

Civil Engineering Heritage Scotland – Lowlands and Borders



Royal
Commission on the
Ancient and
Historical
Monuments of
Scotland

R. Paxton
and J. Shipway

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Scotland – Lowlands and Borders

Published for the Institution of Civil Engineers by Thomas Telford Ltd,
Thomas Telford House, 1 Heron Quay, London E14 4JD

First published 2007

A CIP record exists for this book

ISBN: 978-0-7277-3487-7

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Typeset by Academic + Technical, Bristol

Printed and bound in Great Britain by MPG Books, Bodmin, Cornwall

Foreword

The contribution of the civil engineer to the creation of the fabric of our civilisation has been immense. From land drainage to land forming; from river training to flood defences; from lighthouses to offshore oil rigs; from mill races to hydro schemes; from waggonways to high-speed rail links; from cart tracks to motorways; from fishing ports to container terminals; from standpipes and wells to piped water supply schemes for cities, these are the very building blocks of the quality of life: our life support systems.

Scottish civil engineers have been major players in the transformation of Britain from a rural agrarian community to one of the strongest economies in the world, and Scotland has offered challenges of geography and geology that civil engineers have been inspired to overcome, bridging the great river estuaries; building dams in inhospitable mountainous terrain; driving roads, canals and railways through fearsome ground conditions, often in extreme weather. This is truly a story of transformation that has maintained Scotland's place as a vibrant and successful economic unit within Europe, despite being at its outer edge.

The record of this remarkable achievement is all around us and this volume is a gazetteer and guidebook to inform anyone with an interest in civilisation.

It is a privilege for me to write this foreword for many reasons: as the 141st President of this Institution in direct line from our first President, another Scot, the great Thomas Telford; as the 23rd President to be born in Scotland (Scots have a very creditable share of the highest honour bestowed on civil engineers); as a Commissioner on the Royal Commission on the Ancient and Historical Monuments of Scotland (many of the illustrations coming from this fine organisation); as a friend and occasional collaborator with the editors; and as an enthusiast and supporter of engineering history.

Understanding the past is the key to managing the future. Without this retentiveness, as George Santayana has said, 'those who cannot remember the past are condemned to repeat it'. This book is essential reading, not just for civil engineers but for all historians, social commentators, industrial archaeologists, economists, politicians and those with a general interest in the history and development of Scotland. It describes the visionary projects

that created the opportunities for trade and wealth creation; it records Scotland's achievements as a civilisation – for what is this if not the enduring memorials of what we build; it celebrates the charismatic and persuasive men of genius that could see beyond the status quo to a new paradigm – the civil engineers who laid down the foundations of the civilised world we enjoy today.

Gordon Masterton

President 2005–06

Institution of Civil Engineers

Preface

This is the penultimate book in the *Civil Engineering Heritage* series for the United Kingdom and Republic of Ireland. It is essentially a brief inventory or guide to our selection of historical engineering works executed in Scotland during the last six centuries and contains much new information based on site visits and historical research.

As a general rule for inclusion in this series, historical engineering works (HEWs) have to be at least 30 years old, but we have made occasional exceptions, for example, the Falkirk Wheel because of its context in restoring the historic canal link between Edinburgh and the Clyde. Most works date from the start of modern civil engineering with the Industrial Revolution. John Smeaton, who is believed to have been the first person to begin describing himself as a 'Civil Engineer' from ca.1754, often dubbed the 'father of civil engineering', made a significant contribution to the Lowlands and Borders infrastructure through the Forth & Clyde Canal, and various bridges and harbours.

Most of the entries bear a HEW number. This relates to records of the work made (mostly yet to be written up), by members or helpers of the Panel for Historical Engineering Works (PHEW) of the Institution of Civil Engineers and curated at its library at Westminster. The reader is referred to these, where they exist, and the 'Further reading' references for more information.

The entries have been arranged geographically in seven chapters progressing more or less from south to north in a sequence convenient for visiting. Coverage starts in Chapter 1 with the Mull of Galloway Lighthouse and concludes in Chapter 7 with the Tay bridges at Dundee. The areas covered, shown on the chapter maps, largely follow the Scottish regional boundaries set up under the 1973 Local Government Act, although not necessarily under the names designated at that time. Coverage aggregates loosely to that of the Lowlands and Borders, except for a Baedeker-like excursion into the Perthshire valleys of the Tay and its tributaries and a sortie into Berwick-upon-Tweed. Angus and Aberdeenshire have been included in the companion book on the Highland and Islands, for which there is a precedent in John Hume's two-volume *The Industrial Archaeology of Scotland*, 1976-7 (Batsford, London).

