

how planning can deliver better water management

Peter Bide and **Andrew Coleman** explain how guidance for planners can help to deliver climate resilience, better water quality, enhanced biodiversity, and more liveable and valuable developments



View over a man-made lagoon at North West Cambridge, a development featuring a comprehensive integrated water management system

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Better management of water through the planning system is vital to making places more resilient to the climate crisis, delivering healthier and more liveable local environments, reducing the impact of flooding, ensuring the availability of drinking water during times of scarcity, and delivering biodiversity net gain.

The May/June 2018 issue of *Town & Country Planning* introduced the Construction Industry Research Information Association (CIRIA) research project Delivering Better Water Management through the Planning System.¹ The project aimed to discover, analyse and set out good practice on how spatial planning for water delivers multiple benefits and helps our towns and cities to become greener, healthier, wealthier, more attractive, and more resilient to climate change. More recently, Peter Jones and Daphne Comfort² set out in this journal

some of the water resource challenges that spatial planners need to be aware of, concluding that:

'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.'

The CIRIA guidance resulting from the Delivering Better Water Management through the Planning System project was launched in two events in November and December 2019 – a workshop held in Leeds and a webinar. Over 150 people took part in the two events. The guidance, and resources that can be used to persuade others to use it, are free to use.³

The project deliberately set out to break down the normal 'silo' approach to water issues by looking at the water cycle as an integrated whole – and in this way discover the *critical success factors* needed to deliver better water management *outcomes*. Another objective was to produce *practical and useful* integrated water management (IWM) guidance for planners and other key actors. The guidance provides the most up-to-date picture of how water challenges and opportunities are being addressed and therefore goes some way to providing the help that Jones and Comfort identified as needed.

Project development

The project was co-ordinated by CIRIA project managers and benefited hugely from that organisation's contacts, experience and expertise in developing guidance aimed at the development industry, especially the industry-standard *SuDS Manual*, on sustainable drainage systems. A Project Steering Group guided and shaped the research and outputs. It comprised representatives from the water industry, planning organisations (the TCPA, the RTPI and the Planning Officers Society were members), flood risk experts (including Environment Agency staff) and representatives from several lead local flood authorities (LLFAs) and wildlife charities, especially the Wetland and Wildlife Trust.

An initial survey received over 200 responses and helped the research team to identify challenges and opportunities in delivering better water management through the planning system, as well as potential case studies. Stakeholder workshops helped to turn this work into the key themes of the research and guidance. A challenge in providing relevant guidance was the constant changes in English planning policy guidance, but the final document reflects the 2019 National Planning Policy Framework (NPPF). The guidance is also relevant to Wales, and reflects the latest version of Planning Policy Wales.

Guidance format

The guidance has been designed to be as accessible and useful as possible. The online version of the guidance³ contains hyperlinks to speed the reader from one section to the rest of the document and to external sources. The guidance is structured to enable in-depth reading or 'dipping' in and out. As well as the main guidance (**Part A**), four other parts contain detailed examples and guidance:

- **Part B** – physical case studies;
- **Part C** – examples of good local policy;
- **Part D** – national policy review; and
- **Part E** – characteristics of good local policy.

Parts B and C are structured to provide readers with a snapshot of how 12 projects and 15 Local Plans were delivered and the outcomes they are aiming to achieve, including any challenges that they had to overcome. Part D provides the English and Welsh policy and guidance 'hooks' that planners and other actors can use to justify a better water management approach. Part E emerged during the work because it was obvious that (in England at least) there was a need for generic guidance about how to write good local policies that would help to deliver better water management and be found 'sound'. This was partly derived from the Mainstreaming Green Infrastructure project guidance.⁴

A recording of the launch webinar and the slide pack that was used is available on the susdrain YouTube channel,⁵ and an animation explaining how to deliver better water management through planning is being developed.

Key findings and themes

Some of the key (negative) findings of the survey were as follows:

- The vast majority of respondents had experienced localised flooding in recent years.

