



# Bucks Earth Heritage Group

## Three walks around Ivinghoe Geology, archaeology and nature

### Geology:

The main feature for all three walks is the Chalk geology and how weathering and erosion (mostly during the Ice Age) have shaped it into the beautiful Chiltern Hills. There is also good evidence for the Ice Age itself in the form of landscape features such as coombs and dry valleys, but also in the sediments such as glacial sands and gravels and features such as ice wedges.

### Archaeology:

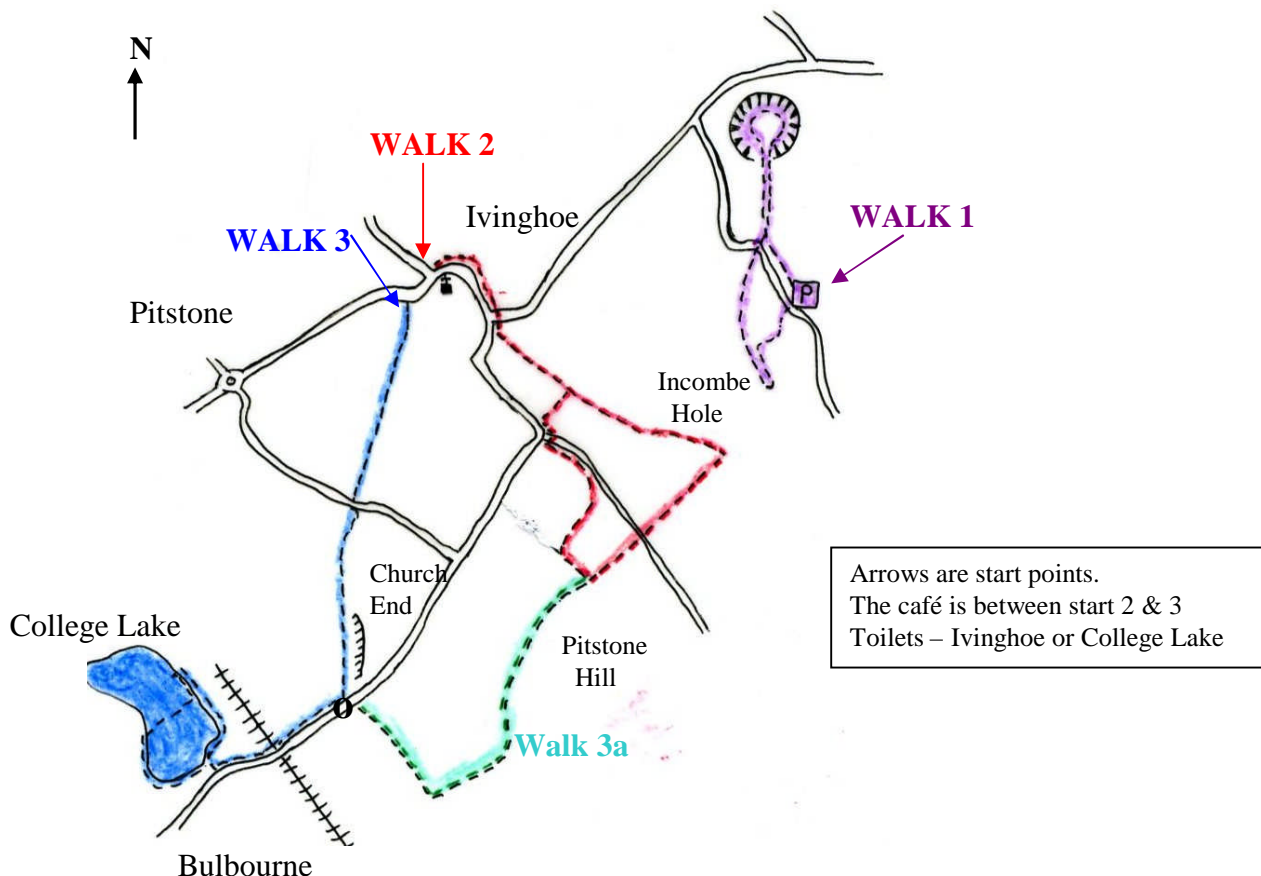
The main archaeological features of the area are the famous Bronze Age burial mounds, Iron Age ditches and a hill fort, but also the local place names give us very good evidence of who lived here in the past and what they were doing.

### Natural History:

The walks encompass a wide variety of habitats from Chalk grassland, scrub and woods to meadows and lake. Enough wildlife for everyone – take your binoculars!

### The Walks:

There are 3 very different walks that can be taken around Ivinghoe ranging from short to lengthy, from hills to flat terrain and also a lake. Use the map as a guide for walks 1, 2 or 3, but a good place to end for any of them is the café in Ivinghoe High Street!



