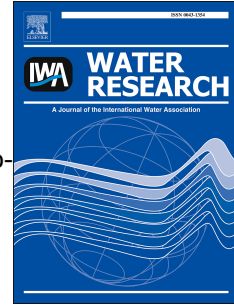


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Modelling the transport and decay processes of microbial tracers released in a macro-tidal estuary

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13
14 **Abstract:** The Loughor Estuary is a macro-tidal coastal basin, which is located along the
15 Bristol Channel, in the South West of the U.K. The maximum spring tidal range in the
16 estuary is up to 7.5 m, near the Burry Port Harbour. This estuarine region can experience
17 severe coastal flooding during high spring tides, including extreme flooding of the intertidal
18 saltmarsh at Llanrhidian, as well as the lower industrial and residential areas at Llanelli and
19 Gowerton. The water quality of this estuarine basin is very important to comply with the
20 designated standard for safe recreational bathing and shellfish harvesting industries. The
21 waterbody, however, potentially receives overloading of bacterial inputs that enter the
22 estuarine system from both point and diffuse sources. Therefore, a microbial tracer study was
23 carried out to get a better understanding of the faecal bacteria sources and to enable the
24 hydro-environmental model to be refined and calibrated for both advection and dispersion
25 transports. A two-dimensional hydro-environmental model has been refined and extended to

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