A significant water management issue

Managing soils

January 2013

What are the problems?

Inappropriate soil management can cause widespread problems. Compaction reduces percolation to ground, and so increases surface run-off. In turn, it increases the risk of soil erosion washing soil particles into rivers and lakes. Sediment in our watercourses has a significant impact on aquatic ecology, water abstractors, people and property. Discolouration of the water impedes light for aquatic plants and animals. Homes and businesses suffer damage and disruption from increased flooding or so called 'muddy floods'. There are increased calls for dredging to manage flood risk and protect navigation which in itself results in additional environmental impacts. These impacts could be made worse by the more intense rainstorms that are predicted. The loss of soil from land is also of concern for individual farms and the future of productive farming across the country. Soil loss at the rates observed is not sustainable, and the loss of nutrients, pesticides and organic matter in run-off are wasted agricultural resources.

Turbidity caused by sediment can affect drinking water abstractions, and capital infrastructure is needed to remove it. Sediment is a problem in its own right, but increased surface run-off from inappropriate soil management can also wash pollutants from the land into rivers, canals, lakes, estuaries and coastal waters (e.g. nutrients, pesticides, and faecal contamination).

About 30% of our water bodies are at risk from sediment, and a significant proportion of water bodies (13%) are actually failing as a result. Around 26% of Natura 2000 protected conservation sites are judged to have failed conservation objectives because of excessive levels of sediment. Sediment impacts are often exacerbated by physical modification of water bodies which change the flow of water and consequently the natural pattern of scouring and settlement of sediment. Managing sediment therefore requires careful consideration of wider land management, the sources of sediment (including soil management) and the physical form (habitat) of rivers, lakes and estuaries.

There is no specific Water Framework Directive water quality standard for sediment, but water bodies may fail good ecological status due to the effects of sediment on fish, insects and plants. For example, trout spawning beds in 57% of the reaches surveyed across England had levels of fine sediment at which half the eggs and fry were expected to die.

Why focus on agriculture?

Agricultural activity takes place on about 75% of our land and can cause widespread problems, such as through overland run-off, land drainage or natural water percolation. Farming systems can

affect the water environment in both positive and negative ways. Agriculture is clearly not the only pressure on the water environment and other events in this series will address linked issues

What are the sources?

A recent study by ADAS shows that across England and Wales three quarters of the sediment in watercourses comes from agricultural land.

Source	'000t/year	Percentage
Agricultural	1929	75.8%
Urban	147	5.8%
bank erosion	394	15.5%
Point	76	3.0%
Total	2546	100.0%

Annual soil erosion rates in the UK vary widely, but are estimated to be in the range of 1-20 tonnes per hectare of farmland.

Other sediment sources are roads and mineral extraction, and construction activities can be a significant though transient local sediment source.

Why is this a nationally significant water management issues?

Using only current approaches to tackle soil and sediment issues, it is possible we will not be able to make the necessary improvements to the water environment. We need to prevent deterioration and ensure resilient and sustainable farming practices in the face of changing weather patterns. We need to consider how we can work differently to deliver improvements faster and agree priority actions in the second cycle of river basin management plans

Why do we want to talk to you about this?

We'd like to get ideas, reactions and thoughts from interested parties to help us develop a better approach to managing soils to protect water, lives and livelihoods. We'd like to:

1. Raise awareness and share information generally about Significant Water Management Issues and specifically managing soils
2. Hear and discuss your thoughts about problems associated managing soils and their consequences.
3. Gather responses to, and input on the information we rely on, including any gaps.
4. Share and develop potential solutions and actions to address the problem in future