

Integrated Water Resources Management and Reform of Flood Risk Management in England

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ABSTRACT

This paper relates the global environmental imperative of Integrated Water Resources Management (IWRM) to the policies and regulatory approaches underlying flood risk management in England. Specifically, the discussion engages with selected points of debate between the House of Commons, Environment, Food and Rural Affairs Committee and the Government, arising from the Committee's 2016 Report on *Future Flood Prevention*. The Committee and the Government took markedly different positions on the 'New Governance Model' for flood risk management (proposed by the Committee) and the potential for greater use of 'natural flood management'. This debate is reviewed and contrasted with the positions that might have been reached by applying IWRM to these issues. The opinion offered is that the neglect of water integration is a matter of concern. It is proposed that there should be a duty to have regard to IWRM in water policy and decision-making, and a review of the highly fragmented state of water legislation to identify scope exists for greater integration.

KEYWORDS: Water Regulation, Integrated Water Resources Management, Flood Risk Management, Natural Flood Management, Environment Agency

INTRODUCTION: INTEGRATION OF WATER MANAGEMENT IN GLOBAL AND NATIONAL LAW

The management of floods as problems in isolation almost necessarily results in a piecemeal, localized approach. Integrated Flood Management calls for a paradigm shift from the traditional fragmented approach, and encourages the efficient use of the resources of the river basin as a whole, employing strategies to maintain or augment the productivity of floodplains, while at the same time providing protective measures against the losses due to flooding. Sustainable and effective management of water resources demands a holistic approach.¹

On the broadest possible view, the all-encompassing imperative for the environment is to make progress towards 'sustainable development'² and the essential role of environmental

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¹ World Meteorological Organization and Associated Programme on Flood Management, *Integrated Flood Management Concept Paper* WMO No.1047 (2009) 4, available at http://www.apfm.info/pdf/concept_paper_e.pdf, accessed 13 April 2017.

² See the Rio Declaration on Environment and Development, *Report of the United Nations Conference on Environment and Development*, A/CONF.151/26 (Vol. I), Rio de Janeiro, 3-14 June 1992, Annex I, available

law might fairly be seen as that of supporting this endeavour. Beyond this, it might reasonably be thought that sustainable development entailed the sustainable management of the environmental media, including water resources, but this is less straightforward. The 1992 Rio Earth Summit Conference, which sealed the position of sustainable development in international environmental consciousness, also formulated a more specific goal for the water environment: “integrated water resources management” (IWRM). Hence, Chapter 18 of Agenda 21 from the 1992 Rio Conference states,

the widespread scarcity, gradual destruction and aggravated pollution of freshwater resources in many world regions, along with the progressive encroachment of incompatible activities, demand integrated water resources planning and management.³

However, like ‘sustainable development’, IWRM was not formally defined anywhere in the proceedings from the Rio Conference and it was not until some years later that a definition gained general acceptance:

“IWRM is a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems”.⁴

So defined, the powerful intuitive appeal of IWRM lies in the suggestion that the aggregate of benefits (economic, social and environmental) will be at an optimum where the degree of coordination of different water management functions is at its greatest. Sceptical views have been expressed about the quantification of, and commensurability between, the different kinds of benefits secured by IWRM,⁵ much the same as sustainable development may have attracted critical comment. Nonetheless, the status of IWRM as a global imperative for water resources management remains indisputable.⁶

Given this global endorsement, it is remarkable that IWRM seems to have been afforded relatively little national recognition in water policy or legislation in England. Whilst environmental quality law might fairly be seen to have its genesis in the integration of

at: <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm/>. See also Andrea Ross, *Sustainable development law in the UK: from rhetoric to reality?* (Earthscan, 2012).

³ See United Nations, United Nations Conference on Environment & Development Rio de Janeiro, Brazil, 3 to 14 June 1992, Agenda 21 available at <http://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>, accessed 13 April 2017. See also the reaffirmation of the need for IWRM in the World Summit on Sustainable Development (2002) Plan of Implementation, *Report of the World Summit on Sustainable Development*, A/Conf. 199/20, 22, available at http://www.unmillenniumproject.org/documents/131302_wssd_report_reissued.pdf, accessed 13 April 2017.

