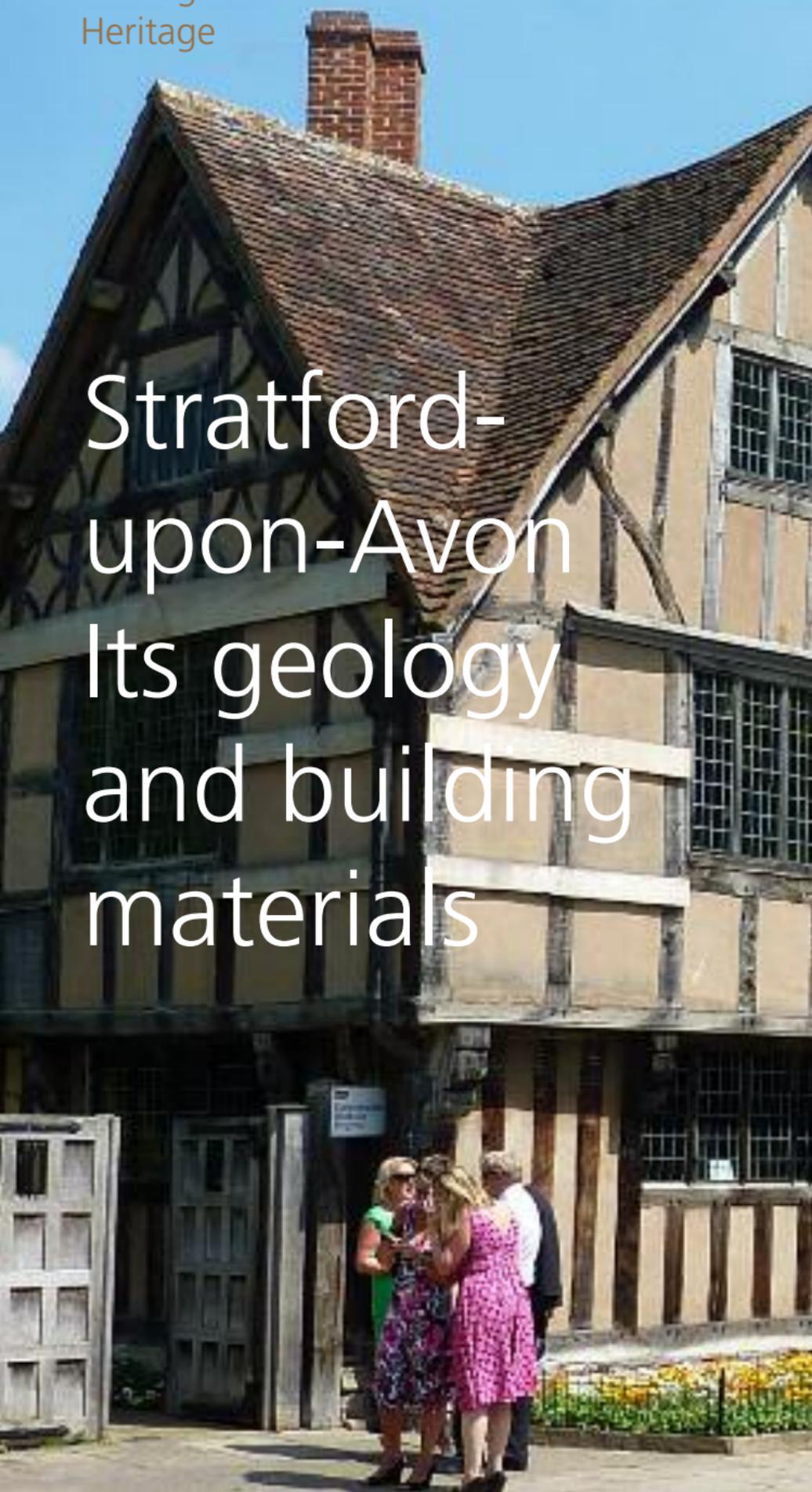


Conserving
Warwickshire's
Geological
Heritage



WGCG
Hidden wonders
in the landscape
of Warwickshire

Stratford- upon-Avon Its geology and building materials



Introduction

The Avon valley has been settled since Neolithic times. Around Stratford the river was shallow enough to allow several crossing places. One of these was used by the Romans for their road linking Alcester with the Fosse Way. The Anglo-Saxons adopted this paved road ('straet') and called the land, near its fording of the river, Straet-ford.

