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Topography based on the Ordnance Survey 1:100 000 scale County maps.  
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Positions of Scheduled Monuments at 31st March 1984 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 protected by the legal constraints of scheduling cannot be represented here. Monuments scheduled since that date are not accounted for.

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**SAND AND GRAVEL**

Superficial deposits

- River gravel resources
- Glacial sand and gravel resources
- Concealed glacial sand and gravel resources (only within areas assessed by BGS)
- Boundaries of areas assessed for sand and gravel at the indicated resource level

**LIMESTONE**

- Lincolnshire Limestone

**REFRACTORY CLAY**

- Rutland Formation (Upper Estuarine series) Kingscliffe area only

**MINERAL PLANNING PERMISSIONS**  
(as at 31.3.00)

Source: Northamptonshire County Council

- Mineral planning permission (valid and expired)
- Planning permission for ironstone and overlying minerals

**MINERAL WORKINGS**

- Earls Barton Active site
- Slope Inactive, worked-out and/or restored site

**Mineral commodity**

- Sg Sand and Gravel
- Lst Limestone
- Istn Ironstone
- RCI Refractory clay
- CI Common clay and shale

**ENVIRONMENTAL DESIGNATIONS**

- Site of Special Scientific Interest
- National Nature Reserve
- Scheduled Monument

**ADMINISTRATIVE AREAS**

- County
- District

**AIMS AND LIMITATIONS**

The purpose of the maps and associated reports 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 plans and to provide a basis for mineral resource and planning applications. 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 primarily 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 (Countrywide Commission, 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 potential economic minerals may occur. These areas are not of uniform potential and do not take 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 essential prior to submitting a planning application for mineral working. Extensive areas are shown as having no mineral resource potential, but some isolated mineral resources may occur in these areas. The presence of these resources generally reflects 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 sets a specific proposal within context.

**Ironstone**

The Northampton Sand Formation ironstone of Middle Jurassic age occurs extensively in Northamptonshire and was formerly worked on a large scale by opencast methods, particularly in the vicinity of Corby, Wellingborough and Kettering. Production ceased with the closure of the integrated iron and steelmaking plant at Corby in 1980, which was the last plant in Britain based entirely on domestic ores. The ironstone bed is up to 6 m thick, although most commonly only 2-4 m was worked beneath an overburden of up to about 30 m. The iron ore had an average Fe content of about 35 per cent, with 12 per cent SiO<sub>2</sub>, 3 per cent CaO and 0.7 per cent P. Technological and economic changes within the UK iron and steel industry led to the demise of the Northampton Sand Formation as an iron ore. For this reason it is not shown as a resource on the face of the main map. However, there remain some 80 planning permissions granted for the extraction of ironstone and overlying minerals within the county. These cover about 8/900 hectares of land and are shown on the main map. They give an indication of the extent of the post-1948 working of ironstone (i.e. the maximum extent of working). Areas of pre-1948 working are not shown. A small number of these permissions cover active sites which are used for the extraction of the ironstone for local use as crushed-rock aggregate. This material accounts for about 10% of the county production of crushed rock (NCC, 1997). The overlying Lincolnshire Limestone may also be extracted from these [and a small number of other sites with ironstone permissions].

**Limestone**

The Jurassic Lincolnshire Limestone Formation forms the principal limestone resource in Northamptonshire. It is utilised mainly as a source of crushed rock aggregate, but also as a building stone. This formation is up to 40 m thick in the Grantham area, but thins rapidly to the south and disappears altogether in the Kettering-Oundle area. Although the Lincolnshire Limestone Formation is a regionally-important source of crushed rock aggregate and is worked extensively in neighbouring counties, there remain only two active operations in this material in Northamptonshire. The relatively low strength and high water absorption of Lincolnshire Limestone restrict its use to undemanding applications such as fill and sub-base.

**Refractory Clay**

In the north-eastern part of the county, unbedded rootlet beds of greyish-white and brown silty 'fireclays' up to 3 m thick occur within the Jurassic Rutland Formation (formerly Upper Estuarine Series). These are worked in the Kingscliffe - Nassington area for refractory applications. The map shows the outcrop of the Rutland Formation in this area only as this sequence is of no economic interest elsewhere in the county.

**Building Stone**

In the extreme north of the county, the basal beds of the Lincolnshire Limestone Formation form a fossil sandy limestone known as the Collyweston Slate. This material is used locally as a roofing material and building stone and is worked at a quarry near Stamford. Bedding is often massive in the upper part of the Lincolnshire Limestone Formation. In the area to the east of Corby, this material was worked (in quarries and underground) as a high quality dimension stone. Known locally as 'Weldon Stone', this material is the only dimension stone from Northamptonshire to be employed extensively outside the region.

