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**Jones, Peter ORCID: 0000-0002-9566-9393 and Comfort, Daphne (2020) Water resource issues and spatial planning. Town and Country Planning. pp. 30-36.**

EPrint URI: <https://eprints.glos.ac.uk/id/eprint/8154>

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# water resource issues and spatial planning

**Peter Jones** and **Daphne Comfort** consider the evolution of water resource management within England, and review current water resource challenges and how they are being addressed in emerging new spatial development plans



**Prospective water shortages are a major concern, even though at times and in places there's currently too much of it to handle**

Concerns about water shortages at a time when flooding is becoming an increasing problem seem to be a paradox within the UK. In March 2019, for example, the Chief Executive of the Environment Agency warned that the impacts of climate change

and population growth could see England run out of water by 2025. Little over six months later, severe flooding in Derbyshire and Yorkshire was just the latest in a series of floods that have brought loss of life, misery and extensive damage to homes,

farmland and transport infrastructure in many areas of England. Flooding and possible future water shortages are arguably the headline issue in a wider and more complex story of water resource management.

Within the academic literature, there has been some interest in the role of spatial planning, defined as seeking to 'develop a co-ordinated vision for guiding the medium- to long-term development of urban regions',<sup>1</sup> in water resource management. Over a decade ago, Carter,<sup>2</sup> for example, argued that 'spatial planning ... has an important role to play in addressing water issues'. More recently, Ran and Nedovic-Budic<sup>3</sup> reported that 'in the context of climate change, the integration of spatial planning with flood-risk management has gained prominence'. Hurlimann and Wilson<sup>4</sup> suggested that spatial planning had the potential to achieve 'sustainable urban water supply management through both supply and demand end initiatives'. Dobricic and Marjanovic<sup>5</sup> examined 'the importance and role of spatial planning within the framework of water quality protection'.

The first London Spatial Development Strategy (the London Plan) was published in 2004, and Regional Spatial Strategies were introduced more widely in England in the same year, to bridge the gap between local and national planning policies. However, the Regional Spatial Strategies (but not the Greater London Strategy) were then revoked in 2011, as part of the then rising tide of localism in planning. More recently, in 2018, three combined authorities – namely for Greater Manchester, the Liverpool City Region and the West of England – in effect reintroduced spatial development plans. The drafts of the London, Manchester and West of England plans have been published, but the Liverpool plan is still at the drafting stage. This short article outlines the major water management challenges and the evolution of water resource management within England, reviews how water resource issues are being addressed in the emerging new spatial development plans, and offers some reflections on approaches to water management within those plans.

### **Water resources challenges and water resource management**

Those charged with water resource management in England, including the water and sewage companies, the Environment Agency, and local and city region authorities, face a wide range of challenges.

On the one hand, there are concerns about safeguarding future water supplies in the face of the demands generated by both population growth and economic growth, the uncertainties of climate change, and increasing pressure to reduce abstraction to protect the environment. On the

other hand, major flooding events seem to be becoming more frequent and, while climate change is seen to be a major cause, the continuing extension of the built environment, particularly for new housing developments, and changes in land use practices in rural areas, are also contributory factors. At the same time, there are concerns about water pollution, about the leakage of water out of the distribution system, about the degeneration of wetlands, and that future energy strategies that involve increased carbon capture and storage would require higher levels of water abstraction.

## **'There there are concerns about safeguarding future water supplies... On the other hand, major flooding events seem to be becoming more frequent'**

A number of these challenges are complex and often contradictory. A changing climate is seen as one of the contributory causes not only of the increased incidence of flooding but also of more prolonged periods of drought and attendant water supply shortages. New housing developments, and an increase in the number of households, will increase the demand for water, but may also contribute to flooding as less rainfall run-off is absorbed into once open ground now covered by roads and buildings. While carbon sequestration is seen to be important in combatting the pace of climate change, it may generate higher levels of water abstraction and consumption.

The Office of Water Services (Ofwat) and the Department for Environment, Food and Rural Affairs<sup>6</sup> traced the origins of the water industry in England and Wales 'to the beginnings of the early nineteenth century' but noted that the 'water industry was highly fragmented in the period up to and after the Second World War.' Further, it also reported that 'in 1945 ... planning for water resources was a highly localised activity with little co-ordination at either regional or national level.'

