

NORTHUMBERLAND AND TYNE & WEAR
(comprising Northumberland, Northumberland National Park, North Tyneside, Gateshead, South Tyneside, Newcastle-upon-Tyne and Sunderland)

A Summary of Mineral Resource Information for Development Plans
Mineral Resources (South)
Scale 1:100 000

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SAND & GRAVEL

- Superficial deposits**
- River sand & gravel resources
 - Concealed river sand & gravel resources in assessed areas
 - Glacial sand & gravel resources
 - Concealed glacial sand & gravel resources in assessed areas
 - Marine & estuarine sand & gravel resources
 - Blown sand and raised beach deposits
 - Boundaries of areas assessed for sand and gravel at the indicated resource level

- Bedrock deposits**
- Outcrop of Basal Sands } Permian

- PEAT**
- Peat

- LIMESTONE**
- Dolomite**
- Upper Magnesian Limestone } Permian
 - Middle Magnesian Limestone
 - Lower Magnesian Limestone

- Limestone**
- Limestone } Carboniferous

- IGNEOUS ROCK (Intrusive)**
- Dolerite (including Great Whin Sill) } Upper Carboniferous
 - Felsite } Devonian

- COAL**
- Areas of shallow coal**
- Principal resource area - thick, closely spaced coals
 - Subsidiary resource area - widely spaced coals
 - Lower, Middle and Upper Limestone groups
 - Opencast coal: Worked area

- COAL LICENCE AREAS (as at 01.08.00)**
- Source: The Coal Authority
- Opencast coal site
 - Deep mine

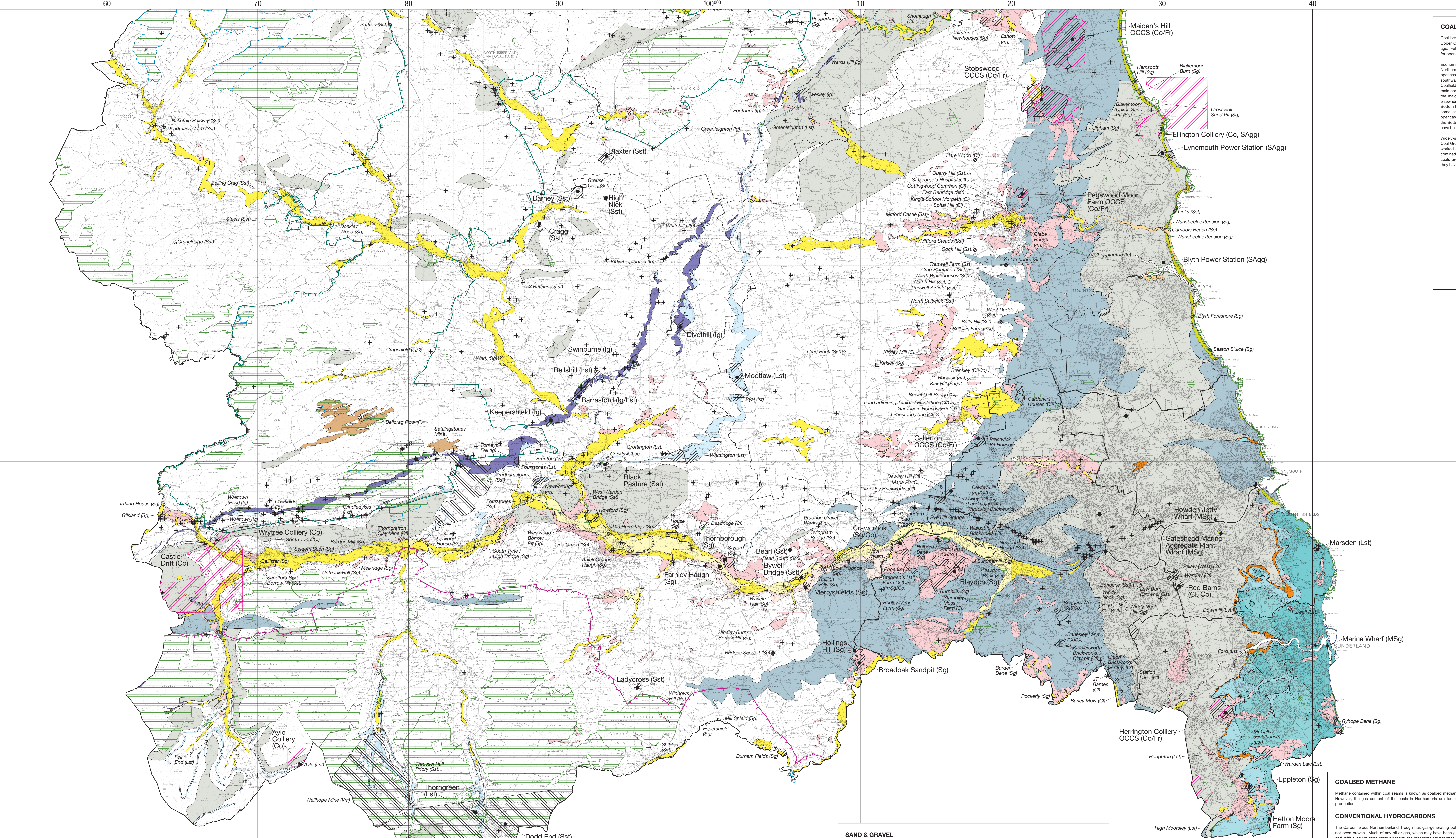
- MINERAL PLANNING PERMISSIONS (as at 01.01.00)**
- Source: Mineral Planning Authorities
- Surface planning permission (valid and expired)
 - Underground planning permission other than coal (valid and expired)
 - Planning Permission undefined

