

Local Geological Site Record

Roadside cutting through the Arden Sandstone, Blackford Hill, Henley-in-Arden				
LGS Site No.	103	Blackford Hill, Henley-in-Arden		
Parish	Beaudesert & Henley-in-Arden			
District	Stratford-on-Avon			
County	Warwickshire			
National Grid Reference	155 654			
Ordnance Survey sheets	1:50,000	151	1:25,000	Explorer 220

Location

This is a roadside cutting through the Arden Sandstone scarp slope immediately east of the town of Henley-in-Arden, on the north side of the A4189, 1km east of the junction with the A3400, Henley-in-Arden. As the A4189 climbs Blackford Hill towards Preston Bagot, there is ~40m of lateral exposure on the north side of the road, with a tarmac footpath along the base of the cutting allowing safe access. At least 5m of vertical sequence could be visible with a moderate amount of clearance work.

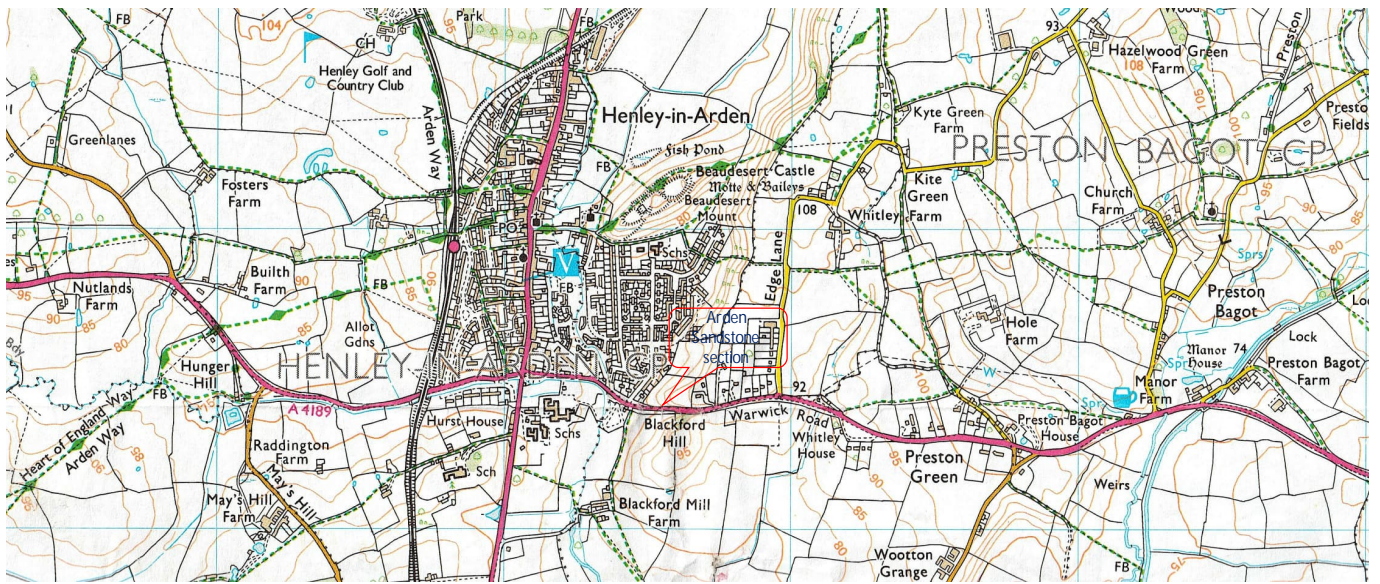
Summary of geological interest

This outcrop provides some ~40m of lateral exposure of an almost complete 5m vertical section through the Arden Sandstone Formation, close to the type locality of the Arden Sandstone at Shrewley. The Arden Sandstone here is up to 6m in thickness, so most if not all the Arden Sandstone Formation within the Mercia Mudstone Group could be revealed and be easily accessible once clearance has been undertaken.

