

United Utilities Water

Drainage and Wastewater Management Plan 2023

Irwell DWMP

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Glossary

For the glossary, refer to document C003.

1. Introduction to the DWMP

The Drainage and Wastewater Management plan (DWMP) is a long-term plan setting out how we intend to maintain robust and resilient drainage and wastewater systems, now and in the future. Whilst long term planning for wastewater has always been undertaken, this is the first time that we are developing a region wide plan in this format, and we have taken a comprehensive approach as we recognise the importance of long-term planning and the increasing need for partnership solutions.

The heart of the plan will be built around collaborative and innovative working, while encompassing all activities relating to drainage, flooding and delivering a wastewater service that protects the environment. We have led on this plan, but have developed it in consultation with our partners as we will be delivering the DWMP in partnership with other organisations such as the Environment Agency and local councils.

By developing the DWMP, we have an opportunity to:

- Provide a basis for more collaborative and integrated planning alongside stakeholders across the region to tackle shared and interrelated risks relating to drainage, flooding and protecting the environment;
- Strengthen partnership working with all key stakeholders to drive integrated investment in the environment and communities;
- Develop a plan that will help address the increasing environmental expectations from customers and stakeholders and work towards the ambitions set out in Defra’s 25-year plan;
- Collectively explore innovative solutions such as Sustainable Drainage Systems (SuDS) and nature-based solutions to understand what is best for the North West; and
- Embed Systems Thinking to better understand drainage and environmental interactions, and to maximise the potential for integrated solutions.

Throughout the DWMP process, we have engaged with stakeholders to share our data and findings, to ensure that the solutions delivered are co-created, drive efficiencies and will benefit the communities and environment that we live and work in.

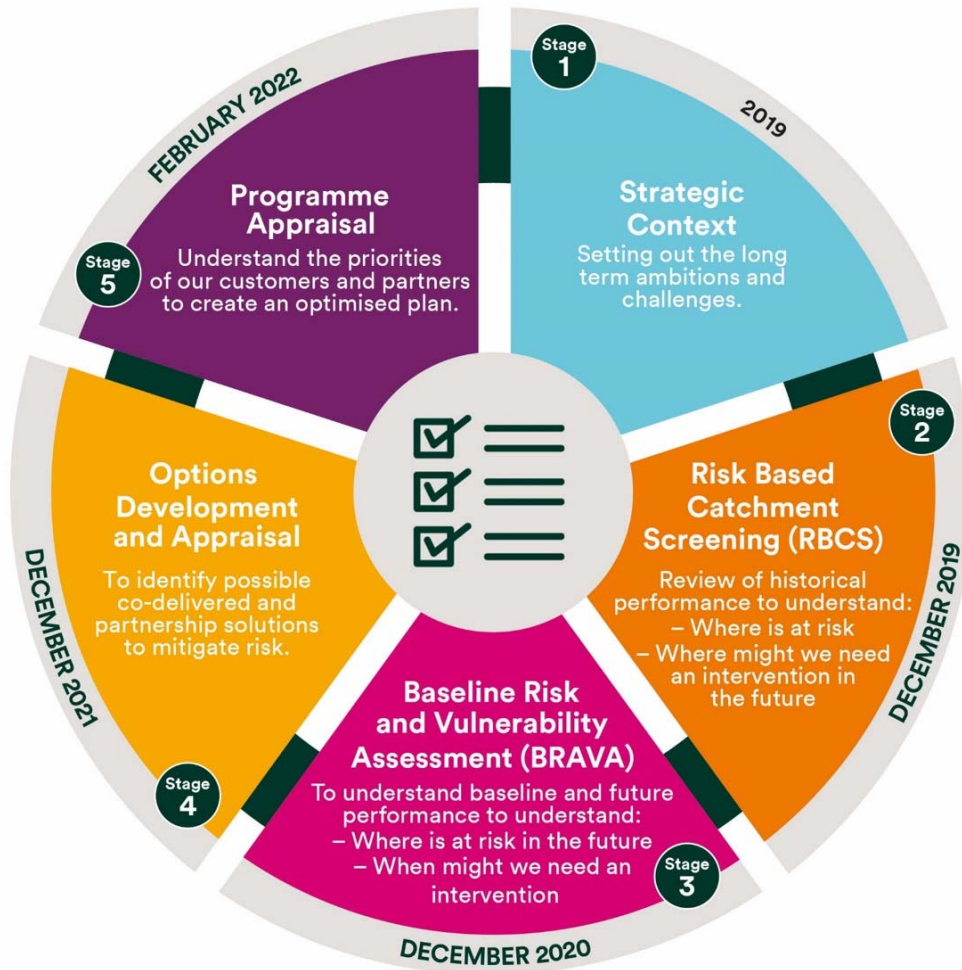
The plan will be set out at three levels (Figure 1) to maximise the potential for partnership working and for effective engagement between regulators and stakeholders at both company-wide level and more locally.

Figure 1 Geographical scales applied for planning and collaboration within DWMP



The plan is made up of five main stages (Figure 2), which each contribute to developing the most sustainable and effective future for the North West. These stages include setting out the long-term ambition for the region, identifying risk and understanding the possible interventions and solutions that could be developed.

Figure 2 Five stages of the DWMP



Across the North West, there are 14 Strategic Planning Areas (SPAs) and the purpose of this document is to share local, place-based information.

We will share the results from the different stages of the DWMP and how the DWMP plans to make a difference in the Irwell SPA.

2. Background to the Irwell catchment

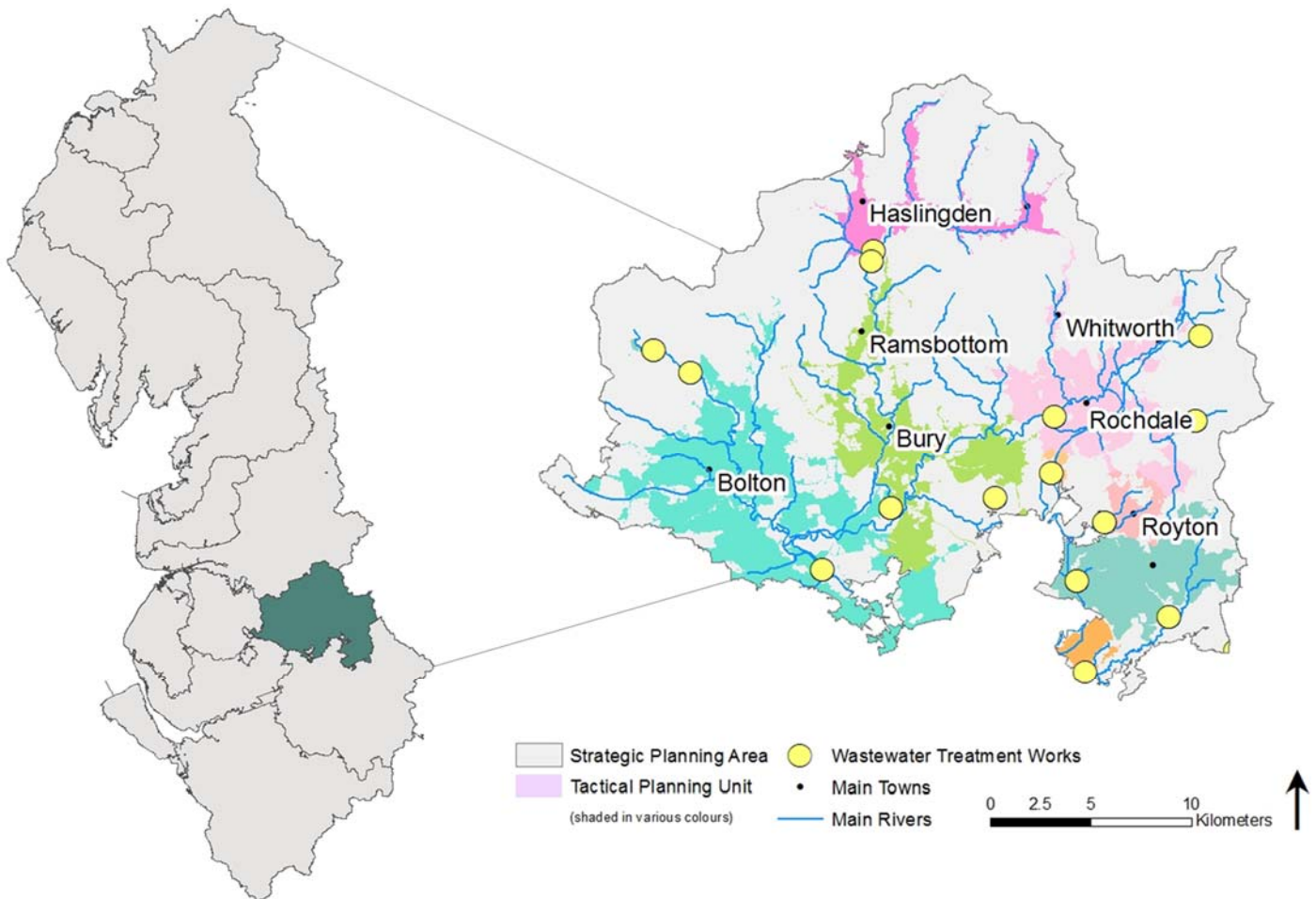
The Irwell catchment area covers a total of 777km² north of Manchester. This catchment is dominated by post-industrial and urbanised towns such as Bolton, Bury, Rochdale, Oldham, Manchester and Salford in the south. In the northern part of the catchment, the land is more covered by heather moorland with large areas of pasture ^[1].

There are two main sub catchments:

- Croal Irwell – Located to the west of the Irwell catchment, this sub catchment includes Rossendale, Bury, Blackburn, Darwen, Bolton, Salford and Trafford. The area is a combination of rural upland in the north, with more heavily urbanised areas in the south, including the Manchester Ship Canal ^[2].
- Roch Irk Medlock – Located in the east of the Irwell catchment, areas such as Rochdale, Shaw, Heywood and Littleborough are located here in the north, with areas such as Chadderton, Oldham and Failsworth being present in the south ^[3].

There are 14 wastewater tactical planning units (TPU, also known as wastewater treatment work (WwTW drainage catchments)) within the Irwell SPA. A TPU is the drainage area including all the sewers and wastewater assets e.g. pumping stations, which drain to the associated wastewater treatment works. The TPUs within the SPA vary in size from larger catchments such as Rochdale and Bury to smaller, rural catchments such as Lydgate. The TPUs are highlighted in Figure 3.

Figure 3 Map of the Irwell SPA



There are numerous strategic management plans within the Irwell that are owned by various other organisations. Within the Irwell catchment, there are active management plans such as:

- The Environment Agency River Basin Management Plan (RBMP) and Flood Risk Management Plan (FRMP);
- Lead Local Flood Authority (LLFA) Surface Water Management Plans (SWMP); and
- Local council plans.

Each of these strategic plans focuses on managing particular risks and links to programmes of work. A high-level summary of these management plans is shown in Table 1.

The DWMP aims to collaborate, share best practice and to align with other strategic plans throughout the catchment. This will help to highlight common challenges, ambitions and goals where there are shared or interconnected risks and opportunities.

Table 1 Summary of stakeholder management plans

Management plan	Overview	Key aspects for the Irwell catchment
<p>River Basin Management Plan (RBMP) ^[4]</p> <p>Owner: Environment Agency</p>	<p>A river basin district covers an entire river system, including river, lake, groundwater, estuarine and coastal water bodies. The RBMP aim is to improve the quality of our water environment to best support wildlife, agriculture, and businesses, and to boost regeneration and recreation.</p>	<p>The main reasons for not achieving good ecological status are physical modifications and pollution from a range of sources such as rural areas, towns, cities, transport and wastewater.</p> <p>Future challenges predicted by the Environment Agency include invasive non-native species, physical modifications, and pollution from a range of sources such as wastewater, towns, cities, transport, agriculture and rural areas.</p> <p>Future challenges predicted by partnerships include invasive non-native species, pollution from wastewater and physical modifications.</p>
<p>Flood Risk Management Plan (FRMP) ^[5]</p> <p>Owner: Environment Agency</p>	<p>The FRMP is a strategic plan, which reviews and develops measures to manage the risk of flooding from rivers, the sea, surface water, groundwater and reservoirs. The plan outlines flood risk areas, hazards, and sets out measures and objectives to manage flood risk.</p>	<p>The North West area covers an area of approximately 13,200km² and is occupied by close to seven million people. More than 370,000 of these people being at risk from flooding by rivers and the sea with a further 600,000 people at risk of surface water flooding.</p> <p>Around 35,000 people are thought to be living in areas that are deemed high risk of flooding from surface water with a further 97,500 at a moderate risk. 31,000 people are living in areas at are high risk of flooding due to rivers and the sea with a further 46,500 at a moderate risk.</p> <p>Areas of significant flood risk across the North West include Ambleside, Ashton under Lyne, Atherton, Blackburn, Burnley, Ellesmere Port, Formby, High Folds, Kendal and Liverpool.</p> <p>The North West has a large amount of reservoirs credited to its industrial history, there are currently approximately 290 in the region that are classed as large raised reservoirs. 300,000 people are at risk of flooding from reservoirs in the North West.</p>
<p>Surface Water Management Plan (SWMP) ^[6]</p> <p>Owner: Lead Local Flood Authority (LLFA)</p>	<p>A SWMP is a plan which outlines the preferred surface water strategy for a location. Although owned and led by the LLFA, a SWMP is produced in collaboration with other drainage owners, water companies included.</p> <p>Partners work together to understand the surface water flood risk in an area and agree an approach to address these issues innovatively and in a cost-effective way, and where appropriate, in partnership. A SWMP is a long-term plan and should influence development.</p> <p>The decision on whether a SWMP is appropriate is down to the LLFA, generally they are produced for areas considered to experience a high flood risk. UuW continues to work closely with LLFAs and supports the development of SWMPs where required, and the delivery of SWMPs where they are published.</p>	

Management plan	Overview	Key aspects for the Irwell catchment
<p>Catchment Based Approach (CaBA) Catchment Plan ^[4] ^[7]</p> <p>Owner: Irwell Catchment Partnership</p>	<p>The aim of the partnership is to bring together stakeholders to create and deliver a focussed, sustainable and collaborative action plan to deliver benefits within the catchment.</p>	<p>The Irwell Catchment Partnership has developed the catchment plan, which through a multi-agency approach, aims to maintain, protect, improve, alter or enhance natural features.</p> <p>Pressures in the catchment include physical modifications and pollution from a range of sources such as wastewater, towns, cities and transport. Future pressures include invasive non-native species, physical modifications and pollution from wastewater.</p>

2.1 Strategic Planning Group (SPG)

We appreciate that there are many organisations with formal roles and responsibilities relating to drainage, flooding and protection of the environment. By participating in the creation of a DWMP much more can be achieved compared to working on our plans in isolation.

Within DWMP, SPGs have been a key form of engagement with stakeholders across the region. SPGs have operated at a local, catchment scale to allow stakeholders to input into the identification of priority and shared risk locations and develop an understanding of potential collaborative solutions to tackle shared risks. The SPGs have covered a wide range of issues including reducing flooding and improving water quality. A key driver is understanding where there may be potential to achieve multiple benefit through solutions.

Through the SPGs, we have been able to consult with strategic partners on the various stages of the DWMP (Figure 4) and share outputs as and when they become available. This has been a two-way process and stakeholders have had the opportunity to share information with us such as action plans, confirmed projects, priority areas and ambitions for the future, which could be developed and delivered in partnership. We have been able to review and incorporate the information shared during the different stages of the DWMP process.

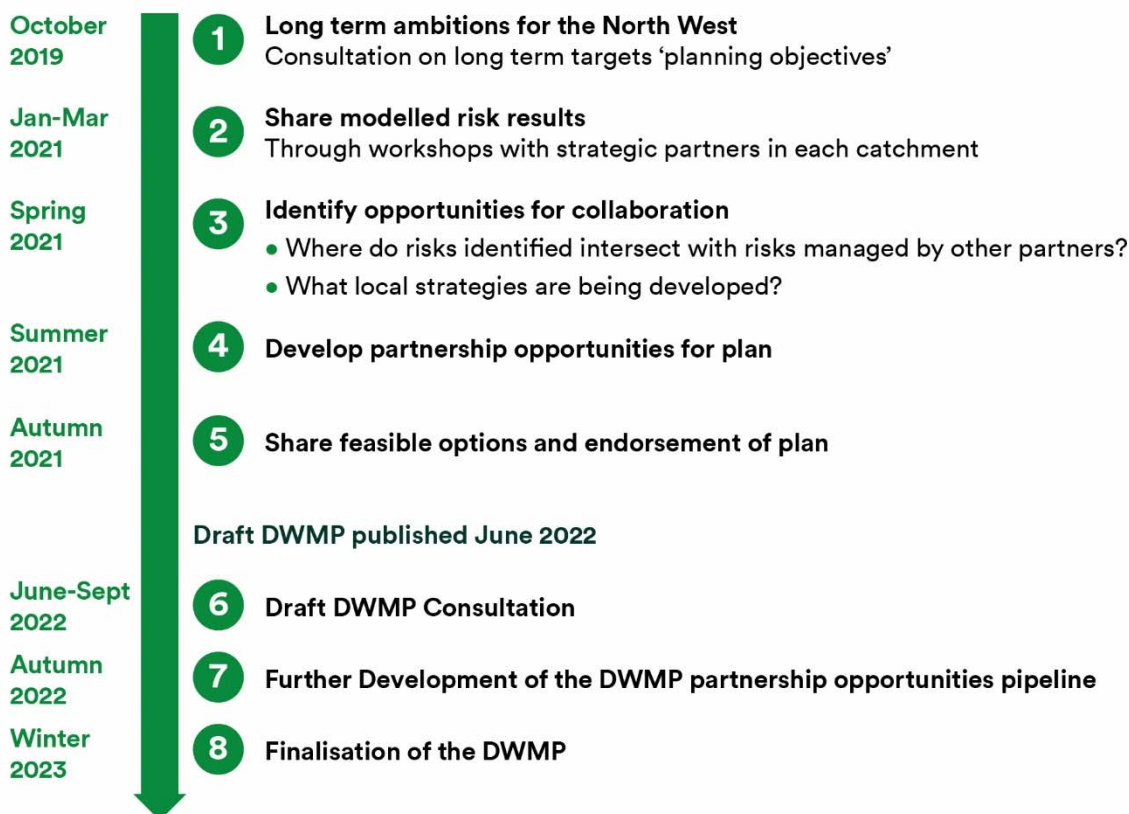
Within the Irwell catchment we have engaged with stakeholders such as:

- The Environment Agency;
- Greater Manchester Combined Authority (GMCA); and
- Groundwork (host of the Irwell Catchment Based Approach (CaBA) partnership).

