



Cambridgeshire
Geological Society

Newsletter

December 2020

Cambridgeshire Geological Society



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Guided Fen Edge Trail walk at Lode Mill

Editorial : Reg Nicholls (Chairperson)

For most of this year, we have been living in Virtual Reality with all our “meetings” online— like every other society! Whilst we all miss the face to face interactions, there has been one huge opportunity afforded us by the pandemic and that is the proliferation of online lectures from a whole variety of sources. Not only have we opened up our monthly talks to the wide world, but so have many other institutions. We

have reciprocal arrangements with the Sedgwick Club (Earth Sciences, Cambridge) and Glasgow Geological Society, but many other societies’ lectures are available for registrants to their websites.

In some ways, the virtual lecture has other advantages—we have had talks from far flung geologists who we would not necessarily have been able to get down to

Cambridge. Our committee has been discussing this and when the emergency is over, we would still like to have the odd “in between” virtual lecture from far afield.

Hopefully, by the time of the next newsletter we will be getting back to “normal” and physical meetings can resume. We are also planning a programme of local field trips— more information on these later.

New Society Committee

In November we had our AGM—again virtually. At this meeting we had a refurbished committee elected by a unanimous vote. The new structure is:

Chairperson: Reg Nicholls

Treasurer: Martin Evans

Secretary: David Brooks

Programme Sec: Franziska Norman

Geosites and website co-ordinator: Chris Donnelly

Other committee members:

Penny Coggill, Steve Daniels and Alex Wedgebury.

Franziska had to step down as chair as her 5 year stint

was up: we thank her for her years of effort in chairing our society and also arranging all of our varied and interesting talks.

Retiring from the committee were Nick Barraud and Peter Friend both of whom have given many years of valuable service to the betterment of the society. We hope that they will still be active generally in the society.

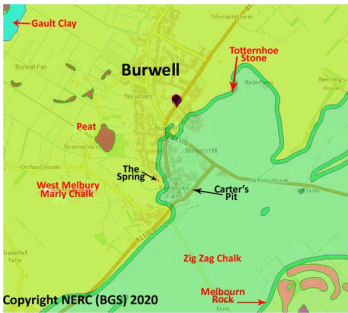
Our membership has increased to 35 this year— which is very gratifying considering the circumstances.

Your committee has a full workload this year: Apart

from organizing a programme of talks, we have embarked on a strategy to identify a list of candidate Local Geological Sites in the county which we can have recognized in the Planning system. We are also involved with the Fen Biosphere project and (of course) the Fen Edge Trail.

We would also like to develop a programme of initially local field visits to some of our geological sites—more of this later.

If you want to contact the committee, please get in touch through our website



Geological Map of Burwell showing locations of sites

GENERALISED STRATIGRAPHY OF CAMBRIDGESHIRE				
EPHOCH	AGE	GROUP	LITHOLOGY	FORMATION/GROUP
QUATERNARY	Holocene			Fluvial mud / silt, Inter tidal, Peat
	0.011Ma			
	0.66Ma			
CRETACEOUS	Pleistocene	Anglian		Glacial and Fluvial deposits
				Holwell Nodular Chalk
	Cenomanian			Zig Zag Chalk
		Grey Chalk Group		Totternhoe Stone West Melbury Marl
		100.5Ma		Cambridge Greensand Gault
Albian			Gault Formation	

The Burwell Local Geological Sites

Cambridgeshire Geological Society are very pleased to announce that our latest proposals for designation as **Local Geological Sites (LGS)** were recently (October 2020) approved by the Cambridgeshire County Wildlife and Geological Sites Panel.

Burwell lies on the eastern Chalk escarpment demarcating the edge of the

Cambridgeshire Fen It has a long history of settlement and geological exploitation – in particular the harder Chalk bands known as “clunch”. The Burwell LGSs join the other two LGS sites to the SW of Cambridge that are also associated with the chalk.

The two sites, 400m apart are linked by the presence of the Cretaceous Grey Chalk

Totternhoe Stone horizon – a famous and ubiquitous , East Cambridgeshire building stone.

The two sites have been chosen due to their importance both to the area and to the understanding of the local geology. For more information visit: <http://www.cambsgeology.org/burwell-pit-and-spring>

Geology of the area

The village gently slopes from the High Town area around St Mary's church down to the fen level at North Street (NNW extent). The bulk of the bedrock is **Grey (Lower) Chalk**, younger than 100Ma and the village straddles the **Totternhoe Stone** horizon. The **Totternhoe Stone** is a

recognisable bed roughly in the middle of the Grey Chalk, approximately 6 m thick. It is harder than the rest of the **Grey Chalk** and is typified by springs emanating near its base. The Totternhoe is more fissured than the less pervious marl below, giving rise to the springs.

The **Totternhoe Stone** is locally termed **Burwell Rock** or Clunch and has been extensively quarried in the past from the SE part of the village. The highest layer is the **Zig Zag Chalk**, a slightly purer grey / off white chalk, blocky in appearance. This latter makes up the quarry wall in **Carter's Pit**.



