WGCG Bridgenorth, Field Trip

Led by Stuart Burley, Mike Allen & Ray Pratt
26/7/26 10:30 – 16:00 hrs

WGCG
Hidden wonders in the landscape of Warwickshire
Warwickshire Geological Conservation Group

Bridgnorth, straddling the Severn Valley in a spectacular setting, is well known for its striking topography, defined by the Bridgnorth Sandstone Formation**,** a bright orange-red, soft sandstone of Permian age, some ≈ 256-260 million years ago. The succession is composed of well-sorted, quartz arenite sandstones organised into large scale sets of cross-strata and has long been interpreted as an aeolian dune deposit (e.g. Shotton, 1937). It is one of several lower Permian aeolian dune-field ('erg') successions present within the United Kingdom and adjacent offshore regions and is thought to be broadly time-equivalent to the desert sandstones of the Kinnerton Sandstone Formation in Cheshire and the Rotliegend Group in the Southern North Sea Basin, including the Leman Sandstone, which formed the main gas-bearing interval. The Bridgenorth Sandstone Formation is considered to be the time equivalent of the Clent Breccias, and possibly the Kenilworth Sandstone Formation.

The Permo-Triassic successions of the West Midlands mainly overlie Carboniferous basement rocks that were deformed during the Variscan Orogeny and partly eroded during early Permian sub-aerial exposure. The Bridgenorth Sandstone Formation occurs in the Stafford Basin, a major half-graben structure filled principally by Permian-Triassic deposits of continental origin. It forms part of a chain of interconnected rift basins that extend from Lancashire in the north to Warwickshire and beyond in the south, forming a large rift basin system in which a variety of non-marine environments developed including large ergs, small isolated dune fields, sandsheets, basin margin alluvial fans and, in the case of the Irish Sea Basin, a large interior-draining playa lake. The Variscan highlands occupied an equatorial latitude and the Stafford Basin lay approximately 400 km further north under the influence of a semi-arid to arid climatic regime. Aridity was maintained because the region occupied an interior continental position within the Pangaea supercontinent, away from any maritime influence, and because it lay in the rain shadow of the Variscan mountain chain that stretched east-west through Europe.

Within the Stafford Basin, the Bridgnorth Sandstone formed as the product of the migration of straight-crested and crescentic dunes that coalesced laterally to form elongate ridges ('draa'). Many bedform slip faces were orientated transverse to the palaeo-wind with bedform migration occurring to the west. Along slope winds modified the dunes on a seasonal basis. The Stafford Basin contains only 200-300 m of Permian strata. By analysing the shape slip face orientations of these fossilised dunes the predominant wind direction when the dunes were formed can be determined. Analysis indicates winds blew from the east and south-east which is consistent with sub-tropical trade winds found at 20 degrees north of the equator today.

Overlying the Bridgenorth Sandstone Formation is the basal conglomerate of the Kidderminster Formation (formerly known as the Bunter Pebble Beds) within the Sherwood Sandstone Group**.** These conglomerates were laid down approximately 250 million years ago during the early Triassic. They represent massive high-energy river systems that swept across the region during periods of flash flooding, eroding deeply into the landscape.

On this field trip we will learn how to recognise aeolian dune sandstones and compare the Bridgnorth Sandstone Formation with the depositional characteristics of the Kenilworth Sandstone Formation.

To register for this trip please email julieharrald@googlemail.com

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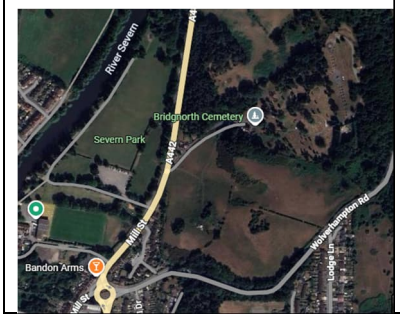
Itinerary

Meet at 10:15 for a 10:30 start at the car park in Severn Park off the A442	Exposure1. Queens Parlour	Exposure 2 The Hermitage
Grid Reference SO 72179 93416 Grid Reference (6 figure) **SO721934** X (Easting) , Y (Northing) **372179 , 293416** Latitude , Longitude (decimal) **52.537885 , -2.4116117** Latitude , Longitude (degs, mins, secs) **52°32′16″N , 002°24′42″W** What3Words : **outwards.payout.imparting** Address (near) : Bridgnorth Road, Low Town, Oldbury, Bridgnorth, Shropshire, England, WV15 Postcode (nearest) : WV15 5AE	**Grid Reference** SO 72749 93266 Grid Reference (6 figure) **SO727932** X (Easting) , Y (Northing) **372749 , 293266** Latitude , Longitude (decimal) **52.53657 , -2.40319** Latitude , Longitude (degs, mins, secs) **52°32′12″N , 002°24′11″W** What3Words : **tangent.live.retraced** Address (near) : Wolverhampton Road, Low Town, Worfield, Oldbury, Bridgnorth, Shropshire, Postcode (nearest) : WV15 5EF	**Grid Reference** SO 72737 93366 Grid Reference (6 figure) **SO727933** X (Easting) , Y (Northing) **372737 , 293366** Latitude , Longitude (decimal) **52.537467 , -2.4033827** Latitude , Longitude (degs, mins, secs) **52°32′15″N , 002°24′12″W** What3Words : **trifle.piglets.economics** Address (near) : Wolverhampton Road, Low Town, Worfield, Oldbury, Bridgnorth, Shropshire, Postcode (nearest) : WV15 5EF
		

