

United Utilities Water

DRAFT Drainage and Wastewater Management Plan 2023

Alt Crossens DWMP

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Acronyms

For a list of acronyms, refer to document C0003.

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. This is the first time that we are developing the plan and we have taken a comprehensive approach as we recognise the importance of long-term planning.

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.

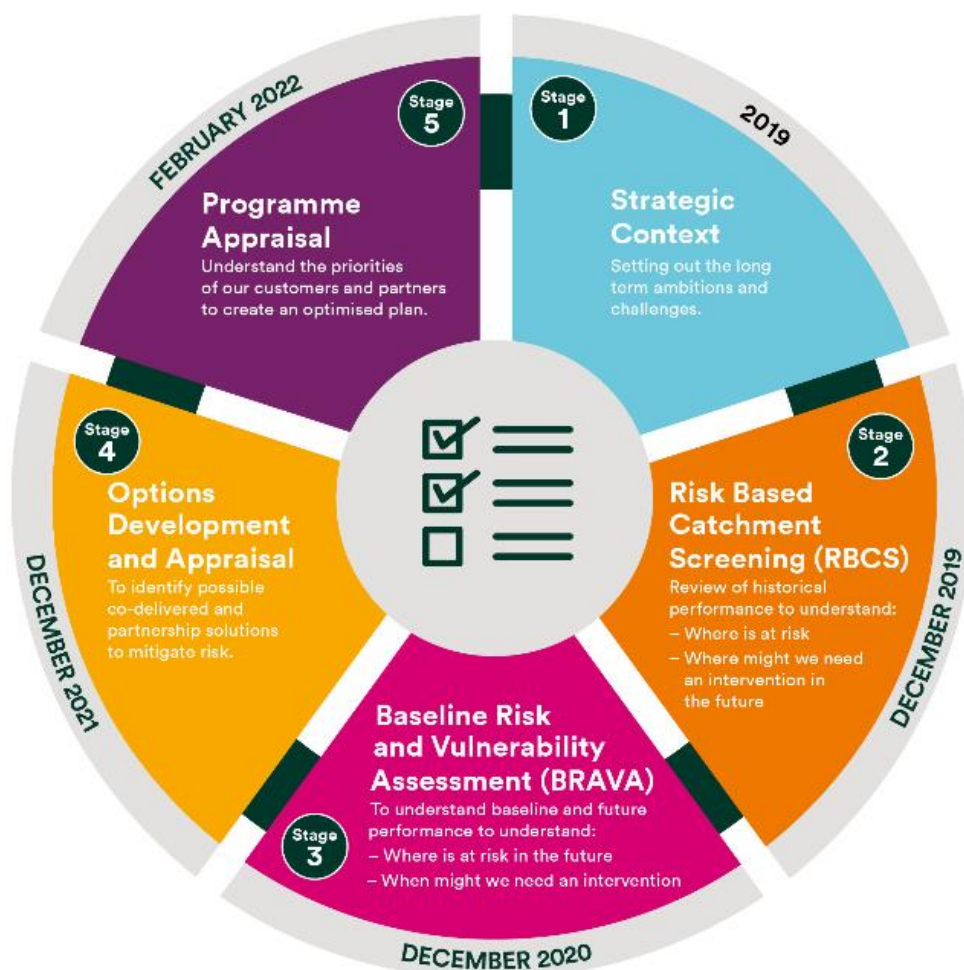
The plan will be set out at three levels (Figure 1) to maximise the potential for partnership working and for effective engagement between regulators and stakeholders at both company-wide level and more locally.

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 Alt Crossens SPA.

