

NATIONAL TECHNICAL ADVISORY GROUP ON FLOODING ISSUES

SUSTAINABLE FLOOD MANAGEMENT SUB-GROUP DEFRA GUIDANCE ON SUSTAINABILITY

Purpose

1. This paper briefly summarises section 7 of volume one of the Department for Environment, Food and Rural Affairs (DEFRA) Flood and Coastal Defence Project Appraisal Guidance -overview including general guidance (FCDPAG1).

Background

2. Section 2 of the Water Environment and Water Services Act 2003 (“the 2003 Act”) requires responsible authorities **to promote sustainable flood management** when carrying out their flood prevention functions under the Flood Prevention (Scotland) Act 1961. However it gives no definition of sustainable flood management. The Sustainable Flood Management sub-group has been set up to advice the Scottish Executive on a workable definition of sustainable flood management within the terms of section 2 of the 2003 Act.

DEFRA guidance

3. Section 7 of PCDPAG1 includes guidance on sustainability, outlining the various ways that it has been described, as well as offering practical advice on how it may be incorporated into the planning process.

4. Section 7 states that the aim of the Government’s flood and coastal defence policy is:

*“To reduce risks to people and the developed and natural environment from flooding and coastal erosion by encouraging the provision of technically, environmentally and economically sound and **sustainable** defence measures.”*

5. Since the Government published *A better quality of life – a strategy for sustainable development in the United Kingdom* in May 1999, sustainable strategies have become an integral part of the approach to development for areas such as construction. Nonetheless, the word “sustainable” is still ambiguous and seldom implemented in practice to the extent that it should be.

Discussion

6. The most widely quoted definition of sustainable development is taken from The Bruntland Report (*Our Common Future*; World Commission on Environment and Development (1987); Oxford University Press) where it is defined as ‘development which meets the needs of the present without compromising the ability of future generations to meet their own needs’. While the read across to flood management is not straightforward it is important to bear this principle in mind when considering what sustainable flood management might entail in the context of the 2003 Act.

7. In 1993 MAFF defined sustainable schemes as:

‘schemes which take account of the interrelationships with other defences, developments and processes within a catchment or coastal sediment cell, and which avoid as far as possible tying future generations into inflexible and expensive options for defence.’ (MAFF/Welsh Office: *Strategy for Flood and Coastal Defence in England and Wales*. Publication PB1471, September 1993.)

8. The DFRA guidance recognises that sustainability is an issue which affects all aspects of project appraisal. Taking a long-term and whole-life design approach is most likely to result in options being developed which naturally fulfil the entire spectrum of sustainability criteria, these encompassing technical, environmental, social and economic evaluations. It also places considerable weight on the “do nothing” option, highlighting the assumption that “something must be done” as a common mistake which may lead to the introduction of a non-sustainable scheme.

9. Implementing a strategy of working with natural processes, rather than struggling against them, may also improve both the resilience and sustainability of defences. The use of natural habitats as a component of flood defence solutions may also reduce the extent and cost of built defences.

Conclusions

10. Members are invited to:

- **consider the attached extract from DEFRA Guidance volume FCDPAG1 and**
- **discuss its relevance to producing a pragmatic definition of sustainable flood management within the meaning of section 2 of the 2003 Act.**

**NTAG Secretariat
February 2004**

SUSTAINABLE FLOOD MANAGEMENT SUB-GROUP DEFRA GUIDANCE ON SUSTAINABILITY

Extract from DEFRA Guidance volume FCDPAG1

7 Sustainability

7.1 Background

The aim of Government flood and coastal defence policy is:

*'To reduce risks to people and the developed and natural environment from flooding and coastal erosion by encouraging the provision of technically, environmentally and economically sound and **sustainable** defence measures.'*

Sustainable schemes are defined as: 'schemes which take account of the interrelationships with other defences, developments and processes within a catchment or coastal sediment cell, and which avoid as far as possible tying future generations into inflexible and expensive options for defence.' (MAFF *Strategy for Flood and Coastal Defence in England and Wales*, reference 1).

Sustainability has also been defined as:

'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Bruntland Commission Report, reference 10).

In May 1999, the Government published *A better quality of life – a Strategy for Sustainable Development for the United Kingdom* (reference 14). Following this general approach more specific sustainability strategies for areas such as construction – *Building a better quality of life – a Strategy for More Sustainable Construction* (reference 11) have been produced and led to the development of industry action plans, such as *Achieving Sustainability in Construction Procurement* (reference 12).

