On the fabric of some Lincolnshire Wolds churches

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Abstract: Settlement of the Wolds began long before the time of the Roman occupation. Sites were consolidated during and after the influx of pagan Anglo-Saxons in the 5th century AD, and communities and burial grounds were established. With the introduction of Christianity, wooden churches were built, and from the 9th century stone began to replace timber. Suitable local rocks were utilized especially after the Norman Conquest. Spilsby Sandstone and Claxby Ironstone became the two main sources for church fabrics. The character and distribution of these rocks are described, and explanations offered for the concentration of Spilsby Sandstone churches in the southern Wolds and Claxby Ironstone churches in the central and northern Wolds. The wide use also of these rocks in Marsh churches is compared with their more restricted use west of the Wolds. Lincolnshire Limestone has been employed in Wold churches mainly for repair and restoration. Tealby Limestone and Chalk are of minor importance as building stones, whereas brick has proved attractive for cheap repairs and for several small complete 19th-century churches. Wold communities were relatively poor as indicated by the large proportion of small churches, frequently repaired with recycled stone, and numerous ruined and abandoned sites. Although the more affluent market towns, mainly on the edges of the Wolds, have larger churches, local building stones, except at Louth, still dominate their fabrics.

The Lincolnshire Wolds, an elongated tract of mainly Chalk upland between the Humber and the Wash, have long been settled. Burgeoning archaeological evidence is revealing the former activities of Neolithic, Bronze Age and Iron Age peoples (Bennet 2009). By the time of the Roman occupation, most woodland had been cleared, agriculture had been established, and many settlement sites occupied. For the latter, water, available from springs, streams and wells would have been a prime factor determining the choice of sites along the Chalk scarp in the west, the partly buried interglacial cliff feature marking the eastern edge of the Wolds, and in deep valleys (Fig. 1). The scarp and valleys also provided shelter from severe easterly weather and protection from enemies. Variation in vegetation cover would have proxied for soil types, both being indications of the underlying bedrock and superficial geology. The Romans built stations with stone walls at Horncastle and Caistor (Pevsner & Harris 1989) and it is likely that Iron Age peoples exploited local rocks for industrial as well as for domestic purposes.

The influx of pagan Anglo-Saxons in the 5th century necessarily brought change. It led to the break-up of Roman 'farms', to the trend for nucleated villages, and to the creation of burial grounds (Bennet 2009). Through the 6th and 7th centuries these peoples were Christianized, churches were built (no doubt small and ubiquitously wooden), and monasteries set up at Louth and Partney (Sawyer 1998; Pevsner & Harris 1989). Danish invasions in the 9th and 10th centuries retarded this process; but in Lincolnshire, as throughout the Danelaw, these peoples soon became settlers as testified by the profusion of village names ending in *-by* and *-thorpe*. Leaders of communities became landowners, and churches were constructed, in many cases by the leaders as private chapels (Sawyer 1998; Platt 1981). However, if the church was open to the community and had a cemetery, a third of any tithes could be claimed by the landowner, and another third by the church (Bennet 2009; Sawyer 1998). This process contributed to the formation of parishes, their areas being adjusted to include as far as possible a variety of land to ensure sustainable occupation. But when, we might ask, was stone first used for the building of churches?

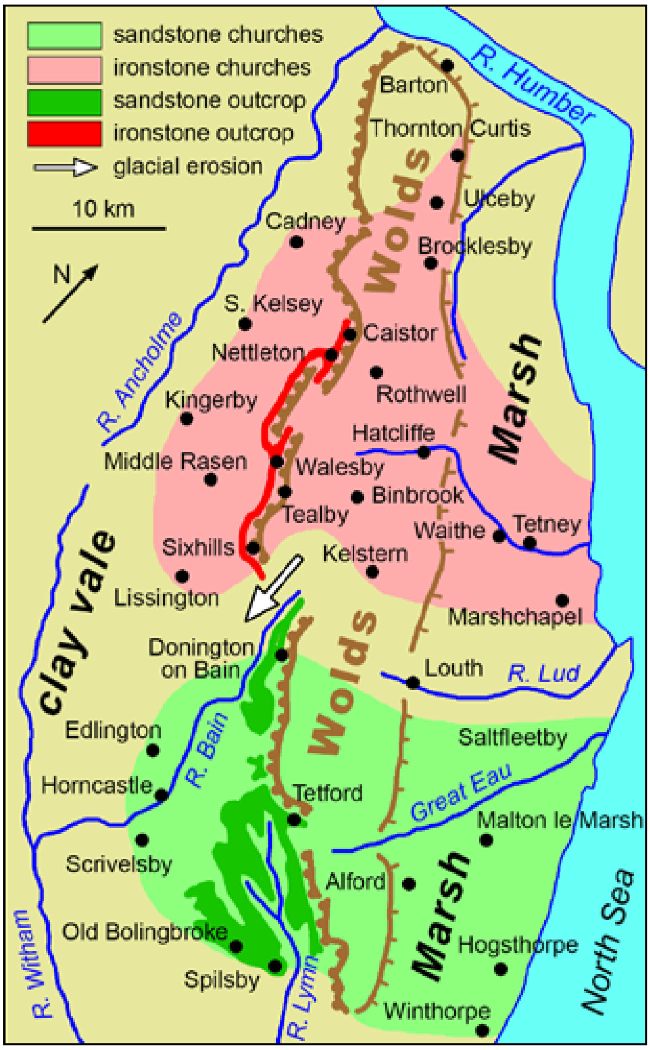

Figure 1*. Locations in the Lincolnshire Wolds, with the outcrops of the Spilsby Sandstone and Claxby Ironstone, along with areas where church fabrics are dominated by stone from those two sources (redrawn by Tony Waltham).*

