

# Too Much or Too Little—Water Management and the Land Use Planning System

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## Introduction

We live on an island surrounded by water, on a planet of which 70 per cent of the surface is covered by water. Water is fundamental to life, yet paradoxically is routinely undervalued. As Adam Smith put it: “Nothing is more useful than water; but it will purchase scarce anything; scarce anything can be had in exchange for it.”<sup>2</sup> Water is multifunctional—clean water is essential to public health, hygiene, agriculture, industry, recreation and leisure. It also supports the ecological functioning of important natural habitats and systems. At a cultural or spiritual level, water is deeply woven into the fabric of national life in terms of literature, art, and the attachment felt by people to the seas, the major rivers, the inland lakes, and the marshes, fens and estuaries of this country. Rivers have historically dictated patterns of settlement, or have formed important national, political, social or cultural boundaries: Sir John Betjeman could famously write in 1948 that all Town Clerks came from north of the Trent.<sup>3</sup>

In the years since the Industrial Revolution, the distribution of fresh water on a global scale has changed as a result of direct human efforts at water management, and also in consequence of alterations in urban and rural land use which have influenced the flow and storage of water.<sup>4</sup> Since before the Industrial Revolution, people have been using the water environment of the U.K. to dispose of effluents and waste, with serious and in some cases persistent adverse consequences for the quality of rivers, estuaries and aquifers. These problems were worsened immeasurably by urbanisation and industrialisation, as witness the numerous official and contemporary accounts written in the nineteenth century of the appalling condition of rivers such as the Thames, Irwell, Aire and Tame. However, subsequent major sewerage projects and more effective pollution control legislation have brought about much-needed improvements to the quality of such inland waters.

Currently there is a growing unease, or angst, that nature may be in the process of exacting retribution for past abuses. Changing and more extreme weather patterns, sea level rise, more frequent floods and droughts, can be and are portrayed as the manifestations of such a process. The words of the Prime Minister in his March 2001 speech, to the effect of “If we do bad things to nature, it will do bad things to us” simply echo the earlier sentiments of Frederick Engels:

“Let us not . . . flatter ourselves overmuch on account of our human conquest over nature. For each such conquest takes its revenge on us.”<sup>5</sup>

Whilst the assertion of over-simplistic causal relationships between the process of global warming and specific distressing natural events does no service to the environmental cause,<sup>6</sup> there is a need to

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<sup>2</sup> *The Wealth of Nations*. Cited in A. Markham, *A Brief History of Pollution* (London, 1994), p. 52.

<sup>3</sup> Sir John Betjeman, *The Town Clerk's Views* (1948): “He was like all Town Clerks from north of Trent; A man with bye-laws busy in his head; Whose mayor and council followed where he led.”

<sup>4</sup> M. I. L'Vovich and G. F. White, *Use and Transformation of Terrestrial Water Systems in The Earth as Transformed by Human Action* (ed. B. L. Turner II, Cambridge, 1990), p. 235.

<sup>5</sup> Cited in A. Markham, *op. cit.*, p. xi.

<sup>6</sup> See *Ministers 'too simplistic' on climate change*, *The Times*, April 16, 2001.

recognise that continued development has brought about effects on the natural environment which are now being perceived as having seriously detrimental consequences not only on natural capital assets, but also on the built environment.

It may be therefore that there has to be a search for a fresh balance between land use and the utilisation of water resources on the one hand, and more sustainable ways of working with natural systems on the other. This will present some difficult legal and policy challenges, which are already becoming apparent in areas such as coast protection, flood defences and water abstraction. The planning system represents a potentially important tool in striking that balance, though not necessarily the most important one. This paper therefore considers some of these challenges, and ways in which the planning system may need to adapt if they are to be faced. But first it is important to understand how the planning system fits within the overall complex framework of water law.

### **Water legislation: the players**

The legislation governing water resources and drainage comprises the Water Resources Act 1991, the Water Industry Act 1991, the Land Drainage Acts 1976 and 1991 and the Coast Protection Act 1949. The bodies involved are the Secretary of State for the Environment, Food and Rural Affairs,<sup>7</sup> the Environment Agency, the Director General of Water Services, the statutory water undertakers, Regional Flood Defence Committees, Internal Drainage Boards and local authorities. Their respective functions, powers and funding arrangements present a legally complex picture. Historically, local authorities have played a major role in relation to water supply, sewage collection and disposal, pollution control and land drainage, in their capacities as town improvement commissioners, boards of health and commissioners of sewers. Largely, however, such functions were lost in 1972–1973 when both local government and the water industry were reorganised. The fragmentary nature of these administrative arrangements, especially in terms of funding, is a complicating factor in striking appropriate balances and finding appropriate solutions in land use and water management terms.

### **Resource management**

In England and Wales, the Environment Agency has the lead role in relation to water resource management and conservation, subject to the power of the Secretary of State to give directions. Through its licensing of abstraction and impoundment it controls the use of water, and is under a general duty to take all such action as it considers appropriate to conserve, redistribute or otherwise augment those resources and to secure their proper use.<sup>8</sup> It must collate and publish information about the actual and prospective resources available.<sup>9</sup> Through its pollution control functions of licensing discharges of sewage effluent and other polluting matter to controlled waters, it is the primary guardian of water quality. As well as conserving resources, the Agency is under a duty as respects the conservation of aquatic flora and fauna, though only to the extent it considers this desirable.<sup>10</sup> There is an inevitable tension between these duties of conservation and the provision of water to meet public supply needs: in statutory terms the primary objective is to ensure that these needs are met, though this does not preclude the Agency considering issues of alternatives to over-exploitation and the reduction of waste in water use.<sup>11</sup> By section 6(2) of the Environment Act 1995, the Agency is under a duty to take all such action as it considers necessary or expedient to conserve, redistribute or augment water resources or to

<sup>7</sup> Formerly DETR and MAFF.

<sup>8</sup> Environment Act 1995, s.6(2).

<sup>9</sup> Water Resources Act 1991, s.188(a).

