



Historic England

Strategic Stone Study

A Building Stone Atlas of
Berkshire (including West Berkshire, Reading, Wokingham,
Bracknell Forest, Slough, Windsor and Maidenhead)

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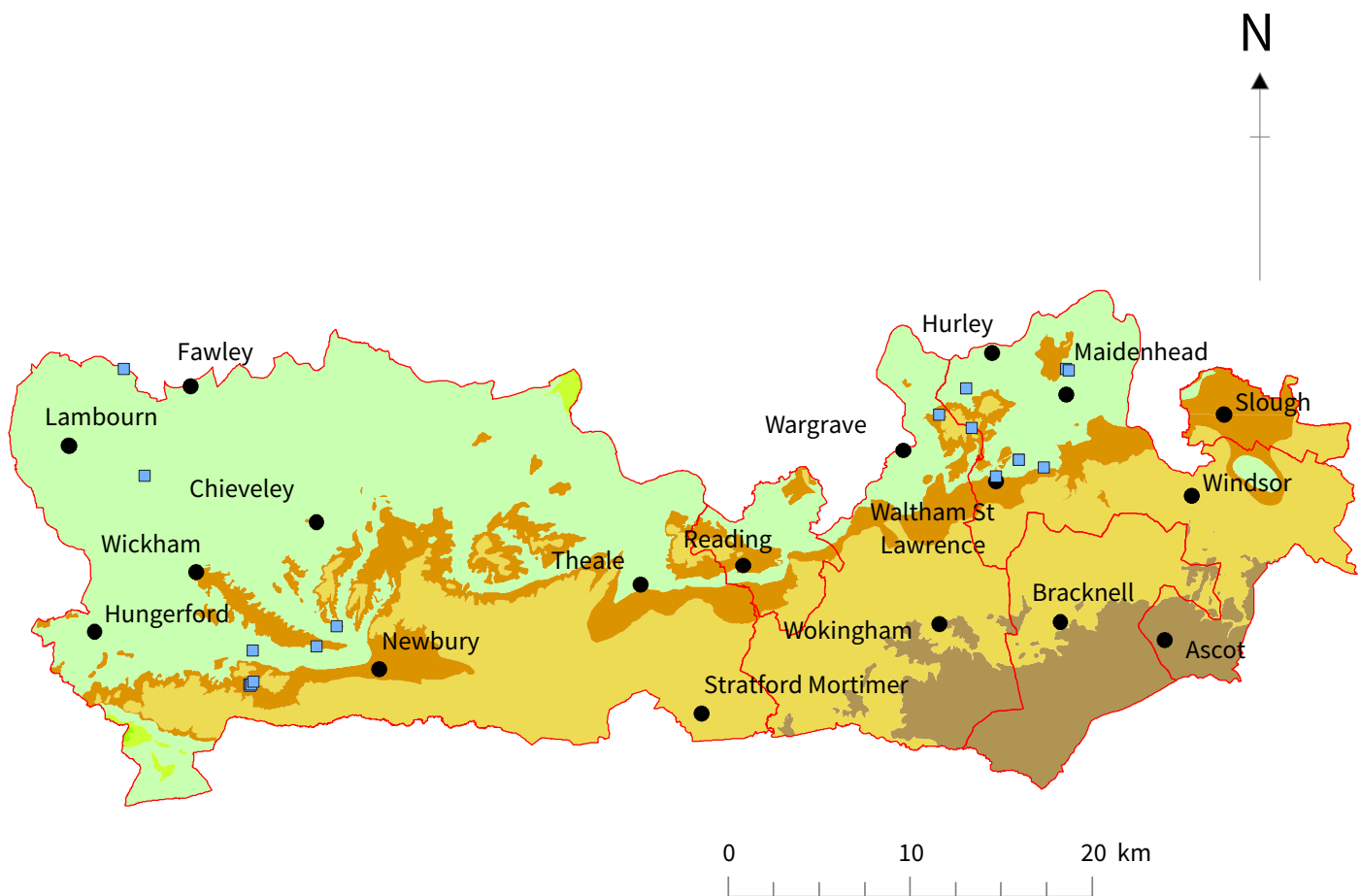
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College House (C18th) in Lambourn High Street (see page 8)

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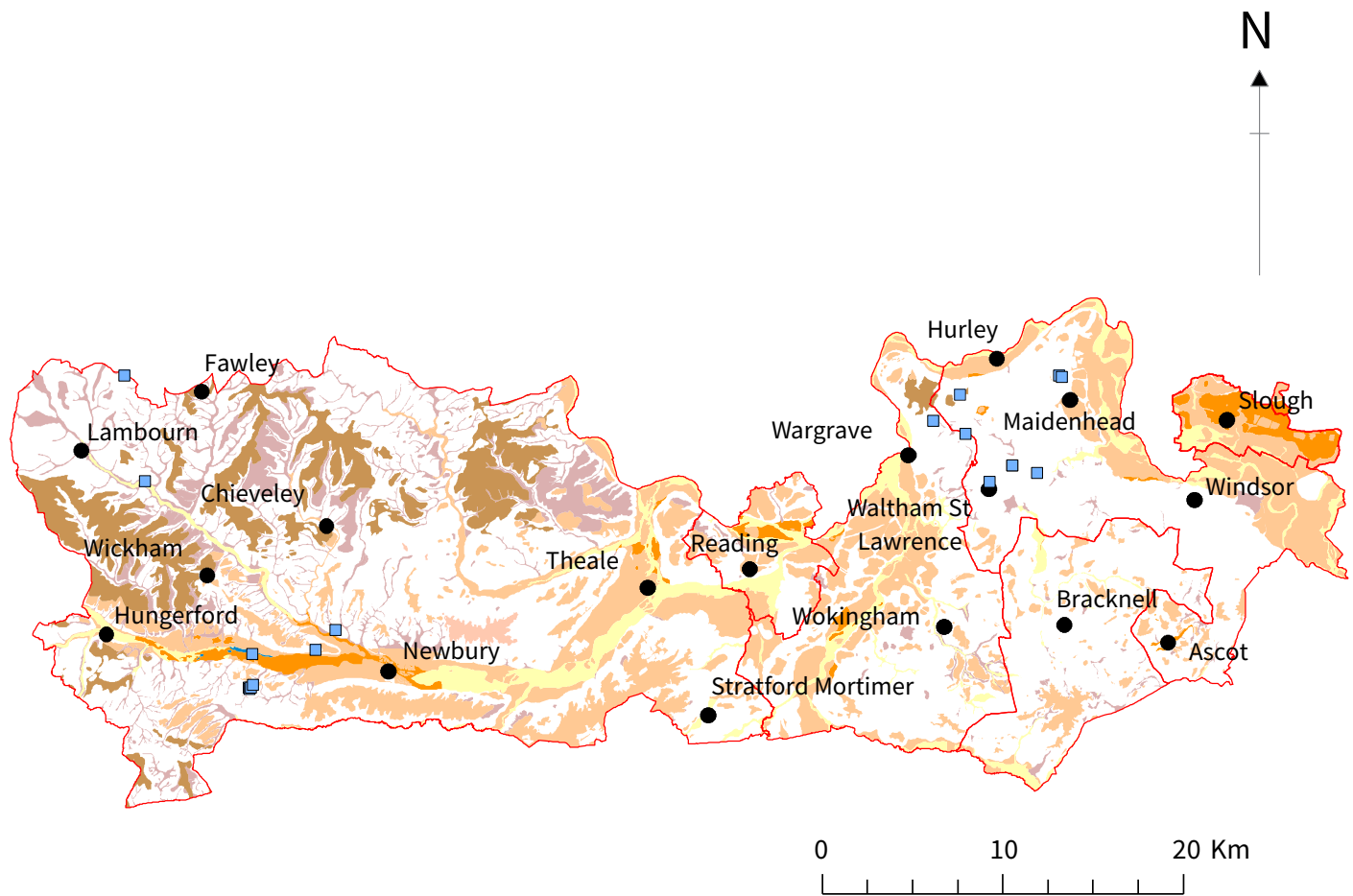
Berkshire Bedrock Geology Map