Inevitably, the variety and properties of rocks occurring within each parish would have become known and exploited, but the first stone churches did not appear until the late 9th and 10th centuries, and even by 1050 the majority of churches were still of timber (Sawyer 1998). Stone churches needed local building materials: some parishes were lucky, some were not. Salzman (1952), citing much documentary evidence, notes that, in medieval times, the cost of producing building stone was less than the cost of its carriage overland for distances of more than about 20 km. Centuries before, the Anglo-Saxons seem to have been reluctant to transport stone more than about 24 km; wherever possible they used already-dressed stone such as grave slabs, crosses and 'Roman' stone (Sawyer 1998).

With the Normans came a stone-building boom. Most parish churches were rebuilt, no doubt at first by Anglo-Saxon masons for Norman landowners, as at Cabourne (Fig. 3), Nettleton (Fig. 17) and Hainton (Fig. 23), hence the term Saxo-Norman. Pevsner & Harris (1989) accept 47 churches with traces of Anglo-Saxon workmanship in Lincolnshire, but in the Wolds prefer only Barton-on-Humber (St Peter) and Caistor as pre-Conquest. Potter (2015) however, also accepts Barnetby le Wold, Cuxwold, Lusby (Fig. 4), Nettleton (Fig. 17) Rothwell (Fig. 5) and Swallow as containing pre-Conquest work. Later generations built new churches in the Wolds, and/or modified the Anglo-Saxon and Norman churches such as Lusby (Fig. 4), Martin (Fig. 6) and Burwell (Fig. 14). The Wolds have examples of parish churches from all periods and in all architectural styles; these have been described by various workers though most extensively by Arthur Mee (1970) and Pevsner & Harris (1989). The small number of churches depicted in this paper have been selected to illustrate the use of building stones from Anglo-Saxon times onwards.

Formation	Member
Burnham (Chalk)	
Welton (Chalk)	
Ferriby (Chalk)*	
Hunstanton (Red Chalk)	
Carstone	
Sutterby Marl	
Skegness Clay	
Roach	
Tealby	Upper Tealby Clay
	Tealby Limestone *
	Lower Tealby Clay
Claxby Ironstone *	
Spilsby Sandstone *	
Kimmeridge Clay	

(* Source of building stone)

***Figure 2**. Rocks of the Wolds.*

***Figure 3**. CABOURNE (TA 140019). The tower, of Claxby Ironstone rubble and quoins, is Saxo-Norman (later C11) up to the drip-course, with original slit window and portal. Top stage (A W Blomfield, 1872), with some re-used stone, has simulated Saxon Lincolnshire Limestone bell-openings (view ESE, 09-10-15).*

Building materials

Four main rock units were available as building stones in the Wolds: Spilsby Sandstone, Claxby Ironstone, Tealby Limestone and Chalk (Fig. 2). The Spilsby Sandstone is exposed mainly in the southern Wolds west of the Chalk scarp and in the middle Bain valley; the Tealby Limestone and the Claxby Ironstone along the scarp from North Willingham northward; and the Chalk from the Humber to the Fens (Fig. 1). Other materials include imported rocks, in particular oolitic Lincolnshire Limestone mainly from the Ancaster area, and brick.

Spilsby Sandstone Formation

This formation is mostly sandstone of latest Jurassic to earliest Cretaceous age. Up to 30 m thick in the south, it consists of fine and medium grained glauconitic sandstone, locally with a calcareous cement. The unweathered rock is a pale yellowish-grey colour, commonly with a greenish tinge imparted by the

***Figure 4**. LUSBY (TF 340679). A Spilsby Sandstone two-cell Saxon (earlier C11) church. The nave has been shortened, a Norman doorway blocked, and a bell-turret added. The eastern half of the chancel rebuilt 1891–3 (E Christian) with old stone. Two-light Lincolnshire Limestone window in nave (view N, 24-04-15).*

glauconite component, as can be seen at Tetford (Fig. 7). Weathering, including the change from glauconite to hydrated ferric oxide, has produced a wide range of shades of brown from yellowish and orangey to very dark brown, well revealed at Market Stainton (Fig. 8) and North Willingham (Fig. 12), perhaps reflecting variations in the degree and duration of exposure as well as in the concentration of iron oxide.