7.2 Sustainability in practice

In recent years, sustainability has increasingly been quoted as a desired objective but seldom implemented in practice to the extent that it could be.

This appears to be due in some degree to uncertainty by practitioners in what is expected and the extent to which time and effort should be expended in seeking out and comparing the sustainability of various actions (clearly this implies aims for sustainability that are capable of being comparative). The implementation of action plans (reference 12) for sustainability, as referred to in section 7.1, should in future give improved direction to achieving this.

Sustainability is an issue dealt with in FCDPAG5 on environmental appraisal, where it is linked to strategic objectives of long-term planning and to environmental objectives such as the wise use of resources and achieving biodiversity targets.

Sustainability is considered in FCDPAG3 in economic appraisal. The achievement of long-term stable benefits is suggested as an alternative preferred option to one with a higher benefit – cost ratio but which has reducing protection standards over time (i.e. is less sustainable).

Sustainability is also an issue for technical soundness when it comes to looking at construction processes (reference 11). The relative maintenance demands of technical solutions, the long-term availability of equipment or materials and even the mode of failure or ease of demolition and potential for eventual recycling of materials are aspects of sustainability that may need to be considered in the design process.

What can be concluded from the above is that sustainability is an issue which affects all aspects of project appraisal. It most often affects the ‘way it is done’ but can also impact on ‘what is done’. If it is to be addressed in practice, some basic principles need to be established to support practitioners in the project appraisal and decision-making process so that appropriate weight is given to the development and selection of sustainable options on merit.

7.3 Some basic principles for achieving sustainability

A strategic approach to problem identification and project appraisal is most likely to ensure that all relevant issues have been addressed. Taking proper account of these issues and establishing sustainability as one of the strategic aims when exploring a wide range of solutions that address them is likely to result in the identification and development of sustainable options.

Taking a long-term and whole-life design approach is most likely to result in options being developed which naturally meet all types of sustainability criteria including technical, environmental, social and economic. Good decision making on the basis of whole-life costs and benefits gives a truer comparison between options than simply looking at limited, short-term scheme life costs and benefits, and is more likely to favour sustainable options.

Proper consideration of the ‘do nothing’ option is a critical step in the process to identifying sustainable options. The assumption that ‘something must be done’ is a common mistake and can lead to the introduction of a non-sustainable regime of work.

Adopting the approach of working with natural processes rather than fighting against them can improve both the resilience and sustainability of defences and river and coastal habitats. The opportunity to incorporate and use natural habitats, such as salt marsh or wetlands, as a part of the flood defence solution, may in some cases reduce the extent and cost of built defences.

7.4 Sustainability check-list

The check-list below is a summary of aspects which may need to be considered if sustainability issues are to be addressed fully. However, the list is not exhaustive and neither is it intended that it should be used as a procedure to incorporate sustainability in project appraisal. Individual projects will require different aspects of sustainability to be considered in more or less detail depending on the nature of the works and their impact.

Sustainability is – Preserving and enhancing the Environment

- Minimising the environmental and social impact of activities, e.g. ensuring water quality is not affected, unacceptable noise levels created or heritage sites disturbed;
- Ensuring all actions are environmentally neutral or positive, and contribute to biodiversity and other environmental targets, e.g. ensuring that there is no net loss (or some gain) of inter-tidal habitat on an estuary;
- Avoiding pollution and reducing greenhouse gas emissions (largely through reduced energy use) during construction and scheme life.

Sustainability is – Using resources efficiently

- Using sustainable construction materials – renewable, recycled or in the local natural resource cycle, and gained without adverse environmental effect;
- Minimising the use of construction materials (especially where these are not renewable);
- Being energy efficient in transport and operational activities;
- Minimising or recycling waste materials.

Sustainability is – Ensuring design, operation and maintenance processes are efficient and flexible to long-term needs

- Ensuring maintenance and operation is efficient in using the least materials and energy for the greatest effect;
- Designing for long-term viability and adaptability to meet the needs of future generations;
- Designing with a whole-life approach – including adaptability to natural processes, climate change impacts and other factors as listed below:
 - Repairable design – designed with maintenance and repair needs in mind;
 - Designed for failure – designed so that any failure is not catastrophic but controlled;
 - Designed to optimise the overall scheme costs and minimise any dismantling costs;
 - Sustainable use of skills – not unique or overly complex (related also to risk);
 - Designed with a dual or multipurpose functionality – e.g. sea wall with promenade or offshore reef providing fisheries habitat or the provision of a walkway along a river floodbank (efficient use of resources).