<sup>10</sup> Environment Act 1995, s.6(1).

<sup>11</sup> See, J. H. Bates, *Water and Drainage Law* (London, 1990), para. 4.78.

secure their proper use—however, this is specifically stated not to relieve any water undertaker of the obligation to develop water resources in order to comply with its duty under section 37 of the Water Industry Act 1991 to develop and maintain an efficient and economical system of water supply in its area. Further, in exercising any of its statutory powers, the Agency is under a duty by section 15(1) of the Water Resources Act 1991, to have particular regard to the duties imposed on water undertakers by the Water Industry Act 1991, which appear likely to be affected by the Agency's exercise of its powers. This may be an important issue so far as the Agency's involvement in the development of the built environment is concerned.

## Infrastructure

Water supply and sewerage services are the responsibility of the appointed undertakers. The undertaker must develop and maintain an efficient and economical system of water supply within its area,<sup>12</sup> so as to meet the standards set by regulations and by its Instrument of Appointment, dealing with matters such as availability, pressure and interruptions to supply. New water mains may be requisitioned by intending developers, subject to financial conditions as to reimbursement of any relevant deficit incurred by the undertaker.<sup>13</sup> Thus the requirement to provide supplies is essentially demand led. The same is true of the provision of sewerage. The sewerage undertaker for an area has a duty to provide, improve and extend the public sewer system either inside or outside its area, and to cleanse and maintain it, so that the area is and continues to be effectively drained.<sup>14</sup> These provisions have important consequences in terms of the linkage between development and demands on water resources, in that the grant of planning permission will almost inevitably lead to calls on resources and on existing infrastructure. Sewers constructed by other persons may be adopted by the undertaker pursuant to section 102 of the Water Industry Act. Further, developers may requisition the provision of sewers under section 98 of that Act, provided financial criteria are met.<sup>15</sup> In addition, there is a duty to provide a sewer for domestic premises completed before 1995, the drainage of which is giving or is likely to give rise to adverse effects on amenity or on the environment.<sup>16</sup> The functions of sewerage undertakers have in large part been driven in recent years by E.C. law in the form of the Urban Waste Water Treatment Directive.<sup>17</sup> This measure seeks to reduce the pollution of freshwater, estuarial and coastal waters by domestic sewage, industrial waste water and rainwater run-off—collectively termed “urban waste water”.<sup>18</sup> The requirements of the Directive in terms of capital investment have been most marked in coastal areas, entailing on one estimate expenditure of some £1.5 billion at 1990 prices, in addition to the £1.4 billion capital programme announced in 1987 for the installation of long sea outfalls to comply with Directive 76/160/EEC on the quality of bathing water.<sup>19</sup> Other major challenges presented by the Urban Waste Water Treatment Directive are the protection of designated “sensitive areas” from eutrophication, an issue which dominated the discussion relating to the 1998–99 price review for the English and Welsh water companies. Overall estimates of the cost of compliance have varied between the initial Government estimate of £2 billion and the £10 billion (later reduced to £6 billion) put forward by OfWat in 1994.

<sup>12</sup> Water Industry Act 1991, s.37(1).

<sup>13</sup> Water Industry Act 1991, ss.41 and 42.

<sup>14</sup> Water Industry Act 1991, s.94.

<sup>15</sup> Water Industry Act 1991, s.99.

<sup>16</sup> Water Industry Act 1991, s.101A, inserted by EA 1995, Sched. 22, para. 103. See *R. v. Environment Agency, ex p. Anglian Water Services Ltd* (October 20, 2000, Tomlinson J.) on the policy of the Agency of rejecting the use of cesspools in this context.

<sup>17</sup> Directive 91/271/EEC O.J. L135, May 30, 1991.

<sup>18</sup> See N. Haigh, *Manual of Environmental Policy: the E.U. and Britain*, p. 4.6-1.

<sup>19</sup> *ibid.* p. 4.6-7.

### Land drainage and flood defence

A further limb of water legislation concerns land drainage and flood defences, its principal purposes being:<sup>20</sup>

“... to prevent the inundation of land by flood waters or the sea, to ensure flood water is efficiently removed, to protect the coast from erosion, to reclaim waterlogged land and to irrigate agricultural land.”

Historically the emphasis has been on the drainage of land, for agricultural or construction purposes, as indicated by the legislation entitled the Land Drainage Acts (the most recent being those of 1976 and 1991). But increasingly the tone has changed towards the function of flood defence. This area of law has generally been characterised by confusion in terms of responsibilities and funding arrangements. Statutes dating back to 1427 have attempted to impose order in the area by institutions such as Commissioners of Sewers and drainage boards, but without total success. Essentially, responsibility currently falls between the Environment Agency, exercising its flood defence functions and associated revenue raising powers under the Water Resources Act 1991, and local internal drainage boards and local authorities operating under the Land Drainage Act 1991. The split is based on the Agency being responsible for “main rivers”.<sup>21</sup> In addition, Ministers have overall supervisory responsibilities, exercised through directions, appointments to Regional Flood Defence Committees, determining appeals, confirming byelaws, making grants and sanctioning borrowing. The Government also gives general guidance to the Agency on the role it is expected to play in contributing to sustainable development.<sup>22</sup> In relation to flood defence, the guidance lays stress on integrating environmental and economic factors, avoiding disruption of natural river or coastal processes, operating within a strategic framework, and avoiding committing future generations to inappropriate options for defence. These factors are of course subject to the paramount need to safeguard life.