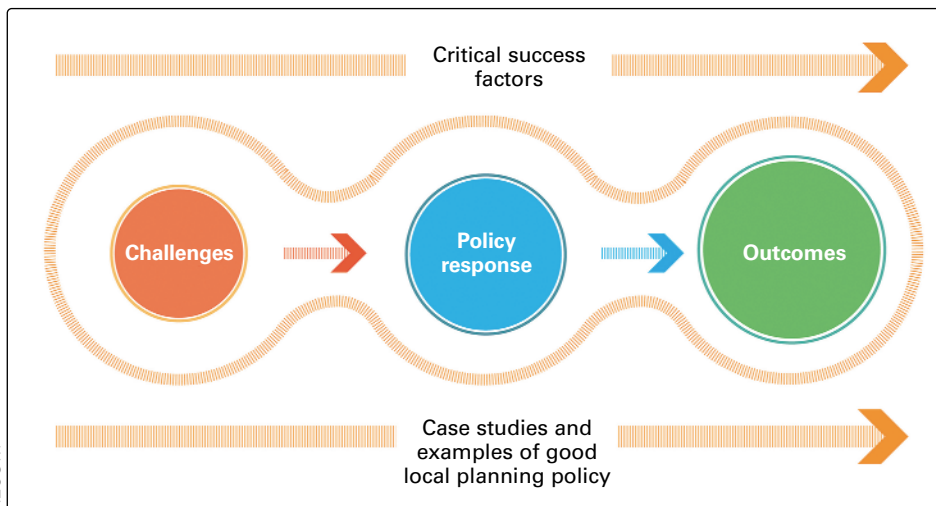


Fig. 1 The 'golden thread' of good IWM practice

- The main challenges in securing good water management outcomes are resistance from developers based on misconceptions about the extra cost of IWM; lack of national policy and guidance (and poor local interpretation of it); and local planning authorities' lack of resources (staff) and understanding of the benefits of and technical requirements for IWM.
- IWM interventions (particularly SuDS) are too often an afterthought rather than a precursor to good design.

But the survey also found that:

- Good IWM delivers amenity benefits and makes places more attractive to people and businesses looking to relocate to the area – bad water management reduces the amenity value of open space, which has a negative effect on local people.
- Pre-application is the most important stage of the development management process for engaging with developers on water management issues.
- The best ways of achieving good water outcomes would be a statutory basis for IWM (particularly SuDS) and statutory national standards; early engagement; good policy in Local Plans; clear rules/procedures for adoption; breaking down institutional barriers and changing the mindsets of key stakeholders; appreciation of IWM's multiple benefits; robust evidence to challenge viability arguments; educating local planning authorities and developers to enhance their understanding of IWM and its benefits; more integration and partnership working; and strategic (catchment/ landscape scale) planning for water.

The project set out to overcome the misconceptions about and lack of awareness of IWM, partly by identifying examples of local planning policies, masterplans and 'on the ground' projects that are helping to deliver better water management, and analysing them to identify:

- **critical success factors** – how the policies/projects had been developed; and
- **outcomes** – what aspects of better water management the policies/projects were achieving.

Arising from this, the authors identified a 'golden thread' running through many of the examples of good practice – identify the water-related opportunities and challenges for the community (such as environmental quality, water supply/quality, flood risk); identify the appropriate IWM response; put in place policies to enable IWM; and facilitate the partnerships to achieve the outcomes (see Fig. 1).

Critical success factors and outcomes

Drivers for the policies and projects varied, but analysis of how the policies had been initiated, justified and delivered revealed some significant

Box 1 Critical success factors

Understanding IWM

- Knowing which IWM interventions are appropriate.
- Identifying IWM possibilities at an early stage.
- Showing that IWM is effective and efficient.
- Breaking down institutional barriers and changing mindsets.

Supportive local policy

- Clear and understandable Local Plan policies.
- Clear, supportive plans and strategies from the LLFA and water company.

Early engagement

- With the water company, developers, the LLFA, and other areas of local government.
- With the local community.
- With the catchment partnership and other stakeholders.

Partnerships

- Good links with (and between) local planning authorities, LLFAs and water companies.
- Catchment partnerships.
- An engaged and supportive local community.
- Understanding partners' interests and drivers.