More information on co-creation activity undertaken with the SPG can be found in Technical Appendix 2 – Stakeholder Engagement (TA2). The outputs from this activity in the Irwell catchment are outlined in section 4.1.

Figure 4 DWMP framework for engagement

A framework for engagement in the North West



3. Risk identification

A key component of the DWMP has been around risk identification. This has been a mixture of both historical risk and forecast risk. Activities to understand this were completed through the Risk Based Catchment Screening (RBCS) and Baseline Risk and Vulnerability Assessment (BRAVA) stages. We have also undertaken numerous additional assessments to understand wider resilience and catchment risks.

Further detail on the approaches can be found in Technical Appendix 4 – Risk Based Catchment Screening (TA4) and Technical Appendix 5 – Understanding Future Risk (TA5).

3.1 Risk Based Catchment Screening (RBCS) and Horizon Scan

The RBCS stage is a series of high-level assessments that are used to review and screen each TPU to determine whether a more detailed assessment is required during the Baseline Risk and Vulnerability Assessment (BRAVA) stage.

The assessments are designed to span the key aspects of a wastewater company's responsibilities: from the network to the treatment works, to its interaction with the environment. Examples of the assessments considered are internal sewer flooding, storm overflow performance, and pollution incidents. The assessments typically used three to five years of historical data.

Additional assessments termed 'horizon scanning' were undertaken to understand wider exogenous factors and opportunities that could inform future investment e.g. major infrastructure projects, private septic tank locations and potential major infrastructure projects (HS2 etc). Areas with potential future developments were also considered and further information on projected growth areas can be found within the associated Local Plans.

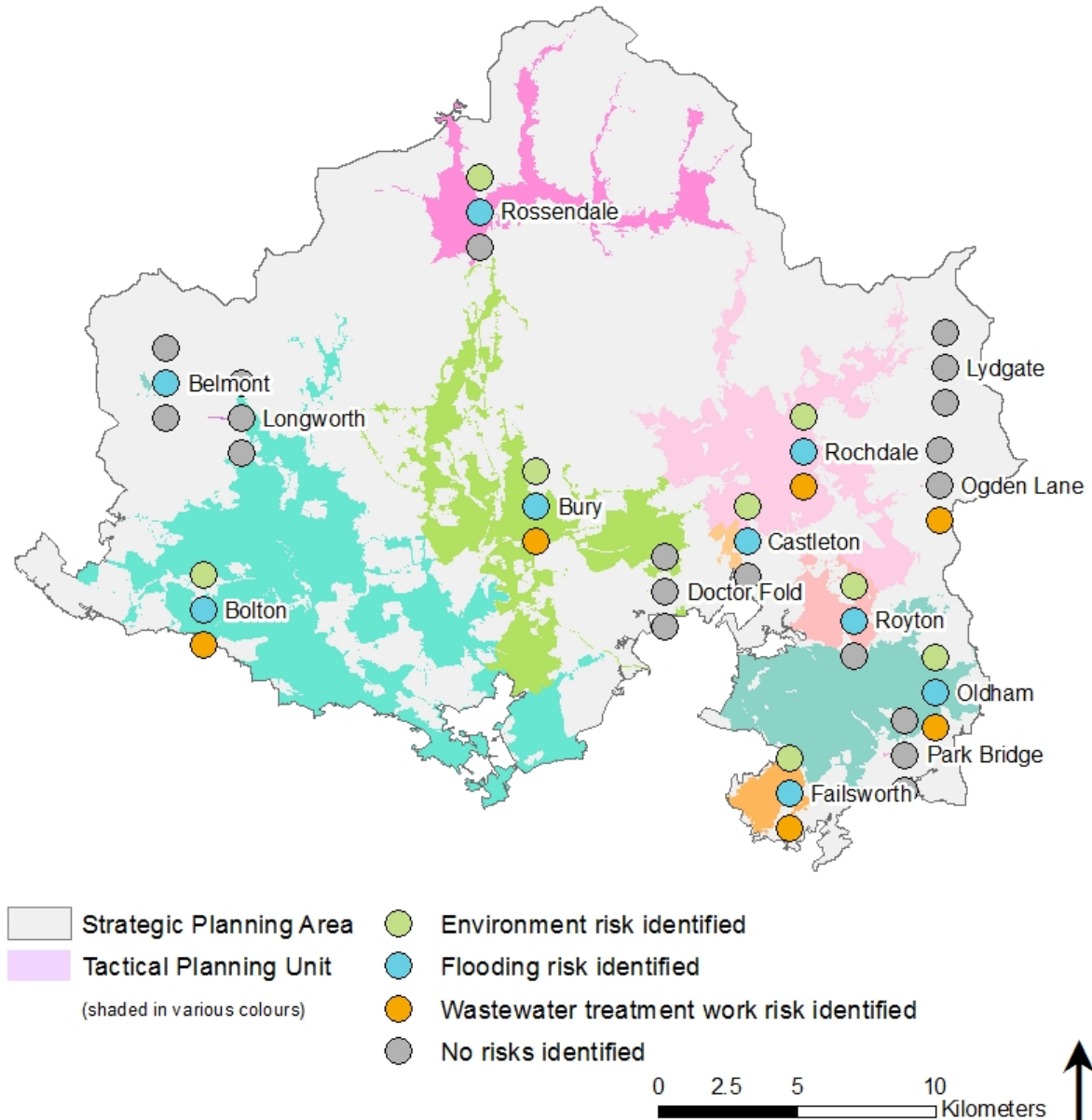
Within the Irwell, the RBCS stage identified 11 out of 14 TPUs that required further investigation and, therefore, passed onto the BRAVA stage (outlined in section 3.2).

Figure 5 indicates which of the RBCS categories (environmental, flooding and wastewater treatment works capacity) have triggered within each TPU. Environmental and flooding categories are the most common within the Irwell, which is supported by the highest triggered RBCS assessments which are:

- Storm Overflow Assessment Framework – (8/15) – Environment; and
- External Sewer Flooding – (9/15) – Flooding.

Further detail on the approaches and assessment results can be found in TA4.

Figure 5 Map of the RBCS results for the Irwell. Risk categories indicate areas triggering further investigation following RBCS



3.2 Baseline Risk and Vulnerability Assessment (BRAVA) and Resilience

The TPUs that were identified during RBCS were then taken forward into BRAVA, which aims to assess the baseline and future position of system performance against the DWMP planning objectives, to understand where there may be issues. It is also to understand wider resilience issues that could also impact upon the DWMP planning objectives. This stage considers risk at 2020, 2030 and 2050 design horizons.

In addition to BRAVA, a range of resilience assessments were undertaken and will have been incorporated throughout the plan to allow us to expand our understanding of wider core risks, such as how the water quality of rivers may change as a result of climate change. We have also assessed risks such as fluvial and/or coastal flooding and fluvial and/or coastal erosion and land stability.

Further detail on the approaches and assessment results can be found in TA5 and Technical Appendix 6 – Resilience (TA6).

The BRAVA and resilience results for the Irwell are outlined in Table 2 to Table 5.

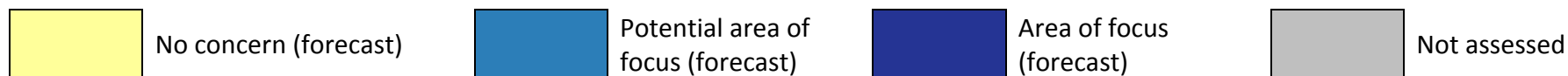
Table 2 Environmental BRAVA results

Tactical Planning Unit	Environmental					
	Pollution Assessment	Storm Overflow Performance		Bathing and Shellfish Spill Assessment		
	2020	2020	2050	2020	2030	2050
Belmont						
Bolton						
Bury						
Castleton						
Failsworth						
Ogden Lane						
Oldham						
Park Bridge						
Rochdale						
Rossendale						
Royton						

BRAVA	
	No concern (forecast)
	Potential area of focus (forecast)
	Area of focus (forecast)
	Not assessed/not applicable

Table 3 Flooding BRAVA results

Key



Tactical Planning Unit	Flooding												
	Internal Flooding Risk			External Flooding Risk			Sewer Collapse Risk	Risk of Flooding in a Storm (1:50yr)		Flooding of Open Spaces			Blockage Assessment
	2020	2030	2050	2020	2030	2050	2020	2020	2050	2020	2030	2050	2020
Belmont													
Bolton													
Bury													
Castleton													
Failsworth													
Ogden Lane													
Oldham													
Park Bridge													
Rochdale													
Rossendale													
Royton													

Table 4 Wastewater treatment works BRAVA results

Tactical Planning Unit	Wastewater Treatment Works		
	Risk to wastewater treatment works (WwTW) capacity		
	2020	2030	2050
Belmont	Yellow	Yellow	Yellow
Bolton	Yellow	Yellow	Blue
Bury	Yellow	Yellow	Yellow
Castleton	Blue	Blue	Blue
Failsworth	Yellow	Yellow	Yellow
Ogden Lane	Dark Blue	Dark Blue	Dark Blue
Oldham	Yellow	Yellow	Yellow
Rochdale	Yellow	Yellow	Yellow
Rossendale	Yellow	Yellow	Yellow

BRAVA	
Yellow	No concern (forecast)
Blue	Potential area of focus (forecast)
Dark Blue	Area of focus (forecast)
Grey	Not assessed

Table 5 Environmental and flooding resilience results

Tactical Planning Unit	Resilience Assessment		
	Environmental		Flooding
	Potential for changes in the water quality of rivers as a result of climate change	Potential for changes in catchment contributions as a result of climate change	Outfall locking
	2050	2050	2020
Belmont	More resilient	More resilient	Not assessed
Bolton	More resilient	More resilient	Less resilient
Bury	Less resilient	More resilient	Less resilient
Castleton	More resilient	More resilient	Not assessed
Doctor Fold	Less resilient	Less resilient	Not assessed
Failsworth	More resilient	More resilient	Not assessed
Longworth	More resilient	More resilient	Not assessed
Lydgate	Less resilient	Less resilient	Not assessed
Oldham	Less resilient	Less resilient	Less resilient
Park Bridge	More resilient	More resilient	Not assessed
Rochdale	Less resilient	More resilient	Less resilient
Rossendale	More resilient	More resilient	Less resilient
Royton	More resilient	More resilient	More resilient

Resilience	
More resilient	More resilient
Less resilient	Less resilient
Not assessed	Not assessed

3.3 Problem characterisation

3.3.1 Complex catchments

Complex catchments were determined through problem characterisation using a combination of a complex and strategic catchment scores based on strategic need (largely derived from growth and climate forecast models) and modelled risks in each of the TPU (largely based on BRAVA). Within the Irwell catchment, no TPUs were identified to be 'complex' based on problem characterisation.

3.3.2 Strategic growth catchments

Through the various risk identification assessments, a number of locations were identified through opportunity workshops that require more strategic analysis. These are areas with high growth, a high number of risks and multiple potential scenarios. Different bespoke scenarios are applied to strategic catchments based on the needs and drivers of the catchments to understand the variability of risk as a first step for optioneering, so that the range of options developed can mitigate a different range of scenarios. Within the Irwell catchment, no TPUs were identified to be 'strategic growth catchments' based on problem characterisation.

4. Options development

The approach for options development is an iterative screening process to identify most appropriate solutions for issues in each TPU. These solutions were taken forward for a best value assessment, which will select the preferred option (Figure 6).

An options hierarchy was then used, which has been endorsed by customers and stakeholders from across the North West to select preferred solutions (Figure 7). The hierarchy covers a range of option types from behavioural, to blue-green solutions e.g. SuDS and traditional grey solutions e.g. storage tanks across benefits such as reducing demand, better system management and creating capacity.

A key element to this has been built around co-development, co-funding and co-delivery through partnerships and third parties (for instances where a specific skill set is required).

Figure 6 Options development process

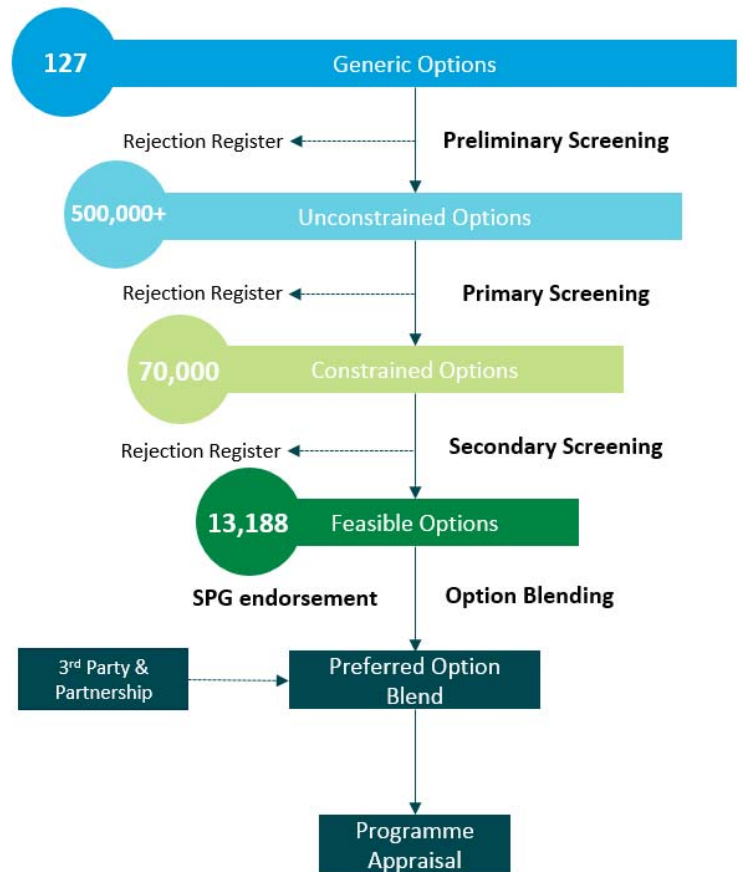
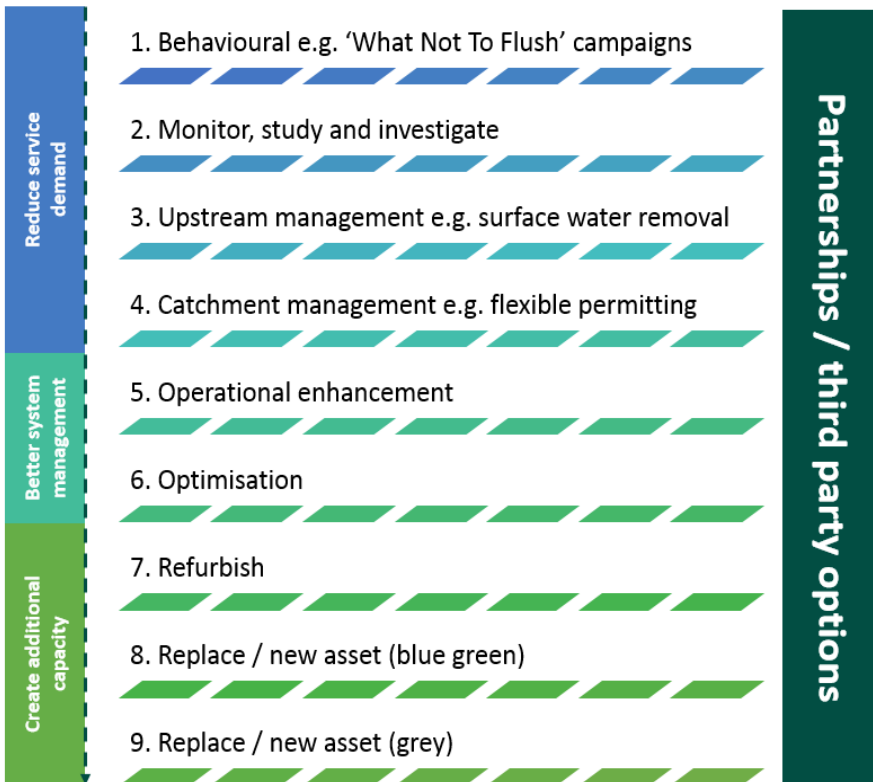


Figure 7 Options hierarchy



4.1 Irwell partnerships options

In order to identify and develop potential partnership options in the Irwell, through the SPG we have shared the results from the risk identification stages such as BRAVA. This was done through a series of workshops and the purpose was to identify areas of shared risk and partnership opportunities.

The DWMP Partnership Opportunities Pipeline (PoP) was consequently created using the outputs of this engagement. The pipeline includes opportunities at a range of different levels of maturity and confidence in development, as such these are not confirmed or funded schemes at this time. However, they provide an indication of areas where we may be able to work collaboratively with stakeholders in the future when more certainty is available on need and funding.

From the initial suggestions made during the SPG workshops, the DWMP PoP has undergone various refinements as summarised below:

- Where possible, the potential partnership opportunities were mapped and this created over 1,000 opportunities for further investigation. The suggestions were screened depending on the opportunities timescales, proximity to UUW assets and the level of detail. This allowed UUW to refine the opportunities, which were believed to have the most potential;
- This refined list was presented back to the SPGs for updates, review and discussion. This further discussion allowed additional benefits to be identified and better mapping. This was particularly important for potential integrated drainage partnership opportunities as it helps to understand the holistic picture of the flooding mechanism. This refined the list further to approximately 500 potential partnership opportunities;
- Following the SPG events, we mapped the updated DWMP partnership opportunities against asset locations and UUW areas of interest e.g. flooding clusters and mutual natural flood management, to identify those most suited to the DWMP. This produced the list of key DWMP partnership opportunities; and
- The key list of opportunities have been reviewed against the wider DWMP options development process.

The remaining opportunities that did not make it into the key DWMP PoP, for example in areas with no wastewater assets, were captured in our organisation-wide partnership opportunity pipeline where they are considered alongside all other partnership opportunities. Another key reasons for opportunities not being included in the DWMP PoP is where projects may be more imminent as the DWMP is a longer-term plan.