The Agency has a general supervisory function over flood defence.<sup>23</sup> It is required however to arrange for its flood defence functions to be carried out by Regional Flood Defence Committees, the successors to regional land drainage committees.<sup>24</sup> RFDCs may in turn create local committees, responsible for local flood defence districts.<sup>25</sup> Internal Drainage Boards (formerly known as Catchment Boards) are established under the Land Drainage Act 1991 or under earlier legislation. Their existence depends on whether an internal drainage district has been identified, which will derive benefit or avoid danger as a result of drainage operations.<sup>26</sup> Members are elected on a constituency basis by those eligible to vote, based on the assessable value of their property. The Agency and IDBs have general powers to maintain and improve existing watercourses and drainage works, to construct new watercourses and works, and to do anything else necessary for the drainage of land.<sup>27</sup> In carrying out such works drainage authorities are under statutory duties with respect to the conservation and enhancement of natural beauty and wildlife.<sup>28</sup> Such works may also be subject to the requirement for environmental impact assessment.<sup>29</sup>

<sup>20</sup> J. H. Bates, *op. cit.* para. 12.01.

<sup>21</sup> Water Resource Act 1991, ss.107, 113.

<sup>22</sup> Guidance under s.4 of the Environment Act 1995, November 1996.

<sup>23</sup> Environment Act 1995, s.6(4).

<sup>24</sup> See Water Resource Act 1991, s.106(2).

<sup>25</sup> Environment Act 1995, s.17.

<sup>26</sup> Land Drainage Act 1991, s.1(1)(a). As to the so-called “Medway criteria” formulated in 1933 in relation to the Medway Catchment Board, see J. H. Bates, *op. cit.* para. 12.22. These are essentially based on the height of land above flood or tidal levels.

<sup>27</sup> Water Resource Act 1991, s.165; Land Drainage Act 1991, s.14.

<sup>28</sup> Land Drainage Act 1991, ss.61A–61E (inserted by Land Drainage Act 1994); Environment Act 1995, s.7.

<sup>29</sup> Environmental Impact Assessment (Land Drainage Improvement Works) Regulations 1999 No. 1783. See also Case C-72/95 *Kraaijeveld v. Zuid-Holland* [1997] Env.L.R. 265.

Major works, such as tidal barrages, will be carried out under a local Act,<sup>30</sup> or under a Transport and Works Act order.

It is perhaps in relation to the financing of flood defence works that the legal system is experienced at its most Byzantine. Put at its simplest, the Environment Agency's revenue raising powers are found in Part VI, Chapter II of the Water Resources Act 1991. It may raise the required funds through levies on local authorities, contributions from IDBs, charges on the occupiers of land in local flood defence districts where there is no IDB, by grants and by borrowing for capital purposes. The financial powers of IDBs are set out in Part IV of the Land Drainage Act 1991. They may seek contributions from the Agency in certain cases, or they may impose drainage rates on agricultural land or buildings, or they may raise special levies on local authorities in respect of non-agricultural hereditaments. They may receive grants from the Minister, and they may borrow within certain constraints.

### **Coast protection**

Coast protection is the subject of special legislation, the Coast Protection Act 1949. The object of this Act is the protection of low lying land on the coast from encroachment by the sea and the safeguarding of cliffs and dunes from erosion. Each district council or Welsh county council whose area adjoins the sea is the coast protection authority for the purposes of the 1949 Act.<sup>31</sup> As such they are empowered to carry out such coast protection work as they consider necessary or expedient to protect any land in their area.<sup>32</sup> In order to do so, they may acquire land, by agreement or by compulsory purchase.<sup>33</sup> Since the flood defence powers of RFDCs extend to works in or adjacent to the sea,<sup>34</sup> there is an overlap between the two pieces of legislation. Current practice is to carry out sea defence works under the Water Resources Act 1991 and works to prevent coastal erosion under the 1949 Act.<sup>35</sup>

### **European Community law**

Reference has already been made to the very significant impact of the Urban Waste Water Treatment Directive on programmes for the provision of sewerage infrastructure in the U.K. Whilst to date that has been the most challenging of E.C. measures in terms of cost and engineering, other Directives have undoubtedly also had an impact on policy relating to water resources and associated activities and land uses. These include the Bathing Waters Directive, the Nitrates Directive, the Groundwater Directive, and in the fields of nature conservation, the Wild Birds and Habitats Directives. All of these have to some degree affected land use. But the next major challenge will undoubtedly be the implementation of the recently adopted Water Framework Directive.<sup>36</sup>

The Directive has been under consideration for some years. Community Ministerial seminars in 1988 (Frankfurt) and 1991 (The Hague) had stressed the need for Community measures to deal with the ecological quality of water and to avoid further deterioration of freshwater quality. As recitals (4) and (9) to the Directive point out, "waters in the Community are under increasing pressure from the continuous growth in demand for sufficient quantities of good quality water for all purposes" and "it is necessary to develop an integrated Community policy on water." The complex policy strands

<sup>30</sup> For example, the Thames Barrier and Flood Prevention Act 1972.

<sup>31</sup> Coast Protection Act 1949, s.1.

<sup>32</sup> Coast Protection Act 1949, s.4.

<sup>33</sup> Coast Protection Act 1949, ss.4, 14.

<sup>34</sup> Water Resource Act 1991, s.165.

<sup>35</sup> J. H. Bates, *op. cit.* para. 12.158.

<sup>36</sup> Directive 2000/60/E.C. establishing a framework for Community action in the field of water policy, O.J. L327, December 22, 2000.

underlying the Directive are, incidentally, shown by the number of recitals, no less than 53. Among the five stated purposes of the Directive at Article 1, of particular relevance to land use are the objectives of promoting sustainable water use, and the mitigation of the effects of floods and droughts. The coordination of administrative arrangements is a key issue. Article 3 requires Member States to identify the individual river basins lying within their national territory and assign them to individual river basin districts—competent authorities must be identified to ensure application of the Directive within each such district.<sup>37</sup> River basin management plans will need to be prepared for each basin,<sup>38</sup> the objective being to achieve specified levels of "good status" for the various types of water identified by the Directive within 15 years of the Directive entering into force.<sup>39</sup> By Article 5, for each river basin district there must be prepared an analysis of its characteristics, a review of the impact of human activity on the status of surface water and groundwater, and an economic analysis of water use. In particular, these will have to include the identification of anthropogenic pressures from point source and diffuse pollution and significant water abstraction, and an assessment of the susceptibility of water to these pressures.<sup>40</sup>

Based on the economic analysis, Member States will have to ensure by 2010 that the environmental and resource costs of water services are factored in to water-pricing policies, so as to provide adequate incentives for efficient water resource use.<sup>41</sup> For each river basin district there must be put in place a programme of measures to achieve the objectives of the Directive. These must include the "basic measures" indicated in Article 11.3, including controls over abstraction and direct and diffuse discharges.