- MINERAL WORKINGS**
- Blaxiter Active site
 - Abandoned, worked-out and/or restored site
 - Inactive underground mine
 - Active secondary aggregate producer
 - Active wharf

- Mineral commodity**
- | | | | | | |
|----|---------------------|------|----------------------|----|--|
| CI | Common clay & shale | Lst | Limestone | Sg | Sand & gravel |
| Co | Coal | MSG | Marine sand & gravel | Sd | Sandstone |
| Fr | Fireclay | P | Peat | Vm | Vein minerals (Lead, Fluorspar, Witherite) |
| Ig | Igneous rocks | SAgg | Secondary aggregates | | |

- ENVIRONMENTAL DESIGNATIONS**
- Northumberland National Park
 - Area of Outstanding Natural Beauty: Northumberland Coast, North Pennines (part)
 - Site of Special Scientific Interest
 - National Nature Reserve
 - Scheduled Monument

- ADMINISTRATIVE AREAS**
- Mineral Planning Authority
 - District



AIMS AND LIMITATIONS

The purpose of the maps and associated reports in this series is to show the broad distribution of those minerals which may be of current or potential economic interest and to provide the necessary information for the consideration and preparation of development plan policies in respect of mineral extraction and the protection of important mineral resources against destruction. This brings together a wide range of information, much of which is collected and collated separately in a conventional form. The maps have been produced by collation and interpretation of mineral resource data principally held by the British Geological Survey. Information on the status of mineral planning permissions has been obtained from the relevant Mineral Planning Authority (MPA). Some of the permissions may have lapsed or expired. The status of individual areas can be ascertained from the appropriate MPA. Locations of national planning designations have been obtained from the appropriate statutory body (County/County Agency, English Nature and English Heritage). For further information the relevant body should be contacted. The mineral resource data presented are based on the best available information, but are not comprehensive and their quality is variable. The mineral boundaries shown are, therefore, approximate. Mineral resources defined on the map delineate areas within which potentially workable minerals may occur. These areas are not of uniform potential and also take no account of planning constraints that may limit their working. The economic potential of specific sites can only be proved by a detailed evaluation programme. Such an investigation is an essential precursor to submitting a planning application for mineral workings. Extensive areas are shown as having no mineral resource potential, but some potential mineral workings may occur in these areas. The presence of these operations generally reflect very local or specific situations which are referred to in the accompanying report. The maps are intended for general consideration of mineral issues and not as a source of detailed information on specific sites. The maps should not be used to determine individual planning applications or in taking other decisions on the acquisition or use of a particular piece of land, although they may give useful background information which acts as a guide to proceed in contact. Topography reproduced from the OS map by British Geological Survey with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. (Crown copyright). All rights reserved. Unauthorised reproduction in whole or in part without the permission of the Controller of Her Majesty's Stationery Office is prohibited. Administrative boundaries are reproduced with permission from Ordnance Survey Boundary Line. Licence number: G027261. Digital OS data and MPA boundaries © English Nature 1999. Copyright © British Geological Survey 2000. Published by the Department of the Environment, Transport and the Regions under licence from the Controller of Her Majesty's Stationery Office. Applications for reproduction should be made to The Copyright Unit, Office of Public Services, Her Majesty's Stationery Office, St Clements House, 1-18 Colindale Avenue, London NW9 1SD.

