

A framework for the production of
Drainage and Wastewater Management Plans

Appendix E

Case studies

Commissioned by Water UK in collaboration with Defra,
Welsh Government, Ofwat, Environment Agency, Natural
Resources Wales, Consumer Council for Water, ADEPT
and Blueprint for Water

September 2019

Report commissioned by Water UK in collaboration with Defra, Welsh Government, Ofwat, Environment Agency, Natural Resources Wales, Consumer Council for Water, ADEPT and Blueprint for Water.

First issued September 2018.

Updated May 2019 and September 2019.

Notice

This document and its contents (including all associated appendices) have been prepared for Water UK. All information contained in this document and associated appendices is made available without responsibility or liability of any nature (including in negligence) on the part of Atkins Limited, and is not to be relied upon as a statement or representation of facts. Atkins Limited does not make or give, nor has any person authority on its behalf to make or give, any representation or warranty whatever in relation to the contents of this document.

E.1. Introduction

This appendix supplements the information provided within the framework document for drainage and wastewater management plans (DWMPs). The main document (and appendices) aim to provide water and sewerage companies (hereinafter referred to as 'companies' or variations thereof), operating within England and Wales, with a framework within which DWMPs can be developed. The DWMP framework is also expected to be of relevance to other parts of the UK.

The authors of the report would like to thank the following for providing the case studies in this appendix:

- > Thames Water: Astrid Colquhoun
- > Northumbrian Water: James MacLean
- > Yorkshire Water: Deborah Redfearn

In defining the DWMP framework, the following planning areas have been defined:

- > **Level 3 (L3) tactical planning unit (TPU)** – the basic TPU will be the wastewater treatment works (WwTW) and its catchment (or aggregations thereof for small catchments, or discrete sub-catchments for larger WwTW catchments).
- > **Level 2 (L2) strategic planning areas (SPAs)** – an aggregation of L3 units into larger L2 SPAs.
- > **Level 1 (L1) water company DWMP** – planning at L2 and L3 to be brought together within an overarching company level DWMP to provide a strategic, long-term plan for drainage and wastewater resilience and associated investment over the plan period.

For consistency the same terminology as used in the main report is used in the case studies.

Three case studies are provided as examples that demonstrate how current practice is applicable to the DWMP framework:

- > Strategic context - Thames Water, London 2100: the case for change (section E.2)
- > Collaborative drainage and wastewater planning:
 - Northumbrian Water, integrated drainage partnerships (section E.3)
 - Yorkshire Water, strategic level engagement (section E.4)

The case studies relate to the initial framework process steps and the establishment of an appropriate management structure. It can be expected that as companies progress through the process steps for the 'first iteration' DWMPs, other case studies can be developed, highlighting good/best practice. The case studies should be read in the context of the DWMP approach.

E.2. Strategic context case study - Thames Water, London 2100: the case for change

E.2.1. Introduction

Thames Water has been developing an approach for the strategic long-term planning of wastewater services in London, called London 2100. It has used the guiding principles of the Drainage Strategy Framework and is aligned with the emerging Drainage and Wastewater Management Plan framework.

By examining the strategic context for wastewater services in London, assessing the drivers for future change and modelling potential future scenarios, Thames Water has been able to establish and evidence a 'case for change' for how it plans to futureproof London's wastewater assets against the uncertainties of the future.

The "London 2100 Case for Change" document¹ states: "The challenge for London 2100 is clear: how do we plan effective, efficient and resilient wastewater services in London in the face of a highly uncertain future?"

In making this case for change, Thames Water has engaged with a wide range of stakeholders to explain the need for longer-term planning of wastewater services and the importance of partnership working and delivery.

E.2.2. What were the objectives?

The primary objectives for London 2100 are:

- > To communicate and gain internal acceptance of the idea that continuing the existing approach to investment would not be possible. Hence the 'Case for Change'.
- > To engage with stakeholders and bring them on board with being part of the team to develop solutions.
- > To develop a framework to allow 'blue-sky' ideas to be generated which will contribute to the overall solution in London.
- > To ensure that the process developed for creating a plan can be rolled out across the whole Thames region.

E.2.3. What issues have been addressed?

London is seeing a rising demand for wastewater services in response to rapid population growth, climate change and urban creep. These challenges are expected to continue into the future.

The assets that service this demand are ageing, with asset deterioration ultimately impacting on capacity. A number of strategic wastewater treatment sites are 'land-locked' or have very limited potential for future expansion². The pace of change and potentially long lead in times for constructing new assets to address needs has meant that the 'business as usual approach' to dealing with growth and quality drivers is no longer appropriate.

Furthermore, there is a regulatory expectation that wastewater planning should be undertaken at a strategic level, similar to that for water resource planning³.

