

THE GEOLOGY OF CERNE and its IMPACT ON VILLAGE LIFE

IMPACT OF THE LOCAL GEOLOGY ON VILLAGE LIFE

Building materials

As with many of England's ancient settlements the older buildings in Cerne were constructed from locally available materials.

This was a necessity because transport infrastructure was poorly developed or too expensive. The local geology dictated, therefore, the type of construction materials that were available for most village houses.

Only the wealthy could afford to source materials from further afield but the majority probably still came from relatively short distances within the county, influenced by the proximity to main transport links at the time. Such materials are found in the more prominent buildings in the village.

One note of caution against this reasoning – the Abbey would probably have been constructed with materials from further afield, such as Purbeck and Portland Stone from the south and Ham Hill Stone from the north. When the Abbey was destroyed by Henry VIII in 1539 the materials would almost certainly have found their way into many other local building projects!

Ground and Surface water

The nature of the geology also influences the location of fresh spring water which would have been used for drinking water. There are two 'spring lines' in Cerne which determine the location of various water wells in the village.

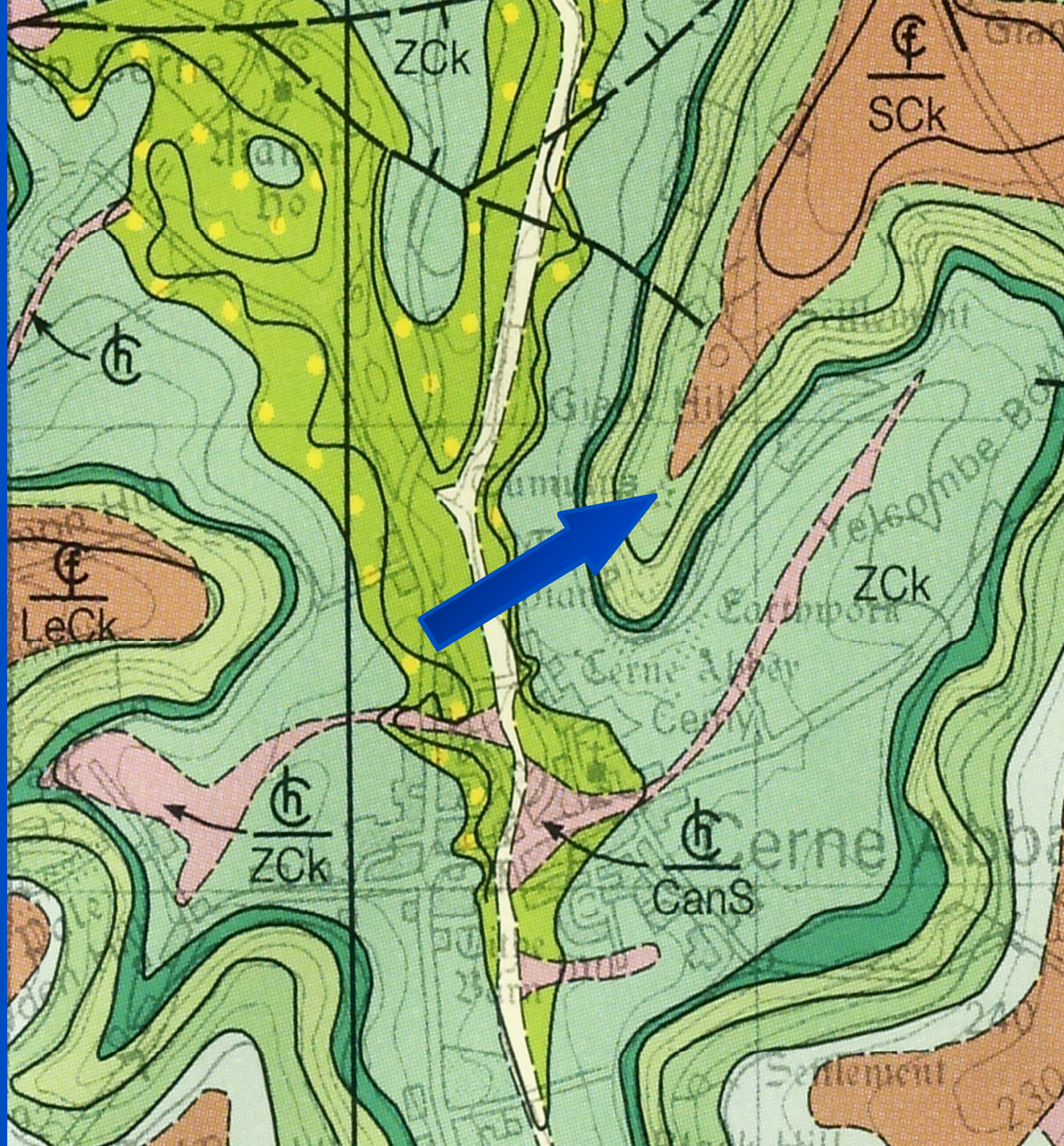
Cerne Abbas is underlain by Chalk and Upper Greensand materials deposited during the Cretaceous period some 90m years ago.