Examples of potential partnership opportunities that were shared during the Irwell SPG workshops are shown in Figure 8 and Table 6.

We are further developing the organisation-wide partnership opportunity pipeline and are developing a central partnership prioritisation process which comprises of two elements; the partnership solution identification stage and a specific partnership assessment activity which aims to support decision making for partnership schemes against a set of specific criteria. This will allow UUW to harness scheme specific collaboration opportunities as we recognise the need for more strategic partnerships, and we will build on successes from historic partnerships in the North West.

For further information on our approach to partnership working, refer to TA2.

Figure 8 Overview of the potential partnership opportunities in the Irwell

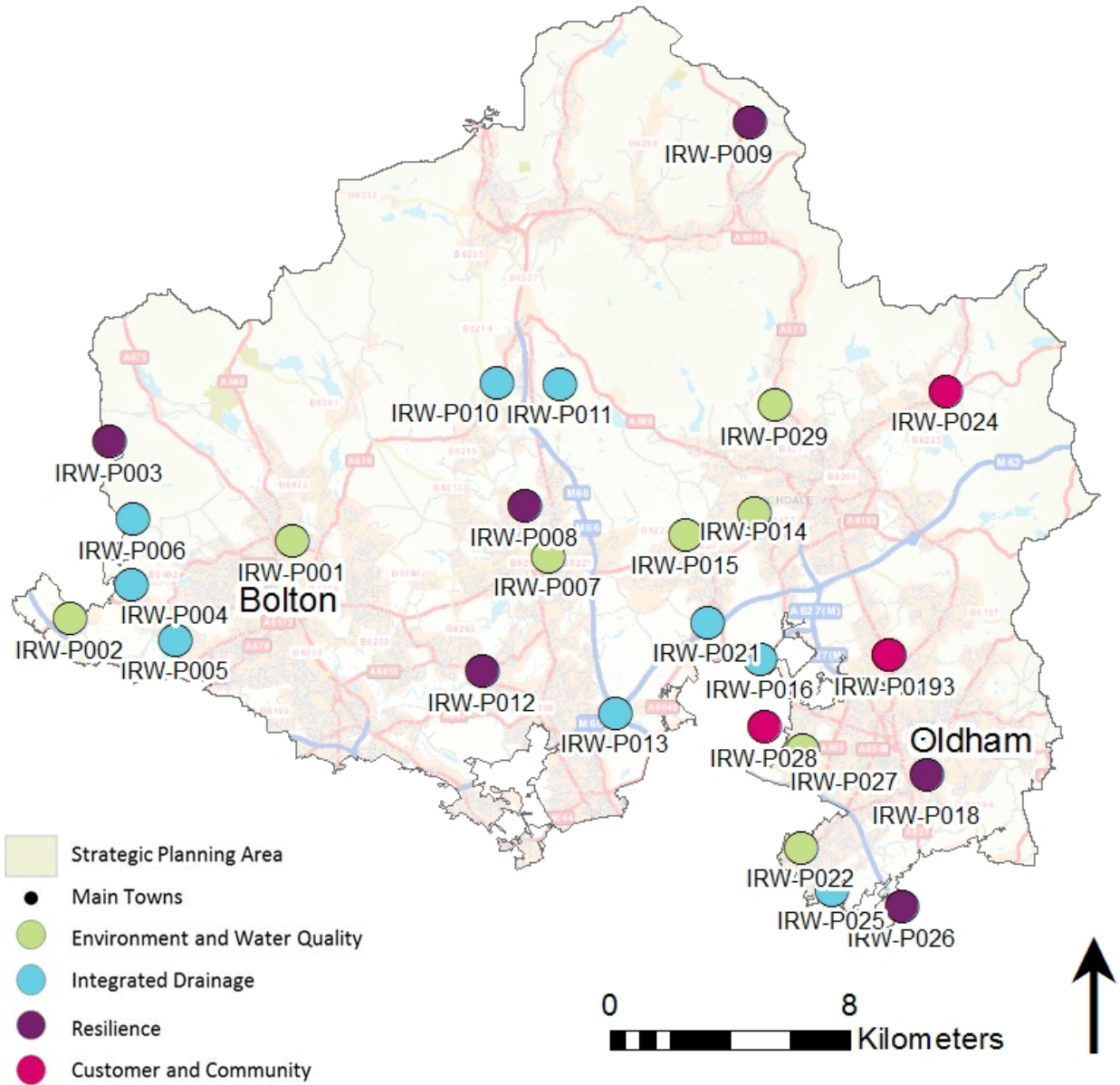


Table 6 Partnership opportunities in the Irwell catchment

ID	Partnership Opportunity	Theme	Organisation Type
IRW-P001	Water quality improvements through water stewardship scheme project	Environment and Water Quality	Private Sector
IRW-P002	Improve water quality project	Environment and Water Quality	Private Sector
IRW-P003	River restoration and Natural flood management opportunities project	Resilience	Private Sector
IRW-P004	Opportunities to manage flooding and overland flow onto railway. project	Integrated Drainage	Public Bodies
IRW-P005	Opportunities to mitigate overland flow onto railway, and flooding associated with outfall locking and sewer overflow. project	Integrated Drainage	Public Bodies
IRW-P006	Collaboration with highways authorities to use sustainable drainage solutions to manage highway drainage	Integrated Drainage	Private Sector
IRW-P007	Water quality improvements project	Environment and Water Quality	Private Sector
IRW-P008	Natural flood management opportunities project	Resilience	Public Bodies
IRW-P009	Potential for natural flood management and identification of areas upstream of outfall locking	Resilience	Private Sector
IRW-P010	Surface water flooding management project	Integrated Drainage	Public Bodies
IRW-P011	Highway drainage improvements project	Integrated Drainage	Private Sector
IRW-P012	Sustainable drainage solutions and Natural flood management opportunities project	Resilience	Private Sector
IRW-P013	Potential sustainable drainage solutions project	Integrated Drainage	Public Bodies
IRW-P014	Water quality improvements project	Environment and Water Quality	Public Bodies
IRW-P015	Flood risk management project	Environment and Water Quality	Undisclosed
IRW-P016	Flood risk management project	Integrated Drainage	Private Sector
IRW-P018	Opportunities to use park and green space sustainable drainage solutions project	Resilience	Public Bodies
IRW-P019	Water quality improvements project	Customer and Community	Public Bodies

ID	Partnership Opportunity	Theme	Organisation Type
IRW-P020	Customer education campaign project	Customer and Community	Private Sector
IRW-P021	Sustainable drainage solutions to improve highway drainage project	Integrated Drainage	Private Sector
IRW-P022	Natural flood management opportunities project	Environment and Water Quality	Private Sector
IRW-P023	Engagement with landowners project	Customer and Community	Private Sector
IRW-P024	Engagement with landowners project	Customer and Community	Private Sector
IRW-P025	Surface water management project	Integrated Drainage	Private Sector
IRW-P026	Natural flood management opportunities project	Resilience	Undisclosed
IRW-P027	Water quality improvements project	Environment and Water Quality	Public Bodies
IRW-P028	Customer education campaign project	Customer and Community	Public Bodies
IRW-P029	Water quality improvements project	Environment and Water Quality	Public Bodies

Note: The above are suggestions made by stakeholders but not all of them meet DWMP criteria for potential partnership working. Suggestions made that do not meet DWMP criteria have been added to UUW companywide partnership pipeline for further consideration.

4.1.1 Wider partnerships within the Irwell catchment

Within the Irwell catchment, there are numerous challenges such as flood risk, water quality, climate change and population growth. In order to mitigate the risks and to protect both communities and the environment, there is an opportunity for partnership working. This is something that we have strongly supported in the past and will continue to support moving forwards both through the DWMP and other avenues within the business.

Figure 9 is an example of partnerships that we are proud to have been involved in, and of an opportunity which is currently being developed in the Irwell catchment.

Figure 9 Salford and Bury Street Trees case study

Salford and Bury Street Trees

Background
 There are many challenges that UUW face within urban areas. This is due to the combination of the naturally high levels of rainfall in the north and west, combined with large cities that have high impermeable areas, such as Manchester. The result is that response times from rain falling on impermeable areas to sewer system is swift which leads to increased sewer flooding risk. Systems that are typically designed for a 1 in 30-year events can quickly get overwhelmed. Building bigger pipes, or larger tanks, cannot solve this easily in isolation, particularly in an urban setting. These are problems shared with other risk managed authorities and so it is important to tackle them in partnership.

What
 To resolve this sewer flooding risk in 2015, UUW alongside a number of partners undertook a project to explore ultra-urban green infrastructure.

This project included:

- 30 streets planted across Salford, Eccles and Bury
- At Howard Street, Salford
 - Run off collected through slot kerbs
 - Three trees installed in a three-layer pit system
 - Flow monitored for volume and quality at the inlet and outlet

Outcomes:
 Initial results showed evidence of;

- Average peak flow attenuation was 81% - Reducing the rate at which rainfall enters the sewer
- Average volume reduction was 78% - The actual volume/amount of water that will end up in the sewer
- Average delay of storm water peak flow was 68 minutes - The amount of time it took for rainwater entering the system and then leaving via the sewer



Great Howard Street



5. Options for the Irwell

The DWMP's purpose is to provide a long-term view of potential interventions and opportunities up to 2050. We acknowledge that planning this far in the future can be uncertain. This is why it is important that the DWMP is also aligned with nearer term activities which could influence and change the trajectory of future risks and opportunities.

The success of the DWMP through investment across the North West will depend on continued and new partnership working which is at the heart of both the DWMP, and the development of the business plan for investment cycle 2025 – 2030 (also known as AMP8). We are aligned to ensure that decisions made support the continued growth of the North West for customers and communities, and allow the environment to thrive for future generations.

This section provides a high level overview of the potential benefits and investment that can be delivered across the North West through key activities such as the Water Industry National Environment Programme (WINEP) for investment cycle 2025 – 2030, longer-term measures identified through the DWMP, and other projects such as Better Rivers: Better North West which is our commitment to improving river health.

5.1 WINEP development

Note: At the time of DWMP publication, the WINEP was not confirmed by regulators so is likely to change. The WINEP data presented below aligns to the formal submission from U UW in January 2023.

The WINEP is a programme of works that is jointly developed between water companies and regulators to meet statutory requirements and deliver environmental improvements to customers and communities. It sets out how the water industry will contribute to improving the natural environment.

The water industry has undertaken significant investment in the last three decades to improve the water environment and thus aquatic life. The WINEP drives the largest investment programme in the water environment nationally. For investment cycle 2020 to 2025, it includes activities such as asset improvements, investigations, monitoring and catchment interventions.

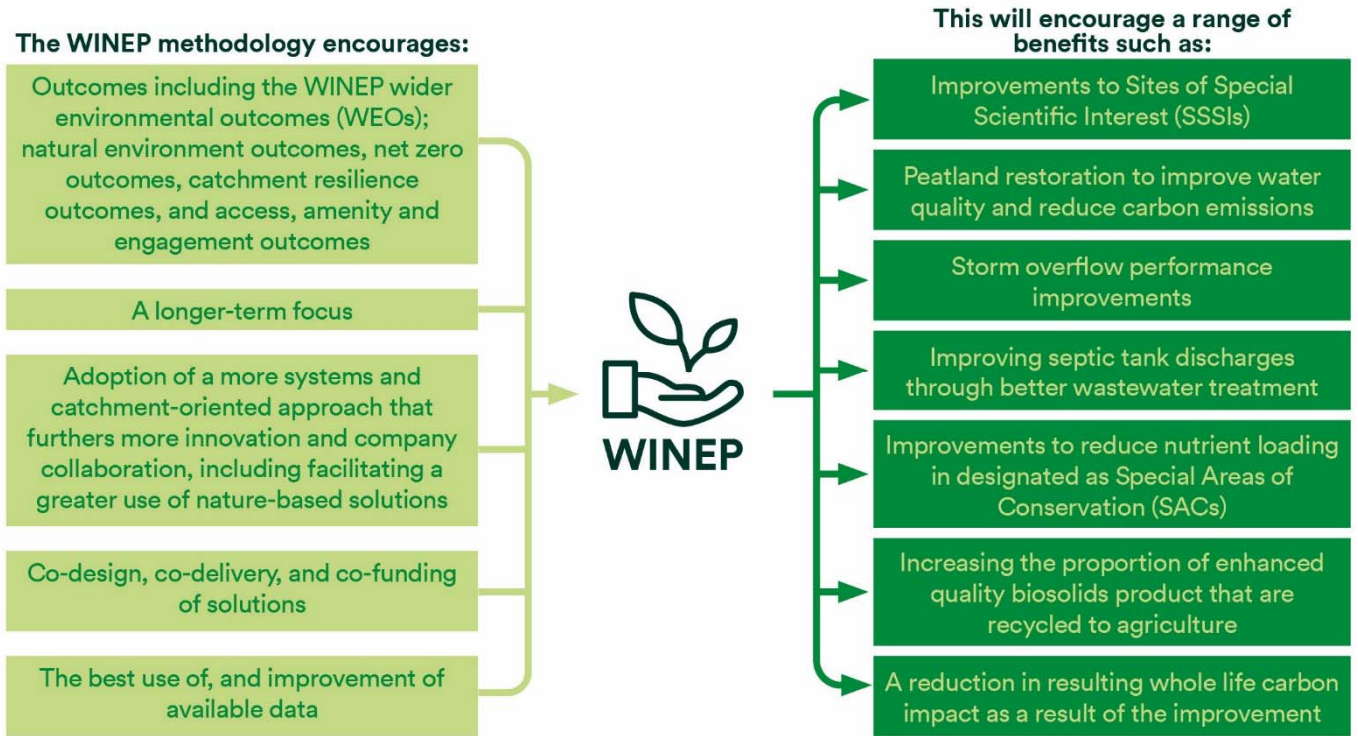
The next WINEP for investment cycle 2025 – 2030 (AMP8) is still to be confirmed (after the publication of the DWMP) and you will be able to find out more about what this means for the Irwell when we publish our AMP8 submission in autumn 2023.

Moving forwards, there is a collective ambition for the WINEP to deliver even more for the environment, for customers and for communities. This reflects society's high expectations and the UK government's ambition to leave the environment in a better state for the next generation.

As part of this, a large portion of the WINEP for the next investment cycle (2025 – 2030) aims to improve storm overflow performance. The programme has been designed to meet the Government's Storm Overflow Discharge Reduction Plan (SODRP) trajectory targets, address proven harm where we have been able to identify the best value solution and then the remainder includes action at the most cost effective overflows to achieve a reduction in spill frequency to around 20 spills per annum average by 2030. Subsequent investment periods will see further reductions in line with the Government requirements. The scale of transition required to meet the SODRP targets means that U UW will be delivering substantial WINEP investment programmes for the next 25 years.

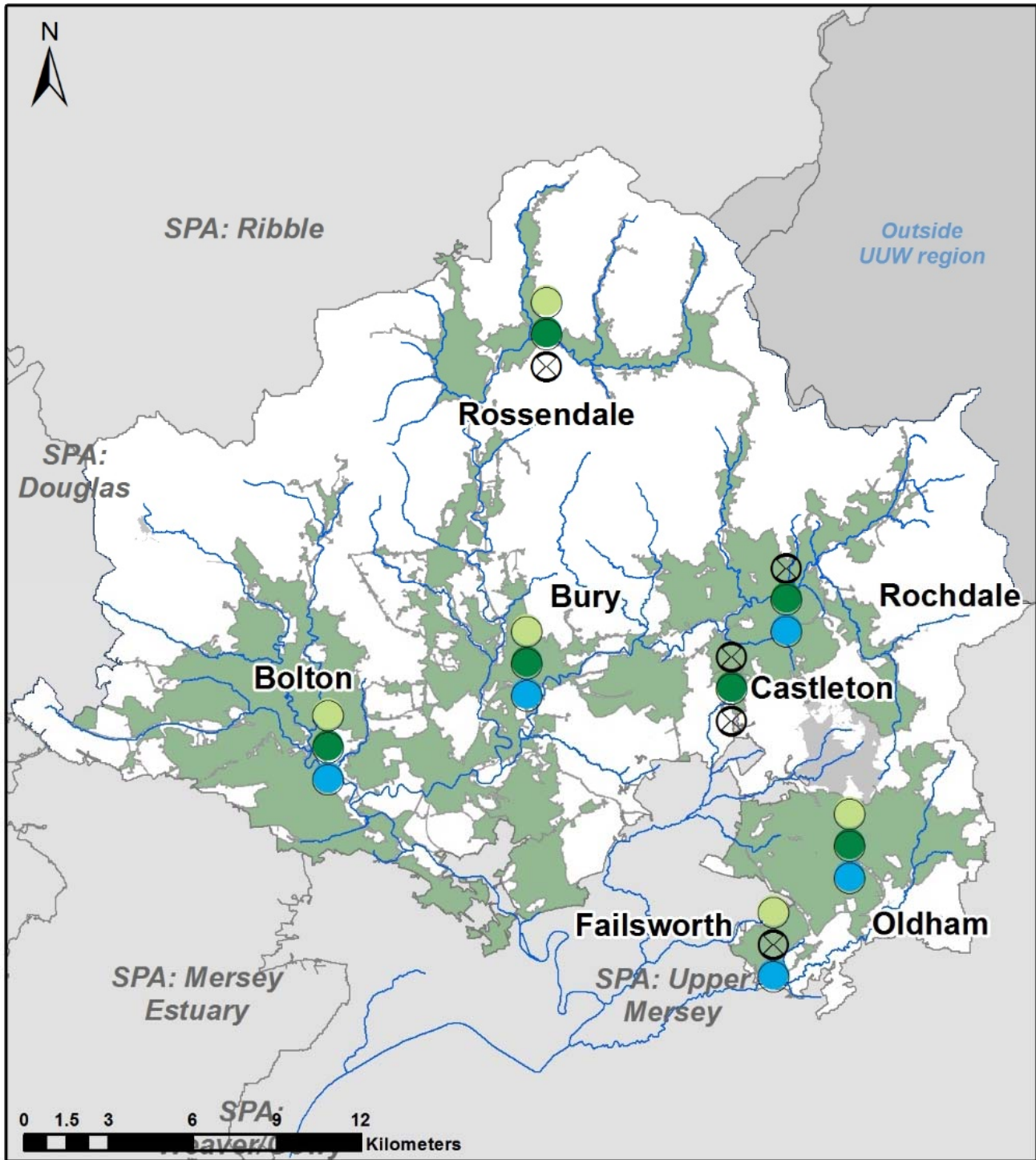
Figure 10 highlights some of the potential benefits as a result of the WINEP.