The years since then have seen the introduction of a wide range of legislative changes and managerial and planning structures and proposals, although regional integration, which might be seen to underpin the spatial planning of water management, has been a re-occurring theme. The 1950s and 1960s were an era of increasing co-ordination and consolidation within the water industry, and the Water Act of 1973 saw the establishment of a number of regional water authorities and recommended the creation of a national water transfer network.<sup>7</sup> However, a growing recognition of the need for the greater

availability of capital for maintenance and future investment resulted in the privatisation of, and the one-off injection of public capital into, the water industry in 1989.

A decade later, the water authorities began to develop Water Resource Management Plans. These plans were made a statutory requirement in 2003, and since then resilience has become an increasingly more important imperative. In 2006, the government published *Future Water*,<sup>8</sup> its 'Water Strategy for England', which addressed water demand, water supply, water quality in the natural environment, surface water drainage, river and coastal flooding, and greenhouse gas emissions. More specifically, the strategy suggested that 'there may be real opportunities for water companies to work together on a local or regional grid basis to improve the supply-demand balance and the resilience of supply security through interconnectivity'.<sup>8</sup>

In 2016, Water UK (the trade association which represents the major water companies) launched a project designed 'to develop a high level strategy and framework for the long term planning of water resources'<sup>9</sup> over a 50-year period up to 2065. One of the project's 'headline messages' was that 'there is a significant existing level of drought risk that is present across many regions in the east and south of England'. Another such message suggested that 'inter-regional transfers have been identified as a possible, potentially cost effective, component of a resilient supply system', but that 'key constraints could limit the feasibility of those options'. Most recently, the Department for Environment, Food and Rural Affairs launched a consultation document<sup>10</sup> which outlined the government's commitment to 'giving water resource planning a stronger regional focus, and putting drainage and wastewater planning on a statutory basis to provide a more robust planning and investment process to meet future needs, including housing growth'.

### **Spatial development plans and water resources**

In looking to examine current thinking on, and approaches to, addressing water resource issues within spatial development plans, the most recent drafts of these plans were reviewed.

Greater London's first spatial plan was published in 2004 and then replaced by a second plan in 2011. The draft of the third London Plan (the Spatial Development Strategy for Greater London) was published for consultation in 2017, and following consideration at an Examination in Public an 'Intend to Publish' version was sent to the Secretary of State in December 2019.<sup>11</sup> The spatial development plans for Greater Manchester, the West of England and the Liverpool City Region are still at an embryonic stage. The drafts, for consultation, of the Greater Manchester and West of England plans

were published in January 2019 and November 2017, respectively. Each of the plans covers an extensive range of themes and issues, and each has its own style and characteristics; but the policies that eventually make up each of the plans will be considered when planning applications are determined.

Overall, water management issues received limited attention within the draft spatial plans, but a number of interlinked themes can be identified – namely awareness of the complexity of water resource management, flood risks, sustainable water supply, the quality of the water environment, and mitigation and adaptation to climate change. The draft Greater Manchester Spatial Framework,<sup>12</sup> for example, recognised that 'Greater Manchester is located within a complex hydrological network that extends into surrounding districts and beyond' and that this 'means that individual areas cannot be looked at in isolation, as rainfall and activities in one place can have significant impacts on the water environment in other locations'. In a similar vein, the West of England Joint Spatial Plan reported on the commitment of the constituent local authorities in the area 'to work in partnership on a catchment wide basis to achieve more holistic outcomes focused on multi-benefit projects across our administrative boundaries'.<sup>13</sup>

More specifically, Greater Manchester's plan was informed by a strategic flood risk assessment, and its approach is rooted in the recognition that, unless there are improvements in flood defences, drainage and surface water run-off management, the majority of the urban area of Greater Manchester could be at risk from surface water flooding, a number of canals and reservoirs generate flood risks, and a changing climate could put more areas and properties at risk in the future. Here the plan posited the need for 'a co-ordinated catchment-wide approach to all types of flood risk',<sup>12</sup> with a focus on looking to work with natural processes and adopt a natural approach to flood management in order to slow the speed of water drainage. More generally, the plan suggested that such an approach 'can provide multiple benefits for people and wildlife, helping to restore habitats, improve water quality and reduce soil erosion'.<sup>12</sup>

The West of England Joint Spatial Plan emphasised the need to increase resilience to tidal, fluvial and surface water flooding, and identified increasing investment opportunities for delivering improvements and adaptation measures across the whole of the plan's water catchment area. These measures include reducing the sedimentation of watercourses and reducing the risk of flooding and enhancing the wider environment through soft engineering solutions. At the same time the plan also stressed the need to address potential flooding risks associated with a number of proposed new housing developments. Land to the west of Backwell

in North Somerset, for example, has been identified to accommodate an extension to the village, and here the plan emphasised that development should avoid the floodplain, demonstrate reduced run-off rates, and make provision for the use of attenuation ponds and possibly long-term water storage.

