

**Flood and Coastal Defence Appraisal Guidance
FCDPAG3 Economic Appraisal
Supplementary Note to Operating Authorities – Climate Change Impacts**

Questions and Answers

Q&A Update at May 2007

Q1 Are the recommended sea level allowances still valid in the light of the 2007 Assessment Report of the Intergovernmental Panel on Climate Change?

In April 2007 the Intergovernmental Panel on Climate Change Assessment Report 4 'Summary for Policymakers'¹ presented a review of sea level rise predictions with a narrower range of model-based estimates of future sea-level rise, compared to their Assessment Report 3. The report considers the global effects of climate change on sea levels and related uncertainties, whilst there are further uncertainties in considering specific areas such as the UK. Work is currently ongoing on these regional impacts. In line with advice from the UK Climate Impacts Programme (UKCIP)² the October 2006 supplementary guidance from Defra still represents a reasonable approach for coastal planning. It will be reviewed and revised as necessary following the publication of new climate change scenarios for the UK by UKCIP in late 2008.

Original Q&A at December 2006

Q1 Why is Defra publishing the Supplementary Note at this particular time?

This Supplementary Note has been necessary to align climate change impacts guidance for flood and coastal management with wider Defra policies, and with findings from the 2002 UK Climate Impacts Programme (UKCIP). This Supplementary Note will set direction for a consistent and sustainable approach to tackling climate change, especially in appraisal and decision making processes associated with flood and coastal erosion risk management.

This Supplementary Note highlights some important principles to consider for the UK adapting to climate change. In addition, the supplementary note is timed to be published ahead of the forthcoming Planning Policy Guidance 25: 'Development and Flood Risk', which includes cross references to this note. Finally, the Supplementary Note's publication complements messages in the recent Stern Review on Economics of Climate Change³.

Q2 How is the guidance reflecting UKCIP's view on Sea Level Rise.

The purpose of the Supplementary Note is to assist with flood and coastal erosion risk management appraisal and decision making, and provide information in a slightly different way to that presented by the 2002 UK Climate Impacts Programme range of scenarios. We have chosen a precautionary point in that range, which also reflects the High scenario estimate from the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report.

¹ http://www.ipcc.ch/WG1_SPM_17Apr07.pdf

² <http://www.ukcip.org.uk/>

³ http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm

Q3 What are the most significant developments from the previous Supplementary Note?

The new sea level rise allowances now look over a 100 year horizon, whereas before, the Supplementary Note only covered 50 years, taking research from UKCIP02 that indicated moderate increases in sea level rise to the 2050s. Beyond 2050s, we anticipate seeing exponential increase in sea level rise. For appraisal and decision making on projects in the south east, for example, increases in sea level rise of 15mm/year between 2085 and 2115 should be considered, taking into account any effects from land tilting due to glacial rebound.

Regarding other indicative sensitivity ranges our note reflects research suggesting that increases of up to 20% and 30% by 2115 for peak river flows and peak rainfall, respectively. For extreme winds and waves on the coasts, our research suggests increases of up to 10% in their speeds and heights, respectively.

Q4 What further knowledge and research is sought for future policy development?

The development of this Supplementary Note has highlighted a number of areas where we wish to extend our knowledge and understanding. In particular, future research is likely to be aimed at improving our approach to managing uncertainties, use of scenario analysis and probabilistic methods. We aim to keep the guidance under review, where any significant evidence emerges, such as from UKCIP or joint Defra/EA research, (e.g. regional impacts of climate change on flood flows).

Q5 What are the principal recommended approaches in the Supplementary Note?

Adaptive approach

We need adaptation to best manage the risk of sea level rise. This might be through re-alignment of infrastructure, or working with natural processes, or ensuring that our flood risk management systems can be adapted or strengthened further to accommodate the changes in risk faced over time.

Long term strategic planning is also needed to assist operating authorities and spatial planners in how to manage with sea level rise over time, and the development of regional spatial strategies and local development frameworks should recognise this need. This approach is aimed at providing flexibility to manage future uncertainties associated with climate change, during the whole life of a flood risk management system. Furthermore, this approach is important to ensure best value for money from public investment

Precautionary approach

For some circumstances likely to be the exception rather than the rule, future adaptation to climate change may be technically infeasible or too complex to administer over the long term of up to 100 years. These circumstances may occur where multiple adaptations are not possible to manage the changes in risk. Therefore, a precautionary approach may be the only feasible option. This may require, say, a structure to be initially designed to accommodate for all change anticipated in the structure's design life. An example of this is in the initial design capacity of a major culvert or in the span of a road bridge across a flood plain.

Q6 How does this Supplementary Note link with the Stern Review?

The Stern Review emphasises the global, but uncertain, risks of climate change. The supplementary note's sea level rise allowances accommodate such uncertainties, such as

Greenland ice sheet melt, broadly through choosing the High scenario estimate from the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report.

Q7 How does this Supplementary Note link with Planning Policy Guidance 25 'Development and Flood Risk'?

Our Supplementary Note also relates to spatial planning, in that planners and developers will need to factor in climate change to their flood risk assessments and consider how to accommodate the climate change impacts in their decision making, using the policies laid out in the note. The forthcoming PPS25⁴ provides references to our Supplementary Note, to ensure that a consistent approach is adopted by operating authorities and the planning community. This will also ensure that climate change is appropriately considered at all stages of the planning process.

Q8 How will this Supplementary Note affect the development of CFMPs, SMPs and Strategies?

The Supplementary Note, in many respects, reinforces policy outlined in the FCDPAG series, and wider Defra policy on adaptation. The key changes relate to: the timescale for considering climate change impacts in the design and appraisal of projects and plans (covering up to 100 years, rather than 50 years); the exponential increase in sea levels over that time; and some minor changes in the indicative sensitivity ranges for peak rainfall and river flows, as well as extreme wind and waves.

CFMPs, and Fluvial Strategies

For work under development, we envisage a degree of change, as the adaptation approach may require a review on the timing of investment for options. In terms of sensitivity ranges for peak rainfall, these will generally relate to smaller catchments and urban studies. Peak river flow ranges are similar to previous guidance, but with the 20% range extended to 2115; so minimal changes are expected, here. It is suggested that justification for any changes to work in progress should be made on a case-by-case basis, and in line with any Environment Agency advice. Such a case should be determined on the amount of strategic and fundamental change envisaged, and on whether business case decisions are sensitive to the policy change.

SMPs and Coastal Strategies

For SMPs and coastal strategies, we envisage a little more change. For SMPs and strategies *recently approved*, we suggest that the Supplementary Note is taken on board at the next period of review, post approval.

For SMPs and strategies *less advanced*, perhaps up to about half-way through development, and where very little abortive work is envisaged, we suggest that the Supplementary Note is followed. Here, we would not expect claims or variation orders for additional work to ensue.

For SMPs and strategies *beyond a half-way stage towards completion/approval*, then a justification should be made for revisions/re-work on a case-by-case basis. Such a case will be determined on the amount of strategic and fundamental change envisaged to the plans, and on whether business case decisions are sensitive to the policy change. For example, if the new allowances change the BCR of a preferred course of action from 9:1 and 11:1; this may not justify additional expenditure for revisions/re-work. Any justifications should also gain the support of Defra Flood Management Division, on the case-by-case basis.

⁴ <http://www.communities.gov.uk/index.asp?id=1504639>