Whilst the Directive does not directly refer to land use planning, there can be little doubt that as basin analyses and management plans begin to be prepared before the December 2009 deadline, and as they fall to be reviewed on a six yearly basis thereafter, they will become material considerations in terms of planning policies and decisions. Decisions on the location of new housing and other developments may well have significant implications for impacts on water resources and on the achievement of the required standards. The Government's first consultation paper on implementation of the Directive, issued in March 2001,<sup>42</sup> whilst proposing that the Environment Agency will have the lead role in implementation, clearly indicates that the Directive will be relevant to local authorities in their role as planning authorities.

### **Flood plain development**

The House of Commons Environment, Transport and Regional Affairs Committee began its December 2000 Report into flood plain development<sup>43</sup> in characteristically trenchant style<sup>44</sup>:

"In the last three years flooding has once again become a matter of great concern. In Easter 1998 there were serious floods in the Midlands. In June 2000 over 1000 properties were flooded in the north east of England. This was followed by the wettest Autumn since records began, and flooding affected large parts of the country. In October a severe flood affected 600 homes and 200 businesses in Lewes. We were informed by the local district council that 'perhaps the most graphic

<sup>37</sup> There are also provisions for international river basin districts, which will be important for rivers in Continental Europe.

<sup>38</sup> See Article 13 and Annex VII.

<sup>39</sup> These being surface waters, "artificial or heavily modified bodies of water", groundwater and "protected areas" (those protected under specific Community legislation on water or on the conservation of species or habitats dependent upon water).

<sup>40</sup> See Annex II.

<sup>41</sup> Article 9.

<sup>42</sup> DETR, NAW, *First Consultation paper on Implementation of the E.C. Water Framework Directive*, para. 1.5. Further consultation packages are due in 2002–2003.

<sup>43</sup> *Development on, or affecting, the flood plain* (Session 2000–2001, Second Report, HC 64–I).

<sup>44</sup> Para. 1.

illustration of the severity of the flood was that RNLI lifeboats operated in the High Street to rescue residents trapped in the upper floors of buildings'. At the same time York suffered its worst flood for 400 years. In all, throughout the country, 6,500 properties were flooded."

The Committee was clear that three factors had contributed to this situation: (1) increased runoff caused by development; (2) reduction in floodplain storage capacity caused by development; and (3) development in the flood plain which was itself at risk from either normal or exceptional floods.<sup>45</sup> Following the 1998 floods, the Commons Agriculture Committee had reached the same conclusion and had recommended a clear presumption against development in the flood plain and a more interventionist approach by the Environment Agency at all stages in the planning process, so as to deter inappropriate development.<sup>46</sup> This conclusion had been endorsed by the ETRA Committee itself in its Report on the Environment Agency earlier in 2000.<sup>47</sup>

The Committee noted the increasing pressures for development on flood plains. Evidence put forward by the Environment Agency suggested that in 1996 about 4,000 houses were proposed in flood plains, whereas by 2000 the figure was 20,000. At the time the Committee reported, the Government had issued for consultation the first draft of PPG 25, *Flood Risk and Development*.<sup>48</sup> The Committee noted a number of criticisms of this draft, for example from the Environment Agency, for not providing strong enough direction to local planning authorities, and for taking a relatively weak precautionary approach, which would allow development subject to the provision of flood defences. These criticisms were largely accepted by Ministers during the inquiry<sup>49</sup> and in the subsequent formal Government response<sup>50</sup> and a revised PPG 25, *Development and Flood Risk*, was issued for consultation in February 2001. The PPG was formally issued in July 2001, replacing DoE Circular 30/92 (MAFF Circular FD1/92).

The new PPG leaves no doubt as to the scale of the potential problem. Approximately 8 per cent of the total land area of England is at risk from river flooding and 1.5 per cent from flooding by the sea. This equates to about 1.7 million homes and 130,000 commercial properties worth over £200 billion and 1.3 million ha of agricultural land worth about £7 billion, or put another way 10 per cent of the population and 12 per cent of agricultural land (61 per cent of Grade 1 agricultural land). It also points out that the experience of recent years suggests that river flooding may be becoming worse, both in terms of frequency and scale, and that climate change is expected to increase the risk of both coastal and river flooding. Damage from flooding, at both a national and global level, is already greater than that from any other natural disaster. The Government expects all planning authorities to give flood issues "early and serious attention".<sup>51</sup>

The key novel feature of the PPG is the risk-based approach and sequential test.<sup>52</sup> It is acknowledged that the assessment of risk needs to take account of a variety of factors, including the size of the area liable to flooding, probability of flooding, likely depth and flow rates, the extent of existing flood defences and the nature of the proposed development. Essentially what is proposed is a sequential test, allocating or permitting sites for development in the following descending order:

<sup>45</sup> See evidence of Dr Geoff Mance, Director of Water Management for the Environment Agency, who referred clearly to the importance of land use change over the past 50–60 years, both in terms of urbanisation and agricultural practices such as field under-drainage and changes from spring to winter cereals affecting the ability of fields to retain standing water (HC 64–II, p.1).

<sup>46</sup> Session 1997–1998, Sixth Report, HC 707–I.

<sup>47</sup> Session 1999–2000, Sixth Report, HC 34–I.

<sup>48</sup> April 2000.

<sup>49</sup> HC 64–II, p.11.

<sup>50</sup> Cm. 5073, February 2001.

<sup>51</sup> para. 21.