Berkshire Bedrock Geology

- BUILDING STONE SOURCES
 - LONDON CLAY FORMATION - CLAY, SILT AND SAND
 - BRACKLESHAM GROUP - SAND, GRAVEL, CLAY AND SILT
 - LAMBETH GROUP - CLAY, SILT AND SAND
 - WHITE CHALK SUBGROUP
 - GREY CHALK SUBGROUP
 - UPPER GREENSAND FORMATION - SANDSTONE
- } CHALK GROUP - CHALK

Berkshire Superficial Geology Map



Berkshire Superficial Geology

- BUILDING STONE SOURCES
- ALLUVIUM - CLAY, SILT, SANDS AND GRAVELS
- BRICKEARTH - PEAT, CLAYS, SILT AND SAND
- HEAD - SANDS, GRAVELS, SILT AND CLAY
- RIVER TERRACES - SANDS, GRAVELS, SILT AND CLAY
- TUFA
- CLAY-WITH-FLINTS - SANDS, GRAVELS, CLAY AND SILT

Stratigraphic Table

EPOCH	GROUPS		FORMATIONS	BUILDING STONES
QUATERNARY	Variously subdivided		Variously subdivided	<ul style="list-style-type: none"> ● Tufa ● Quaternary Flint (Field Flint, Downland Field Flint, Clay-with-Flints) ● Ferricrete (including Conglomerate, Iron-cemented conglomerate, Puddingstone, Pebble Beds) ● Sarsen Stone (Sarsen Sandstone, Berkshire Sarsens, Greywethers, Silcrete)
PALAEOGENE	Bracklesham Group		Camberley Sand Formation	
			Windlesham Formation	
			Bagshot Formation	
	Thames Group		London Clay Formation	
			Harwich Formation	
	Lambeth Group		Woolwich Formation	
			Reading Formation	
			Upnor Formation	
CRETACEOUS	Chalk Group	White Chalk Subgroup	Newhaven Chalk Formation	<ul style="list-style-type: none"> ● Chalk Block ● Quarry Flint (Fresh Flint)
			Seaford Chalk Formation	
			Lewes Nodular Chalk Formation	
			New Pit Chalk Formation	
			Holywell Nodular Chalk Formation	
	Grey Chalk Sub-group		Zig Zag Chalk Formation	
			West Melbury Marly Chalk Formation	
	Selborne Group		Upper Greensand Formation	

Table 1. Summary (Interactive) of stratigraphical and building stone names applied to Cretaceous and Cenozoic sediments and sedimentary rocks in Berkshire

The use of stone in Berkshire's buildings

Background and historical context

There are nearly 4400 listed buildings and 121 conservation areas in Berkshire. They range from graveyard monuments to the extensive complex of buildings that constitutes Windsor Castle. However, geologically speaking, Berkshire has relatively few rocks that are suitable sources for building stone. The Berkshire Downlands, to the west of the county, provided Quarry and Quaternary Flint, Chalk and Sarsen Stone, whilst Ferricrete (Puddingstone) was occasionally used in the east in the Thames Valley; Tufa is known to have been employed in at least one church in the Thames Basin Heaths area. Due to the sparsity of indigenous building stone, timber framing was the dominant vernacular building technique in Berkshire from the mediaeval period, and was much used for housing until the early C17th and for farm buildings until the early C19th.

The River Thames and its tributaries, particularly the Kennet, provided easy access to London and to the west, through the Goring Gap. Such good transportation links influenced Berkshire's economy and enabled the importation of a wide range of building materials. From an early date similar stone to that available within Berkshire was imported from adjacent counties. For example, some of the Sarsen Stone used in the C12th Round Tower of Windsor Castle originated from near Bagshot in Surrey. In Reading and the east Thames Valley much of the flint used originated from the Chiltern Hills in Buckinghamshire. Building stone, particularly flint, was also frequently transported within Berkshire, for example from the Berkshire Downs southwards to the Newbury area.

From the C18th onwards the development of long-distance transport routes, first canals, then railways, enabled the importation of a wide variety of stone from further afield. Rapid economic and population growth and changing social, cultural and religious practices increased demand for stone, particularly for 'polite' housing, civic buildings and especially for new churches and chapels.

The largest and most significant building of Norman origin in Berkshire is Windsor Castle (described later in this Atlas). A wide variety of different stones were used, including locally sourced Sarsen Stone and Chalk and imported stones such as Kentish



Ragstone and Caen Stone. Local Quarry Flint and Chalk were utilised at Donnington Castle near Newbury; the only standing remains of the quadrangular castle is the late C14th gatehouse.

Throughout the mediaeval period Berkshire was strongly influenced by monastic estates, particularly those of Abingdon Abbey (now in Oxfordshire) and the Cluniac Abbey of Reading, founded in 1121 by Henry I. The Abbey was one of the richest in England and the Abbey church was the fourth largest church in Britain. There were other religious houses from a variety of Orders at Hurley, Steventon, Wallingford Broomhall, Bisham, Poughley and Sandford. The monastic estates were generally directly managed. Agriculture was dominated by a sheep and corn system throughout much of the county, with downland manors supporting large flocks of sheep. Newbury established itself as a major cloth town in the C15th.

From the late C15th and C16th farms and manors started to be let on long-term leases resulting in the construction of new or enlarged manor farmhouses. Timber framing remained the preferred construction method for some large houses, such as Ockwells Manor (built in 1446), Cox Green, Maidenhead and for

most vernacular buildings. The Dissolution of the Monasteries resulted in the break-up of monastic lands and a growth in privately owned farming estates. Often, farmhouses and major farm buildings were rebuilt. Large new houses, particularly those in the east of the county, such as Shaw House (1581), at Shaw-cum-Donnington, were built in brick, reflecting the abundance of locally available clays. Others houses continued to be of timber framed construction, such as Ufton Court (1576), at Ufton Nervet, south-west of Reading.

Churches are the most frequent examples of surviving mediaeval buildings in which indigenous stone is used extensively. They are predominantly constructed of flint, with Chalk and Sarsen Stone also being employed in the western downland area. A few Ferricrete and flint churches occur in the east and here the stone may often have originated from sources outside the county. The long history of alteration, extension, rebuilding and repair of such churches means they frequently exhibit a range of stone of different origins and periods.



Detail of chequerwork of flint and Taynton Stone, south wall, Minster Church of St. Mary the Virgin, Reading

Flint is one of the most characteristic building materials of a large part of Berkshire. It is used in churches, houses of various social statuses, garden structures, farm buildings and boundary walls. From the start of the C14th knapping and squaring of flints to produce flat surfaces became common. 'Flushwork' became highly fashionable in the late C15th and a particularly fine example of chequerwork can be seen in the tower of the Minster Church of St. Mary the Virgin (1550-53), Reading.

