



# Historic building stones and their distribution in the churches and chapels of West Sussex, England



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## ABSTRACT

A survey of the historic building stones used in the construction of 258 West Sussex churches and chapels has used a simple, replicable methodology for recording the relative abundance of building stones. The results, from buildings spanning the 10th to 20th centuries (Saxon to Victorian), have been analysed to produce distribution maps for 32 of the 42 significantly different stone types in common usage, including minor but geologically interesting forms. These building stones come from a range of geological and geographical sources, including imported material from the Isle of Wight, Dorset and France. It is shown that the distribution and abundance of the different building stones reflects the local geology, landscape character and changes through time as a result of improvements in supply and modes of transport. The inappropriate choice of stone is easily recognised. This study demonstrates the importance of geological resources in creating a heritage of 'local distinctiveness'. The declining availability of the historic materials makes it increasingly important to respect and conserve existing building stones in order to protect the individuality of the churches. The methodology applied in this study contributes to the understanding and selection of appropriate stone for conservation and repair works.

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## 1. Introduction

The bedrock geology of West Sussex spans the Cretaceous and Palaeogene periods (Fig. 1) with a cover of Quaternary superficial deposits, particularly on the coastal plain. These rocks are of sedimentary origin and, with a couple of exceptions, are relatively poor sources of freestone suitable for ashlar, carved or decorative work. It was therefore necessary, even in Roman times, to import stone from Dorset, the Isle of Wight and France. This picture was repeated in the wave of church construction that followed the Norman Conquest in 1066 (Roberts, 1988; Parsons, 1990; Pearson, 2006). However, local material has been widely used as rubble stone for walling, paving and some roofing. It was only following the development of the rail network in the mid to late 19th Century that mass-produced building stone became common (White, 1961; Farrant, 1999b).

Most stone-built churches are of Saxon or mediaeval date up to around 1400 although church building, albeit at a reduced rate, continued through post-mediaeval times. The frequent enlargement of churches, such as seen in the addition of aisles, chapels and

extended naves, often resulted in the reuse of old stone in the new build. This is obvious when dressed stone has been reused but can also be identified by the use of particular stone types, as is discussed below. Churches were sometimes reduced in size as the population shrank or repairs became excessively expensive. The resultant demolition of aisles with the blocking of aisle arches as they became exterior walls, as well as blocking of doors and windows, also provided stone for reuse.

The Victorian period (1837–1901) saw a major expansion in new build, particularly in urban areas after the Church Building Act of 1818 (Elleray, 1981). The use of stone was almost certainly encouraged by the implementation of the Brick Tax, a property tax introduced in 1784 and increased three times before being repealed in 1850. These new churches of Victorian and later build show little variety in stone types and many do not use stone in their construction. Elleray (1981) gave a breakdown of Victorian church building materials for 603 Sussex churches (includes East Sussex) and noted that it was only in the 'stone belt' of central and northern Sussex, extending through Petworth and Horsham to Hastings, that stone competed successfully with brick for construction (Table 1).

The decayed state of many churches by the 19th Century also led to major repairs to an extent that some authors view them as being 'mercilessly restored' (e.g. Beevers et al., 1989). Some

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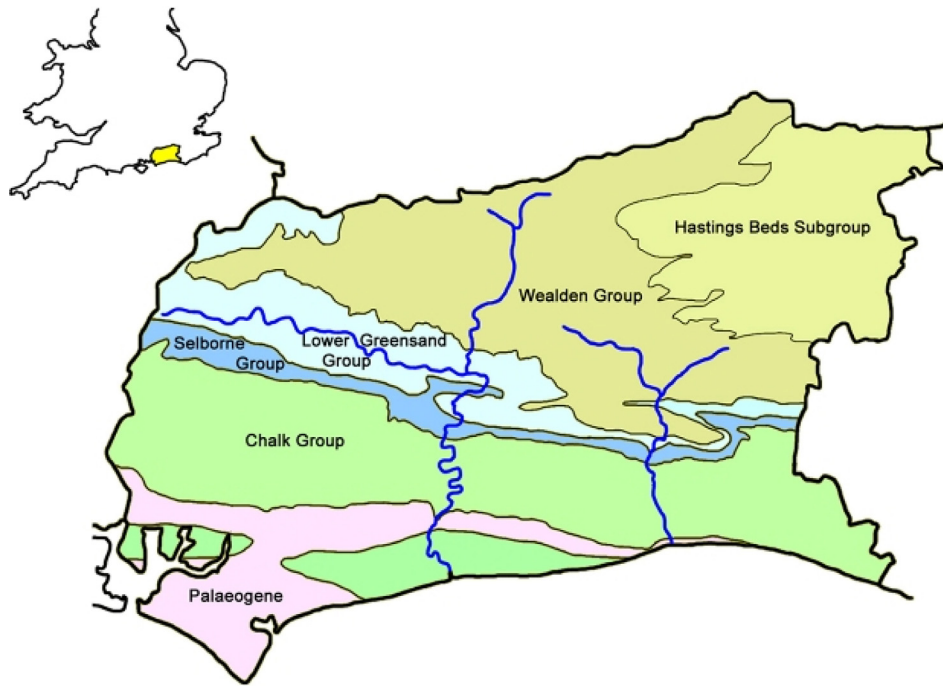