Figure 10 Potential benefits to the North West as a result of the WINEP

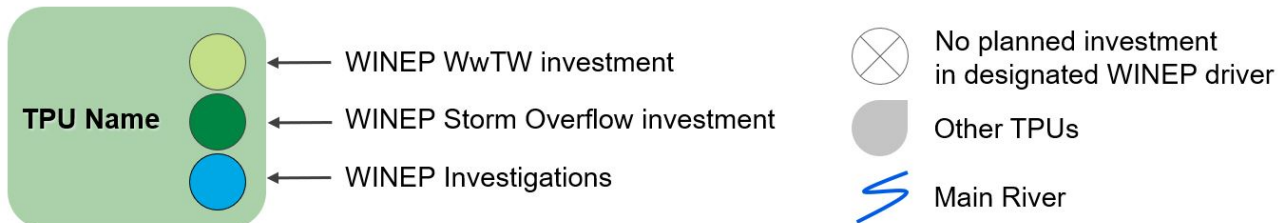


The WINEP will provide great opportunities to drive and deliver benefits across the North West region, and Figure 11 shows which locations within the Irwell have the potential for investment cycle 2025 – 2030 WINEP schemes, based on the January 2023 WINEP submission.

Figure 11 Potential WINEP investment in the Irwell for investment cycle 2025-2030



TPUs with WINEP driver investment



All potential WINEP interventions are subject to a regulatory decision making process that is ongoing at time of DWMP publication.

5.2 Options considered within the DWMP

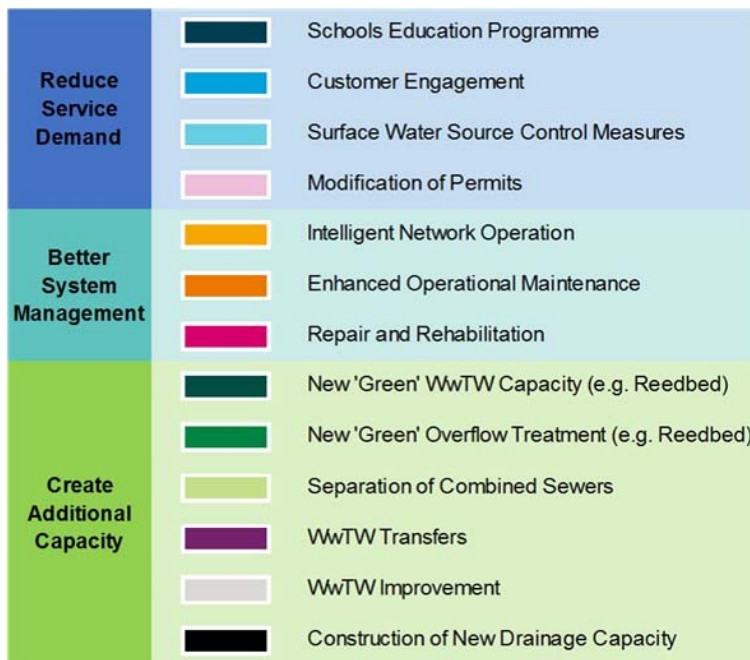
As highlighted above, the delivery of the WINEP will drive improvements and deliver benefits across the North West in the nearer-term. The DWMP is closely aligned with the ambitions and targets included within the WINEP, and included below are potential further enhancement schemes to be delivered over the next 25-years as part of the DWMP.

The development of the DWMP has utilised various data sources across the different stages of the plan, such as risk identification and BRAVA, partnership opportunities, and option development. This has allowed us to understand what options and interventions could be introduced to mitigate shared risks and harness opportunities for collaboration. This aspect of the DWMP is known as preferred options and has been developed using a decision support tool and by following the option hierarchy. The preferred options are high-level potential interventions up to 2050.

The development of the DWMP preferred options followed an iterative screening processes (outlined in section 4) which have been grouped into option types as shown in Figure 12. There are three main categories which are:

- ‘Reducing Service Demand’ which focusses on either reducing the amount of wastewater that is produced, or preventing it from reaching the sewer network;
- ‘Better System Management’ which focusses on managing and operating the existing assets in a more efficient or effective manner; and
- ‘Create Additional Capacity’ which focusses on building new assets, for example storage tanks or new treatment work process units, where it is not possible or economical to reduce demand or improve operations any further.

Figure 12 Option types



Potential opportunities for investment as part of the DWMP can be summarised as:

- Level 1: Regional measures (section 5.2.1);
- Level 2: Options for the Irwell (section 5.2.2); and
- Level 3: Options for each location within the Irwell (section 5.2.3).

Across these three levels, there are numerous opportunities over the next 25 years for continued and new partnerships in addition to new innovative technology.

The following sections provides an overview of the outputs from the DWMP. This includes all potential interventions that could be undertaken over the next 25-years to deliver benefit to the North West under the assumption of unconstrained funding. Therefore, it is likely that the interventions implemented will vary.

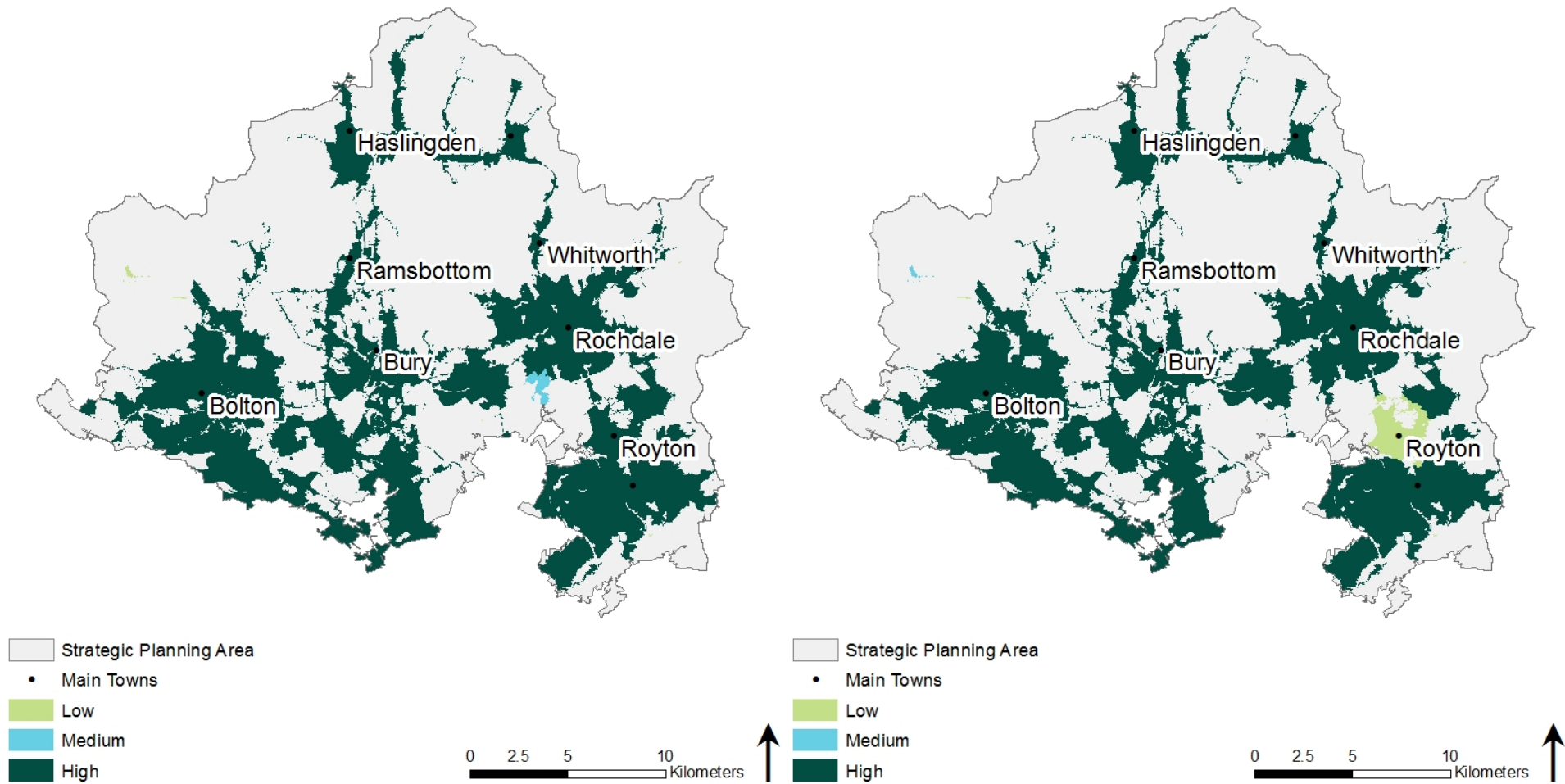
5.2.1 Level 1: Regional measures

Across the option types, a number can be considered regional options – those which could be implemented across the North West but may bring tangible benefits in some areas more than others. These can be investigated further ahead of investment cycle 2025–2030 where viable.

Across the Irwell catchment customer engagement options (Figure 13) comprising of options to work with customers to reduce demand and increase awareness of ‘what not to flush’ have been identified as having the potential to deliver the highest benefit in Rochdale, Bury, Bolton TPUs.

Sustainable Drainage System (SuDS) options have been assessed, these form a key part of the strategy to manage rainwater from entering the sewer system in Bury, Rochdale and Bolton TPUs (Figure 13).

Figure 13 Maps showing the benefit of implementing regional customer engagement (left) and sustainable drainage solutions (right) options across the Irwell



5.2.2 Level 2: Options for the Irwell

The DWMP preferred options can also be summarised as the potential investment and associated benefits across the Irwell. These can be demonstrated by:

- The potential options to address environmental planning objectives as shown in Figure 14. This incorporates elements such as wastewater treatment work permit compliance, WINEP compliance and pollution of watercourses;
- The potential options to address flooding planning objectives as shown in Figure 15. This incorporates elements such as internal flooding, external flooding, highway and open space flooding and 1 in 50-year flooding; and
- The distribution of the potential options that could contribute to addressing the above planning objectives as shown in Figure 16.

Figure 14 Distribution of environmental investment by option type within the Irwell

This is an example of how investment in different options types may be used to address the environmental planning objectives. The vast majority of potential investment could be through surface water source control measures (e.g. SUDS), improvements in wastewater treatment works, and construction of new drainage capacity.

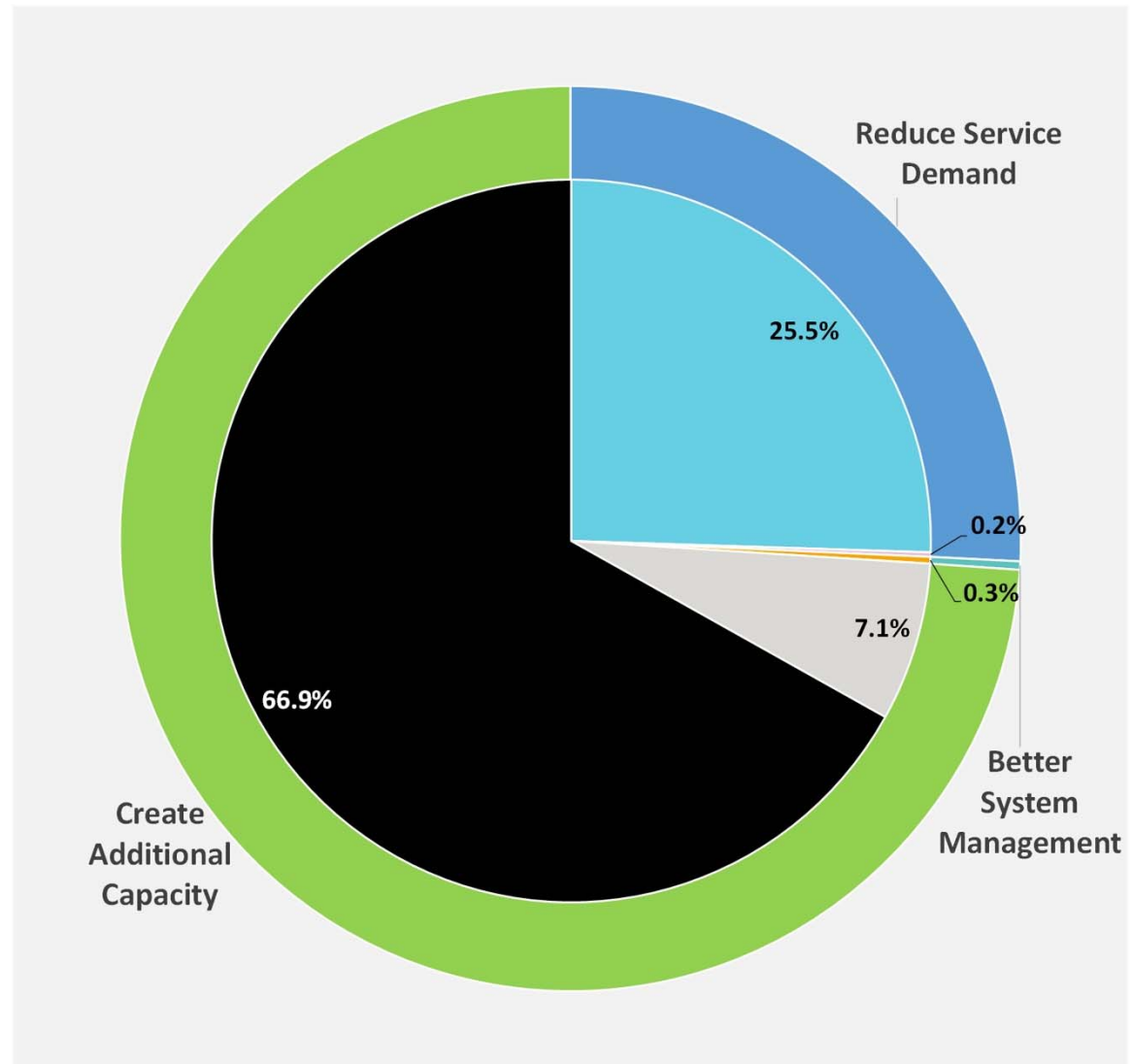


Figure 15 Distribution of flooding investment by option type within the Irwell

This is an example of how different options types may be used to address flooding planning objectives. Almost three quarters of the investment could be in the construction of new stormwater storage capacity.

The remainder could be in improving existing system management, and in schools and customer engagement programmes.

Reduce Service Demand		Schools Education Programme
		Customer Engagement
		Surface Water Source Control Measures
		Modification of Permits
Better System Management		Intelligent Network Operation
		Enhanced Operational Maintenance
		Repair and Rehabilitation
Create Additional Capacity		New 'Green' WwTW Capacity (e.g. Reedbed)
		New 'Green' Overflow Treatment (e.g. Reedbed)
		Separation of Combined Sewers
		WwTW Transfers
		WwTW Improvement
		Construction of New Drainage Capacity

