

IMPACTS OF CLIMATE CHANGE ON COASTAL FLOODING

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Executive Summary

Climate Change impacts on flooding and coastal erosion are a fundamental challenge and risk for Defra and Operating Authorities (i.e. EA, Local Authorities and Internal Drainage Boards). These impacts are well documented and include sea level rise and the potential increase in intensity, severity and frequency of coastal storms, and rainfall events affecting fluvial catchments and urban surface water flooding.

In *Making Space for Water*, Defra undertook to review its existing guidance (Defra, 2006) on climate change as part of a wider ranging review of appraisal guidance in 2007. However, recognising the need for some earlier updates, Defra is now aiming to publish supplementary guidance in advance of publication of Planning Policy Statement 25 'Development and Flood Risk', in the Autumn 2006. This supplementary guidance will:

- Extend the time horizon considered in the current guidance from 50 years to early 2100s in line with developments in longer-term strategic appraisal and whole life costing. This could have a significant effect as changes over time are not linear but on an exponential curve;
- Reflect recent changes in land movement predictions from UKCIP (UKCIP 2005) (post glacial tilt of the UK landmass) in revised regional sea level rise allowances;
- Provide additional guidance on how climate change impacts should be taken into account in appropriate decision making e.g. in ensuring the design of defences enables adaptation in future if required.

A table of parameters to take account of climate change (e.g. sea level rise), within existing guidance, will be changed with new figures for 2020s, 2050s, 2080s and 2100s, and with regional differences. By 2110, for example we might see an increase in sea level rise equivalent to 12mm per annum. The effect of these changes should ensure Defra continues to adopt an appropriately precautionary approach.

Following discussion with experts in the Environment Agency it has been agreed that this interim guidance will not make provision for an accelerated sea level rise due to Greenland ice melt (Ridley *et al.*, 2005) or other factors, beyond those considered by the last IPCC report, or for any potential change in sea surge. At present there is still significant uncertainty associated with these impacts and further evidence is needed before we make changes to guidance that would have a significant impact on how we invest now, particularly since the most significant changes would not take effect until well into the latter part of the century

Level of Confidence

Medium (dataset agreements) and Low (info). There is still significant uncertainty in this field.

Key sources of Information

Defra (2006). Flood and Coastal Defence Appraisal Guidance. Available at <http://www.defra.gov.uk/environ/fcd/pubs/pagn/Climatechangeupdate.pdf>

UKCIP (2005) Updates to regional net sea level change estimates for Great Britain. Available at <http://www.ukcip.org.uk/resources/publications/documents/124.pdf>

Ridley, J., Huybrechts, P., Gregory, J., Lowe, J. (2005) Elimination of the Greenland ice sheet in a high-CO₂ climate *Journal of Climate*, 18(17), 3409–3427

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