


# YORKSHIRE AND HUMBER CLIMATE CHANGE ADAPTATION STUDY

## LOCAL AREA REPORT

### DONCASTER METROPOLITAN BOROUGH

<p><b>Location</b></p>	
<p><b>Description of District</b></p>	<p>Doncaster is a mix of urban and rural areas within the borough, though predominantly urban.</p>
<p><b>Future Climate Projections</b></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"> <li>• This district has the greatest increase in winter daily mean temperatures at 1.5°C;</li> <li>• Annual maximum temperatures are expected to rise by 3.1°C to above 30°C;</li> <li>• Summer rainfall reductions are to be greatest for the lowland areas at 14.3mm but with heavier rainfall during the winter; and</li> <li>• Relative humidity will decrease by -11.6% for the district.</li> </ul> <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 Metropolitan Borough of Doncaster. 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 leading to increasing and more frequent flood problems for local properties, businesses and infrastructure in main towns;
- Increased erosion and more frequent breaching of historic defences with greater and more prolonged loading requiring increased maintenance works;
- Increased watercourse blockages and siltation reducing channel capacity and requiring greater maintenance works; and
- Increased surface water flooding in heavily urbanised areas during higher intensity, more extreme storms.

#### *Key Adaptations*

- Develop flood management strategies to protect local businesses and properties or encourage flood-resilience of buildings where this is not viable;
- Concentrate flood management on protecting critical infrastructure assets and services, to include enhanced maintenance where necessary; and
- Produce multi-agency response plans to co-ordinate responses during extreme events and ensure clear access routes are kept available; and
- Improve current drainage design standards to incorporate future climate changes.

### Groundwater and Minewater

#### *Key Impacts*

- Unquantified risk of minewater outbreak from former metal mines due to increase in frequency of multi-day rainfall events.

#### *Key Adaptations*

- Risk is low due to areas being sparsely populated.

## Business and Economy

### *Key Impacts*

- The distribution and logistics sector is susceptible to flooding and heat impacts at warehouse and distribution park sites. It is also heavily dependent on the activities of the ports and the wider transport network; and
- 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.

### *Key Adaptations*

- Flooding impacts on distribution and retail parks should be addressed as a priority before development, with surface water management plans and sustainable drainage systems, designed to cope with future water flows, integrated into the developments from the outset; and
- Increasing links with the regional and sub-regional universities will enable greater research and development. Combined with support from local and regional business organisations this will help make the most of the opportunities which will be presented.

## Public and Voluntary Services

### *Key Impacts*

- Indoor air temperatures are likely to rise in the summer in schools and public buildings, particularly in urban areas, with impacts on indoor air quality also;
- With the expected increase in winter rainfall and extreme rainfall, localised flooding events will become increasingly frequent and intense, impacting buildings as well as social housing residents, housing association, public services and emergency service ability to operate.

### *Key Adaptations*

- A set-aside maintenance and repair budget for school buildings and public service offices, developed through adapting current budgetary mechanisms, would ease the costs of any damage that is incurred as a result of climate impacts; and
- Ensure participation in regional resilience forums and regional flood groups and undertake precautionary as well as adaptive measures recommended, in addition to reviewing risk registers.

## Infrastructure and Utilities

### *Key Impacts*

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

- Water demand increases may not be fully met through the Yorkshire Grid supply due to presence of another service provider in parts of the district; 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 infrastructures, leading to improved resilience planning.

### **Biodiversity**

#### *Key Impacts*

- Chalk and limestone grassland may be prone to further loss due to the combination of existing pressures plus climate change;
- Potential shrinkage of wetland and low flow in rivers with a loss of habitat connectivity due to lower rainfall and hotter drier summers, particularly when combined with abstraction pressures arising from development; and
- Peatland is typically found on areas that will be prone to solar gain and therefore prone to the impact of drought, especially where there are existing areas of shrinkage caused by current pressures.

#### *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 help 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; and
- Growing number of cases of respiratory illnesses due to increasing number and intensity of air pollution episodes.

### *Key Adaptations*

- Try to limit urban temperatures as much as possible through building and urban design;
- Improvement in sustainable transport infrastructure to reduce isolation; and
- Raising awareness, educating and building community resilience to climate change and its likely impacts.