Mines and quarries

Mineral products have been worked in the district since at least Roman times. Minerals are important natural resources that make an essential contribution to the nation's prosperity and quality of life. Their extraction contributes to the local economy through direct employment and as raw materials for industry and construction. The district's varied mineral resources and localities at which they have been worked are an important aspect of its geodiversity. Exposures in mines and quarries provide unique opportunities to see and study local rocks. Mineral exploitation has contributed, and continues to contribute, much to the district's essential character and landscape. Mineral working can, however, cause major disturbance to the environment and people's living conditions. Whereas its impact on the landscape has been generally less than in the nearby Northumberland Coalfield and Northern Pennine Orefield, the legacy of mining and quarrying is conspicuous in several places. Mining has ceased, but quarrying continues to be an important part of the local economy, though modern planning constraints greatly reduce the industry's most obvious visual impacts.

Whilst strict conditions and controls are applied to the approval and operation of all mineral operations in the UK, the special status of National Parks requires mineral planning applications to be subject to the most rigorous examination and operations to be planned and operated with particular sensitivity. A Minerals Local Plan provides the policy framework for the extraction of minerals in the Northumberland National Park and was adopted in 2000. This will, in due course, be replaced by a Local Development Framework.

The mode of occurrence of the rocks and minerals of the district, and their economic contribution to it, are described in earlier sections of this report. The following rocks and minerals are known to have been worked in the district:

- Ores of iron, lead, and zinc
- The non-metalliferous minerals witherite, barytes
- Limestone, sandstone, dolerite and other igneous rocks, coal, fireclay and brickclay, peat, sand
- and gravel.

The contribution of mineral extraction to the geodiversity of the district is considered below:

Abandoned quarries

Abandoned quarries may be regarded as essential and distinguishing features of the present day landscape.

The diverse geology of the region has meant that it has a long history of quarrying that has taken a range of forms. Small quarries clearly utilised for building stone are found spread widely across the region. In building dry-stone walls and farm buildings, it was common practice to obtain stone from as close as possible to the construction site. Thus, small pits are common alongside many lengths of wall, or close to farms or hamlets. These all used simple technology, and it is difficult to date their use.

Stone was not only used for building, but also a range of other products including millstones and troughs. Many millstone quarries are known, often only through map or documentary evidence, though at some sites, such as Beanley Moor and Harbottle Crags, semi-completed millstones are still visible.

Limestone was also often burnt for field lime, and it is common to find quarries associated with limekilns. Substantial quarries and kilns can be seen, for example at Tossen, Greenchesters [NY 87287 94264], near Walltown and at Crindledykes [NY 781 670]. A Roman limestone quarry and kiln have been identified near Greenlee Lough [NY 769 698]. Improved communications and transportation made local kilns uneconomic but limestone was still being burnt in the 1950s in the Redesdale Limestone quarries at Buteland [NY 880 816].

Certain geological units have attracted particular economic interest; numerous substantial quarries mark the outcrops of the Great Limestone, the Whin Sill, and several of the Carboniferous sandstones. Opened in 1876, Walltown Quarry, on

the Whin Sill, was the largest ‘whinstone’ quarry on Hadrian’s Wall. It and the rather smaller Cawfields Quarry to the east have been restored and landscaped while maintaining faces exposing the Whin Sill and adjacent rocks.

As disused quarries provide some of the most important, and several unique, sites at which certain rock units may be seen, they contribute greatly to the area’s geodiversity. In some instances their biodiversity interest may be significantly greater than their geodiversity interest.

Abandoned quarry floors and faces offer a variety of substrates for specialised plant communities, including sites for lichens and other lower plants. They frequently offer excellent nest and roost sites for a variety of bird species, and may provide important bat roosts. Flooded quarry workings may offer important water bodies for aquatic life and a variety of bird species. Abandoned quarries are commonly seen as eyesores or convenient sites for waste disposal. Overgrowth of vegetation may spoil, or eventually totally obliterate, useful or important geological features. Reclamation schemes aimed at remediation of land affected by mineral extraction may destroy important or unique material.