In outlining its policy on 'water infrastructure', the 'Intend to Publish' version of the London Plan reports that on average Londoners consume 6% more water than the national average and that all the water companies that supply London are classed as water-stressed. In addressing water supply, the London Plan argues that 'in order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner'.<sup>11</sup>

At the same time, the London Plan recognises that a focus on increased water efficiency and reduced leakage are, in themselves, unlikely to meet future water demand. It notes that Thames Water's draft Water Planning Management Plan has 'explored co-ordinated supply options with the other water companies serving London and the South East of England, working with the Water Resource South East expert group'.<sup>11</sup> Here the London Plan explicitly recognises both the importance of working in partnership with a range of key stakeholders within and beyond London, as well as the importance of proactively investing in water supply infrastructure ahead of need – while also aiming to protect and support vulnerable customers from rising water bills.



**Strategic flood risk assessments will be increasingly crucial as the climate changes**

More specifically, the accent is on development plans promoting improvements to water supply in an attempt to ensure the security of supply, undertaken 'in a timely, efficient and sustainable manner taking energy consumption into account'.<sup>11</sup> The plan emphasises that development proposals should look to minimise the use of mains water and should encourage the incorporation of smart metering and recycling.

In focusing on water quality, the London Plan seeks to promote the protection and improvement of the water environment and to support investment in waste water treatment infrastructure, and it suggests that such infrastructure should take account of new smart technologies and energy implications. Further, development proposals should aim to improve the water environment and ensure that adequate wastewater infrastructure capacity

is provided and should be designed to ensure that misconceptions between foul and surface water networks are eliminated and not easily created through future building alterations.

The draft Greater Manchester Spatial Framework emphasised the importance of improving water quality in small rivers and streams in several locations, including Timperley Edge, New Carrington, Stanley Park, and Bredbury Green. It also drew attention to the importance of controlling potentially contaminating activities around a number of wells, boreholes and springs that are used for the supply of public drinking water.

The importance of water in providing ecosystem services, in contributing to habitats and in amenity provision was also recognised in the spatial development plans. The London Plan, for example, emphasises that 'water spaces make up an important set of habitats',<sup>11</sup> and, in looking to prioritise improving and restoring degraded sections of rivers, draws attention to the importance of managing waterways for their habitat value.

In a similar vein, the draft Greater Manchester Spatial Framework reported that, while a number of initiatives pursued over a 25-year period up to 2010 by the Mersey Basin Campaign had improved the ecological value of watercourses, much work remains to be done. The plan emphasised the need to ensure that river corridors, and the habitats they provide, are not only integrated with new developments but also managed sustainably in the long term. The draft West of England Joint Spatial Plan looked to integrate water management with the plan's green infrastructure objectives.

### Concluding reflections

Two of the three draft spatial development strategies reviewed here are still at an embryonic stage, but nevertheless taken together the three provide an indication of current combined authority and mayoral thinking on planning and water resources. That said, three issues merit reflection.

First, while such plans explicitly recognise the vital importance of water to all facets of human life, in truth they devote very limited attention to water management issues. The draft Greater Manchester Spatial Framework, for example, recognised that 'water is a precious resource that is essential for life' and that 'as well as meeting human needs for drinking, washing and cooking, it is also vital for the health of the human environment, supports agriculture and fisheries, provides a resource for many businesses, and offers opportunities for transport and recreation'.<sup>12</sup> However, the most substantive section of the plan devoted to water commanded less than three pages in a 440-page document, while the corresponding number of pages for the London Plan are five and 527 (excluding annexes).

As such, this would seem to suggest that spatial planning is currently giving greater priority to economic and social issues, including housing, social infrastructure, inclusion, transport, economic growth, employment, urban regeneration, and the Green Belt. These priorities, might be seen, in turn, to reflect political agendas. Such agendas receive regular and high-profile media attention, while water only makes the front pages of the newspapers and the headlines in the television news, albeit graphically, when there are floods and when reservoir levels are dangerously low. Rather pessimistically, if climate change continues apace, then water management issues may assume an ever increasing political and media profile, but it may then be too late to turn back the clock, in that changes in the climate and the water environment may then effectively be irreversible.