⁴ Global Water Partnership – Technical Advisory Committee, *Integrated Water Resources Management: Background Paper 4*, Stockholm (2000); and see Muhammad Mizanur Rahaman and Olli Varis, ‘Integrated water resources management: evolution, prospects and future challenges’, (2005) 1(1) *Sustainability: Science, Practice, and Policy* 15.

⁵ A widely cited critique is offered by Asit K. Biswas, ‘Integrated Water Resources Management: Is it working?’ (2008) 24(1) *Water Development Management* 22.

⁶ For discussion of how IWRM might be applied in practice, with illustrations from different jurisdictions, see Global Water Partnership, *The Handbook for Integrated Water Resources Management in Transboundary Basins of Rivers, Lakes and Aquifers* (Global Water Partnership and others, 2012) available at <http://www.gwp.org/globalassets/global/toolbox/references/the-handbook-for-integrated-water-resources-management-in-transboundary-basins-of-rivers-lakes-and-aquifers-inbo-gwp-2012-english.pdf>, accessed 13 April 2017.

sectoral pollution control laws relating to the different environmental media,⁷ the different branches of water legislation seem to have trenchantly resisted integration. As a consequence, there remains marked separation between regulatory provisions concerned with different water functions, such as: water quality and quantity (particularly, floods and droughts); utility functions of water supply and wastewater treatment; aquatic ecosystem services provision; and the various uses which may be made of water for irrigation, hydro-power and recreational activities. A cursory search on “water” will serve to demonstrate how widely this is dispersed around the statute book.⁸ To a degree, the same separation is paralleled in the fragmented allocation of regulatory and administrative responsibilities for different water functions.⁹ The broad picture is that any evidence of regulatory or administrative interlinking between different kinds of water use, in accordance with IWRM approach, is quite difficult to discern.

Taking the remarkable neglect of IWRM in national law as a starting point, the following discussion investigates the potential relevance of the approach to a topical debate about a single aspect of water management: flood risk management.

PRESENT AND FUTURE FLOOD RISK MANAGEMENT

The perceived transience of flooding is a feature that often serves to set it apart from other environmental and water management concerns. The rise and fall of floodwater is matched by a political ebb and flow of policy and legislative attention, and particularly the reactive availability of flood defence funding to match elevated levels of public concern. Recently, the catastrophic floods over the Winter of 2015-16 have placed flooding at a peak of public anxiety and political concern to be seen to be doing something. Over Christmas and the New Year of 2015-16 storms Desmond, Eva and Frank broke rainfall records and caused massive damage to property and misery to communities particularly across northern parts of the UK. Storm Desmond was estimated to have cost £5 billion alone¹⁰ and these floods are seen as an indicator of worse things still to come with predictions of a doubling of peak river flows by 2070.¹¹

Since the floodwaters have receded there has been a flurry of governmental activity¹² directed at improving flood resilience and to see what lessons can be learnt from the events

⁷ See the Environmental Protection Act 1990 as a key legal measure marking this transition.

⁸ See the number of hits for a search for “water” on the legislation.gov.uk website at <http://www.legislation.gov.uk/>, accessed 13 April 2017.

⁹ For example, contrast the statutory provision for water utility regulation under the Water Industry Act 1991, as amended, with the provision for environmental water regulation under the Environment Act 1995.

¹⁰ See n13 below EFRAC Report 5.

¹¹ See Department for Environment, Food and Rural Affairs *Flood Risk Assessment Webpages*, Flood Risk Assessment: Climate Change Allowances (2016 updated) at <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> and n13 below EFRAC Report, *Written evidence from the Committee on Climate Change* (FFP 110) <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environment-food-and-rural-affairs-committee/future-flood-prevention/written/30543.pdf>, accessed 13 April 2017.

