



BRITISH GEOLOGICAL SURVEY DOE

BEDFORDSHIRE

A Summary of Mineral Resource Information for Development Plans

Mineral Resources

Scale 1:100 000

Compiled by M.G. Sumbler, D.E. Highley, D.G. Cameron and M.D.A. Samuel. Project Leader: D.E. Highley. Planning Consultant: J.F. Cowley, Mineral and Resource Planning Associates. Digital cartography by C. Simpson, British Geological Survey, Keyworth.

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Topography based on the Ordnance Survey 1:100 000 scale County maps. © Crown Copyright 1985

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Positions of Scheduled Monuments at 31st March 1994 as supplied by English Heritage. Monuments scheduled or descheduled since that date are not accounted for.

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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 constraints. 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. 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 mineral planning permissions has been obtained from the relevant Mineral Planning Authority. 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 Commission, English Nature and English Heritage). For further information, the appropriate 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 hatched boundaries shown are, therefore, approximate. Extensive areas are excluded 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 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 acquisition or use of a particular piece of land, although they may give useful background information which sets a specific proposal within context.

Brick clay The Lower Oxford Clay of Marston Vale is one of the major sources of brick clay in Britain. Extraction is on a large scale and the resulting voids are of regional importance for waste disposal. The Lower Oxford Clay contains some 5% carbonaceous matter which acts as a fuel during firing and reduces the costs of brick production. The weathered mantle of the Lower Oxford Clay and the more calcareous Middle and Upper Oxford Clay are generally unsuitable for brick production and so are removed where present as overburden. The base of the Lower Oxford Clay has been mapped throughout the county. The top is more difficult to define, and except in parts of Marston Vale, this upper boundary has been inferred. Permitted reserves of clay in Marston Vale are large and sufficient for up to 70 years. A distinction has, therefore, been made between the principle resource area in Marston Vale and the outcrop of the Lower Oxford Clay elsewhere in the county. The latter may be covered by extensive thicknesses of superficial deposits. The Gault clay has an extensive outcrop in the south of the county. It is a difficult clay to use in brickmaking, but a small works was until recently in operation at Arlesey, near Hitchin.

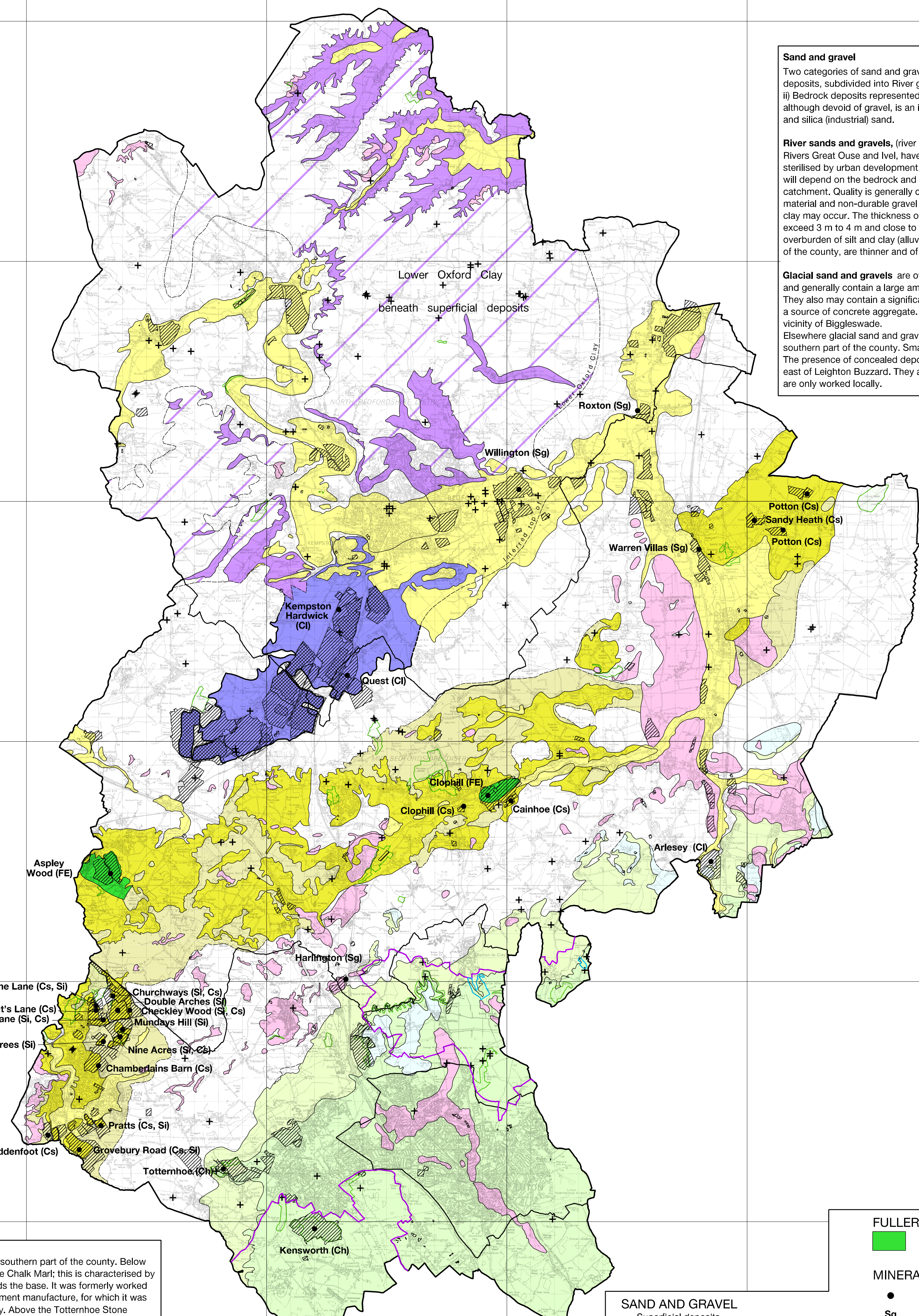
Fuller's earth There is a long history of fuller's earth extraction in Bedfordshire, believed to date back to Roman times. The county provides one of the few indigenous sources of this rare clay which has a wide range of industrial applications. It is extracted from localised deposits within the Woburn Sands Formation at Woburn Sands and Clophill. Only minor occurrences have been found elsewhere in the county.

