Durham geodiversity audit

Prepared for Durham County Council by the British Geological Survey

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The British Geological Survey

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Cover photograph: Exposures of 'Second Grit' in banks of River Derwent, Shotley Bridge.

Lists of sites in this document have been compiled from previous reviews of the area's geology, published literature sources, BGS archives etc. Sites have been selected for their representativeness and geological merits. Their listing implies no rights of access. In all instances access must be arranged in advance with the appropriate land owner.

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Thanks go to the following organisations and societies who have been consulted during the compilation of this Audit:

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The North Pennines AONB Partnership

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North East Geological Society

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North Pennines Heritage Trust

Friends of Killhope

Weardale Society

Weardale Field Studies Society

Weardale Museum

Middleton Plus

Durham Dales Mining Group Teesdale Records Society Teesdale Heritage Group

Foreword

For many hundred years County Durham has been justifiably proud of the rich variety of rocks and landform features that are found within the area. As far as is known, the word 'geologia' or 'earthly science' was coined by a former Bishop of Durham, Richard de Bury, in the fourteenth century. It is thus fitting that the County Council should have been the first local authority to produce a Geological Conservation Strategy, a document which was published in 1994.

Ten years on, this much more detailed Geological Audit of County Durham has now been written describing the range of geological features to be found within the County. In many ways it is a comparable document to the Durham Wildlife Audit which was produced in partnership with English Nature in 1995. A Geodiversity Action Plan for County Durham is currently in preparation and will be produced as an Appendix to this document.

The County is grateful to both the Aggregates Levy Sustainability Fund for financing this project and to the British Geological Survey for its excellent work in compiling the contents. In highlighting the geological importance of the County and the need for its conservation we greatly hope that the residents of County will find these documents to be both

informative and interesting.

Councillor Bob Pendlebury, OBE, DL Cabinet Member, Durham County Council

Increasing pressure on land and the environment demands a greater awareness and understanding of the dynamics of our natural world in order to deliver a sustainable environment for the future. Biodiversity, and the need for Government to recognise, audit and plan for habitat and ecology is widely accepted and enshrined in legislation. However the complementary concept of Geodiversity is only now gaining recognition.

The British Geological Survey is proud to be associated with this Audit which represents the first fully comprehensive geodiversity statement for County Durham.

David A Falvey, PhD Executive Director, British Geological Survey June 2004

Rear cover text:

This Geodiversity Audit has been prepared by the British Geological Survey, in collaboration with Durham County Council, with funding from the Aggregates Levy Sustainability Fund (ALSF) administered by the Minerals Industry Research Organisation (MIRO) via the Office of the Deputy Prime Minister.

The Geodiversity Audit presents the results of a detailed evaluation of the geological and geomorphological features of the county. In so doing the wide spectrum of geological features are considered both as key factors in appreciating and explaining the county's earth science, and also as essential elements vital to the true understanding of the full range of natural and man-made features which characterise County Durham. Like its predecessor, the County Durham Geological Conservation Strategy, the present document is one of the first Geodiversity Audits to be undertaken on behalf of a County Council.

A guide to this audit

This document seeks to address geodiversity in its very broadest sense.

As the single most important factor in determining the county's physical characteristics and providing its abundant natural resources, the fundamental importance of the underlying geology cannot be overestimated.

Although dealing with a varied, and sometimes complex, range of issues relating to earth science, this Geodiversity Audit is not targeted solely at practitioners in earth science, but is intended as a source of information and guidance for a wide range of planning, management, conservation and interpretation interests.

At the heart of the county's geodiversity is the succession of rocks, which together comprise and characterise County Durham. To these may be added the geological structures, phenomena and processes which, over millions of years of earth history, have shaped and continue to shape them today.

This document does not seek to offer a detailed geological description of County Durham but introduces those aspects of the geology, which are essential to appreciating their importance in the county and beyond.

Part 1 serves as an introduction to the concept of geodiversity and in particular its relevance and application in County Durham.

Part 2 is a detailed evaluation of the county's geodiversity. Within each geological topic the relevant issues are addressed under a series of headings. General observations or comments of national or wider relevance are followed by comments which relate specifically to the county.