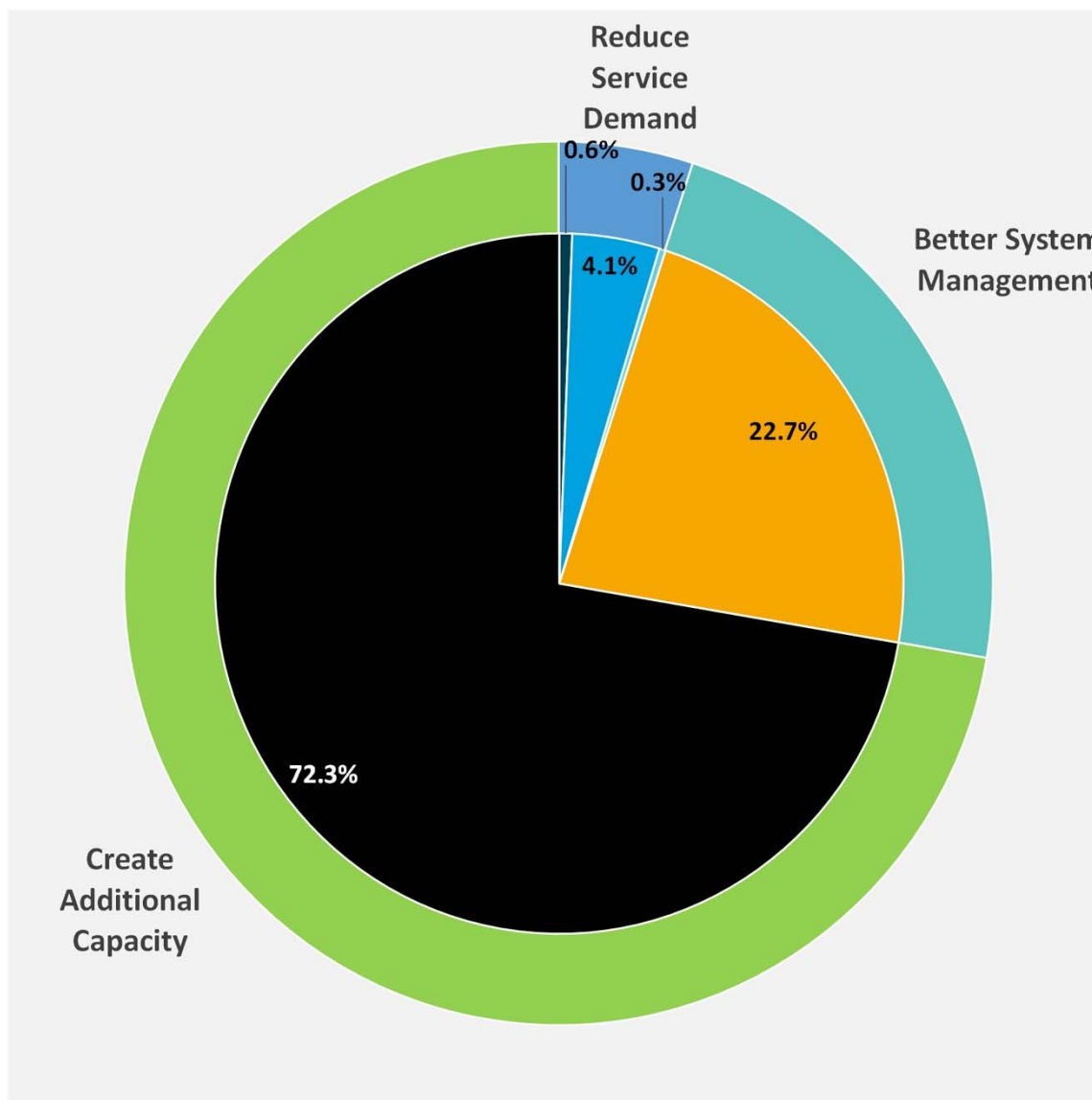
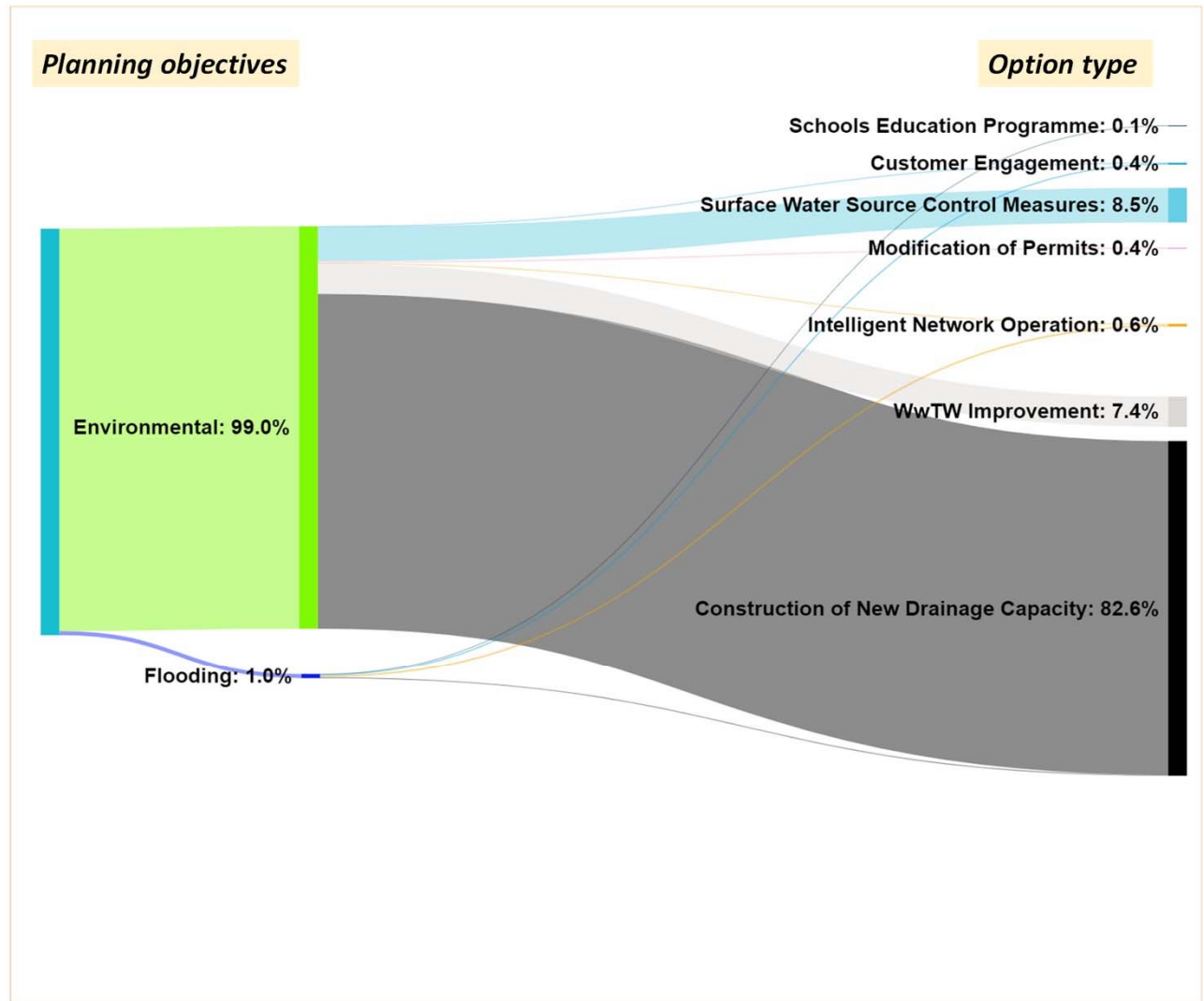
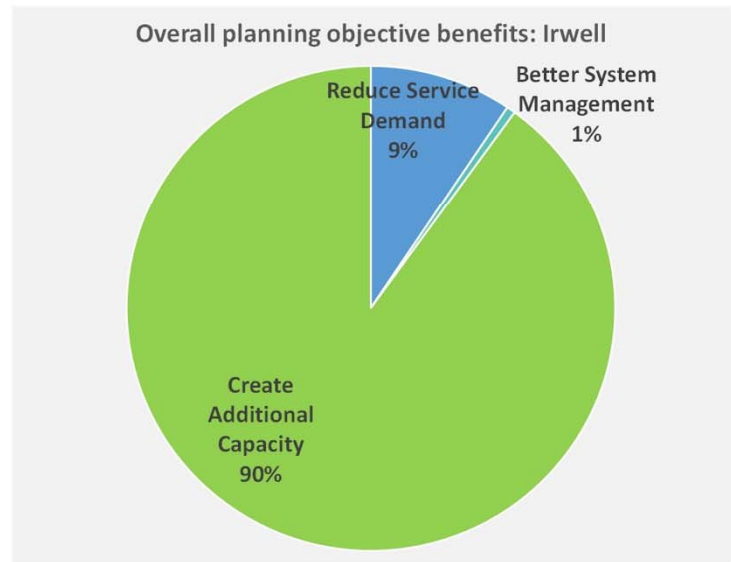


Figure 16 Distribution of benefit by option type within the Irwell

This is an example of how different option types may be used to demonstrate potential benefits against different planning objectives within the Irwell SPA.

United Utilities Water (UW) commitments to improving flooding performance could be met through the reduction of surface water flows, schools and customer engagement programmes, installation of intelligent network operation systems, and the construction of new stormwater drainage capacity.

Environmental planning objectives could be met through improvements to wastewater treatment works, intelligent network systems, customer and school engagement programmes, modification of permits and provision of stormwater storage capacity.

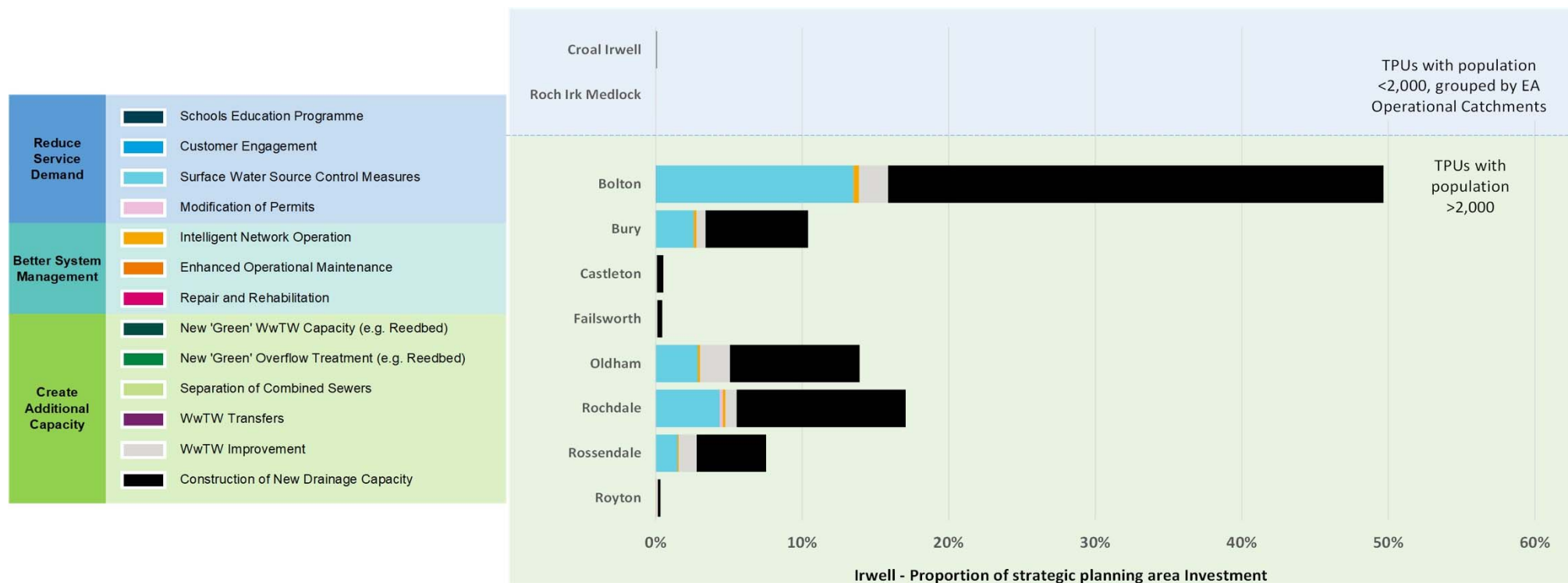


5.2.3 Level 3: Local options for each TPU within the Irwell

The proportion of the Irwell’s potential investment in each TPU, split up by option type, is shown in Figure 17. Note that the smaller TPUs within the catchment (those with less than 2,000 population) have been reported together at the top of the chart, grouped by sub catchment (Environment Agency Operational Catchment boundaries).

It can be seen that in the Irwell catchment, the largest TPUs see the largest potential investment, which is split predominantly between surface water control, improved system management, improvement at wastewater treatment works and construction of new storm water storage capacity.

Figure 17 Proportion of investment seen in each TPU within the Irwell



The following sub-sections show how investment could be split between different types of options to bring benefits to each TPU over the short, medium and long term. Some options, such as construction of new storm water storage tanks, occur at a single point in time; however, the benefit of reduced flooding will be seen long into the future. Other options such as school education, are continual programmes that will help to encourage long-term sustainable behaviours, such as reduction in water use.

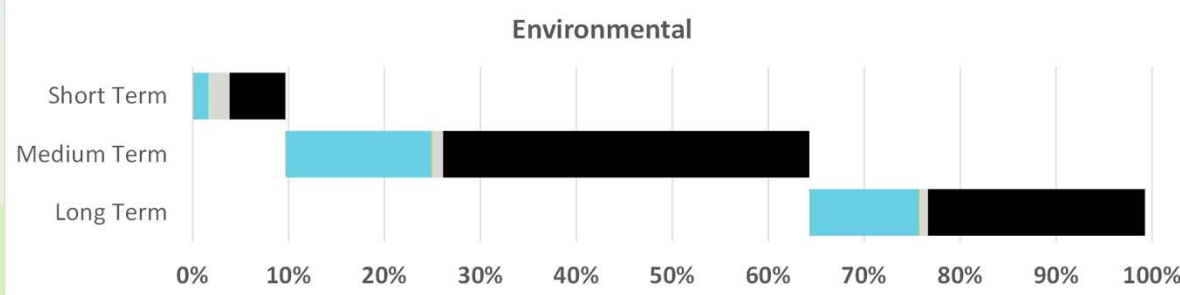
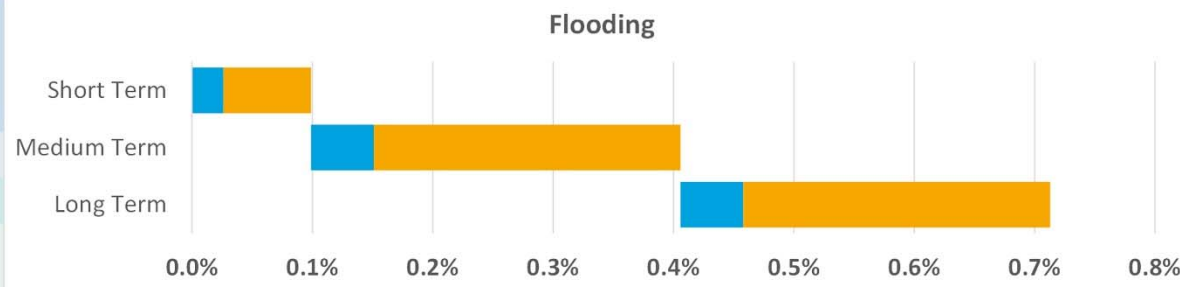
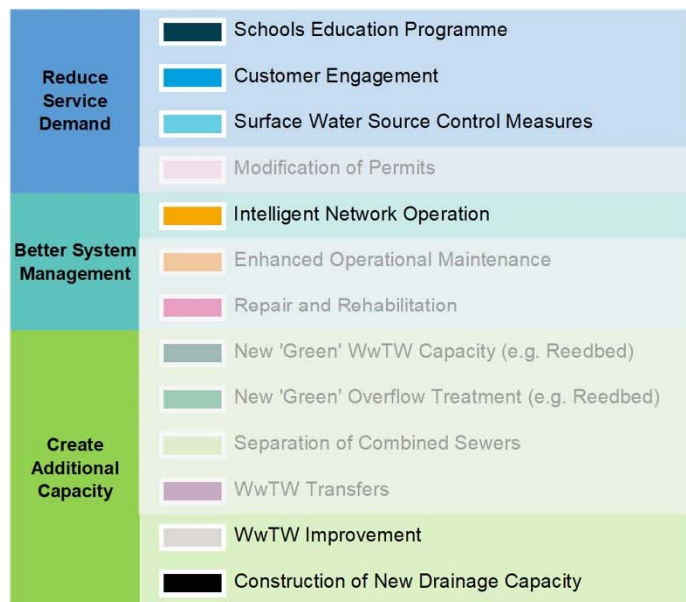
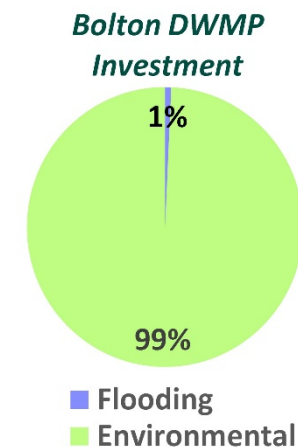
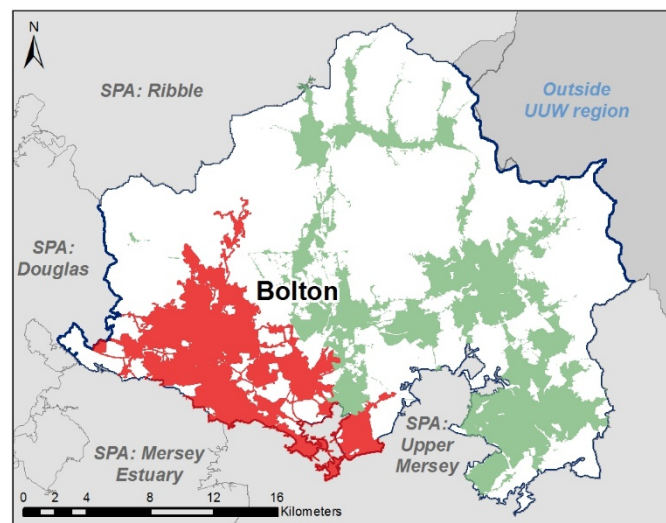
5.2.3.1 Bolton

Figure 18 Details of the DWMP investment plan for Bolton

The data on this page gives details of the investment plan for Bolton TPU. The plan shows the geographic location of Bolton within the Irwell catchment.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