Enclosure of open agricultural fields by agreement during the C17th to mid C18th in response to increases in food prices and population, required greater capacity for the processing and storage of corn crops. Many new farm barns were built and existing barns modified. Much of the Berkshire countryside was transformed between 1700 and 1900, with open fields, common lands and manorial wastes being replaced by hedged fields. Between 1738 and 1883, one third of the total land area of historic Berkshire was enclosed by Parliamentary means. Enclosure pre-1800 was concentrated in the Berkshire downland area, particularly around Lambourn and East Garston. The gradual conversion of downland to arable accelerated and farming tended to become more specialised, requiring different and additional farm buildings. Enclosure spread to the Kennet Valley and the Downs of east Berkshire. The enclosure of Windsor Forest took place between 1813 and 1817.

Timber frame construction of farm buildings predominated well into the C19th. The form of barns changed little between the mediaeval period and the age of stream threshing. Aisled construction was used for many of the earliest barns, particularly in south Berkshire. Such barns frequently used indigenous stone in the footings and plinths, including flint, Sarsen Stone, Chalk and Ferricrete. Large, un-aisled timber frame barns or brick and flint combination barns became dominant in the downland areas enclosed from the later C18th. Many



The west tower of the Minster Church of St. Mary the Virgin, Reading, repaired in the 1550s and showing spectacular chequerwork of alternating flint and Taynton Stone.

timber-framed agricultural buildings were clad by weatherboarding, though brick and flint became much more frequent in the C19th. In eastern and southern Berkshire, brick became increasingly used in farm buildings from the C17th, but it was not until the later C19th that brick became common in the Berkshire downland areas, where it was employed extensively in combination with Quaternary Flint.

South Berkshire has an abundance of clays suitable for brickmaking. Brick was used extensively in the Roman period and many Roman bricks have been reused in buildings in association with flint and other stonework. The making of bricks restarted in the C15th. An early use was in church towers dating from the C16th, such as at Wargrave and Bradfield; larger houses started to be built in brick during the C16th. However, brick was not used extensively in agricultural buildings in the western downland areas until the C19th. The brick industry became very important in Berkshire in the late C19th and C20th, with brick becoming the commonest building material used throughout the county. The rapid expansion of Reading, following the opening of the Great Western Railway in 1841, made extensive use of locally manufactured bricks in the construction of houses and civic buildings.

The 17th and 18th centuries saw rapidly increasing population and improvements in agriculture and a continued growth of large estates and farms. In eastern Berkshire, park estates and modest country houses within easy distance of London were established from the C18th; the majority of these were constructed of brick or imported stone. The latter became more easily available with the opening of the Kennet Navigation in 1723, the Thames and Severn Canal in 1789 and the Kennet and Avon Canal in 1810.

In the C18th and C19th a comparatively large number of new Anglican and Roman Catholic churches and Non-conformist chapels were built to serve the spiritual and social needs of the rapidly growing population. The Classical and Gothic Revivals of the C18th and C19th, combined with improved transportation, led to the importation of a wide range of stone from sources outside the county. In particular, architects of the High Victorian Gothic Revival, from the 1850s on, favoured flint, (such as in St. Peter's Church, Chavley, designed by G. E. Street and built in 1860-61) and the use of elaborate ornamentation, colour and textual contrasts using a wide variety of imported building stones. The use of flint as a favoured building stone continued into the early C20th, as seen for example in St. Ethelbert's Catholic Church, Slough, built in 1909-10.



St. Ethelbert's Catholic Church, Slough constructed of flint nodules, some knapped, with mainly Bath Stone dressings

The Berkshire and Marlborough Downs

The Downs have been settled since Palaeolithic times. The first 'monuments' were constructed in the landscape during Neolithic times (4000-2351BC) with settlements developing during the Bronze Age (2350-801BC). Many of today's villages date to the Saxon period (AD801-1065).

Settlements are generally sparse and villages cluster in valley bottoms and near springs. There are historic market towns such as Newbury and Hungerford and villages such as Lambourn, Great Shefford, East and West Ilsley. From the C18th the Lambourn Valley and the surrounding downs became a centre for racehorse breeding necessitating the construction of stables and other new buildings. Traditional buildings are predominantly timber framed, generally with brick infill. However, the Berkshire Downs were also a local source for Quaternary Flint, Chalk and Sarsen Stone. Roofing materials include thatch, tiles and Welsh slate.

Flint was usually a by-product of the quarrying of Chalk for lime or marling, or was picked from the fields after ploughing. It was

widely and extensively employed across the area, in a wide range of buildings from town houses to barns; it was also much used in churches dating from the C12th onwards. One of the earliest surviving uses of flint is in the C11th Saxon west tower of St. Swithin's Church, Wickham. This is mainly constructed of squared and knapped flint with some reused Roman brickwork, tiles or tegulae. In other locations flint stonework was rendered; for example, the walls of the C12th Church of St. Luke and St. Mark at Avington, east of Hungerford, are mainly built of rendered flint rubble with some blocks of Ferricrete and Bath Stone dressings. The C11th Old Church at Great Shefford also employed Ferricrete in addition to flint in its construction. Villages such as Lambourn include large houses mainly constructed of flint (such as Rook's Nest, a C16th country house with C20th additions in flint with stone dressings) and cottages built of combinations of flint and brick. However, flint was not widely used in farm and domestic buildings until the C19th when it was frequently employed in farm buildings and walls. A good example of the use of flint and brick in a mid C19th barn is provided by Hookend Farm, Basildon, which exhibits fine banding and quoins in brick.

Sarsen Stone has been used for construction in the Berkshire and Marlborough Downs area since Neolithic times. Sarsens are frequently found in the plinth walls of timber framed barns such as the those at the Pigeon House, Eastbury. They were also used in boundary walls, cottages, town houses and churches. Settlements such as Lambourn and Upper Lambourn have a considerable number of buildings constructed mainly of Sarsen Stone. These include the C18th College House, High Street, Lambourn, the C16th 'Sarcens' Cottage, in Lambourn High Street and the Old Manor House in Upper Lambourn. Sarsen Stone is also used extensively in boundary walls in Upper

Lambourn village and, to a lesser extent, in Lambourn itself.

A substantial Sarsen Stone industry developed in the C19th when stonemasons working in the High Wycombe area of Buckinghamshire moved to Fyfield, Wiltshire in the upper Kennet Valley. They supplied Sarsen Stone for buildings, gate posts and other structures until the 1930s, including stone for restoration works at Windsor Castle in 1939.

Chalk was quarried in several places including Fognam Quarry near Lambourn and was also mined at Kintbury between Newbury and Hungerford. Clunch was used as rubblestone, including as the inner skin to brick walling. Harder Chalk Block was also used occasionally as quoins (as seen in the largely Sarsen Stone built Old Manor House in Upper Lambourn), as squared stones with brick bands (for example in the south gable end of East Ilsley Farmhouse) and in some churches as window tracery and quoins. Chalk continued to be used as an occasional building stone into the C19th, as typified by the picturesque cottages of 26-27 High Street in West Ilsley, which were built in 1840.

Staddle barns are an unusual type of timber framed barn that developed in the downland areas of Hampshire, Berkshire and Wiltshire. Many of these barns date from the mid to late C18th and have an un-aisled timber frame raised on as many as 64 staddle stones which helped protect the un-threshed crop from problems of damp and vermin, particularly after the introduction of the brown rat in the early C18th.

The Thames Valley

The Thames Valley includes major settlements such as Reading, Slough, Windsor, Bracknell, and riverside towns such as Maidenhead along with the principal western approaches to London. Suburban and recent development within this area is extensive.

