King’s Pond Climate Change Effects

Forecast effects of climate change on weather in Alton, Hampshire over the next 50 years

Alton is expected to experience progressively warmer temperatures, hotter and longer heatwaves, drier summers, wetter winters, and more frequent extreme weather events over the next 50 years. These changes are likely to affect water resources, flood risk, habitats, and the ecological condition of waterbodies.

Climate projections for Alton (2026-2076)

2026-2035

- Average temperatures continue to rise.
- Heatwaves become more frequent and longer lasting.
- Winter rainfall increasingly falls in intense downpours.
- Drought years become more common despite continued year-to-year variability.

2036-2045

- Days exceeding 30°C become noticeably more frequent.
- Summer thunderstorms become more intense.
- Increased risk of flash flooding from short-duration heavy rainfall.
- Reduced summer soil moisture affects gardens, agriculture, and natural habitats.

2046-2055

- Summer temperatures are substantially higher than late twentieth-century averages.
- Water shortages become a growing concern during prolonged dry spells.
- Winter flood risk increases as warmer air holds more moisture, leading to heavier rainfall events.

2056-2065

- Extreme heatwaves occur much more often than today.
- Longer dry periods are interrupted by episodes of very intense rainfall.
- Greater variation between wet winters and dry summers.

2066-2076

- Summer climatic conditions may begin to resemble those currently experienced in southern Europe.
- Drought management becomes a routine planning issue.
- Extreme rainfall events continue to increase in intensity even though summers become drier overall.

Key climate trends

Temperature

By the second half of the century, summer temperatures across southern England could be around 3-5°C higher than historical averages, depending on future greenhouse gas emissions. The greatest warming is expected during summer months.

Higher temperatures and lower water levels could:

- Increase fish and aquatic invertebrate mortality.
- Reduce dissolved oxygen concentrations.
- Encourage algal blooms and microbial dominance.
- Lead to poorer water quality and reduced biodiversity.

Rainfall

- **Winters:** generally wetter.
- **Summers:** generally drier.
- **Heavy rainfall events:** more intense throughout the year.

This pattern is likely to increase both flood and drought risks, creating greater pressure on water management systems.

Heatwaves

Heatwaves are expected to become:

- More frequent.
- More intense.
- Longer lasting.

Conditions that are considered extreme today may become relatively common by mid-century. Increased evaporation from ponds and wetlands could lower water levels and stress aquatic ecosystems.

Drought

Long dry spells are expected to become more frequent, particularly in southern England. Higher temperatures will increase evaporation from soils, rivers and ponds, reducing water availability and potentially concentrating pollutants.

Storms and intense rainfall

Although future changes in the number of storms remain uncertain, rainfall associated with storms is expected to become heavier. This is likely to increase:

- Surface-water flooding.
- Flash flooding.
- Soil erosion.
- Sediment transport into watercourses.

Following drought periods, pollutants that accumulate on roads, fields and urban surfaces may be washed rapidly into watercourses and waterbodies during intense rainfall events, potentially causing short-term declines in water quality.

Change	Dredging Plus	River & Pond
	If King's Pond is dredged, silt traps fitted and enhanced with additional marginal planting.	King's Pond is reconfigured from a large open-water pond into a flowing river channel with a smaller dredged pond, together with silt traps, extensive wetland habitats, and enhanced marginal planting.
Increased Annual Rainfall	**Likely effects** • Increased flow in the river. • Higher and more sustained water levels in the pond helping maintain open water habitat for longer periods. • Increased through flow may improve oxygenation at times but could also bring higher nutrient loads from surrounding land, potentially increasing the risk of algal growth.	**Likely effects** • Increased flow in the river. • Extended inundation of wetland areas. • Increased water movement would improve oxygenation and reduce the likelihood of nutrient build-up. • The pond would receive more water, so maintaining good levels and permanently open.
Wetter Winters	**Likely effects** • More water in the aquifer which in turn means higher river flows in winter and spring sustaining flow for longer. • More frequent periods of high-water levels and occasional overtopping of the pond margins. • Greater winter flows through the pond may help prevent stagnation and support aquatic habitats. • Extended inundation of planted wetland margins could support wetland biodiversity, provided water levels do not remain excessively deep for prolonged periods.	**Likely effects** • More water in the aquifer which in turn means higher river flows in winter and spring sustaining flow for longer. • High water levels are maintained in the pond. Higher winter flows would maintain active river processes and support habitats associated with running water. • Seasonal inundation of wetlands would maintain valuable habitat for amphibians, invertebrates and wetland birds.

Intense Rainfall Event	**Likely effects** • High flow volumes and velocities in flash flooding are likely to mean that more silt will be carried past the trap. Implications for long-term maintenance. • Large and frequent fluctuations in pond levels. Erosion implications; impact on wetland and marginal planting. • Sudden surges of pollutants. Potential negative impact on pond life. • Wetlands and the river channel would slow and temporarily store stormwater, reducing the impact of peak flows. • The upstream silt trap and extensive vegetation would capture much of the sediment mobilised during heavy rainfall events	**Likely effects** • High flow volumes and velocities in flash flooding are likely to mean that more silt will be carried past the trap. Implications for long-term maintenance. However, more bypasses the smaller pond and taken further downstream by the river. • Smaller and less frequent fluctuations in pond levels as river bypasses the smaller pond. • Wetlands and silt traps would attenuate floodwaters and capture sediment during storm events. • The river channel would convey high flows more effectively than a large static pond. • Extreme events could still cause localised erosion and require more frequent maintenance of silt traps.
Dryer Summers & Long Dry Spells	**Likely effects** • Water levels would decline, but the dredged pond would provide a drought refuge for aquatic species. • Wetland areas would contract seasonally, creating a diverse mosaic of wet, damp and exposed habitats that support a range of wildlife.	**Likely effects** • The smaller dredged pond would provide important refuges for aquatic species during drought. • Reduced open-water area would lower evaporation losses compared with the existing pond. • Some wetland habitats may dry seasonally, increasing habitat diversity but reducing water availability in prolonged droughts.

Heatwaves	**Likely effects** • Water warming leading to higher evaporation levels with risk to aquatic life and increased algal blooms. • Deeper refuge areas and increased shading from vegetation would help reduce water-temperature extremes. • Wetland plants would improve water quality and reduce the risk of widespread algal blooms compared with a large, shallow standing pond	**Likely effects** • • Water warming leading to higher evaporation levels with risk to aquatic life and increased algal blooms. • Shading from marginal planting would help keep water temperatures lower and improve ecological resilience. • Wetland habitats would generally maintain better oxygen levels than a large open-water pond. • The risk of severe algal blooms would be lower due to increased shading, flow and nutrient interception.
Summary	The **Dredging Plus** option would be markedly better adapted to future climate conditions. **Key Benefits** • Improved flood storage and natural flood management. • Better drought resilience through a permanent refuge pond. • Reduced sedimentation and improved water quality. • Greater habitat diversity and climate resilience than a large open-water pond.	The **River & Pond** option would create a more climate-resilient landscape than a large open-water pond alone. **Key Benefits** • Better flood management and sediment control. • Improved resilience to drought, heat and extreme rainfall. • Greater biodiversity through a wider range of wetland and river habitats. • More climate-resilient than the existing large open-water pond.

Sources

metoffice.gov.uk	UK Climate Projections (UKCP18)
weather.metoffice.gov.uk	Climate change in the UK
metoffice.gov.uk	UKCP18 Factsheet: Derived projections
carbonbrief.org	In-depth Q&A: The UK Climate Projections 2018
Appendix A	Five Rivers Design Summary Report