


YORKSHIRE AND HUMBER CLIMATE CHANGE ADAPTATION STUDY

LOCAL AREA REPORT: ROTHERHAM METROPOLITAN BOROUGH

<p>Location:</p>	
<p>Description of District:</p>	<p>A district that has a mix of urban settlements and rural expanse with several country parks. Its traditional industry is a mix of steel and coal-mining.</p>
<p>Future Climate Projections:</p>	<p>The results of the modelling carried out for the Yorkshire and Humber Regional Climate Change Adaptation Study suggest that the following changes are likely by 2050:</p> <ul style="list-style-type: none"> • This district has the greatest increase in summer daily mean temperatures within the study area, at 2.5°C; • Annual minimum temperatures are projected to rise by 1.6°C but to remain below 0°C; • Winter rainfall to increase by 14%; and • Annual snowfall days are predicted to decrease by over 3 days per year. <p>These figures relate to the nearest modelled cell, which was Sheffield.</p>

Key Impacts and Adaptation Actions

Although principally a regional / sub-regional study, there are a range of issues that are of particular relevance to the Rotherham Metropolitan Borough. These are set out below, using the same 'sector' headings as the main report. These points are not the only issues for consideration, however, as sub-regional and regional reports, as well as the thematic or sectoral areas of the website, do cover other issues relevant to this local authority area.

Flooding

Key Impacts

- Greater rainfall would lead to increasing and more frequent flood problems for local properties, businesses and infrastructure. Greater seasonality of rainfall would bring an extended winter 'flood' season and higher intensity, flashy flood flows;
- Increased flooding to critical infrastructure and services (Ambulance, Fire and Police stations all at significant risk);
- Increased watercourse blockages and siltation reducing channel capacity. Culvert entrances becoming blocked by tree debris and vegetation during high storms; and
- Increased surface water flooding in heavily urban areas during more extreme storms, also affecting low sections of roads and railways.

Key Adaptations

- Continue river flow monitoring for fluvial flood events;
- Improve current drainage design and maintenance standards to incorporate future climate changes, and strategically plan and implement system improvements across the drainage network; and
- Concentrate flood management on protecting critical infrastructure assets and services. Develop flood management strategies to protect local businesses and properties, or encourage flood-resilience of buildings where this is not viable. Look for more innovative sustainable flood management approaches.

Business and Economy

Key Impacts

- Manufacturing industries can be expected to experience changes in market demand;
- There will be significant opportunities for the Advanced Manufacturing sector and the region's advanced technology industries in developing solutions to the challenges presented by climate change; and

- Impacts of climate change on the built environment, in particular business premises, will have a significant effect on employee and customer wellbeing. Increased summer temperatures are likely to have a significant effect on the attractiveness of urban retail areas due to impacts on customer comfort.

Key Adaptations

- Market changes may have positive or negative effects, but should be monitored and longer-term trends responded to through, for example, changes to production; and
- Particularly bearing in mind the high levels of regeneration targeted within the district, climate adaptation should be built into all new developments to ensure working and other conditions are maintained at an agreeable standard into the future. Increased use of shade trees in urban areas will limit the heat island effect through shading and evaporative cooling. Their adoption should be maximised in new developments and inclusion in redevelopment or renovation schemes.

Public and voluntary services

Key Impacts

- Indoor air temperatures are likely to rise in the summer months, particularly in urban with an impact on indoor air quality. This problem will affect school classrooms, local authority, emergency and military base offices and social housing.

Key Adaptations

- Building refurbishment should encompass adaptation of flood-prone homes, and buildings as well as building in retro-fitted insulation and protection against rising internal temperatures. Low carbon approaches should be adopted as reliance on mechanical cooling powered by fossil fuel-derived energy will also further exacerbate climate change through carbon dioxide emissions. Activity could use the index of multiple deprivation to identify priority areas and develop community scale NI 188 assessments; and
- Greenspace and green infrastructure should be developed at a neighbourhood level, taking full account of future impacts of climate change to inform species choice, management regimes, and future use.

Infrastructure and Utilities

Key Impacts

- Increased frequency of flooding from urban drainage and sewer systems;
- Increased blockage of drains, culverts and gullies;

- Water demand increases would not be fully met through Yorkshire Grid supply due to presence of another service provider; and
- Mechanical operations within the water distribution grid could be affected by climate-related disruption to power supplies.

Key Adaptations

- Capital programs should consider improved sewer and drainage design capacity;
- Re-evaluate resources and approaches for inspection and clearance of drain, culvert and gulley blockages;
- Cross-organisational awareness and joint working between the two water companies; and
- Increased awareness of inter-dependencies between critical infrastructure.

Biodiversity

Key Impacts

- There is likely to be increasing pressure on hedgerow species due to soil moisture stress. Any loss of hedgerow will also affect the movement of species that use hedgerows for navigation or food;
- High risk of total loss of habitats which have already become very isolated and confined such as heathland, marshland, calcareous grassland and woodland; and
- Trees are relatively slow growing and while it is likely that the climate space of southern tree species will move north, the speed of adaptation will be slow.

Key Adaptations

- Wherever possible allow natural processes to continue, and therefore adaptation to change to occur naturally;
- An overall expansion in habitat types currently suffering from isolation or fragmentation, to improve habitat permeability. The overall connectivity of existing and newly created habitats needs to be enhanced to enable species to migrate and disperse easily;
- Maximise the potential for different habitats and species to sustain each other. New habitats may take on functional roles such as buffering natural hazards such as wind, flooding and drought; and
- Limit additional pressures on, particularly sensitive, habitats through more formal management of visitor access and altering land management practices.

Health and Welfare

Key Impacts

- Declining mental and physical health due to increasing temperatures, particularly in areas of deprivation; and
- Growing number of cases of respiratory illnesses due to increasing number and intensity of air pollution episodes.

Key Adaptations

- Urban design to minimise the heat island effect as much as possible;
- Raising awareness, educating and building community resilience to climate change and its likely impacts; and
- Continue tackling social and economic inequalities throughout the city.