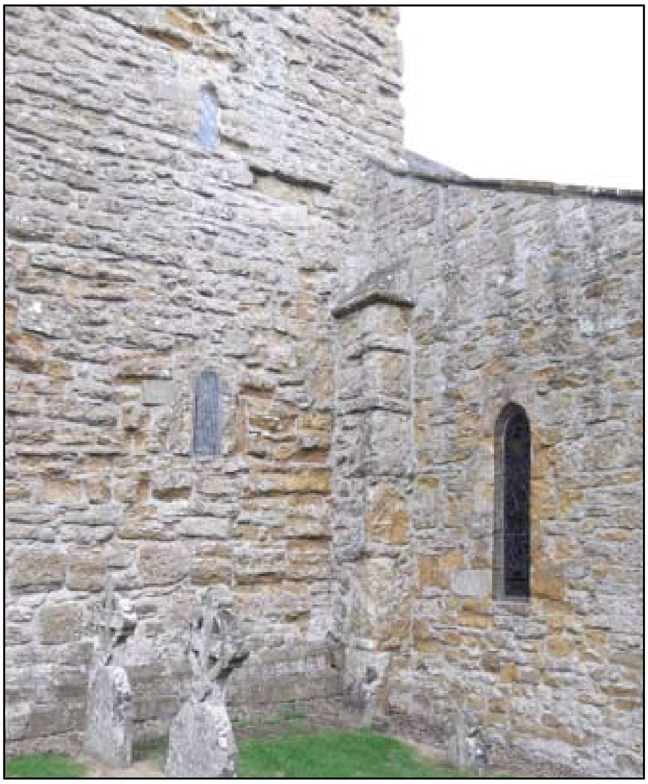

***Figure 5**. ROTHWELL (TF 149994). Claxby Ironstone coursed rubble, quoins and buttresses. In the angle of the Saxo-Norman tower and Norman side-aisle is the SW corner of the pre-Conquest Saxon nave, with 'long and short' quoins (view NE, 09-10-15).*

***Figure 6**. MARTIN (TF 240668). A Spilsby Sandstone two-cell Norman (later C12) church. West wall repaired with Chalk when the C15 window was inserted. C18 brick gable with Spilsby Sandstone bell-opening. In 1877 the roof was replaced on brick eaves, and two pairs of nave Lincolnshire Limestone windows renewed (view NE, 10-10-15).*

***Figure 7**. TETFORD (TF 334747). A well-proportioned Spilsby Sandstone church with Lincolnshire Limestone windows, buttress set-offs, pinnacles and repairs. Aisle and chancel are C14; tower, clerestory and porch late C15 (view NW, 24-04-15).*

The most extensive outcrop is in the southern Wolds, west of the Chalk scarp (Fig. 1), which is drained by the River Lymn and its tributaries, except for the wide expanse between Old Bolingbroke and Spilsby. All streams occupy deep valleys floored by the underlying Kimmeridge Clay Formation and flanked by bluffs of sandstone. This circumstance is the consequence of spring and fluvial erosion, which thereby provided opportunities for obtaining building stones from the valleyside bluffs and beneath the 'plateau' area. The considerable spread of colours reflects varying amounts of iron oxide weathered for different lengths of time under environmental conditions ranging from periglacial to humid temperate, and beneath different vegetation covers.

The ferric minerals have so strengthened the sandstone, which hardens on exposure, as to enhance its use for building. The strongest materials were most

Figure 8. *MARKET STAINTON (TF 228799). Mid C14 south tower wall, of variegated Spilsby Sandstone in coursed, dressed blocks. C18 brick buttress, lichen-covered (view NE, 05-11-11).*

probably those with a substantial iron content, and which had been near the land surface for the longest time, particularly in the valleyside bluffs where stone could be won from numerous small pits rather than from a few large quarries. However, some larger workings must have existed, because some churches contain, especially internally as at Tetford (Fig. 9) and Horncastle, substantial quantities of unweathered stone. Quarries near Harrington and Ashby Puerorum, around Spilsby, and at Holbeck near Salmonby (Jukes-Browne 1887; Robinson 2009a, b) were worked until the later 19th century but none of these are now extant.

The Spilsby Sandstone was used over a long period of time: by the Romans in their station at Horncastle (Pevsner & Harris 1989); by Anglo-Saxon and Danish settlers in churches like Lusby (Fig. 4); by the builders of Bolingbroke castle in the 1220s and of the nearby 14th to 15th century church (Fig. 16); and, in later centuries, in churches at Alford (Fig. 10), South Willingham, Scrivelsby (Fig. 11), Bag Enderby, Burwell (Fig. 14) and others.

Most of these structures were on or close to the sandstone outcrops within the Lymn catchment and inliers as at Belchford and northwest of Greatham. The Spilsby Sandstone occurs widely in the middle Bain valley and has been used in Benniworth and Market Stainton (Fig. 8) churches, but only meagrely in the nearby Donington-on-Bain church. Although low bluffs bordering the Bain alluvial floodplain do exist through Donington and Goulceby parishes, the sandstone is generally more friable here and underlies extensive areas of loose, wind-susceptible, sandy soils.