They comprise several layers of contrasting materials and all dip very gently towards the south, slightly more steeply than the fall of the Cerne Valley.

As the current shape of the landscape developed, the river valley has cut through the layers. Looking across to Giant Hill from the viewpoint (see blue arrow) the valley side rises through successively younger layers of the geology.

The map shows the location of these layers:-

- The *lime green* in the centre of the valley is the Upper Greensand, comprising the *Cann Sand* (plain) overlain by the *Shaftesbury Sandstone* (with yellow dots).
- The *grey-green* underlying the gently sloping lower valley sides is the lowest Chalk layer, the relatively soft greyish-white *Zig Zag Chalk*.
- The *dark green* layer marks the change to the steeper slope below the Giant. This is the *Holywell Nodular Chalk*, a very hard, nodular layer, more resistant to erosion, thus the change in slope.
- The *light green* layer is the *New Pit Chalk*. This is a moderately hard, blocky, white chalk generally free of flints and is the layer in which the Giant has been carved
- The *mid green* layer is the *Lewes Chalk*, a hard, blocky, white chalk with flints, which underlies the flatter top slope of Giant Hill.
- The *brown* layer on top of Giant Hill is *Clay-with-flints* and represents the weathering residue from a considerable overlying



UNITS OF THE CRETACEOUS

Age (million yrs)	Generalised Strata Name	Building Material
65	Upper Chalk (white, many flints)	Seaford Chalk
82		Lewes Chalk
85	Middle Chalk (white, few flints)	New Pit Chalk (Giant hill carving) Holywell Nodular Chalk (Abbey Barn)
90	Lower Chalk (grey)	Zig-Zag Chalk (The Old Bell)
92	Upper Greensand	Shaftsbury Sandstone (Kettle Bridge and Minterne Parva) Cann Sand (local building sand)

O.S. 1:2500 2nd edition 1902

The various layers of chalk are in close proximity around the base of Giant Hill and on the south side, to the north east of the village centre, this map shows the location of the old chalk pit and lime kiln.

This quarry was a source of the grey-white Lower Chalk, the hard grey Holywell Nodular Limestone and the white New Pit Chalk. It also provided the raw materials for the lime kiln which produced quicklime. This was slaked by adding water to produce lime putty for lime mortar.

Flints were also abundant, particularly from the fields above the Giant, where the flint was a residue from the erosion of the Upper Chalk.

All of these materials were readily available and within a 'stones throw' of the village centre