Active quarries

Igneous rock, limestone, sandstone, peat, and sand and gravel are worked in the district. Active quarries provide fresh and constantly changing sections through the deposits being worked. They therefore provide some of the finest opportunities to further understanding and appreciation of the area’s geodiversity. With appropriate planning for after-use, quarries may also be developed as important future assets for biodiversity and recreation and can become considerable assets to the area’s natural heritage. Active quarries offer opportunities to demonstrate the working techniques and the relevance of these industries within their local and regional communities. Significant opportunities exist at many active sites to plan after-uses which may be sympathetic to the conservation of important geological features.

Dolerite (‘whinstone’) from the Whin Sill is worked as an important source of roadstone and large blocks are recovered for use as armour-stone. Four large quarries today work the main sill at Keepershields [NY 893 727], Barrasford [NY 91300 74400], Swinburne [NY 946 765] and Divethill [NY 97932 79064]. Porphyritic rhyolitic rock at Harden Quarry within the National Park is one of the few places in the UK where naturally red stone can be obtained and is particularly siutable for specialised use in road surfaces.

The Great Limestone is extracted at Mootlaw Quarry, near Ryal, and metamorphosed Oxford Limestone is worked adjacent to the Whin Sill at Barrasford Quarry. Crushed rock aggregate and roadstone are the main products. The working practice adopted at Mootlaw is to partially backfill the worked-out portions of the quarry with overburden and quarry spoil and then to return the land to agriculture. Similar practices are adopted at Barrasford.

Sandstone is worked primarily for building stone. Small amounts, mainly of waste material, are also sold for aggregate. Northumberland produces particularly high quality building stones, which have been used for prestigious buildings both locally and nationwide (p. 91).

Peat is currently extracted at two sites in Northumberland on the north-eastern margin of the district, Kemping Moss near Lowick and Greymare Farm near Belford.

Sand and gravel in the alluvial deposits of the River Tyne have been worked from comparatively small pits. The sand and gravel deposits in the area between Wooler and Milfield are, together with the Powburn area, amongst the highest quality reserves in Northumberland and continues to be extracted at a number of sites in that area. These include Roddam Quarry [NU 014 193] on the eastern edge of the National Park and Woodbridge Farm.

Underground mines

Underground mining in the district ceased with the closure of Blenkinsopp Colliery [NY 665 647] in 2002. The majority of coal workings were of small scale, consisting of open cast workings on the seam outcrops, bell-pits, shallow shafts and adit levels which mainly worked coal to depths of 100 metres or less. All the coal workings are now believed to be flooded and inaccessible, but documentary material including illustrations and photographs is important in appreciating the place

of coal mining in the geodiversity of the region. The Romans almost certainly worked coal, particularly from those seams which crop out close to Hadrian's Wall. Documentary records exist of coal working in the 13th century and by the early 1620s, coal was being mined on a commercial basis in the Grasslees valley between Elsdon and Hepple.

Substantial underground mining of lead and later witherite took place in the south of the district. The closure of Settlingstones Mine [NY 84232 68267] in 1968 brought an end to witherite production worldwide (p. 73). Some buildings remain as evidence of the Settlingstones and adjacent mines; the underground workings are inaccessible, but material extracted can still be found on the spoil heaps.

Spoil heaps

The district includes a varied legacy of mineral wastes in the form of spoil heaps from quarries, mines or mineral processing plants, including former metal smelting operations. Such spoil heaps typically comprise the geological materials discarded as waste from the deposit worked. Inevitably most spoil heaps also contain examples of the materials worked. As the area's underground mines are no longer accessible for study, spoil heaps provide a unique source of material evidence for the materials worked, or penetrated, in the mine workings. Exposure to weathering in spoil heaps may enhance the value of the materials present. For example, many fossils which may be extremely difficult to see in an unweathered exposure or quarry face, may be clearly exposed in weathered blocks in a spoil heap. New mineral species may be forming within spoil heaps, particularly in waste materials from former smelting operations, as a result of near-surface (supergene) processes.