The Late Triassic Mercia Mudstone Group (of Carnian to Norian age) records the deposits of alluvial, playa-lacustrine and pedogenic processes which are divided into two stratigraphic units above and below the Arden Sandstone Formation, which appears to record a pronounced change in climate in the late Triassic. Beneath the Arden Sandstone Formation blocky mudstones dominate the lower Mercia Mudstone Group (the Sidmouth Mudstone Formation), which comprises alluvial and lacustrine mudstones with common pedogenic features (including syn-depositional slickensides, colour mottling, root tubules and carbonate/sulphate nodules). The Arden Sandstone Formation is an ephemeral fluvial deposit, forming a widespread marker at this stratigraphic horizon, which can be traced southwards through the Worcester Graben into the Severn Basin and Dorset coast, resulting from high intensity rainfall events, generally termed the Carnian Pluvial Event. In Henley-in-Arden and Shrewley area the Arden Sandstone Formation is probably a terminal splay formed as the river system opened onto the extensive playa mudflats of the Central Midlands. The overlying massive to weakly stratified silty mudstones of the upper Mercia Mudstone Group (the Branscombe Mudstone Formation) are locally gypsiferous and alternate with subordinate blue-green-grey laminated silty mudstones, recording fluctuating hydrological conditions within the saline playa lakes of the upper Mercia Mudstone Group. The laminated silty mudstone facies were deposited under subaqueous conditions during more humid periods of the Carnian whereas the massive mudstones reflect diagenetic modification through interstitial growth of sulphates during drier episodes. These facies record a return to increased aridity during deposition of the upper Mercia Mudstone Group compared with the lower Mercia Mudstone Group and the Arden Sandstone.

The Henley-in-Arden section comprises two discrete units of white coloured sandstone, forming cleaning and coarsening-upwards sequences, the lower one being ~2m in thickness, the upper one ~1m, which are separated by greenish-grey, laminated and rippled silty mudstones. These mudstones are extensively burrowed and contain common desiccation cracks. The sandstones are cross-bedded and rippled, organised into erosively-based bed forms typically 5-20cm in thickness, and the top part of the lower unit includes mud-flake rip-up clast lags and laminae of coarse grains. This exposure complements the Arden Sandstone LGS at Rowington and SSSI at Shrewley, the latter of which is the type locality for the Arden Sandstone Formation. Fossil crustacean and bivalves from this exposure are archived in the Warwick Museum, which form part of an internationally important fossil collection making this exposure suitable for teaching and further research of international significance.