The Blisworth Limestone (Great Oolite) is a building stone of local significance and is worked near Oundle and in a small operation south of Towcester. Although the Northampton Sand Formation ironstone has been used in buildings in many parts of the county there are no quarries currently working this material as a building stone. Because of their limited local significance, the outcrop area of both these formations is only shown on a small-scale inset map.

**Sand and gravel**

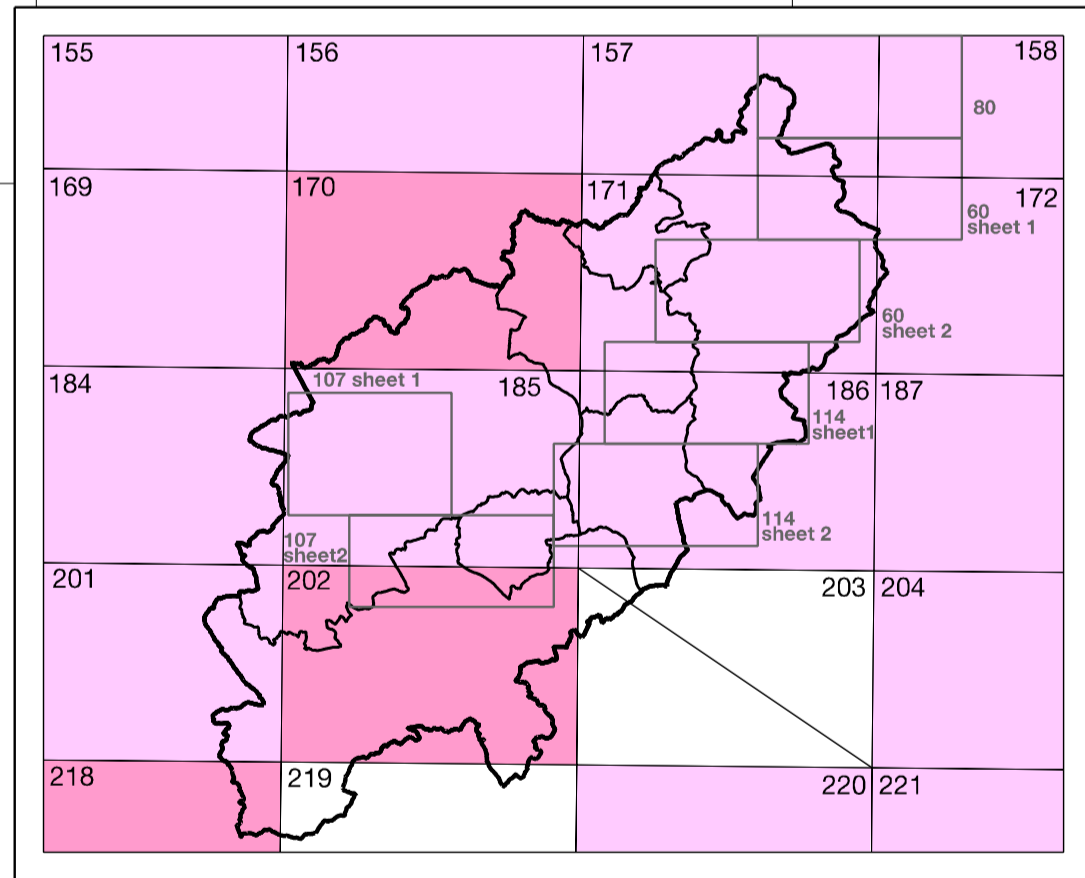
**Pre-glacial and glacial sand and gravel**

Pre-glacial sand and gravel, known locally as Milton Sand, occurs in a belt running to the south and west of Northampton. It is probable that these deposits were laid down by a river system that existed in the area prior to glaciation. The Milton Sand appears to reach its maximum thickness of about 13 m near Milton where sand with thin gravel beds containing mainly locally-derived sandstone and ironstone pebbles has been quite extensively worked. Milton sand is not separately distinguished from glacial sand and gravel on the map.

'Glacial Sand and Gravel' is sand and gravel that has been deposited either by melt-water streams issuing from an ice sheet, or by streams flowing within, beneath or on the surface of the ice. The till (boulder clay) that is widespread in the county was laid down by the same ice sheet so the glacial sand and gravel and the till are often intimately associated. Consequently, sand and gravel deposits may occur within, beneath and on top of the till. Outcrops of glacial sand and gravel are scattered throughout much of the county and are particularly extensive between along the M1 corridor between Northampton and Daventry. The thickness of the glacial sand and gravel deposits is highly variable and difficult to predict, as is the thickness of overburden where deposits are concealed. Up to 33 m of glacial sand and gravel are reported in central parts of the county. Glacial sand and gravel in the county are typically clayey to very clayey, sandy gravels.

