

Delivery of Services in Warwickshire - threats and opportunities associated with extreme weather events: - Heavy Rainfall, High Winds (storms), Heat Waves / Sun, Snow & Ice

Heavy rainfall

Heavy Rainfall	Public Services	
	Threats ☹️🌧️	Opportunities 🙌😊
Emergency / Services / Planning	<ul style="list-style-type: none"> • Risk of extreme weather events and more demand for services • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Health / Care	<ul style="list-style-type: none"> • Psychological impacts / stress from climate impacts • Risk of contamination of water supplies • Increase in vector-borne and water-borne diseases • Health risks from pests and vermin and 'exotic' new diseases • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Transport / Highways / Bridges	<ul style="list-style-type: none"> • Risk of infrastructure damage • Disruption to services • Maintenance of roadside verges • Risk of accidents in extreme conditions • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Waste Management	<ul style="list-style-type: none"> • Pests and vermin • Rate of degradation and leaching at landfill sites • Mobilisation of toxic wastes • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Education	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •



Heavy Rainfall	Natural Resources	
	Threats ☹️🌧️	Opportunities 🙌😊
Biodiversity / Forestry	<ul style="list-style-type: none"> • Pests • Disease • Fungal disease • Some species and habitats may be lost • Local extinction of species that migrate away from nature reserves • 	<ul style="list-style-type: none"> • Building adaptive capacity • Some species and habitats may be gained •
Water	<ul style="list-style-type: none"> • Water quality problems • Pressure on drainage and wastewater management systems • Winter flood damage to drinking water supplies • Need for pumping from low-lying areas • 	<ul style="list-style-type: none"> • Building adaptive capacity • Water trading between farms •
Agriculture	<ul style="list-style-type: none"> • Pests and diseases • Damage to crops and soils • Difficult to access fields • Potential loss of competitive advantage to other regions • Soil erosion • Land in floodplain flooded more often or use limited • Increased insurance costs • Reduce soil quality • Yield variability • Timing of crop maturity 	<ul style="list-style-type: none"> • Building adaptive capacity •
Public Open Spaces	<ul style="list-style-type: none"> • Difficult to access • Inability to maintain spaces • Increased costs of maintenance • Damage to grassed areas • Overwhelmed drainage • Reputational risks 	<ul style="list-style-type: none"> • Building adaptive capacity • Adapt machinery to circumstances or get other machinery • Changed nature of external play • Different grasses can be used that are not so susceptible to flooding • Use self-watering containers • Use containers with troughs • Need more inside facilities.



Heavy Rainfall	Built Environment	
	Threats ☹️👉	Opportunities 👉😊
Planning / Development	<ul style="list-style-type: none"> • More resources / skills needed to understand / address climate change • Need to avoid development in the floodplain • • 	<ul style="list-style-type: none"> • Building adaptive capacity • Planning adaptation • Built in resilience •
Building Design / Drainage	<ul style="list-style-type: none"> • Buildings currently designed for past climates • Risk of subsidence • Mould growth • Urban drainage problem • • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Utilities / Infrastructure	<ul style="list-style-type: none"> • Risk of damage to infrastructure and distribution network • Disruption to supply through weather events • Risk of telecoms infrastructure damage and 'downtime' • • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Building Control	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity
Asset Management	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •



Heavy Rainfall	Commerce & Industry	
	Threats ☹️🌧️	Opportunities 🙌😊
Tourism	<ul style="list-style-type: none"> • Increased insurance premiums • • 	<ul style="list-style-type: none"> • Building adaptive capacity • New markets and opportunities •
Insurance	<ul style="list-style-type: none"> • Increased insurance premiums • Increase in claims due to extreme weather, subsidence, floods etc. • Properties could lose value • Insurance blight • • 	<ul style="list-style-type: none"> • Building adaptive capacity • Properties could lose value • Insurance blight • New insurance products required •
Business Support	<ul style="list-style-type: none"> • Increased insurance premiums • • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Heritage	<ul style="list-style-type: none"> • Increased maintenance costs • Fungal damage • • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Economic Development	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

Heavy rainfall

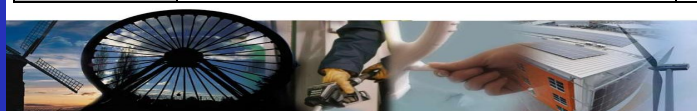


High Winds (storms)

