

---

# Doncaster Geodiversity Assessment Volumes 1&2

Doncaster Geodiversity Assessment Volume 1 – Report

S Engering and H F Barron Contributors

A H Cooper Editor

Geology and Landscape South Programme Commissioned Report CR/07/025N

The National Grid and other Ordnance Survey data are used with the permission of the Controller of Her Majesty's Stationery Office. Licence No: 100017897/2007.

Keywords Geodiversity; Doncaster.

Front cover Permian Bryozoan reef, North Cliff Quarry, Doncaster

Bibliographical reference Engering, S & Barron, H F. 2007. Doncaster Geodiversity Assessment. British Geological Survey Commissioned Report, CR/07/025N. 139pp.

Copyright in materials derived from the British Geological Survey's work is owned by the Natural Environment Research Council (NERC) and/or the authority that commissioned the work. You may not copy or adapt this publication without first obtaining permission. Contact the BGS Intellectual Property Rights Section, British Geological Survey, Keyworth, e-mail [ipr@bgs.ac.uk](mailto:ipr@bgs.ac.uk). You may quote extracts of a reasonable length without prior permission, provided a full acknowledgement is given of the source of the extract.

Maps and diagrams in this report use topography based on Ordnance Survey mapping.

© NERC 2007. All rights reserved Keyworth, Nottingham British Geological Survey 2007

The British Geological Survey is a component body of the Natural Environment Research Council.

## Foreword

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 the Government to recognise, audit and plan for habitat and ecology is widely accepted and enshrined in UK legislation. However, the importance of the complementary concept of Geodiversity is only now gaining recognition, despite providing the foundations for habitats and species.

Geodiversity has a vital role in all aspects of the natural heritage and impacts on many sectors in economic development and historical and cultural heritage. For example, in the development of sustainable eco or geo-tourism (UNESCO Global Geoparks), Strategic Environmental Assessment, local authority structure and mineral plans, building stone resources, education and art.

Nationally important geological sites have been assessed and are protected by statutory measures, but other than Regionally Important Geological and Geomorphological Sites (RIGS) in some areas, there is little systematic inventory and evaluation of local sites or development of management measures for these sites. The introduction of Planning Policy Statement 9 (PPS9): Biodiversity and Geological Conservation has elevated the importance of geodiversity to a new level in England and Wales.

This report produced by the British Geological Survey seeks to address the aims of PPS9 and provides a foundation for developing a Doncaster Geodiversity Action Plan.

## **Acknowledgements**

The authors wish to express their thanks to Helen McCluskie, Steve Butler, Colin Howes and Elaine Ward of Doncaster Metropolitan Borough Council for support and advice throughout the project and to Tony Gibbs of the Derbyshire Caving Association for information on the cave systems.

Also thank you to the workshop attendees Cllr Yvonne Woodcock, Melissa Massarella, Donna Halliday, Roy Sykes, Tim Kohler, Mick Oliver, Rachel Overfield and David Edwards for their contributions.

The field work could not have taken place without the co-operation of the various landowners and quarry operators; their permission is gratefully acknowledged.