Secondly, there are wider issues over the relationships between sustainability and the drive for growth that is seen as an important rationale for the spatial development plans. Sustainable development is, in principle, an important priority within spatial development plans. In his foreword to the draft Greater Manchester Spatial Framework, Andy Burnham, the Mayor of Greater Manchester, described it as 'a prospectus for more sustainable development',<sup>12</sup> and the London Plan emphasised that 'the Mayor has had regard [inter alia] ... to achieving sustainable development within the United Kingdom'.<sup>11</sup> Here, the London Plan specifically emphasises that development plans and proposals to, for example, promote improvements in water supply and to protect and improve water quality are to be pursued in a sustainable manner. Within the Manchester plan the expectation is that, for example, development proposals will 'manage surface water runoff through sustainable drainage systems'.<sup>12</sup>

More generally, within the spatial development plans the relationship between sustainability and growth lacks clarity. On the one hand, the London Plan claims that 'the concept of Good Growth – growth that is socially and economically inclusive and environmentally sustainable – underpins the London Plan and ensures that it is focused on sustainable development'.<sup>11</sup> However, while the term 'good growth' is described as 'sustainable growth that works for everyone',<sup>11</sup> there is no attempt to explain how the demands that economic growth put on natural resources are to be reconciled with environmental sustainability. In a similar vein, while the overall strategy of the Greater Manchester Spatial Framework 'includes ... supporting high levels of economic growth.... and delivering sustainable patterns of development'<sup>12</sup> there is no attempt to explain how sustainable patterns of development can accommodate high levels of economic growth.



While Boyle *et al.*<sup>14</sup> have argued for the need to plan for 'degrowth', not least 'because further growth might contribute excessive carbon emissions and jeopardise ... transition to a low-carbon future', such thinking currently seems unlikely to find favour with those driving spatial strategies and plans.

Thirdly, a set of issues revolve around the contention that 'strategic spatial planning practices have recently taken a neoliberal turn in many northwestern European countries',<sup>15</sup> and that this may have implications for water management. Olesen,<sup>15</sup> for example, has argued 'the role of strategic spatial planning [is] now interpreted as facilitating economic growth and competitiveness. Rather than focusing on expanding the welfare state by promoting equal development across the state territory, public investments were prioritised in major cities and urban regions, promoting a new set of spatial logics centred on major cities and urban regions as key sites for economic activity.' Boland<sup>16</sup> has suggested that spatial planning 'privileges competitiveness'.

Olesen<sup>15</sup> cited examples from Denmark, Germany and the Netherlands to support his argument, and Daly<sup>17</sup> has argued that 'the role of the planning system in the overproduction of development during Ireland's Celtic Tiger needs to be analysed as instructive of contemporary neo-liberal transformations of strategic spatial planning'.

Further, and arguably pejoratively, Koglin and Petterson<sup>18</sup> argued that neoliberalisation within the Swedish spatial planning system has 'led to a change of role for planners from actual planners to collaborators'.

As outlined above, the draft spatial development plans devote considerable attention to encouraging and facilitating economic growth, while water resource management receives much less attention. Indeed, many of the water resources policies within these plans are explicitly concerned with supporting growth, rather than with conserving water per se as a vital element within the natural environment – for example, in addressing water quality the London Plan states that 'Development Plans should [inter alia] ... support wastewater treatment infrastructure investment to accommodate London's growth...'.<sup>11</sup>

This potential tension extends beyond the UK, and is also illustrated, for example, in Wiering and Immink's study<sup>19</sup> of the relationship between water management and spatial planning in the Netherlands, in which they argue:

*'In the domain of spatial planning, water issues are seen as one of the basic conditions for spatial planning, but water will not be given priority over other relevant features – such as the quality of the environment, or economics. In the domain of water management, however, a normative discourse is becoming dominant in which water should be regarded as a fundamental 'guiding principle'. This means that 'space for water' is not just one of many claims to be considered on an equal footing; rather, it takes precedence over other claims...'*

Such a discourse is not currently reflected in the draft spatial plans within the UK. Indeed, Carter's suggestion that 'there are considerable challenges faced by planning systems in reconciling conflicts between economic development, social progress and the sustainable use and management of water

environments<sup>1</sup> still seems to resonate. That said, if the pressure on water resources continues to grow, then those charged with responsibility for spatial planning may need to review and revise their thinking, and the planning community may wish to keep a watching brief on how water issues are addressed within spatial plans and on how that influences the determination of planning applications.

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## Notes

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