For each work we have given its location, scale, the names of its Engineer and Contractor where known, and our comment. To help illustrate the written word we have included more than 300 images and have occasionally leavened entries with a little digressive seasoning and a line or two of verse! Here and there are examples of earlier works at the same site where significant in terms of their engineers or genre, for example, the development of engineering practice at Leith Docks from 1800-1970 (3-50), and the first publication of James Watt's drawing for long gone Rutherglen Bridge (4-17).

Every effort has been made to trace the origin of the illustrations but, given the wide variety of sources, it is possible that some information and ascribed acknowledgements are incorrect or incomplete. We should therefore be pleased to hear from anyone with information which either corrects or enhances that provided. Copyright acknowledgements appear under each image in our cases, our respective names. A 'Further reading' reference number indicates that copyright is believed to be with the reference author. Unless indicated otherwise, the illustrations have been scanned from images in Roland Paxton's possession.

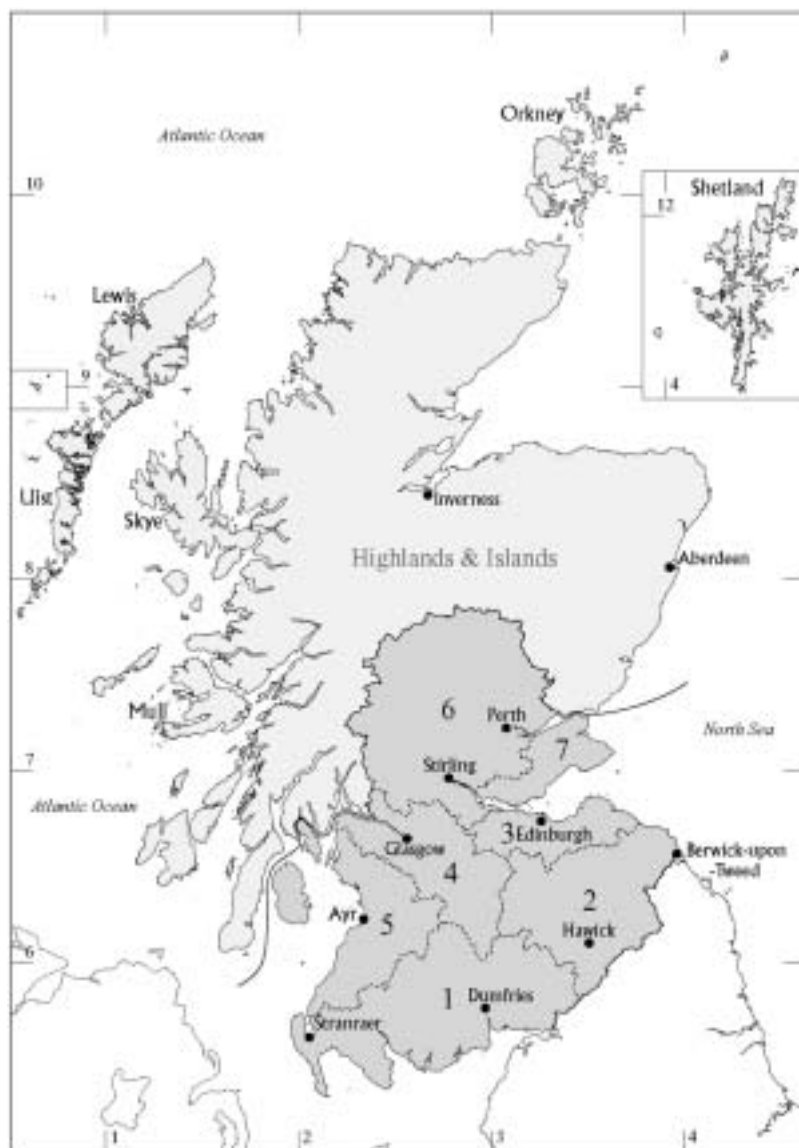
We acknowledge a significant input into this book from the PHEW Scottish Group Members past and present; the ICE Library; the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) via Miles Ogelthorpe for supplying the maps and numerous high-quality images and Heather Stoddart the originator of the maps; the School of the Built Environment at Heriot-Watt University for its research and manuscript preparation facilities and Thomas Telford Publishing via Ben Greshon and Stephen Nixey. We thank them and the many other persons and organisations listed in the acknowledgements, for their enthusiastic and valuable support.

