


YORKSHIRE AND HUMBER CLIMATE CHANGE ADAPTATION STUDY

LOCAL AREA REPORT

NORTH EAST LINCOLNSHIRE DISTRICT

<p>Location</p>	
<p>Description of District</p>	<p>This is a small coastal district that is predominantly rural agricultural land on the Lincolnshire Wolds. More urban areas include the coastal towns of Grimsby and Cleethorpes.</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 minimum temperatures are to rise by 1.6°C to almost 1°C; • Summer average temperatures are expected to rise by 2.3°C; and • Winter average rainfall will increase by 17% <p>These figures relate to the nearest modelled cell, which was Hull.</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 North East Lincolnshire 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

- Increasing potential for tidal flood impacts with rising sea levels;
- Greater seasonality of rainfall bringing more, and higher intensity winter rainfall and more flashy flood flows during the summer and leading to surface water flooding problems in the low-lying urban areas. This will be further exacerbated by the more frequent tide-locking of drainage outfalls due to increased tidal levels; and
- Increased flooding to critical infrastructure and services.

Key Adaptations

- Prioritise improvements to tidal flood defences;
- Improve current drainage design standards to incorporate future climate changes, and strategically plan and implement system improvements across the drainage network;
- Protect critical infrastructure and emergency services to ensure continuation of service, or relocate away from flood risk areas;
- Produce multi-agency response plans to co-ordinate responses during extreme events; and

Coastal Erosion

Key Impacts

- Increased rates of inter-tidal marsh-edge recession at some locations within the Humber Estuary, leading to the progressive 'squeezing' of habitats.

Key Adaptations

- Adaptation to inter-tidal salt marsh-edge erosion within the Humber Estuary is inextricably linked with flood risk management. There are limited opportunities for salt marsh re-creation due to the protected urban and industrial nature of the frontage, leading to continued coastal squeeze. However habitat loss will be addressed through the Environment Agency's habitat creation programme associated with the Humber Flood Risk Strategy (Environment Agency, 2008).

Groundwater and Minewater

Key Impacts

- Risk to Chalk groundwater resource due to declining groundwater levels and increased drought;
- Impact on river flows due to reduction in spring flow from Chalk; and
- Risk of saline intrusion, particularly around Grimsby.

Key Adaptations

- Continued monitoring and careful exploitation of the Chalk aquifer; and
- Assessment of saline intrusion and possible constraint of groundwater abstractions during periods of drought.

Business and Economy

Key Impacts

- Increases in pest and disease spread, together with the potential for more 'exotic' species, are likely to have significant effects on the district's agriculture;
- As fish species currently targeted by local boats become unavailable or uneconomic they are likely to be replaced by other warmer-water species, the attractiveness of which will depend upon the market;
- Higher summer temperatures are expected to increase demand for leisure and tourism, and especially outdoor amenity and coastal destinations. However this may also place significant strain on existing attractions and infrastructure; and
- Increased flooding in urbanised and developed areas, combined with increasing temperatures, will increase the risk of contamination within the food and drink industries (and in particular the fish processing sector).

Key Adaptations

- Initiate, develop and review pest management strategies, in particular in those rural areas frequented by visitors, to ensure the early identification and treatment of any species or conditions which may negatively affect the district's habitats or economy;
- Promote and circulate research into the likely effects of climate change on local fisheries species, and ensure long-term investment decisions account for a potentially changing catch. Drive and share research on changing markets to ensure and enable early adaptation. Require that development and support programmes, especially where publicly or industry-supported, are climate adapted;

- Long-term changes in the tourism industry should be built into visitor management strategies, and the expected future needs and demands of tourists should be built into infrastructure and other regional plans, and longer-term maintenance regimes; and
- Although standards are very high already there may be an increased demand on audit and quality control, and new processes and equipment may be required for food and drink industries. Urban heating and flooding can also be ameliorated through the use of shade trees in urban areas. 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.

Public and Voluntary Services

Key Impacts

- Heightened summer temperatures and drier soil conditions could spark a noticeable increase in primary and secondary fires; and
- The drying out of soils followed by heavy rainfall could lead to increased risk of subsidence and slope instability, together with inundation and/or erosion of low lying coastal facilities.

Key Adaptations

- Review built assets and resource availability and location to ensure resilience to future demands. Emergency planning will need well developed communication links with the Armed Forces Units to prepare for resourcing when required; and
- Ensure full 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

- Surface melt of rural road surfaces and associated knock-on effects;
- Increased frequency of flooding from urban drainage and sewer systems in Grimsby, especially in winter;
- Increased demand on water resources, particularly from agriculture;
- Increased blockage of drains, culverts and gullies; and
- Water resource issues due to nature of supply source and being part of a different water company area compared to most of the region.

Key Adaptations

- Allow additional resources for use of alternative road surfacing materials in carriageway maintenance programs to ensure higher melt resistance;
- Capital programs should consider improved sewer and drainage design capacity;
- Farm-holdings to consider local winter water storage reservoirs to assist with summer irrigation or livestock watering;
- Re-evaluate resources and approaches for inspection and clearance of drain, culvert and gulley blockages; and
- Cross-organisational awareness and joint working between the two water companies.

Biodiversity

Key Impacts

- There is likely to be a loss of salt and freshwater wetland due to coastal squeeze;
- An increasing saline influence due to sea level rise and coastal flooding may increase the presence of specialised species; and
- Change in grassland species mix to drought tolerant species on south facing aspects and low lying areas where there is more solar gain and consequently increased water stress.

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 as easily as possible;
- Integrate biodiversity concerns fully with coastal and development planning; and
- Maximise the potential for different habitats and species to help sustain each other.

Health and Welfare

Key Impacts

- Impacts upon mental and physical health due to increasing temperatures, particularly in areas of deprivation; and
- Coastal and fluvial flooding, and consequent impacts on mental and physical health, attributable to sea level rise and increased seasonality and intensity of rainfall.

Key Adaptations

- 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 reduce vulnerability to the impacts of climate change; and
- Encouraging rainwater capture and harvesting, and associated work on flood preparedness and resilience, with vulnerable communities.