British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Office of the Deputy Prime Minister
Creating sustainable communities

NORFOLK

Mineral Resource Information in Support of National, Regional and Local Planning

Mineral Resources

Scale 1:100 000

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Digital cartography by N.A. Spencer, British Geological Survey.
Published 2004.

This map comprises part of a summary of the 'Mineral Resources of the East of England Region'.
For further information see www.mineralsUK.com

BIBLIOGRAPHIC REFERENCE

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SAND & GRAVEL

Superficial deposits

- Sub-alluvial: Inferred resources
- Sub-alluvial: Indicated resources (only in area assessed by BGS)
- River Terrace deposits
- Pre-glacial sand and gravel (Crag Group and Bytham Formation)
- Glaciofluvial sand and gravel, undifferentiated
- Glacial and Glaciofluvial sand and gravel, undifferentiated: Concealed (only in area assessed by BGS)
- Blown Sand
- Beach and Shoreface deposits
- Sand and gravel of uncertain age
- Boundary of area assessed for sand and gravel at the indicated resource level

SILICA SAND

- Silica Sand — Leziate Member: Lower Cretaceous

CRUSHED ROCK

- Sandstone aggregate — Carstone Formation: Lower Cretaceous

PEAT

- Peat — Recent

CHALK

- High purity chalk (93-98% $CaCO_3$) — White Chalk Subgroup: Upper Cretaceous
- Low purity chalk (<93% $CaCO_3$) — Grey Chalk Subgroup: Upper Cretaceous

MINERAL PLANNING PERMISSION (as of 01/03/04)

Source: Mineral Planning Authorities

- Surface planning permission (valid and expired)

MINERAL WORKINGS

- Stanfield — Active site
- Denver — Inactive (including sites not yet worked, worked-out and/or restored site
- Active wharf
- Rail aggregate terminal

Mineral commodity

Sg	Sand & gravel	Peat	Peat	Sst	Sandstone
Fl	Flint	Ch	Chalk	SiS	Silica Sand
Cl	Common clay & shale	Oil	Oil	Gas	Gas
MSg	Marine sand & gravel	CR	Crushed Rock		

ENVIRONMENTAL DESIGNATIONS (as at 30/04/03)

- National nature conservation designations (SSSIs and NNRs)
- International nature conservation designations (SACs, SPAs and Ramsar sites)
- National Park: Norfolk Broads (part of)
- Area of Outstanding Natural Beauty (AONB): Norfolk Coast
- Heritage Coast
- Scheduled Monument

ADMINISTRATIVE AREAS

- Mineral Planning Authority
- District

AIMS AND LIMITATIONS

The purpose of the maps in this series is to show the broad distribution of those mineral resources which may be of current or potential economic interest and to relate these to selected nationally recognised planning designations. The maps are intended to assist in the consideration and preparation of development plan policies in respect of mineral extraction and the protection of important mineral resources from sterilisation. They bring together a wide range of information, much of which is scattered and not always available in a convenient form.

The maps have been produced by collation and interpretation of mineral resource data principally held by the British Geological Survey. Information on the extent of mineral planning permissions has been obtained from the relevant Mineral Planning Authority (MPA). Some of these permissions may have lapsed or expired. The status of individual areas can be ascertained from the appropriate MPA. Location information on national planning designations has been obtained from the appropriate statutory body (Countryside 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 inferred 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 apply to the extraction of the resource. Consideration of specific sites cannot be given without a detailed evaluation programme. Such an investigation is an essential precursor to submitting a planning application for mineral working. Extensive areas are shown as having no mineral resource potential, but some isolated mineral workings may occur in these areas. The presence of these operations generally reflect very local or specific situations.

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 sets a specific proposal within context.

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Digital SSSI, NNR, SPA, SAC and Ramsar boundaries © English Nature 2003.
Contact address:
English Nature, Northminster House, Northminster, Peterborough, PE1 1UA. Tel: 01733 455000; Fax: 01733 455103. Web page: www.english-nature.org.uk

Positions of Scheduled Monuments at 25th September 2003 as supplied by English Heritage.
The majority of monuments are plotted using a centred NGR symbol. Consequently the actual area and/or length of a monument extending from the point of scheduling cannot be represented here. Monuments scheduled since that date are not accounted for. ©Copyright English Heritage.
Contact address:
English Heritage, 23 Savile Row, London, W1X 2ET, Tel: 020 7973 3132; Web page: www.english-heritage.org.uk

Digital AONB boundaries © Countryside Commission 1986 (now Countryside Agency).
Contact address:
Countryside Agency, John Dower House, Crescent Place, Cheltenham, Gloucestershire, GL50 3RA, Tel: 01242 521381, Fax: 01242 584270, Web page: www.countryside.gov.uk

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SILICA SAND

Norfolk is one of the most important sources of silica sand in Britain accounting for over 10 per cent of total output and a much larger proportion of glass sand production.