In the Spilsby area, the sandstone is the major component of the fabric of many churches, including Tetford (Figs. 7, 9), Horncastle, Old Bolingbroke (Fig. 16), Hagworthingham, Harrington and Bag Enderby. It was also used in churches out on the Marsh to the east of the Wolds, like Alford (Fig. 10) and close to the coast at Saltfleetby All Saints, Theddlethorpe All Saints (Fig. 13), Maltby le Marsh, Winthorpe, Burgh le Marsh, and Croft, being facilitated by transport down the River Lymn/Steeping (Fig. 1). By contrast, its use extended for only a few miles to the west of the Wolds (Fig. 1) at Hemingby, Edlington, Thimbleby, Martin (Fig. 6) and Scrivelsby (Fig. 11), because of the readier availability of Lincolnshire Limestone conveyable along the River Witham. On the Chalk areas of the southern Wolds, the Spilsby Sandstone is to be found in the medieval parts of Burwell church (Fig. 14), in the 1886/7 chancel

Figure 9. *TETFORD (TF 334747). Mid C14 masonry of unweathered, greenish-tinted Spilsby Sandstone in coursed, dressed blocks. The pier and inner order of the arches are of Lincolnshire Limestone (view ENE, 24-04-15).*

Figure 10. *ALFORD (TF 456761). Spilsby Sandstone ashlar, with Lincolnshire Limestone windows, buttresses, tower quoins, parapet and pinnacles. Chancel and NE chapel C14, tower early C16, north aisle 1867 (G G Scott) (view SW, 07-11-14).*

Figure 11. *SCRIVELSBY (TF 265657). Early C13, but refaced in 1860 and 1876 with Spilsby Sandstone ashlar, and given some new Lincolnshire Limestone windows and drip-course. Lincolnshire Limestone spire, 1860 (view NW, 07-11-14).*

of the church at Kelstern (Fig. 15), and as quoins and buttresses in the 1868 restoration of Legbourne church near Louth. In the central Wolds, along the scarp, churches mostly built of Spilsby Sandstone occur at South Willingham, Hainton (Fig. 24), Sixhills, and North Willingham (Fig. 12). In the central Lincolnshire vale, however, only East Barkwith has a substantial amount of the sandstone.

Figure 12. *NORTH WILLINGHAM (TF 164883). Spilsby Sandstone forms the lower two-thirds of the C13 tower; Claxby Ironstone the upper one-third, 1895 (C H Fowler) (view SE, 05-10-18).*

Pevsner & Harris (1989) frequently refer to churches built of Spilsby Sandstone as of 'greenstone', but this can be misleading. Although the unweathered sandstone often has a greenish tint (Tetford, Figs. 7, 9), in some instances the green colour is due to a veneer of green algae, which seems readily to colonize the sandstone where walls and the like are damp and shaded. An overall greenness can therefore effectively mask the browns of the weathered sandstone. This can be seen at Old Bolingbroke (Fig. 16) which also reveals that Lincolnshire Limestone is prone to occupation by pink algae. These contrasts often help with stone identification.

Figure 13. *THEDDLETHORPE ALL SAINTS (TF 463882). South aisle (late C14) wall has Spilsby Sandstone lower courses overlain by Lincolnshire Limestone ashlar, rubble and brick, all possibly original and formerly rendered. Spilsby Sandstone and brick porch. Clerestory (late C14) with Spilsby Sandstone ashlar (algal veneer) and Lincolnshire Limestone windows and battlements (view NW, 05-11-10).*

Claxby Ironstone Formation

The Spilsby Sandstone Formation is succeeded by 6–7 m of Claxby Ironstone Formation, which contains oolitic grains of iron oxide and in parts has a sufficient Fe content (23–27%) to constitute an ore worthy of extraction. It crops out along the scarp face from Tealby to Caistor where it has been worked as both an ore and a building stone (Squires 2017). The Claxby Ironstone also occurs, but has not been exploited, in the middle Bain valley around Donington-on-Bain; further south it passes into clays (Swinnerton & Kent 1976). It has a rich molluscan fauna, but its mechanical strength varies, and it weathers quickly so that churches where it has been used now have a shabby appearance (e.g. Brocklesby, Fig. 19) or have been frequently patched. Although rarely suitable for quoins and dressings (but see Walesby, Fig. 20), it has been used widely in the northern Wolds in church fabrics from late Anglo-Saxon times (at Rothwell, Fig. 5; Caistor; Nettleton, Fig. 17; and Swallow) to the 19th century, as illustrated by the churches figured in this paper. Despite its dubious

***Figure 14**. BURWELL (TF 356797). Originally all Spilsby Sandstone rubble and ashlar. Tower early C16, with late C18 brick repair. Nave is C13 with brick eaves of 1882. South arcade blocked with Spilsby Sandstone and given new windows possibly in 1414 when adjacent alien priory demolished. Chancel C13, but east third rebuilt early C16 and east wall in 1912 (Lincolnshire Limestone). Behind the tomb-chest is C12 fabric of coursed Spilsby Sandstone blocks, with later C15 rubble-work above related to insertion of the Lincolnshire Limestone three-light window (view, NW, 24-04-15).*

quality as a building stone, it was used frequently by J. Fowler of Louth in restorations at Cuxwold (1860), Swallow (1868), Benniworth (1874–5), Croxton (1878), and most notably in his fine church at Binbrook (1869; Fig. 18). Squires (2017) noted post-medieval use at Wyham (1656), Humberston (1710), North Owersby (1762), Lissington (1796) and Tealby (1871–2).