IGNEOUS ROCK

The most important source of igneous rock for crushed rock aggregates is the Whin Sill, a tabular, sheet-like, intrusive body of quartz dolerite, locally known as 'limestone'. This sill may be up to 30 m thick in places and underlies most of the Carboniferous rocks of northern Northumberland. It is worked at the prominent opencast quarries where the sill is exposed from the Tyne Valley to the coast at Bellbusk. The Whin Sill is normally considered in conjunction throughout its outcrop, though its thickness varies considerably. It is primarily used for roadstone.

An igneous complex of Devonian age, comprising an extensive suite of basal intrusions and their associated dykes, occurs in the Cheviot Hills. The complex is deeply weathered and, except for small intrusions of felsite, has been little worked. A block of felsite, near Rothbury, is quarried for the production of a range of aggregate products which are valued for their red colour. The granite and basalt has been excluded from the map.

BUILDING STONE

Dolomite, dolomitic limestone and limestone of Permian age (the Magnesian Limestone) occur in the south-west corner of the area. The majority of monuments are defined using a central NGR symbol. Consequently the actual area and/or length of a monument protected by the legal constraints of a scheduling cannot be represented here. Monuments scheduled as ancient monuments are not shown on this map. Administrative boundaries are reproduced with permission from Ordnance Survey Boundary Line. Licence number: G027261. Digital OS data and MPA boundaries © English Nature 1999. Copyright © British Geological Survey 2000. Published by the Department of the Environment, Transport and the Regions under licence from the Controller of Her Majesty's Stationery Office. Applications for reproduction should be made to The Copyright Unit, Office of Public Services, Her Majesty's Stationery Office, St Clements House, 1-18 Colindale Avenue, London NW9 1SD.

CLAY AND SHALE, INCLUDING FIRECLAY

Coal Measures mudstone and fireclay are the principal brick clay resources in the area and their extent is largely coincident with opencast coal resources. Coal Measures mudstone is produced at Red Barns Quarry in South Tyneside to supply the Throckley plant, west of Newcastle, with red-firing clays for firing brick manufacture. A small brick plant at Overland, near Rothbury, also producing red firing bricks is based on locally produced glacial clay.

Fireclay typically occurs beneath coal seams and resources are, therefore, confined to coal-bearing strata. Originally fireclays were valued as refractory raw materials but only small amounts of fireclay are now used for refractory applications. Some fireclays have relatively low iron contents compared with other brick-making clays and they are valued for the production of buff-coloured bricks and pavans. They are often interbedded with red-firing clays to give a range of colours. The close association of fireclay and coal means that opencast coal sites are one of the few valuable sources of fireclay. Fireclay resources are thus coincident with opencast coal resources, although because of quality considerations, mainly levels of gault, sandstone and iron, only a small number of fireclay sites are usually available. The Northumberland coalfield is an important source of fireclay, which is used mainly by a brick manufacturer and an opencast coal site for refractory applications.

LIMESTONE

Carboniferous limestone occurs in a cyclical sequence of limestone, mudstone and sandstone beds (the so-called 'Yoredale facies'). The limestones are usually less than 10 m thick and, therefore, are too thin to support a modern quarrying operation. Consequently they have mostly been excluded from the mineral resource map except where closely associated with the Whin Sill. The main exception is the Great Limestone which is sufficiently thick (up to 30 m) extensive and consistent in quality to form a valuable resource. It is worked at two sites in the southern part of the county by crushed rock aggregate.

SAND & GRAVEL

Two main categories of sand & gravel resources are defined:

- Superficial (SP) deposits, further subdivided into river sand & gravel (Sg), glacial sand & gravel (Sd), marine and estuarine sand & gravel (Sv) and blown sand deposits.
- Bedrock (BD) deposits represented here by the Permian Basal Sands.