Historically, timber frame was dominant, with brick and/or flint fill used in numerous smaller houses and farm buildings post-C17th. Pre-1750 farmstead buildings were typically of loose courtyard plan with timber-framed barns, including aisled barns and cattle housing. Many of the C19th farmsteads were built in brick with occasional use of flint in their plinth walls; they are often arranged in regular courtyard complexes. Flint was used in the C2nd Roman villa at Cox Green, Maidenhead and as the rubble core of the walls of buildings in Reading Abbey, which was founded by Henry I in 1121. The much-restored Abbey Gate and the Hospitum survive together with extensive



College House (C18th) in Lambourn High Street is built of coursed, squared Sarsen Stone with red brick dressings



Mill House (C19th) at Frogmill near Furley, displays a chequerwork of mainly Chalk and flint

ruins which also contain Caen Stone, although often only the flint rubble cores of the walls remain. At least some of the flint used at Reading Abbey is likely to have been sourced from the nearby Chiltern Hills in Buckinghamshire or south Oxfordshire.

Flint was also extensively used in mediaeval church buildings. Reading Minster (the Church of St. Mary the Virgin) originates from the C11th and predates Reading Abbey; it was extensively rebuilt in the C16th using materials from the Abbey, the west tower is chequered with squared Flint with stone. The C12th St. Mary's Church in Slough is also built in flint with rubble and stone dressings and has a C17th tower base constructed of flint. Flint was also sometimes employed in association with Ferricrete, as seen in All Saints Church at Binfield. Here squared knapped flint is used in dressings to some windows, but the stone also occurs as nodular rubblestone with irregular Ferricrete blocks as the main walling material in the aisle.

Hurley Priory was founded in 1087. The C12th nave remains as the parish church with walls of flint and Chalk with minor Caen Stone and possibly Taynton Stone. Hurley village also has many boundary walls constructed of flint with brick and some Chalk blockwork. Other examples of flint-built churches with stone dressings (usually Bath Stone) include the Church of St. Mary the Virgin at Shinfield and the C11th Church of St. Andrew in Windsor. The distribution of flint in mediaeval churches in the east of the area suggests that some flint may have been imported from adjacent counties.

During the C19th, the use of flint in new churches was extensive.

Examples include St. Mary's Church in Twyford (designed by Benjamin Ferrey and constructed in 1846) and St. Michael's Church in Tilehurst (designed by G. E Street), built in 1856 of knapped and squared, coursed flint.

Chalk was usually dug from small pits, although it was mined during the C18th in the Reading area, in Coley and Elmer Green. However, not all of this Chalk was extracted for building purposes, as it was also largely used as an additive in brick making. Mill House and associated barns at Frogmill, near Hurley, exhibits a range of C19th buildings that display Chalk and flint in attractive chequerwork along with red brick dressings.

Hurley village also has a considerable number of buildings dating from the mediaeval period to the late C19th that employ Chalk Block. For example, extensive use of Chalk was made in the buildings of the C12th Priory. Surviving buildings include the Cloisters, a much-altered part of the refectory of the Priory (which also employs flint and other stones), the mediaeval dovecote by Hurley Tithe Barn and the large mediaeval Monk's Barn in Hurley High Street. The latter is largely constructed of flint but much Chalk is also present as dressings, quoins, chequerwork and blockwork in the north gable end wall.

Chalk was also occasionally used in other mediaeval churches such as St. Lawrence's Church in Waltham St. Lawrence and St Mary's Church in White Waltham. The latter is mostly built of flint but exhibits Chalk dressings and fine chequerwork of Chalk with squared flint. The Church of St. Mary at Wargrave burnt down and was rebuilt in 1916; it is one of the last churches in



Berkshire built in flint with Chalk dressings. Chalk was also occasionally employed in cottages, smaller houses and agricultural buildings; an example is provided by the C18th Dew Drop Inn near Hurley which is constructed of flint rubble and squared Chalk Block with red brick dressings. At Shottesbrooke Farm, a C17th timber frame weather-boarded and brick barn has an attached cowshed and stable built mainly in Chalk Block.

Ferricrete was used in a small number of churches in the Bracknell area. Its use in All Saints Church, Binfield is noted above but was also employed at St Mary's Church, notably in the C14th nave, where it is galleted with smaller Ferricrete stones in combination with flint. In St Michael's Church, Warfield, Ferricrete is used in the C15th tower and nave along with chalk window tracery. The C15th tower and clerestory of All Saint's Church, Wokingham, exhibits squared Ferricrete blockwork.

The Thames Valley area also contains a select range of buildings that are constructed exclusively from imported stones. A particularly good example is provided by the Polish Roman

Catholic Church, in Watlington Street, Reading, which was constructed in the 1870s mainly of grey Kentish Ragstone; this vividly contrasts with the alternating blocks of decorative red Mansfield Stone and cream-coloured Bath Stone which are well displayed at various window levels on the clock tower and around the triple-arched lancet windows and adjoining turrets.





The impressive C19th entrance of Wellington College, near Crowthorne, Bracknell Forest, constructed from red brick and Bath Stone

The Thames Basin Heaths

The Thames Basin Heaths cover the south of Berkshire and extend from Newbury eastwards to Weybridge in Surrey. Until the C19th, the area was dominated by a wood-pasture economy with commons, small fields, wood-pasture and small woodlands created by the clearance, or assarting, of woodland. Timber-framed building was the dominant tradition for houses and farm buildings in this area until the emergence of brick during the C16th. Local farms were small scale, which meant there was little capital available to replace buildings. Consequently mediaeval and C16th-C17th farm buildings and moated farmsteads often survive although some timber-framed buildings were refaced or filled in brick. Staddle barns and granaries also occur in the area, such as The Granary, Banisters, at Finchampstead. Brick becomes the dominant building material encountered in buildings and walls from the C18th onwards, reflecting the lack of readily available indigenous stone.

Large park estates and modest country houses were established during the C18th and C19th due to the area's proximity and easy access to London. These tended to be mainly con-

structed in brick with imported stone dressings; for example, Bearwood near Wokingham was built in 1865 from brick with Mansfield Stone dressings. The Royal Military Academy Sandhurst, Wellington College and Broadmoor Hospital were all established in the C19th and are constructed in brick with imported Bath Stone dressings.

Flint is much used in and around Newbury and most was probably bought from the downland area to the north and west. Examples of mediaeval uses include Quarry Flint with Chalk in the C14th Donnington Castle gatehouse and flint rubble in the walls of the C13th Litten Chapel in Newbury. Flint was also employed with brick in substantial houses and cottages such as the C17th-19th Priory at Shaw-cum-Donnington and the C17th Hambridge Farm House, near Newbury. In the east of the area flint was used in the Victorian churches of St. Bartholomew at Arborfield, near Wokingham and St. James at Barkham (although, this may have been imported from sources outside of Berkshire).

Tufa has a very localised and occasional use as a rubblestone in mediaeval church walls. It occurs in the C14th Church of St. Mary at Hamstead Marshall, south west of Newbury. Here, Tufa



Church of St Mary (C14th) at Hamstead Marshall is constructed mainly of flint and red brick with numerous blocks of Tufa and smaller amounts of Sarsen Stone, Taynton Stone, Caen Stone and Bath Stone

is used as roughly shaped and faced blocks with flint nodules and red brick along with minor amounts of Sarsen Stone, Chalk, Caen Stone and Bath Stone.

The Chiltern Hills

The south-western boundary of the Chiltern Hills area is mainly formed by the River Thames as it flows past Wallingford, Reading, Henley and Marlow. A small area lies south of the River Thames by Goring and is bounded to the west by the North Wessex Downs Area of Outstanding Natural Beauty. Although part of the Chilterns, this belt of countryside is dominated by the river and its floodplain rather than by the hills.