## **Contents**

Foreword

Acknowledgements

Contents

Summary

### **1 Introduction**

1.1 Project background

1.2 Project objectives

1.3 Legislative and policy context

### **2 Geodiversity and its importance**

2.1 Geodiversity – why is it important?

### **3 The Geology of Doncaster**

3.1 Introduction — Bedrock

3.2 Introduction — Quaternary

3.3 Geology and landscape – natural areas

3.4 Carboniferous

3.5 Permian

3.6 Triassic

3.7 Neogene (Quaternary)

3.8 Structure

### **4 Mineral resources**

4.1 Introduction

4.2 Resources and reserves

4.3 Sand and gravel

4.4 Crushed rock aggregates.

4.5 Industrial dolostone

4.6 Brick clay, including fireclay

4.7 Building stones

4.8 Coal

4.9 Peat

4.10 Hydrocarbons

## **5 Groundwater resources**

5.1 Overview

5.2 Permian Yellow Sands, Cadeby and Brotherton formations

5.3 Triassic Sherwood Sandstone Group

5.4 Quaternary superficial deposits

## **6 Geodiversity of Doncaster**

6.1 Site of Special Scientific Importance (SSSI)

6.2 Regionally Important Geological/Geomorphological Sites (RIGS)

## **7 Sources of information**

7.1 BGS maps

7.2 South Yorkshire RIGS Group

7.3 Doncaster Council

7.4 Project GIS

## **8 Glossary**

## **9 Selected bibliography**

9.1 General geodiversity

9.2 Geology of Doncaster

## **Appendix UKRIGS field record and site assessment**

A1 D6 Denaby Lane

A2 D166 Doncaster Road

A3 D177 Wath Road Railway Cutting

A4 DR2 Harlington Railway Cutting

A5 DR3 Cadeby Waste Water Works

A6 DR1 Denaby Woods/Mexborough Oxbow Lake

A7 DR6 Barnburgh Cliff

A8 D11 Hazel Lane Quarry

A9 D4 Watchley Craggs

A10 D15 Melton Park

A11 D133 Hooton Pagnell

A12 D13 North Cliff Quarry

A13 D5 Hooton Pagnell Village Pound

A14 D20–D22 Cadeby Cliff/Constitution Hill

A15 D112 Parknook Quarry

A16 D28 Pot Ridings Wood Railway Cutting

A17 DR5 Levitthagg Wood

A18 D94 Warmsworth Quarry

A19 D78 Warmsworth Park

A20 DR4 Nearcliff Wood Quarries

A21 D300 Conisbrough Caves East

A22 D301 Conisbrough Caves West

A23 D302 Conisbrough Caves South

A24 D303 Levitt Hagg Hole

A25 D61 New Edlington Brick Pit

A26 D31 Leys Hill Bridge

A27 D51 Hexthorpe Flatts — The Dell

A28 D87 Brodsworth Quarry

A29 D99 Skelbrooke Quarry

A30 D44 Cedar Road Adventure Playground

A31 D101 Dunsville Quarry

A32 D102 Common Lane Quarry

A33 D190–192 Blaxton Common

A34 D109 Hurst Plantation Quarry

Table 1 The sequence of superficial deposits in the Doncaster area

Table 2 Summary of Doncaster RIGS and potential RIG site

Table 3 Digital datasets used in the project GIS

Figures 1–13 Volume 2

Figures 14–163 Volume 1

## Summary

This report describes a resurvey of Doncaster's RIGS (Regionally Important Geological and Geomorphological Sites) commissioned by Doncaster Metropolitan Borough Council (DMBC). It updates and expands the 1997 South Yorkshire RIGS Group survey of geologically important areas in Doncaster Barnsley and Rotherham.

Since 1997 the concept of geodiversity has moved up the planning agenda. The recent Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9), which places equal weight on biodiversity and geodiversity is a key driver in this process. The report will allow DMBC to develop a Doncaster Geodiversity Action Plan and incorporate this within the Local Development Framework.

RIGS resurvey work took place between January and March 2007. Site assessment data was collected using the UKRIG Site Assessment Form and entered into the UKRIGS GeoConservation database. Problems were encountered in using this database, especially importing and exporting data and the translation into a user-friendly report format. The database entries have been exported and appended to ESRI shape files for use in Geographic Information Systems (GIS).

Of the 28 sites listed in 1997, 23 are recommended for continued designation as RIGS, while five sites are proposed for removal from the list. Six new sites were surveyed and are recommended for designation as RIGS, bringing the total RIGS in Doncaster to 29. The new sites are:

- DR1-Denaby Woods–Mexborough Oxbow Lake
- DR2-Harlington Railway Cutting
- DR3-Cadeby Waste Water Works
- DR4-Nearcliff Wood Quarries
- DR5-Levitt Hagg Wood
- DR6-Barnburgh Cliff