## Walk 1: Ivinghoe Beacon to Incombe Hole circular walk

*About 1 hour at a leisurely pace, c. 2 miles (3 km), 2 steep inclines.*

**Route:** To park a car for the start go immediately south of Ivinghoe village and take the B489 towards Whipsnade. After 1 km turn right to the National Trust Beacon Hill car park (at SP 963 160) at the top of the hill. Park here and locate the footpath leading from the back (hedge) end towards Beacon Hill. Walk into the beacon and make your way round it clockwise using the map supplied to spot the archaeology. Follow the footpath down, crossing the minor road, following the Ridgeway towards Steps Hill. You will come across the steep incision of Incombe Hole. For the shorter walk you turn back following any footpath through the woods back to the car park.

### **What you see on this walk:**

This is the highest point of the Chilterns (287 m) affording good views of how rocks control landscape – the low ground is underlain by softer clays and the hills by relatively harder Chalk. The view is uninterrupted at this point from 80 million year old chalk to older Jurassic rocks from midway to the far horizon (c.200 million years). Spot the Greensand Ridge in the middle distance?

**The Chalk exposure** at the side of the public footpath is an ideal location to view the Middle Chalk with the Chalk Rock. There are very few localities to view this junction between two differing Chalk lithologies. The Chalk Rock is usually a well-cemented, hard bed and is therefore more resistant to weathering and erosion, and hence it tends to make a notable ledge on the hillside. This topographic feature is useful for mapping even when the rock itself is not exposed. Chalk rock can be seen in local buildings such as the church in Ivinghoe.



**Ivinghoe Beacon: showing how changes in the underlying rocks make landscape. Even subtle changes in the chalk layers create small ledges in the hills.**

**The Coomb or Nivation Hollow.** Incombe Hole lies to the SW of Beacon Hill. This is a classic landscape feature which records part of our Ice Age story in Bucks. The nivation process involves a combination of fracturing the rock when water freezes in joints or pores and then the downhill movement of the wet debris. These processes are particularly active under tundra conditions when there is an alternation of freezing and thawing either on a daily or seasonal basis. The result is a gradual movement of loose rock debris down-slope and small depressions, or coombs, formed at the top of slopes. The material that was eroded in the formation of the coomb is spread out as broad apron-like fans on the lower slopes of the escarpment.

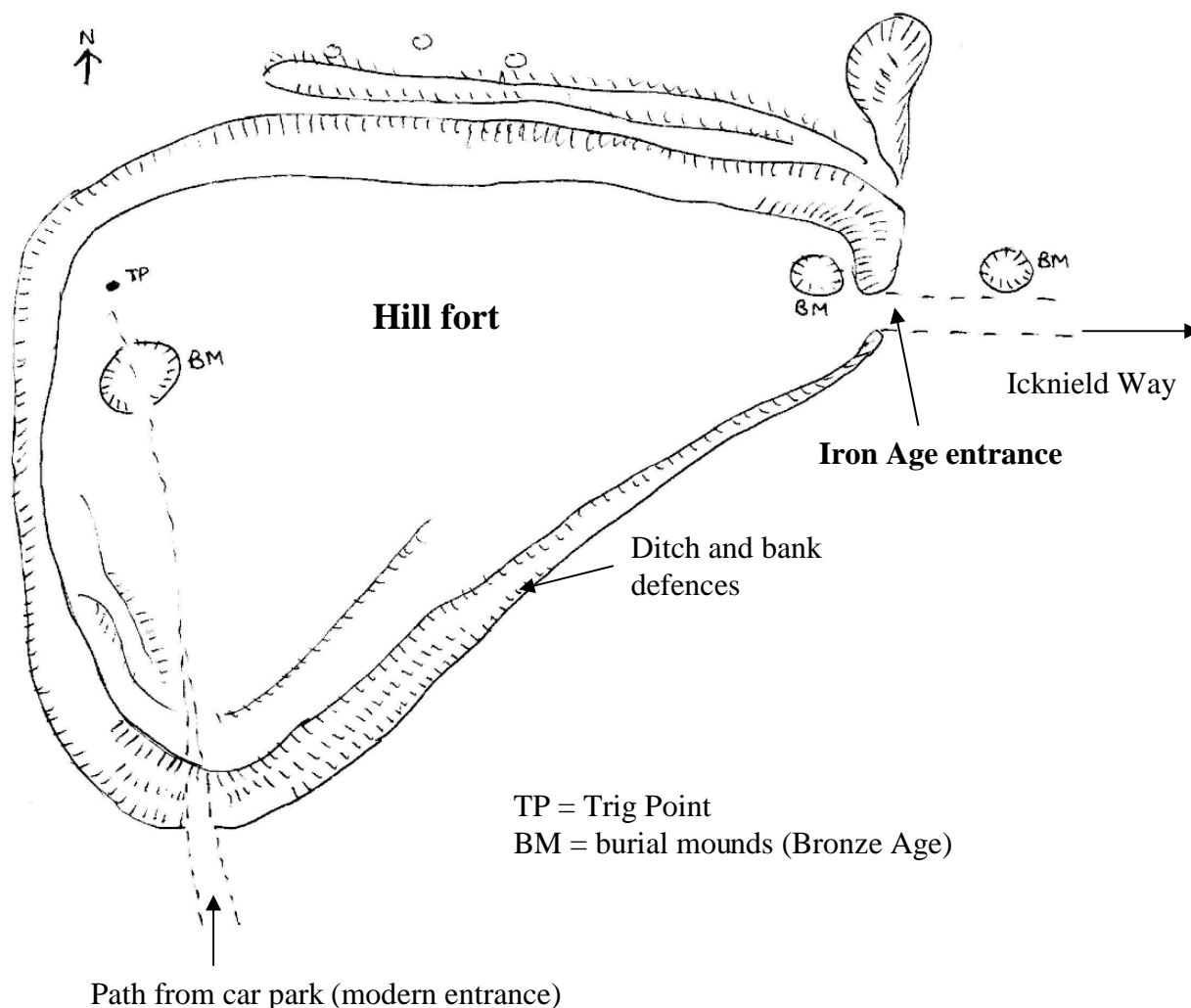
**Incombe Hole: a dry valley formed during tundra conditions partly from flowing water (cutting the channel) and partly by sediment movement under freeze-thaw action (making hollows, ridges and fans).**