Timber-frame was the traditional material for most buildings here until the C18th, when brick began to be widely used. Brick was often made locally, giving rise to variations of colour and quality. Locally, flint was widely used in combination with brick. Clay tiles represent the general roofing material utilised from the C16th onwards, until Welsh slate became available in the C18th.

Stones in walls

Berkshire displays a diverse range of stones and styles of use in walls across the county. A representative (but not exhaustive) selection of these relating to indigenous building stones are illustrated in the following pages.



Dressed and roughly squared blocks of grey Sarsen Stone, College House, High Street, Lambourn



Squared and randomised Chalk Block, Church House, Hurley



Roughly squared, knapped Flint blocks and nodules, St. Mary's Church, near Hamstead Marshall



Chalk quoins (containing fresh Flint nodules) adjoining squared and part knapped flint, Monk's Barn, Hurley



Flint nodules, some knapped, All Saints Church, Binfield



Weathered Downland Field Flint nodules, north east Berkshire



Different styles of flint in wall and above lancet window (squared blocks), All Saints' Church, Binfield



Partly dressed Sarsen Stone with roughly knapped Flint nodules, Old Manor House, Upper Lambourn (see page 17)



Sarsen Stone employed with Chalk Block, Limes Farmhouse, Upper Lambourn



Sarsen Stone, some blocks dressed and roughly shaped, High Street, Upper Lambourn



Sarsen Stone, large unworked blocks used randomly in modern wall with bricks, near Place Farmhouse, Lambourn



Ferricrete, large randomly-shaped to roughly lenticular blocks, All Saints' Church, Binfield



Ferricrete, small blocks and discrete rounded flint pebbles, Church of St. Michael the Archangel, Warfield (see page 18)

Indigenous building stones



The Church Cloisters at Hurley (formerly part of a C12-14th Benedictine Priory) are mainly constructed of Chalk Block

Upper Cretaceous Chalk Group - White Chalk Subgroup Chalk (Chalk Block)

The white chalky limestones of the Upper Cretaceous White Chalk Subgroup are amongst the most distinctive and easily recognised building stones employed in Berkshire. They are white to very pale grey, typically structureless limestones, sometimes containing fossil oysters (inoceramids), echinoids and occasionally crinoids, brachiopods and belemnites. Pale-coloured Malmstone (from the Upper Greensand Formation of the Selborne Group) can resemble Chalk but does not powder in the same way.

Chalk is generally unsuitable for exterior stone-work as repeated wetting and drying (coupled with frost action), causes the relatively soft rock to powder and disintegrate into small angular brash. Softer forms of the stone, when used externally, may show concave weathering away from mortar joints. Where used as a building stone in Berkshire, chalk tends to be protected from rain by wide eaves or is employed above the

foundation course of a more resistant stone.

Chalk has been quarried as a local source of building stone across much of its outcrop in Berkshire, although its use is relatively limited and mainly to confined to an area within and close to the Chalk Downs and south of the Chiltern Hills and River Thames.

Chalk is typically used as a rough walling stone (often accompanying other stones, especially flint and Sarsen Stone) or for decorative purposes (window dressings or banding etc.). The stone may be roughly cut, which has enabled the creation of areas of squared blockwork, but walls constructed entirely of Chalk block are rare; an example may be seen in a barn wall at Shottesbrooke Farm, west of Maidenhead. The more typical use of Chalk is exemplified by the church walls at Bisham, Chieveley, Hurley, Speen, Warfield, Wargrave and Waltham St. Lawrence. It was also used with Flint in the construction of Donnington Castle, near Newbury. Many small villages around Lambourn (e.g. Upper Lambourn, East Garston and Eastbury) feature Chalk Block in their buildings (e.g. the Chalk quoins of the Old Manor House in Upper Lambourn and the Chalk cob perimeter wall of All Saints Church in East Garston).

The village of Hurley, near Maidenhead, serves as a particularly impressive example of the use of Chalk, especially around the church, its gate house and cloisters and along the northern end of the High Street (e.g. Monks Barn). Fine examples of Chalk-Flint chequerwork can be seen in the Church of St. Mary the Virgin in White Waltham and at Frogmill Court, west of Hurley.

Quarry Flint (Fresh Flint)

Quarry Flint is one of the most common and widely used building stones in Berkshire. It originates from bands and more isolated nodules of flint which occur within the chalky limestone beds of the White Chalk Subgroup. Quarry Flint was dug from chalk pits and has been used extensively close to and within the outcrop area of this bedrock unit, within and adjoining the Berkshire Downs and south of the River Thames.

The stone is an extremely fine-grained (cryptocrystalline) and hard form of silica containing microscopic, quartz-crystal aggregates. It usually occurs as irregularly-shaped nodules that are 10-20 cm across, or as (sub-)rounded pebbles and cobbles; occasionally, it is also found as weakly banded tabular sheets or layers up to 20 cm thick. The colour is very distinctive; fresh flint nodules have a white outer cortex with a black or dark grey interior.

Quarry Flint breaks with a characteristic conchoidal fracture, producing razor-sharp, fine edges; the cleaved surfaces may

exhibit banding resulting from the alternation of layers of slightly different composition. Flint nodules may contain cavities lined with translucent botryoidal chalcedony or small transparent quartz crystals; some flints contain well preserved fossils, with echinoids, sponges, bivalves and burrow-structures being the most commonly encountered types.

Quarry Flint is used very extensively in walls throughout Berkshire in a wide variety of ways: it is laid to course as rough tabular 'sheets' of nodules; in squared chequerwork; as knapped, faced, trimmed or 'cleaved-faced' stone, both in random and decorative arrangements. Many churches in Berkshire employ flint in one form or another, and the stone was used extensively in many villages around Maidenhead. Around Newbury, roughly-trimmed flints, usually accompanied by blocks of Sarsen Stone and Ferricrete may be seen in the walls of many old buildings. Locally mined flints were used with Chalk in the construction of Donnington Castle near Newbury; with Caen Stone and Taynton Stone in the mediaeval walls of Reading Abbey and with Chalk Block in the Monks Barn at Hurley.

The extremely hard and resistant nature of Quarry Flint nodules has resulted in their having been recycled by natural processes into younger deposits, where they show specific characteristics - these types of flint are described in the Quaternary section of this Atlas below.



The mediaeval Monks Barn in Hurley High Street, displays a fine example of the use of knapped Quarry Flint and Chalk Block



The Old Manor House, Upper Lambourn was built in the mid C16th (with C17th and modern additions) mainly from Sarsen Stone rubble with lesser amounts of knapped flint nodules and Chalk (notably used as quoins)

Quaternary

Sarsen Stone (Sarsen Sandstone, Berkshire Sarsens, Greywethers, Silcrete)

Sarsen Stones occur as rounded or elongate pebbles, cobbles, boulders or even metre-scale isolated slabs (up to 2 m in length). They are typically grey to pale brown in colour, becoming distinctly creamy-buff when weathered, and possess a very fine- to fine-grained saccharoidal ('sugary') texture comprising sub-rounded quartz grains set within a silica matrix (which is visible on fractured surfaces). Sarsen Stones are very hard and resistant to weathering. Their surfaces are often smooth, and may occasionally show poorly-defined bedding structures.

Sarsen Stones have seen widespread use in Berkshire. They are found as rounded field boulders and cobbles, and were often used as such. Sometimes, however, they were split and dressed into roughly-square shaped blocks. Sarsen was mainly utilised as a walling stone and it is encountered in many old village, church and boundary walls, often accompanying other materials such as Flint or Chalk. Large sarsens were also used as corner-stones, doorsteps, stepping-stones, mounting-blocks or gate-posts.

