

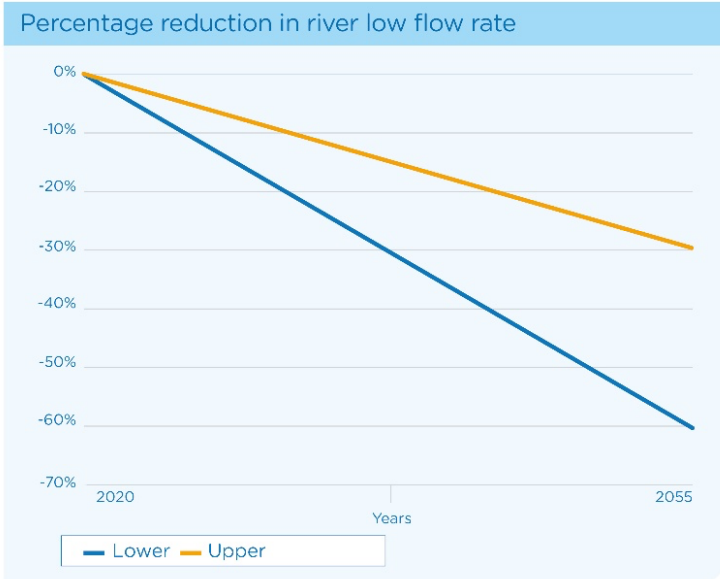
Future Trend: Low River Flows

Trend definition and relevance to DWMP

River flows, and consequently water levels, are strongly influenced by both short-term and seasonal rainfall patterns. As a result of climate change and associated rainfall changes, rivers are expected to experience low-flow conditions more frequently and more severely. With low river flow, there is less dilution of pollutants entering the environment, including those from treated and untreated wastewater discharges. This increases the risk of harm to the river environment. The low-flow statistic is therefore a critical component of water quality planning, helping to estimate the potential ecological impact of discharges on water quality.

Responding to the trend within the DWMP is likely to require increased investment in both sewage treatment and wastewater network capacity. These measures will mitigate the risk of water quality deterioration by improving effluent quality and reducing the frequency of spills from storm overflows.

Trend description, uncertainty and potential impact on our region



- A commonly applied low-flow statistic, the 95-percentile low flow¹, is widely used in a variety of water quality planning contexts to assess the impacts of discharges from storm overflows and sewage treatment works. The forecasts available in the eFLAG dataset enable this trend to be considered in the DWMP¹.
- As illustrated in the figure¹, the 95-percentile low river flows are projected to decline between 30% and 60% by 2055, with an average reduction of 35.4% across rivers receiving treated effluent within the Thames Water region.
- The reduction in river low flows due to climate change reduces the dilution provided to discharges (especially in summer months) from storm overflows and sewage treatment works resulting in water quality deterioration unless this is compensated for with fewer overflow discharges and higher-quality effluent from sewage treatment works (STW).
- The extent to which rivers are affected by this trend varies according to local catchment characteristics, particularly underlying geology and the relative contribution of groundwater and surface water to river flows.

Stage of DWMP used	
Risk assessment	✓
Plan development	✓
Impact/Importance	
Short term (2035)	Low
Medium term (2045)	Medium
Long term (2055)	High
Example PIs affected by this trend	
	Good ecological and/or chemical status: Public sewerage
	Bathing water quality
	Serious pollution incidents



References

- 1 Hydrological projections for the UK, based on UK Climate Projections 2018 (UKCP18) data, from the Enhanced Future Flows and Groundwater (eFLaG) project. Hannaford, J.; Mackay, J.; Ascott, M.; Bell, V.; Chitson, T.; Cole, S.; Counsell, C.; Durant, M.; Facer-Childs, K.; Jackson, C.; Kay, A.; Lane, R.; Mansour, M.; Moore, R.J.; Parry, S.; Rudd, A.; Simpson, M.; Turner, S.; Wallbank, J.; Wells, S.; Wilcox, A. (2022). NERC EDS Environmental Information Data Centre. doi.org/10.5285/1bb90673-ad37-4679-90b9-0126109639a