As with the ore (Squires 2017), most of the building stone has come from the Nettleton area, where the scarp is fretted by deep obsequent valleys providing many exposures. Within 24 km or so of Nettleton, churches built wholly of Claxby Ironstone occur at Brocklesby (Fig. 19), Great Limber, Caistor, Cabourne (Fig. 3), Swallow, Cuxwold, Hatcliffe (Fig. 22), Rothwell (Fig. 5), Normanby le Wold, Thorganby and Swinhope. Patching with ironstone occurs at Kirmington and northward at Ulceby (Fig. 24) and Thornton Curtis.

Further south, along the scarp, the medieval churches at Bigby, Clixby, Caistor, Claxby, Walesby (Fig. 20) and Tealby were also constructed mainly of Ironstone. Behind the scarp on the Wolds, it is also the pre-eminent stone at Kirmond-le-Mire (1846–7) and Kelstern (Fig. 15), while at Hainton (Fig. 23) and South Willingham, small amounts appear as jambs and dressings.

East of the Wolds, the Claxby Ironstone was transported, like the Spilsby Sandstone, widely over the Marsh. For the group of churches consisting of Humberstone, Waithe (Fig. 21), Tetney, Grainsby, Marsh-chapel, Utterby and Covenham St Mary, its carriage would have been facilitated by the stream that flows from Croxby and Hatcliffe in the Wolds, via Waithe to Tetney. Similarly, the north-flowing Skitter/East Halton Beck allowed stone to reach Ulceby (Fig. 24) and Thornton Curtis.

West of the Wolds, where numerous streams flow west to the River Ancholme, the ironstone is to be found in churches at North Kelsey, Cadney, Thornton

***Figure 15**. KELSTERN (TF 252898). Claxby Ironstone early C14 nave, with Spilsby Sandstone blocked doorway, re-roofed 1886–7 on Spilsby Sandstone eaves when the Spilsby Sandstone chancel was rebuilt. Tower early C19 of rendered brick. Lincolnshire Limestone windows of C16 and C19 (view NNW, 09-10-15).*

Figure 16. *OLD BOLINGBROKE (TF 349652). Angle of the NW tower buttress, early C15. Spilsby Sandstone with green algal veneer (one dark brown replacement block). Lincolnshire Limestone blocks with pink algae (view SE, 07-11-14).*

le Moor, North Owersby, Kingerby, Kirkby-cum-Osgodby, and Middle Rasen. They all lie within 24 km of Nettleton and east of the River Ancholme, whose wide watery floodplain inhibited transport of Lincolnshire Limestone from the west.

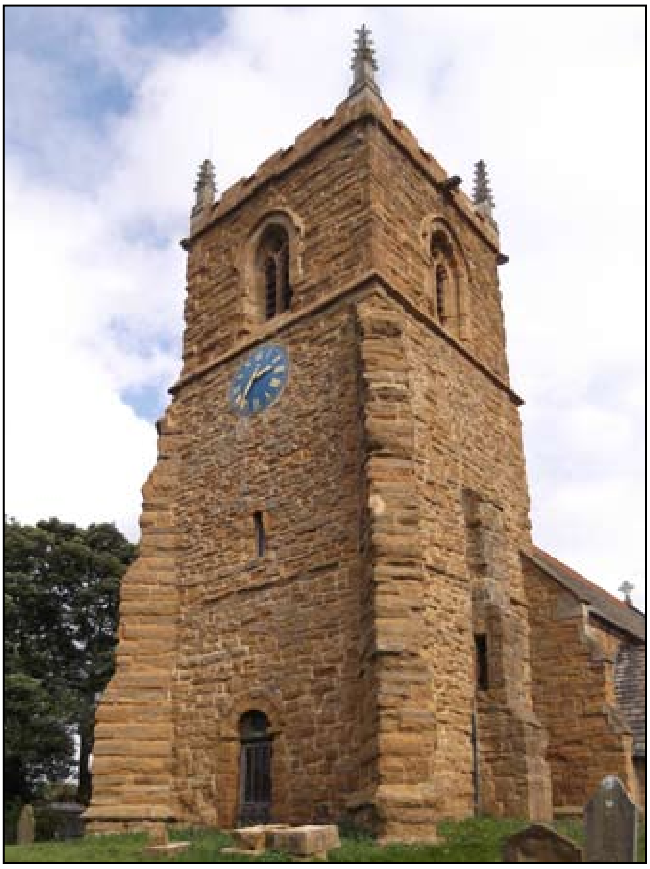

Figure 17. *NETTLETON (TA 111002). Claxby Ironstone Saxo-Norman (late C11) tower with C15 top-stage and 1874 pinnacles. Diagonal buttresses, probably C15, are of large Claxby Ironstone blocks (view NE, 20-09-12).*

Figure 18. *BINBROOK (TF 212939). Claxby Ironstone with Lincolnshire Limestone dressings and spire. 1859 (J Fowler, Louth) (view NW, 09-10-15).*