Silica (industrial) sands contain a high proportion of silica in the form of quartz and are marketed for purposes other than for direct application in the construction industry. They are essential raw materials for the glass and foundry casting industries, but also have a wide range of other uses including filtration media, abrasives, chemicals, agricultural products, paints and plastics. Silica sand is produced from both loosely consolidated sands and by crushing weakly cemented sandstones. Unlike construction sands, which are used for their physical properties alone, silica sands are valued for both their chemical and physical properties and it is on a combination of these properties that their industrial applications are based. These include a high silica (SiO_2) content in the form of quartz and, more importantly, an absence of deleterious impurities, such as clay, iron oxides and chromite, and typically a narrow grain-size distribution (generally in the range 0.5 to 0.1 mm). For most applications silica sands have to conform to very closely defined specifications, specific uses demanding different combinations of properties. Consequently different grades of silica sand are usually not interchangeable in use.

Depending on the end use of a silica sand, processing is of varying degrees of complexity and often requires a high capital investment in plant. A critical factor in defining a sand or sandstone deposit as a silica sand resource is the ease with which contaminants, such as iron-bearing impurities and clay can be removed, together with the level of losses incurred in removing oversize and undersize fractions to obtain the desired size distribution. Resources of silica sand occur in only limited areas and the special characteristics of silica sand extraction and, in particular, the cost of processing means that the industry has a restricted distribution. Silica sands command a higher price than construction sand, which allows them to serve a wider geographical market.

Silica sand production in Norfolk is based on the Leziate Beds of Lower Cretaceous age at Leziate to the east of King's Lynn, which have been extensively exploited since before the Second World War. The Leziate Beds are the uppermost division of the Sandringham Sands Formation and crop out from the Wash, to the west of Hunstanton, southwards to Ryston near Downham Market in south-west Norfolk. They are predominantly fine to medium-grained, well sorted quartz sands, occasionally slightly consolidated, mostly clean grey and white, fine-grained, well-sorted quartz sands. Subordinate bands of mudstone and silt may occur.

Resources of silica sand are difficult to define without a detailed evaluation of their properties and, most importantly, the ease with which they can be processed to a marketable quality. The outcrop of the Leziate Beds is shown on the map, which includes material covered by thin superficial deposits. Resources also occur beneath the overlying Carstone, both in isolated outliers, such as at Middleton, and to the east where the Leziate Beds dip beneath the Carstone.

Silica sand is quarried at two sites in the Leziate area. The most important is Wicken quarry, which supplies sand both for the manufacture of colourless glass containers and flat glass. Minton quarry produces a fine foundry sand for resin coating, for use mainly in metal casting. In order to produce to high purity silica sand suitable for the manufacture of colourless glass, the sands at Leziate are processed by sizing, attrition scrubbing, and either a cold or hot sulphuric acid leaching to remove iron oxides coating the individual grains. The sand is then dried, sized and, if required, further treated by flotation. The sand is used for the manufacture of colourless glass containing less than 0.035 per cent Fe_2O_3 which is suitable for use in the manufacture of colourless glass containers. Sand with a somewhat higher iron content can be used in the production of flat glass and is produced by a cold acid leach. The processing plant at King's Lynn is tall linked.

CHALK

Chalk is a relatively soft, fine-grained, white limestone consisting mostly of the debris of planktonic algae. The Chalk is of Upper Cretaceous age and occurs extensively in eastern and southern England where it forms an important resource of 'limestone raw materials'. The Chalk is the dominant bedrock in Norfolk.

The White Chalk Subgroup (formerly known as the 'Middle and Upper Chalk') occurs extensively in central parts of the county, although much of the outcrop is concealed by a thick cover of superficial deposits. This part of the sequence is predominantly white coloured, with layers of flint. It is generally of high purity (93-98% $CaCO_3$), in contrast to the underlying Grey Chalk Subgroup ('Lower Chalk') which is mainly of lower purity (<93% $CaCO_3$) due to the numerous calcareous mudstone bands.

The Chalk has been worked in many parts of the county, primarily for agricultural purposes, although harder beds and the numerous flints have also been used for building stone. Chalk is currently extracted at only three sites, and on a relatively small scale, for the production of agricultural lime.