Burwell Spring



Carter's Pit, Burwell

The Spring: The junction of the **Totternhoe Stone** (aka Burwell Rock) above the **West Melbury Marly Chalk**. acts as a natural spring line throughout the Eastern Fen Edge of Cambridgeshire (see Nine Wells LGS). Springs like these occur all along the Fen edge escarpment on this side of Cambridgeshire. This is one of a few places where the water can be observed emanating from the bedrock. The spring site has been settled from pre-

Roman times – no doubt the availability of the water was a prime driver. The spring feeds a chalk stream (the Burwell Brook) which meanders its way along the western boundary of the village to merge with Burwell Lode – an historic transport route.

Carter's Pit: This worked-out quarry at the eastern edge of the village is rare in that the quarry walls are still visible. The pit was dug to win the **Totternhoe**

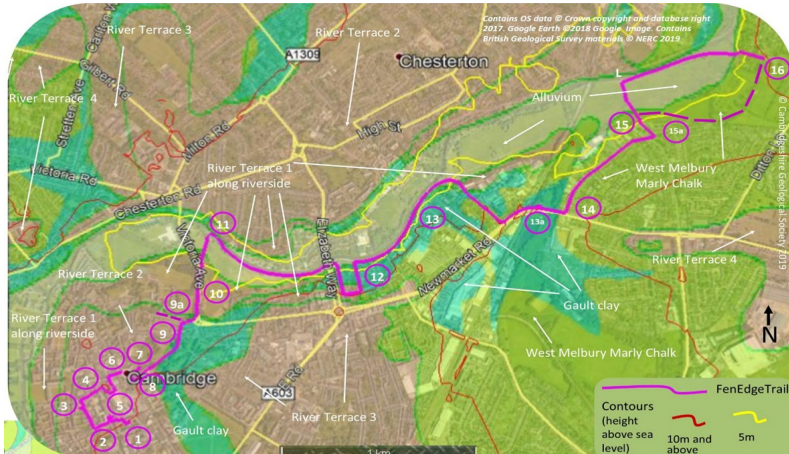
Stone, but has been worked out and backfilled so that the **Zig Zag Chalk** is the main bed visible. The harder Totternhoe Stone layer forms the spine of the marked escarpment that runs SW / NE along this eastern Fen edge. The string of villages nearby are built upon the chalk ridge . The stone was used in local buildings as well as more “famous” Cambridge colleges and Ely Cathedral. It is rare to have exposed bedrock accessible and visible to the general public.

Fen Edge Trail Update by Chris Donnelly

2020 has seen the start of several new walks on the Trail and a few new members to the team, now 15 strong, who are working on designing the routes and writing up the details. With 5 walks almost ready for publishing, another 7 due next year and 14 more being researched, this is great progress. There are just a couple on the main fen edge and a few on the 'fen islands' that need volunteers to take them on. With the designation this year of 3 Local Geological Sites on the fen edge, we are now looking at other sites we find on the walks that are of significant enough interest to consider for similar protection. Below are previews of the geology to be seen on 4 upcoming walks.



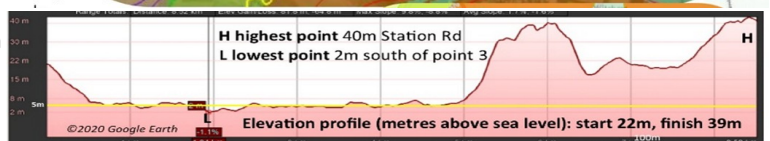
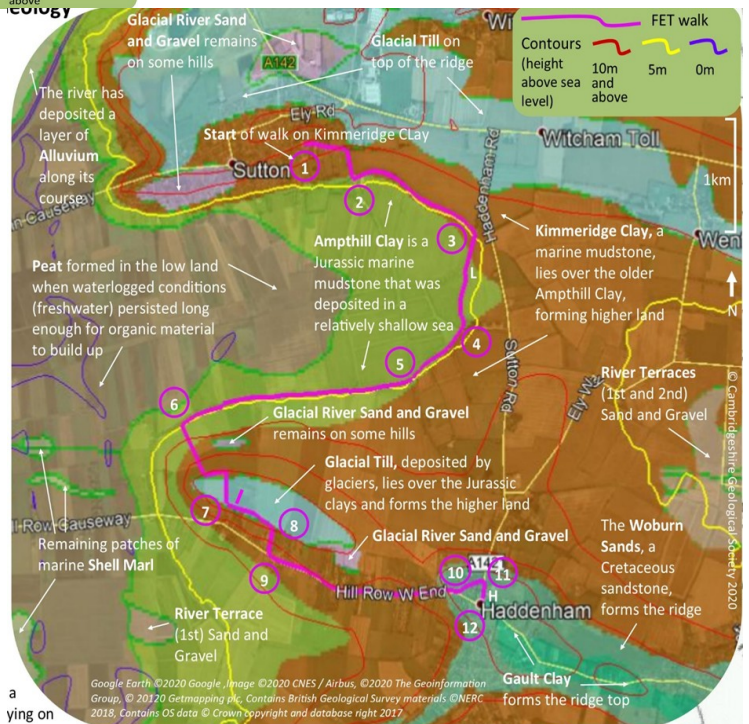
Earth to Needingworth (Designer Pat Doody) This walk starts at a major landscape feature - the junction of the River Ouse and the Old Bedford River, at the southern end of the internationally important Ouse Washes. Partly following the Ouse Way, it passes over the extensive floodplain of Holocene Alluvium that lies on top of the Pleistocene gravels of the River Terraces. The land rising at the side of the Ouse Valley along the 5m contour can be seen clearly, surely the edge of past major flooding – maybe the Bronze Age incursion of the sea?! An option is to cross the river to visit Ouse Fen, an RSPB reserve where bitterns breed in reedbeds growing between the few patches of Peat that survive.



