



# CREATING DRAINAGE CAPACITY AND A FLOOD-RESILIENT FUTURE FOR YORKSHIRE

**M**any partners and stakeholders hold different responsibilities within our urban areas, write *Deborah Redfearn and Chris Digman*.

They all aim to serve society while protecting and enhancing the environment. But how do they work together to maximise benefit and support economic growth?

Water companies supply drinking water, protect public health and collect and treat sewage. But they also manage an uncontrollable input; rainfall. When runoff exceeds drainage-system capacity, it can cause flooding, damage, disruption and pollution. Overflows from sewers and wash-off from highways can pollute waterbodies, and treatment works must remove solids and pollutant loads before discharging final effluent.

The need to replace ageing infrastructure is always an issue – all the more so, given major challenges that we cannot simply pass on to future generations. Our climate is changing, so heavier rainfall will increase pressures on

our drainage and wastewater networks. New homes and growth along with the increase in impermeable surfaces, raise the likelihood of flooding and pollution.

We need more resilient systems to cope with infrequent, severe shocks and provide capacity for population growth. Planning is the starting point.

Drainage Area Plans, first created in the 1980s, addressed tactical issues but often failed to promote long-term strategic investment. Drainage planning has evolved, but it has not resulted in a step change.

## SETTING A NEW DIRECTION

Water UK's 21st Century Drainage Programme sets a new strategic direction for water companies and communities aiming to transform the way we collectively plan for and create capacity and resilience across wastewater drainage services. Although some argue that we have had long-term planning frameworks for years, these typically focused on smaller catchments or on an element of drainage. Applying

these frameworks varied across the UK: few drove investment beyond five to ten years or engaged with wider stakeholders to unite common and interconnected risks and pressures.

Water UK's Drainage and Wastewater Management Plan (DWMP) framework provides a common structure to screen and prioritise areas of risk, to set strategic plans and direct future investment over at least 25 years.

DWMPs create roadmaps to support and manage risk in the communities we serve. Done properly, this will support economic growth, enabling development and supporting new services. Each water company's DWMP will provide visibility on challenges, future needs and, critically, long-term funding requirements at national level.



Deborah Redfearn and Chris Digman

## LEARNING FROM YORKSHIRE'S APPROACH

At Yorkshire Water we adopted a strategic approach at the start of AMP6. While continuing to develop drainage-area plans and to update models that contributed to the AMP7 business plan, we started to focus on creating capacity and resilience, through our Strategic Drainage Management Plans (SDMP).

We recognised from the outset that new approaches and processes required initial steps. We undertook pilots on three catchments, each with a large treatment works and multiple drainage areas, to develop, test and shape our thinking, in partnership with local stakeholders.

Developing stronger relationships with key partners and working more collaboratively was central, sharing data and overcoming the hurdles this created, to understand current challenges and pressures, and future needs and aspirations.

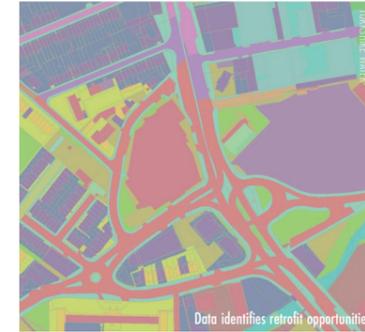
The SDMP for Sheffield served the Blackburn Meadows WwTW and some 500,000 people. We identified and scoped joint opportunities, meeting to understand different problems and issues, and focusing on where to increase capacity.

Understanding Sheffield City Council's aspirations and plans opened new insight into timings. We studied the problems and identified solutions for up to five years, up to 15 years and long term, to 60 years, to understand what to do over a longer timescale, and what within the next AMP.

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We developed geo-spatial routines to assess the region's strategic opportunities and possible solutions. For example, we analysed large data sets to identify opportunities to retrofit green and blue infrastructure in public and private space. These data sets highlight the types of appropriate interventions, based on the opportunities.

Because good engagement requires all parties to work off common data to progress together, we developed and



tested a web platform to share data, to support informed discussions. This went beyond holding data to analyse data, create information and identify joint opportunities.

Developing the SDMPs has underpinned our approach to the DWMP framework.

## OPPORTUNITIES AND CHALLENGES

The framework rightly advocates not completing plans in isolation. Engaging with many partners and stakeholders is critical to wider community and environmental needs. But although this supports transparency, it can raise expectations about levels and timing of partner investment. It takes time to develop trust and mature relationships to overcome these frustrations.

It can be difficult to accept that incremental change may occur over a 40-year period, and that some geographical areas take priority over others, but DWMPs' transparency and visibility should offer evidence and reasoning.

It will take time to establish the plans and clarify the understanding behind the issues, especially looking beyond the drainage systems' hydraulic models to understand the issues and their cause and effect. Many models may need upgrading to present the whole drainage picture, to incorporate pressures and issues from other stakeholders.

Models and spatial data sets only tell part of the story. Having so much data from so many sources offers new insight into problems and issues that would previously have been time-consuming. Having numerous data sets to validate each other boosts confidence, helping to discern truth and fiction.

However, turning all this data into information creates a different challenge, strategically setting the direction with the granularity to give confidence, without

falling into a smaller-scale, drainage area planning mentality. This challenge comes through characterising the problem and developing the right solutions. This can be difficult to achieve if stakeholders want a level of detail not appropriate to this stage of planning.

The framework highlights the need for significant engagement, but it may be necessary to work more as a partnership than to take a do-engage-revise approach, particularly for more complex problems. Strong partnerships, including those that go beyond water-interested parties, offer potential to unlock a key to long-term planning; timing. The DWMP process should help to align programmes to increase capacity in our networks through incremental surface-water management, particularly blue and green infrastructure.

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However, because there is potential for different interpretations of the framework, and supporting elements that Water UK has developed, naturally overall plans will vary. It may prove challenging to compare the plans' current and future needs and performance on a national level.

## COMMENCING THE JOURNEY

The first series of plans must be developed by 2022. But this is only the first step. As the plans set out the direction and we start delivery, success will be measurable, not only against what was identified to be delivered. True success may be to move from a decision-making process that looks to resolve problems, towards a risk-based process, helping our communities to solve problems before they happen. ●

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