

Future Flood Resilience Relies On...

Planning

Accounting for natural **tidal cycles** and **sea-level rise**



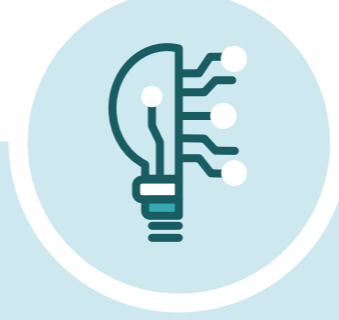
Knowledge

Sharing **experiences** and **retaining** information



Technology

Utilising latest **modelling** and **innovation**



Personnel

Having **skilled workers** available



Funding

Ensuring **sufficient resources**



The Threat

1 in 6



properties at risk of flooding **now**



Changing Climate



Rising Sea-level



Growing Population



Coastal Migration

1 in 4



2050

Source: Environment Agency (2025)



Storm Surge Barriers

Protect low-lying communities against **coastal flooding**



Consist of **movable gates** that can be closed **temporarily**



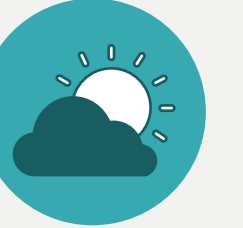
Require **specialist expertise** to manage, maintain and operate



Rely on maintenance to keep them **functioning** to the end of their design life



Can only be maintained during "**weather windows**" when conditions are safe



Under pressure to complete maintenance due to **ageing** and **sea-level rise**



Looking To The Future

Utilising *big data*



Water level observations from tide gauge records and ensemble forecasts of future water levels

Adjusting *maintenance strategy*



Shift and narrowing of weather windows due to sea-level rise and natural tidal cycles

Aiding *decision making*



Probabilistic model determines the likelihood of upcoming weather windows

Sunke Trace-Kleeberg, Ivan Haigh, Marc Walraven and Susan Gourvenec

