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Selecting multi-objective land management measures in the Ripon catchment

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The Ripon catchment covers an area of 140 square kilometres west of the town of Ripon (North Yorkshire, England). The rivers Laver and Skell rise in the North Pennine Moors and flow 15km towards their confluence in Ripon. The Skell then flows through Ripon before joining the River Ure. The town of Ripon is considered to be at high flood risk and has recently suffered from a number of severe flood events. As a result, the Ripon Flood Alleviation Scheme has been designed to provide flood protection to properties in Ripon and consists of a flood storage area on the Laver and hard defences within Ripon. The Ripon Multi Objective Project (Ripon MOP) aims to investigate the potential to deliver flood risk management elsewhere in the catchment, through land use and land management changes, while also pursuing resource protection, biodiversity and other opportunities. Ripon MOP Phase 1 started in September 2004, commissioned by the Department for Environment, Food and Rural Affairs (Defra). Defra handed the project over to the Environment Agency for Phase 2, the focus of this paper.

Ripon MOP Phase 2 developed a strategy to implement and deliver future multi-objective land management change in the Ripon catchment to reduce flood risk. The main output of the project was the development of an innovative new spreadsheet tool which enables different land management measures to be prioritised. The tool scores the potential benefits (reduced runoff, reduced erosion, water quality improvements, carbon storage, and enhanced biodiversity) and the ease of delivery for each measure. To score benefits, a series of specific questions were asked and scores given, based on scientific evidence were possible and also professional judgement. To establish the ease of delivery a generic set of questions were asked:

- How easy is the measure to implement?
- What is the cost of implementing the measure?
- How much maintenance is required?
- Is there any legislative or policy support for the measure?
- Is there an existing funding source for this measure?

The spreadsheet can be used as a pragmatic tool, in addition to other sources of information and expert judgement, for prioritising land management change. Whilst the spreadsheet tool provides a pragmatic basis upon which land management changes can be planned, it is desirable to be able to quantify the benefits that could be achieved in the catchment under certain 'uptake scenarios' of land management changes – this information is useful for gaining funding and popular support and for encouraging realistic expectations. Unfortunately though, estimation of specific benefits from land management change cannot be easily achieved. Modelling tools that are available were reviewed to assess their suitability for this question. No tool currently exists that can provide us with quantitative estimations of flood risk and other benefits at the catchment scale.

The study recommended that the project be taken forward to full implementation across the catchment,

aiming to apply the developing land management science in a practical way that can be accepted locally by land managers (and policy makers). As a result Ripon MOP Phase 3, ‘Delivery on the ground’, has begun, as a partnership between the Environment Agency, Natural England, The National Trust, Yorkshire Dales Rivers Trust, Nidderdale Area of Outstanding Natural Beauty, and the Farming and Wildlife Advisory Group.

The project is closely related to the aims of the Flood and Water Management Bill and the Pitt Review Recommendation 27 (Sir Michael Pitt, Review of 2007 floods) that "Defra, the Environment Agency and Natural England . . . should work together with partners. . . to achieve greater working with natural processes."