

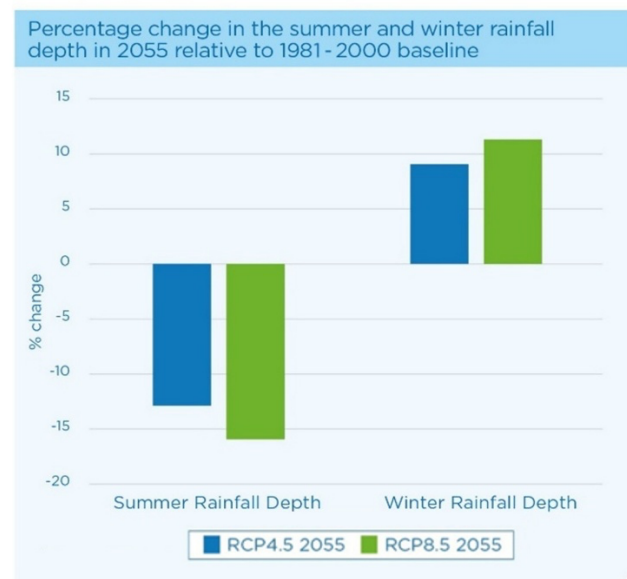
Future Trend: Rainfall Seasonality

Trend definition and relevance to DWMP

Rainfall seasonality refers to changing patterns of seasonal rainfall depth we are anticipating resulting from climate change. While the overall annual depth of rainfall is expected to remain stable, climate change is predicted to drive a prominent pattern of wetter winters and drier summers. These seasonal patterns in rainfall are important for our long-term planning because they have an impact on how we operate our systems, as they can cause both high sewer flows and low river flows. High winter flows place greater demand on sewer capacity, whereas low river flows affect the impact that discharges can have on river water quality. This trend co-exists and interacts with the future trend of increasing rainfall intensity.

Responding to the trend within the DWMP will likely require increased investment in wastewater networks and sewage treatment to provide all year-round capacity and protect against water quality deterioration.

Trend description, uncertainty and potential impact on our region



¹ UK Climate Projections (UKCP18) Summaries and headline findings, Met Office, 2022. [UKCP summaries and headline findings - Met Office](#)

Stage of DWMP used	
Risk assessment	✓
Plan development	✓
Impact/Importance	
Short term (2035)	Medium
Medium term (2045)	High
Long term (2055)	High
Example PIs affected by this trend	
	Internal flooding
	Surface water flooding (shared responsibility)
	External flooding

- Under the Representative Concentration Pathway (RCP) 8.5 scenario (a high greenhouse gas emissions pathway used in climate modelling to assess different possible futures for global emissions and warming), the average summer rainfall depth is projected to decrease by 16%, while winter rainfall depth is projected to increase by 11% by 2055, compared to the 1981-2000 reference period, as illustrated in the figure¹.
- Under RCP4.5 scenario, (a medium greenhouse gas emissions pathway used in climate modelling), average summer rainfall depth is project to reduce by 13%, and winter rainfall depth is projected to increase by 9% by 2055, compared to the reference period, as illustrated in the figure¹.
- Year-to-year seasonal rainfall is expected to increase as our weather patterns become more volatile. While wetter summers and drier winters will still occur, they are likely to be less frequent than historically.
- Beyond 2055, seasonal rainfall depth trends will continue in this pattern with increasingly wetter winters and drier summers.
- Climate science is certain that rain depths will change seasonally continuing a pattern of recent observations. The exact timing and magnitude remain less certain, and year-to-year there will be considerable variability. In the short term these influences may be moderate, but they are expected to become more significant in the medium and long term.