¹² Alongside the documents noted in n13 below, see House of Commons Environmental Audit Committee, *Flooding: Cooperation Across Government*, Second Report of Session 2016-17 (HC183 26 May 2016); House of Commons Environmental Audit Committee, *Government Response to the Committee’s Second Report of Session 2016-17* (HC645, 7 September 2016); HM Government, *National Flood Resilience Review*, September 2016, available at

and whether there are administrative or regulatory changes that might be beneficial in managing the risk of future events in the face of a grave and growing flooding threat.

Whilst the politically charged debate about future flood risk management has surfaced in diverse fora it is convenient in this brief comment to focus upon some specific aspects of the debate which have been aired by the House of Commons, Environmental, Food and Rural Affairs Committee (EFRAC) in its 2016 Report on *Future Flood Prevention*, and the Government's response to this published early in 2017.¹⁴ In part, this selective coverage of points of dispute between the Committee and the Government serves to highlight some significant disparities of approach. In part also, the discussion seeks to pick out issues from the debate where IWRM might have an important bearing upon the deliberations, but seems to have been overlooked by both EFRAC and the Government.

EFRAC's 'NEW GOVERNANCE MODEL'

The EFRAC Report on *Future Flood Prevention* ranges over some longstanding flooding-related issues, but is perhaps most notable for the 'New Governance Model for Managing Flood Risk' that is proposed. Arguing that present flood risk management structures are 'fragmented, inefficient and ineffective',¹⁵ it is recommended that there should be a new *National Floods Commissioner for England*, who would be responsible for securing strategic, long-term flood risk reduction outcomes agreed with Government.¹⁶ Delivery of this would be via new *Regional Flood and Coastal Boards* that would take on current lead local flood authority and regional flood and coastal committee roles.¹⁷ In addition, a new *English Rivers and Coastal Authority* would take over present Environment Agency (EA) roles to focus on efficient delivery of national flood risk management plans.¹⁸ In the view of EFRAC, "This model would streamline roles and pool capacity and expertise to allow bodies to deliver their unique roles, with funding firmly linked to outcomes".¹⁹

The new governance structures proposed by EFRAC are seen as a response to perceived deficiencies in current risk management approaches, both in respect of strategic and governance problems. At a strategic level the lack of a robust national strategy to tackle increasing flood threats and the absence of a proactive response to increasing risks were identified.²⁰ In respect of governance, the lack of clarity about roles and responsibilities was seen as a problem, with the EA exercising a dual role in the development of strategies and exercising practical management over particular schemes.²¹ Alongside this, there was seen to be a general lack of transparency and accountability in decision making, which remains

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551137/national-flood-resilience-review.pdf, accessed 13 April 2017.

¹⁴ House of Commons, Environment, Food and Rural Affairs Committee, *Future Flood Prevention*, Second Report of Session 2016-17 (HC115, 2 November 2016) (referred to here as the 'EFRAC Report') and House of Commons, Environment, Food and Rural Affairs Committee, *Government Response to the Committee's Second Report of Session 2016-17*, Fourth Report of Session 2016-17 (HC 926, 24 January 2017) (referred to here as the 'Government Response').

¹⁵ n13 above EFRAC Report 44.

¹⁶ Ibid 32.

¹⁷ Ibid 33.

¹⁸ Ibid.

¹⁹ Ibid 3.

²⁰ Ibid 26.

²¹ Ibid.

opaque to the general public, and an unsatisfactory proliferation of flood risk management bodies.

The details of EFRAC's New Governance Model are spelt out at only the most general level. In essence the proposal involves the present strategic responsibilities of the EA for flood risk management passing to the new Commissioner. The major operational responsibilities for undertaking and maintaining flood defence works would be transferred to the English Rivers and Coastal Authority. Local authority land drainage and local river management functions would pass from district councils to water and sewerage companies. In effect, this involves a comprehensive reallocation of flood risk management responsibilities and a transfer of a major water management role from the EA, which would, apparently, remain responsible for a range of water functions apart from flooding.

