Geology, Geography and Flooding

The Parish of Bersted lies on the coastal plain at the south western edge of the Weald. The boundary to the east approximates to the north-south running A29 and the west-east aligned A259 dissects the Parish. It forms the north western edge of Bognor Regis and the western edge of Arun District Council. Beyond the Parish to the west is the Strategic Gap between Bognor and Chichester and the fields to the north beyond Shripney act as a buffer zone between Bognor and the villages of Aldingbourne, Westergate and Eastergate. See appendix 3 for maps of the Parish.

The geology for the most part is aeolian deposits or loess laid down during the glacial and interglacial periods during the last 1.8 million years. This material, traditionally called Brickearth, has been modified by fluvial and solifluction process and now drapes the pre-existing topography and earlier deposits to a depth of between 3.5 and 2 metres. These earlier deposits include a layer of peat which comes close to the surface in the vicinity of Chalcroft Lane cemetery, and requires this area to be constantly pumped to maintain a low enough water level to permit burials.

Nevertheless, the resulting soil in many areas of the Parish is highly prized Grade 1, 2 or 3A agricultural land. The preponderance of intensively cultivated fields growing salad crops as well as the more traditional field crops is a testament both to the soil and the summer sunshine record of the area. The Parish contains less and less of this quality land with a large area of farmland currently disappearing under the Willows Edge and Bersted Park development and the threat of another swathe of land disappearing should other proposals come forward. All this at a time when sustainability appears to be high on the political agenda both locally and nationally.

The Parish slopes very gently from the south, seven metres OD in the Lower Bognor Road, to the north, three metres OD in North Bersted Street. As a result the surface drainage streams, known locally as “rifes”, that ultimately flow into Aldingbourne Rife, flow away from the sea in the first instance down the natural slope. Developments over the last hundred years have seen a number of rifes and ditches filled in and/or culverted which has added to the flood hazard within the Parish.

The rifes are spring fed but their height above the water table means that summer flows are negligible. However the water table can rise rapidly, as much as several metres under extreme conditions. This problem is exacerbated by the nature of the surface material. Within Bersted the silty clay overlies a layer that is predominantly clay in nature and so largely impermeable under wet conditions. A combination of these geological and meteorological conditions can and does give rise to extensive rife and groundwater flooding. This in turn leads to extreme difficulty in negotiating local main roads and the problems of drains and sewers being unable to cope leading to in-house back up. This became even more evident when a flood survey was conducted within the Parish during 2011 to inform the strategic flood assessment for the County Council with many houses across the Parish reporting incidents of sewage back up in toilets during periods of heavy rainfall.
Full details and evidence were provided to West Sussex County Council which is now responsible for coordinating flooding and drainage matters and copies are available for inspection in the Neighbourhood Plan library held by the District Council.

This type of flooding incident is the result of the inability of the current surface water disposal system to cope with anything other than “normal” conditions. There is an acknowledged lack of capacity following years of rural and urban development. This can only get worse with the added pressure of increased short term summer and longer term winter precipitation as an ongoing impact of increasing climate change. The problem is exacerbated, as already mentioned, by the loss of some watercourses which reduces the floodplain capacity. Groundwater flows reaching the surface then run off thus surcharging the sewer system leading to back up. The low lying nature of the Parish and the lack of any significant natural gradient also contribute to this problem as does the sluice gate control at the outfall of the Aldingbourne Rife at Felpham during periods of high precipitation and spring tides.

A further contributory issue is the need for the system of waste water disposal to rely on pumping stations as a result of the topography of the area. The inability of these pumping stations to cope with exceptional flows and/or the mechanical failure of them can lead and has led to rapid sewer flooding and domestic back up. The current flood zone maps provided by the Environment Agency only indicate those areas liable to flood as a result of river or sea incursions. As a result the incidence of sewer flooding and the impacts thereof remains largely anecdotal and needs further investigation at a more local level than the current modelling systems permit. Figures published by HMG, in PPS 25, do suggest guidelines and sensitivity ranges for assessing the potential for sewer flooding but these do not necessarily take in to account the peculiar circumstances experienced in Bersted Parish.