These issues have prompted a focussed, strategic approach to address both short and long-term planning needs for the provision of drainage and wastewater services in London.

E.2.4. How was this challenge approached?

An internal case was made to review the strategic planning approaches to wastewater services, looking beyond current investment cycles. A London 2100 team was established in April 2017 to work with existing infrastructure and non-infrastructure teams within Thames Water. The team used the existing Water Resource Management Plan (WRMP) model as a framework to develop a focussed strategic plan for London's wastewater services. A risk-based approach was used to enable the company to adopt a proportional approach to plan operational and investment activities depending on the probability and consequence of inadequate network and treatment provision over 25 to 80-year planning horizons.

To develop the approach, the following activities were undertaken:

- > Research to explore the principal drivers for change.
- > A futurology workshop to develop scenarios of what the future could look like, particularly with respect to social trends.
- > Strategic analysis to provide a high-level view of the baseline position across London's infrastructure and non-infrastructure assets.

¹ London 2100 Case for Change, Thames Water <https://www.thameswater.co.uk/-/media/Site-Content/Thames-Water/London2100/London-2100-Case-for-change.pdf>

- > Development of metrics. These have been taken from the Capacity Assessment Framework and the Wastewater Resilience Metrics which are in the DWMP framework. One or more additional metrics are under consideration.
- > Optioneering; following the broad approach utilised for water resources planning, a generic options shortlist has been developed at the time of writing. The options are grouped depending on whether they can be applied across the whole of London, at a named catchment level, or have multi-stakeholder elements which require a collaborative approach with multiple benefits to all stakeholders³.

Stakeholder engagement is central to the planning process and an ongoing activity. The companies' engagement strategy is based on five stages: 'captivate, sustain, collaboration, consolidation, advocacy'². A booklet has been produced ('London's Wastewater Future. London 2100: The Case for Change')¹ which has been used as a major engagement tool to introduce the concept of London 2100 to key stakeholders, including: Government, academia, businesses and organisations, financial groups, non-government organisations, regulators and charity/pressure groups¹. Thames Water has received good feedback from stakeholders which has continued into the options appraisal stage.

Support for the London 2100 Project has been established internally through Thames Water's alliance partners and the creation of a steering group. External support has also been provided through an Independent Advisory Group to oversee and provide feedback on the work. The Independent Advisory Group is provided by Cranfield University with the four panel members being taken from both UK and international university institutions. The London 2100 team have also developed partnerships with key academic institutes (e.g. Imperial College, University College London) who are able to provide the expertise in areas of planning for future worlds and decision making under great uncertainty. The team is developing the DWMP for London; the intention is to apply this learning within a company-wide roll out of the DWMP process across all catchments.

E.2.5. Understanding and developing the strategic context

The first step in understanding and developing the strategic context was to ensure that the future drivers for change were fully understood, in order to explain the problems faced and the need for a change in approach to planning wastewater services. This was reinforced to others through demonstrating why longer-term strategic planning works in other business areas (e.g. water resources).

A framework has been developed that shows how the 'Case for Change' fits into the wider process which will lead to a full strategic plan for the Thames region. An awareness of needing to apply the approach across the entire Thames region has provided an important guiding focus for the development of their plan.

The development of future scenarios follows the principles established through the Government Office of Science Foresight Horizons Scanning programme (2009). The use of foresight engineering is described as 'a tool for ordering one's perceptions about alternative future environments in which one's decisions might be played out'⁴. It is used across a number of industries as they all attempt to wrestle with planning for the future when the future is so uncertain.

To consider the future worlds in which Thames Water may be operating, the Case for Change document sets out four possible, and plausible, scenarios. For the purposes of solution optioneering, the actual future world may more likely be a hybrid of all of these or may be completely different. It may even vary across the geographical region. Nevertheless, the future world's concept has provided a useful context within which to consider potential solutions and how Thames Water might go about developing an adaptive plan in response to uncertain future drivers.

The four scenarios are:

- > **Think big** where advances in technology enable centralised wastewater treatment to continue
- > **Technology utopia** where people deeply care about the environment and water, waste and energy are integrated at a local scale
- > **Flush and forget** where utilities are squeezed between rising customer expectations and slow technological change
- > **Reality bites** where people have a choice of utility providers at a range of scales

² London 2100: Future-proofing waste water services for the Capital, Thames Water

³ London 2100 – DWMP updated case study, Thames Water material for May 2018 DWMP stakeholder workshop