Figure 19. *BROCKLESBY (TA 140113). Much-weathered Claxby Ironstone (early C14) with Lincolnshire Limestone windows; repairs to gables c.1900 (view WNW, 29-08-08).*

Figure 20. *WALESBY (TF 138924). South aisle, c.1300, of Claxby Ironstone rubble fabric. Windows c.1300, and battlements C15 (view NW, 05-11-10).*

__Figure 21__. WAITHE (TA 284007). North side of Saxon (late C10) tower, of glacial erratic cobbles, with a restored C13 Lincolnshire Limestone window. Lincolnshire Limestone buttress and wall of 1861–2 (J Fowler, Louth), the stone probably being transported by the new (1848) East Lincolnshire Railway (view SSE, 30-09-16).

__Figure 22__. HATCLIFFE (TA 212007). Claxby Ironstone nave (late C12). Aisle demolished in later C13, and arches blocked with old stone but given smaller windows and a doorway. The latter was probably blocked (again old stone) in the 1861–2 restoration, when eaves and roof were refurbished. Claxby Ironshore vestry and chancel 1861–2 (view SE, 09-10-15).

__Figure 23__. HAINTON (TF 180845). South side of Saxo-Norman tower (later C11). Uncoursed Tealby Limestone and Claxby Ironstone rubble. Original 'keyhole' window with single-block Lincolnshire Limestone headstone. Spilsby Sandstone buttress (view N, 05-10-18).

Tealby Limestone Member

This unit comprises the middle part of the Tealby Formation, which is nowhere more than 30 m thick (Fig. 2). It is a friable, thinly-bedded, micritic, shelly deposit, grey in colour and weathering to yellow-brown. It crops out in two localities: along the eastern side of the middle Bain valley where it forms prominent scarp face benches, and along the scarp between South Willingham and Nettleton, where it is barely 3 m thick. Containing thin seams of ironstone and clay, it is not capable of being carved, or dressed as ashlar, and was used in masonry only as rubble, for instance at East Barkwith, Hainton (Fig. 23), South Willingham, and Donington-on-Bain.

North of Donington-on-Bain, the valley of the south-flowing River Bain breaches the Cretaceous scarp fortuitously where the Spilsby Sandstone thins north and the Claxby Ironstone thins south, and where their outcrops remain concealed by glacial deposits. These circumstances help explain why churches built of sandstone dominate south of the gap, and of ironstone to the north.

Chalk

In the Wolds, the Chalk Group consists of the Ferriby, Welton and Burnham Formations (broadly equivalent to the former Lower, Middle and Upper Chalks). The Ferriby Chalk is flintless, grey in colour and includes harder beds that represent the Totternhoe Stone of Buckinghamshire (Kent 1980; Lott 2001). The Welton Chalk contains nodular flints and the Burnham Chalk distinctive tabular flints.

The Chalk makes a poor building stone. Although often used in the past in houses and farm buildings, few Wolds churches include it as the main fabric, and these occur mainly in the northern Wolds, for instance at Horkstow, Ulceby (Fig. 24), Croxton, Great Limber and Cuxwold, but also at Legbourne near Louth, where Ferriby Chalk is exposed within the Lud catchment (Lott 2001). Mostly, Chalk is used for repairs or as rubble core, as at Goxhill, Kirmington, Bigby, Clixby, Kelstern (Fig. 15) and Burwell (Fig. 14).

The Chalk does however contain flint, a building material made great use of in East Anglia and parts of southern England. Why, therefore, are there no flint churches in Lincolnshire? The situation must reflect its relative availability. In Norfolk for example, large areas of the Chalk and Tertiary rock outcrops are covered by glacial outwash gravels in the form of extensive, low relief, outwash plains such as those at Holt, Salthouse and Great Bircham, and river terraces beside the Wensum and its tributaries (Straw 1973). Of these, the so-called 'cannon-shot' flints form a large proportion. These cobbles, derived originally from the Chalk on both sea-floor and land, have been rounded and 'chatter-marked' by marine wave action and meltwater transport. Most of this material relates to the Wragby

Figure 24. *ULCEBY (TA 103146). CIaxby Ironstone tower (late C13) with angle buttresses of large Claxby Ironstone blocks, Lincolnshire Limestone bell-openings and C15 battlements. Chalk nave and south aisle (earlier C14) with Lincolnshire Limestone buttresses, quoins and windows; gable patched with brick when clerestory raised in C15. Chancel west half (late C13) with Lincolnshire Limestone windows and C18 brick repairs; east half refaced 1887 (view WNW, 23-03-18).*

Glaciation when, about 250 000 years ago, ice flowed from the north, picked up the cobbles and incorporated them in till and gravel. These flints are extremely hard and, although rounded, can with plenty of mortar be built into rubble walls. When split or knapped, they can be used as facings and for that distinctive decoration known as 'flushwork'.