Good management

- A strong champion.
- Early and clear identification of long-term management arrangements.
- Co-ordination of budgets and funding.
- Enforcement of conditions.

common themes among the **critical success factors** (see Box 1).

From the survey and discussions with the Project Steering Group, ten better water management **outcomes** that are achievable by applying the guidance were identified, including reduced risk from flooding; increased water efficiency and reduced water stress; better blue/green infrastructure; and mitigating and adapting to climate change – but also enabling new housing; and facilitating economic growth and regeneration. The full list is set out in Table 1.

Fig. 2 gives an idealised example of good water management to show the interventions that can help produce the multiple benefits of IWM across a water catchment.

The main guidance (Part A) explains how these critical success factors come together to deliver the outcomes and how planners can pull the right levers, even with diminished resources, to achieve better water management.

Table 1
IWM outcomes

Outcome	How IWM contributes to multiple benefits
	<p>Reduced risk from flooding</p> <p>Reducing risk of flooding from a range of sources and scales, from landscape scale (thorough natural flood risk management), reducing the risk of river flooding to sustainable drainage systems (SuDS), and reducing and attenuating run-off to reduce the risk of local flooding</p>
	<p>Increased water efficiency and reduced water stress</p> <p>Reducing potable water use, including rainwater harvesting and use and greywater and wastewater recycling/re-use, can reduce demand on the public water supply. If this is linked to water efficiency measures in buildings, the savings can be significant</p>
	<p>Clean and good-quality water environment</p> <p>Reducing or removing pollution from surface water and groundwater, and providing a more natural and biodiverse water environment</p>
	<p>Enabling new housing</p> <p>Providing water management and improvements to overcome challenges such as flood risk, availability of water, lack of drainage capacity, and poor urban environment</p>
	<p>Facilitating economic growth and regeneration</p> <p>Improving urban economies and environments and enabling sustainable redevelopment. Enhanced value of development with better green spaces and water views</p>
	<p>Enhanced biodiversity</p> <p>Providing a vibrant, more natural environment, introducing a range of habitats and species. Providing ecosystem services and enhancing natural capital, contributing to net environmental gain</p>
	<p>Better blue-green infrastructure</p> <p>Providing functional and connected blue and green spaces which deliver multiple benefits and connect urban places for water, wildlife and people</p>
	<p>Improved accessible public spaces and places, and improved wellbeing</p> <p>Providing good-quality open space which, as well as managing water, is accessible, creates more liveable places, and promotes health and wellbeing. Connecting places and people to water</p>
	<p>Mitigating and adapting to climate change</p> <p>Providing sustainable urban green space at a range of scales makes urban areas more resilient by reducing the urban heat island effect, reducing energy consumption, making better use of water, and enabling our towns and cities to better cope with more extreme weather events</p>
	<p>Using resources more sustainably and effectively</p> <p>Cost savings and efficiencies, particularly through partnership working, delivering multiple benefits, make schemes affordable, and more can be done for less</p>

Partnership working

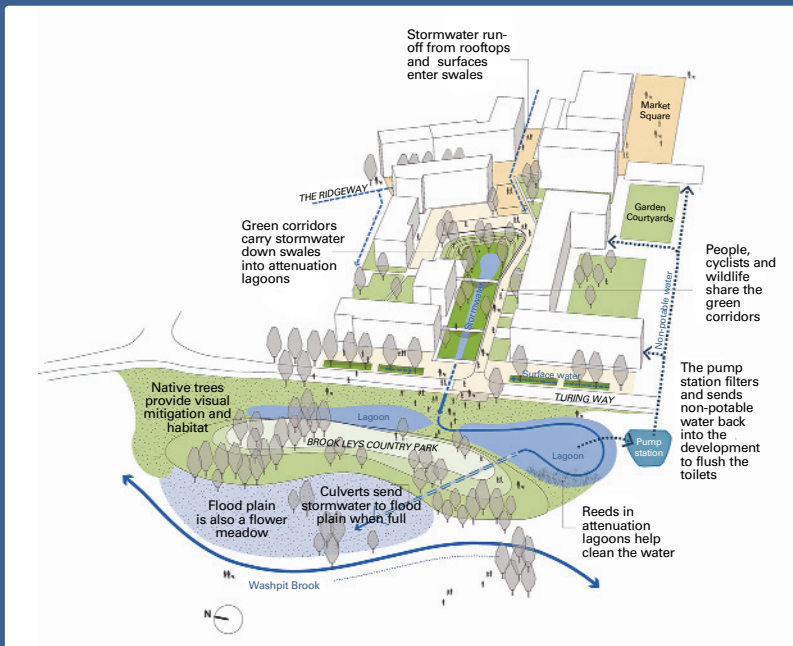
One extremely important critical success factor that almost all the case studies exhibited was a good relationship between local authorities, water companies, and environmental regulators.