In the 7th century, the area was part of a Worcester diocese estate administered from a minster church on the site where the parish church now stands. In 1196, the Bishop was granted a town charter, and near the ford laid out a new town with streets wide enough to hold markets. This grid of streets remains the heart of the town today.

The history of Stratford can be traced through its building materials, reflecting not only changes in fashion but availability of materials and their durability. Early houses were timber framed, using plentiful and easily transported wood from the nearby Forest of Arden. More prestigious town buildings were constructed of stone. However, the local rock is Mercia Mudstone covered by gravelly river deposits. Neither is suitable for building so stone had to be brought from further afield. Stones used were:

Arden and Warwick Sandstones – Triassic desert rocks c. 225 million years old; and **White Lias, Blue Lias, Horton Stone and Cotswold Limestone** – Jurassic marine limestones and mud stones c. 200 million years old, often rich in fossils.

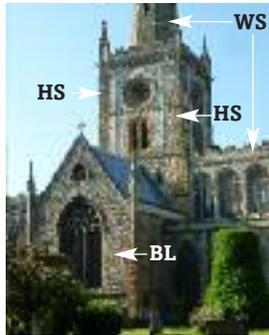
Mercia Mudstone produces good bricks and tiles. Between 1594 and 1641, several fires devastated Stratford, and although many houses were rebuilt with timber frames, brick began to appear in walls and tiles replaced thatched roofs.

As the town expanded in Georgian and Victorian times, brick came into its own as a building material. Meanwhile, in an attempt to keep up with the fashionable spa towns, most of Stratford's old timber houses were stuccoed (plastered) to resemble stone. A century later and much stucco was removed as Stratford embraced its Shakespearian, timber-framed image.

Stone - public buildings to impress

Stone is a beautiful and durable building material so it has long been used to produce impressive, high status buildings. Some types of stone last better than others. Older buildings often show different phases of construction or repair, each using a different stone as old quarries were abandoned and new sources became available.

1 Holy Trinity Parish Church



Almost every type of stone within a radius of 20 miles of Stratford's 800-year-old parish church has been used in its construction. The fine-textured, pale grey Arden Sandstone (AS see photograph), which sometimes develops a dull purple-red surface, has a gently rippled

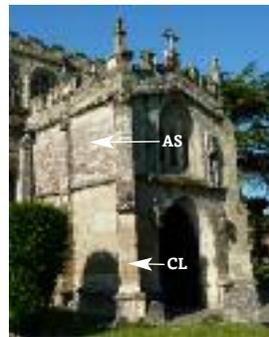
appearance from when the sand was laid down in quiet river channels. This stone was sourced near Shrewley. Inside the chancel the unweathered stone is almost white.

Hornnton Stone (HS), a yellow-brown sandy limestone from near Edge



Hill, was formed in shallow seas and contains clusters of fossil shells. The distinctive rusty hues and dark brown veins come from a high iron content.

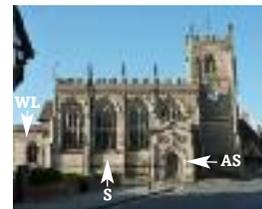
The grey Warwick Sandstone (WS) (used to build Warwick Castle) was deposited in desert stream beds. It is relatively soft and weathers easily. Where a more durable stone is needed for the base of the tower and pillars in the nave, the stronger Cotswold Limestone (CL) has been used. The rough-hewn, local pale grey



Blue Lias (BL), originally deposited on an old sea bed, is used for the irregular blocks in the nave walls and also the old bier house in the churchyard