<sup>52</sup> para. 27 *et seq.*

1. Areas with little or no risk (annual probability of less than 0.1 per cent) where there are no constraints due to tidal or coastal flooding. Local assessment will still be necessary however in relation to groundwater flooding or localised flooding from run-off during prolonged or intense rainfall.
2. Areas with low to medium risk (annual probability of 0.1 per cent–1.0 per cent, or for coastal areas 0.1 per cent–0.5 per cent) which would be suitable for most development except essential civil infrastructure such as hospitals, fire stations and other facilities needing guaranteed access. However, a flood risk assessment appropriate to the nature and scale of the development should be provided, and in the light of this flood-resistant construction and suitable warning or evacuation procedures may be required.
3. Areas with high potential risk (annual probability greater than 1.0 per cent, or 0.5 per cent for coastal areas) but which are already developed.<sup>53</sup> These areas may be suitable for residential, commercial and industrial development provided the appropriate minimum standard of flood defence can be maintained for the lifetime of the development, with preference being given to those areas already defended to that standard. Authorities should seek to avoid areas that will be needed for strategic flood defence strategies such as managed realignment<sup>54</sup> or washland creation, or which have the potential for such uses.
4. Areas with high risk (annual probability greater than 1.0 per cent, or 0.5 per cent in coastal areas) and which are currently undeveloped or sparsely developed.<sup>55</sup> These areas are not generally suitable for residential, commercial or industrial uses, unless a particular location is essential, for example transport and utilities infrastructure, or recreational or navigation uses, and an alternative lower risk location is not available. General purpose housing or other development comprising residential or institutional accommodation should not normally be permitted; nor should caravan and camping sites. Where it is exceptionally permitted, such development should be provided with the appropriate minimum standards of flood defence and should not impede flood flows or result in a net loss of flood-plain storage.
5. Functional flood plains.<sup>56</sup> These are defined as “the unobstructed or active areas where water regularly flows in time of flood”.<sup>57</sup> They are shown on the flood plain maps produced by the Environment Agency and distributed to all local authorities; since December 2000 such maps have also been available on the Agency’s website. Such areas may be suitable for some recreation, sport, amenity and conservation uses. Built development should be wholly exceptional and should be limited to essential transport and utilities infrastructure that has to be there, and is appropriately designed and constructed to remain operational during floods and to result in no net loss of flood plain storage.

The PPG acknowledges that the purity of the sequential approach must be tempered by pragmatism. In particular, the restrictive approach may need to be subject to exceptions where extensive areas of land fall into the high risk category (for example, much of East Anglia). As Noel Coward wrote: “Very flat, Norfolk”.<sup>58</sup> The PPG says that in such areas further development may be needed to avoid social and economic stagnation or blight, or to allow existing development to be adequately protected.<sup>59</sup>

Secondly, it is acknowledged that the sequential approach may conflict with policies favouring the use

<sup>53</sup> Referred to as 3(a) in the Table to the PPG.

<sup>54</sup> See below.

<sup>55</sup> Category 3(b).

<sup>56</sup> Category 3(c).

<sup>57</sup> para. 23.

<sup>58</sup> *Private Lives* (1930).

<sup>59</sup> para. 31.



of previously developed land, and that “a balanced flexible approach is needed which addresses the risks of flooding whilst recognising the benefits of recycling previously developed land and the damage to urban regeneration caused by under-investment and urban blight.”<sup>60</sup> In answers to questions by the Committee, the then Minister for Housing, Planning and Construction (Nick Raynsford) stated that 13 per cent of existing brownfield land available for development lies in flood plains, much of it in the Thames Gateway,<sup>61</sup> and that to stop all development in the London flood plain because of the risk that after 2020 the Thames barrier might not be able to cope would essentially be to say “We are consigning our whole brownfield strategy to the dustbin”.<sup>62</sup> It seems clear therefore that the approach advocated by the draft PPG will create potential clashes with other policies, and not just those for developing brownfield land—it is equally possible to imagine circumstances where similar conflicts might arise with policies on green belt, for example.

At a practical level, the PPG contains much useful advice and should raise the priority of flooding as an issue in development planning and development control. In particular, it means that developers should address the issue through commissioning and undertaking a Flood Risk Assessment,<sup>63</sup> and through the use of sustainable drainage systems (SUDS),<sup>64</sup> that consultation with the Environment Agency should become a more rigorous exercise,<sup>65</sup> and that there will be a framework for the considerations of proportional developers’ contributions to the cost of flood defence works.<sup>66</sup> In addition, now that Human Rights Act concerns over the use of call-in have been laid to rest by the *Alconbury* case, further consultation seems likely over the use of an Article 14 call-in direction in cases where the local planning authority is minded to grant permission in the face of a sustained Environment Agency objection on flood risk grounds.

There will remain some problematic areas to be worked out, notwithstanding the best efforts of the new PPG. The potential conflict between the sequential test and other land use policies has already been referred to. Other issues include the funding of flood defence works where they are necessary, in particular the problem of the first developer having to bear a disproportionate share, or in case of small scale infill developments where existing properties are undefended but ought to be. Further issues are how best to make available information to prospective purchasers on flood risk, whether by the Environment Agency on its website or in answer to an enquiry, or by a question on the Law Society’s standard enquiries.<sup>67</sup> Perhaps the key concern is that encapsulated by one of the worst affected local authorities, Lewes District Council, in its Memorandum to the Committee, the potential blighting effect on regeneration and economic development of flood risk policies<sup>68</sup>:

“It is therefore essential that PPG 25 does not encourage local plans to imply the message ‘do not invest here’ in important parts of towns such as central previously used sites, where other strands of government policy such as PPG 6 and PPG 13 are encouraging development and regeneration. The result in a few years’ time could be degeneration, with under investment, and increasing dereliction akin to the 1960s ‘red lined’ clearance areas where borrowers could not raise capital to invest because of a prejudicial notation on a map.”

<sup>60</sup> para. 35.

<sup>61</sup> HC 64–II, p. 11.

<sup>62</sup> HC 64–II, pp. 14–15.

<sup>63</sup> See Appendix F.