⁴ Schwartz P. 1991. The art of the long view. New York: Doubleday/Currency

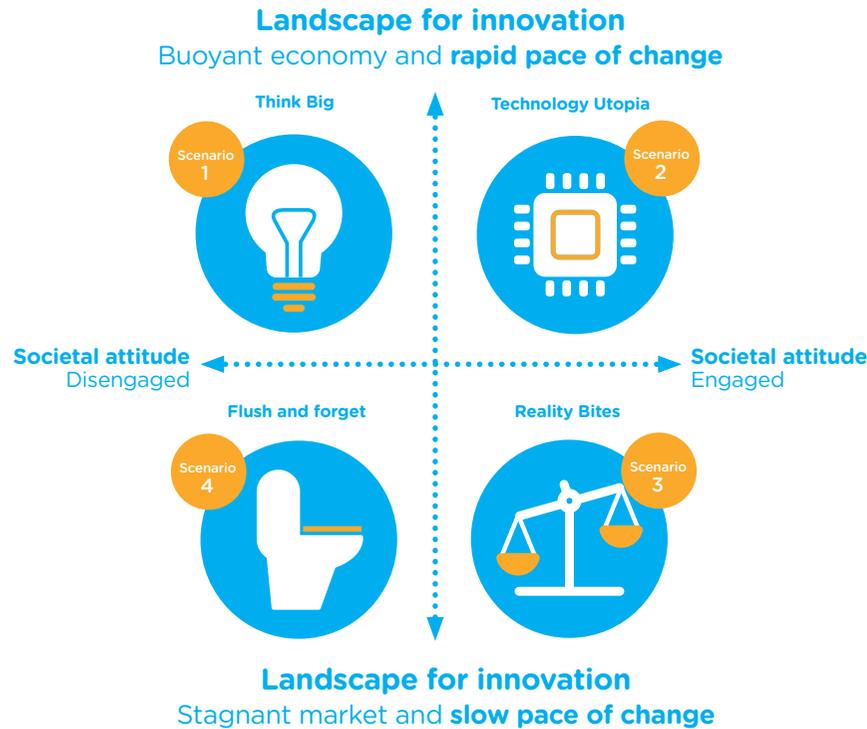


Figure E-1 - Future worlds, reference: London's Wastewater Future – London 2100: The Case for Change

These future worlds were delineated by two key drivers; societal attitude and landscape for innovation. These two factors were chosen via scoring as having the most significant impact on what our future world may look like and also being the most difficult to predict.

Scenario planning approaches are a technique which can be applied when grappling with problems that are complex, long-term and carry much uncertainty. In the face of such uncertainty it is unreasonable to assume any probability occurrence pattern to be associated with any future world scenario or to attempt to rank them.

The alternative is to adopt a more step-wise approach described as an adaptive pathway. This method provides a framework that enables routes or pathways to be established based on socioeconomic and environmental data that map an array of interventions to the changing world. The pathways are dynamic, changing with feedback from appropriate monitoring data. The first steps towards developing an adaptive framework for London 2100 are to consider future scenarios based on, forecast data and identify potential interventions.

E.2.6. Alignment to the DWMP framework

The London 2100 plan for drainage and wastewater management has been developed using many of the same concepts and approaches as the DWMP framework, noting their concurrent development. It is therefore considered that the plan will be a good foundation upon which to build the DWMP process. The 'Case for Change' represents the scene-setting / strategic context element of the DWMP and the overall objectives of both are comparable in relation to the following¹:

- > To develop a structured, auditable approach to develop solution options for future investment, confidence in strategies and planning.
- > To continue to use the guiding principles of the Drainage Strategy Framework and the DWMP framework metrics from the work on the Capacity Assessment Framework and Wastewater Resilience Metrics. Thames Water is also intending to use additional metrics of their own.
- > To deliver the outcome of a "safe, reliable, affordable wastewater service that meets customer requirements and appropriate environmental standards now and in the future, ensuring the reputation of London as a resilient city".

E.2.7. Benefit and results

To date, the outputs of London 2100 and particularly the 'Case for Change' booklet have delivered significant benefits in terms of stakeholder engagement. The substantial work behind this document clearly demonstrated the transformation in approach to planning for wastewater service provision and this has been evident to their stakeholders.

In response, stakeholders have been 'captivated' by the work and eager to be involved in the journey to developing the plan.

The key drivers identified in the 'Case for Change' were also used to develop an 'adaptive capability assessment' for proposed significant AMP7 investment schemes. The purpose was to score the schemes for their ability to adapt to unknown future risks. This again demonstrated a change of thinking and awareness of the need to think longer term.