### Archaeological interest:

- Beacon Hill summit with Bronze Age round barrows and Iron Age hillfort.
- Bronze or Iron Age ditches known as 'Grim's Ditch' (probably territorial or farming boundaries), seen on the way to Incombe Hole and in the woods.
- The small depressions of the Neolithic Pitstone flint mines where flint was extracted for tools (on Pitstone Hill).

### Beacon Hill archaeology



### Walk 2: Ivinghoe Village-Incombe Hole-Pitstone Hill circular walk

*1.5 hours, c. 4 km (2.5 miles), one incline, 2 stiles.*

**Route:** Park in Ivinghoe village somewhere near the church or High Street. Walk past the church with the church on your right, cross over the B489 and take the footpath c. 20 m ahead on your left (next to Middle Path Farm). Keep following the footpath up the hill and you will arrive at Incombe Hole on your left. On reaching the Ridgeway path turn right and follow it to the road, cross the road and walk up onto the high hill ahead. Admire the view and then walk down (to your right from the entry path, NW) heading towards Ivinghoe and the footpath that leaves the bottom of this field through a gate. Follow this hedge-line path until an exit with a minor road. Emerge briefly onto the B488 just ahead of you, then turn almost immediately right through a gate, this path links back up with the Middle Path Farm footpath you came in on, and hence your route back to Ivinghoe.

### What you see on this walk:

**Ivinghoe village** was named by the Anglo Saxons '*ifainghashoe*' from *iffa* (a person's name), *inghas* (his people), *hoe* (a hill promontory – no doubt Beacon Hill). However, archaeological finds indicate people have lived and farmed Ivinghoe for 5,000 years – since the Neolithic period. Also look around the village for the Norman, Tudor, Georgian and Victorian history:

- The school (now the Village Centre) opened in 1875, note the score marks on the side walls where Victorian children sharpened their slate pencils.
- The Old Vicarage (no's 4, 6 and 8) dates to 1418 and is the oldest house in the village (note the water-pump and timber framing).
- The Tudor jetty house opposite the Vicarage – note overhanging jetty.
- The Kings Head is a Tudor building built after 1500.
- The water pump, closed in the 1930s due to a cholera epidemic.
- St Mary's Church is Norman, note the local building materials (Portland Limestone, Chalk Rock, Totternhoe stone, flint (Photograph below). The building sits on Totternhoe Stone (hence is higher in the landscape).
- Note the thatch hook (fire protection) and the man-trap (for catching poachers) on the church perimeter wall.
- Next to the church, the Georgian house is the old brewery manager's residence. The brewery lay behind this house, now with new housing.
- The blacksmith was next door – convenient for the brewery horses (the B&B)
- The Town Hall was built during Tudor times, but the herringbone brickwork and timbers are undoubtedly Victorian re-building (they are too neat).