Particularly noteworthy and good examples of the use of Sarsen Stones are provided by Wayland's Smith chambered barrow

and in the villages of Lambourn and Upper Lambourn, where they are employed in a wide variety of walls, often in association with Flint and Chalk. Sarsen stones have also been used very extensively in the construction of Windsor Castle (see the section on Imported Building Stones) and in nearby churches, for example, St. John the Baptist, Windsor.

Ferricrete (Conglomerate, Iron-cemented conglomerate, Puddingstone, Pebble Beds)

This is a distinctive dark reddish-brown or dark orange-red to purplish-brown, iron-cemented conglomerate containing sub-rounded to sub-angular pebbles of flint or chert, or occasionally sandstone. The pebbles may reach 5 cm in diameter, but the usual size range is between 2 and 3 cm; they may appear whitish or be stained to various hues of pale brown, ochreous brown, grey or green. The matrix cement is often coarsely-sandy or gritty, dark coloured and iron-stained. The conglomeratic texture and colour of Ferricrete readily distinguishes this building stone from all others in Berkshire. It is relatively soft when first excavated, but hardens upon exposure to air.

Ferricrete is widely, but sporadically, used across several areas of Berkshire including Newbury, Reading, Windsor, Bracknell



Church of St Michael (C14th) the Archangel at Warfield is built of variously sized blocks of Ferricrete with dressings of Bath Stone and Chalk. The Chalk was obtained from nearby Hurley Chalk Pit

Forest and Slough. It is typically employed as irregular, crudely dressed blocks in walls and is often accompanied by roughly-trimmed flints and Sarsen Stones. It is seen in a variety of walls, including those of churches and other old buildings, but also occurs in farm-yard and garden walls. Particularly good examples of its use are provided by the churches at Binfield, Bucklebury, Waltham St. Lawrence, Warfield and Winkfield, and the round towers of Welford and Great Shefford churches. The tower of All Saints Church at Wokingham formerly exposed a superb example of Ferricrete stonework, but has since been extensively rendered.

Quaternary Flint (Field Flint, Downland Field Flint, Clay-with-Flints)

Quaternary Flint occurs in large quantities in Berkshire and is distributed across wide areas of the Downs where it typically occurs as irregularly-shaped nodules on the field surface or in ‘Clay-with-Flints’, or as pebbles in river terrace gravels and other superficial deposits. The size of the nodules ranges from 10-30 cm, although larger nodules occasionally occur. The colour is variable; less weathered flint nodules or pebbles have a cream outer cortex with darker coloured (greyish) interior; weathered flints, in contrast, or those that have lain in soil or superficial deposits for a long period may be variously discoloured or bleached, and often have brown stained interiors due to the precipitation of iron hydroxides from percolating ferruginous



Detail of the northern wall at St. Michael the Archangel's church at Warfield showing fine dark coloured Ferricrete stone work contrasting with white Chalk window dressings

water. This ‘weathered’ appearance helps distinguish Field Flint from the much ‘fresher-looking’ Quarry Flint.

Its widespread availability, combined with its hardness and resistance to weathering, means that Quaternary Flint is one of



Randomly arranged Quaternary Flint nodules, some knapped, in the walls of St. Ethelbert's Presbytery in Slough (built around 1910 in a simplified Art and Craft Tudor design). Window dressings are mainly of Bath Stone

the most dominant types of building stone used in Berkshire. Many walls and buildings (especially those of churches) throughout the county employ Quaternary Flint in one form or another, and the stone has been used extensively in many towns and villages.

As a walling stone, Quaternary Flint was employed in a wide variety of ways: as nodules or pebbles laid roughly to course; as squared blocks as part of chequer-work; as knapped, faced, trimmed or cleaved faced stone in random or decorative arrangements. Nodules were often selected for their shape and size, and laid in either a random or coursed manner.

Tufa

Tufa is a whitish or pale grey coloured, limestone formed by the precipitation of calcium carbonate (lime) in or adjacent to springs issuing from calcareous rocks (such as chalk or limestone). It is often highly porous and open-textured, with up to 50% void space. Blocks may be 'fibrous' and contain the impressions of vegetation, and sometimes exhibit faint traces of banding.

Tufa is soft and crumbly when freshly-quarried, and easily cut into blocks suitable for use as ashlar, but upon exposure to air it hardens to become a useful, more general building stone. It has a very localised and sporadic use as a rubblestone in mediaeval church walls in Berkshire. An example of its use is provided by St. Mary's Church at Hamstead Marshall, near Marsh Benham (illustrated below and on page 12).



Detail of the southern wall of St. Mary's church at Hamstead Marshall showing blocks of Tufa next to knapped and roughly squared flint

Imported building stones

Overall, Berkshire has few locally-sourced building stones and there are no quarries currently extracting building stone in the county. This limited availability of indigenous building stone has resulted in the extensive use of imported stones. These have been sourced from various parts of England, and indeed, further afield.

Stone has been imported into Berkshire since at least the Saxon period. For example, extensive quantities of Caen Stone were imported for use in Windsor Castle and Reading Abbey. Such importation increased dramatically from the C17th with improved transportation. A wide range of stones were used as ornamental dressings to mansions, civic buildings, churches and chapels.

The rapid growth in population in the C19th led to the construction of a comparatively large number of new Anglican and Roman Catholic churches. Imported stone, including Bath Stone, was extensively used for decorative effect in churches of the Victorian High Gothic, often in conjunction with brick and flint.

A summary of the main imported building stone types which have been seen in Berkshire follows below. A section dedicated to the building stones of Windsor Castle is also provided. Additional descriptions of imported stones relevant to Berkshire can be found in several of the references listed in the Further Reading section of this Atlas and in the Strategic Stone Study atlases covering the source areas of these stones.

York Stone

West / South Yorkshire

Upper Carboniferous

Elland Flags

Pennine Coal Measures Group

Buff to pale grey or greenish grey, fine- to coarse-grained sandstones, often micaceous and laminated, occasionally with small-scale cross-bedded structures. Usually weather evenly, but may separate along mica-rich horizons. Little used as a building stone in Berkshire, but employed occasionally as flagstones, paving stones or as plinths.

Left: The Queen Victoria Jubilee Fountain, St. Mary's Butts, Reading Town Centre, constructed in 1887 of York Stone ashlar plinth, granite columns, red Permo-Triassic Sandstone bands with Portland Stone finials and carvings



Pennant Sandstone

Bristol-Mendip area and Forest of Dean

Upper Carboniferous

Pennant Sandstone Formation, Warwickshire Group

Grey or rusty-brown lithic sandstones, often with coaly flecks or streaks. Iron-staining develops upon weathering, often being concentrated along joints. Found mainly in the southern parts of Berkshire, notably in association with the Great Western Railway and Kennet and Avon Canal. Used as randomised or coursed, snecked, rock faced blocks in a cluster of churches and chapels in the Maidenhead-Reading area, for entrance gateways and lodges (e.g. Englefield Park) and as decorative squares or hexagonal blocks in flintwork in church walls. Pennant Sandstone was also widely used for church steps and door sills, as well as for kerbing, guttering and flagstones.