High winds & storms	Public Services	
	Threats ☹️👉	Opportunities 🙌😊
Emergency / Services / Planning	<ul style="list-style-type: none"> • Risk of extreme weather events and more demand for services • • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Health / Care	<ul style="list-style-type: none"> • Injury from storm events • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Transport / Highways / Bridges	<ul style="list-style-type: none"> • Risk of infrastructure damage • Disruption to services • Risk of accidents in extreme conditions • • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Waste Management	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Education	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
High winds & storms	Natural Resources	
	Threats ☹️👉	Opportunities 🙌😊
Biodiversity / Forestry	<ul style="list-style-type: none"> • Storm damage • • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Water	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •



Agriculture	<ul style="list-style-type: none"> • Difficult to access fields • Yield variability • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Public Open Spaces	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
High winds & storms	Built Environment	
	Threats ☹️🌪️	Opportunities 🙌😊
Planning / Development	<ul style="list-style-type: none"> • More resources/skills needed to understand/address climate change • • 	<ul style="list-style-type: none"> • Building adaptive capacity • Planning adaptation • Built in resilience •
Building Design / Drainage	<ul style="list-style-type: none"> • Problems with safe use of construction equipment • • 	<ul style="list-style-type: none"> • Building adaptive capacity • New markets and opportunities
Utilities / Infrastructure	<ul style="list-style-type: none"> • Risk of damage to infrastructure and distribution network • Disruption to supply through weather events • Risk of telecoms infrastructure damage and 'downtime' • • 	<ul style="list-style-type: none"> • Building adaptive capacity • Opportunities for biofuels/renewables •
Building Control	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Asset Management	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
High winds & storms	Commerce & Industry	
	Threats ☹️🌪️	Opportunities 🙌😊



Tourism	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Insurance	<ul style="list-style-type: none"> • Increased insurance premiums • Increase in claims due to extreme weather, subsidence, floods etc. • • 	<ul style="list-style-type: none"> • Building adaptive capacity • New insurance products required •
Business Support	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Heritage	<ul style="list-style-type: none"> • Increased maintenance costs • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Economic Development	<ul style="list-style-type: none"> • Closed markets • 	<ul style="list-style-type: none"> •

High Winds (storms)



Heat Waves / Sun

Heat waves and sun	Public Services	
	Threats ☹️👉	Opportunities 🙌😊
Emergency / Services / Planning	<ul style="list-style-type: none"> • Risk of extreme weather events and more demand for services • Population displacement • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Health / Care	<ul style="list-style-type: none"> • Heat-related illness and death • Incidence of food poisoning • Risk of skin cancer • Increase in vector-borne and water-borne disease • Health risks from pests and vermin and 'exotic' new diseases • • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Transport / Highways / Bridges	<ul style="list-style-type: none"> • Risk of infrastructure damage • Tourism may increase road congestion • Maintenance of roadside verges • • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Waste Management	<ul style="list-style-type: none"> • Pests and vermin • Rate of degradation and leaching at landfill sites • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Education	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •



Heat waves and sun	Natural Resources	
	Threats ☹️👉	Opportunities 🙌😊
Biodiversity / Forestry	<ul style="list-style-type: none"> • Drought risk • Trees suffer from drier conditions • Risk of fires • Changes in species • Some species and habitats may be lost • Competition from exotic species • Stress from wetlands to drought • Fire risk • Gardeners may adapt plantings • • 	<ul style="list-style-type: none"> • Building adaptive capacity • Growth and productivity increases • Changes in species • Gardeners may adapt plantings • Some species and habitats may be gained • Improved woodland and grassland management • Improved public perception •
Water	<ul style="list-style-type: none"> • Risk of summer water shortages • Demand for household irrigation and industrial uses • • 	<ul style="list-style-type: none"> • Building adaptive capacity •



<p style="text-align: center;">Agriculture</p>	<ul style="list-style-type: none"> • Need for irrigation • Heat stress for livestock • Damage to crops and soils from intense drought • Winter storage reservoirs • Reduced soil quality • Reduced soil moisture content • Yield variability • Timing of crop maturity • Keeping up with Health & Safety Legislation • Finding time and cash to make the most of the opportunities • 	<ul style="list-style-type: none"> • Building adaptive capacity • Longer growing season • Potential to grow new crops • Reduced problems for livestock in winter • Enhanced yields • Winter storage reservoirs • Good land and water stewardship • Cooling systems for fresh produce such as ground source heat pumps • Rising CO₂ levels • Improved crop growth • New markets • Reduced frost damage • New livestock species • Increase rural tourism • Reduced food miles • Organic food • Subsidies / grants • Energy crops • Less mineral fertilizer • Reduced odour emissions • Stronger rural infrastructure • Energy security of supply • New partnerships • Reduced heating needs for young livestock • Increase demand for salad crops •
<p style="text-align: center;">Public Open Spaces</p>	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •



Heat waves and sun	Built Environment	
	Threats ☹️👉	Opportunities 🙌😊
Planning/ Development	<ul style="list-style-type: none"> • More resources/skills needed to understand/address climate change • • 	<ul style="list-style-type: none"> • Building adaptive capacity • Planning adaptation • Built in resilience
Building Design / Drainage	<ul style="list-style-type: none"> • Buildings currently designed for past climates • Discomfort in buildings in summer • Demand for air conditioning • • 	<ul style="list-style-type: none"> • Building adaptive capacity • Reduced damp related problems •
Utilities / Infrastructure	<ul style="list-style-type: none"> • Power stations constrained by water availability • Disruption to supply through weather events • Risk of over-capacity demand for cooling systems • Changes in seasonal demand for energy • • 	<ul style="list-style-type: none"> • Building adaptive capacity • Opportunities for biofuels / renewables • Reduced damage from freezing weather • Changes in seasonal demand for energy •
Building Control	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Asset Management	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •



Heat waves and sun	Commerce & Industry	
	Threats ☹️👉	Opportunities 🙌😊
Tourism	<ul style="list-style-type: none"> • Water supply problems and need for cooling in summer • Pressure on tourist attractions • Heat could deter visitors • Transport pressure from increased tourism • Changes to food/drink consumption patterns • 	<ul style="list-style-type: none"> • Building adaptive capacity • New markets and opportunities • More construction days available • Increased tourism • More outdoor pursuits • Longer tourist season • Health benefits from outdoor lifestyle • Changes to food / drink consumption patterns •
Insurance	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity • New insurance products required •
Business Support	<ul style="list-style-type: none"> • Water supply problems and need for cooling in summer • Water intensive manufacturers (e.g. paper) could become uncompetitive • More difficult working/manufacturing conditions due to higher temperature • Changes to food/drink consumption patterns • 	<ul style="list-style-type: none"> • Building adaptive capacity • New markets and opportunities • More construction days available • Increased tourism • More outdoor pursuits • Longer tourist season • Health benefits from outdoor lifestyle • Changes to food/drink consumption patterns •
Heritage	<ul style="list-style-type: none"> • Light-degradation damage • Investment required in shading • Degradation of designated sites • Character of parks and gardens will change • 	<ul style="list-style-type: none"> • Building adaptive capacity • Increased revenue from tourism • Character of parks and gardens will change •
Economic Development	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

Heat Waves / Sun



Snow and Ice

Snow and ice	Public Services	
	Threats ☹️👉	Opportunities 🙌😊
Emergency / Services / Planning	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Health / Care	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Transport / Highways / Bridges	<ul style="list-style-type: none"> • Risk of infrastructure damage • Disruption to services • Risk of accidents in extreme conditions • • 	<ul style="list-style-type: none"> • Building adaptive capacity • Less cold weather damage and disruption • Reduced need to grit roads in winter •
Waste Management	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Education	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Snow and ice	Natural Resources	
	Threats ☹️👉	Opportunities 🙌😊
Biodiversity / Forestry	<ul style="list-style-type: none"> • Drought risk • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Water	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •



Agriculture	<ul style="list-style-type: none"> • Difficult to access fields • Damage to crops and soils • Reduced winter cold / vernalisation • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Public Open Spaces	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Snow and ice	Built Environment	
	Threats ☹️👉	Opportunities 👉😊
Planning/ Development	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Building Design / Drainage	<ul style="list-style-type: none"> • Risk of damage to infrastructure and distribution network • Disruption to supply through weather events • risk of telecoms infrastructure damage and 'downtime' • 	<ul style="list-style-type: none"> • Building adaptive capacity • Reduced frost damage •
Utilities / Infrastructure	<ul style="list-style-type: none"> • Risk of damage to infrastructure and distribution network • Disruption to supply through weather events • Risk of telecoms infrastructure damage and 'downtime' • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Building Control	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Building adaptive capacity •



Asset Management	•	•
Snow and Ice	Commerce & Industry	
	Threats ☹️👉	Opportunities 👉😊
Tourism	•	<ul style="list-style-type: none"> • Building adaptive capacity •
Insurance	•	<ul style="list-style-type: none"> • Building adaptive capacity • New insurance products required •
Business Support	•	<ul style="list-style-type: none"> • Building adaptive capacity •
Heritage	<ul style="list-style-type: none"> • Increased maintenance costs • 	<ul style="list-style-type: none"> • Building adaptive capacity •
Economic Development	•	•

Snow and Ice