Going forward the strategy will:

- > Futureproof London's wastewater assets against the uncertainties of the future
- > Continue to stimulate stakeholder buy-in which is vital for delivering a successful long-term strategy
- > Be defensible and justifiable; able to stand up to challenge
- > Deliver better outcomes for customers for less money than the traditional planning processes

E.2.8. Lessons learned

- > **Stakeholder engagement is key.** Stakeholders are interested but the main challenge is to engage at the appropriate level. Bombarding them with either too much, or too little information risks disengagement and apathy further along the project.
- > **Care is required when communicating messages.** Stakeholders assume that long term planning and alignment with WRMP is already happening, and so it is important to communicate correctly to avoid: "Great, but why aren't you doing this already?"
- > **Regular re-baselining is important.** Population forecast data is constantly being updated. To ensure appropriate investment at the right time, baselines need to be regularly re-evaluated.
- > **The need for good, consistent metrics.** Without these, baselining becomes difficult and evaluation of any capacity deficit becomes subject to 'interpretation'. Good metrics are also essential to help in discussions around where trade-offs are required in dealing with multiple outcomes and competing pressures. A compelling case for investment must be underpinned with consistent reliable data supporting a metric enabling the change over time to be clearly evident.

E.2.9. Summary

The approach to London 2100 is well aligned with the DWMP aspirations and demonstrates a firm understanding of the strategic context and need for stakeholder engagement, to develop holistic solutions for the future. It is envisaged that the emerging DWMP framework will be incorporated into the London 2100 methodologies to further align the companies' aspirations and objectives with stakeholder expectations.

E.3. Collaborative drainage and wastewater planning case study: Northumbrian Water, integrated drainage partnerships

E.3.1. Introduction

Northumbrian Water is developing and improving their approach to collaborative drainage and wastewater planning, to provide a service that effectively deals with sewage flows and heavy rainfall. They work with multiple environmental partners across their operating area to help them deliver such services. This case study outlines the work done to bring stakeholders together, recognising that working in partnership can help deliver multiple outcomes in a more affordable way, achieving more benefits together than could have been achieved alone.

E.3.2. What issue has been addressed?

Drainage systems are a complex mixture of interactions between land, terrain, buildings, highways, private drains, public sewers, watercourses, rivers and in some cases the sea. The requirements placed upon these systems are also continuously changing. Ensuring that drainage systems are able to accommodate future growth, climate change and urban creep whilst continuing to protect the environment, and without exacerbating existing flooding issues, is a significant challenge.

Water and sewerage companies recognise that it may not always be practical or cost effective to continue to increase system capacity, and that alternative ways of working are often necessary to continue to provide the expected levels of service to customers and the environment.

Over the years there have been several Governmental visions and strategies moving the industry towards an integrated, sustainable approach to drainage and flood risk management involving collaboration between multiple stakeholders. However, there remains complex institutional and funding arrangements which divide drainage responsibilities between water and sewerage companies, the Environment Agency, Lead Local Flood Authorities (also local authorities planning and highways departments), housing developers and property owners. This case study outlines how this issue has been addressed by Northumbrian Water to deliver benefits across multiple stakeholders through an integrated partnership approach.

E.3.3. How was this challenge approached?

In support of an integrated partnership approach and following the success of the Northumbrian Tyneside Sustainable Pilot Project⁵, the Northumbria Integrated Drainage Partnership (NIDP) was formed in 2014, consisting of Northumbrian Water, the Environment Agency and the thirteen Lead Local Flood Authorities covering the north east of England. The NIDP have quarterly meeting and at least one annual capacity building workshop to focus on training in areas such as modelling and funding. This partnership allows all partners to take an active and up to date approach to integrated drainage issues.

The NIDP have developed a strategic level, area risk-based methodology to prioritise partnership working opportunities and provide a basis to apportion funding for collaborative planning. This identifies situations where responsibilities for drainage provision and the causes of flooding are shared or overlap. It does not replace any existing arrangements or responsibilities where flood risk from single sources may be present.

The integrated collaborative approach championed by the NIDP, promotes cost beneficial schemes and the use of sustainable drainage techniques, such as natural flood management, to deliver multiple benefits alongside flood risk reduction thereby further benefiting the environment, society and the economy.