The driver for making successful and effective partnerships is delivering multiple benefits through IWM interventions. Working in partnerships and pooling resources enables delivery of projects that are not affordable for individual partners on their own. Additionally, the sum of the pooled resources

can be greater than the threshold cost of the scheme, allowing more to be achieved for the money spent, or for savings to be made by the partners. Either way, this amounts to getting more for less (see Fig. 3).

This partnership working was sometimes crystallised in the form of a water cycle study or integrated water management study (IWMS), which are extremely useful when there are multiple water issues to address – often there are current and future flooding, water stress and water quality issues, in areas which also have a great need to deliver new

Box 2 North West Cambridge



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**North West Cambridge
SuDS strategy**

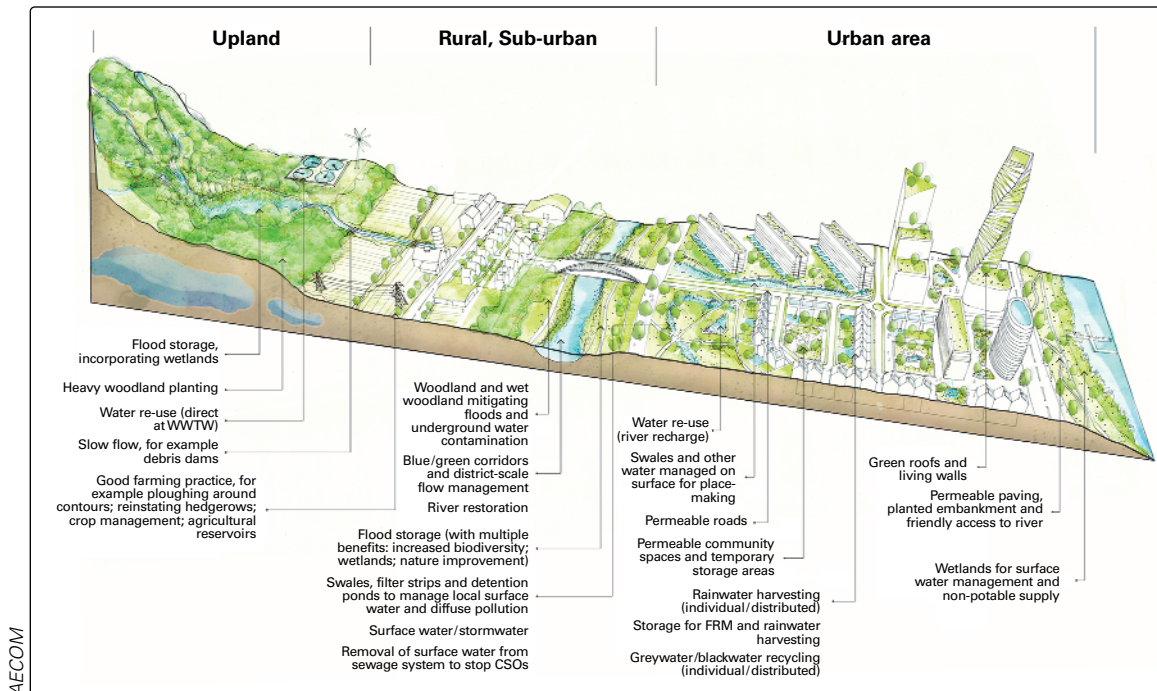
Cambridge is located within an area of water stress (East Anglia has the lowest regional rainfall in the UK and is described officially as semi-arid) and is also at high risk of surface water flooding. The local communities downstream regularly suffered flooding from two different brooks so there was no capacity within existing watercourses to accommodate additional surface water from new development. Cambridge planning policy requires sustainable drainage and sets stringent standards for water use.