Above: East Lodges and Gateway to Englefield Park near Theale, built in 1862 of snecked, rock-faced Pennant Sandstone and Bath Stone



Mansfield Stone (Mansfield Red Stone)

Nottinghamshire

Permian

Cadeby Formation, Zechstein Group

A distinctive uniform, red-brown sandy dolostone used very occasionally in Berkshire as a decorative stone. One of the best examples is the Polish Roman Catholic church (formerly the Church of St. John the Evangelist) in Watlington Street, Reading

Left: The Polish Roman Catholic Church, Reading built in the 1870s mainly of Kentish Ragstone but also displaying attractive and ornate dressings around arched lancet windows and columns comprising alternating blocks of cream-yellow Bath Stone and red-brown Mansfield Red Stone



Permo-Triassic Sandstone (New Red Sandstone)

Midlands

Permian-Triassic

Various Formations/Groups

Pale red to red-brown, fine-grained dolomitic-quartz sandstones. The individual sandstone types and source of these 'New Red Sandstones' is often impossible to determine in the absence of documentary or petrological evidence. These sandstones are employed only occasionally in Berkshire, but do feature in ashlar work and decorative bands of certain buildings. Some of the best examples of their use are seen in Reading, notably at the front entrances of Reading Museum and Art Gallery, and Reading Town Hall.

Left: The entrance to Reading Museum and Library in Blagrove Street, Reading, built in 1894 of grey and red bricks with Permo-Triassic Sandstone ashlar, window uprights and carved dressings



Hollington Stone (Uttoxeter Sandstone)

East Staffordshire and west Derbyshire

Triassic

Helsby Sandstone Formation, Sherwood Sandstone Group

This is a pale red to red-brown, quartzitic, sometimes pebbly, sandstone; small-scale cross-bedding, ripple marks or laminations are typical of many blocks seen in buildings. Employed only occasionally and mainly for decorative purposes in Berkshire. An example of its use is provided by Wycliffe Baptist Church, King's Road, Reading.

Left: Wycliffe Baptist Church, Reading was constructed in 1887 in classical-Romanesque style mainly of grey and red bricks. The arched entrance at the front of the building exhibits columns which have bases and capitals carved from Uttoxeter Sandstone



Hornton Stone

North Oxfordshire

Lower Jurassic

Marlstone Rock Formation, Lias Group

This is a dark grey to rusty-brown, ferruginous, sandy limestone, which is often 'iron-shot' and very fossiliferous. A rarely used stone in Berkshire, but it was employed in St. Laurence's church wall in Reading town centre.

Left: Parts of the perimeter wall of St. Laurence's church in Reading date from the C16th and contain blocks of Hornton Stone with Flint, Taynton Stone and red brick



Bisley Common Stone

Near Stroud, Gloucestershire

Middle Jurassic

White Limestone Formation, Great Oolite Group

A fine- to medium-grained, pale grey to pale buff limestone, sometimes similar to Bath Stone but with fine, darker grey laminations. The pale grey colour also helps to distinguish Bisley Common Stone from the warmer cream to buff-yellow colour of Bath Stone. Known from only two churches in West Berkshire where it is employed as a coursed walling stone, e.g. St. Mary's Church in Fawley and All Saints' Church, Brightwalton.

Left: St. Mary's Church in Fawley built in 1866 in Early English Geometric style of squared and coursed Bisley Common Stone with Bath Stone dressings



Bath Stone

Bath, NE Somerset and possibly Corsham area, Wiltshire

Middle Jurassic

Chalfield Oolite Formation, Great Oolite Group

A creamish to buff-yellow, oolitic limestone (freestone). Extensively used throughout Berkshire, especially in Victorian new build and church refurbishment, especially as ashlar and window and door mouldings. Particularly noteworthy examples of its use as ashlar include the Church of the Most Holy Trinity, Theale and grand houses along Eldon Road, Eldon Square and London Road in Reading.

Left: The Church of the Most Holy Trinity, Theale was constructed between 1820 and 1832 mainly from Bath Stone ashlar



Taynton Stone

Oxfordshire

Middle Jurassic

Taynton Limestone Formation, Great Oolite Group

A cream to pale brown, fine- to medium-grained limestone with frequent shelly and 'foliated' layers which become more pronounced upon weathering. It is readily distinguished from Caen Stone, which tends to be paler in colour and lacks the distinctive 'foliated' layers. Used as an occasional walling stone in Berkshire; examples of its use include the Church of St. Nicholas in Newbury, Reading Abbey (with Caen Stone and locally mined Quarry Flint) and the Minster Church of St. Mary, Reading.

Left: One of its most dramatic uses of Taynton Stone is in the fine chequerwork pattern with knapped and squared Flint seen in the mainly C16th Minster Church of St. Mary, St. Mary's Butts, Reading



Caen Stone

Normandy, France

Middle Jurassic
Calcaire de Caen Formation

Pale creamy-yellow to light orange limestone with a fine-grained texture and few large fossils. It may exhibit spalling if laid 'out of bed' and softer blocks of Caen Stone may also show irregular dissolution. It is employed only occasionally as a walling stone in Berkshire, a notable example being the Chapter House of Reading Abbey.

Left: Remains of the C12th Chapter House at Reading Abbey built of Caen Stone, Taynton Stone and locally mined Quarry Flint



Above: Corallian sandstones and limestones (with later repairs made mainly in Bath Stone) used at Ascot Priory, North Ascot. Here the stones are typically used as random rubble or roughly-dressed and squared (rock-faced) blocks.

Corallian Sandstone and Limestone (Wheatley Limestone)

Oxfordshire

Upper Jurassic
Kingston and Stanford formations, Corallian Group

Shelly, medium- to coarse-grained, light grey to buff coloured, calcareous sandstones and sandy limestones, which are occasionally ooidal or contain fossil molluscs, echinoids and corals ('Coral Rag'). Often weathers to a dull yellow-brown or yellow-orange colour due to the presence of a ferroan (iron-bearing) calcite cement. Glauconite is always absent (which serves as a useful means of distinguishing the Corallian sandstones from other macroscopically similar, but Cretaceous-aged, sandstones). The use of Corallian sandstones and limestones in present-day Berkshire is very limited, but they are extensively employed at Ascot Priory, North Ascot.



Swindon Stone

Swindon, Wiltshire

Upper Jurassic
Portland Stone Formation, Portland Group

A pale grey, very uniform, calcareous sandstone composed of quartz and calcareous mud 'pellets' with very fine bioclastic debris. A few rounded grains of glauconite are often also present. Faint, delicate laminations are characteristic of this stone, and some blocks show indistinct traces of bioturbation or simple burrow structures perpendicular to the bedding. Swindon Stone is relatively little used in Berkshire, but has a widely scattered distribution. The best examples are provided by the churches in Stratfield Mortimer (St. Mary the Virgin) and Maidenhead (St. Luke), where it is employed in regular, coursed and rock-faced, tabular blocks, often interspersed and alternating with larger, square blocks which may extend in height to two or occasionally three courses.

Left: The Church of St. Mary the Virgin at Stratfield Mortimer built in 1869 of rock-faced Swindon Stone with Bath Stone dressings



Above: Maidenhead Road Bridge over the River Thames was first opened to traffic in 1777. It is built of Portland Stone ashlar, vermiculated in places with moulded cornice and balustrade

Portland Stone

Isle of Portland, Dorset

Upper Jurassic

Portland Stone Formation, Portland Group

A very pale or white limestone that is typically fine- and evenly-grained freestone. It has seen widespread use across Berkshire, especially in urban areas as a carved stone in architectural elements, milestones, obelisks, monuments (e.g. Simeon Monument, Reading Market Place), war memorials, war graves, fountains, columns and ionic porticos etc. (e.g. Prospect House, Reading). Portland Stone is also employed as a high-quality walling stone and ashlar, particularly noteworthy examples being Maidenhead Bridge, Purley Park House, the North and South entrance gates to St. Lawrence's Church in Newbury and Cambridge Lodge, Windsor.