**River gravels**

River gravels outcrop along the valleys of the rivers Nene, Ouse, Welland, Isle and Tove, where they are deposited beneath a series of level surfaces, or terraces. The most extensive river gravel resources in the county are found in the Nene Valley. The river gravels in these valleys range up to about 6 m thick, exceptionally 8 m near Warrington, with a mean thickness of about 2.5 to 3 m. Overburden, comprising alluvial silty clay, rarely exceeds 2 m in thickness although up to 6 m has been recorded in isolated boreholes. There has been considerable extraction of Nene Valley gravels over the past 100 years. The majority of the River Nene gravels are sandy gravels that fall within a fairly narrow grading range. Although data are limited, gravel resources along the other river valleys in the county are likely to be extensive, particularly in the Welland valley in the north and around the confluence of the Ouse and the Tove in the south.



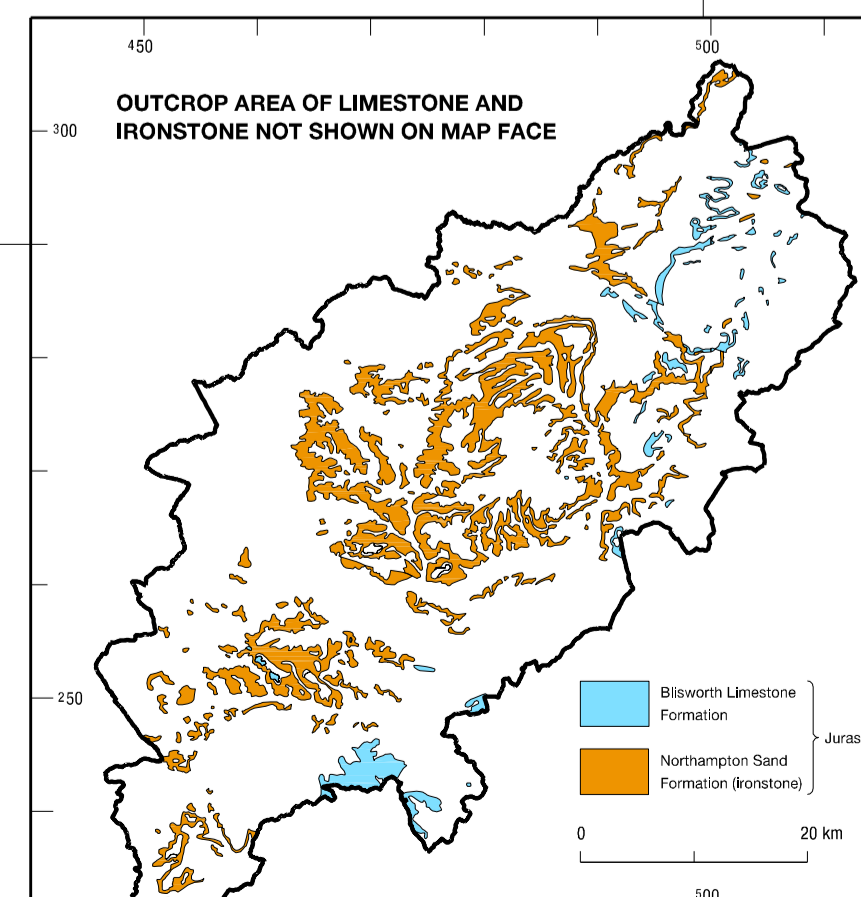
1:50 000 map published

1:63 360 map published

1:25 000 map published (Industrial Minerals Assessment Sand and Gravel Resource Map)

Modern geological maps not available

Modern geological maps out of print



**HYDROCARBONS**

The prospects of finding oil and gas fields in Northamptonshire are very low. The area is unprospective due to a lack of mature source rocks. The Lower Jurassic potential source rocks have not been buried to sufficient depths to generate significant quantities of oil or gas. Similarly, the coals in the Westphalian C-D Coal Measures of the Oxfordshire Coalfield which occur at depth in the extreme southwest of the county are of very low rank and have not been buried sufficiently deeply to produce thermogenic gas. Poor prospectivity is reflected in the fact that no exploratory wells have been drilled for oil and gas, and only a few seismic lines have been acquired.

Northamptonshire is not prospective for coalbed methane. Although Coal Measures occur beneath the surface in the southwest of the county, the gas content of the coals they contain is too low to allow coalbed methane production.

