

## Bedfordshire's landscape

Bedfordshire is simply beautiful. The landscape varies from the Chalk hills in the southwest emphasized by the low Gault Clay vale that separates the Chalk from the Greensand Ridge. North of the Greensand's forests and parks the Jurassic clay vales change colour from shades of green to gold as the arable crops ripen. Rivers – the Ouzel, the Great Ouse, the Flit and the Ivel – cut through this landscape, revealing the underlying rocks and depositing sediments to create fertile riverside meadows. The rivers also provided a transport network and permanent water source for early settlers in Bedfordshire.

### How rocks make landscape

The landscape of an area is shaped by the rocks that lie beneath the surface, and what has happened to these rocks over millions of years. Weathering and erosion take their toll on different rocks in different ways. In the last 200 million years Bedfordshire has experienced everything from hot and humid tropical climates to freezing cold ice sheets. It's been under the ocean many times and exposed as land many times, too. This has gradually sculpted the rocks into rounded hills and escarpments, ridges and complex river valleys. There is an exciting story for every part of Bedfordshire, and a few stories that are quite unusual. The RIGS group has selected some of the best sites, places that tell these stories for everyone to enjoy.

### Geology influences more than the landscape



Rocks affect our lives in many ways. The heaths of the Greensand Ridge (left) developed centuries ago, after arable crops failed on the sandy infertile soils, but those sands now support a major industry. The limestones of the Ouse Valley are traditional building materials (Felmersham Bridge, below).



## The Bedfordshire & Luton Geology Group

We exist to encourage understanding of the geology and geomorphology of the county and to undertake site recording, interpretation, advice and education. We aim to:

- Protect local geological and geomorphological sites
- Encourage public enjoyment of rocks, fossils and landscape
- Encourage the use of RIGS\* sites by the public, by schools and local groups
- Keep a listing of RIGS sites in Bedfordshire
- Provide information for potential users of sites
- Encourage landowners to participate in the scheme
- Involve landowners and users of RIGS in good practice and management

### What are RIGS?

Regionally Important Geological and Geomorphological Sites, places that reveal our geological past and are considered important enough to deserve conservation. They include sites where rocks can be seen (such as quarries and road cuttings) or where the geology or geological processes can be inferred from the shape of the landscape. Even buildings made of local stone can be RIGS! Official RIGS are recognised by county councils and by Natural England (the statutory nature conservation body of England).

### How to contact us

For more information about the BLGG and our events as well as the geology and geomorphology of your area visit our website at

[www.bedsrigs.org.uk](http://www.bedsrigs.org.uk)

or contact Chris Andrew c/o Bedford Museum,  
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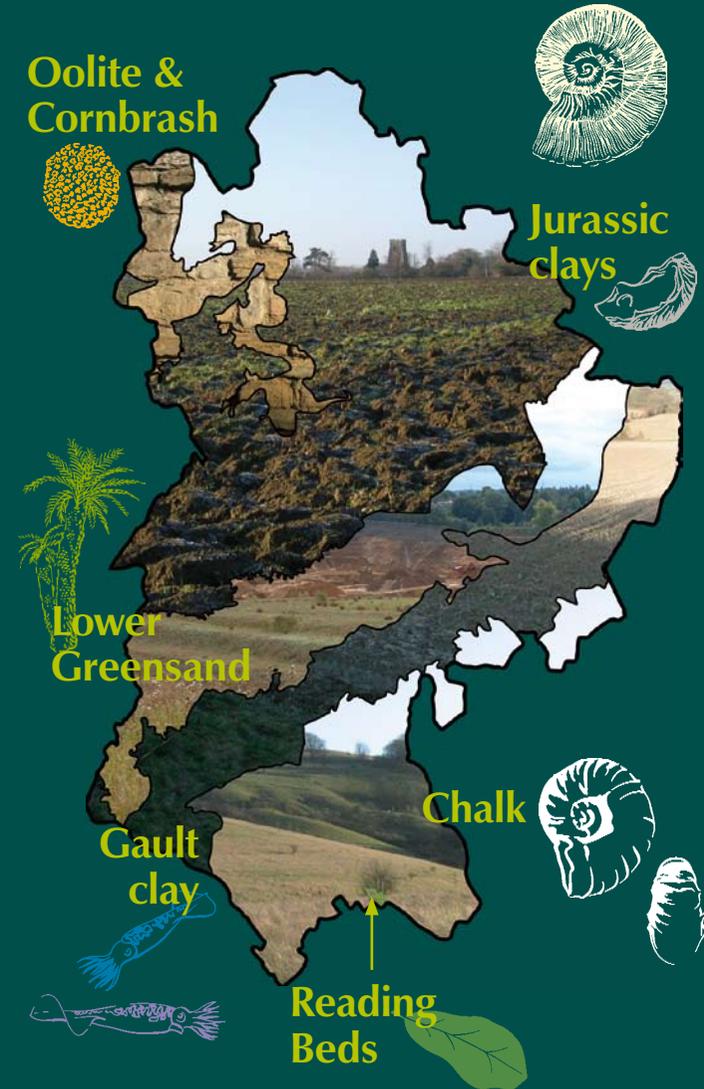
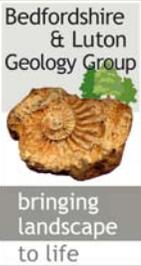
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# Bedfordshire & Luton RIGS

