

The contribution of sewer leakage to urban groundwater recharge remains poorly characterised. There has been a tendency to focus on estimating leakage from pipe network characteristics rather than its impact on the receiving environment. Indeed, pipeline leakage simulation models are frequently used to analyse sewage systems and optimise maintenance efforts. Here a mass balance approach employing groundwater geochemistry is presented to estimate sewer leakage rates; this is done using depth-specific groundwater quality measurements from multilevel monitoring piezometers, specially installed in the Sherwood Sandstone aquifer underlying Doncaster (UK). The results show that leakage rates from the foul sewage system are up to 10% of flow per annum (30–40% of urban recharge) and highlight the utility of groundwater quality monitoring (in particular depth-specific sampling) as an alternative means to assess sewage ingress to urban groundwater.