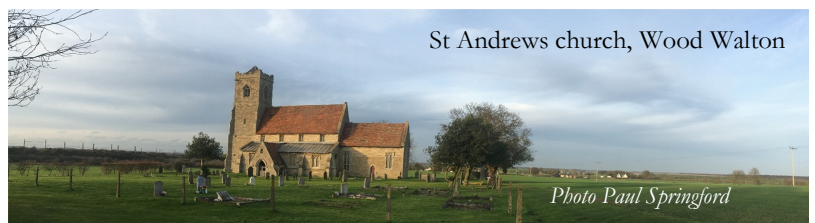
Cambridge to Fen Ditton (Designer Penny Coggill) Not only a fascinating exploration of the building stones of many of the important buildings of Cambridge but also a lovely walk through the attractive, Alluvium covered, riverside meadows of the Cam. The geology of the city is usually overlooked but Cambridge has a complex and important array of Pleistocene River Terraces covering the Marly Chalk and Gault clays that underlie it.



Sutton to Haddenham (Designer Jeff Parker) From the Sutton ridge of Jurassic Kimmeridge Clay, down onto Amphill Clay around the edge of a bay then up onto the even higher Haddenham ridge, this walk finishes on sandstone of the Cretaceous Woburn Sands and clay of the Gault. On the way, you climb onto the highest hill on the Isle of Ely, North Hill, with a short detour to the great view at the top, over 40m!



Sawtry to Wood Walton (Designer Paul Springford) 1 of only 2 walks on the Trail that is on just 1 type of geology - in this case the Jurassic Oxford Clay bedrock. It is a lovely walk in this quiet, less well-known part of the western fen edge, passing the ruins of Sawtry Abbey and, on a lonely hill, St Andrews church, looked after by the Friends of Friendless Churches.



Monthly Society Meetings

All talks are currently virtual (by Zoom) and begin at 7.30 pm. Everyone welcome—CGS members and previous registrants will be sent link: otherwise please register through our [website](#).

Monday 11th January 2021 7.30pm

'Remote Monitoring of an Urban Mud Volcano'

Dr Andrew Hart, Chief Engineering Geomorphologist at Atkins Engineering Consultancy

On 29 May 2006, a mud volcano erupted in the Sidoarjo regency of East Java, Indonesia. Unlike other mud volcanoes, this one has been erupting almost continuously since then, burying villages, factories and farmland to now cover an area of almost six square kilometres. Atkins has been monitoring and assessing these risks since early 2007.



Volcanic mud pile, East Java

Monday 8th February 2021 7.30pm

'The Evolution of the Iceland Plume'

Prof Nicky White Dept of Earth Sciences, University of Cambridge

The mantle plume beneath Iceland is highly unusual: instead of the typical dome-shape at its top it has a number of fingers that stretch as far away as Scotland and Norway, over 1000 km away. The talk will explore the reasons for the existence of these fingers and also the influence they have on the geography of Scotland and Norway.



Eruption in Iceland, 1984 Wikipedia

Other Local Society Meetings

The Sedgwick Club is an undergraduate society of Earth Sciences, Cambridge University. They run weekly virtual meetings most Monday evenings.

The next talk is 25th Jan at 6.00 pm.

CHS members will be sent link. Others may contact jac293@cam.ac.uk for details

<https://talks.cam.ac.uk/talk/index/152008>



CNHS events can be found on their website <http://www.cnhs.org.uk/>

The seasonal NatHistFest began online from Dec 10th. CGS is showing a virtual exhibit.

Visit <http://www.cnhs.org.uk/conversazione/seasonal-nathistfest-2020/> for more information



Fens Biosphere Conference: 13th January 2021

This event is to raise awareness of the potential UNESCO Fens Biosphere designation with those living and working in the proposed Biosphere area.

<https://www.fensbiosphere.org.uk/fens-biosphere-conference/>



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