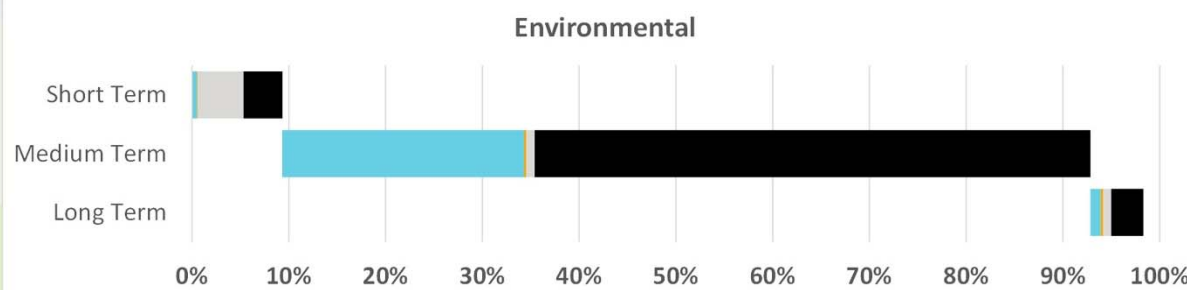
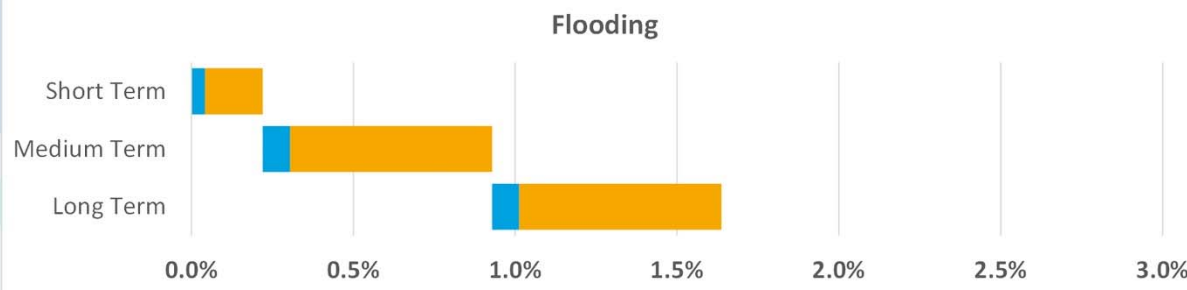
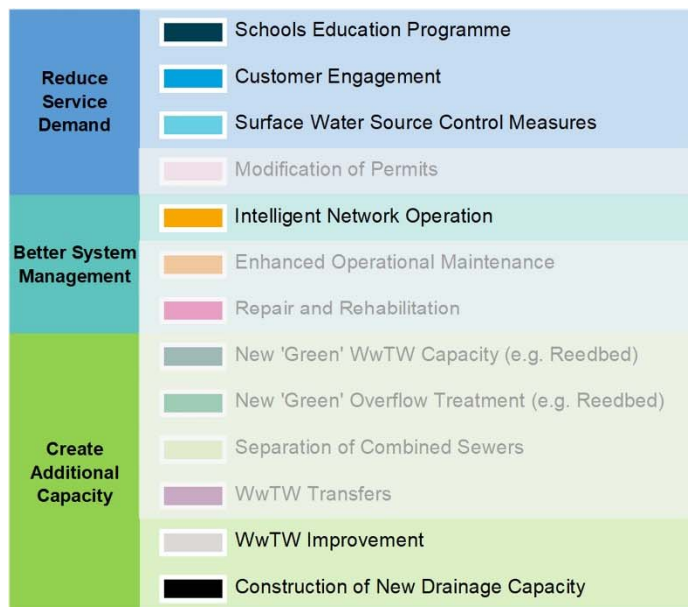
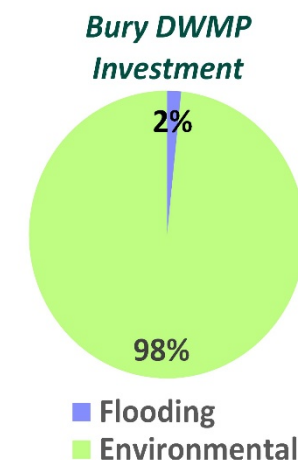
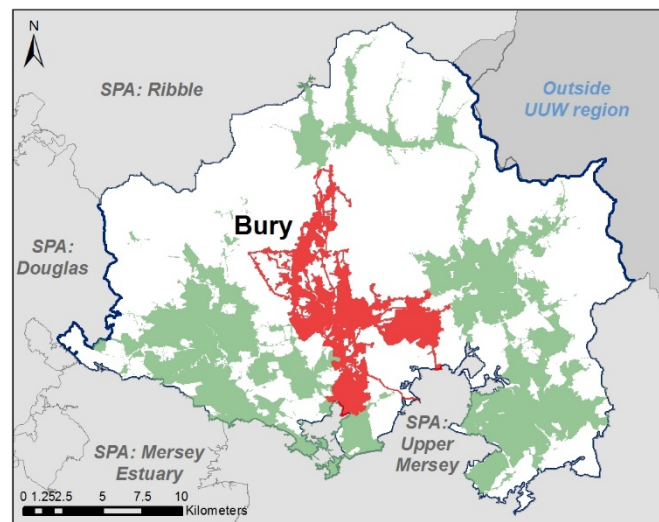
5.2.3.2 Bury

Figure 19 Details of the DWMP investment plan for Bury

The data on this page gives details of the investment plan for Bury TPU. The plan shows the geographic location of Bury within the Irwell catchment.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



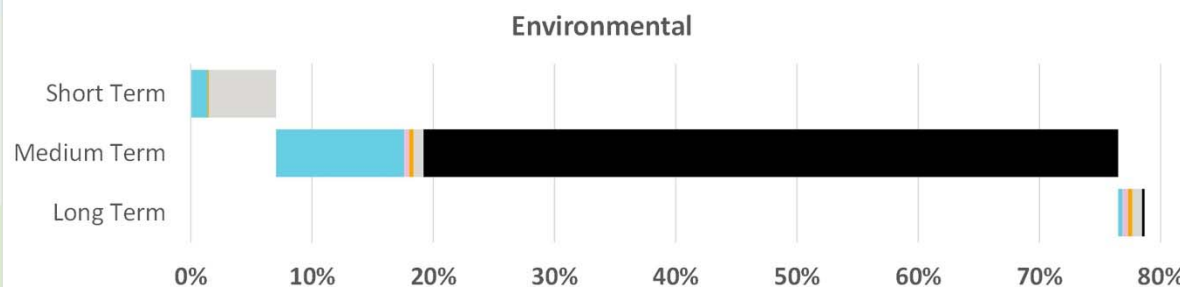
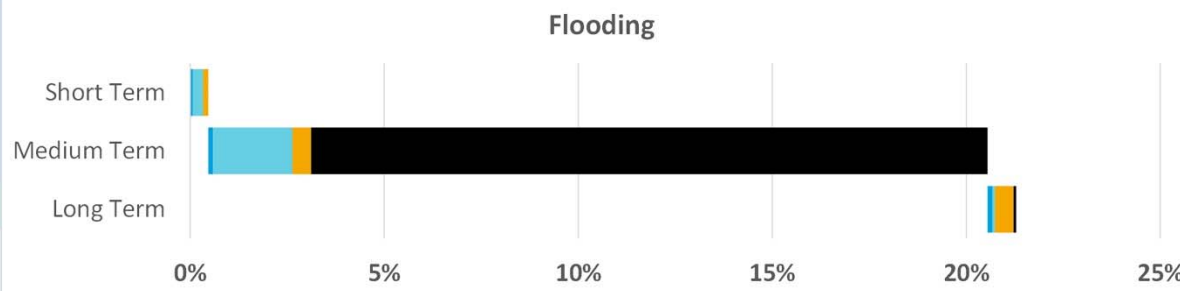
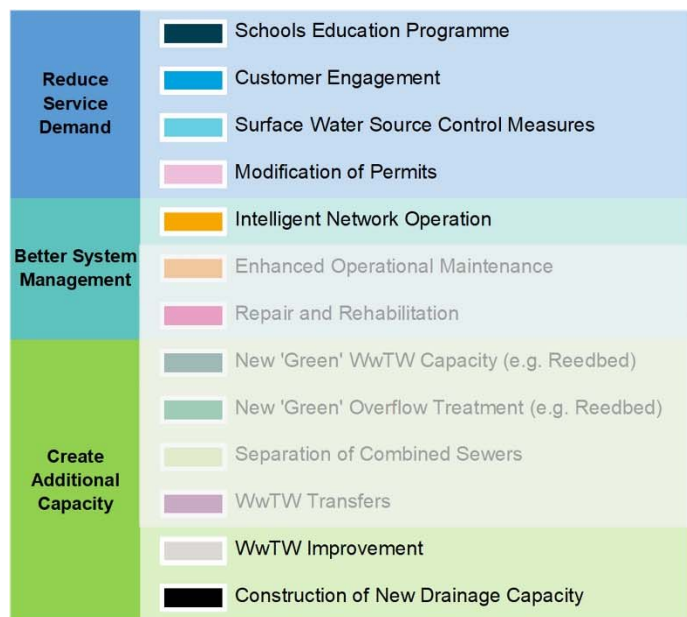
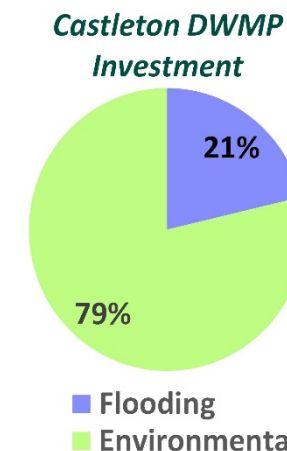
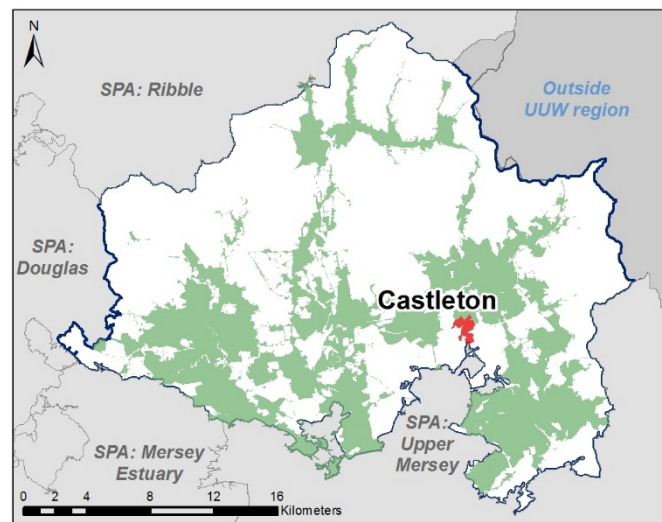
5.2.3.3 Castleton

Figure 20 Details of the DWMP investment plan for Castleton

The data on this page gives details of the investment plan for Castleton TPU. The plan shows the geographic location of Castleton within the Irwell catchment.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



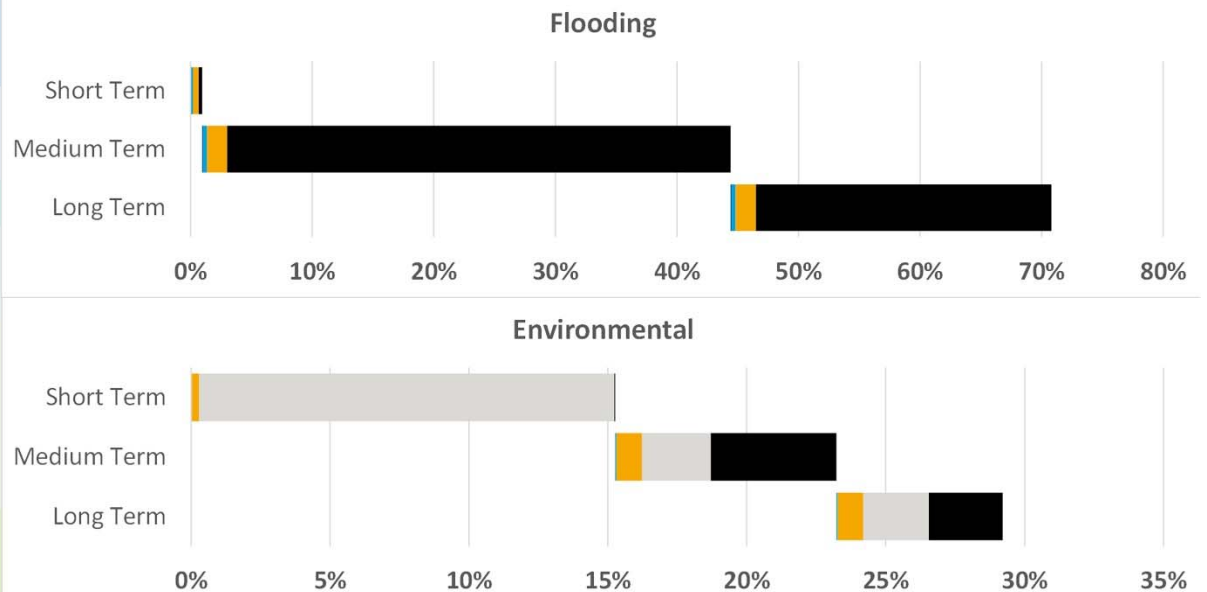
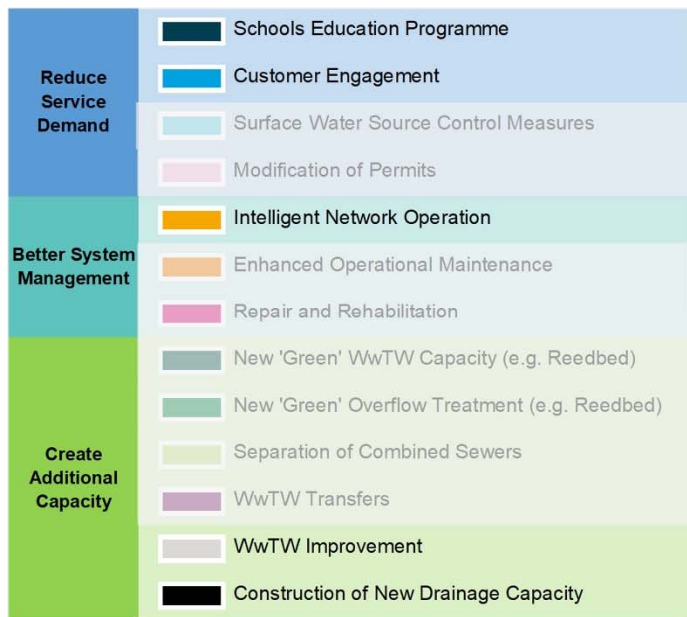
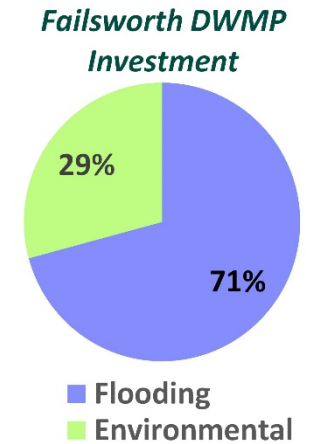
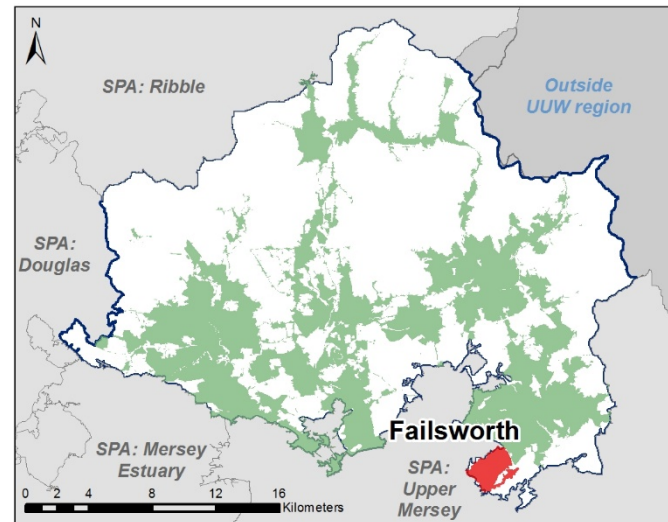
5.2.3.4 Failsworth

Figure 21 Details of the DWMP investment plan for Failsworth

The data on this page gives details of the investment plan for Failsworth TPU. The plan shows the geographic location of Failsworth within the Irwell catchment.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



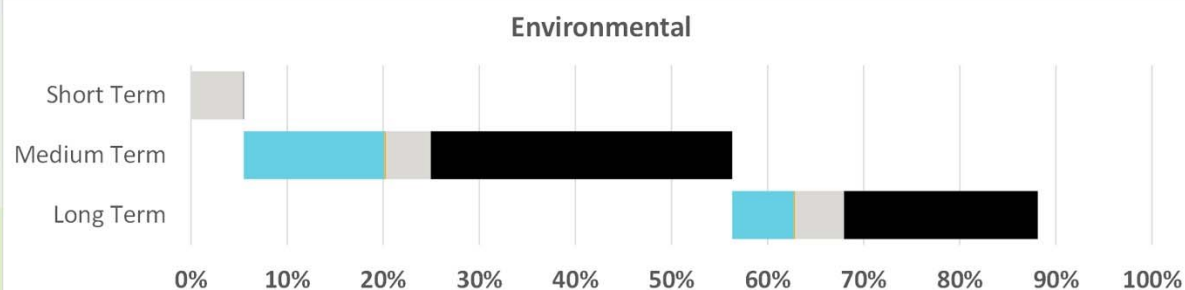
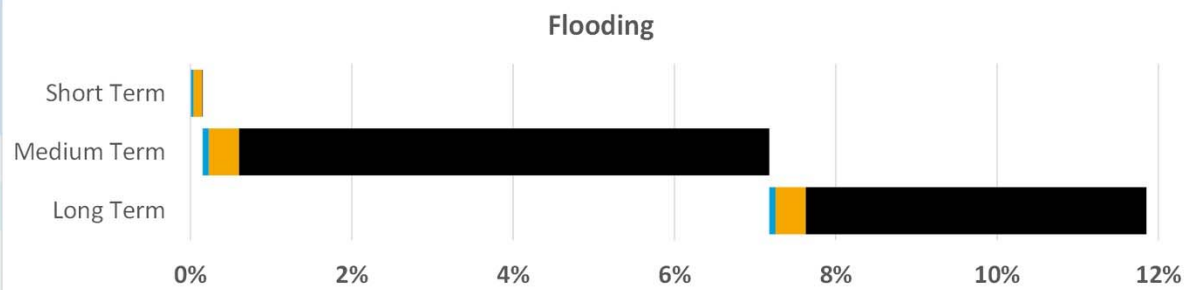
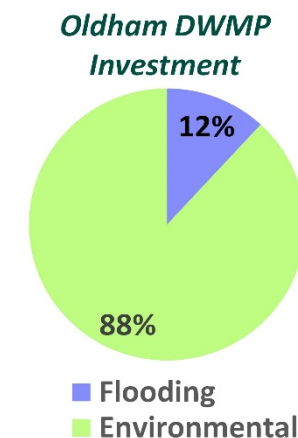
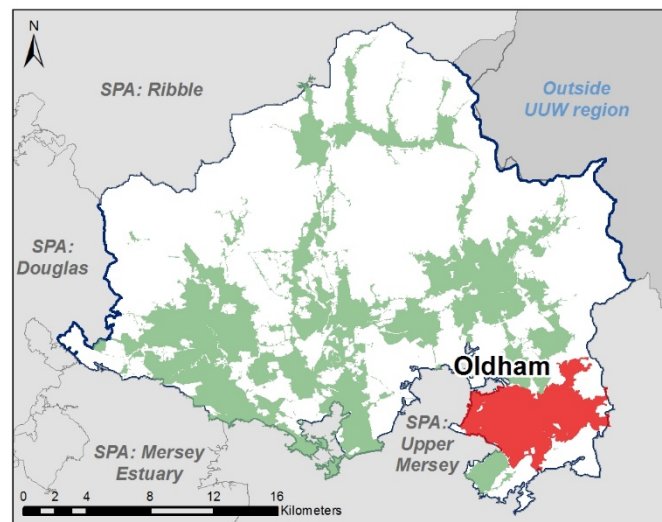
5.2.3.5 Oldham

Figure 22 Details of the DWMP investment plan for Oldham

The data on this page gives details of the investment plan for Oldham TPU. The plan shows the geographic location of Oldham within the Irwell catchment.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