2 Guild Chapel

Medieval Stratford was governed by a religious fraternity of leading townsmen known as the Guild of the Holy Cross. What remains of their chapel and hospital from the 1420s can be recognised by the smooth-faced blocks of cream White Lias limestone (WL), quarried east of Stratford near Moreton Morrell. In 1495, the hospital was replaced by the existing nave and tower built of Arden Sandstone (AS see photograph), which sometimes develops a dull purple-red surface, has a gently rippled



appearance from when the sand was laid down in quiet river channels. This stone was sourced near Shrewley. Inside the chancel the unweathered stone is almost white. Time took its toll on the delicate features; by 1864 slender pinnacles had been damaged by weathering and the battlements were crumbling. By 1964, the Arden sandstone quarries were closed so the porch was clad in a pinkish-buff sandstone (S), probably from Staffordshire. The nave and tower were similarly restored at a later date. A few blocks of the original Arden Sandstone (AS) have been retained around the porch door.

3 Clopton Bridge



The young town depended upon the river crossing for its success. By 1269 a wooden bridge replaced the ford, but it needed constant repair. In 1490 a grand stone bridge with a causeway towards the town was completed. In dazzling fresh white Arden Sandstone, it must have looked spectacular. It was paid for by local benefactor Sir Hugh Clopton who also funded work on Holy Trinity church, the Guild Chapel and paving Stratford's streets. The bridge was widened in 1814 when the tollhouse tower was built. The grey Warwick Sandstone used is prone to damage by traffic

pollution and masonry bees. Both bridge and tollhouse show signs of repair.

4 Town Hall



The present Town Hall, originally called Shakespeare Hall, dates from 1767, and occupies the site of a market hall built in 1634. Thanks to the philanthropy of a then-famous actor, David Garrick, Shakespeare Hall was built using the high quality Cotswold Limestone from Chipping Camden. Pale brown in colour, its marine origin is evident from the bands of shell debris clearly visible in the windowsills. Open archways beneath Shakespeare Hall provided a covered market area until 1863 when they were infilled with a darker batch of limestone. Similar stone was used in 1927 for Elizabeth House (A), now the offices of the District Council.

5 Lloyds Bank

This late Victorian Bank seeks to impress. With vastly improved transportation, high quality building material could be brought economically from distant parts of the country. This pale cream, marine limestone is probably from Bath. It is a freestone (one that can be cut in any direction without splitting) and carved to produce the decorative stonework.



Timber and Local Stone – domestic scale buildings

Houses used readily available, less expensive building materials, and Stratford made extravagant use of local wood for timber frames. These frames sat on stone footings often of Blue Lias, quarried 2 -3 miles away at Binton and Wilmcote. Blue Lias consists of beds of limey mud and harder, shelly limestone from the fossilised sea floor. The name comes from the blue-grey colour of the freshly cut stone and the layers (“Lias”) along which it splits into slabs, makes it excellent for footings and paving but less good as a general building stone.



6 Hall’s Croft



The wealth of the owner of this very fine timber framed house shows in the quality of the wattle and daub (the infill between the vertical studs) used. Thin strips of oak, rather than the more usual cheaper hazel twigs, were used for interweaving (wattle),

and then covered with a mixture of clay and dung (daub). Inside, the stone flagged floor and step are Blue Lias, while the original fireplace is of Cotswold Stone, a real luxury for its time. The garden wall is also of Blue Lias

7 Shakespeare Hostelrie and 8 Falcon Hotel

These buildings on Chapel Street and High Street display unusually close spacing of their vertical planks (close studding), and are good examples of this once quite common craft in Stratford.



The Falcon Hotel has an old fireplace of Blue Lias.