Details of site location



1. OS map of Henley-in-Arden showing the location of the Blackford Hill roadside cutting.



2. Google Earth 3D image of Blackford Hill.



3. Google Street View of the outcrop section.



4. Photograph taken in December 2020 of the actual outcrop section.



5. Representative section of the coarse grained top to the lower sandstone unit.



6. Detail of the mudflake conglomerate at the top of the lower sandstone unit.

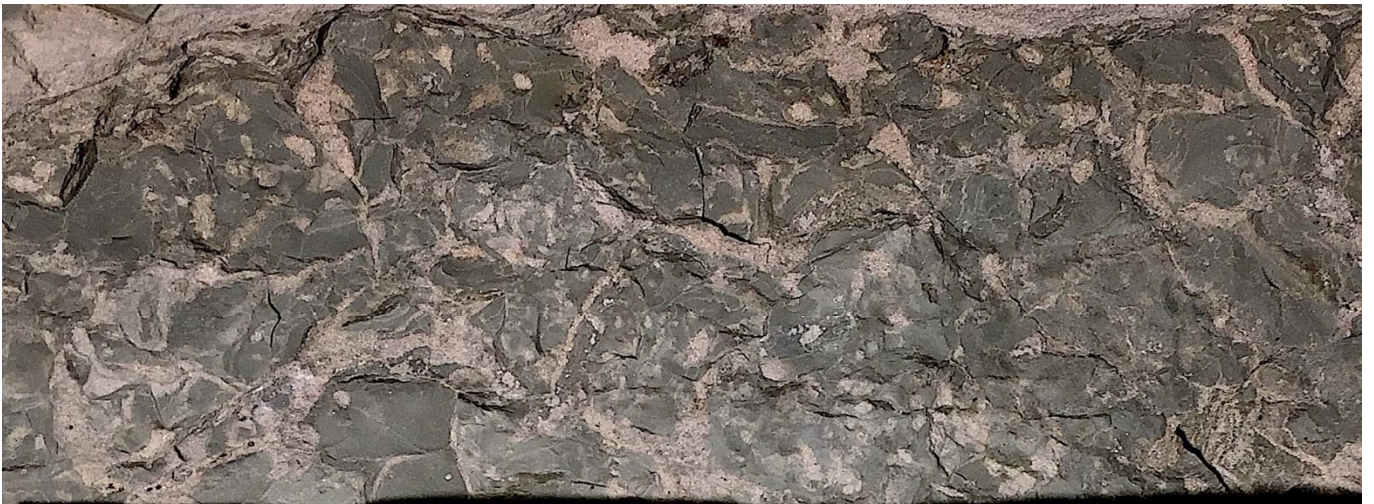


7. Rippled, fine-grained sandstone at the base of the lower sandstone unit.



cm

8. Cut and polished vertical section through a sandstone bed in the lower unit showing abundant burrows.



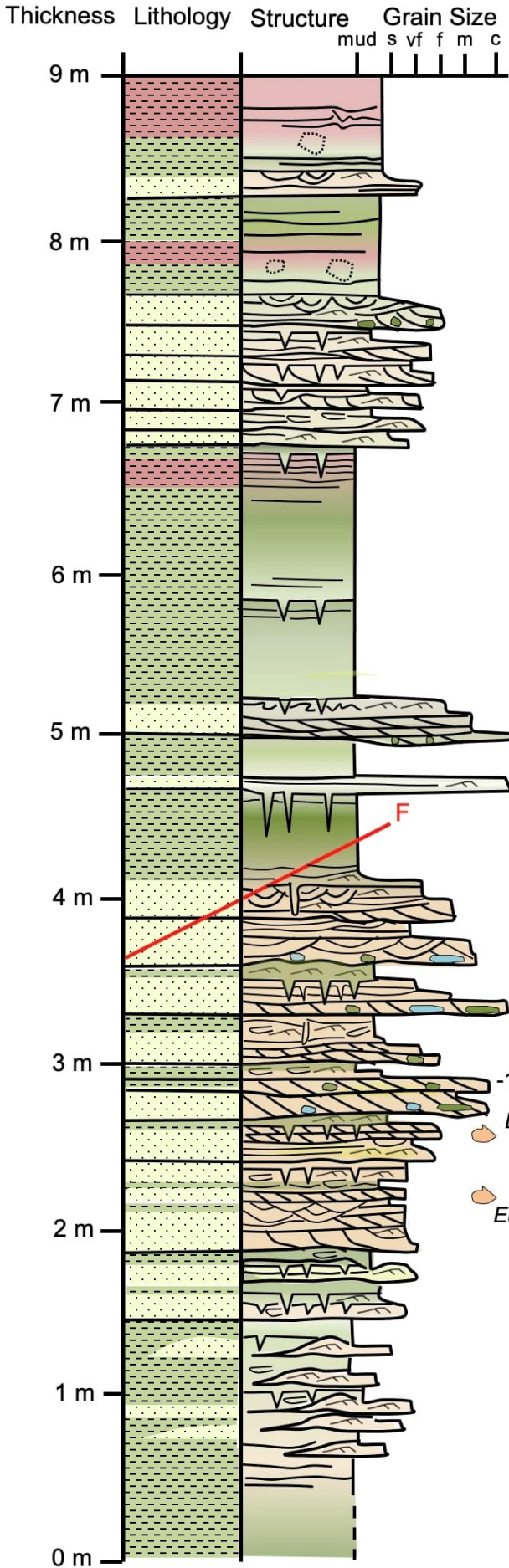
cm

9. Plan view of the section in figure 8 showing the network of burrows.



cm

10. Plan view of the upper surface of a rippled sandstone bed showing the symmetrical nature of the ripples and presence of grazing trails between ripple crests.



A4189 cutting, Henley

SP16 SW/16 GR 415620, 265395

Roadside exposure at Blackford Hill,
on the north side of the A4189, Henley-in-Arden

Pale green coloured silty mudstones with laminations. Small nodular textures locally developed. Top part of section is red coloured mudstone.

Planar and trough cross-bedded, fine to very fine grained, pale green to buff coloured sandstones with symmetrical rippled and laminated tops. Common small desiccation cracks and abundant *Planolites montana*.

Pale green coloured silty mudstones, poorly exposed, but with some desiccation cracks. Top part of section is red coloured mudstone.

Medium to coarse grained cross-bedded sandstones within pale green coloured silty mudstones. Top surface is rippled and contains desiccation cracks.

Finely bedded, very fine to fine grained rippled sandstones interbedded with pale green coloured silty mudstones. Trough cross-bedding dominant in upper part. Sandstones sharply based, locally erosive, with mudstone and dolomite pebble clasts. Current ripples common in the sandstones, tops of individual sandstones display symmetrical ripples and desiccation cracks. Vertical and horizontal burrows. *Euestheria* abundant in specific horizons.

Silty mudstones and very fine grained sandstones with common desiccation cracks and starve symmetrical ripples

Pale green coloured silty mudstones with laminations.

11. Graphical sedimentological log through the vertical section of the Arden Sandstone illustrating the nature of the sandstone beds and sedimentary structures.