In conclusion, we hope that the book will serve not only for reference but also, as many of the works are in picturesque locations, as a recreational guide, and that it will convey an idea of the invaluable contribution of civil engineering to the transport, water and power infrastructure of our civilisation which is so essential to Scotland's well-being and yet so often taken for granted!

Roland Paxton
Jim Shipway

Acknowledgements

Alex Anderson; Jim Arnold; Geoffrey Bailey; Barr Limited; Maurice Berrill; Birmingham City Archives; Ronald Birse; Cameron Black; Blyth & Blyth; Jim Bowie; British Aluminium Co. Ltd; British Waterways; Buccleugh Estates Office Langholm; D. Buchan; Norman Butcher; Sam Callander; Richard Chown; Mike Chrimes; City of Edinburgh Council Bridge Maintenance Dept; G. Cobb; Claire Cook; Jim Cornell; James Crawford; Peter Cross-Rudkin; Crouch, Hogg, Waterman; Ross Cunningham; Lorna Davidson; David Devereux; Tom Dougal; Dumbarton Council; Paul Dunkerley; *The Engineer*; *Engineering*; Chris Ford; David Forfar; Robert Fraser; Fay Fyfe; Michael Gould; Halcrow Group Ltd; A. D. Harper; Steve Hawkin; John B. Henderson; Alex Heron; John Hume; the Institution of Civil Engineers Library staff; Bill Jamieson; Willie Johnston; Michael Jones; John Kerr; Steve Kirkcaldy; Ian McDougall; David G. C. Mackenzie; Gordon Masterton; Sir William McAlpine Bt; Sir Robert McAlpine Ltd; Richard McBay; Kenneth McCrae; Robert McWilliam; Hamish Mearns; David Middleton; the late Norman and Margaret Miller; G. A. Milne; Ian Moffat; Carol Morgan; Motherwell Bridge Company; Bob Mowat; Network Rail; New Lanark Conservation Trust; the late Ronald Noble; the North of Scotland Hydro-Electric Board; the Northern Lighthouse Board; the late Brian O'Laughlin; Miles Oglethorpe; Anne Ormston; Sandra and Bill Purves; the Railway Heritage Trust; W. M. Reid; *Roads and Road Construction*; the Royal Commission on the Ancient and Historical Monuments of Scotland; the Royal Highland & Agricultural Society of Scotland; Ted Ruddock; the late Peter Russell; Scottish Power – Galloway Hydros Visitor Centre; David Small; Duncan Sooman; Sorn Castle Estate Office; Geoffrey Stell; Duncan Stirling; Jim Stirling; Heather Stoddart; Matthew Stoddon; Colin Stove; Strathclyde Regional Council Water Services; *The Structural Engineer*; Peter Stubbs; Tayside Regional Council Roads Department; Transco Scotland, Provan Works; Alastair Turner; David M. Walker; A. A. Cullen Wallace; Charles Waterston; Anne and George Watson; Mark Watson; Alastair White; John Williamson; George Wilson; Mike Winney; and the late Alan Woodhead.



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|--|---|
| 1. Dumfries and Galloway | 5. Ayrshire and Bute |
| 2. Scottish Borders and Berwick-upon-Tweed | 6. Stirling, Perthshire and Kinross, and Clackmannanshire |
| 3. Lothian and Edinburgh | 7. Fife |
| 4. Lanarkshire and Glasgow, Renfrewshire, and Dunbartonshire | |

Contents

Foreword	iii
Preface	v
Acknowledgements	vii
Metric Equivalents	xi
1. Dumfries and Galloway	1
2. Scottish Borders and Berwick-upon-Tweed	59
3. Lothian and Edinburgh	108
4. Lanarkshire and Glasgow, Renfrewshire, and Dunbartonshire	181
5. Ayrshire and Bute	273
6. Stirling, Perthshire and Kinross, and Clackmannanshire	295
7. Fife	347
Note on Authors	375
Name Index	377
Subject Index	383

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To Ann Paxton for her patience and support

