



Adaptation Assessment Summary Report

Note to Readers – this summary follows a set template and is based upon notes and outputs from the Climate Adaptation Workshop held at the RSPB on 8th January 2014.

Title / subject of assessment

Greater Thames Estuary and Marshes

Summary

What is the key message about climate change and adaptation for this work area?

The impetus to provide high quality habitat will increase in the face of a changing climate. Rising sea levels and the need to protect London from flooding will transform the shape of the Estuary, seasonal changes in rainfall patterns will make it more challenging to create and maintain freshwater grazing marshes and rising temperatures will permanently alter the species dynamics of the coastal ecosystem.

Adaptation measures will be key to ensure that this area can remain nationally and internationally important for wildlife over the course of this century; where well planned there are opportunities to develop adaptation to realise multiple benefits, e.g. water management.

The main changes in climate for a 2°C world are...

Briefly describe the main changes in climate / weather conditions expected from the local climate change projections for a 2°C rise in average global temperature

Temperature: annual temperatures are projected to increase within a range of 1-1.5 – 2-2.5°C, however the greatest variability of temperature will be in summer, with a projected range between 0.5-1 – 3-3.5°C

Precipitation: annual rainfall is not projected to show significant overall change (between 9-0 – 1-10 %mm/day), however there will be important changes in seasonal rainfall, with significant decreases in summer rainfall (39-30 – 11-20 %mm/day) and increases in winter rainfall (9-0 – 21-30 %mm/day). Spring and autumn averages remain relatively constant.

Sea level rise: climate change is likely to have an effect on average sea and tide levels, the frequency and severity of North Sea storm surges and fluvial flows coming down the Thames and its tributaries. This change will be gradual and cumulative, with sea levels currently rising at a rate of 3mm/year.

The main changes this is likely to bring to our current interests are...

There may be benefits as well as problems and adverse effects, and these may arise from both direct (eg climate) and indirect (eg land management / use change) impacts and changes.

Projected changes in precipitation create a strong need for improved water management in order to sustain freshwater grazing marshes as high quality habitat for breeding waders and

associated species. Adaptations of other sectors, and the impact this would have on water availability and quality, would need to be taken into account. However, in our response to increased seasonal changes in precipitation, and increased likelihood of extreme weather events (drought and deluge), there would be opportunities to integrate our biodiversity objectives to create multifunctional cross-sector water infrastructure, such as “green reservoirs”, managed floodplains and sustainable urban drainage solutions.

Steady increases in temperature will see continuation of already observed shifts in species ranges (predominantly northwards). To facilitate this changing dynamic, the focus of conservation needs to shift to ensure resilience across the existing habitat network by maintaining heterogeneity of habitats to suit both incumbent and potential colonist species. Not all colonist species would be beneficial to our conservation objectives; therefore there will be a need to develop an invasive species policy and response. For less mobile species, such as invertebrates, there is a need to engineer stepping stones and corridors between habitat patches to facilitate species movement between sites and across the landscape.

Rising sea levels and saline incursion are key threats to conservation objectives as intertidal and freshwater habitats are squeezed further inland, where there may not be space to manage land for wildlife. Changes in land use to create flood defences will be a major driver for change, but opportunities are present in the medium term to create new habitat and improve connectivity for species such as European Eels between freshwater and saline habitats.

During the workshop several potential indirect impacts were identified, for example, changes to agriculture systems, energy production and access and recreation, these areas require further investigations within these sectors to better understand how climate change and adaptations would affect conservation outcomes

If we had to cope with a 4°C world, this would bring...

Briefly describe the climate change and key changes this would bring. Although far off and with much greater uncertainty, a short vision of this possible future may be helpful both to guiding long term conservation action, and to inform mitigation action.

Changes in climate would follow the direction of travel projected for a 2 °C change in global temperature, however the level and rate of change would be significantly greater. For example summer temperatures would be 2-2.5 – 5.5-6 °C from current levels, this would be within a context of annual temperature increase within the range of 2-2.5 – 4.5-5 °C. Seasonal differences in projected precipitation will become more pronounced with a projected decrease in summer within the range of 49-40 – 1-10 %mm/day with a corresponding increase in winter within the range of 9-0 – 41-50 %mm/day. Rising sea levels could peak over 1m, requiring significant investment in large-scale infrastructure to manage the risk of flooding.

The more pronounced changes in seasonality, and increasing likelihood of extreme weather events projected for a 4°C world could outpace ability of the natural environment and species to adapt, therefore early action is required to facilitate adaptation where possible. The urgency and scale of impact may provide a strong driver for investment in adaptation

measures, but would require direction to ensure these delivered multiple benefits, including for wildlife.

Natural systems and ecosystems would be significantly altered in a 4°C world, but with greater uncertainty around their adaptive capacity. For example there may be substantial changes in coastal and marine environment with significant impact on fish and migratory species.

Current activities that contribute to meeting climate change are...

There may be several current conservation activities that help build resilience, or help accommodate nature to the changes that climate change is bringing

Broadly speaking, current conservation activities which are building resilience to climate change include:

- Targeted management of key sites by conservation organisations to improve populations of priority species, such as Buglife at Canvey Wick and RSPB at Northward Hill
- Development of NIA and landscape scale project initiatives, such as Futurescapes and Living Landscapes, to create and maintain a coherent ecological network of habitats, for example Higham Marshes project to restore grazing marsh habitat and Farm Conservation Advice work
- Flood and coastal erosion risk management (FCERM) programme within Environment Agency, which includes TE2100 and habitat creation targets
- Maintenance and management of a series of designated sites, from Local and National Nature Reserves to Special Protection Areas, Ramsars and Special Areas of Conservation.

The main new things that we need to consider and/or do are...

What needs to be done differently? And when is action needed to implement them?

- Develop our understanding of potential changes in species ranges (having identified a suitable methodology for doing so), and how this will impact on species interactions within the Greater Thames, including identifying potential colonist and invasive species and agreeing management actions
- Consider existing site designation policy and identify whether/how this could and should adapt in the light of changing climate and natural dynamics (ref. colonists and species interactions above) – e.g. referring to [CHAINSPAN](#) research
- Strategic planning around management of natural resources, in particular water, in the light of climate projections, looking across the full water use cycle in relation to our conservation objectives (abstraction, storage and management)
- Advocate the need to embed delivery of biodiversity objectives into climate adaptation measures, including identifying case studies to replicate, and to pilot new mechanisms of green infrastructure. Key to this will be gaining greater understanding of how sectors outside conservation will adapt to climate change, and building cross-sector partnerships to benefits can be maximised across interest groups.