CRUSHED ROCK AGGREGATE

A variety of hard rocks are suitable for use as aggregates. Their technical suitability for different applications depends on their physical characteristics, such as crushing strength and resistance to impact and abrasion. Higher quality aggregates are required for coating with bitumen for road surfacing, or for mixing with cement to produce concrete. For applications such as constructional fill and drainage media, with less demanding specifications, lower quality material is acceptable. Norfolk has very limited resources of rock suitable for crushed rock aggregate.

Sandstone

In north-west Norfolk the Carstone of Lower Cretaceous age forms a local resource of crushed rock aggregate. The Carstone is a thickly bedded or massive, iron-rich sandstone which is commonly pebbly and medium-grained. It is dark greenish grey in colour but weathers to a rusty brown. In the northern part of its outcrop, around Hunstanton, it is 19 m thick, but becomes thinner and more clay-rich southwards from Sandringham.

The Carstone has been extensively quarried in the past for building stone, but in recent years extraction has been for relatively low-grade crushed rock aggregates. South of the River Nar, the formation becomes less massive and has not been worked. Currently, relatively low quality sandstone aggregates, such as fill materials, are produced in several quarries around Middleton, Sandringham and Snettisham. Some of the quarries also produce construction sand (mortar and asphalt sand) from the soft, silty, lower beds of the Carstone and from the underlying Leziate Member.

PEAT

Peat is an unconsolidated deposit of plant remains formed in a water-saturated environment such as a bog or fen. Peat occurs extensively in the Fenland area of south-west Norfolk, in the Broadland area of east Norfolk, and also along the larger river valleys in the east of the county.

In the Fenland area, peat occurs at two main levels, a Lower Peat, and an Upper Peat commonly referred to on BGS maps as the Nordelph Peat. The bulk of the Lower Peat, which can be up to several metres thick, formed between 5400 and 4700 years BP, with isolated pockets preserved in deep channels and hollows which may date back to between 7000 and 9000 years BP. The Lower Peat is extensively preserved beneath the Upper Peat, but where the Upper Peat is absent it has been extensively eroded by modern drainage. Peat growth commenced in about 4000 years BP and continued to form in places until the fens were drained in medieval times about 1100 year BP.

In the Broadland area, up to three layers of peat may be present, an impersistent Lower Peat up to about 2 m thick, an extensive Middle Peat generally between 2 and 4 m thick, and an Upper Peat generally confined to the marsh margins. Radio-carbon dates suggest that the Middle Peat in Broadland formed between about 5000 and 3500 BP years ago with the Upper Peat forming more recently than 1600 years BP. In places estuarine silts separate the peats, but towards the margins of the mainland the silts may be absent and the peats may have coalesced to form one bed. The peat was worked extensively for fuel between the 13th and 19th centuries; the workings now being flooded and forming the Broads.

Many of the peatland areas in Norfolk have been given national or international conservation status. About 98 per cent of the peat extracted in the UK is used as a growing media by amateur gardeners and professional horticulturists.

SAND AND GRAVEL

Sand and gravel are defined on the basis of particle size rather than composition. In current commercial practice, following the introduction of new European standards from 1st January 2004, the term 'gravel' (or more correctly coarse aggregate) is used for general and concrete applications to define particles between 4 and 80 mm, and the term 'sand' for material that is finer than 4 mm, but coarser than 0.063 mm. For use in asphalt 2 mm is now the break point between coarse and fine aggregate. Most sand and gravel is composed of particles that are rich in silica (quartz, quartzite and flint), but other rock types may occur locally.

Pre-glacial sand and gravel

Pre-glacial fluvial and marine sand and gravel are present in south and east of the county respectively. The fluvial sand and gravel, which is Pliocene in the Cromer Ridge area and Lower Pleistocene in the glacial cliffs at Bacton, is represented by a more very similar to that of the present day River Bytham; these deposits are thus restricted to this part of Norfolk, where they are almost entirely masked by overlying glaciofluvial deposits. The gravel fraction consists predominantly of sub-angular to well-rounded flint with up to about thirty per cent well-rounded quartz and quartzite clasts. The gravels are chalk-free. Lenses of fine- to coarse-grained sand and sandy gravel are also present. The gravels have been worked locally, often in combination with overlying glaciofluvial deposits, for example at East Hill, near Colchester, where they have been worked in several small pits often in association with overlying glaciofluvial gravels. The marine sand consists predominantly of fine- to medium-grained sand that is commonly ferruginous and locally shelly, although beds of silt and gravel may occur locally. The Winterton Crag is predominantly a gravel with a similar composition to that of the Bytham Formation. The sands of the Norwich Crag are restricted to the south-eastern part of the county, whereas the gravels of the younger Winterton Crag are well developed from Norwich northwards although generally, apart from in the deeper valleys and low-lying ground they are overlain by glaciofluvial deposits. The gravels have been worked in several small pits often in association with overlying glaciofluvial gravels.

