
5 Geodiversity site selection

5.1 Existing designated sites

The geology within the study area has been discussed and considered for over 200 years. It is presented in a wide variety of scientific, conservation and general publications that, coupled with local knowledge and recent geodiversity studies for parts of the area, provide a sound basis for this study. The major sources of information consulted are listed, with brief synopses, in Appendix 2.

Most important, there is a strong record of geological conservation within the area by local councils, Durham County Council and national bodies such as Natural England (mostly in its former guise of English Nature) and the Joint Nature Conservation Committee. In the 1980's, Sunderland Borough Council, in co-operation with the Nature Conservancy Council and the British Trust for Conservation Volunteers preserved eight key localities in the magnesian limestone reef, most of which are now listed as SSSIs. Durham County Council was the first local authority to produce a Geological Conservation Strategy, published in 1994. This lists 20 County Geological sites within the area which are locally significant in terms of earth science conservation (see Appendix 3). Local Sites have been designated for their geodiversity interest by local councils, The Durham Wildlife Trust and by RIGS (Regionally Important geological and Geomorphological Sites) groups <https://geoconservationuk.org/>. The discovery and preservation of the Sunderland North Dock Tufa RIGS is cited as a case study of earth science conservation in an urban development (Fenwick and McLean in Bennet et al., 1996). The Tees Valley RIGS Group ([Tees Valley RIGS Group](#)) is active in the very south of the area, but there is currently (April 2009) no active RIGS presence further north. Reserves and sites of national and international importance have been approved by Natural England and European bodies. More comprehensive discussion of each of these types of site can be found in recent geodiversity publications for the area (Lawrence et al., 2003 and Young, 2008).

Very many such sites have been identified for biodiversity or geological conservation within the project area, although not necessarily in strict accord with the recent Defra Local Site Guidance (2006). There is also geodiversity interest in a number of the sites designated for a non-geological reason.

The scientifically most important sites are those identified in the Geological Conservation review. The Geological Conservation Review (GCR) was initiated by the Nature Conservancy Council in 1977 to identify, assess, document and eventually publish accounts of the most important parts of Great Britain's rich and varied geological heritage. GCR sites are those of national or international importance. Almost all the sites within the Limestone Landscapes area meet at least two of the main selection criteria, and some sites satisfy all the criteria for GCR sites. Twenty-two GCR sites have been recognised in the study area (see Appendix 2) and subsequently designated as SSSIs. Seventeen of the sites are Marine Permian sites, representing two-thirds of all the GCR sites of this type nationally. Several of these are without parallel in the UK and Western Europe and are considered to be of international importance, i.e. Blackhall Rocks, Claxheugh Rock and Ford Quarry, Fulwell Hills Quarry and the coastal cliffs of Trow Point to Whitburn Steel (Smith, 1994). Many of the SSSIs in the area are type localities and lend their name to established stratigraphical nomenclature for the Upper Permian sequence. These include Ford Quarry (Ford Formation), Seaham Harbour (Seaham Formation) and Raisby Hill Quarry (Raisby Formation).

Coastal geomorphological processes and landforms are also well represented along the Tyne & Wear coastline from Trow Point to Whitburn Bay and sites important for demonstrating Pleistocene and Quaternary deposits also occur further south along the coast at Warren House Gill and Shippersea Bay. Lastly, small sections of the underlying Carboniferous Coal Measures are exposed along the Wear River Bank at Sunderland. This section exhibits the best permanent exposure of the Carboniferous Permian interface in the region, as the Upper Carboniferous strata and the basal layer of the Permian sequence (Yellow Sands Formation) are represented together.

The sites are described in the following published GCR volumes:

No. 8 Marine Permian of England Smith, D.B.1995 Huddart, D. and Glasser, N.F. (2007)

No. 9 Palaeozoic Palaeobotany of Great Britain, Cleal, C.J. & Thomas, B.A., (1995),

No. 10 Fossil Fishes of Great Britain Dineley, D. & Metcalf, S., (1999)

No. 11 British Upper Carboniferous Stratigraphy, Cleal, C.J. & Thomas, B.A., (1996)

No. 16 Fossil Reptiles of Great Britain, Benton, M.J. & Spencer, P.S., (1995)

No. 25 Quaternary of Northern England, Huddart, D. and Glasser, N.F. (2007)

No. 28 Coastal Geomorphology of Great Britain May, V.J. and Hansom, J.D. (2003)

The site descriptions in these volumes are accompanied by an extensive bibliography.