Superficial deposits

River sand & gravel

Post-glacial river terrace and alluvial deposits are developed along the major river valleys such as the Beamish, Tyne, Coquet and Till. Fluvio-glacial sands and gravels may also occur beneath these deposits, and quarry operations generally extend down to these deposits. River gravels are generally well sorted, well rounded and of a high commercial quality. In the Beamish, Coquet and Widdow Water valleys, pink sand & gravel derived from the Cheviot complex is quarried as a first class concrete aggregate. Terrace deposits are generally well sorted and well graded with a moderate fines content. Narrow belts of flood plain gravel are also common in valleys.

Fluvio-glacial sands and gravels, generally thicker deposits than river alluvium, have been partially, but imperfectly, sorted by streams issuing from the melting glaciers. The largest spread of such deposits in north-east England is near Widdow Water, where extensive terraces of sand & gravel to 8 m in thickness occur. Terraces are also present along the River Tyne and its tributaries. The deposits tend to be regular in depth and composition, and contain a high proportion of gravel, much of the finer material having been washed out. The terrace gravels consist mainly of Carboniferous sandstones with some Lower Palaeozoic gneisses, some limestone and igneous rocks.

Glacial sand & gravel

The largest group of sands and gravels in north-east England are ice-contact sediments laid down by streams flowing on the tops of, within and beneath ice sheets. These deposits commonly occur as these either within, or beneath till (Boulder) clays. The composition and thickness of these deposits is highly variable, although characteristically sandy, except in the Tyne Valley where gravels predominate. They may also grade into till-free contact facies. Unsorted glacial beds may reach a thickness of up to 30 m in the Tyne Valley. Parts of the area assessed for sand & gravel by the BGS are identified on the map. Within these areas, the extent of sand & gravel, including the position of glacial sand & gravel beneath it, is shown. Outside resource assessment areas, data are more limited and only glacial sand & gravel of variable thickness and consist of unsorted fine to medium-grained sands. Dunes are rarely worked because of conservation considerations.

Marine and estuarine sand & gravel

Within the Northumbria area, these resources are shown in the estuaries of the Blyth and Wearbeck, where they consist of silty, pebbly clay and sand & gravel.

Blown and blown sand

Blown deposits are found along the length of the Northumberland coast, often backed by sand dunes. They are generally clean fine and medium-grained sands of uniform grading, used for concrete and building sand. No blown deposits are currently worked. Blown or dune sand is of variable thickness and consist of unsorted fine to medium-grained sands. Dunes are rarely worked because of conservation considerations.

Bedrock deposits

The Permian Basal Sands have a small outcrop in the extreme south-west of the area, where they crop out intermittently along the base of the Permian Magnesian Limestone outcrop and dip to the east beneath the limestone. They are currently unworked, unlike in neighbouring Durham, where they form an important source of building sand.

COAL

Coal-bearing strata occur at a number of horizons in Northumberland in rocks of both Upper Carboniferous (Namurian and Westphalian) and Lower Carboniferous (Devonian) age. Future commercial interest is likely to be mainly confined to those deposits suitable for opencast extraction.

Economically by far the most important are the Westphalian Coal Measures of the Northumberland Coalfield from which the largest tonnages of both deep-mined and opencast coal have been extracted. The coalfield extends from Arkle in the north southwards to the Tyne Valley where, by tradition, it becomes known as the Durham Coalfield. Three outcrops of coal measures occur in the Tyne Valley to the west of the main coalfield. Extensive deep-mining has now almost ceased but the coalfield is one of the major sources of opencast coal in Britain, being characterised by larger areas than elsewhere. The main concentration of coal measures in the Tyne Valley is the west of the main coalfield. The main concentration of coal measures in the Tyne Valley is the west of the main coalfield. The main concentration of coal measures in the Tyne Valley is the west of the main coalfield.

Water-repellent coals occur within the Carboniferous succession within the Scremerston Coal Group and the Lower, Middle and Upper Limestone Coal groups. These have been worked on a modest scale by both opencast and deep mining. Current production is confined to deep-mining of the Lower Limestone Coal near Greenhead and Blyth. The coals are widely spaced, laterally variable and generally of low quality. Consequently they have been classified as a subsidiary resource.