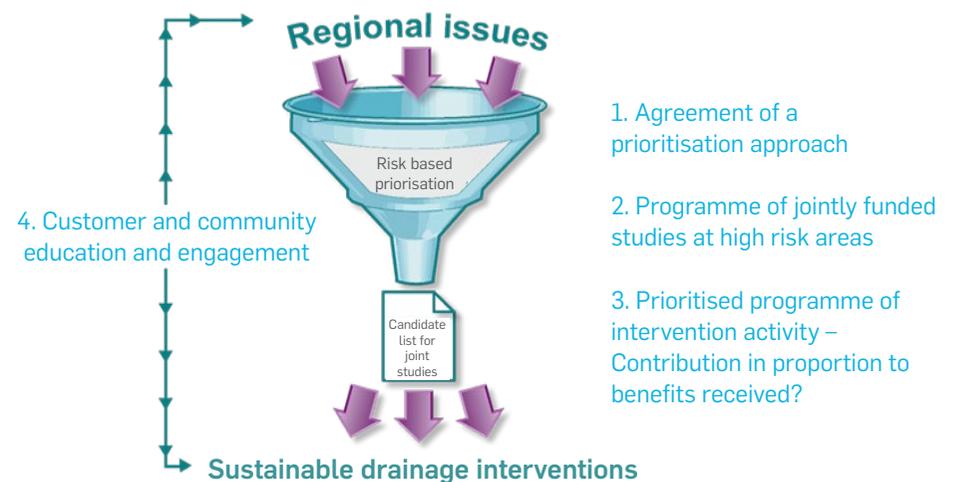


Figure E-2 – Partnership opportunity prioritisation process overview

⁵ http://www.waterprojectsonline.com/case_studies/2012/Northumbrian_Tyneside_Sewerage_2012.pdf

E.3.4. What were the objectives?

The purpose of the NIDP initiative is to establish a proactive cross organisation process and procedure to:

- > use the agreed strategic level area risk-based prioritisation methodology to promote collaborative working at areas of greatest risk, including moderation factors when considering the focus for available resources
 - > agree an annual delivery programme of prioritised and jointly funded integrated studies
 - > identify and promote a programme of prioritised and jointly funded studies for future years
 - > create a template of how organisations can work together in communities to understand current and future drainage issues
 - > establish and implement data sharing and communication protocols (to include capacity building and knowledge sharing across organisations)
- > identify and promote integrated sustainable drainage opportunities including natural flood management techniques
 - > promote 'best possible' service to individuals and communities balanced against environmental needs and costs
 - > provide risk-based evidence to inform future business planning requirements for all parties
 - > identify and promote the organisational structures and relationships needed to deliver change in communities
 - > champion the delivery of innovative and sustainable approaches to the management of surface water
 - > promote opportunities that deliver multiple benefits (social, economic and environmental)

E.3.5. Implementing a collaborative planning approach

By working better together, the partnership approach has enhanced the reputation of the NIDP across the region. It has been recognised as industry best practice in the 2017 UK Water Industry Research project 'How best to align the funding processes with the various bodies involved in resolving flooding'⁶ and has also received national awards, such as a Water Industry Achievement Award in 2016 for "SuDS For Schools and Communities"⁷. More recently, the NIDP won the Working in Partnership category of the Project Excellence Awards as part of the national Flood & Coast 2018 event.

Establishing the collaborative process that underpins the NIDP has taken significant time and effort, but at all stages all partners were at the table with a desire to make it work (the partnership ethos being that "it's the right thing to do"). To achieve partnership working, at times some partners needed to park their priorities to allow other areas to be moved forward.

The partnership is also about:

- > improving skills and knowledge sharing
- > Integrated modelling incorporating data from all
- > collaboration and innovation
- > identifying and delivering training requirements
- > providing benefit of joint procurement
- > utilising framework suppliers
- > one voice to the community

Similar integrated catchment strategies have also been implemented within the company such as Defra's Catchment Based Approach which is a key part of the UK's implementation of the Water Framework Directive. As active members of the five catchment partnerships within their operating area, Northumbrian Water support the delivery of improvements to river environments and wider catchments through the provision of financial support, expertise, data and knowledge sharing. For example, in 2017 the company financially supported five projects and hosted four 'Thinking Ahead' workshops to develop an integrated catchment strategy. The company worked to understand how their objectives could align with other members' objectives and how they can work together on projects.

⁶ <https://www.ukwir.org/How-best-to-align-the-funding-processes-with-the-various-bodies-involved-in-resolving-flooding>

⁷ https://www.nwl.co.uk/_assets/documents/SL057_Suds_Reports_-_Schools_and_Communities_A4_LR_V7.pdf

E.3.6. Alignment to DWMP framework

The integrated approach taken by the NIDP aligns to the DWMP framework as it provides an existing and effective integrated drainage partnership involving all risk management authorities (RMAs) in the Northumbrian Water region. This maps across to the DWMP L2 strategic planning groups as well as providing a mature risk-based prioritisation process for identifying proactive partnership working opportunities, which considers a number of factors, including drainage capacity, housing growth, water quality and flood risk. The outputs are of interest to all stakeholders involved and can be carried forward with sound governance. As all schemes are integrated, they consider environmental protection and reducing flood risk from all sources. Addressing the main drivers will also have benefits on the drainage network by providing surface water separation, keeping surface water on the surface by managing surface water in the environment for the benefit of customers, communities, wildlife and the environment.