Regionally Important Geological  
and geomorphological Sites





## Bedfordshire geology

Rocks make landscape, and Bedfordshire's countryside is shaped by many different rocks.<sup>1</sup> The county's visible geological history spans a period of more than 200 million years. It begins in the tropical seas of the Jurassic limestones of the Ouse valley, followed by lagoons where dinosaurs roamed 170 million years ago. The Greensand Ridge was once a sandy shallow seaway, and the high white Chalk hills were deposited at the bottom of a warm blue ocean.

Bedfordshire's amazing geological history is open for you to read; you just have to know where to look! Here's a brief guide to take you back through time (leaflets for specific RIGS sites will tell you more about what the rocks have to say).

## Quaternary

For someone interested in rocks, this era is notable for the rocks that disappeared, ground to dust and scraped or washed away by glaciers. Others were exposed in the sides of river valleys. Today, valleys too large for the rivers that flow in them, or with no rivers at all (the *dry valleys* of the chalk) record the force and volume of the water that poured across the landscape when the ice melted. The remains of mammoths and woolly rhinoceros lie in the river gravels.

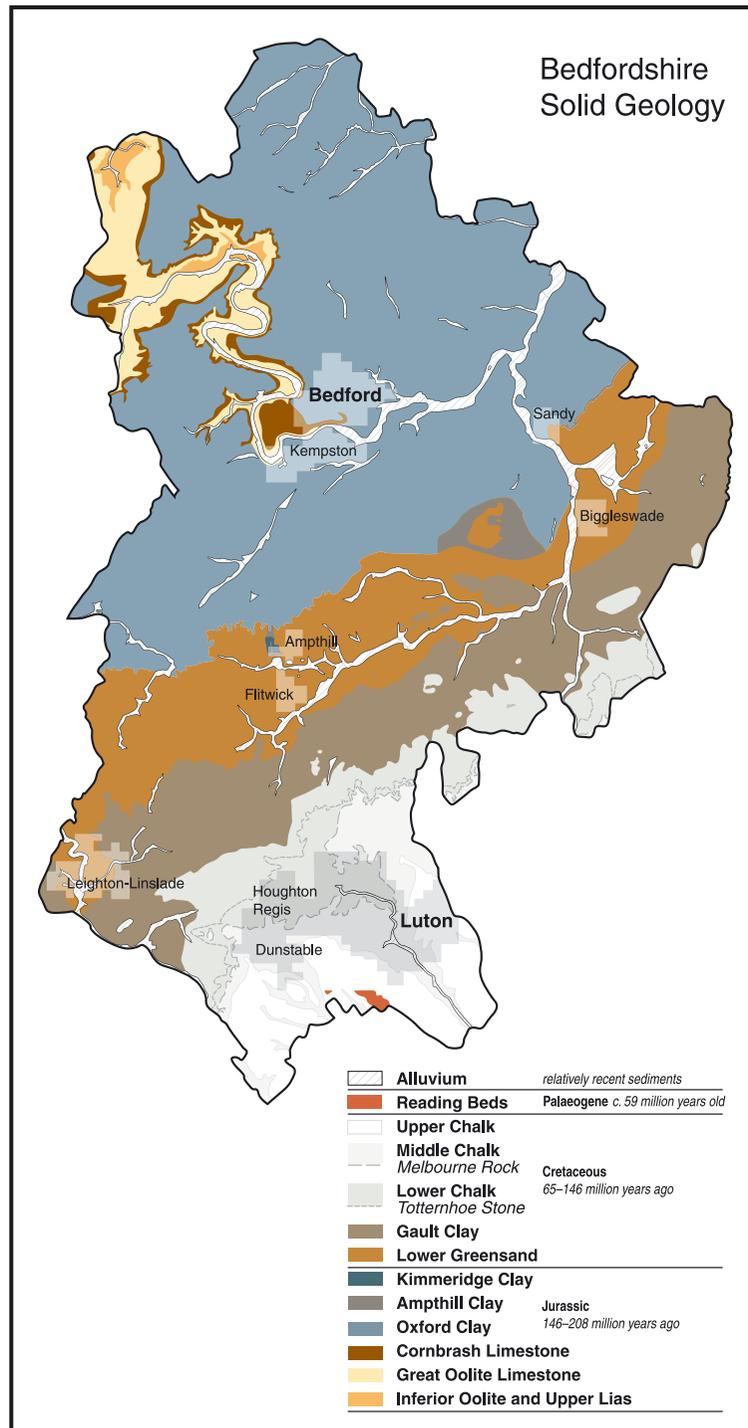
## Tertiary

### Reading Beds<sup>2</sup>

The world changed at the beginning of the Tertiary, when dinosaurs disappeared. Mammals began to diversify, birds took to the air, even insects began to look like those we see today. Sadly glaciers have scraped away most of the Tertiary rocks from this area, leaving only the Reading Beds in the far south of the county. These clays record an ancient waterlogged soil that was flooded by the sands of an estuary and then by the sea about 40 million years ago.



1. To geologists clay is a rock!  