2. Background to the Alt Crossens catchment

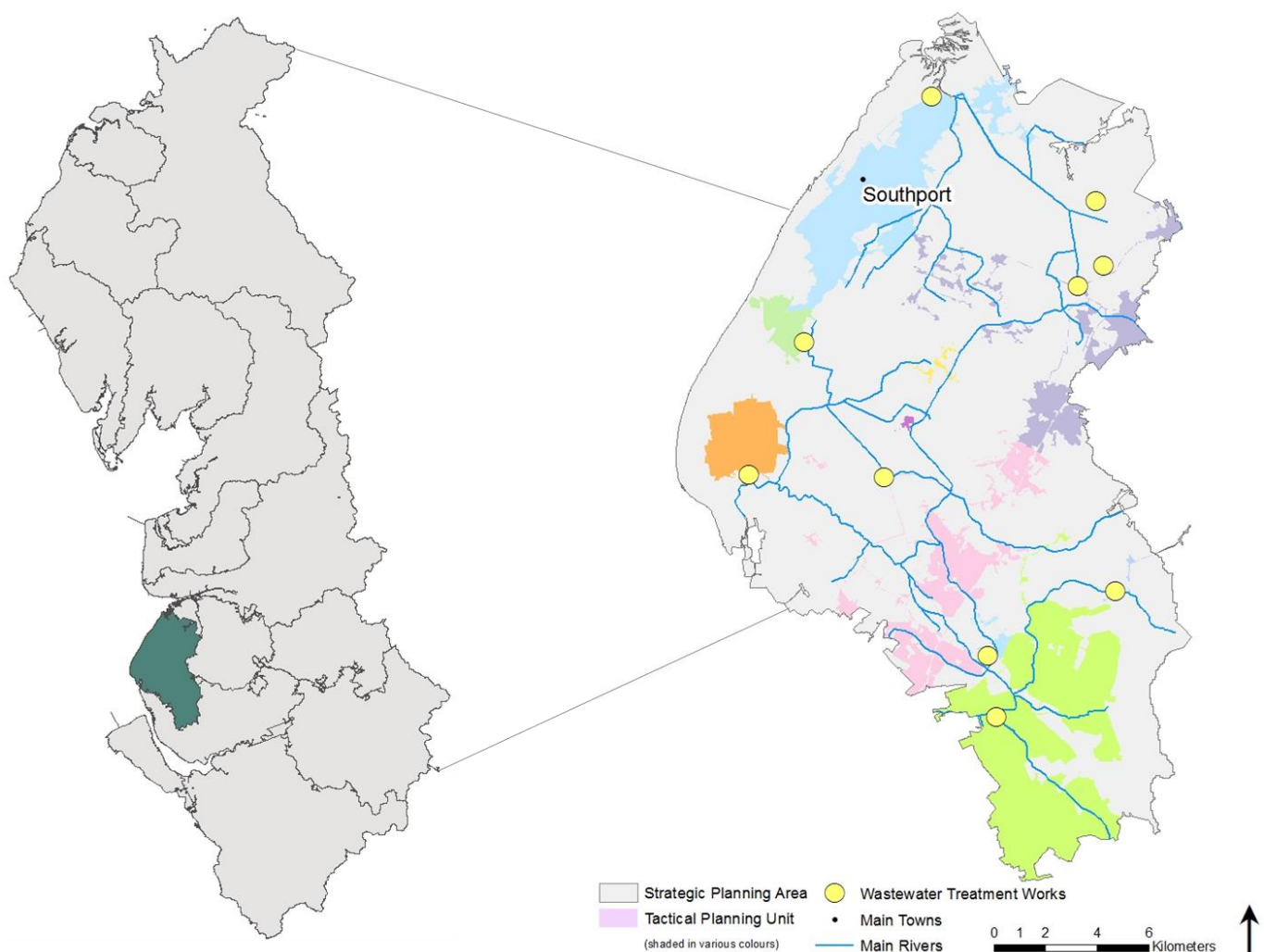
The Alt Crossens catchment area is located between the Mersey and Ribble Estuaries and is low-lying land. It consists of urban areas such as Liverpool, Formby and Southport, while also covering farmland that consists of a variety of modified watercourses ^[1].