Glaciofluvial Sand and Gravel

Extensive outcrops and subcrops of glaciofluvial sand and gravel are present throughout the county. A feature of these deposits is their great variability in terms of thickness, particle size and composition. During the last one million years, Norfolk was over-ridden by ice sheets on several occasions. Some of the ice sheets covered most of the county, others impinged on the north or north-east of the county from the North Sea basin. As the ice sheets advanced and retreated across East Anglia, they deposited an sheet deposited outwash sand and gravel. In areas covered by two or more ice sheets this has commonly led to complex relationships with layers of till separating sand and gravel of differing age e.g. Crimplesham where sand and gravel occurs within glacial till. In general, the most complex sequences occur in the north-east of the county, with the simplest relationships in the south and west.

In north Norfolk, a sand and gravel sequence, up to 40 m thick, caps the Cromer Ridge and provides a good source of aggregate. The gravels on the Cromer Ridge are comprised predominantly of fine to coarse, angular to well-rounded, flint with subordinate amounts of quartz, quartzite and chalk. Lenses of laminated silt are commonly present. The gravels were deposited by ice sheets and glacial meltwater streams which extend westwards to just east of Hunstanton. These are much thinner, typically only several metres thick, commonly contain chalk, and are locally intermixed with chalky tills in a complex relationship. To the south of the Cromer Ridge, the glaciofluvial deposits in north-east Norfolk become finer grained and, from North Walsham to the south of Great Yarmouth, are typically comprised of fine- to medium-grained chalky sands, with fine to coarse, poorly sorted gravels restricted to capping some of the small hills. Many of the small pits in north-east Norfolk have worked a combination of the glaciofluvial deposits and the underlying marine Winterton Crag. Elsewhere in western and southern Norfolk, variable thicknesses of glaciofluvial sand and chalk-bearing flint gravel occur beneath the extensive Lowestoft Till (chalky boulder clay). These deposits crop out along many of the valleys where they have been worked for aggregate.

River Terrace Deposits

River Terrace Deposits, which postdate the glaciofluvial deposits, occur at several levels in most of the major valleys where they flank the present floodplain. The most extensive deposits occur in the valleys of the rivers Great and Little Ouse, Waveney, Nar, Wissey, Thet, Tas, Yare and Wensum.

The deposits generally comprise sequences of sands and gravels, commonly 3-8 m in thickness with a sheet-like geometry. The basal material is gravelly sediment, locally rich in cobbles and boulders, fining upwards into sand and finally silt and mud in the uppermost part. Lenses of laminated silt may occur within the sand and gravel. The composition of the gravels varies from area to area. Where glaciofluvial input is dominant the gravel clasts tend to be angular to subangular with small quantities of rounded quartz and quartzite. Where input from the Wroxham Crag has been significant, the gravels contain a greater proportion of rounded clasts of flint, quartz and quartzite.

The River Terrace Deposits are generally dry in their upper part and saturated at lower levels, particularly in the lowermost terrace, and where the sand and gravel overlies impermeable deposits such as till.

Sub-alluvial Gravels

Gravels occur beneath the silty alluvium and peat in many of the major valleys. The gravels were laid down during former cold periods when the rivers were graded to a lower base level than at present. In places, mapped River Terrace Deposits on the lower flanks of valleys can be demonstrated to extend beneath the alluvial deposits. The most extensive deposits of Sub-alluvial Gravels occur in the Fenland area, where they have been proved by drilling beneath the alluvial deposits of the Nar, Wissey, Little Ouse, Thet and Waveney. They are predominantly flint gravels with subordinate sand. Because of their location, the Sub-alluvial Gravels are always saturated and require wet working.

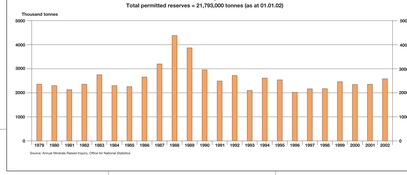
Blown Sand

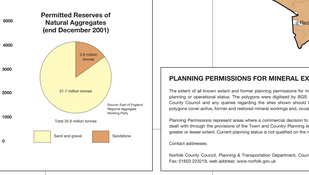
Impressive dunes of blown sand, some more than 12 metres high, are a common feature along the coast of Norfolk, particularly in the Great Yarmouth, Winterton on Sea and Hunstanton areas. In places several rows of coast-parallel dunes are present with the most seaward one still receiving sand from the adjacent sandy beaches. The older and bigger dunes along the north Norfolk coast, which are now stabilised by vegetation, probably originated during the late Pleistocene and formed from extensive areas of glaciofluvial outwash sands that were exposed along the coast at that time. The blown sand is composed of clean, well-sorted fine- to medium-grained sand comprised of sub-rounded to well-rounded quartz grains.