In east Lincolnshire, quite different conditions prevailed. Wragby ice travelled the length of the Wolds Chalk dipslope (then more extensive eastward than now) and not over the sea-floor, scraping the surface of any 'clay-with-flint' residual material and leaving Calcethorpe Till widely over the higher ground. On deglaciation, meltwaters escaped mainly down the flanks of the Wolds (e.g. the Bain valley) and were erosive rather than aggradational so that no outwash plains similar to those in Norfolk exist. When a later ice-sheet invaded the Marsh and eastern parts of the Wolds, the ground to the west experienced severe periglacial conditions, and processes such as gelifluction carried chalk and flint downslope to form 'head' deposits. No flints suitable for local church building were therefore available, not even the tabular flints of the northern Wolds.

There is one church, at Waithe (Fig. 21), that perhaps deserves mention, even though it contains no chalk or flint and lies in the Marsh about two miles east of the eastern cliff (Fig. 1). This is because of the uncommon use of well-rounded cobbles in its Saxo-Norman, or even pre-Conquest, central tower (Pevsner & Harris 1989; Potter 2015). The tower was abutted on three sides with chancel, porch and nave of Lincolnshire Limestone in 1861 by J. Fowler, so that it is the north wall that reveals mostly the complex fabric of weakly-coursed cobbles rising into the second stage (Fig. 21). At this level, some cobbles are interlayered with coursed, dressed freestone blocks, which then constitute the whole of the third, bell stage. Potter (2015) describes the cobbles in some detail, noting a variety of sedimentary, quartzose and igneous rocks, and speculates on the possibility that the cobbles might formerly have been ships' ballast. It is surely relevant, however, that the Saxons sited the former village on, and exploited, a tract of outwash gravels bordering the glacially-diverted, Barnoldby Beck. The cobbles in the tower are most likely glacial erratics. Lott (2001) refers to cobble walls in churches at Scartho, Holton le Clay and Clee further out on the Marsh.

Brick

Brick has been used in two ways. From the 15th century it was often employed for making cheap repairs to the church fabric, particularly in the 17th and 18th centuries as at Martin (Fig. 6), Market Stainton (Fig. 8), and Burwell (Fig. 14). Secondly, for building complete churches: examples in the Wolds include Raithby (1839) by W. A. Nicholson and G. R. Willoughby, Sausthorpe (1842) by C. Kirk, Little Cawthorpe (1860) by R. J. Withers, and Langton by Spilsby (1725) by E. Hutchinson (Fig. 25). At Haugham and Biscathorpe (Fig. 26), both about 1840 by G. R. Willoughby with W. A. Nicholson, the brick is wholly rendered to simulate Lincolnshire Limestone.

Figure 25. *LANGTON BY SPILSBY (TF 390704). Red brick, Flemish bond, 1725. Spilsby Sandstone quoins, Lincolnshire Limestone dressings (view ENE, 12-10-15).*

Lincolnshire Limestone

Buff-coloured oolitic and shelly limestone from the Lincolnshire Limestone Formation of the Middle Jurassic cuesta, and particularly from the quarries near Ancaster on the south side of the Ancaster gap, has been used in almost every church in Lincolnshire. Within the Wolds and out on the Marsh, its great virtue was its suitability for dressings (Figs. 7, 9, 10, 11, 13,

Figure 26. BISCATHORPE (TF 230848). Rendered rubble and brick, 1847. Spalled area on nave. Twenty-four Lincolnshire Limestone pinnacles overall (view NW, 24-04-15).

17), including window tracery and jambs, portal jambs and voussoirs, buttresses, battlements and parapets, quoins and drip courses — a property well appreciated by Victorian restorers. It has also been used frequently for repairs to church fabric, especially in the 19th century even when (or perhaps because?) it contrasts with the local stone (Fig. 10), and for refurbishment of spires (Lott 2001). In the Marsh, several churches have been built of it in part or whole, such as Marshchapel (tower), Winthorpe (porch), and Addlethorpe. In the

Figure 27. LOUTH (TF 326874). Lincolnshire Limestone clerestory and south aisle (mid C15). Lincolnshire Limestone tower (later C15) and spire (early C16) (view NW, 25-04-15)

Wolds, only G .G. Scott's (1845–9) church at Saxby All Saints and the magnificent 15–16th century church at Louth (Fig. 27) are largely composed of it.

Before the mid-19th century, costs related to transport of this stone were generally too high for large quantities to be brought into the area. Medieval use of it is shown in Figures 13, 14 and 15, and impressive 19th century use at Binbrook (Fig. 20), where J. Fowler of Louth combined it successfully with Claxby Ironstone. Wherever possible, movement of building stones in earlier days was by water, transport overland of such heavy material being both slow and expensive. Ancaster stone was taken eastward down the Slea valley to Appletreeness wharf and thence onto the Witham and Langworth rivers for central and northern Lincolnshire churches, and downstream on the Witham to the coast, for shipping to the east and northeast of the county. After 1848, the East Lincolnshire Railway provided a readier means of transporting stone into this area.

