


YORKSHIRE AND HUMBER CLIMATE CHANGE ADAPTATION STUDY

LOCAL AREA REPORT

WAKEFIELD CITY METROPOLITAN DISTRICT

<p>Location</p>	
<p>Description of District</p>	<p>Wakefield district is a mix of urban and rural areas. The principal urban area is Wakefield City, with smaller settlements at Castleford and Pontefract. The district was previously a large coal-mining area.</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"> • Winter average temperatures rising by 1.4°C; • Longer dry spells occurring with increased frequency; • An increase in winter average rainfall of 15%; and • A reduction in relative humidity of over 10%. <p>These figures relate to the nearest modelled cell, which was Leeds.</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 Wakefield City Metropolitan District. 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 around Wakefield and other main towns;
- Traffic impacts on main routes affecting local and national businesses;
- Increased watercourse blockages and siltation reducing channel capacity and requiring greater maintenance works; and
- Increased erosion and more frequent breaching of historic defences requiring increased maintenance works.

Key Adaptations

- 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 rather than traditional flood defences, such as the upstream storage of flood water. Also review maintenance regimes;
- Protect critical infrastructure and emergency services to ensure continuation of service, or relocate away from flood risk areas; and
- Produce multi-agency response plans to co-ordinate responses during extreme events and ensure clear access routes are kept available.

Business and Economy

Key Impacts

- Warehouse and distribution parks are susceptible to flooding and heat impacts, as well as being heavily dependent on the wider transport network;
- Management of sports venues and heritage and amenity sites will be affected by changing temperatures and rainfall/storm patterns. This will affect the management of grounds and building fabric. Visitor management strategies may need adaptation to limit climate impacts on health and wellbeing, and larger events may become more susceptible to disruption or cancellation;

- Digital industries will be particularly vulnerable to effects on telecommunications infrastructure, and to the effects of increased flooding on data storage and electrical services; and
- Increased summer temperatures are likely to affect the attractiveness of urban retail areas due to impacts on customer comfort. Climate controlled retail parks and malls may experience an opposite effect, with greater demand on summer days.

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 from the outset;
- Climate adaptation should also be built into all new developments, particularly bearing in mind the high levels of regeneration in the district, to ensure working and other conditions are maintained into the future;
- Long-term changes in climate should be built into visitor management strategies and infrastructure plans to ensure the continued viability of events and venues;
- Raise awareness of the impacts of climate change among the digital industries and those business sectors heavily reliant on data transmission and storage, and ensure networks and transmission infrastructure is resilient; and
- Using shade trees in urban areas to limit the heat island effect through shading and evaporative cooling.

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;
- 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; and
- Greater pressure on public and voluntary sector services to provide community support during periods of disruption (eg floods and storms).

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. The budget should give due consideration to appropriate guttering and sustainable drainage systems, green roofs,

water butts, grey water systems, passive ventilation and shading, and renewable sources of energy; and

- Ensure participation in regional resilience forums and regional flood groups and undertake precautionary as well as adaptive measures recommended, in addition to review of the risk register.

Infrastructure and Utilities

Key Impacts

- Increased number of traffic delays on major highways caused by increased winter rainfall and winter average wind speeds;
- Increased frequency of flooding from urban drainage and sewer systems in Wakefield and Pontefract, especially in winter;
- Increased blockage of drains, culverts and gullies;
- Increased slippages in road or rail embankments or cuttings; and
- Mechanical operations within the water distribution grid could be affected by climate-related disruption to power supplies.

Key Adaptations

- Weather and travel warnings issued to users of principal roads during forecast storms and anticipate increased resource requirements for emergency responses;
- Capital programs should consider improved sewer and drainage design capacity and maintenance. Re-evaluate resources and approaches for inspection and clearance of drain, culvert and gulley blockages;
- Increased resources for inspection and maintenance of embankments and slopes; and
- Raise awareness of the inter-dependencies between critical infrastructures, leading to improved resilience planning.

Biodiversity

Key Impacts

- High risk of total loss of habitats which have already become very isolated and confined such as heathland, marshland, calcareous grassland and woodland and therefore a loss of species, many of which are at immediate risk;
- Changes in the characteristics of standing water such as natural and colliery ponds which could result in changes in species associated with standing water. There may also be an increase in non-native invasive species; and
- Urban green space, parkland and brown field sites are likely to become increasingly important refuges for some species. This has already occurred.

Key Adaptations

- Wherever possible allow natural processes to continue, and therefore adaptation to change to occur naturally;
- Enable 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 as easily as possible; and
- Maximise the potential for between different habitats and species to help support and sustain each other. New habitats may take on functional roles such as buffering natural hazards such as wind, flooding and drought.

Health and Welfare

Key Impacts

- Rising levels of respiratory complaints due to increased duration and intensity of air pollution episodes as temperatures rise; and
- Heat stress impacting large numbers of employees and students across the urban area if buildings are unable to maintain a comfortable temperature in summer. This could lead to reduced productivity and economic loss.

Key Adaptations

- Urban design to minimise heat island effect as much as possible; and
- Raising awareness, educating and building community resilience to climate change and its likely impacts. Continuing to tackle social and economic inequalities throughout the area will greatly reduce vulnerability to the impacts of climate change.