<sup>64</sup> In its Memorandum to the Committee, the Housebuilders’ Federation made far-reaching claims for such systems, which it said, “. . . replicate the river regime, with a completely neutral effect on flood risk” (HC 64–II, pp. 23–24).

<sup>65</sup> HC 64–I, para. 63ff.

<sup>66</sup> para. 61.

<sup>67</sup> See Supplementary Memorandum by the DETR, HC 64–II, p. 47.

<sup>68</sup> HC 64–II, p. 56.

It therefore remains to be seen how planning committees will approach the very difficult choices which they may have to make, particularly in areas where there is great pressure for development and limited land which meets the PPG 25 risk criteria. There will be scope for conflict not only between developers and planning authorities, but also between planning authorities and the Agency, and between different local planning authorities, who may face different risks and have different priorities. Apart from anything else, there are serious issues of liability to be faced, give the possible scale of damage which may result where inappropriately sited development floods, or causes flooding elsewhere. It has already been held in one case<sup>69</sup> that failure by Thames Water Utilities to execute drainage improvement works may constitute an unlawful failure to act so as to respect the right under Article 8 of the Convention to enjoyment of home and family life of individuals who suffer repeated flooding from storm water sewage, thereby giving rise to a claim for damages under the Human Rights Act 1998. Further, the Court of Appeal has held in *Kane v. New Forest District Council*<sup>70</sup> that a local planning authority may be liable in negligence where its planning decisions create a source of danger, and that in this respect there is no general principle of immunity in respect of anything done in the exercise of planning functions.<sup>71</sup> These cases should give planning authorities and developers alike much food for thought as to the possible liabilities which may arise from bad decisions where flood risk is concerned.

### Coast protection and managed retreat

Coast protection and management, whilst having a long history as legal topics, have been neglected subjects in policy and administrative terms. The House of Commons Environment Committee considered the subject in its March 1992 Report, *Coastal Zone Protection and Planning*, and concluded that coastal protection, planning and management in the U.K. “suffer from centuries of uncoordinated decisions and actions at both the national and local levels”.<sup>72</sup> Inadequacies included the legislation, anomalies in the planning system, lack of guidance, and overlapping or inconsistent policies. In particular, the Committee identified the failure to make linkages between the offshore impact of onshore development and the onshore impact of offshore development.

In the past, cases have pointed to a common-law duty on the Crown to protect land from the incursions of the sea. As Lord Coke put it in a case in 1609<sup>73</sup>:

“... the King ought of right to save and defend his realm, as well against the sea, as against the enemies that it should not be drowned or wasted ...”

Such cases do not however provide a basis for requiring protection in all circumstances, and it has been held in a New Zealand case that a policy of “planned retreat” is lawful.<sup>74</sup> In that case, residential properties fronting Wainui Beach were vulnerable to the sea as a result of erosion of the foredune. Coastal defences had been provided, but in 1992 it was resolved to discontinue the repair of such defences on the basis that it was not a long term option. The residents faced the loss of their homes, and wished to erect their own defences. It was argued by the Minister that this required consent under the

<sup>69</sup> *Marcic v. Thames Water Utilities Limited* (Technology and Construction Court, May 14, 2001, H.H. Judge Richard Havery Q.C.).

<sup>70</sup> June 13, 2001, not yet reported.

<sup>71</sup> Compare *Chung Tak Lam & others v. Borough of Torbay* (1997) P.I.Q.R. P488; [1998] P.L.C.R. 30.

<sup>72</sup> Session 1991–92, 2nd Report, HC 17–I, para. 3).

<sup>73</sup> *Case of the Isle of Ely* (1609) 10 Co. Rep. 141. See also *Attorney-General v. Tomline* (1880) 14 Ch. D. 58, 67, per Brett L.J. referring to the Crown’s duty “... to make a bank if it were not there—to improve the bank if it required improving, and to restore the bank if it were injured by natural causes.”

<sup>74</sup> *Falkner v. Gisborne District Council* [1995] 3 N.Z.L.R. 622.

Resource Management Act 1991. The High Court held that in constitutional terms the common law rules on protection from the sea formed part of New Zealand law. However, the underlying premise of the Government's duty under those rules was not exclusively to benefit frontagers, but rather the interests of the general public. There was no absolute entitlement to protection. Moreover, the common law right of the owner to protect their own property, though previously in absolute terms, could not stand in that form in the light of coastal management in the public interest as contemplated by the 1991 Act<sup>75</sup>:

“Such an approach manifests a narrow nineteenth century preoccupation with proprietary rights, out-of-keeping with the more holistic policy concerns of sustainability and environmentalism popular today.”

U.K. authorities would now no doubt have to take into account in such decisions under the Human Rights Act 1998 the qualified convention rights of respect for home and family life<sup>76</sup> and the peaceful enjoyment of possessions,<sup>77</sup> as indeed is illustrated by the *Birling Gap* decision, referred to below.

In March 1999 the Environment Agency published its report on the condition of the coasts of England and Wales.<sup>78</sup> This pointed out both the increasing pressure being placed on the coast from housing, industry and other development,<sup>79</sup> and by natural changes in terms of coastal erosion, sea level rise<sup>80</sup> and possibly more extreme weather patterns associated with global climate change. It highlighted the phenomenon of “coastal squeeze”, where sea level rise meets a hard barrier, squeezing out of existence the intervening intertidal area, which may be a habitat of national or European significance. Some three-quarters of currently eroding saltmarshes are backed by a sea wall or embankment.<sup>81</sup> The significance of such saltmarshes is not just environmental, however. The economics of flood defence demonstrate vividly the concept of natural resource service values, and that ecosystems are valuable capital assets. A sea wall protected by 80m of saltmarsh in front of it needs to be 3m high, and costs about £400 per metre to construct; without the marsh it would need to be 12m high and cost around £5,000 per metre.<sup>82</sup> The cost of maintaining coastal defences will therefore rise substantially, and it may be questioned in many cases whether it is justified. The House of Commons Agriculture Committee in 1998 reached much the same conclusion, referring to a flood defence policy based on substantial human intervention in natural processes as unsustainable in the long term and as presenting “insuperable difficulties” in the future.<sup>83</sup>

One possible answer is managed retreat or realignment, where flood defences are allowed to be breached, and the intertidal zone move inland to some pre-determined line.<sup>84</sup> This may clearly have social and economic consequences; it also raises the problem that in the process habitats of European importance may be lost, which under E.C. law would have to be compensated for by the provision of equivalent habitat elsewhere.<sup>85</sup> By Article 6(2) of that Directive, the U.K. is obliged to take active

<sup>75</sup> p. 630 (Barker J.).