Natural England also hold 'Geological site Documentation and management briefs' for each of the SSSIs which contain detailed information about the sites and were made available for consultation (listed in Appendix 2).

5.2 Selection of sites for limestone landscapes

It is not so much a question of finding sufficient sites, but more one of how to identify which of the multitude of sites are most appropriate for the task in hand. It goes without saying that the geodiversity at GCR sites and geological SSSIs is of great scientific importance; it does not, however, mean that they are all suitable for interpretation or development. They still remain an important part of the geodiversity of the region and need to be preserved, made available and perhaps better advertised to the geological community but existing conservation measures should already be in place for this. On the other hand, some GCR sites would be most appropriate for interpretation and development as part of Limestone landscapes.

The initial brief was for the identification of up to 25 sites which best represented the geodiversity of the area. However, in order to ensure continuity and connectivity with other aspects of the natural heritage and community usage, it was agreed at the first review meeting that it would be most appropriate to prepare a more comprehensive list of sites categorised by geodiversity quality. For example, two adjacent quarries might display the same geological feature, quarry one better than quarry two. But quarry two might display additional natural heritage features, already have community use and thus be a better option for developing geodiversity potential as part of a holistic scheme. Consequently, although some proposals are made for actions and management at sites, these must be considered as provisional until viewed in the wider context of the Limestone Landscapes Action Plan. Extensive discussion with community groups and interested parties will be needed to ensure that the best sites are selected with the prospect of medium to long term sustainability. Several of the sites recommended are SSSIs and it is vital that Natural England are involved with any plans for these.

The selection of sites has been in part guided by the recent report "GeoValue: Valuing Geodiversity for the Community" (Scott et al 2007c;). This includes discussion of a number of criteria for site selection including those recommended by RIGS and the Geodiversity profile handbook (Scott et al., 2007a;

However, of overriding importance for the purpose of this study it is believed that the geodiversity at the location should:

- Be sufficiently clear /obvious/observable that, given appropriate interpretation or explanation, a non geologist will be able to recognize it.
- Have geodiversity features that are believed to be sufficiently robust to embrace community use of the areas.
- Be accessible and could link with Access to Nature
- Where possible link to other aspects of the environment and to other geodiversity sites.
- Be suitable for educational use at a variety of levels. Where possible links in with existing or proposed community initiative/space. It is hoped that nature-based voluntary and community organisations and locality-focused groups will be able to use the sites selected as a 'bridge' for wider community involvement.
- Have potential to engender local pride in the natural heritage.

This study concludes that, for the most part, a selection made from those sites (in some cases enclosing considerable areas) that already hold some form of nature or community designation, or are candidates for such designation, should enable a very good representation of the geodiversity to be conserved, presented and interpreted. It is felt that it would be most appropriate for a combination approach of mainly enhancing existing geological sites while developing some others where the geological interest is not the main reason for designation, for examples quarries featured in the MAGical Meadows project.

The locations selected include:

- Natural outcrops
- Coastal sections
- Disused quarries
- Working quarries
- Sites with heritage/biodiversity/cultural links

The sites have been divided into three broad categories:

1. Those that have important and well-displayed geodiversity, generally have good access, would be appropriate for some form of interpretation and in many cases have links with other heritage features.
2. Those that have good geodiversity, often paralleling that in some of the sites in category 1, but probably are not as convenient or do not have such good heritage links. Consultation with communities and detailed consideration of other natural heritage or greenspace issues might promote some of these to category one. Most would be suitable for inclusion in themed trails or as viewpoints.
3. Sites that mostly have scientific importance, but are perhaps too specialised or have poor access for general use. Some could be incorporated in local trails or education initiatives.

Some sites, such as SSSIs, already have extensive descriptions available. Such information is not duplicated here, but supplemented where appropriate.

[References](#)