The Claygate Beds and Bagshot Beds are the uppermost formations of Eocene age in south Essex, the former resting on the London Clay. The Claygate Beds consist primarily of silts and clays with subordinate sands, whilst sands are more common in the Bagshot Beds. The paper describes the geotechnical properties of these two sedimentary units. The results form part of a larger study of the engineering geology of south Essex. The sands, particularly in the Bagshot Beds, are fine grained. All the sands are uniformly sorted and negatively skewed. Quartz is the principal minerals in these beds and in the fine material mica, montmorillonite, kaolinite and chlorite figure in that order of relative abundance. The geotechnical properties of the silts and clays of both formations are generally similar. However, the plasticity of the Claygate Beds tends to decrease somewhat from the lower to the upper division and the range of plasticity is greatest in the upper division. This may be due to the greater variation in quartz content and montmorillonite content in the latter division then in the two others. The clays in both formations tend to have normal activity whilst that of the silts is both normal and active.The values of the undrained shear strength parameters, especially in the sandy material, are influenced by the amount of cement present, and the degree of interlocking of grains and compaction undergone. The undrained shear strength of the silts and clays suggests that they range from soft to very stiff.