Spoil heaps are locally important elements in the area's landscape. Indeed, many of the spoil heaps associated with metalliferous mines may be viewed as essential elements which help to characterise and define those landscapes. In some places spoil heaps may give the only clues to the presence of former workings. Spoil heaps may be rather vulnerable elements in the landscape. Removal of rubble for earthworks or track-making, or reclamation of spoil heaps may damage them. Such reclamation activities may include tree planting or top- soiling of the heaps, both of which effectively render the materials contained within the spoil heap inaccessible for geological study. Natural erosion threatens a small number of scientifically significant spoil heaps. Collection of mineral specimens may seriously deplete the resource. Some spoil heaps provide an important habitat for a number of plant communities. These include limestone flora on the heaps adjoining some limestone quarries and metallophyte flora on numerous spoil heaps from metal mines and processing plants.

Several spoil heaps, particularly some associated with former metalliferous mines are included in the archaeological features scheduled at those sites. Scheduled Ancient Monument (SAM) designation normally precludes any form of disturbance, however minor. Spoil heaps may offer important potential for sustainable educational and recreational collecting. Excavation of a spoil heap offers important opportunities for recovery of significant material and associated recording of finds.

The spoil heaps associated with former coal mining are typically of modest size and are generally comparatively inconspicuous, but are in many cases the only present day expression of the former industry and provide valuable markers in tracing the position of coal seams.

A number of waste heaps associated with limestone and, to a lesser extent, sandstone quarrying contain weathered fossil material. Perhaps most significant are the large piles around Ridsdale and Bellingham containing the 'shell band' of the Redesdale Ironstone Shale, rejected as valueless by the ironstone miners.

In the south of the district, spoil heaps associated with the working of mineral veins at the Langley Barony, Stonecroft and Fallowfield mines remain. Most of the spoil heaps at the former Settlingstones Mine have been landscaped and although parts of the remaining coarse rock dumps are protected as an SSSI, for the mineralogical specimens they contain, they are becoming inconspicuous through increasing vegetation cover.