Beach sand and gravel

Extensive areas of shoreface and storm beach sand and gravel are present around the Norfolk coast. On many of the modern beaches the distribution of sand and gravel is ephemeral, and may differ greatly before and after a storm event. The north Norfolk coast is characterised by extensive sand dunes, backed by tidal marshes, from Blakeney Point to Brancaster, and by a shingle barrier between 1 and 11 km southwards from Hunstanton. The beach and storm beach gravels are comprised predominantly of sub-rounded to well-rounded flints, generally less than 150 mm in diameter, with minor quantities of quartz and quartzite and, locally other less durable rock types, for example, chalk, Carstone and Red Chalk occur in the deposits south of Hunstanton.

Production of sand and gravel, 1979 - 2002
Total permitted reserves = 21,793,000 tonnes (as at 01.01.02)





HYDROCARBONS

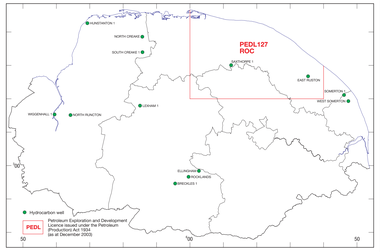
Conventional Oil and Gas

To the north of the Variscan Front in southern Britain, the county of Norfolk occupies a tract of land beneath which Palaeozoic basement, forming part of the northern flank of the ancient London-Brabant Massif (LBM), lies at relatively shallow depths. Thin Mesozoic and Cainozoic rocks rest with (often) marked angularity upon the basement rocks. At crop they range from the Kimmeridge Clay Formation (Jurassic) in north-west Norfolk to the Crag Group (Pliocene - Pleistocene) in east Norfolk. Hydrocarbon exploration onshore and offshore the Southern North Sea are thick enough in here, in the onshore area, been turned to sufficient depths to generate hydrocarbons. In the east of the county, to the east and north of Norwich, boreholes have proved both Carboniferous (Dinantian) Limestone and strata of Westphalian (Coal Measures) age to subcrop the Mesozoic cover rocks. Representing a sandstones and mudstone sequence up to 60 m thick, no coals were recorded and the Westphalian has been assigned a C-D age.

Exploration for both gas and oil has occurred offshore in the southern North Sea where, sourced from Namurian shales and the Coal Measures, gas fields have been found in Permian sandstones and carbonates (Leman Field) and in Triassic sandstones (Hewett Field). There have been brief periods of hydrocarbon exploration in the county. D'Arcy Exploration Company Limited drilled the first hydrocarbon exploration well at North Creake in 1943 (see table below). It proved dry and was subsequently plugged and abandoned with no further testing. There followed a series of wells drilled in the late 1960s and early 1970s, with the last exploration well being by Trafalgar House Oil & Gas Limited at West Somerton in 1987. Seismic reflection data were acquired both during the late 1960s, accompanying the early phase of drilling, and the early and late 1980s. They occur in a strip of land upto 20 km wide around the northern and northeastern coastline. A group of three exploration wells were drilled at Ellingham, Rocklands and Breckles in the south central part of the county. The Ellingham Borehole encountered strata of Devonian age that may be connected to the south with that proved in the Four Mile Water borehole in north Suffolk.

To date, hydrocarbon exploration in the county has proved unsuccessful with no oil or gas shows recorded in those wells drilled. Although initially appearing to offer little or no conventional hydrocarbon potential, the award to Roc Oil in the 11th Onshore Licencing Round of PEDL127 in the Wissey area, which is based on a new interpretation of existing seismic data, has generated some renewed interest in the area. The absence of suitable shale or coal source rocks proven in the county suggests that prospects will be reliant upon models that involve long distance migration of hydrocarbons from out of the southern North Sea and the presence of stratigraphic traps at the base of, or perhaps within, the thin Mesozoic rocks on the northern flank of the LBM.

Of related interest, the county has one of the main gas storage facilities at Bacton, which in 1999, accounted for some 19 per cent of gas supplied into the UK, coming mainly from the southern North Sea gasfields. Further storage facilities, perhaps using underground (geological) sites, might become important in the future.