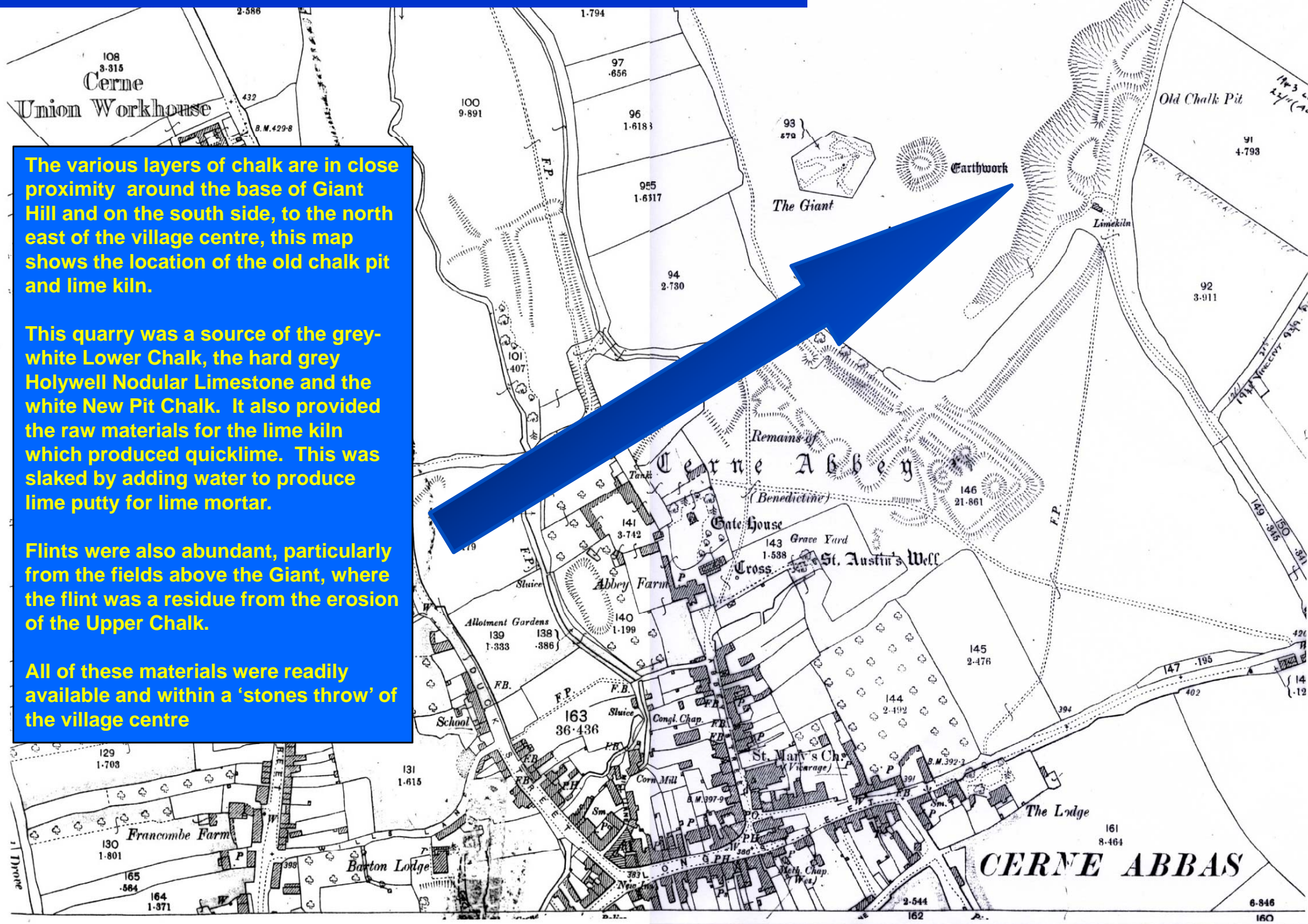