THE GOVERNMENT RESPONSE TO THE NEW GOVERNANCE MODEL

As a general matter, the EFRAC Report was met by what was seen to be a rather dismissive rejoinder from the Government. The Committee found the Government Response "disappointing" and a "cursory response" that failed to address its calls for improvement.²² More particularly with regard to the new governance proposal, in rather blunt terms the Government declined to accept that there was any need for substantial change to the existing national and local governance provisions for flood risk management.²³

In the view of the Government, the Flood and Water Management Act 2010 satisfactorily clarifies the roles and responsibilities for the management of local flood risk. The Government contends that, "the current Environment Agency structure allows us to integrate flood and environmental/economic benefits in ways that a standalone flood agency could not." Recognising that many different public and private bodies are involved in flood and coastal erosion risk management, in the opinion of the Government the EA's *National Flood and Coastal Erosion Risk Management Strategy* 2011²⁴ clearly describes and delineates the different roles, responsibilities and accountabilities. It explains how organisations and communities can work together to tackle flood and coastal risk in a co-ordinated and effective way. Managing flood risk in an integrated and partnership approach is seen as the most effective way of managing a difficult, but essential task, while facilitating local involvement and ownership. Therefore, the Government is staunchly of the view that the EA is best placed to continue to deliver national and local flood risk management in partnership with the other flood risk management bodies. From the Government's perspective this might be seen as vote of confidence in the EA, equally it might be seen as the approach that is most consistent with IWRM.

²² See, Environment, Food and Rural Affairs Sub-Committee, *MPs Criticise Government's sub-standard response on flood prevention report*, (Press Statement of 24 January 2017) available at <https://www.parliament.uk/business/committees/committees-a-z/commons-select/environment-food-and-rural-affairs-committee/news-parliament-2015/future-flood-prevention-government-response-published-16-17/>, accessed 13 April 2017.

²³ Ibid.

²⁴ Environment Agency, *National Flood and Coastal Erosion Risk Management Strategy* (2011) available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228898/9780108510366.pdf, accessed 13 April 2017.

IWRM AND FLOOD RISK GOVERNANCE

The staunch opposition of the Government to any root-and-branch reform of flood risk management responsibilities tends to affirm, without explaining, why an ‘integrated and partnership’ approach should be preferable to the establishment of a specialised and self-contained flood management regulatory body. The answer that is provided by adopting an IWRM approach is that the separation of flooding from other aspects of water management is not conducive to the maximisation of overall social, economic and environmental benefits. Co-ordinated management of water resources to secure those benefits is best achieved by the greatest possible degree of legal, regulatory and administrative integration. Separating the management of flood risk from other aspects of water regulation is unhelpful because imposing administrative divisions, with separate bodies taking responsibility for different water functions, is the direct opposite of what is needed for an integrated approach.

Traditional hard engineered flood defence strategies, such as constructing river embankments and dredging drainage channels, are undertaken with the objective of directing floodwater off land as swiftly as possible.²⁵ This may give rise to ecological damage to the hydromorphology of watercourses. Similarly, accelerated water flows may be detrimental to water quality through introducing contaminated run-off from land and causing deterioration of quality through sediment disturbance. The rapid removal of water from land may also prevent infiltration into the soil and reduce groundwater levels, giving rise to problems of water shortage, for supply purposes, in times of drought. In short, there may be a range of ecological and other adversities which may arise from engineered flood defences. These need to be addressed by a body that is properly empowered to take cognisance of both the hydrological and the ecological aspects of different flood risk management options. In practice, the EA may not always have been as receptive to the need for interlinking of different water management concerns as it might have been. Nonetheless, its responsibilities spread across a range of water management functions and this gives it the capacity to take account of the relationships between those functions, as where the ecological impacts of different flood risk management options are under consideration.

