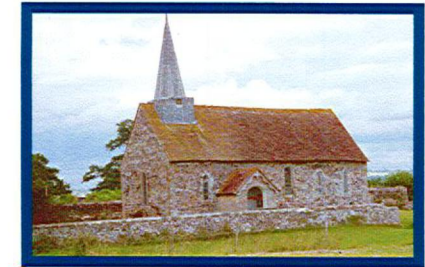


**Holy Trinity Church, Duncton**  
Calcareous Tufa

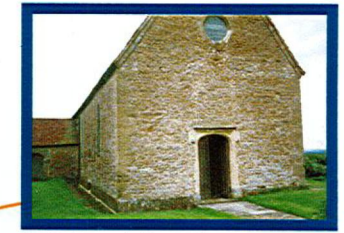
*Some examples of the use  
of West Sussex building stones  
and their locations.*



**Greatham Church**  
Lower Greensand, Sandgate Beds



**Blackfriars Priory, Arundel**  
Chalk



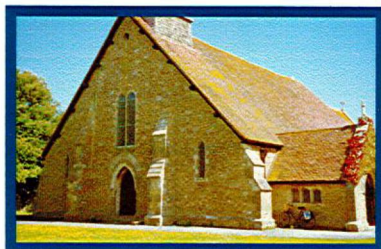
**Holy Sepulchre, Warminghurst**  
Weald Clay, Sussex Marble



**Boxgrove Priory**  
Lavant Stone



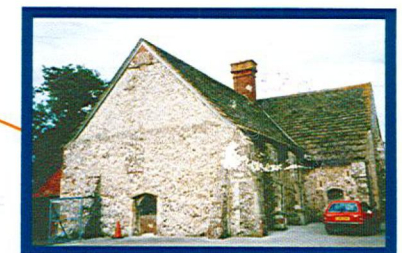
**Amberley Castle**  
Upper Greensand



**St Peter's Church, Selsey**  
Mixer rock

**Key to geological formations**

- Bracklesham beds
- London Clay
- Woolwich and Reading formations
- Chalk
- Upper Greensand and Gault
- Lower Greensand
- Weald Clay
- Hastings Beds



**Bishop's Palace, Tarring**  
Weald Clay, Horsham Slate



## Principal Building Stones Found in West Sussex

**Calcareous Tufa** is a deposit of calcium carbonate formed by deposition from solutions of calcium bicarbonate. It has been formed relatively recently in geological terms. The tufa used in the building of the Holy Trinity Church at Duncton is unique and was probably quarried at Duncton Mill. Here, lime saturated waters drain from the chalk and emerge as springs at the junction with the Gault Clay.

**Mixen Rock or Alveolina Limestone** is an unusual rock used locally and sporadically in the Selsey area. It exists as a unique hard reef uncovered at low tide, a mile offshore at Selsey Bill. It was formerly quarried by rowing boat. This was stopped by an Act of Parliament around 1825. The rock contains the fossil foraminifera *Alveolina*.

**Chalk** is a fine-grained limestone whose hardness varies considerably. Usually it will be used for internal facing of buildings but in some circumstances the harder chalks (e.g. Lavant Stone, below) may be used structurally.

**Lavant Stone** is a hard chalk layer in the Upper Chalk confined to the area North of Chichester. Over the last few years Anne and David Bone of the West Sussex Geological Society have been carrying out a continuing study of this unique building stone. Previously unrecognised, it is now frequently identified in old ecclesiastical buildings around Chichester, particularly the Guildhall, Priory Park.

The stone is a phosphatic chalk, partially cemented, coarse grained and rich in microscopic sponge spicules. Its source was a quarry,

thought to be owned by Shulbrede Priory, on a site near the village of Lavant, near Chichester. Production probably finished around 1350 and the quarry is now covered by farmland. Age is Turonian in the Cretaceous

**Flint** is cryptocrystalline (i.e. microscopic) silica which is exclusively found in the Chalk. Flint has significantly different qualities depending upon whether it is freshly mined, found weathered in the fields or as a cobble on the beach.

Fresh flint has a brown/black interior and a white coating (patina/cortex) on the outside; hence rolled beach flints are sometimes white but often black where the outer layer has been removed. Brown flints have suffered extensive weathering, their colour is due to iron oxide.

Fresh mined flint was used by Palaeolithic and Neolithic man as a tool because of the curved fracture planes (conchoidal) that are produced when they are broken. Elaborate cutting tools implements could be produced with sharp serrated edges.

Most weathered or rolled flints break with a flatter cleavage plane or sometimes with an irregular surface termed hackly or chattermarks. These cleaved flints are sometimes used to "face" buildings and are termed knapped flints. The broken shards of flint are often squeezed into the adjoining mortar as 'galleting'; which saves on the lime or cement binding material.

Flint is an extremely durable and weatherproof material and is found in many buildings in Sussex.

## Principal Building Stones Found in West Sussex *contd*

**Upper Greensand.** The Gault Clay grades upwards into the pale glauconitic siltstones which form the lower part of the Upper Greensand. Above this is a predominantly sandy series of beds containing some clays and silts. Within this series is the Malmstone which is a pale coloured rock with abundant sponge spicules, soluble silica, clay, calcareous deposits and mica.

Malmstone has many local names (e.g. Harting Stone) and although not very hard it is the best stone available locally. Used extensively for walls and buildings, it is particularly well developed to the west of the county.

**Lower Greensand** suffers from the twin problem of consisting of four layers, rather than one, and of none of them being green. Elsewhere in England the same horizon is coloured green by the mineral glauconite, but throughout West Sussex this glauconite has been oxidised to brown iron oxide (rust).

The uppermost layer is the Folkestone Beds. These red brown sandstones can be seen in quarries from Washington to Storrington and Midhurst. The uppermost bed of the Folkestone Beds is heavily cemented with iron oxide and is known as 'iron grit'. 'Carstone', which can be concretionary or

nodular, occurs within the main mass of sands and is used locally for facing walls and as galleting. The underlying Sandgate Beds are extremely fertile and are rarely found in exposures at the surface.

In contrast, the Hythe Beds beneath the Sandgate Beds become thick and well cemented sandstones west of Pulborough. Hard sandstone (chert) from the Hythe Beds is used extensively in Petworth and Midhurst as a building stone. The working quarry at Little Bognor still produces Hythe Beds chert, but alas it is now sold mostly as a rockery stone, known affectionately as 'Sussex Blue'.

Sussex Marble and Horsham Slate are thin rock layers occurring at irregular horizons within the Weald Clay, which occupies the low ground of north West Sussex. The Sussex marble is not a marble but a limestone packed with the gastropod *Viviparus sussexiensis*. It is used largely as an ornamental building stone as it takes a high polish.

Horsham Slate is not a slate but a micaceous sandstone which splits easily to produce thick flagstone layers. Many ancient buildings in the Weald, especially around Horsham, are roofed in this flagstone. The excessive weight of these slabs often makes the roof timbers sag.

## THE BUILDING STONES OF WEST SUSSEX



Flint, Fishbourne Road, Chichester

### The West Sussex Geological Society:

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- Welcomes new members
- Issues the Outcrop magazine twice a year

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