

Water Framework Directive Expert Assessment of Flood and Coastal Risk Management Impacts

Technical Summary: FD2609

Joint Defra / EA Flood and Coastal Erosion Risk Management R&D programme

Background to R&D project

The Water Framework Directive (WFD) (2000/60/EC) is a substantial piece of EC water legislation which was made law in England and Wales in 2003 (Water Environment (Water Framework Directive) (England and Wales) Regulations 2003).

The main purpose of the WFD is to establish a framework for the protection and sustainable use of the water environment. The Directive sets Environmental Objectives for all surface waters (rivers, transitional, lakes and coastal waters at the water body scale, the effective unit of management and monitoring defined under the WFD. The Objectives, set out in Article 4 of the Directive, include the prevention of deterioration of Ecological Status within the water body. Each water body is initially classified according to current Ecological Status (or the alternative of Ecological Potential for Heavily Modified or Artificial water bodies). The classification is based on biological elements and supporting physico-chemical quality and hydromorphological quality elements, thus deterioration as a result of a new development should be assessed according to these elements.

The objective of this project is to design a framework for the expert assessment of the impacts of flood and coastal risk management (FCRM) activities on ecological status applicable to all surface water body types excluding lakes, where flood risk management activities were deemed to be limited. The types of FCRM activities considered are those relating to physical modification of water bodies as documented in current asset system management operational guidance.

Results of R&D project

The project concluded that there is currently insufficient data on the hydromorphological conditions within each water body to develop a quantitative scoring mechanism to evaluate whether hydromorphological change results in deterioration between ecological status classes. The majority of surface water bodies have been modified in terms of river continuity and morphological structure and/or the hydrological, tidal and sediment regime thus it is not possible to assume morphological response for a given surface water type. In addition, due to the gap in the science base in understanding the relationship between hydromorphological change and consequent impact on biology, it is not possible to define generic pressure impact relationships. This framework provides a process for determining a proportionate level of assessment in a consistent way to assess hydromorphological functioning, the likely changes as a result of FCRM activities and potential ecological impacts.



The framework provides three tiers of assessment:

- Preliminary assessment will be done in all cases to define whether further assessment is necessary after assembling and assessing key data.
- Level 1 assessment will be undertaken in most cases as to provide the Expert Assessment of likelihood for deterioration in ecological status and clear documentation of the findings.
- Level 2 assessment will be undertaken in cases where there is potential for deterioration in status and greater certainty about the magnitude, extent or nature of impacts is needed.

R&D Outputs and their Use

The output from this project is a Technical Report detailing the Expert Assessment Framework. The report can be used by surface water managers and practitioners to assist in defining a scope of works associated to WFD assessment or in undertaking the assessment itself. Look-up tables are provided as prompts to assist in defining FCRM engineering activities, hydromorphological response and the dependency of Biological Quality Elements on physical parameters. Accepted methods for assessing hydromorphology and ecology which may be used to support Expert Assessment are set out, indicating the required level of expertise.

The Framework is designed for use in association with Project Appraisal Guidance as well as operating as a standalone tool. The reporting mechanisms for WFD assessments are referred to within Project Appraisal Guidance or can be sought from the Environment Agency River Basin Management Planning team.

Further operational guidance could be developed from the Expert Assessment Framework. The decision making process would be well suited to delivery through a web-based platform which would avoid all information being presented in full, as is necessarily the case with a written document.

This R&D Technical Summary relates to R&D Project FD2609 and the following R&D output:

R&D Technical Report FD2609/Water Framework Directive Expert Assessment of Flood Management Impacts.

Published May 2009

Publication Internal Status: Released Internally

External Status: Released to Public Domain

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The above outputs may be downloaded from the Defra/EA Joint R&D FCERM Programme website (www.defra.gov.uk/environ/fcd/research).



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