Bedrock sand Bedrock sand resources are confined to the Woburn Sands Formation which shows marked variations in quality and grain size over its extensive outcrop. The vertical and areal distribution of different qualities of sand are generally poorly known, and cannot be delimited on the map. The sands may be up to 120 m thick in the Woburn area, but are generally between 30 m and 60 m in thickness. Extensive areas of the outcrop are overlain by superficial deposits. Extraction is centred on the Leighton Buzzard and Potton areas, the latter being a major source of building and asphaltting sand. At Leighton Buzzard, and Heath and Reach the upper part of the formation is worked in numerous quarries for building and concreting sand, and silica sand. Construction sand and silica sand are normally produced from the same quarry where their production is interdependent. Woburn Sands are worked from beneath an overburden of Gault and superficial deposits to the south-east of Leighton Buzzard, and Heath and Reach; the area with an overburden thickness of less than approximately 20 m is shown.

Chalk Chalk has an extensive outcrop in the southern part of the county. Below the Totternhoe Stone it is known as the Chalk Marl; this is characterised by a high clay content, particularly towards the base. It was formerly worked at Sundon and Houghton Regis for cement manufacture, for which it was suitable without further addition of clay. Above the Totternhoe Stone the chalk has a higher purity. Much of the Upper Chalk on the higher parts of the Chilterns is covered by clay-with-flints which is not shown on the map. At Kensworth the Middle Chalk and basal beds of Upper Chalk are extracted. The crushed and slurred chalk is pumped by pipeline to Rugby and Southam in Warwickshire, where it is mixed with additional clay for cement manufacture. At Totternhoe, chalk is worked for agriculture lime and the Totternhoe Stone is extracted on a small scale as a building stone for restoration work.

Conventional hydrocarbon potential Because of the absence of suitable source rocks at depth, Bedfordshire has a low potential for the discovery of conventional hydrocarbons (free oil and gas held in the pore spaces of reservoir rocks such as sandstones or limestones). Coalbed methane potential Although there are few deep boreholes in Bedfordshire, the information available suggests that coal-bearing rocks are not present beneath the county. Thus Bedfordshire has no coalbed methane potential.

Sand and gravel Two categories of sand and gravel have been defined: i) Superficial deposits, subdivided into River gravels and Glacial sand and gravels; ii) Bedrock deposits represented by the Woburn Sands Formation which, although devoid of gravel, is an important source of construction sand and silica (industrial) sand. River sands and gravels, (river terrace deposits) mainly associated with the Rivers Great Ouse and Ivel, have been delineated. Extensive resources have been sterilised by urban development, notable around Bedford. Their composition will depend on the bedrock and glacial units being eroded within the river's catchment. Quality is generally consistent, with a lower proportion of fine-grained material and non-durable gravel than in glacial deposits, although beds of silt and clay may occur. The thickness of the main river sand and gravel deposits rarely exceed 3 m to 4 m and close to the course of the river, may be covered by a thin overburden of silt and clay (alluvium). Deposits elsewhere, such as in the north of the county, are thinner and of limited economic potential. Glacial sand and gravels are of variable composition and thickness, and generally contain a large amount of finer-grained material (silt and clay). They also may contain a significant amount of chalk, which limits their value as a source of concrete aggregate. The most extensive deposits shown are in the vicinity of Biggleswade. Elsewhere glacial sand and gravel occurs as isolated deposits, particularly in the southern part of the county. Small outcrops have been omitted. The presence of concealed deposits beneath till is likely, particularly to north-east of Leighton Buzzard. They are not an important aggregate resource and are only worked locally.



SAND AND GRAVEL Superficial deposits River gravel resources Glacial sand and gravel resources at surface Bedrock deposits Construction sand resources, locally suitable for silica sand near Leighton Buzzard Woburn Sands beneath overburden of till, (and Gault in the Leighton Buzzard area) CLAY Outcrop area of Lower Oxford Clay, within the Marston Vale; principal brick clay resource (passing beneath Middle Oxford Clay at black line) Outcrop of Lower Oxford Clay; elsewhere Lower Oxford Clay: Worked area CHALK Outcrop of chalk, higher purity (90-97% CaCO3) (Grey, Middle and Upper Chalk) Chalk with high clay content (Chalk Marl) Chalk beneath till

FULLER'S EARTH Fuller's earth beneath overburden MINERAL WORKINGS Surface mineral working Sg Sand and gravel Cs Construction sand Si Silica sand Ch Chalk Cl Common clay and shale FE Fuller's earth MINERAL PLANNING PERMISSIONS Planning permission (as at 1.6.94) Source: Bedfordshire County Council ENVIRONMENTAL DESIGNATIONS Area of Outstanding Natural Beauty (Chilterns) Site of Special Scientific Interest National Natural Reserve + Scheduled Monuments ADMINISTRATIVE AREAS County District