The North West Cambridge project is a 150 hectare development with a comprehensive IWM system reducing off-site flows to below greenfield run-off rates. It hosts what will be the largest water recycling system in the country, capturing rainwater to reduce potable water demand by up to 45%. In particular:

- The development will deliver 3,000 homes and 100,000 square metres of other uses.
- The IWM is driven by Local Plan policy.
- The development incorporates a site-wide IWM system.
- Swales, blue and brown roofs and green corridors manage water through the site into man-made lagoons.
- Treated rainwater is pumped back into the homes, in what will be the largest rainwater harvesting system in the country.
- Flow and volume discharged will not exceed greenfield run-off rates.

North West Cambridge demonstrates the application of all the critical success factors for IWM and the full range of IWM outcomes. In particular:

- The development will capture 25%-45% of rainwater for recycling.
- The water recycling scheme will cut water consumption to 80 litres per person per day (compared with the Cambridge average of 150 litres per person per day).
- The rainwater harvesting system will reduce mains water consumption across the site by over 45%, a daily saving of approximately 595,000 litres – the equivalent of 8,500 baths of water.
- The IWM system will enable a discount on customer bills by charging different tariffs for potable and non-potable sources.
- A consequence of the IWM will be less water in local watercourses and reduced risk of downstream flooding.
- The cleansed water that is discharged from the development reduces the risk of contaminating sensitive water courses.



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Fig. 2 An idealised good water management example

housing. Added to that are requirements to deliver net biodiversity gain, to adapt to climate change, and to deliver developments that are attractive (and therefore can be sold for a premium). A water cycle study or IWMS can help reveal where the challenges and opportunities are and can bring the various parties together to identify solutions, including using blue/green infrastructure. Part A contains guidance on how to scope out, create and deliver an IWM strategy based on real-life examples.

Practising planners can find inspiration for delivering projects on the ground or Local Plan policies in the collection of good examples. Part B contains the case studies of what can be achieved if the guidance principles are followed. Each is set out in the same format, with illustrations, so that they are easily accessible – detailing:

- what was done;
- the outcomes that were achieved, and how the critical success factors contributed;
- how the development relates to planning policy;
- the organisations that were involved; and
- references and links to further information.

In nine of the 12 physical case studies planning policy supporting IWM had influenced the development – the golden thread. In two cases (Croydon and Sheffield), the project had influenced the development of IWM-supporting planning policy – a ‘reverse golden thread’.

Part C of the guidance contains the case study local policies from NPPF-compliant Local Plans

around England drawn up by a variety of local planning authorities, including a regional planning body (the London Plan), unitary and district councils, and a National Park. They show how different water issues are being treated to produce an integrated approach. Each is drawn up under the same template so they are easily accessible. They:

- list the relevant plan and policy or policies;
- summarise the issues that the policies are addressing;
- outline local challenges or opportunities;
- identify and explain the critical success factors to getting the policy into the plan and the intended better water management outcomes; and
- contain links for further information.

Drawing upon the ‘lessons learnt’ from studying these planning policies, Part D of the guidance sets out the relevant policy hooks from national policy and guidance. Part E attempts to help hard-pressed local policy-makers by outlining the following key characteristics of good local policy for better water management (although the principles are applicable to any policy):

- **Evidence based:** The guidance provides a list of documents that are essential or useful for planners to use as part of their evidence base for sound local policies, such as Strategic Flood Risk Assessments, Local Flood Risk Management Strategies, River Basin Management Plans, Water Resource Management Plans, Catchment Management Plans, water companies’ Drainage