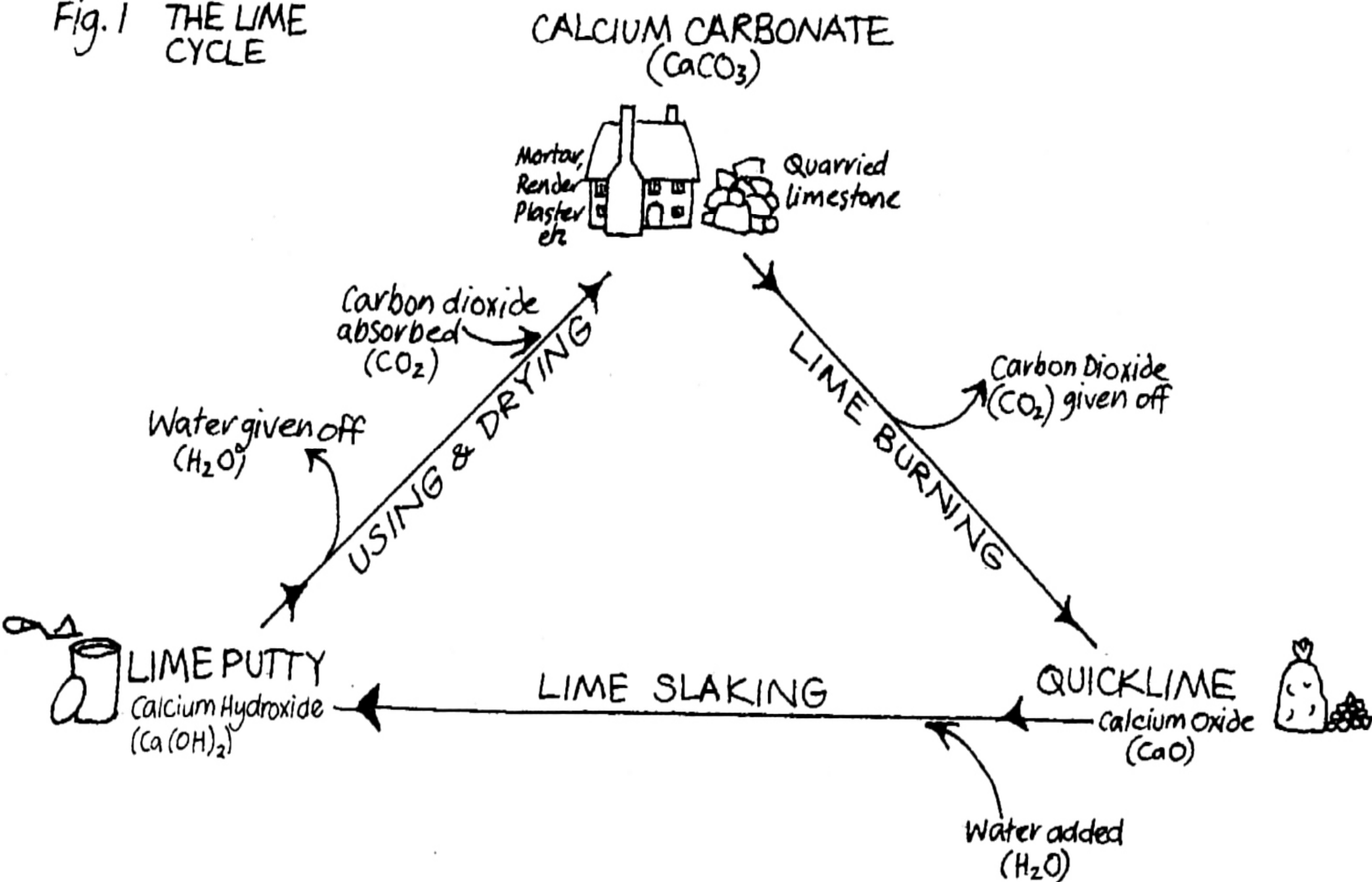