Overview

1. In the Wolds, reliance on two main stones from Saxon times is obvious — Spilsby Sandstone and Claxby Ironstone — which were available in largely separate areas determined by outcrop. The Lincolnshire Limestone was used widely but not, apart from Louth and Saxby All Saints, for whole buildings; its 'freestone' character and durability rendered it valuable for dressings from the Norman Conquest onwards.
2. The Spilsby Sandstone and Claxby Ironstone are less resistant to weathering, which militated against their use for dressings and necessitated, in many churches, repeated and extensive repairs or partial or whole rebuilding. Much remedial work took place in the 14th and 15th centuries, opportunities being taken to introduce new styles and alter layouts. Neglect through later centuries led to 18th century, and particularly 19th century, renovations and 'restorations'.
3. Building stone was a valuable commodity and was often re-used. This must have been a necessity in many Wolds communities, especially when primary sources of stone were far distant.
4. The Wolds retain many small churches and this, together with the evidence of cheap repairs to fabrics, may reflect the relative poverty of early parish economies by comparison with the Fenland, and Holderness beyond the Humber. Granted, the addition of towers and chapels, and enlargement of chancels came with increasing wealth, and the local stones continued to dominate church fabrics well into the 19th century, but changing fortunes led also to contraction with demolition of some aisles and chapels (Figs. 14, 22). There are many redundant sites in the Wolds today marked only by earthworks or a solitary farm.

5. The market towns have the larger churches — Barton-on-Humber, Caistor, Binbrook, Louth, Alford, Horncastle, Old Bolingbroke, Spilsby — but, apart from Louth, the local stones prevail in all fabrics. It is also of interest that all, except Binbrook, are located on the edges of the Wolds, probably reflecting age-old interactions between communities of adjacent, rather different areas.

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Place-name map references

Addlethorpe (TF 551691)
Alford (TF 455761)
Ancaster (SK 983438)
Appletreeness wharf (TF 136496)
Ashby Puerorum (TF 328714)
Bag Enderby (TF 350721)
Barnetby le Wold (TA 058093)
Barton on Humber St Peter (TA 033220)
Belchford (TF 294755)
Benniworth (TF 210818)
Bigby (TA 060075)
Binbrook (TF 212939)
Biscathorpe (TF 230848)
Brocklesby (TA 140113)
Burgh le Marsh (TF 501650)
Burgh on Bain (TF 222865)
Burwell (TF 356797)
Cabourne (TA 140019)
Cadney (TA 017034)
Caistor (TA 116013)
Claxby (TF 111946)
Clee (TA 290085)
Clixby (TA 102043)
Covenham St Mary (TF 340944)
Croft (TF 509618)
Croxby (TF 190981)
Croxton (TA 094123)
Cuxwold (TA 172010)
Donington on Bain (TF 236830)
Edlington (TF233715)
East Barkwith (TF 166815)
Goulceby (TF 255793)
Goxhill (TA 102212)
Grainsby (TF 278995)
Great Bircham (TG 770326)
Greatham (TF 308707)
Great Limber (TA 135086)
Grimblethorpe (TF 238865)
Hagworthingham (TF 343693)
Hainton (TF 180845)
Harrington (TF367719)
Hatcliffe (TA 212007)
Haugham (TF 336815)
Hemingby (TF 237744)
Holbeck (TF 316726)
Holt (TG 080388)
Holton le Clay (TA 286028)
Horkstow (SE 987183)
Horncastle (TF 258695)
Humberston (TA 311052)
Kelstern (TF 252898)
Kingerby (TF057929)
Kirkby cum Osgodby (TF 063928)
Kirmington (TA 106113)
Kirmond le Mire (TF185926)
Langton by Spilsby (TF 393704)
Legbourne (TF 368845)
Lissington (TF 109836)
Little Cawthorpe (TF 357838)
Louth (TF326874)
Lusby (TF 340679)
Ludford (TF 200892)
Maltby le Marsh (TF 462814)
Marshchapel (TF 360987)
Martin (TF 240668)
Market Stainton (TF 299799)
Middle Rasen (TF 087896)
Nettleton (TA 111002)
Normanby le Wold (TF 123947)
North Kelsey (TA 044015)
North Owersby (TF 062948)
North Willingham (TF 164883)
Old Bolingbroke (TF 349652)
Partney (TF 410684)
Raithby (TF 310847)
Ranby (TF 232785)
Rothwell (TF 149994)
Salmonby (TF 328735)
Saltfleetby All Saints (TF 455905)
Salthouse (TG 076437)
Sausthorpe (TF 382691)
Saxby All Saints (SE 992168)
Scartho (TA 268063)
Scrivelsby (TF 265657)
Sixhills (TF 170871)
South Ormsby (TF 370752)
South Willingham (TF 195834)
Spilsby (TF 400660)
Swallow (TA 176030)
Swinhope (TF 216962
Tealby (TF 157908)
Tetford (TF 334747)
Tetney (TA 317008)
Theddlethorpe All Saints (TF463882)
Thimbleby (TF 241700)
Thorganby (TF 208976)
Thornton Curtis (TA 088179)
Thornton le Moor (TF 050962)
Ulceby (TA 103146)
Utterby (TF 305933)
Waithe (TA 284007)
Walesby (TF 132924)
Welton le Wold (TF 273873)
Winthorpe (TF 560658)
Woodhall Spa (TF 197632)
Wyham (TF 278951)