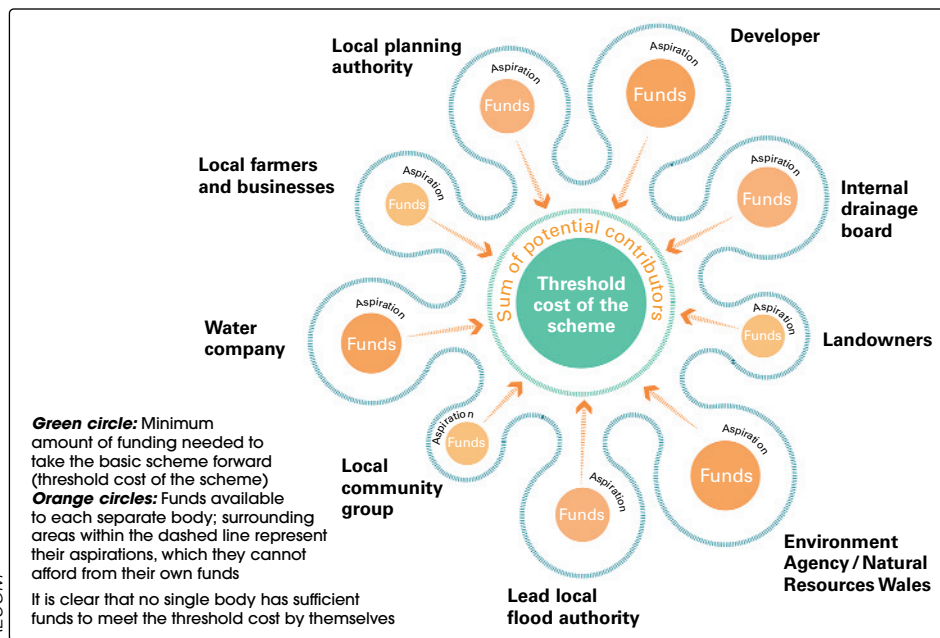


Fig. 3
Partnerships - getting more for less

and Wastewater Management Plans and Water Resource Management Plans, green infrastructure strategies, viability assessments, and other relevant evidence.

- **Vision:** IWM policies should help to deliver a clear vision for sustainable development, or follow a theme such as ecosystems services or climate change adaptation.
- **Strategic:** Local Plans should include a strategic policy that integrates managing flood risk, water quality, water efficiency and blue/green networks, and should set the framework for any non-strategic Local Plan or Neighbourhood Plan policies.
- **Avoidance of simple duplication:** NPPF or PPW policy should not simply be reproduced, but should be translated into locally specific policies and guidance.
- **Clear and positive:** Strong language should be used in emphasising the requirements for new development to deliver positive benefits, preferably identified as targets (for example what constitutes 'reduced water demand' or 'better water quality').
- **Co-operative:** Policies should be developed with strategic partners and neighbouring local planning authorities, and IWM issues should be included in Statements of Common Ground to help pass the soundness test.
- **Deliverable:** IWM should be included in Infrastructure Delivery Plans and longer-term masterplans, which should also identify long-term management arrangements and partners.

Part E also provides of good examples of clear 'technical asks' in Local Plan policies, such as for water efficiency in new development.

Conclusion

Managing the implications of development on water – and vice versa – is an existing challenge that will only intensify in the future. Spatial planning has a crucial role in delivering both resilience to flooding and water stress and enhanced biodiversity. With the multiple institutional actors, agencies and drivers that exist, a partnership approach and good guidance is crucial to achieving better integrated water management. The CIRIA guide shows planners the tools they need to help deliver better water management.

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Notes

- 1 A Coleman: 'Towards integrated approaches to planning for water'. *Town & Country Planning*, 2018, Vol. 87, May/June., 215-19
- 2 P Jones and D Comfort: 'Water resource issues and spatial planning'. *Town & Country Planning*, 2020, Vol. 89, Jan., 34-40
- 3 P Bide and A Coleman: *Delivering Better Water Management through the Planning System*. CIRIA, 2019. The guidance may be downloaded in whole or in parts at tinyurl.com/planforwater
- 4 See the Mainstreaming Green Infrastructure project website, at <https://mainstreaminggreeninfrastructure.com/>
- 5 *Better Water Management through the Planning System*. YouTube video. susdrain, Mar. 2020. www.youtube.com/watch?v=2VRaFrhMqu0