Thames*. 1588."

Source:        British Library Postcard.

Copyright:    © British Library. Sloane 2596.

Note:           Showing ships downstream of London Bridge and boats upstream.

## Illustration 25            Page 176B

Title:            "Boats in John Speed, *England*. 1611."

Source:        John Speed, *Theatre of the Empire of Great Britaine, Parts II, IV*. (1<sup>st</sup> Edition 1611.) Facsimile London: Phoenix House Limited. 1953-4.

Note:           Showing boats upstream of bridges in Newcastle, Norwich and Chester.

Illustration 26                      Page 177A

Title:                      “John Constable, *A view of the Stour near Dedham*. 1822.”  
 Source:                    Michael Rosenthal, *Constable. The painter and his landscape*. New Haven and London: Yale University Press. 1983, 141.  
 Copyright:                © Henry E Huntington Art Gallery.  
 Note:                      Showing that bridges were constructed to accommodate barges.

Illustration 27                      Page 182A

Title:                      “Crossing rivers in Bewick’s woodcuts.”  
 Source:                    Thomas Bewick, *A History of British Birds. Volumes I and II*. Newcastle: Longman and Co. 1832, Volume I, 170, 285, 375; Volume II, 62, 186.  
 Note:                      Showing people crossing rivers by wading, on slits and on floats.

Illustration 28                      Page 195 A

Title:                      “A Tibetan horizontal watermill”  
 Source:                    Photograph by the author.  
 Note:                      Showing that the horizontal mill was located on a small stream.

Illustration 29                      Page 199A

Title:                      “A water mill as illustrated by Thomas Bewick.”  
 Source:                    Thomas Bewick, *A History of British Birds. Volume I*. Newcastle: Longman and Co. 1832, 263  
 Note:                      Showing a mill on a wide river which did not obstruct the navigation.

Illustration 30                      Page 206A

Title:                      “Paul Spoerry’s Medieval Motorways.”  
 Source:                    William Camden, *Britain*. Translator Philemon Holland. London: Joyce Norton and Richard Whitaker. 1637, 485.  
 Note:                      Showing a large number of interconnected waterways.

Illustration 31                      Page 213A

Title:                      “River use today.”  
 Source:                    Peter Knowles, *Pub Paddles*. Keswick: Rivers Publishing. 2010, 44.  
 Copyright:                © Peter Knowles. 2010.  
 Note:                      Showing the popularity of a present day river.