Fig. 1 THE LIME CYCLE



***The
Remains
of
the
LIME KILN***



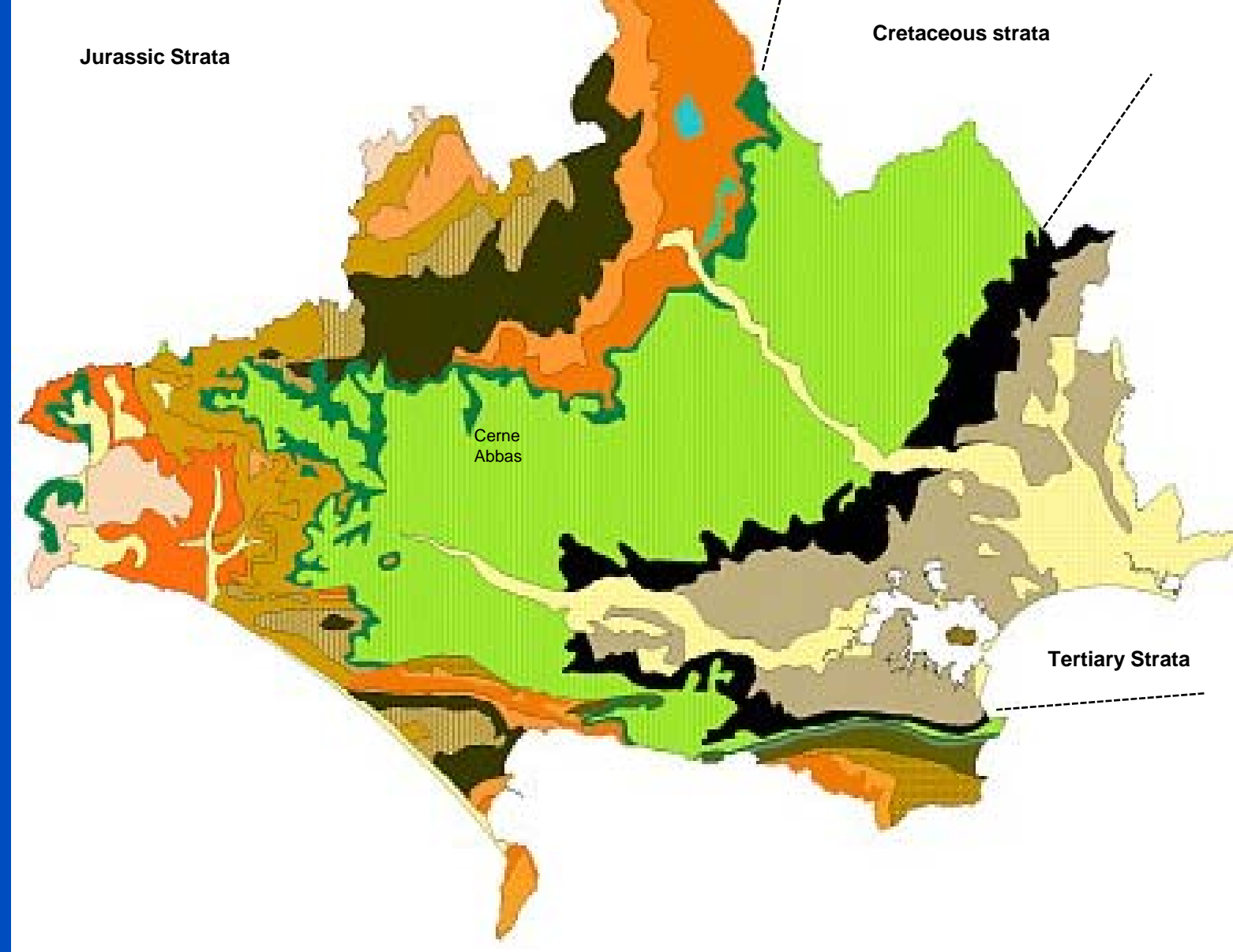
GEOLOGY OF DORSET

Further afield from Cerne Abbas, particularly to the north, west and south, the Jurassic rocks provided a source of good quality limestone.

The Jurassic sequence is a frequently alternating series of marls and limestones and many building stones were available to the more wealthy residents of Cerne.

These included the Sherborne stone from Sherborne, Ham Hill stone from Yeovil, Forest Marble from Longburton and Stalbridge, Purbeck stone and Portland stone from the Ridgeway quarries around Abbotsbury and Portesham and, of course, from Portland.

There was regular traffic between the abbeys at Cerne and Abbotsbury providing, perhaps, well used tracks between the two centres along which the stone could be transported.



