

HYDROLOGICAL PERFORMANCE OF A RECONSTRUCTED SOIL PROFILE ¹

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Abstract: Lowland wet heath is a vegetation type of very high nature conservation value in the UK. The transplantation of an area of wet heath was part of a mitigation package which enabled planning permission to be granted for a new opencast coal mine in the Central Midlands, UK. The wet heath is dependent on a specific hydrological regime where the soil profile is saturated within 100-200mm of the soil surface in the late winter - early spring, but is in an unsaturated condition to a depth of 600mm or more during the rest of the year. The soil hydrological regime is either dependent on a fluctuating ground water table or seasonal surface wetness (the latter usually in conjunction with an extensive catchment). In either case, the hydrological regime is dependent on the hydraulic conductivity of the soil profile. This feature of the profile has to be recreated where the vegetation type is to be restored or transferred. A scheme was designed for the coal site where the transferred turves (300mm thick) were replaced on a loosely placed subsoil (350mm layer) originating from beneath the turf, over a compacted soil layer (400mm thick). Comparison of depth to the water table and soil moisture content in the donor site and transferred wet heath indicates that the soil hydraulic conditions have been recreated.

Additional Key Words: Wet heath, soil profile, soil hydrology, hydraulic conductivity.

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