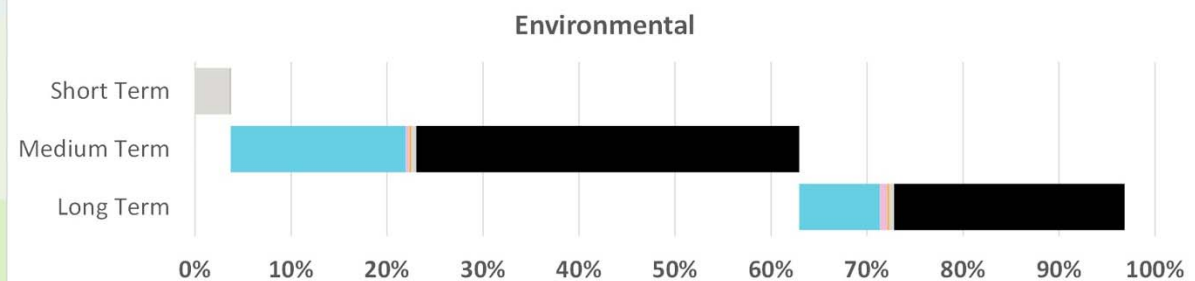
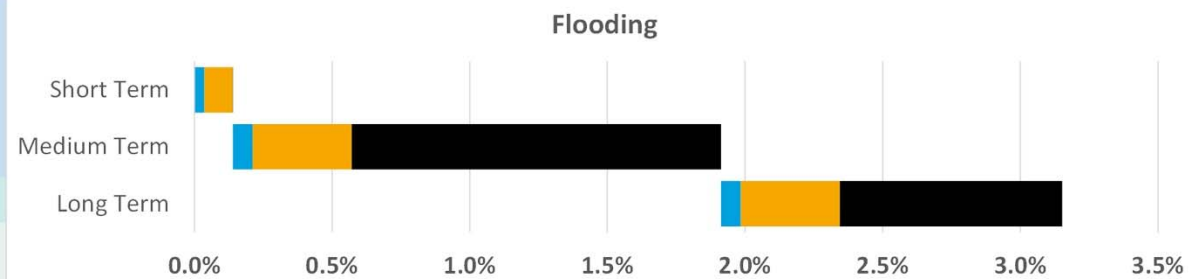
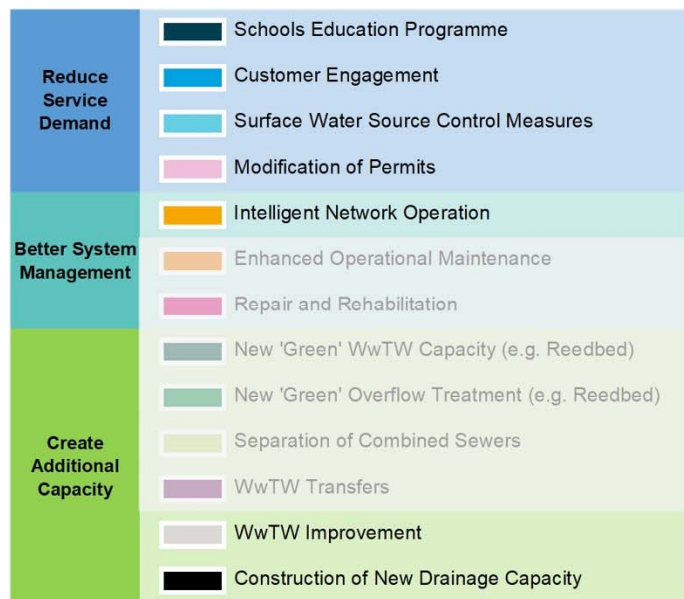
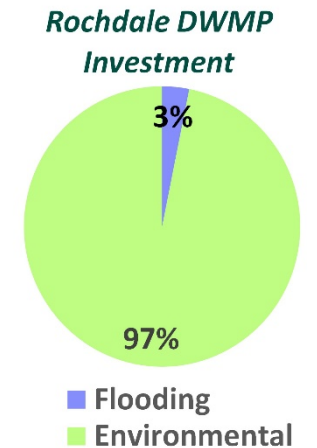
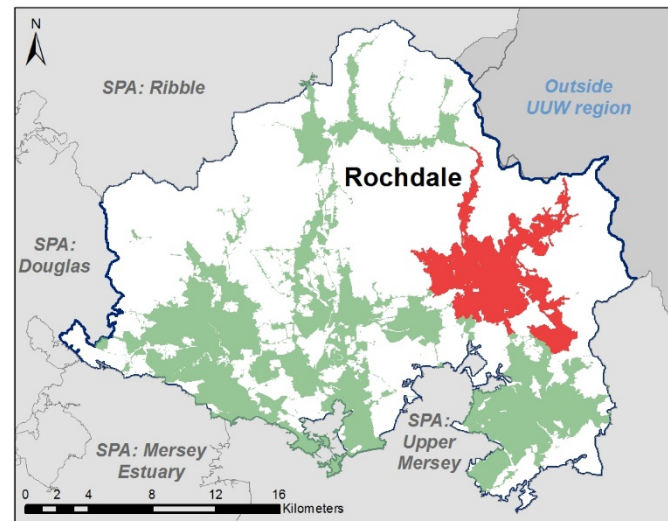
5.2.3.6 Rochdale

Figure 23 Details of the DWMP investment plan for Rochdale

The data on this page gives details of the investment plan for Rochdale TPU. The plan shows the geographic location of Rochdale within the Irwell catchment.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



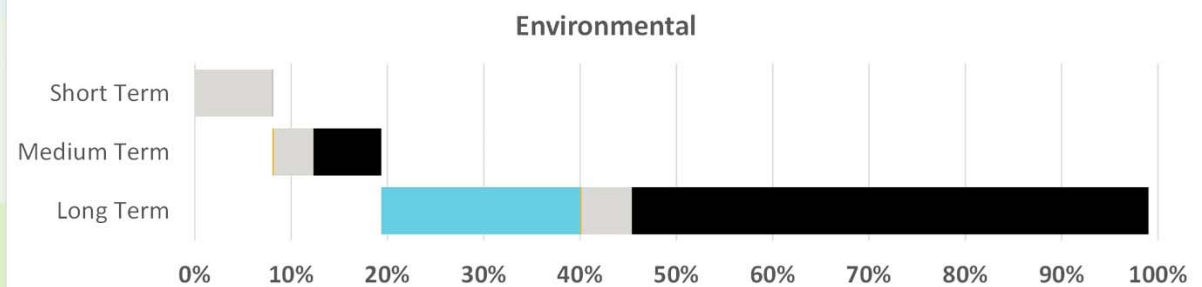
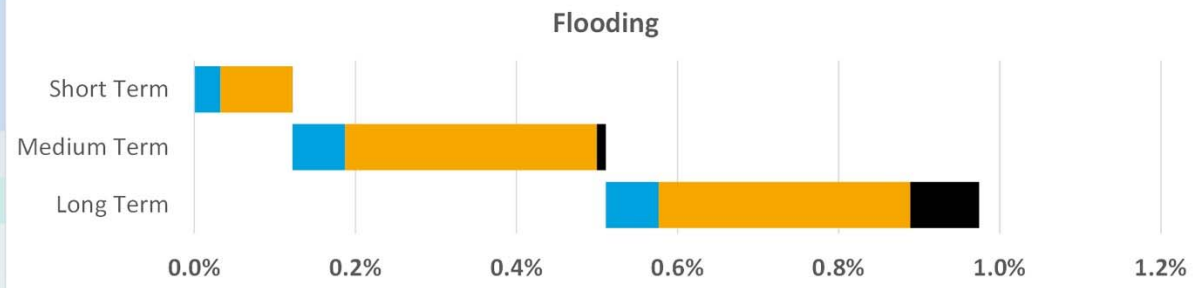
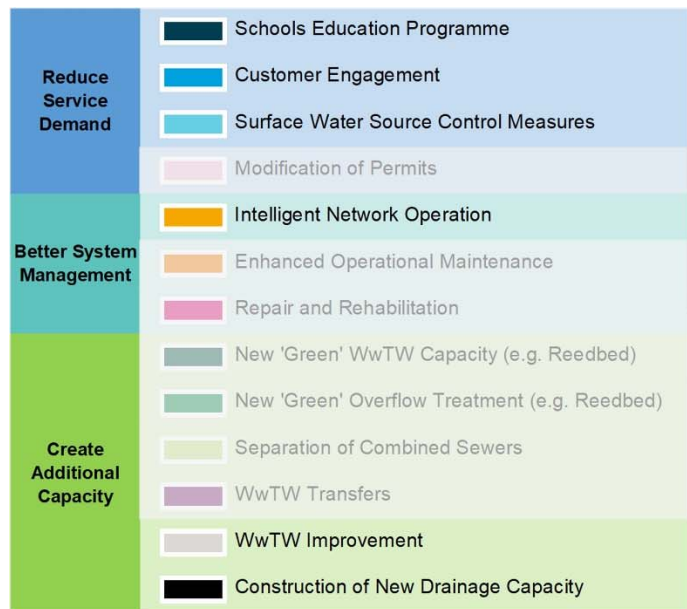
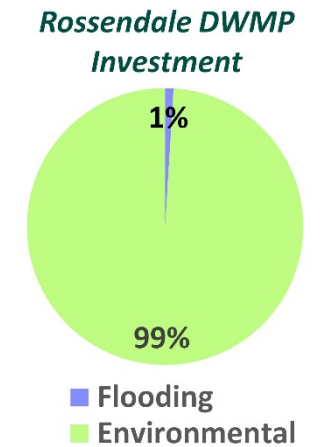
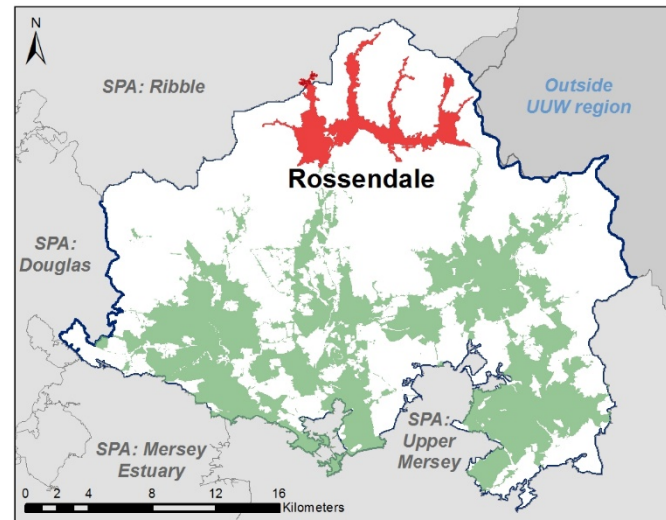
5.2.3.7 Rossendale

Figure 24 Details of the DWMP investment plan for Rossendale

The data on this page gives details of the investment plan for Rossendale TPU. The plan shows the geographic location of Rossendale within the Irwell catchment.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



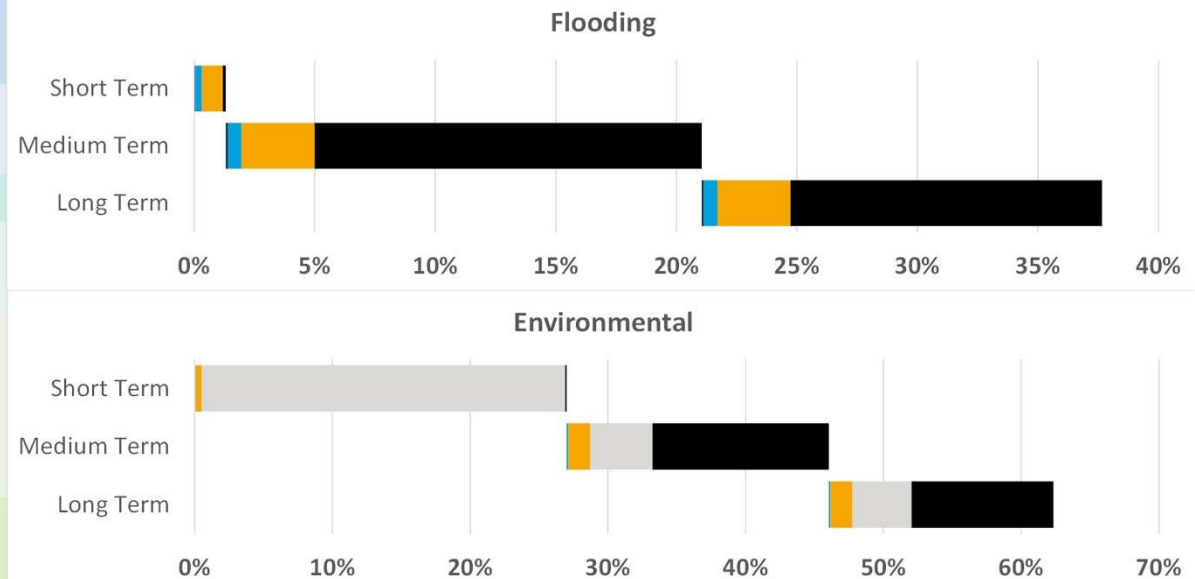
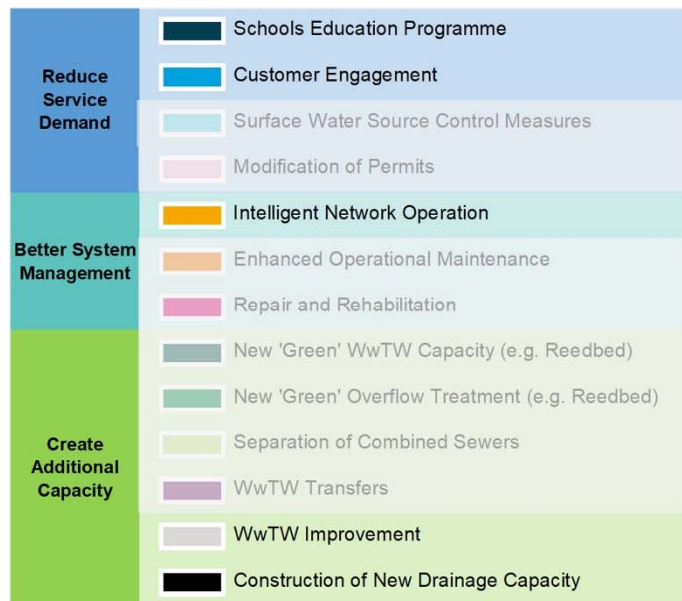
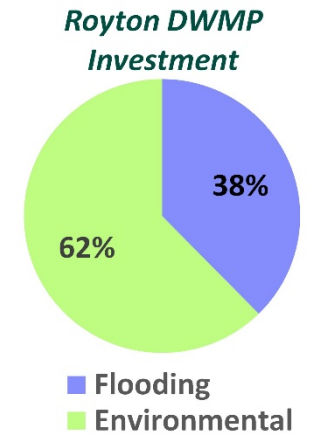
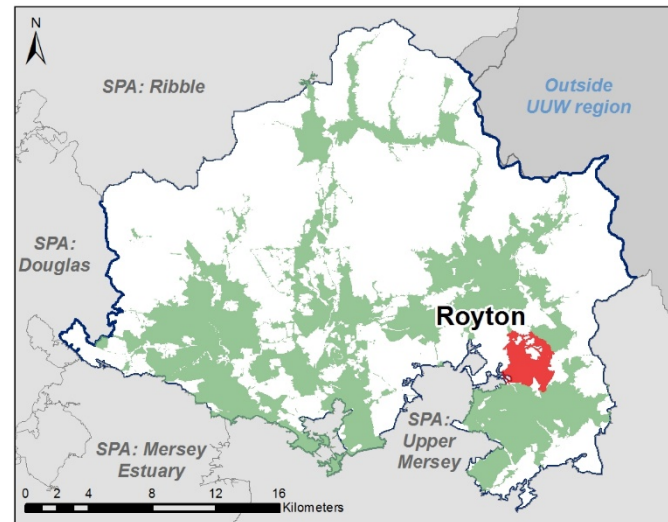
5.2.3.8 Royton

Figure 25 Details of the DWMP investment plan for Royton

The data on this page gives details of the investment plan for Royton TPU. The plan shows the geographic location of Royton within the Irwell catchment.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

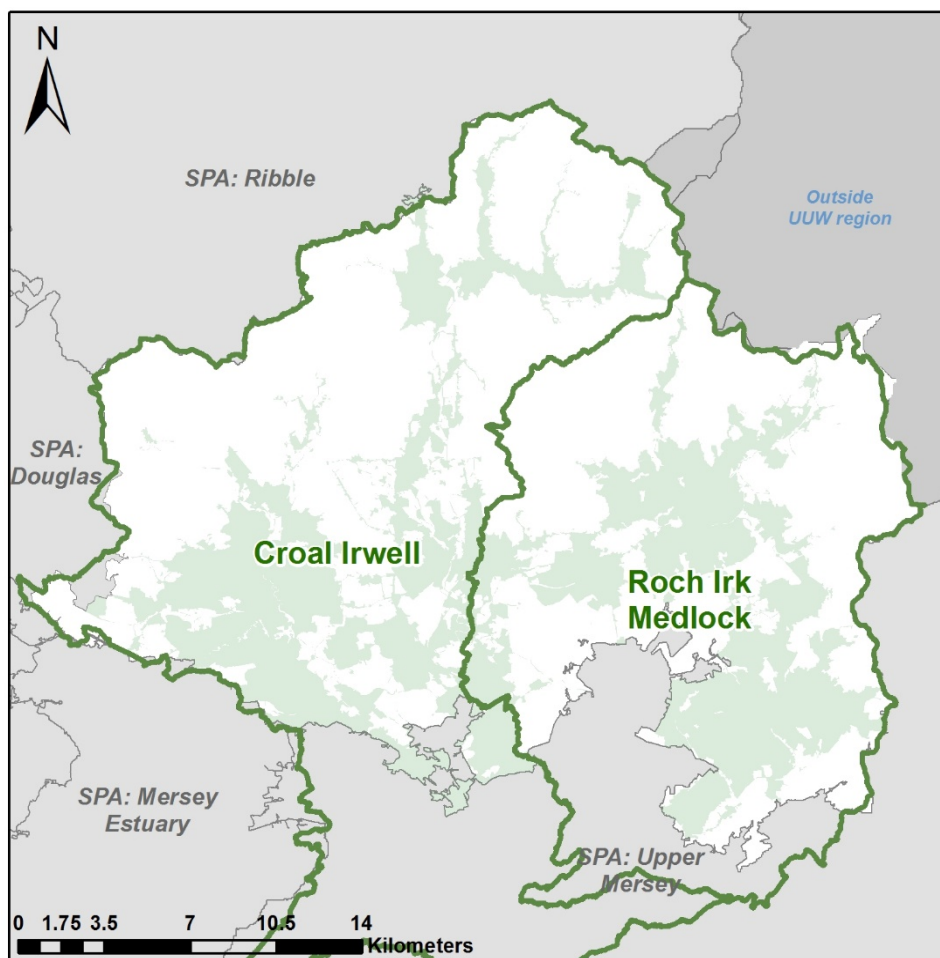
The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



5.2.4 TPUs with population less than 2,000

Within the Irwell catchment, there are a number of small TPUs, each with a population of less than 2,000. For the purpose of reporting, these have been grouped together within Environment Agency operational catchment (OC) boundaries, which are sub-divisions of the overall SPA, aligned to local river systems. Within the Irwell SPA, there are two Environment Agency operational catchment areas, which can be seen in Figure 26.