From an IWRM perspective, having a single body to exercise the widest possible range of water management functions is therefore advantageous. However, ensuring that these functions are *actually* exercised in an integrated way is a continuing legal, administrative and practical challenge.

THE EFRAC PROPOSALS ON HOLISTIC CATCHMENT MANAGEMENT

A second key theme selected from the EFRAC Report concerns the role of holistic catchment management as a means of flood prevention or mitigation and particularly the use of various mechanisms to attenuate floodwater flows through ‘natural flood management’.²⁶

²⁵ Chartered Institute of Water and Environmental Management, *Floods and Dredging – a reality check* (CIWEM 2014) available at <http://www.ciwem.org/wp-content/uploads/2016/02/Floods-and-Dredging-a-reality-check.pdf>, accessed 13 April 2017.

²⁶ See Houses of Parliament, Parliamentary Office of Science and Technology, Postnote, *Natural Flood Management*, Number 396 December 2011, available at: <http://researchbriefings.parliament.uk/ResearchBriefing/Summary/POST-PN-396>, accessed 13 April 2017.

Flooding, of the kind widely experienced in the Winter of 2015-16, is clearly a consequence of extreme amounts of rain falling within a short duration. However, the flooding impact of rainfall depends greatly upon where the rain falls, the capacity of the ground to absorb water, and the role of conduits for transmission of excess water through natural or constructed drainage channels and watercourses. There is an increasing concern that human activities have altered and accelerated floodwater flows in a way that has exacerbated flooding. Artificial land drainage, deforestation and urban development, particularly in flood plains, have increased run off and hastened the transference of floodwaters to downstream locations, thereby increasing their susceptibility to flooding.²⁷

Holistic catchment management seeks to naturalise flows to counteract these changes. Accordingly, supporters of natural flood management would favour land use practices which enable a retention of floodwater or a slowing down the rate of run off by the use of bunds, leaky dams, ponds, swales and other ‘sustainable drainage’ approaches that allow water to soak into the ground or to progress downstream less rapidly. Thus, the call for greater use of ‘green infrastructure’ of this kind contrasts markedly with traditional flood defence engineering approaches that have sought to channel floodwater off land as rapidly as possible.²⁸

Encouraging results have been produced from initial natural flood managements pilot projects, such as the Pickering ‘Slowing the Flow’ project,²⁹ which involved using low-level water bunds, storage of water on farmland, planting more trees, restoring woody debris dams and re-creating wetlands. Also the Pennines/Peak District ‘Moors for the Future’ project³⁰ and other projects in England adopting similar approaches noted by the Committee have been seen to produce promising initial results. The EA has also offered useful support for the adoption of a holistic approach to flood risk management of a similar kind in various publications.³¹ Nevertheless, despite the apparent theoretical advantages of natural flood management and promising initial studies, uncertainties remain as to its effectiveness because it has not yet been tested at the scale of larger river catchments.

Against the clash of cultures on flood risk management, the Committee’s report came out strongly in favour of holistic catchment management, concluding that managing water flows throughout river catchments has helped to reduce flood risk, in many cases more cost-

²⁷ n13 EFRAC Report 6.

²⁸ n13 EFRAC Report 7-8.

²⁹ See Written evidence from ‘Slowing the Flow’ Project at Pickering, North Yorkshire, (FFP 153) available at <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environment-food-and-rural-affairs-committee/future-flood-prevention/written/35161.pdf>, accessed 13 April 2017 and see Forestry Research, Slowing the Flow at Pickering, webpages at <http://www.forestry.gov.uk/fr/slowingtheflow>, accessed 13 April 2017.

³⁰ See n13 EFRAC Report, *Written evidence from Rewilding Britain* (FFP 80) available at <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environment-food-and-rural-affairs-committee/future-flood-prevention/written/30490.pdf>, accessed 13 April 2017 and Moors for the Future webpages at <http://www.peakdistrict.gov.uk/looking-after/projects-and-partnerships/mff>, accessed 13 April 2017.