Name of Oilfield	Date	Company	Status
Breckles No.1	Dec 1969	Norris Oil Company Ltd	Plugged & Abandoned, dry
East Ruston No. 1	June 1971	Hamilton Brothers	Plugged & Abandoned, dry
Ellingham No.1	Dec 1964	Superior Oil	Plugged & Abandoned, dry
Hunstanton No.1	Jan 1969	Place Oil & Gas Company (UK) Ltd	Plugged & Abandoned, dry
Lexham No.1	Oct 1971	Norris Oil Company Ltd	Plugged & Abandoned, dry
North Creake No.1	May 1945	D'Arcy Exploration Company Ltd.	Plugged & Abandoned, dry
North Runcton	1974	KBD/DEI oil shale project	Plugged & Abandoned, dry
Rocklands No.1	Nov 1969	Norris Oil Company Ltd	Plugged & Abandoned, dry
Sparhorje No.1	Oct 1970	Dunlex Petroleum Corporation	Plugged & Abandoned, dry
Somerton No.1	Jan 1969	Continental Oil Company of England Ltd.	Plugged & Abandoned, dry
South Creake No.1	Aug 1969	BP Petroleum Development Ltd	Plugged & Abandoned, dry
West Somerton No.1	Oct 1987	Trafalgar House Oil & Gas Ltd	Plugged & Abandoned, dry
Wiggenhall No.1	Jan 1971	Texaco Production Services Ltd	Plugged & Abandoned, dry

Coal Bed Methane (CBM) potential

Strata of Precambrian and Lower Palaeozoic age form the majority of the pre-Mesozoic basement to the county of Norfolk. Beneath the Wash to the north, strata of Namurian and Westphalian A-B age subcrop the cover rocks. Onshore there has only been a thin Westphalian C-D succession with no coals recorded.

Cainozoic strata of Palaeocene and Eocene age crop out and rest unconformably upon the Chalk in the east of the county, reaching a maximum thickness of some 115 m immediately offshore from Great Yarmouth. They comprise interbedded sandstones, siltstones and mudstones deposited in open marine to shallow brackish conditions near the margins of the then slowly subsiding southern North Sea basin. There are no references to the occurrence of lignite in these successions.

The county of Norfolk is therefore thought to have little or no CBM development potential.

Licensing

The Department of Trade and Industry grants licences for exclusive rights to explore and exploit oil and gas onshore within Great Britain. The rights granted by landward licences do not include any rights of access, and the licensees must obtain any consent under current legislation, including planning permission.

BUILDING STONE

The Cretaceous formations of Norfolk have yielded a range of building stones. However, none of the quarries produced good freestone and a considerable volume of Middle Jurassic Lincolnshire Limestone (Barnack, Ancaster, etc) and some Caen Stone (Middle Jurassic limestone from Normandy) was imported into the county from medieval times onwards.

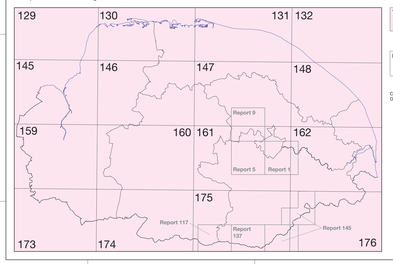
The Lower Cretaceous strata were the most important source of building stone, providing yellow-brown, ferruginous sandstones from the Carstone Formation, and Dersingham Member of the Sandringham Sands Formation, which were used extensively in buildings along their outcrop. In addition, some of the sands in the Leziate Member of the Sandringham Sands Formation in the Castle Acre area of north-west Norfolk have been cemented with a silica cement, these have been used locally for building stone.

Red chalk rubblestone from the Hunstanton (Red Chalk) Formation was occasionaly used locally for building in the Old Hunstanton area. In contrast, the Upper Cretaceous white chalks were quarried across much of the outcrop e.g. Malham and Northwold for blockstone or 'clunch', as well as for flint, the most common local building stone.