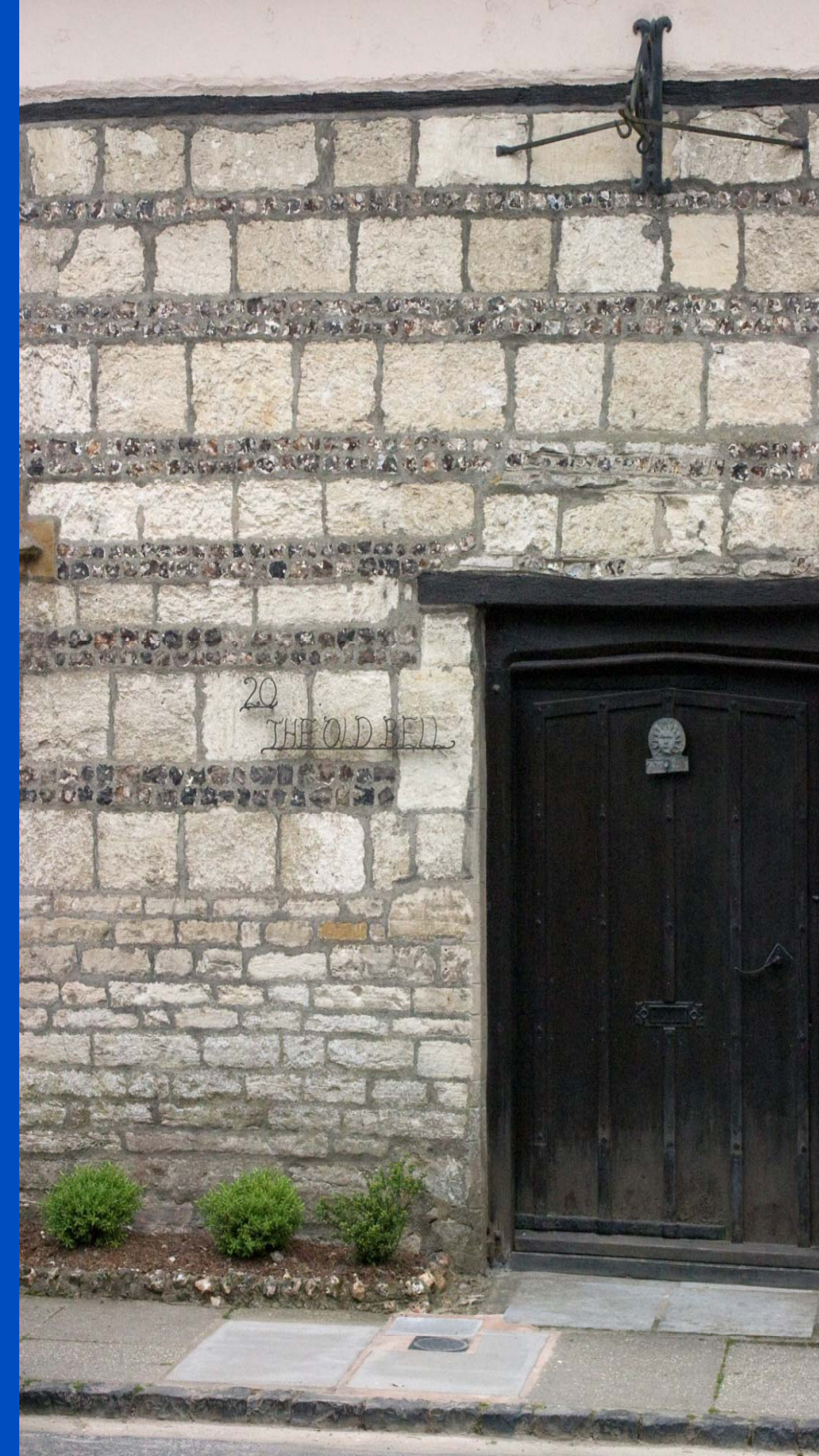
UNITS OF THE JURASSIC

Age (million yrs)	Generalised Strata Name	Building Material
145	Purbeck Beds	Purbeck Stone
	Portland Beds	Portland Stone
	Kimmeridge Clay Formation	Clay for Bricks
161	Corallian Group	
	Oxford Clay	Clay for Bricks
	Great Oolite Group	Forest Marble (Longburton Stone)
175	Inferior Oolite Group	Sherborne Stone
200	Lias Group	Ham Hill Stone Blue Lias Stone

***SOME EXAMPLES OF MATERIALS
IN LOCAL BUILDINGS***

The Old Bell, Long Street

The flatter stones at the base are Purbeck Stone and this is overlain by alternate layers of Zig-Zag Chalk blocks and napped Flints



The Abbey Barn

*Large blocks
(up to 4
tonnes) of
Holywell
Nodular Chalk
were used –
the only use of
this material in
the village*



St Mary's Church

Portland Stone, Purbeck Stone and Flint is used as the base of the wall.

At higher level the Ham Hill Stone (orange-brown) and Portland Stone (grey) form the thicker stone layers between layers of napped flints.

The window is framed in Ham Hill Stone.



The New Inn, Long Street

A wide mixture of materials have been used here. Purbeck Stone and Ham Hill Stone are used as roofing slates. Both materials are also used in the walls, together with napped flints, chalk blocks and bricks.

