Rainwater has been used as drinking water in Thailand for centuries especially in the rural parts and is accepted as an important water resource. From past to present, the quality of rainwater has changed with the landuse and its water quality is influenced by a diverse range of conditions such as the management of pollutant sources, the catchment condition, wind and meteorological conditions and the location of rainwater collection points. In this study, the quality of rainwater collected off roofs at several locations was examined. Granular activated carbon (GAC) filtration was used as a pretreatment to microfiltration to remove the dissolved organic matter (DOC). After an initial adsorption period, the biofilm that formed on the GAC (biofilter) was found to remove DOC by up to 40%, 35% and 15% for bed filter depths of 15 cm, 10 cm and 5 cm respectively. Biofilters also removed nitrate and phosphate by more than 80% and 35%. The hollow fibre membrane microfiltration with pore size of 0.1 μm was used to treat the effluent from biofiltration to remove the microorganisms/pathogens in the rainwater. Although there was no significant additional removal of DOC by MF it removed all microorganisms. The use of biofilters as pretreatment to MF/UF could remove a higher amount of DOC, increase the membrane treatment efficiency, and reduce membrane fouling.