**Ivinghoe Church**

**Portland Limestone – an Oolitic Limestone in the church. There are at least 5 different building stones in this church: 2 types of Portland, chalk rock, Totternhoe stone and flint.**



On the **footpath to Incombe Hole**: in June to July the flower meadow will be full of wild flowers. Look at the view to the Beacon (photo above) and note the range of animals living in the earthen bank towards the top of the flower meadow – a rabbit, fox and badger city! Your walk is over Grey Chalk to the notable Melbourne rock bench of the photo above and then into steeper Middle Chalk to finally the Chalk Rock which caps the hill.

**Incombe Hole** – see details above. From Pitstone Hill survey **the view** and note the location of the old quarries, how the landscape is controlled by the geology (scarp and vale). Note where all the villages and farms are located – close to the spring line – which is controlled by geology.



### Walk 3: Ivinghoe village-Pitstone Windmill-Chalk Pit-College Lake

2 hours, c.5 km (3 miles), mostly flat terrain, £2 entrance to College Lake - no dogs.

**The route:** Park in Ivinghoe, somewhere near/in the High Street. Walk west from the church, down the High Street, past the café, and look for the footpath on your left. Take the footpath, walk past or visit the windmill, and across two fields. Cross the road turning left onto it, and then take the next right into Church End. Keep straight on when reaching the footpath, over old quarry rails, go past or pause to visit the old chalk quarry face (on your left). On reaching the A488 turn right at the roundabout towards Bulbourne and walk alongside the road for a short distance, over the railway line, and after 100m the entrance to College Lake is on your right. Walk up the track to your right to go to the main centre and displays first, then do the circular walk to see the geological and ecological interests on site. There are then several ways to return to Ivinghoe – the shortest is to re-trace your steps, or alternatively a longer walk back can be to cross the A488 at the roundabout (Northend Lane) and take the path opposite Folly Barn (Walk 3a, which goes behind the quarry works) towards Pitstone Hill where you can descend from the hill as Walk 2.

#### What you see on this walk:

The **geological interest** is three-fold: glacial, periglacial and Chalk. In addition, there is the relationship of the underlying rock to the landscape (chalk escarpment, dip slopes and coombs).

**Ivinghoe Village** (see details in Walk 2). The **Pitstone Windmill** built c. 1627 is an early type of post mill. It opens on Sundays in July and August (from 2.30 pm).

**The old quarry face** shows the Chalk that was being quarried from this area for the cement making industry. These layers form part of the Middle Chalk and this is harder than the Lower Chalk that was extracted in College Lake, now forming the lake area.



#### College Lake:

Your visit here should take in the geology, the geological and agricultural displays, the natural history (flora and fauna, notably birds – which can be seen from the many hides), and the industrial legacy remaining from the old quarry.



#### The old face at College Lake

Here the Middle Chalk emerges above the water line, the Lower (Zig-Zag) Chalk is now submerged. The grassed area in the foreground of the photograph is where the mammoth remains were found.

**The Ice Age layers on site: Quaternary Channel fills:** River channels were cut into the Chalk and show fossil evidence of warmer conditions when water flowed between two glaciations. The fossils from one of the channels contained many mammals including mammoths, which form part of the on-site display. There are at least 3 channels on site dating from 120,000 to around 150,000 to 170,000 years old.

There are a variety of ways to walk round the site, which provides a continuous exposure within the Chiltern dip-slope deposits of **Middle and Upper Pleistocene age**. Most of these sediments result from the type of slope processes that occur at the end of a glaciation, especially solifluction (which is where wet sediment sludges downhill). This deposit can be seen in the 2 m cut section along the pathway walking to the far north of the site. This sediment and others seen around the pathways show **periglacial features** - the evidence of tundra conditions. This is seen as involutions in the upper layers of sediment (called cryoturbation) and also as long v-shaped ice wedges.



**Cryoturbation** - the white swirling pattern - is formed when freeze thaw conditions of a tundra environment churn up the soil and sediment layers.

**A cast of an ice wedge caused from freezing conditions.**

As water freezes it expands and a wedge of ice can grow down into the ground layers. Once melted, the gap fills with darker sediment from above. The freezing and thawing also contorts the sediment – giving it an appearance like a ‘marble cake’, look for this effect on the exposed sediment faces.



There are loose **Sarsen** stones on the edges of the site which provide an interesting view of the Tertiary part of our geological history (semi-arid conditions c. 40 million years ago). The form of Sarsen stone here is sandy and cemented by quartz. Geologists call it a silcrete - a fossil soil horizon today only forming in places like the Sahara and Australia!