2. Formations are almost always named for the best places to see them.



## Cretaceous

### Chalk, Gault and Lower Greensand

In the Cretaceous the land was sinking and sea level was rising. The **Lower Greensand** was deposited in a shallow seaway; the sands aren't green here, but cream, gold and rust-brown, with fossil trees washed down into flood-swollen rivers and out to sea. As the sea rose higher, mud and silt of the **Gault Clay** covered the sands, with fossil *belemnites* (relatives of modern squid) and reptiles that lived in open water. Sea levels rose further; microscopic plants and animals thrived in the clear warm water. For millions of years their skeletons rained down on the sea floor, building up the thick white layers of the **Chalk**. Harder and more permeable (water flows through rather than over it) than clay, the chalk stands high above the vale of the Gault.



## Upper Jurassic

### Amphill, Kimmeridge and Oxford clays

Most of north Bedfordshire is covered by a thick layer of these clays, which were deposited in shallow to deep seas. In some places beds of sand and limestone in the sediments, and the remains of oysters, mussels, dinosaurs and crocodiles tell us that these layers were laid down in lagoons or other shallow seawater.



## Middle Jurassic

### Cornbrash, Great Oolite and Inferior Oolite

These rocks were exposed by the River Ouse northwest of Bedford. *Oolite* describes the tiny perfect spheres ('oo' is Greek for egg) about 1mm across that may be seen in the warm cream-brown limestone. Oolites are forming today near Bermuda, and our rocks contain fossils of corals and other animals that lived in shallow tropical seas, so we know something about what Bedfordshire was like when these rocks were deposited. The **Cornbrash** is a thin layer of tough brown limestone containing other marine fossils that have been broken by waves and strong currents near an ancient shore.