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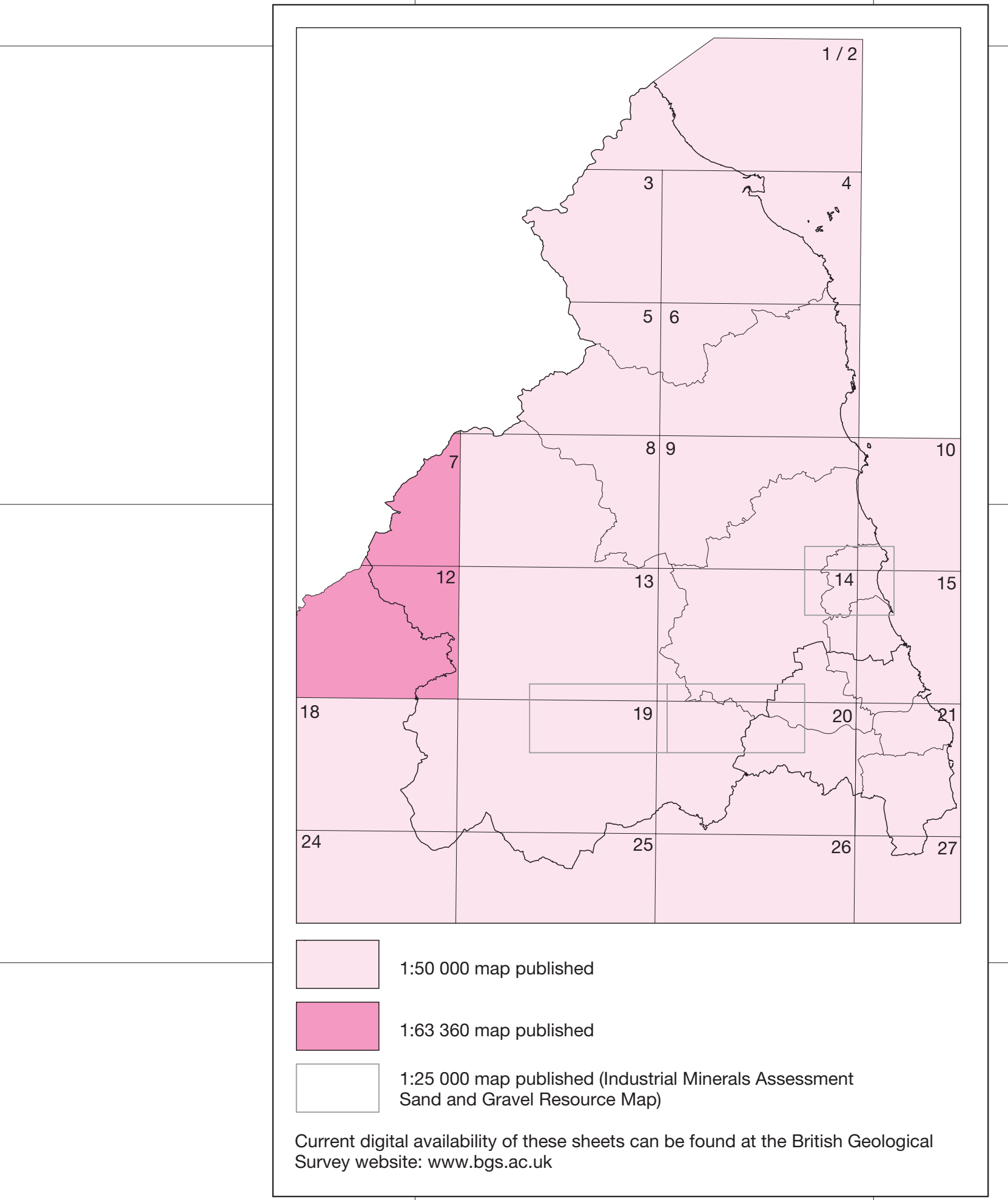
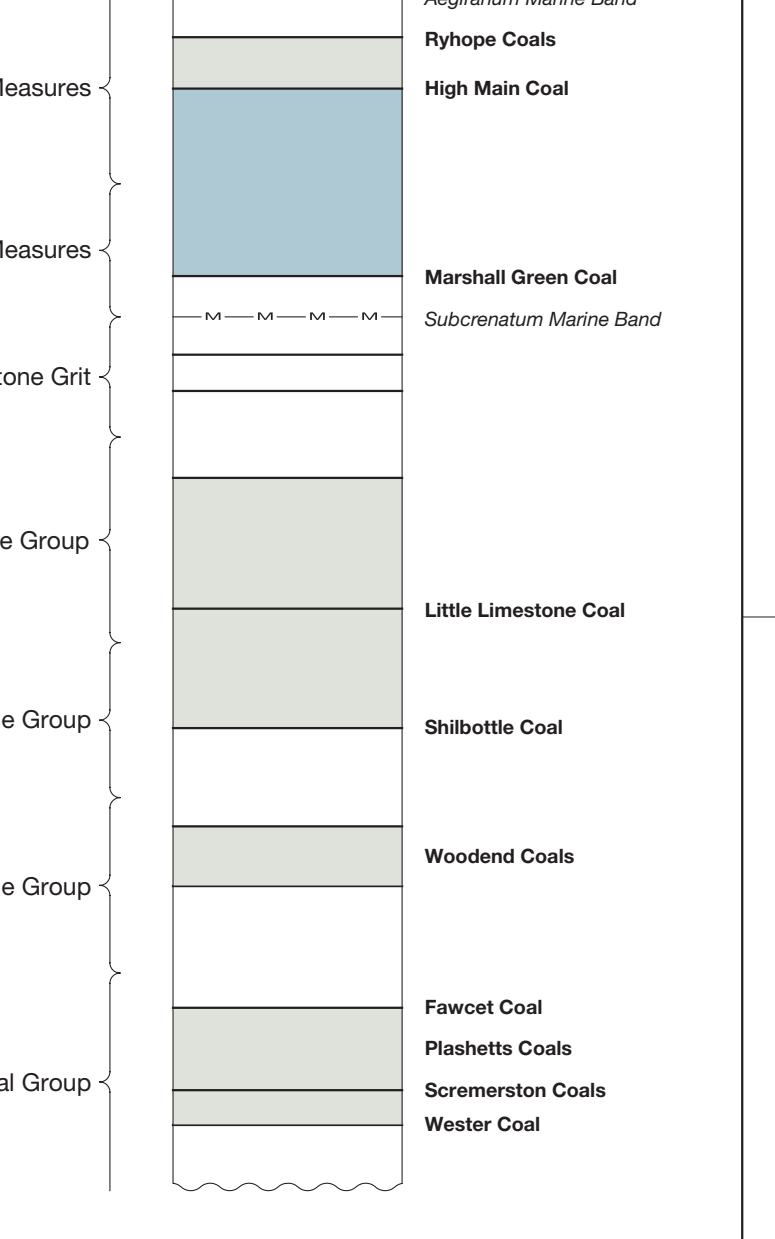
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Current digital availability of these sheets can be found at the British Geological Survey website: www.bgs.ac.uk