The company is also exploring partnership working with organisations that do not have flooding or water quality as their main objective but where working together could provide multiple benefits to customers such as transport departments in Local Authorities. This level of planning would also map across to the L2 DWMP strategic planning groups. The company were awarded an Innovate UK grant along with Newcastle City Council to explore the feasibility of aligning various council programmes with the strategic surface water management plan for the city.

The company has also signed the Blue Green Cities⁸ Declaration initiative; a pilot based in Newcastle-upon-Tyne, and are part of the Learning Action and Alliance⁹ which has been setup to support this initiative. These groups also provide strong platforms for the L2 stakeholder engagement that will arise from DWMP implementation.

E.3.7. Benefit and results

The NIDP approach to drainage and wastewater management planning aims to deliver the following benefits:

- > enabling future growth
- > protecting properties from surface water and river flooding (with over 1,000 homes protected to date)
- > improving drainage provision to many thousands of homes
- > reducing combined sewer overflow (CSO) spills and improved water quality
- > creating new habitat and biodiversity
- > enhancing recreation/leisure spaces and creating teaching spaces
- > delivering Natural Flood Management
- > providing sustainable solutions

The approach has provided the partners with efficiencies through:

- > economies of scale
- > shared understanding of issues
- > "one fix, one time"
- > visibility of a long-term programme (10 years ahead)
- > identification and alignment of opportunities
- > joint communication strategies

The benefits of the approach have been clear with integrated working allowing funding efficiencies with funding from multiple sources (Lead Local Flood Authorities, water company and Flood and Coastal Erosion Risk Management grant-in-aid (GIA) resulting in lower costs to individual partners (and in the case of GIA being able to draw down national funding to local schemes).

By working together, the NIDP has been able to use partners' powers to facilitate construction works to allow more surety of delivery. The company has now developed a 10-year programme of studies to deliver the joint working across a further 60+ areas in the region. This will look to address risk to almost 20,000 properties from the drainage network and potentially a further 10 to 15,000 from fluvial and surface water risk (ground water, while considered, is currently not a realised risk in the north east). Study areas continue to highlight numerous partnership working opportunities. As a result, there is a healthy pipeline of further schemes currently in development.

⁸ <http://www.bluegreencities.ac.uk/>

⁹ <http://www.bluegreencities.ac.uk/research/learning-and-action-alliance.aspx>

E.3.8. NIDP project examples

E.3.8.1. Fellgate Estate Flood Risk Reduction Scheme

A great example of a partnership project is the Fellgate Estate Flood Risk Reduction Scheme¹⁰, which protects 175 homes. The innovative solution consisted of constructing sustainable drainage systems (SuDS) throughout the estate helping to slow the flow of water. NIDP also delivered the "SuDS for Schools and Communities" programme within the two schools on the same estate, creating swales, ponds, and an outdoor classroom to enhance the educational experience for the children.

E.3.8.2. The Don Partnership

In 2016 Northumbrian Water made the first steps towards aligning the aspirations of the NIDP and the catchment partnerships within the region, by bringing both partnerships together to work on the River Don catchment. The Don Partnership brings Northumbrian Water together with six partners – South Tyneside Council, Gateshead Council, Sunderland Council, the Environment Agency, Wear Rivers Trust and Durham Wildlife Trust. Together they are collecting information which aligns with all partners' objectives and identifying risks that can be jointly resolved through partnership work.



South Tyneside Council In partnership with... **NORTHUMBRIAN WATER** living water

MWH LUMSDEN & CARROLL CIVIL ENGINEERING

Figure E-3 - Fellgate Estate Flood Risk Reduction Scheme

¹⁰ https://www.nwl.co.uk/_assets/documents/SL057_Suds_Reports_-_Fellgate_A4_LR_V9.pdf

E.3.8.3. Killingworth & Longbenton

Northumbrian Water, the Environment Agency and North Tyneside Council are together investing over £5 million to manage surface water in the Killingworth and Longbenton areas of North Tyneside. As part of this, a watercourse is to be diverted out of the combined sewer, thereby increasing the combined sewer capacity and reducing the risk of flooding during heavy rainfall¹¹.

The work is to be completed in three phases, the first two are complete and the final phase is now under construction. The scheme will reduce the risk of flooding to 3,500+ properties as well as providing the following benefits:

- > reduced treatment flows, reduced pumping costs, increased capacity
- > reduced CSO spills both in frequency and volume of spills
- > improved river water quality and improved habitat and amenity

The integrated partnership working approach has enabled the provision of over 50% of the £5 million funding from external partners (Flood and Coastal Erosion Risk Management GIA, Local Authority, Regional Flood and Coastal Committee Local Levy) and allowed the ability to utilise all of the RMAs 'powers' to facilitate delivery of the surface water management solutions.