Fig. 1. Geological sketch-map of West Sussex (including Brighton & Hove). Redrawn from [British Geological Survey online Geology of Britain viewer](#).

**Table 1**

Use of stone in Victorian churches.

Brick	247 (41%)
Stone	146 (24%)
Flint	97 (16%)
Rendered and stucco	92 (15%)
Roughcast, iron and wood	17 (3%)

Source: Adapted from [Elleray \(1981\)](#).

**Table 2**

Stone sources and supply in West Sussex.

Source	Provenance
Reused	Local
Field brash	Local
Delves and small pits	Local
Coastal outcrops	Local and imported
Quarries	Local and imported

churches were even demolished and rebuilt, although using much of the original stone. Examples include the churches at Hunston, North Mundham and Selsey, the latter being relocated from nearby Church Norton where the original chancel still survives. Fortunately, despite these Victorian depredations, parts of many original church structures often survive which, with the additions of the 19th Century, give an even greater range of stone types.

There are many published guides to the historic churches and chapels (hereafter simply noted as churches) of West Sussex; useful summaries include [Roberts \(1988\)](#), [Salter \(2000\)](#), [Sladen and Antram \(2005\)](#) and [Coppin \(2006\)](#). These churches are often a focus for the local community and are usually buildings of historical significance. The church is often the oldest building in the settlement and may be a key feature in the landscape with the building stones providing local distinctiveness. These churches often preserve historic building stones that are being swept away elsewhere by modern developments in brick and imported stone. Many types of building stone are no longer available as quarries have become overgrown, backfilled or sterilised by industrial and residential development. This study is therefore an important record of the surviving building stones, as well as providing information for considering appropriate stone types for repair and conservation works.

## 2. Supply and transport

Building stone was obtained from five principle sources ([Table 2](#)), depending on cost, quality and quantity requirements. The use of reused stone was a common occurrence, both legitimate

and illicit ([Knoop and Jones, 1949](#); [Parsons, 1990](#)). It is particularly apparent in churches where Roman tile has been reused, as this is easily recognised as a reused material. Undoubtedly, as discussed below, there is much more reuse of stone that is currently not recognised. This will be most common around Chichester, which was an important centre in Roman times ([Down, 1988](#)), and former villa sites such as Fishbourne ([Blagg, 1990](#)). The recycling of stone is a continuous process with mediaeval churches subsuming earlier Saxon churches (e.g. St Thomas the Martyr at Pagham; [Freke, 1980](#)) and Victorian reconstruction sometimes involving wholesale demolition of the church and reuse of the stone (e.g. St Stephen at North Mundham; [McGowan and Girling, 2002](#)). The process continues today as churches, no longer having access to historic stone sources, reuse stone in repair works.

Rubble from shallow delves was frequently used for foundations and in the core of ashlar-faced walls, as well as for rubble-built walls. The need for good quality stone increased dramatically after the Norman Conquest, with the construction of cathedrals, monasteries and castles, as well as churches ([Parsons, 1990, 1991](#)). Quarries were opened where suitable stone was found, although most were small by modern standards ([Knoop and Jones, 1938](#)). Most of these are now lost and impossible to trace. Records for 1857 reveal that there were 45 quarries in the whole of Sussex (East and West) with an annual return of just 400 tons, but it is suggested that there were many more active quarries with a total annual return estimated at 3010 tons ([Hunt, 1858](#); [Lott, 2005](#)). Many of these would have provided stone for Victorian church construction.

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