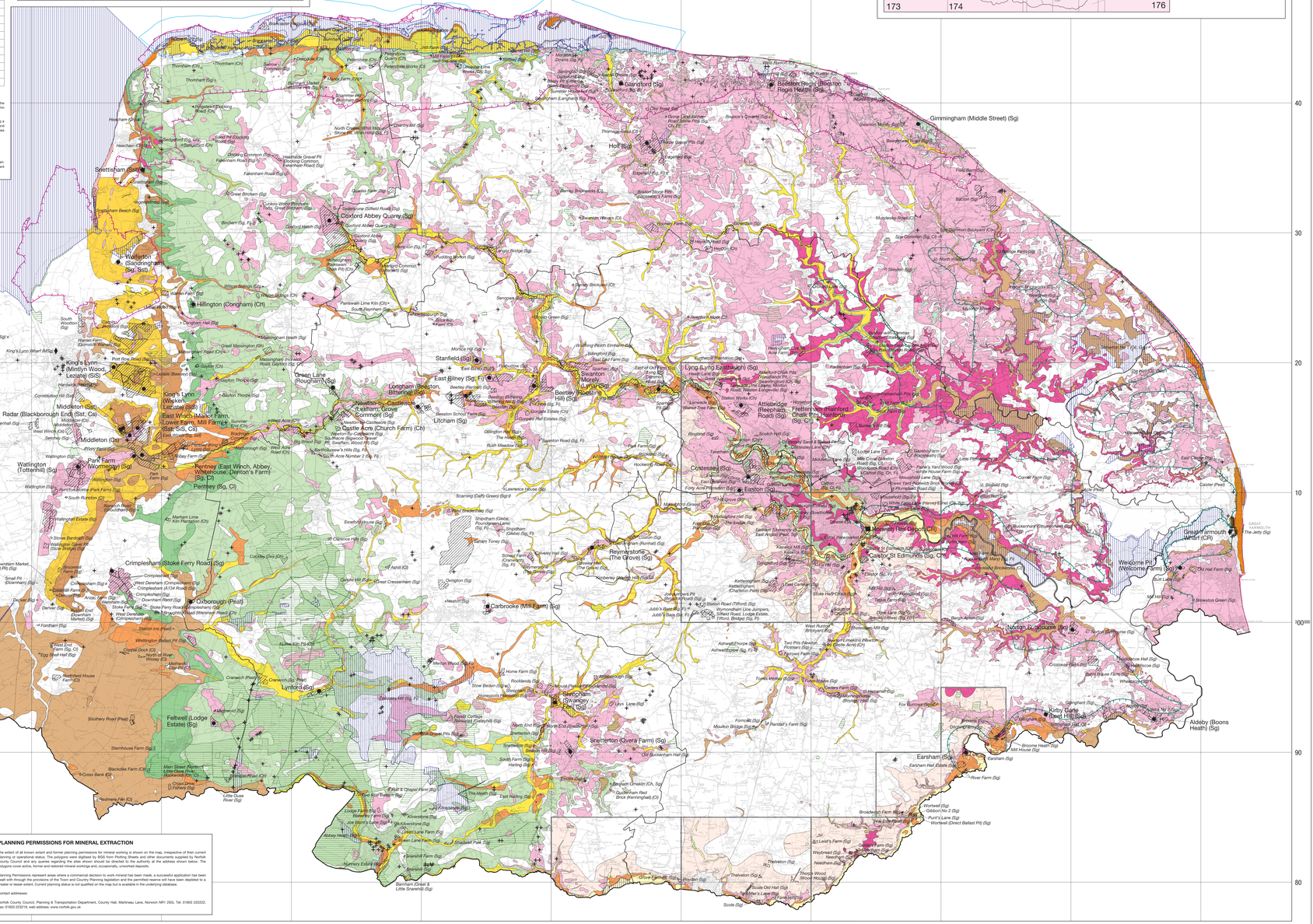
Quartz-cemented and iron-cemented sandstones and sands from the Quaternary have provided a very local source of building stone. Pebbles of flint, and other more exotic lithologies, derived from glaciofluvial outwash deposits and modern beaches, have also been used extensively for building purposes.

Currently, only the Carstone Formation is being quarried for building stone, on a small scale at Snettisham.