Northumbrian Water successfully applied directly for GIA funding as part of the NIDP. It has also been estimated, that to provide the same level of storage in below ground tanks and upsizing sewers for this



Figure E-4 - Killingworth & Longbenton scheme location

scheme would have required an investment of £20 million, further highlighting the real benefits of full partnership working.

E.3.9. Lessons learned

The success of the NIDP has been built upon the following behaviours and actions:

- > ensuring that partnerships are established early in the process
- > participating partners consistently attending meetings and workshops
- > making the partnership a priority and having the appropriate level of authority for their organisation

- > having partners that are committed, constructive and in agreement to the prioritisation process for partnership opportunities

The partnership has been recognised nationally as best practice in the 2017 UK Water Industry Research project⁶ and has already delivered significant benefits. It is a transferable model should all partners want to make it work. It takes time to achieve success and it has to have the appropriate level of resource commitment.

The NIDP strategic prioritisation process has evolved and will continue to be enhanced and modified, for example to

take into account new methodologies such as the "Five Capitals"¹², to benefit multiple parties as residual to addressing flood risk.

E.3.10. Summary

The NIDP's approach to integrated partnership working is well aligned with the DWMP expectations. The approach provides proven examples in which solutions can be developed and implemented at a strategic planning area level, beneficial to multiple stakeholders.

¹¹ <https://nwlcommunityportal.co.uk/Projects/killingworth-and-longbenton/Activity>

¹² <https://www.forumforthefuture.org/project/five-capitals/overview>

E.4. Collaborative drainage and wastewater planning case study: Yorkshire Water, strategic level engagement

E.4.1. Introduction

Yorkshire Water is currently developing and refining their approach to long-term planning through the implementation of Strategic Drainage Management Plans (SDMPs). These are generally an aggregation of several Drainage Area Plans (DAPs) which together align with a strategic area enabling opportunities for partnership engagement and solution co-creation. It is considered that the SDMPs will be a good foundation upon which to build the DWMP process.

At the time of writing, the company is delivering four 'pilot' SDMPs; Leeds, Sheffield, Hull and the Upper Aire Valley, each of which have been specifically chosen as opportunities to test and develop key parts of the SDMP process¹³. This case study outlines the work that has been undertaken for the Sheffield SDMP, which was chosen as a pilot to concentrate specifically on partnership and engagement.

E.4.2. What issue has been addressed?

There is an acceptance that strategic level planning can be achieved more effectively with a wider understanding of stakeholder aspirations and intentions and their proactive engagement as collaborators/partners. The company was also keen to strengthen relationships with Sheffield City Council, particularly with regards to sustainable urban drainage and planning responses, to stimulate proactive engagement around key future opportunities.

The SDMP's aim is to address these issues by expanding Yorkshire Water's normal business process to develop and include external stakeholder relationships, engagement and data sharing throughout the process to develop a portfolio of potential shared interventions.

E.4.3. How was this challenge approached?

The SDMP process firstly develops a company based understanding of the risks and challenges through the collection of internal data and investment plans. This has been overlaid onto external stakeholder information (e.g. Environment Agency flood maps, water quality data, British Geological Society overlays, planning information). GIS routines were then used identify solution opportunities such as SuDS. Extensive network modelling coverage in the Sheffield area has also been used to undertake a number of future scenarios to monitor

the increasing stress on the network over time and to understand where short, medium and long-term investments are likely to be required for solutions to the risk of flooding, CSO performance and capacity¹³.

Once this stage was complete for the Sheffield SDMP, the data was used in discussions with representatives from Sheffield City Council to determine areas of mutual concern and to establish a joint aspiration to form a robust partnering relationship. This approach is similar to that which had worked well for the vision for Hull in the development of the Water Culture document; a 'foldout' document which highlighted the history of Hull, flooding issues and the aspirations to change the culture so that the City and surrounding area 'lived' with water going forwards.

Areas of shared responsibility, and potential barriers/constraints to partnership working, were openly discussed at the outset and a plan was drawn up for key areas of focus going forwards. Subsequent meetings took more of a 'workshop' format where key risk information was shared and opportunities for partnership work over different time frames were documented. Each session was focussed to allow the company to invite a targeted wider group to the sessions to maximise efficiency. For example, the 'growth' session was attended by a representative of the planning department to allow early visibility of 'unpublished' development plans.

E.4.4. What were the objectives?

The primary objective was to build a robust relationship with representatives from Sheffield Council who Yorkshire Water could work with to develop partnership projects beneficial to both parties.

E.4.5. Implementing a collaborative planning approach

The collaborative planning approach was achieved by identifying key personnel empowered to deliver a shared vision and a potential programme of work through the approach outlined in section E.4.3. In planning responses, Yorkshire Water deliberately set out to keep sessions short and open, allowing time to demonstrate that they were dealing with the issues tabled before meeting again. This steady approach allowed trust and relationships to develop and encouraged proactive engagement around key future opportunities.