<sup>76</sup> Art. 8.

<sup>77</sup> First Protocol, Art. 1.

<sup>78</sup> *The State of the Environment of England and Wales: Coasts*.

<sup>79</sup> It points out that about one-third of the population lives in the coastal zone, and that as much as 40 per cent of large-scale industry including power stations, steel manufacture, chemical production and oil refining is located there.

<sup>80</sup> This may be eustatic, caused by fluctuations in ocean circulation or volume, or isostatic, caused by geological changes in landmass levels.

<sup>81</sup> p. 31.

<sup>82</sup> p. 149.

<sup>83</sup> *Flood and Coastal Defence*, Session 1997–98, Sixth Report, HC 707–I.

<sup>84</sup> See MAFF, *Coastal Defence and the Environment—a Guide to Good Practice* (PB1191, 1993).

<sup>85</sup> The advice provided by the national nature conservation agencies under regulation 33(2) of the Conservation (Natural Habitats & c.) Regulations 1994 on conservation objective for European marine sites will also be important in this respect.

measures to avoid deterioration of European sites. It has been recently estimated in an article in the *Geographical Journal*<sup>86</sup> that there could be a net loss of freshwater and brackish habitats of 4000 ha, which would cost £50–60 million to replace on a hectare for hectare basis, including costs of site purchase, set up and maintenance.<sup>87</sup> The issue is now being taken very seriously by the Government, the Environment Agency and English Nature, with some major schemes proposed.<sup>88</sup> The key tools include the production of Coastal Habitat Management Plans (CHaMPs), which will inform Shoreline Management Plans and coast and flood defence strategies.<sup>89</sup>

The tensions which may be generated by these issues in planning terms are illustrated by the appeal decisions in the case of Birling Gap, East Sussex.<sup>90</sup> These concerned proposals by the Birling Gap Cliff Protection Association and others for the placing of a rock revetment at the base of the cliffs at Birling Gap to protect homes and property from damage due to cliff erosion by the sea. The issues were visual impact and conflict with policies in PPG 7 (the site being in an AONB), the effect on geological and geomorphological interests contrary to policies in PPG 9, and conflict with the objectives of Heritage Coast designation in PPG 20. Planning permission was refused for these reasons by the Secretary of State, agreeing with the inspector's conclusions. The applicants had argued, interestingly, that the refusal of permission would be contrary to Article 8 of the European Convention on Human Rights (respect for home and family life) and Article 1 of the First Protocol to the Convention (protection of property and peaceful enjoyment of possessions). The inspector had expressed the view that refusal of permission for the proposed revetments would not directly affect the dwellings on the cliff top, or the lives of their occupants, since the effects would arise from natural processes of coastal erosion.<sup>91</sup> Instead, the Secretary of State took the view that "failure by the State to protect a person's home from environmental blight" may constitute an interference for the purpose of Article 8. However, both of the relevant Articles are qualified and as such require a balance to be struck between the interests of the community and the individual's rights. Having considered the interests of the persons involved as owners and occupiers of the properties concerned, the Secretary of State concluded that such interference was justified, given the importance of protecting the "unique environment" of Birling Gap.

The role of the planning system in resolving such conflicts seems likely to increase, and as with the issue of flood defence, the planning system will have to come to terms to a greater extent than in the past with issues of natural risk. This was stressed back in 1993 in the comprehensive report of Rendel Geotechnics for the Department of Environment, *Coastal Planning and Management: A Review*.<sup>92</sup> This pointed out that whilst the planning system had been successful in arresting the spread of piecemeal development along the undeveloped coast, and was an important instrument in delivering nature conservation objectives above the low water mark, it had been less effective in addressing issues relating to the physical character of the coast<sup>93</sup>:

"Indeed the prevailing view, in the past, has been that hazards such as erosion, landsliding and flooding are a matter for the developer and not a planning issue. This has led to coastal

<sup>86</sup> Mark Lee, *Coastal Defence and the Habitats Directive: Predictions of Habitat Change in England and Wales* *Geographical Journal* (March 2001, Vol. 167) p. 39.

<sup>87</sup> Another study suggests that in Essex alone, some 100 ha of salt marsh have been lost over the last 25 years.

<sup>88</sup> For example, a proposed intertidal scheme involving 440 ha of land near Goole, at the confluence of the Ouse and Trent.

<sup>89</sup> See *Living with the Sea: an Introductory Leaflet* (2000), describing the project, which is funded by English Nature, the Environment Agency, NERC, DEFRA and the E.U. Life Project.

<sup>90</sup> APP/C1435/V99/000071 and APP/C1435/A/99/1023380, March 5, 2001.

<sup>91</sup> Report, para. 481.

<sup>92</sup> HMSO, 1993.

<sup>93</sup> p. (ix).

development in vulnerable locations and demands for coast protection or sea defences funded by the public purse once the threats become apparent.”

Specifically, the planning system at that stage had not take full account of the dynamic nature of the coastline, allowing development to proceed at locations such as Durlston Bay, Lyme Regis and Charmouth, which had subsequently required protection.<sup>94</sup> This was due not to inherent limitations in the planning system itself, but rather to the view that such hazards were a matter for owners, developers and insurers rather than planners. There was also the widespread view that such hazards were difficult to predict, and that constraints based on hazards were less easily defended than traditional amenity constraints. Nevertheless, there were examples of appropriate policies in some development plans, such as that for Delyn District Council, which contained a presumption against development which would either (1) increase the risk of flooding through its impact on natural coastal processes; or (2) prejudice the capability of the coast to form natural sea defences or adjust to changes; or (3) increase the need for sea walls or additional civil engineering works; or (4) be likely to be subject to inundation by the sea.