Meet at the car park in Severn Park off the A442. Parking in and around Bridgenorth is limited so we will car share to minimise the number of vehicles.

The first two exposures require walking up a steep grass sloped hill to examine cliffs of Permian aeolian sandstone overlaid by Triassic Kidderminster Formation conglomerates. The Hermitage caves are carved into the sandstone enabling a 3-dimensional view of the sedimentary features. Care must be taken when the outcrop is examined close-up because the rocks here overhang. These exposures are the uppermost parts of the Bridgenorth Sandstone Formation and comprise large-scale trough cross bedded sets with steeply inclined foresets composed principally of grain flow strata with intervals of translatent wind ripple strata confined to toesets within the basal parts of the troughs. The grain flow units are generally loosely packed and many exhibit a millet seed texture of well sorted and well frosted grains.

Walking back to the cars down the B463 we can examine the road cutting consisting of Kidderminster Sandstone Formation with an abundance of Silurian limestone clasts. This is a busy road and a narrow footpath so we will not stop to discuss this exposure.

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Exposure 3 Levington Hole	Exposure 4 A442 Quatford	Exposure 5 A442 Quatford Church
Grid Reference SO 71771 92870 Grid Reference (6 figure) SO717928 X (Easting) , Y (Northing) 371771 , 292870 Latitude , Longitude (decimal) 52.532958 , -2.4175756 Latitude , Longitude (degs, mins, secs) 52°31'59"N , 002°25'03"W What3Words : darting.chuck.mirror Address (near) : St Mary's Steps, Low Town, Oldbury, Bridgnorth, Shropshire, England, WV16 Postcode (nearest) : WV16 4AQ	**Grid Reference** SO 73817 90343 Grid Reference (6 figure) SO738903 X (Easting) , Y (Northing) 373817 , 290343 Latitude , Longitude (decimal) 52.510341 , -2.3872170 Latitude , Longitude (degs, mins, secs) 52°30'37"N , 002°23'14"W What3Words : hardly.sandbags.pills Address (near) : A442, Quatt Malvern, Quatford, Bridgnorth, Shropshire, England, WV15 Postcode (nearest) : WV15 6QL	**Grid Reference** SO 73862 90669 Grid Reference (6 figure) SO738906 X (Easting) , Y (Northing) 373862 , 290669 Latitude , Longitude (decimal) 52.513276 , -2.3865826 Latitude , Longitude (degs, mins, secs) 52°30'48"N , 002°23'12"W What3Words : plugged.overlaid.depending Address (near) : Quatford, Bridgnorth, Shropshire, England, WV15 6QJ, United Kingdom Postcode (nearest) : WV15 6QJ
		

The 3rd exposure is Levington Hole which is the lowest part of the Bridgnorth sandstone. Parking here can be difficult here. Paid car parking can be had at nearby Lavington Court, Underhill St, Bridgnorth WV16 4BY. Grid Ref: SO 71798 92833
Lat Long: 52.53263 -2.41717 W3W: fighters.sinkhole.seastack

Alternatively, paid parking is available in the Co-op and M&S car park, a 5-minute walk to the exposure.

Exposure 4 is on the busy A442. The excellent sedimentary features can be viewed from the safety of the car park on the opposite side of the road.

Exposure 5 is a little further north back towards Bridgenorth. Here we can safely park and inspect the rock up close by the historic church of St Mary Magdalene. Although of only limited lateral extent, this locality offers some of the best examples of small-scale aeolian dune lithofacies in the Bridgnorth area and therefore makes an excellent locality for observing with subtle differences in dune characteristics, their small-scale geometry and the nature of their relationship to one another. Individual grain flow (sand avalanche) units are typically 2-3 cm thick and are composed of medium-grained, well sorted, loosely packed, orange-brown coloured sand. Translatent wind ripple strata are characterised by thin, inversely graded laminae that are just a few grains thick (1-5 mm) and form a characteristic striped pattern. In the basal parts of sets, wind ripple strata representing dune plinth deposits are commonly preserved as packages up to 1- 2 m thick and are inclined at angles up to 12 degrees. In the middle parts of dune sets, packages of wind ripple strata are mixed with grain flow strata in variable proportions.