E.4.6. Alignment to DWMP framework

The overall strategic ambitions and plans for partnership working that Yorkshire Water are adopting are highly comparable to those proposed in the DWMP and it is considered that the SDMP pilots will be a good foundation upon which to build the DWMP process. The proposed Levels 1, 2 and 3 for the DWMP align well to the structure within which Yorkshire Water already undertakes its planning, particularly with the new SDMPs¹⁴.

¹³ DWMP Long Term Planning Review: Alignment to DSF – Yorkshire, Ed Bramley December 2018

¹⁴ Email: *21st Century Drainage – The three levels*, Ed Bramley, Yorkshire Water, 16th Jan 2018

- > **Level 1** – The regional view of the DWMP fits with the national summary overview as a way of providing a long-term overview context for the challenges of the region.
- > **Level 2** – Equates to the SDMPs which build on the risks and notional solutions developed in the DAPs, by combining demand pressures and developing holistic catchment solutions. Future scenarios are modelled at this stage and uncertainty is quantified, however, sensitivity analysis is [currently] not undertaken as part of the option development.
- > **Level 3** – Equates to the DAPs which are built around the tried and tested Drainage Area Zones (DAZ). For some treatment works there would be several contributing DAZs, whilst for rural areas, there may be an individual DAZ covering several rural works. The DAP programme uses a risk-based approach against the business drivers, similar to the DWMP risk-based screening process.
- > **Level 4** – Yorkshire Water would also look at hydraulically homogenous areas within a DAZ; the natural break points for dividing up the catchment for implementing solutions.

The overall long-term planning process is based around the principles of the Drainage Strategy Framework, risk-based prioritisations, transparency, governance and developing holistic solutions. The partnership engagement and collaboration has allowed more confidence in long term planning and in identifying opportunities to work together and maximise funding streams.

E.4.7. Benefit and results

As a result of the newly established relationship and workshops, Yorkshire Water has been able to openly discuss tactical and strategic issues and to build a closer relationship with Sheffield City Council. This has allowed the two organisations to work together to present a shared approach to future developments.

Consequently, a number of projects have been developed which Yorkshire Water can drive forward with Sheffield City Council. Some of these are at a tactical scale, but the real benefits have been the number of strategic partnership projects, likely to be delivered across multiple AMPs. A number of these have been made available for inclusion in their PR19 submission and will be used to demonstrate how they are able to use less traditional interventions to manage capacity and reduce flooding and pollution.

Yorkshire Water has also found to benefit greatly from the experience Sheffield City Council has in delivering and maintaining blue green solutions in an urban environment.

E.4.8. Lessons learned

The main lessons learnt from the development of the Sheffield SDMP are:

- > **Building robust effective relationships cannot be rushed.** It is important to understand current perceptions of the relationship, to build on the strongest parts and to work hard together to improve the issues.
- > **A trusting relationship makes it easier** to deal with any future issues and challenges which present themselves due to the different objectives of the organisations involved.
- > **Have mutual respect** for the technical and professional skills of the people involved. This enables informed compromise, or where required, understanding of the evidence supporting the decision making.
- > **Make sure the right people are involved** with the specific elements of work. The technical aspect should not be ignored as this is the key element which drives through from the initial discussions to implementation of shared objectives.
- > **Take steps to be more open** about ongoing activities, even though this may be uncomfortable at times, it ultimately helps to build trust and confidence, which is reciprocated by those who need to work in collaboration.
- > **Building a robust effective relationship produces the dividends** rather than focussing solely on the success arising from technical expertise and eye-catching visualisations.

E.4.9. Summary

Yorkshire Water has acknowledged that strategic level planning can be achieved more effectively with a wider understanding of stakeholder aspirations and intentions. By establishing SDMPs that cover several DAPs, the planning process builds on the risks and notional solutions developed by combining demand pressures and developing holistic catchment solutions. From the newly established relationship and workshops, the company has been able to openly discuss tactical and strategic issues and to resolve previously underlying issues with stakeholders. This has allowed the organisations to work together to present a shared approach to future development areas. By building robust and effective relationships, it has produced trusted partnerships which can be utilised and built on as the company progresses into the implementation phase of the DWMP framework.

A blue-tinted photograph of a green leaf resting on a textured, light-colored surface. A white diagonal line runs from the top left towards the bottom right, crossing over the leaf. The background is a solid blue color.

John Sutherland / Gian Illari / Brian Arkell

Atkins Limited
Woodcote Grove
Ashley Road
Epsom
Surrey
KT18 5BW

Tel: +44 (0)1372 726140

Fax: +44 (0)1372 740055