BGS publications covering Norfolk



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


Stanford (Sg)
Gimmingham (Middle Street) (Sg)
Holt (Sg)
Snettisham (Sg)
Coxford Abbey Quarry (Sg)
Hillington (Congham) (Cl)
King's Lynn (Middleton) (Sg)
Middleton (Sg)
Stanfield (Sg)
East Bilney (Sg, Fl)
Beetley (Sg)
Lyng (Lyng Earlhaugh) (Sg)
Easton (Sg)
Costessey (Sg)
Reymerstone (The Grove) (Sg)
Carbrooke (Mill Farm) (Sg)
Lyndford (Sg)
Feltwell (Lodge Estate) (Sg)
Snetterton (Syera Farm) (Sg)
Earsham (Sg)
Aldeby (Boons Heath) (Sg)
Kirby Cane (Peel Hill) (Sg)
Great Yarmouth Market (CR)
Welcome Pit (Welcome Farm) (Sg)
Castor St Edmunds (Sg, Cm)
Norton Subcourse (Sg)
Bacton (Sg)
Bacton Bowland Cliff (Sg)
Mundesley Road Cliff (Sg)
Sea Dunham Bowland Cliff (Sg)
Sea Dunham Cliff (Sg)
Sea Palling (Sg)
Stalham (Sg)
Ingham (Sg)
Ludham (Sg)
Hoveton (Sg)
Wroxham (Sg)
Horsford (Sg)
Hellesdon (Sg)
Trowse (Sg)
Bramerton (Sg)
Rockland (Sg)
Forncett (Sg)
Tacolneston (Sg)
Ashwellthorpe (Sg)
Wymondham (Joe Jumpers) (Sg)
Tittford, Bridge (Sg, Fl)
Ketteringham (Sg)
Ketteringham (Charlton Pits) (Sg)
Hethersett (Sg)
Cringleford (Sg)
Colney (Sg)
Bawburgh (Sg)
Marlingford (Sg)
Colkett (Sg)
Ringland (Sg)
Taverham (Sg)
Felthorpe (Sg)
Lenwade (Sg)
Blickling (Sg)
Oulton (Sg)
Aylsham (Sg)
Burgh Castle (Sg)
Belton (Sg)
Fritton (Sg)
Haddiscoe (Sg)
Toft Monks (Sg)
Raveningham (Sg)
Ditchingham (Sg)
Broome (Sg)
Beccles (Sg)
Worlingham (Sg)
Lowestoft (Sg)
Corton (Sg)
Hopton (Sg)
Gorleston (Sg)
Southtown (Sg)
Caister (Sg)
Winterton (Sg)
Hemsby (Sg)
Scratby (Sg)
Ormesby (Sg)
Martham (Sg)
Repps (Sg)
Thurne (Sg)
Acle (Sg)
Freethorpe (Sg)
Halvergate (Sg)
Tunstall (Sg)
Langley (Sg)
Chedgrave (Sg)
Thurton (Sg)
Claxton (Sg)
Carleton Rode (Sg)
Saxlingham (Sg)
Shotesham (Sg)
Stoke Holy Cross (Sg)
Swainsthorpe (Sg)
Newton Flotman (Sg)
Tasburgh (Sg)
Tharston (Sg)
Hapton (Sg)
Flordon (Sg)
Mulbarton (Sg)
Kettlestone (Sg)
Tatterford (Sg)
Great Snoring (Sg)
Stiffkey (Sg)
Binham (Sg)
Langham (Sg)
Blakeney (Sg)
Morston (Sg)
Weybourne (Sg)
Sheringham (Sg)
Upper Sheringham (Sg)
Beeston Regis (Sg)
Runton (Sg)
East Runton (Sg)
Cromer (Sg)
Overstrand (Sg)
Manningford (Sg)
Bunwell (Sg)
Carleton Rode (Sg)
Forncett (Sg)
Flitcham (Sg)
Anmer (Sg)
Harpley (Sg)
Docking (Sg)
Burnham Market (Sg)
Burnham Deepdale (Sg)
Burnham Norton (Sg)
Burnham Overy (Sg)
Burnham Thorpe (Sg)
Burnham Market (Sg)
Burnham Deepdale (Sg)
Burnham Norton (Sg)
Burnham Overy (Sg)
Burnham Thorpe (Sg)
Hunstanton (Sg)
Heacham (Sg)
Snettisham (Sg)
Ringstead (Sg)
Sedgeford (Sg)
Docking (Sg)
Stanhoe (Sg)
Fakenham (Sg)
Great Massingham (Sg)
Harpley (Sg)
Shernborne (Sg)
Dersingham (Sg)
Leziate (Sg)
Grimston (Sg)
Roudham (Sg)
Thetford (Sg)
Brandon (Sg)
Santon Downham (Sg)
Weeting (Sg)
Methwold (Sg)
Hockwold (Sg)
Wretton (Sg)
Stoke Ferry (Sg)
Wereham (Sg)
Crimplesham (Sg)
Downham Market (Sg)
Denver (Sg)
Southery (Sg)
Fordham (Sg)
Isleham (Sg)
Soham (Sg)
Fordham (Sg)
Littleport (Sg)
Ely (Sg)
Stretham (Sg)
Wicken (Sg)
Haddenham (Sg)
Sutton (Sg)
Mepal (Sg)
Chatteris (Sg)
March (Sg)
Wisbech (Sg)
Upwell (Sg)
Outwell (Sg)
Terrington St Clement (Sg)
King's Lynn (Sg)
Walsoken (Sg)
Wisbech St Mary (Sg)
Leverington (Sg)
Newton (Sg)
Tilney All Saints (Sg)
Tilney St Lawrence (Sg)
Wiggenhall St Germans (Sg)
Wiggenhall St Mary Magdalen (Sg)
Wiggenhall St Mary the Virgin (Sg)
Wiggenhall St Peter (Sg)
Emneth (Sg)
Walpole St Peter (Sg)
Walpole St Andrew (Sg)
Terrington St John (Sg)
Tilney cum Islington (Sg)
Marshland St James (Sg)
Clenchwarton Hall (Sg)
Gaywood (Sg)
Bawsey