Bargate Stone

Surrey

Cretaceous

Sandgate Formation, Lower Greensand Group

A hard, medium- to coarse-grained, calcareous sandstone or gritstone, which is pale orange or honey-brown to greyish coloured; it is sometimes notably ferruginous and often weathers with a brown surface. Bargate Stone is mainly encountered in some of the larger towns in eastern Berkshire including Wokingham and Greater Reading. Typically, the stone is employed as rock-faced or half-snecked tabular blocks in (often roughly coursed) walling. Examples of its use include the churches of St. Andrew in Reading (Caversham), St. Michael and All Angels in Sandhurst and All Saints in Wokingham.

Left: The Church of St. Michael and All Angels in Sandhurst was built in 1853 (enlarged in 1860) from coursed Bargate Stone rubble with Bath Stone dressings



Kentish Ragstone

Weald of Kent

Cretaceous

Hythe Formation, Lower Greensand Group

The name Kentish Ragstone has been applied to a range of medium- to coarse-grained, pale grey or pale brown lime-stones, which are often rich in quartz and fossil sponge debris. Like Bargate Stone, the use of Kentish Ragstone in Berkshire is mainly restricted to eastern parts of the county, and mainly to specific churches located close to the River Thames. Particularly good examples of Ragstone walling are provided by the Polish Roman Catholic Church in Reading and St. Edward and St. Mark's Roman Catholic Church in Windsor.

Left: The Roman Catholic Church of St. Edward and St. Mark, Windsor was constructed in 1867-68 from Kentish Ragstone rubble with Bath Stone dressings



Above: Skyline view of Windsor Castle

Windsor Castle

The original C11th castle at Windsor was built following the Norman Conquest in order to assert Norman control over the western outskirts of London and to oversee a strategically important part of the River Thames. Since the time of Henry I (1068-1135), Windsor Castle has been used by the reigning monarch and is the longest occupied palace in Europe. The first castle on the site was built as a motte-and-bailey structure with three wards surrounding a central mound constructed from chalk excavated from the surrounding ditch.

In the C12th, Henry II started to replace the outer fortifications in stone and added an official residence in the Lower Ward and a smaller private residence in the Upper Ward. Over time, stone fortifications were added including various towers (the Round Tower, Edward III Tower and Curfew Tower) gates (The Norman Gate, Henry VIII Gate), chapels and cloisters (St. George's Chapel, the Lady Chapel, Horseshoe Cloister), terraces and wings with a series of State and Private Apartments. Continued development, additions, alterations and restorations have taken place in the succeeding centuries up to the present day. The Castle is in essence a Georgian and Victorian design, based on a mediaeval structure. The whole castle site occupies an area of around 13 acres.

A significant number of building stones have been used during the Castle's lengthy history of construction, repairs, modifications and additions. Although much of the main walling employs local and imported Sarsen Stone and Kentish Ragstone, other imported stones used include Magnesian Limestone, Clipsham Stone, Bentley Stone, Reigate Stone and Caen Stone. Reigate Stone was commonly used for external work during the C12-C14th and much still survives at the castle today, but from the C15th onwards this stone was mainly used internally.

The bulk of the stone was brought to Windsor along the Thames, although C14th records note that some of the stone was quarried underground beneath the North Downs (e.g. Reigate Stone). Surviving records also refer to the "... bringing by ox- or horse-drawn carts overland of Totternhoe stone" from quarries north of Windsor on the edge of the Chiltern Hills near Leighton Buzzard. In the C19th Sarsen Stone was supplied from High Wycombe in Buckinghamshire. A quantity of Sarsen Stone was also obtained for wall repairs in 1939 from the Upper Kennet Valley quarries in Wiltshire.



Above: The Norman Gate leading to the Upper Ward of Windsor Castle, constructed mainly from Sarsen Stone ('Bagshot Heath Stone'), with some Kentish Ragstone, Caen Stone and Bath Stone

Glossary

Ashlar: Stone masonry comprising blocks with carefully worked beds and joints, finely jointed (generally under 6 mm) and set in horizontal lines ('courses'). Stones within each course are of the same height. Although successive courses may be of different heights. 'Ashlar' is often wrongly used as a synonym for facing stone.

Bioturbated: Sediments that have been reworked or disturbed by burrowing organisms such as worms.

Bivalve: A mollusc with two shells, which may be marine or freshwater. Examples are cockles, clams, scallops, oysters.

Calcareous: A sedimentary rock containing a significant amount (10–50 %) of calcium carbonate.

Chalk: A soft, white limestone, sometimes powdery, which was formed at the bottom of a sea during Late Cretaceous times.

Chert: An opaque, extremely fine-grained sedimentary rock composed of silica (quartz). It occurs as nodules (Flint), concretionary masses, or occasionally as layered deposits.

Conchoidal fracture: A smooth fracture surface, often occurring in a fine-grained rock such as flint, which shows a curved pattern of fine concentric rings or ripples.

Conglomerate: A sedimentary rock that comprises broken up, rounded rock fragments, pebbles (>2 mm), cobbles or boulders set in a finer-grained matrix.

Cretaceous: A period of geological time that lasted from approximately 145 million to 65 million years ago. Sedimentary rocks of this age are the source of a number of important types of building stone such as Greensand, Flint and Chalk.

Cross-bedding: A structure in the layers (beds) of a sedimentary rock formed by the movement of water or air. The term is usually applied to sandstones and the feature itself typically resembles sets of lines which are inclined with respect to the bedding planes or form regular arc-shaped patterns.

Dolostone: A sedimentary carbonate rock (often a limestone) that contains a high percentage of dolomite (a calcium and magnesium carbonate mineral).

Echinoid: A type of marine organism formed of calcareous plates, commonly called a sea urchin. Often found in Chalk sediments.

Ferricrete: A dark reddish-brown coloured iron-oxide cemented layer formed in soil profiles or superficial (surface) deposits of Quaternary age. Typically, it contains rounded or angular pebbles of flint, chert or sandstone up to 6 cm in diameter.

Flint: A form of very hard, micro-crystalline quartz. Typically occurs in Chalk deposits as rounded or irregular shaped masses (nodules) and has a dark grey or black coloured inner 'core', with a white outer 'skin'.

Freestone: Term used by masons to describe a rock that can be cut and shaped in any direction without splitting or failing.

Glaucanite: A mineral composed of iron and silica. It often occurs in Cretaceous and Tertiary sedimentary rocks as small greenish coloured specks or grains. It gives the green colour to the rock type Greensand.

Ironstone: A hard sedimentary rock cemented by iron oxide minerals. Often dark brownish or rusty coloured.

Knapped flint: Worked flint which has been fractured (cleaved) to reveal the interior of the nodule.

Lamination: A small scale sequence of fine layers that occur in sedimentary rocks.

Massive: Describes a sedimentary rock which is homogeneous and lacks any internal structures (such as cross-bedding or ripple-marks) or fractures.

Nodule: A small, hard, rounded or elliptical mass within a sedimentary rock. Resembles a pebble or larger cobble.

Quaternary: A period of geological time that lasted from approximately 2.6 million years ago to the present day. It includes the last Ice Age.

Quoin: The external angle of a building. The dressed alternate header and stretcher stones at the corners of buildings.

Sandstone: A sedimentary rock composed of sand-sized grains (i.e. generally visible to the eye, but less than 2 mm in size).

Sarsen Stone: A very hard sandstone formed mainly of silica-cemented quartz grains. Often found as boulders or rounded pebbles.

Superficial deposits: Surface deposits and sediments of various types formed during the Quaternary period.

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