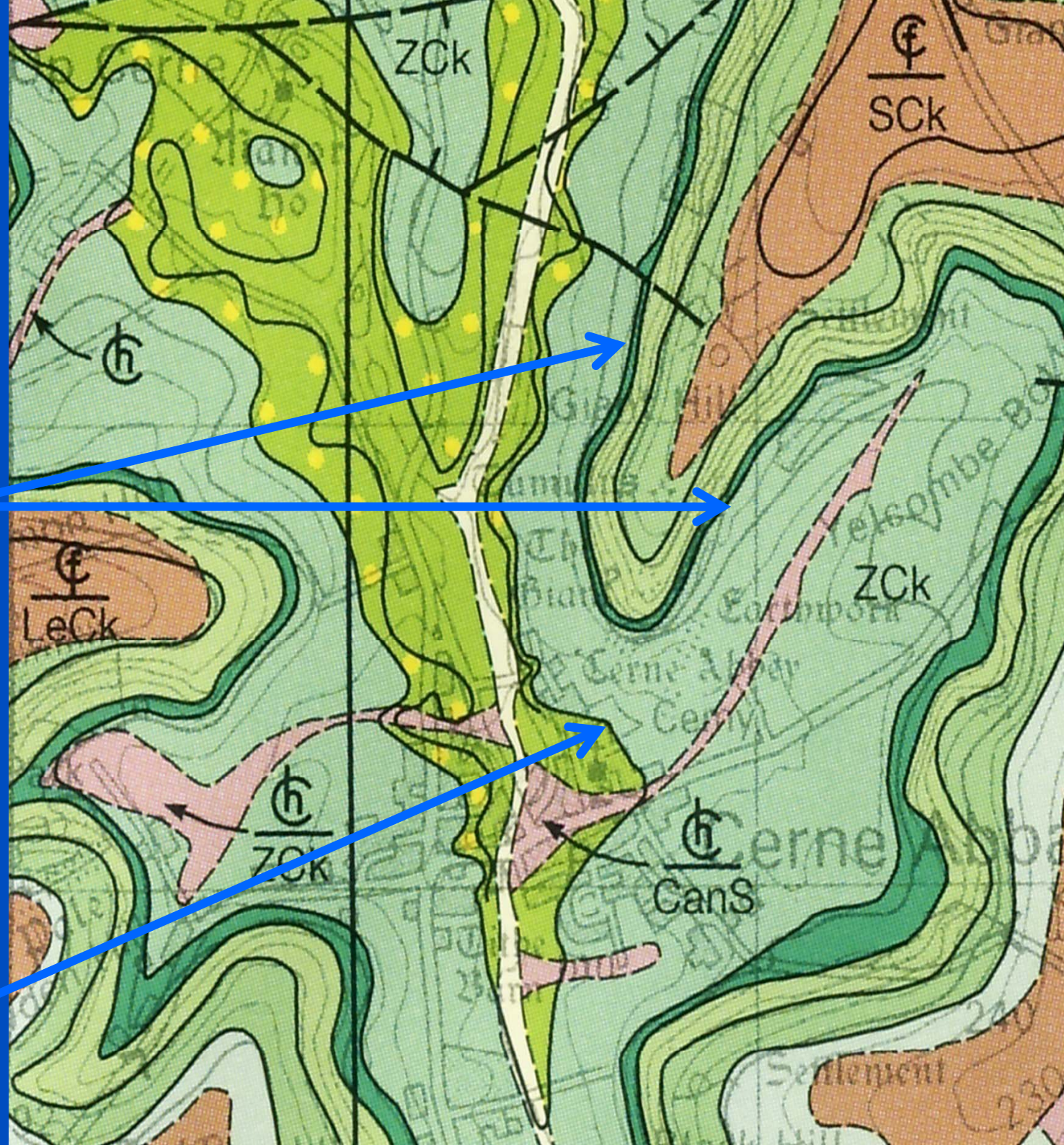


Ground Water

Two spring lines are evident in Cerne:

A marl band at the level of the Holywell Nodular Chalk causes springs around the base of Giant Hill.

