

**HASTINGS & DISTRICT GEOLOGICAL SOCIETY and
HORSHAM GEOLOGICAL FIELD CLUB**

Joint field trips to LANGHURSTWOOD QUARRY, WARNHAM, WEST SUSSEX

Dates: Sunday 28th APRIL 2019 & Sunday 2nd JUNE 2019, 10:30am–4:30pm

Contact: Please contact Peter Austen if attending (tel: 01323 899237, e-mail: p.austen26@btinternet.com) with a contact phone number in case there's any change of plan.

Meet: 10:30 am in the quarry car park at Grid reference TQ 1769 3539 (O.S. map 187 – 1:50,000 series). We will meet back at the cars at 4:00 pm to clear the site by 4:30 pm.

Directions: The pit is immediately north of Horsham and can be accessed by travelling east along the Horsham By-Pass (A264) and turning left at TQ 177 336 (should be signposted 'Brickworks' & 'Warnham Station'). Drive north along this road. DO NOT turn left when you see a sign for Warnham Works (Wienerberger) on the left – this is the processing plant and offices, not the pit. Continue north along this road. You will drive underneath a conveyor belt spanning the road. Turn right into the site immediately after this. If you drive past a company called 'Fisher Scientific' on the left you have gone too far – Langhurstwood Quarry is just before this on the right. **After driving into the site, follow the roadway and park at the small pull-in on the right of the road just after passing the site office.**

Equipment: Hard hats, reflective jackets and protective goggles are compulsory.

Eye protection (see below), hammer, chisels, wrapping material for specimens, handlens and boots suitable for claypit. Packed lunch. Allow for the vagaries of the British weather – warm clothing and wet weather gear if necessary.

The mandatory wearing of eye protection came into effect on all Wienerberger sites, including Langhurstwood, on 1st March 2018. Ordinary glasses will not be sufficient, you must have proper protective goggles. These can be purchased from most DIY stores or online for as little as £2. **You will not be allowed on site without them!**

Minimum age: 12 years, and must be accompanied by a parent or guardian.

About the Site – Edited extract from Batten and Austen (2011)

Langhurstwood Quarry, Warnham, is situated near the top of the Lower Weald Clay Formation (Hauterivian), and exposes around 30 m of grey-brown mudstone, siltstone, fine sandstone and shelly limestone. Siltstone and fine sandstone lenses contain a range of trace fossils and the mudstones yield various bivalves (*Filosina*) and gastropods (*Paraglauconia*). Limestones with concentrations of shell debris along bedding planes occur mainly near the base of the pit as part of BGS Bed 2a. This unit consists of two prominent limestones, about 50 mm thick, separated stratigraphically by 2 m of mudstone. The lower of the two is a 'Cyrena' limestone in which calcite-cemented bivalves (*Filosina gregaria*) are abundant; the upper bed is a Small-'Paludina' limestone containing the gastropod *Viviparus infracretacicus* (Toye *et al.* 2005). Abundant blocks of these limestones can be found on the northern spoil heap.

Often occurring in association within these blocks, particularly in the Small-'Paludina' limestone, are the remains of fish (bones, scales and teeth of *Scheenstia* – see below), fin spines of hybodont sharks and spiral coprolites (Jarzembowski *et al.* 2009). Partial fish palates of *Scheenstia* (formerly *Lepidotes*; Lopéz-Arbarello, 2012) and the pycnodont *Ocloedus* (formerly *Coelodus*; Poyato-Ariza and Wenz, 2002) can also be found in the Small-'Paludina' limestone (Austen *et al.* 2010). Ostracod limestones containing abundant, well-preserved *Cypridea* occur at several levels within the pit. Lithified siltstone lenses have yielded insect remains including cockroaches, beetles, dragonflies and bugs, as well as ostracods, teleost scales, plant fragments and small burrows (Toye *et al.* 2005). Also in 2009 the wing of an aeshnidiid dragonfly was found (Jarzembowski *et al.* 2009). Near the top of the south-east face a bone-bearing unit yielding various reptilian remains, including those of 'Iguanodon' and possibly *Valdosaurus*, has been reported (Styles 2000). Confirmed

'*Iguanodon*' bones have since been recovered from the same face (Toye *et al.* 2005). Plant remains have been found in the top sandstones: these include *Equisetites*, *Onychiopsis* and conifer shoots (Toye *et al.* 2005).

This site is also important for the first record of fish otoliths (ear stones) from the Wealden succession, one of only two locations where they have been found so far (Anon. 2005; Austen 2007, 2011), the other being the pit at Clockhouse Brickworks. The otoliths occur in both the shelly limestones and the ostracod-limestone beds. In 2010, more than 100 scattered specimens were recovered from a thin band of well-cemented calcareous sandstone just below the Small-'*Paludina*' limestone that marks the top of BGS Bed 2a, and in 2015 several hundred partially decalcified otoliths were found in blocks of loose mudstone (Austen 2015). These otoliths have now been formally described by Flannery Sutherland *et al.* (2017) and named *Leptolepis wealdensis* and *Leptolepis toyei*, the latter in honour of Geoff Toye, who was the first to discover Wealden otoliths.

More information can be found on Wealden fossils in the 2011 Palaeontological Association field guide, *English Wealden fossils* (Batten 2011), and the update published in the *Proceedings of the Geologists' Association* in 2018 (Austen and Batten 2018).

References

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* *Wealden News* can be found at: <http://geoconservationkent.org.uk/> (click on 'Resources' and scroll down page)

RISK ASSESSMENT

FOR FIELD TRIPS TO LANGHURSTWOOD QUARRY, WARNHAM, WEST SUSSEX

on Sunday 28th APRIL 2019 & Sunday 2nd JUNE 2019.

By kind permission of Wienerberger Limited

Leader

Peter Austen – Hastings & District Geological Society / Horsham Geological Field Club.

Personal protective equipment required

Hard hats, high visibility jackets and protective goggles are **compulsory**, together with strong footwear.

HAZARD	TYPE OF RISK	RISK LEVEL	PRECAUTIONS to reduce the risk level
Chips of rock from hammering.	Eye injuries	High	Wear eye protection. Other people to remain at safe distance.
Soft mud.	Trapped in mud	High	Avoid soft mud – not always obvious. If trapped call for help LOUDLY . Do not struggle.
Sun / heat	Sunstroke / Sunburn / Dehydration	High	Keep well covered. Use sunblock on exposed skin. Take sufficient drink.
Moving vehicles and machinery.	Hit by vehicle or machinery	Medium	Wear high visibility jacket. Remain aware of vehicles and vehicle noise. Call warning to others.
Water in base of quarry	Drowning	Medium	Keep away from waters edge.
Danger from overhangs	Head injury / crush injury	Medium	Avoid overhangs, do not undermine the face when digging on a slope, wear a hard hat
Uneven surfaces – deep furrows and slopes	Twisted ankles, trips and associated injuries	Medium	Wear strong footwear.
Adverse weather conditions – rain / cold	Hypothermia	Low	Wear warm, weatherproof clothing if adverse weather is forecast.
Brickworks site	Accident whilst walking through works to quarry	Low	Keep clear of all machinery.
Works car park	Damage in car park or during parking	Low	Drive carefully and keep a look out.

The leader will take all measures reasonably possible to prevent accidents and to ensure the safety of all members of the party. Members of the party must follow any instructions given by the leader or an official of Wienerberger Limited. Members must themselves behave in a responsible manner and ensure that none of their actions endanger either themselves or any other person.

**Peter Austen
January 2019.**