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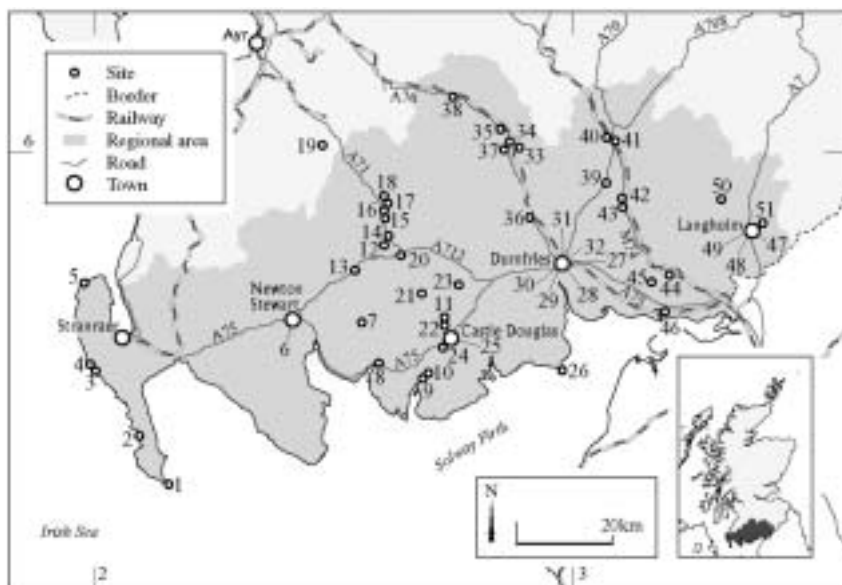
Title page: Maryhill Locks and Kelvin Dry Dock (British Waterways Scotland)

Metric equivalents

Imperial measurements have generally been adopted to give the dimensions of the works described, as this system was used in the design of the great majority of them. Where modern structures have been designed to the metric system, these units have been used in the text.

The following are the metric equivalents of the Imperial units used.

Length	1 inch = 25.4 millimetres 1 foot = 0.3048 metre 1 yard = 0.9144 metre 1 mile = 1.609 kilometres
Area	1 square inch = 645.2 square millimetres 1 square foot = 0.0929 square metre 1 acre = 0.4047 hectare 1 square mile = 259 hectares
Volume	1 gallon = 4.546 litres 1 million gallons = 4546 cubic metres 1 cubic yard = 0.7646 cubic metre
Mass	1 pound = 0.4536 kilogram 1 Imperial ton = 1.016 tonnes
Power	1 horsepower (hp) = 0.7457 kilowatt
Pressure	1 pound force per square inch = 0.06895 bar



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Dumfries and Galloway

- | | |
|---|--|
| 1. Mull of Galloway Lighthouse | 27. Dumfries Suspension Bridge |
| 2. Port Logan Mole and Lighthouse | 28. River Nith Caul, Dumfries |
| 3. Portpatrick Harbour | 29. Devorgilla Bridge, Dumfries |
| 4. Laird's Bay Cable House, Port Kale | 30. Buccleuch Street Bridge, Dumfries |
| 5. Corsewall Lighthouse | 31. Arrol-Johnson Works, Heathhall |
| 6. Cree Bridge, Newton Stewart | 32. Dumfries Railway Station |
| 7. Big Water of Fleet Viaduct, Gatehouse | 33. Carron Viaduct |
| 8. Port McAdam and the Fleet Canal, Gatehouse | 34. Drumlanrig Tunnel |
| 9. Tongland Bridge, Kirkcudbright | 35. Enterkinfoot Retaining Wall |
| 10. Tongland Dam | 36. Auldgirth Bridge |
| 11. Glenlochar Barrage | 37. Creel Bridge, Drumlanrig |
| 12. Glenlee Tunnel | 38. Knockenjig Waste Treatment Plant, Kirkconnel |
| 13. Clatteringshaws Dam | 39. Raehills Three-way Footbridge, St Ann's |
| 14. Earlstoun Dam | 40. Beattock Bridge |
| 15. Carsfad Dam | 41. Beattock Inn |
| 16. Kendoon Power Station | 42. Dinwoodie Toll House |
| 17. Ken Dam | 43. Dinwoodie Green Milestone |
| 18. Deuch Dam | 44. Mein Water Bridge, Ecclefechan |
| 19. Loch Doon Dam | 45. Hoddom Bridge, Ecclefechan |
| 20. Ken Bridge, New Galloway | 46. Annan Bridge |
| 21. Loch Ken Viaduct, Parton | 47. Skippers Bridge, Langholm |
| 22. Glenlochar Bridge | 48. Langholm Bridge |
| 23. Glenlair Bridge | 49. Duchess Bridge, Langholm Lodge |
| 24. Old Bridge of Dee | 50. Westerkirk Parish Library, Bentpath |
| 25. Threave Bridge, Castle Douglas | 51. Malcolm Monument, Whita Hill |
| 26. Southernness Lighthouse | |