Springs also issue at the Zig Zag Chalk / Upper Greensand boundary (St Augustine's Well)

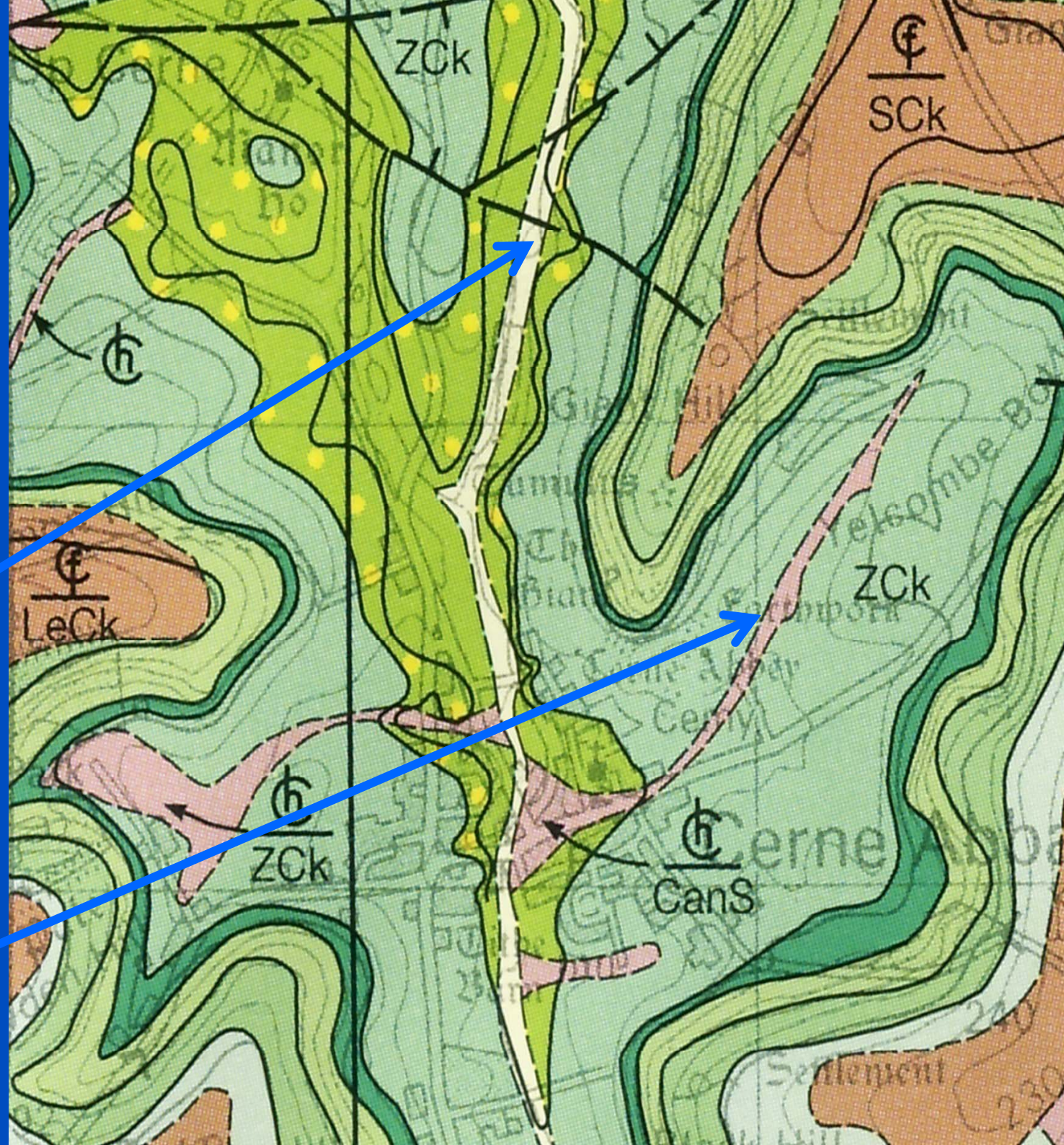


Surface Water

Surface water courses respond quickly to periods of high rainfall.

The River Cerne is now controlled by flood relief works.

The 'winterbourne' in Yelcombe Bottom flows freely in winter months and is often wet throughout the year.



A SUMMARY OF THE GEOLOGY 'on the ground'