³¹ See Environment Agency, *Working with Natural Processes* webpages, available at <https://www.gov.uk/government/publications/working-with-natural-processes-to-reduce-flood-risk-a-research-and-development-framework>, accessed 13 April 2017 and Environment Agency, *Reducing Flood Risk from Source to Sea: First steps toward an integrated catchment management plan for Cumbria* (2016) available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/533457/cumbria-flood-plan-overview.pdf, accessed 13 April 2017.

effectively than simply building flood defences in urban areas. Although the results of trials were encouraging for smaller rivers catchments, it was conceded that more evidence is needed on how effective these measures might be on larger scale catchments. In the Committee's view the EA, in particular, should work more effectively with other flood risk management bodies to fill the evidence gap.³²

Although natural flood risk management involves slowing down the progress of water to downstream parts of a catchment, it does this by retaining water in upstream parts of the catchment for a longer period. The use of undeveloped upstream land for water storage makes economic sense if this done to prevent the flooding damage to developed land downstream, but the cost of this to upstream landholders needs to be recognised nonetheless. A key regulatory difficulty inherent in natural flood management is that of devising a mechanism which allows for appropriate compensation to be paid to upstream landowners of land that has been temporarily submerged to prevent or reduce downstream flooding damage.

The Committee noted that in other countries, particularly the Netherlands, incentive schemes operated whereby farmers allowed their land to be flooded, to prevent downstream developed land from being flooded, in return for compensatory payments or benefits in kind.³³ Despite the advantages of this approach for natural flood defence, it was thought that there may be legal difficulties in providing for similar measures in England. Specifically, it was suggested that there were problems in using incentive schemes under the EU Common Agricultural Policy in respect of flood management measures. However, with the prospect of new systems of support for farmers after leaving the EU, the Committee felt that work should be undertaken to see how suitable incentives could be provided for land management practices contributing to this kind of flood risk management.

THE GOVERNMENT RESPONSE ON NATURAL FLOOD MANAGEMENT

The Government's response on natural flood management was supportive of the need for greater use of catchment-wide flood management measures *alongside* engineered defences.³⁴ It drew attention to the significant investment that had been made in natural measures and ongoing projects seeking to demonstrate the flood risk reduction and broader environmental benefits arising from *integrated* catchment approaches. The Government's overall view was that "usually it is a combination of different hard and soft [engineered and natural] measures throughout the catchment which is most effective",³⁵ but the critical question, of how this balance is to be drawn, is not engaged with.

On the question of using agricultural land to store excess water, the Government points out that this is already an important part of the approach that is adopted, with the EA operating around 1000 flood storage areas involving 'flood easements' entered into with land managers to ensure fair payment where appropriate. The Morpeth flood alleviation scheme³⁶ is given as an example of such a scheme where upstream storage on third party land is used in

³² n13 EFRAC Report 12.

³³ n13 EFRAC Report 12.

³⁴ n13 Government Response 7

³⁵ *Ibid.*

³⁶ See Environment Agency, Morpeth Scheme: Reducing the risk of flooding webpages, available at <https://www.gov.uk/government/publications/morpeth-scheme-reducing-the-risk-of-flooding/morpeth-scheme-reducing-the-risk-of-flooding#about-the-flood-scheme>, accessed 13 April 2017.

combination with new flood defences in the town, with farmers and other landowners being compensated for allowing flood water to spill over onto their land. Moreover, the Government does not seem to share the concern of the Committee about the unavailability of agricultural support measures for flood management purposes. It identifies the Countryside Stewardship Scheme as allowing improvement of flood resilience measures including options relating to natural flood management and notes that further measures for temporary storage of flood water is under consideration. Nonetheless, the point is conceded that it is important to link future agricultural support to sustainable land management practices and that, post-Brexit, there may be opportunities to make better connections between agriculture and the environment, including addressing the flooding attenuation dimension.