Planning guidance on development on unstable land (PPG 14) and on the coast (PPG 20) has to some extent addressed the concerns highlighted in the 1993 Report. The next challenge will be adaptation to sea level rise, whether or not brought about by climate change. The U.K.'s adaptation strategies were the subject of a Report for the DETR prepared by ERM, and published in May 2000. This gives ranges of likely costs based on various scenarios, for example the adaptation of coastal and river defences, meeting higher building standards, and so on. Such costs run into billions of pounds, but the key point of the ERM Report is that better planning and decision making are highlighted as ways of minimising such costs, and that discouraging development in areas at risk is an example of action on a “low regrets” or “no regrets” basis. Similarly, the Commons Environment, Transport and Regional Affairs Committee in its March 2000 Report on the U.K.'s Climate Change Programme, commented in relation to sea level rise that if future costs are to be minimised, it is critical that changes are made in some policy areas, for example land use planning.<sup>95</sup>

### **Water resource use**

Another issue of growing importance to planning, at least in some parts of the country, seems likely to be water supply and conservation. Whilst the U.K. may not suffer from the same problems of water resources as those generated by urban sprawl in the arid Western regions of the U.S.,<sup>96</sup> it is not an issue to be dismissed lightly. In November 1996 the Commons Environment Committee published its comprehensive report, *Water Conservation and Supply*,<sup>97</sup> which had been prompted by increasingly dry summers, especially the hot summer of 1995, which had focused public attention on the issue of water supply. The report highlighted how little reliable data then existed about patterns of water demand and likely future needs—however, it was apparent that demand patterns were changing, with less water being consumed by industry and more by public supply, and that individual water consumption on a per capita basis was rapidly increasing. Changes in agricultural production methods were also leading to significant increases in agricultural water usage, which were magnified in importance because of their concentration in specific areas of the country and particular times of the year. Key themes in the report were the importance of reducing leakage rates and promoting more efficient domestic usage of water and water recycling. The design of new developments obviously has an important part to play in this

<sup>94</sup> paras 6.43–6.45.

<sup>95</sup> Session 1999–2000, 5th Report, HC 194–I, para. 88.

<sup>96</sup> See Franz, Kropf and Pearce, *An Insatiable Thirst: the Impact of Water law on Sprawl in the West*, *Natural Resources & Environment* (Vol. 15, No. 1, Spring 2001) p. 228.

<sup>97</sup> Session 1996–97, First Report, HC 42–I.

area, but a number of witnesses to the Committee also urged that water availability should be taken into account at the planning stage of any new development, with water issues included in development plan policies, new planning policy guidance on the issue, and a requirement for applicants for “thirsty” development to demonstrate they had made best use of water conservation techniques.<sup>98</sup> The Committee, however, resisted the temptation to make recommendations on the issue in its Report.

Some five years on, the Environment Agency published a water resource strategy for England and Wales.<sup>99</sup> This looks 25 years ahead and seeks to produce a strategy that is robust enough to cope with all the uncertainties involved. The maps included in the Strategy show that large parts of the country (notably the south-east) are subject to unsustainable or unacceptable water abstraction regimes in terms of summer surface water flows and in terms of groundwater. In other parts, the regimes are such that there is no additional water available. How this situation will play out in future will depend, the Agency suggests, both on societal patterns and on the possible effects of climate change. Land use is seen as an important contributing factor in terms of water demand and the water environment generally.<sup>100</sup>

It may be that there are analogies to be drawn between water resource and water pollution implications of development. In the 1993 case of *Ynys Mon Borough Council v. Secretary of State for Wales* an embargo had been placed on development involving discharges of sewage to sea in the Holyhead area. It was held, supporting the view of the inspector, that in planning terms such a total embargo could not be conclusive. The correct question was whether the development would have unacceptable environmental or aesthetic effects, bearing in mind that there would be a statutory right to connect to the sewerage system.<sup>101</sup> It is perhaps not too big a leap to ask whether the water resource demands of a new housing development in an area where surface and groundwater resources are already over-committed, would have unacceptable environmental effects.

## Conclusions and reflections

Water, in many respects, has been something which the planning system has hitherto taken for granted. Where development is permitted water services and flood defences would be provided as necessary. As this paper shows, these assumptions may not hold good in future years. At one level it is possible to see the hazards and uncertainties of increased flooding, possible sea level rise and water shortages as simply constraints to be approached by way of technical fixes. However, that ignores the possibility that there comes a time when technical fixes are no longer possible in the face of natural forces and natural resource limits. Recognising where that point occurs will involve some hard choices, possibly foregoing options which offer economic gains. The planning system is an important instrument for making those societal choices in a democratic manner, but it will have to work in close cooperation with other structures such as catchment management strategies and river basin and shoreline management plans. Better integration may offer the prospect for gains through working with nature rather than seeking to control it. For example, constructing flood defence banks simply means that they may be overtopped or breached, resulting in significant loss. A better solution may be to retain rainfall in the upper catchment in order to moderate peak flows. Rather than hard engineering solutions downstream, this may involve restoring the upper river to a more natural profile and recreating meadows, fens or wet pasture. In some areas, it may involve following the earlier examples of

<sup>98</sup> See evidence of CPRE, summarised at para. 147.

<sup>99</sup> *Water Resources for the Future* (March 2001). See also *Managing Water Abstractions—Towards a Shared Strategy* (April 2000).

<sup>100</sup> para. 4.6.

<sup>101</sup> [1993] J.P.L. 225 (Deputy Judge Graham Eyre Q.C.).

Peterborough and Bedford, and creating modern versions of washlands such as the Nene and Ouse Washes. Such land may in turn provide wildlife habitats of national or international importance. Approaches such as this will involve thinking outside traditional ways. The question is whether the planning system can adjust and adapt accordingly.