Figure 26 Location of Environment Agency operational catchments within the Irwell SPA



Environment Agency Operational Catchment	TPUs
Croal Irwell	Belmont Longworth
Roch Irk Medlock	Doctor Fold Lydgate Ogden Lane Park Bridge

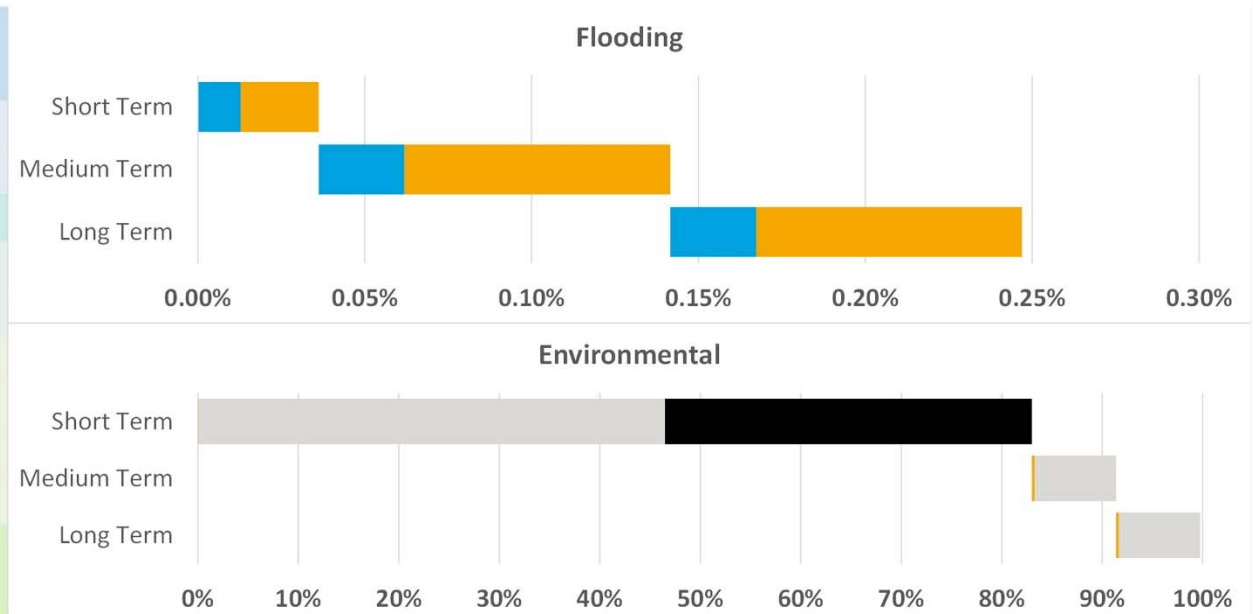
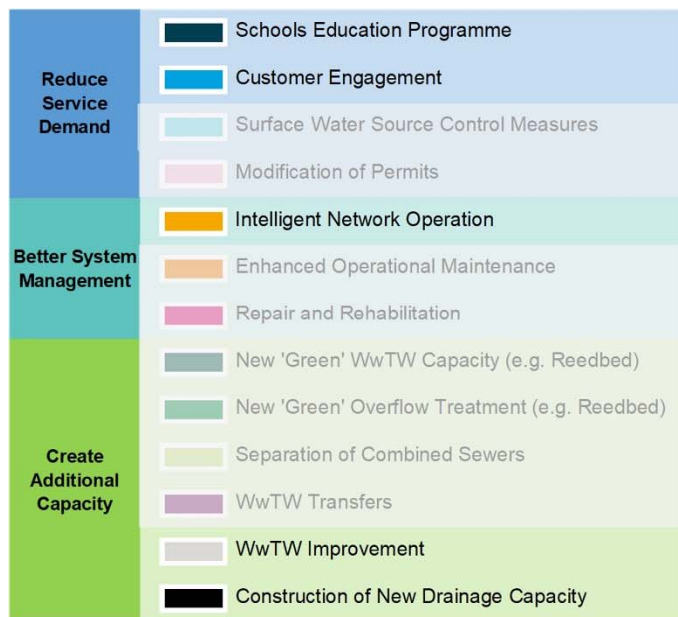
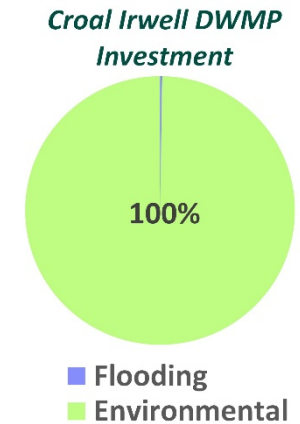
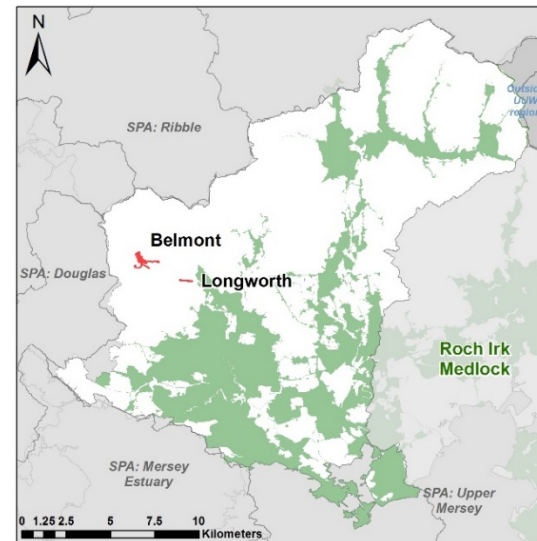
5.2.4.1 TPUs with population less than 2,000: Croal Irwell Operational Catchment (OC)

Figure 27 Details of the DWMP investment plan for the Croal Irwell OC

The data on this page gives details of the investment plan for the TPUs within the Croal Irwell OC. The plan shows the geographic location of these TPUs within the Croal Irwell OC.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



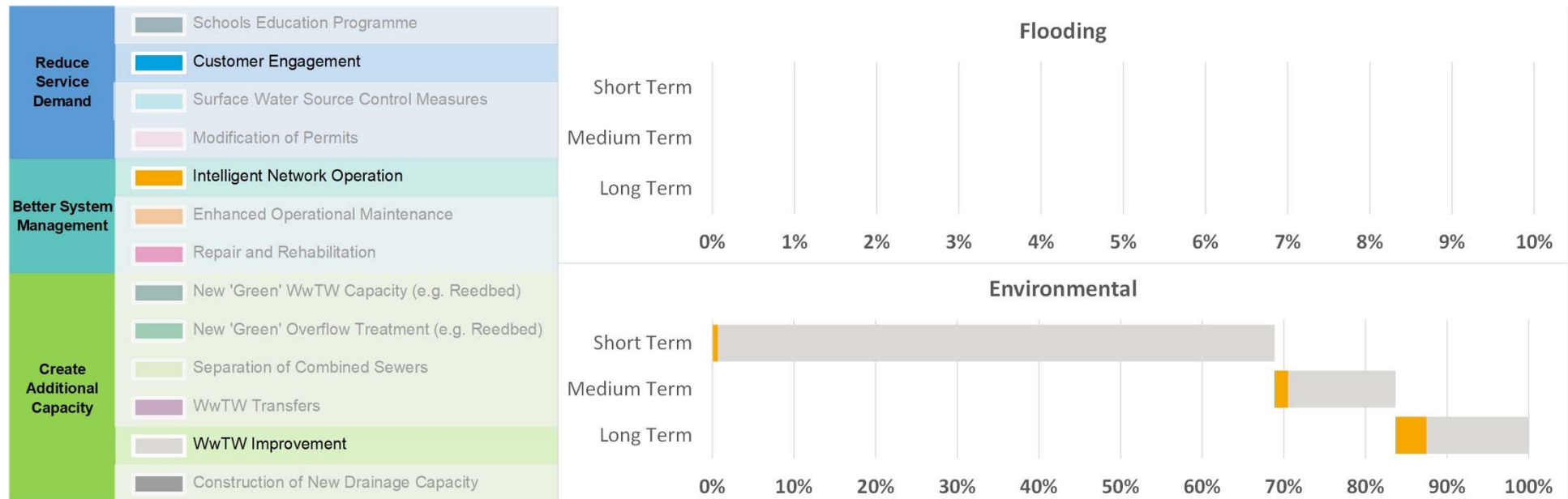
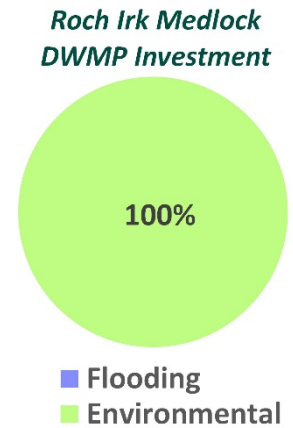
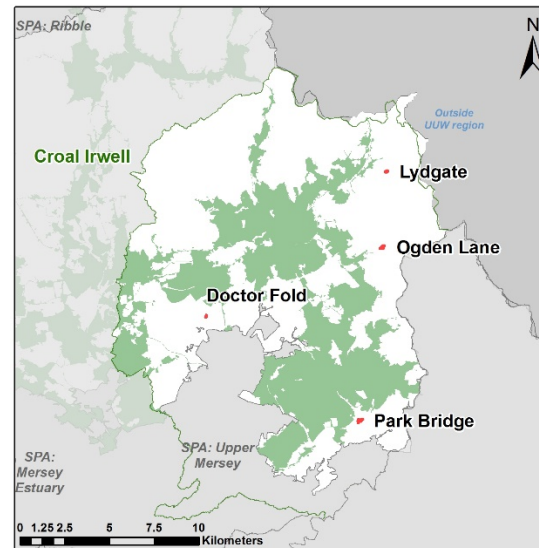
5.2.4.2 TPUs with population less than 2,000: Roch Irk Medlock Operational Catchment (OC)

Figure 28 Details of the DWMP investment plan for the Roch Irk Medlock OC

The data on this page gives details of the investment plan for the TPUs within the Roch Irk Medlock OC. The plan shows the geographic location of these TPUs within the Roch Irk Medlock OC.

The pie chart to the right of the plan indicates the percentage split of proposed flooding and environmental investment. Environmental investment includes work to address storm overflows, wastewater treatment works and pollution of watercourses.

The bar charts below show a more detailed breakdown of the potential option types that make up the flooding and environmental investment. The key to the left of the bar charts show the colours used for the 13 different option types. Additionally, the charts indicate whether investments are proposed in the short, medium or long term.



5.3 Other projects and investment

In addition to the improvements and benefits that the WINEP and the DWMP will drive in the years to come, there are also other projects that will help to achieve our ambitions. One of which is our Better Rivers: Better North West project which aims to improve the region’s river water quality.

5.3.1 Better Rivers: Better North West

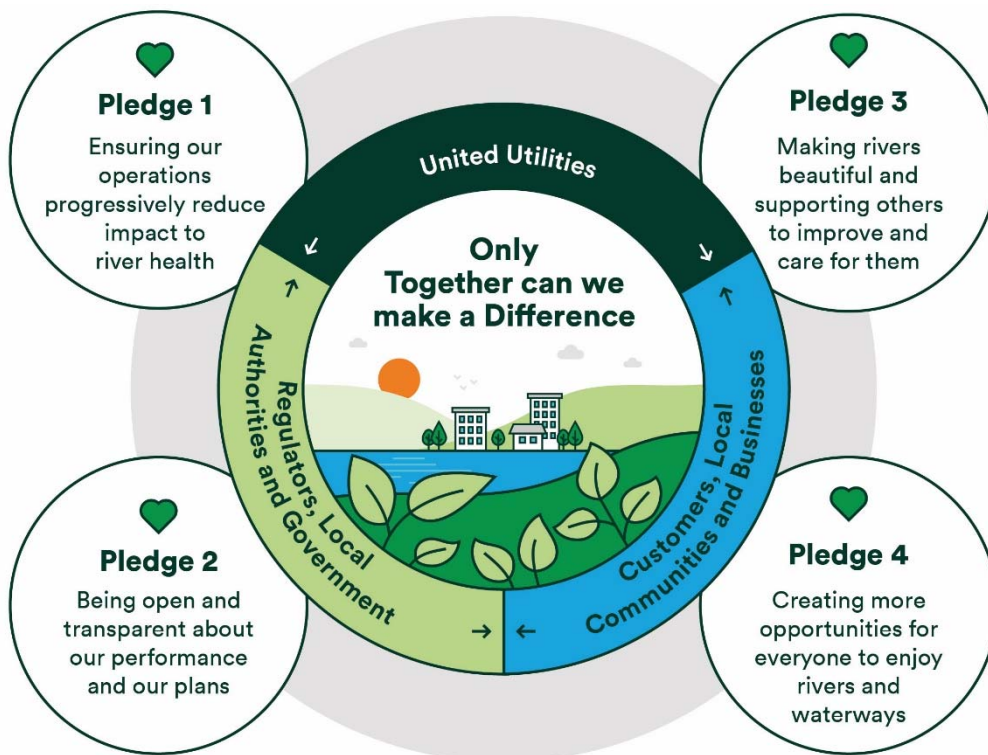
The North West is home to some of the most beautiful natural landscapes. We take our role in protecting them very seriously so they can be enjoyed by all. We are investing significantly to reduce the impact that wastewater has on the natural environment and our long-term ambition is to eliminate pollution incidents.

We want to demonstrate how we are addressing concerns regarding storm overflows and making our contribution to improving river health. Through our Better Rivers: Better North West plan, we have made four pledges which will include improving our wastewater network and treatment assets, collecting more data and sharing it, greater innovation and more use of nature-based solutions (Figure 29).

We are determined to build a coalition of the willing to improve the region’s river water quality and catalyse action from many parties. At the heart of this will be addressing surface water management at scale and securing continued investment in effective end-to-end wastewater management is necessary to improve river water quality. This programme sets out our ambitions for the next three years and beyond.

You can find out more about the Better Rivers: Better North West plan on our website (<https://www.unitedutilities.com/corporate/responsibility/environment/reducing-pollution/storm-overflows/our-commitments-to-river-health/>).

Figure 29 Overview of the Better Rivers: Better North West project



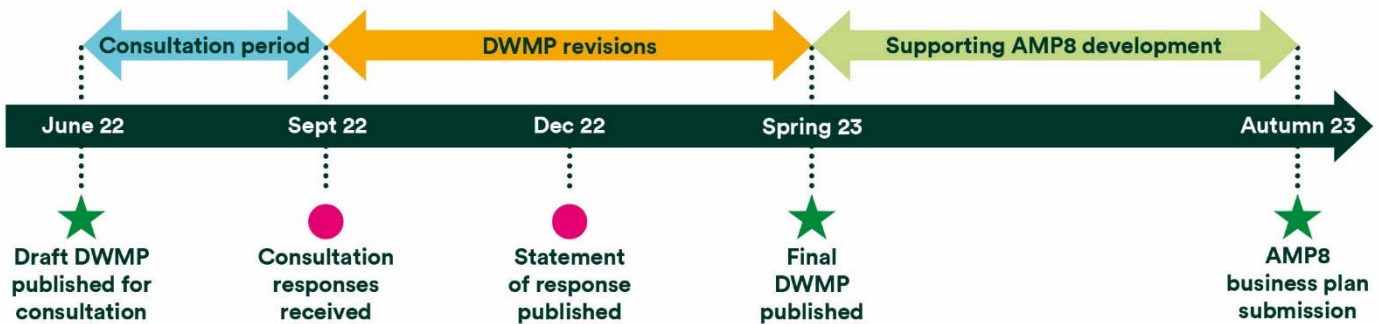
6. Embedding the DWMP

Since we began our DWMP journey when the framework was published in 2018, we have now produced our first ever plan. We have done this with the support from customers and stakeholders where we have listened to, reflected upon and made changes to different views, priorities and ambitions that we have for the North West, now and in the future.

The DWMP encompasses a host of documents covering different topic areas from assessing risks to identifying opportunities, and the SPA documents like this one for the Irwell catchment. The DWMP is not a static programme and will continue to work with stakeholders to develop partnership options and strategies, which will make a difference within the Irwell catchment.

Moving forwards, the DWMP will be a key component in the development of our business plan for investment cycle 2025 – 2030 (AMP8, Figure 30). Here, we will be able to continue to work in partnership to identify joint opportunities to mitigate risk, to improve the environment and create spaces for communities to enjoy.

Figure 30 Timeline of key milestones



7. References

- [1] <https://environment.data.gov.uk/catchment-planning/ManagementCatchment/3042>
- [2] <https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3116>
- [3] <https://environment.data.gov.uk/catchment-planning/OperationalCatchment/3382>
- [4] <https://environment.data.gov.uk/catchment-planning/v/c3-plan/CatchmentPartnership/WEIF3002>
- [5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1120229/North-West-FRMP-2021-2027.pdf
- [6] <https://www.gov.uk/government/publications/surface-water-management-plan-technical-guidance>
- [7] <https://catchmentbasedapproach.org/wp-content/uploads/2019/09/Irwell-Catchment-Plan-2019-2027.pdf>

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Water for the North West