IWRM AND NATURAL FLOOD MANAGEMENT

IWRM, it may be recalled,³⁷ is ‘a process which promotes the co-ordinated development and management of land, water and related resources’ to aggregate and maximise benefits of economic, social and environmental kinds. Options for water management need to be evaluated against a range of factors to arrive at optimal and equitable solutions which, amongst other things, avoid ‘compromising the sustainability of vital ecosystems’. In the light of this, both the Committee’s proposals and the Government’s response seem to be rather incompletely argued.

Possibly natural drainage may be more hydrologically effective than engineered options as a means of protecting developed land from flooding. Supposing that an appropriate compensation can be devised to support disadvantaged upstream landowners, it may, with sufficient trials of natural approaches to larger catchments, be possible to show that it is economically advantageous to allow upstream inundation to prevent downstream flooding damage. Beyond this, however, there are a range of social, environmental and ecological issues needing to be factored into the decision making process. On the environmental quality front the contrasting water quality and land erosion issues arising from hard and soft engineering approaches need to be relatively assessed. On the ecological front, the assessment of flooding impacts upon aquatic ecosystems and the relative ecological benefits that might arise from natural and engineered flood management are key aspects needing to be considered under the IWRM approach.

In summary, the Committee and the Government may have reached a defensible conclusion in supporting greater use of natural flood management progressively applied on a catchment-wide basis, subject to further evidence being provided. However, the nagging concern is whether this inference is as fully reasoned as it might be. Natural flood management seems to be admirably consistent with the need to implement IWRM, but this does not feature anywhere within the debate that has been recounted.

CONCLUDING OBSERVATIONS

This discussion does not seek to diminish or detract from the momentous challenges involved in protecting people and property from the increasing environmental threat posed by flooding. The human misery and the economic cost involved make it self-evident that robust

³⁷ See p**** above.

measures must be put in place to manage flood risk in an cost-effective, equitable, and enduring way. Moreover, these measures should address the longer-term dimensions of the problem, not simply the immediate response in the face of catastrophic and tragic events of the kind that have recently been experienced.

Beyond that, the critique offered here is that the recent public discussion of how to address flooding suffers from being detached from a wider water management context. Specifically, flood risk management should be seen as one aspect of IWRM, which requires decision makers to take a full view of the spectrum of water management issues. It is exactly this perspective that is lacking from the recent debate. This is not to suggest that flooding is unique in this respect. Pollution and water quality, water supply and wastewater treatment, ecological quality and water flow, and other topics in water management, could almost equally well have been chosen as case studies to illustrate the same problem of isolating particular issues from the wider context.

What should be the proper response to this concern? Firstly, in the short term, consideration might be given to establishing a duty upon Ministers and public bodies with duties in respect of water management and regulation. This would require those subject to the duty to adopt an integrated approach to water resources management. In much the same way as a statutory duty is placed upon public bodies to have regard to sustainable development,³⁸ an analogous duty to have regard to the need for integration should be imposed where any aspect of water management is at issue.

Secondly, the parallel with the development of integration in environmental quality law should be reflected upon. The history of environmental quality law in England over the last generation has involved sectoral law, relating to separate legislation relating to water, air and land, being superseded by legislation concerning the environment taken as a single entity. The parallel path for water legislation would be to undertake a review of the presently highly fragmented water statute book and pursue mechanisms for securing the maximum degree of integration between (presently disconnected) water concerns.

On one view, the ideal of IWRM is that there should be a fully unified statutory regime governing all aspect of water management and that this should be entrusted to a single regulatory body. This body would have comprehensive powers to regulate competing claims to water use according to the need to secure the greatest overall economic, social and environmental benefits. Consolidation of legislation and unification of regulatory responsibility may lie some way in the future so far as water legislation and management are concerned. Nonetheless, it is hoped that the content of this discussion may provide food for thought as to why that direction of progress might be desirable.

³⁸ See s.4 Environment Act 1995 and Planning and s.39 Planning and Compulsory Purchase Act 2004 for examples of statutory duties in respect of sustainable development.