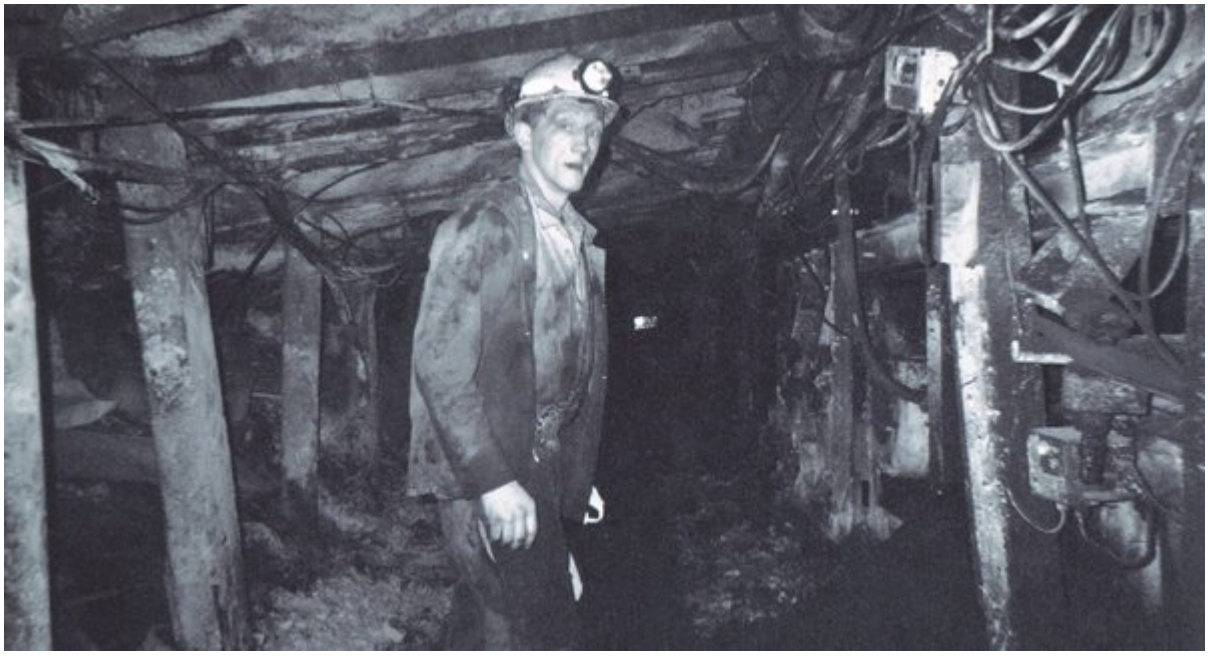
Figures

(Figure 68) Extracting and crushing rock for aggregate at Barrasford Quarry; the near-horizontal bedded rocks behind the excavator are metamorphosed Oxford Limestone.

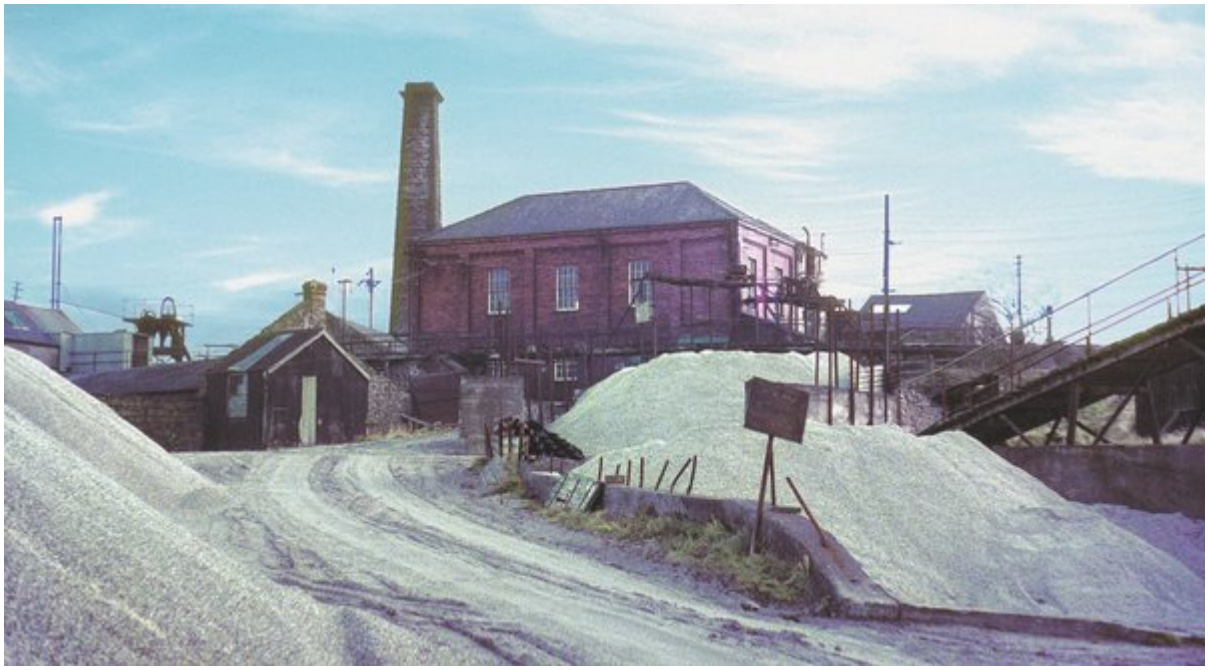
(Figure 69) Roadway in underground workings of the Little Limestone Coal at Blenkinsopp Colliery photographed in 2002 © Joel Porter.

(Figure 70) Stock piles of witherite at Settlingstones Mine in 1967.

(Figure 68) Extracting and crushing rock for aggregate at Barrasford Quarry; the near-horizontal bedded rocks behind the excavator are metamorphosed Oxford Limestone.



(Figure 69) Roadway in underground workings of the Little Limestone Coal at Blenkinsopp Colliery photographed in 2002 © Joel Porter.



(Figure 70) Stock piles of witherite at Settlingstones Mine in 1967.