9 Shakespeare's Birthplace

When the Birthplace Committee of the Royal Shakespearian Club acquired this property in 1847, it needed careful restoration. Their architect, Edward Gibbs, observed that parts of the building



(By Permission of the Shakespeare Birthplace Trust)

were not original, "the materials . . . being of bricks and elm timber of comparatively recent date, whereas the original structure is of Blue Stone and Oak timber". They resolved, "to restore any parts needing it in such manner that the restoration can never be mistaken for the old work, though harmonising with it". Try comparing the present building with the photograph. The 1858/9 restoration used Blue Lias for all stone work: new chimneys, the boundary wall on Guild Street, and stone coping marking the front boundary. Note the use of lead flashing in an attempt to protect the Blue Lias footings from weathering.

10 Grammar School, Guildhall and Alms Houses in 1882



(By Permission of the Shakespeare Birthplace Trust)

In the 18th and 19th centuries, spa towns were fashionable, and Bath led the way with its elegant stone-built crescents. Many towns applied stucco (a type of plaster) to their buildings to

imitate Bath stone. Almost every timber house in Stratford, including the ancient Guildhall and Grammar School, were not spared this treatment. In the 1900's the town realised the value of its Elizabethan heritage and restored many timber-framed buildings to their original appearance. Across the road, 16 Church Street (B), built in 1600, retains its stuccoed front but the timber frame can be seen in the side wall.



Brick – the coming of the industrial age

Brick was first used in early Tudor times, often replacing wattle and daub. Early bricks were handmade using local, often rather pebbly, clay from the Mercia Mudstone. They were thin, unevenly sized and varied in colour. Many show diagonal press marks formed when pliable bricks were stacked to dry before firing. Although expensive, brick was increasingly used for chimneys of ordinary houses along with tiles for their roofs.



The Swan's Nest Hotel (C) and 5 Chapel Street (1673) are the oldest brick houses in Stratford. In Georgian and Victorian times mass produced bricks became increasingly common.

11 Payton Street

12 Old Town

The 18th century turnpike roads, completion of the canal in 1816, a horse-drawn tramway in the 1820s, and the coming of rail in 1859 all brought increased trade and prosperity. This led to some fine houses built in suburbs to the north (11) and south (12) of the town, and terraced houses towards the canal and railway lines.



By this period, brick manufacture had become a local industry, and some very stylish brick houses can be seen in the Old Town around the Holy Trinity church.

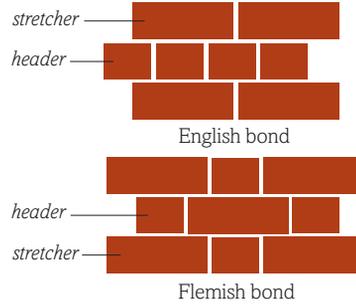
Key

Roads:

Roman

Planned town

Medieval



The particular arrangement of the bricks used in these houses is called Flemish Bond. In Stratford this bond used a mix of red and yellow bricks giving a chequered pattern. English Bond was favoured before the early 17th century and also in the 19th century.

13 Tramway Bridge



The canal linking the River Avon to Birmingham was completed (1816) thanks to transport entrepreneur William James. He owned the Wilmcote quarries, and realised how much easier it had been to lay rails in his quarries than to dig the canal. So he built this fine brick bridge (1826), and the tramway to Moreton-in-Marsh, to transport coal, machinery and agricultural products between the Black Country and the Cotwolds via Stratford. The relatively new wall behind the railway wagon is of Blue Lias.

14 HSBC – “Old Bank”



In 1883, this fine Victorian Gothic structure was built of machine-made bricks for the Birmingham Banking Company. The name and date above the door recalls an earlier bank on this site. A variety of exotic stones used adds a touch of class, and the terracotta panels show scenes from Shakespeare's plays.

The Warwickshire Geological Conservation Group was established in 1990 by a few enthusiasts who wanted to raise awareness of and conserve the many rock exposures dotted around the county. The membership has since grown and includes many enthusiastic amateurs, students and teachers as well as professional geologists. The group retains its two main aims: to raise awareness of geology and landscape through education, and to conserve and protect geological sites in the Warwickshire area.

For further information, including an outline of programmes and events, visit the WGCG websites **<http://www.wgcg.co.uk>** or **www.wgcg.org**

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