COALBED METHANE

Methane contained within coal seams is known as coalbed methane and is a potential source of energy. However, the gas content of the coals in Northumbria is so low for commercial coalbed methane production.

CONVENTIONAL HYDROCARBONS

The Carboniferous Northumberland Trough has gas-generating potential but oil-generating potential has not been proven. Much of any oil or gas, which may have been generated, may have already been lost and, with a lack of good reservoir rocks, the prospects are not encouraging.

HYDROCARBON WELLS OF NORTHUMBERLAND

- | | | | |
|-------------------|---|-----------------|---|
| 1 LONG HORSELEY 1 | Operator: Carbonate Resources
Start date: 13.07.1999
Terminated: Gasymon Group
Liddesdale Group
Scremerston Coal Group
Fall Sandstone Group
Carboniferous Limestone Group
Total depth: 1428 m
Test results: Not tested
Status: Plugged and abandoned | 3 HARTON DOME 1 | Operator: BGS
Start date: 20.10.1960
Terminated: Gasymon Group
Liddesdale Group
Scremerston Coal Group
Fall Sandstone Group
Carboniferous Limestone Group
Total depth: 1025 m
Test results: Not tested
Status: Plugged and abandoned |
| 2 WHITBY BAR 1 | Operator: BGS
Start date: 12 August 1967
Terminated: Gasymon Group
Liddesdale Group
Scremerston Coal Group
Fall Sandstone Group
Carboniferous Limestone Group
Total depth: 1025 m
Test results: Not tested
Status: Plugged and abandoned | | |