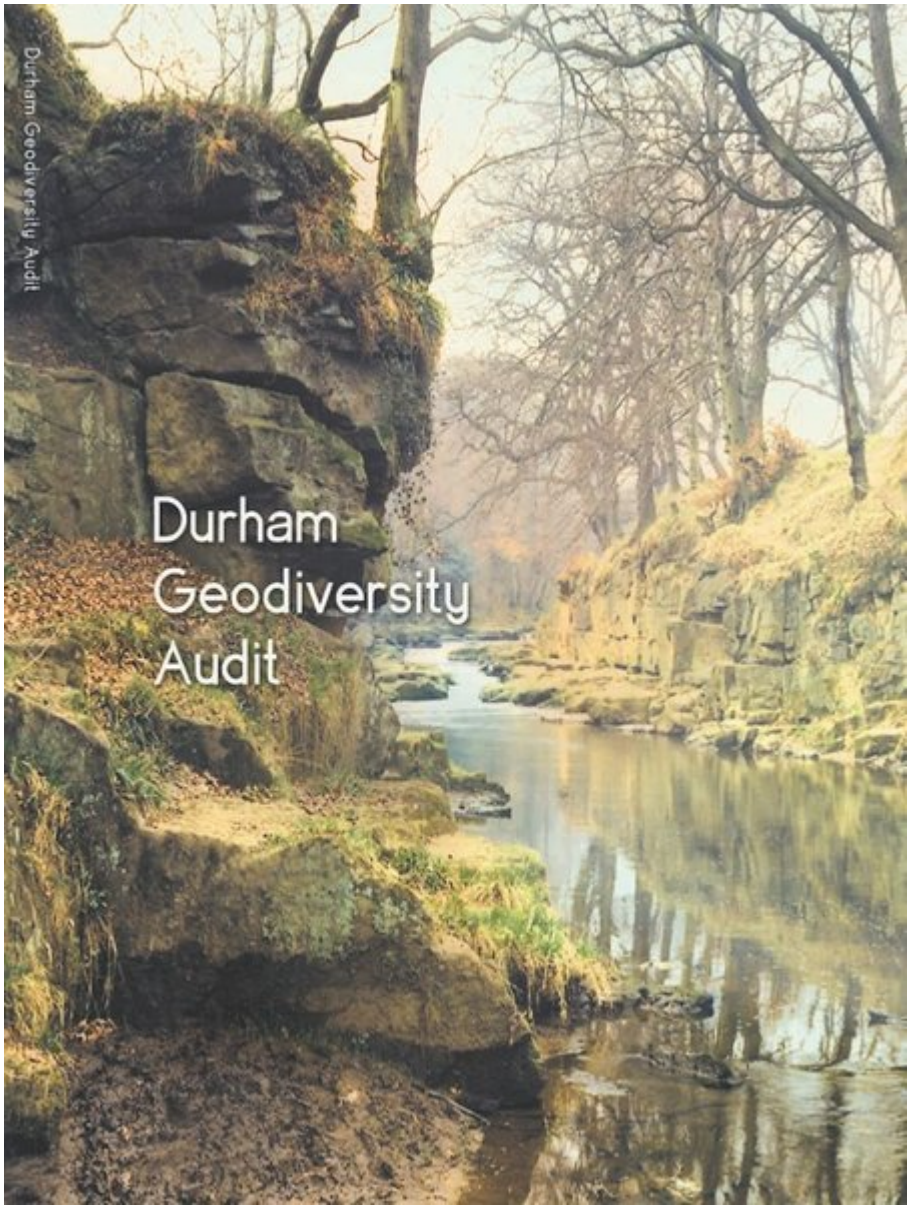
A small selection of key references is given for each topic. These are mainly major reviews or syntheses of the area's geology which present the most easily accessible overview of the topic under which they are listed. Comprehensive

literature references are to be found within the texts cited.

In preparing this document the use of technical jargon has been kept to a minimum, though the use of some geological terms is unavoidable in places. To assist readers unfamiliar with such terms a glossary is provided.

In the pages which follow the terms 'earth science' and 'geology' are taken to embrace the widest spectrum of earth science disciplines, including geology, palaeontology, mineralogy, geochemistry, geophysics and geomorphology.

Full references



(Front cover) Front cover. Exposures of 'Second Grit' in banks of River Derwent, Shotley Bridge.