LOCAL GEOLOGICAL SITES
THURROCK DISTRICT

GeoEssex
Promoting the geology and landscape of Essex

ThG1 Arena Essex Sand Pit

Site location: Arena Essex Sand Pit, West Thurrock

Grid reference: TQ 587 797

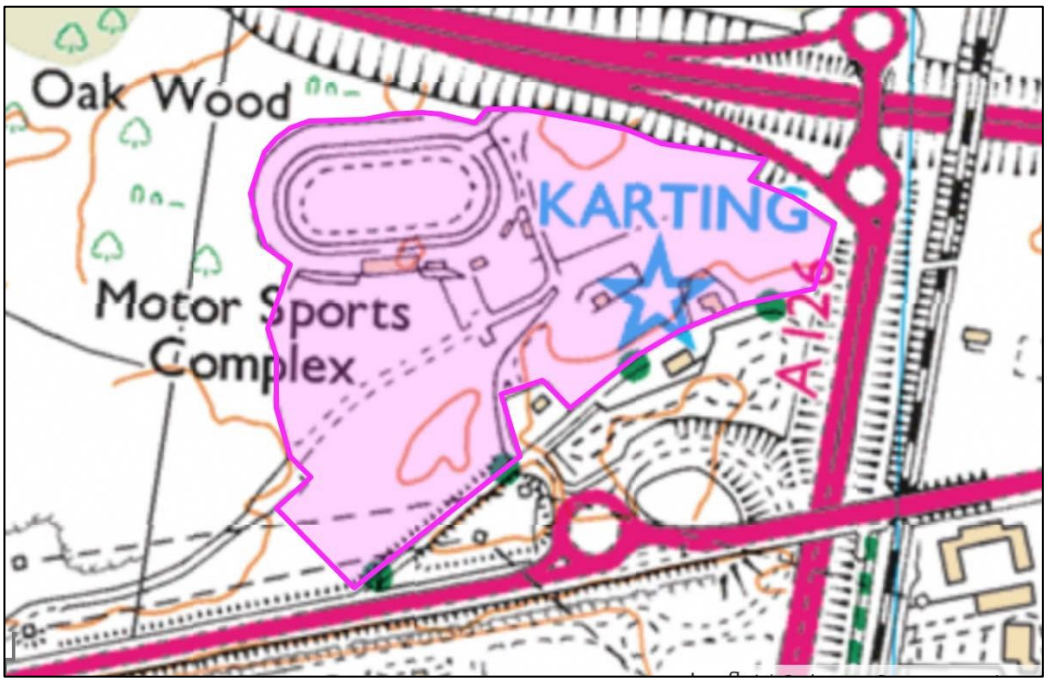
Status: Private land

Summary of the geological interest:

On the south side of the A13, in a large sand pit that was formerly the Arena Essex Motor Sports Complex, is a fine collection of at least 20 large sarsen stones with exceptionally well-preserved surface structures. The largest stone is over three metres long and is almost certainly the largest sarsen in south Essex. Most of the stones were piled up in one place close to the car park at TQ 5875 7967 but others were scattered about. One stone was sticking out of a bank of what appears to be Thanet Sand. This may be a unique in-situ example.

Sarsens are extremely hard boulders of sandstone that are native to Thurrock and their formation has been the subject of recent scientific debate. Research has compared the conditions under which sarsens and puddingstones may have been formed with the present day climate in the Kalahari Desert and parts of Australia.

The sarsen stones of Thurrock are some of the best-preserved examples in the UK.



Site Assessment. *Local Geological Sites (LoGS) in Essex are assessed using criteria based on DEFRA guidance. An assessment form is used which asks key questions under four value categories: scientific, educational, historical and aesthetic. This site has been assessed and qualifies under these criteria.*

Date of selection/last revision: November 2020

The origin and formation of sarsen stones

The origin of sarsens appears to be the sands of the Woolwich and Reading Beds, which occurs above the Thanet Sand. At some stage these sands must have been exposed at the surface when the climate of Essex was extremely hot (probably during the Palaeocene Period some 55 million years ago) and during that time water with dissolved silica was drawn to the surface. The sand therefore became cemented by silica (in the form of quartz) to form a tough layer of sandstone called *silcrete*. Subsequently, when these beds were subjected to erosion and broken up, large blocks of these hard rocks remained.

Compared to sarsens elsewhere in Essex the sarsens of Thurrock have not been abraded and retain their remarkable ‘mammilated’ surfaces which are ‘growth structures’ formed as the quartz slowly crystallised between the sand grains. The preservation of these surfaces is due to the fact that, although the stones were picked up and transported by the Thames during the Ice Age, they have not travelled far. They came to rest in the Thames gravels which here lies on top of the Thanet Sand.

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