There are two main sub catchments:

- Alt – Location begins at Huyton and follows along to an estuary in Hightown, this river covers approximately 30 miles ^[2].
- Crossens system – This sub catchment drains the area between Ormskirk and the edge of the Ribble Estuary ^[3].

There are 12 wastewater tactical planning units (TPU, also known as wastewater treatment work (WwTW) drainage catchments) within the Alt Crossens SPA. A TPU is the drainage catchment area encompassing all the sewers and wastewater assets e.g. pumping stations, which drain into the associated wastewater treatment works. The TPUs within the SPA vary in size from larger catchments such as Southport to smaller, rural catchments such as Hillhouse. The TPUs are highlighted in Figure 3.

Figure 3 Map of the Alt Crossens SPA



There are numerous strategic management plans within the Alt Crossens that are owned by various other organisations. Within the Alt Crossens 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);
- North West and North Wales Coastal Group Shoreline Management Plan (SMP); 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 SPA. 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 Alt Crossens 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 towns, cities, transport and wastewater.</p> <p>Future challenges predicted by the Environment Agency include invasive non-native species, physical modifications and pollution from agriculture, towns, cities, transport and wastewater.</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>Around 27,000 people (approximately 5%) and 2,200 non-residential properties are at risk of fluvial and coastal flooding in the Alt Crossens catchment. Approximately 26% of agricultural land and 52% of SSSI sites and 61% of Ramsar sites are at risk of flooding of fluvial and coastal flooding in the area. Areas along the Sefton coastline are at risk from coastal flooding and erosion.</p> <p>The Alt Crossens has suffered from severe flooding events such as storms Desmond and Eva in 2015, which saw widespread flooding across the catchment in areas such as Ormskirk and Burscough.</p> <p>Groundwater levels in the Mersey basin are known to be rising due to a decline in water abstraction by industry, which poses a risk to low lying areas and properties with basements.</p> <p>Across the Alt Crossens catchment there are 42 measures from earlier plans to manage flood risk.</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.</p> <p>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.</p> <p>United Utilities Water (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>	
<p>Shoreline Management Plan (SMP)</p> <p>Owner: North West and North Wales Coastal Group</p>	<p>The SMP is a non-statutory, high level policy document for coastal flood and erosion risk management planning that was formally adopted in August 2016. It provides a large-scale assessment of the risks associated with coastal processes and helps to reduce these risks to people and the environment by identifying the most sustainable policies for managing flood and coastal erosion risks in the short term (0–20 years), medium term (20–50 years) and long term (50–100 years).</p>	<p>Managed realignment approach in Formby.</p> <ul style="list-style-type: none"> The sand dunes at Formby point are a highly dynamic system with erosion rates of up to 4m per year. While this movement has various habitat benefits for the area, the rollback has the potential to cause significant land management issues. The Shoreline Management Policy for this area is Managed Realignment, which recommends that the dunes be left to rollback naturally, with limited intervention to control movement and impact to coastal footpaths and car parks. Erosion rates are monitored closely through the regional monitoring programme to inform management options and timings.
<p>Catchment Based Approach (CaBA) Catchment Plan ^{[4] [7]}</p> <p>Owner: Alt Crossens 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 catchment partnership aims to ensure cooperative and considerate water management to:</p> <ul style="list-style-type: none"> support a healthy water environment that is rich in wildlife; and be a community asset, which supports economic growth, health and wellbeing. <p>A main challenge in the catchment is the combination of agricultural and urban pollution, which affects water quality as the area is approximately 50% urban and 50% rural.</p> <p>The watercourses in the Alt Crossens catchment have classifications that range between good and bad, however, the good accounts for only 3%, the remaining 97% are failing.</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 Alt Crossens SPA we have engaged with stakeholders such as:

- The Environment Agency;
- Sefton Council;
- Knowsley Council;
- Liverpool City Council;
- Lancashire Flood Partnership; and
- Mersey Rivers Trust (host of the Alt Crossens 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 Alt Crossens catchment are outlined in Section 4.

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.

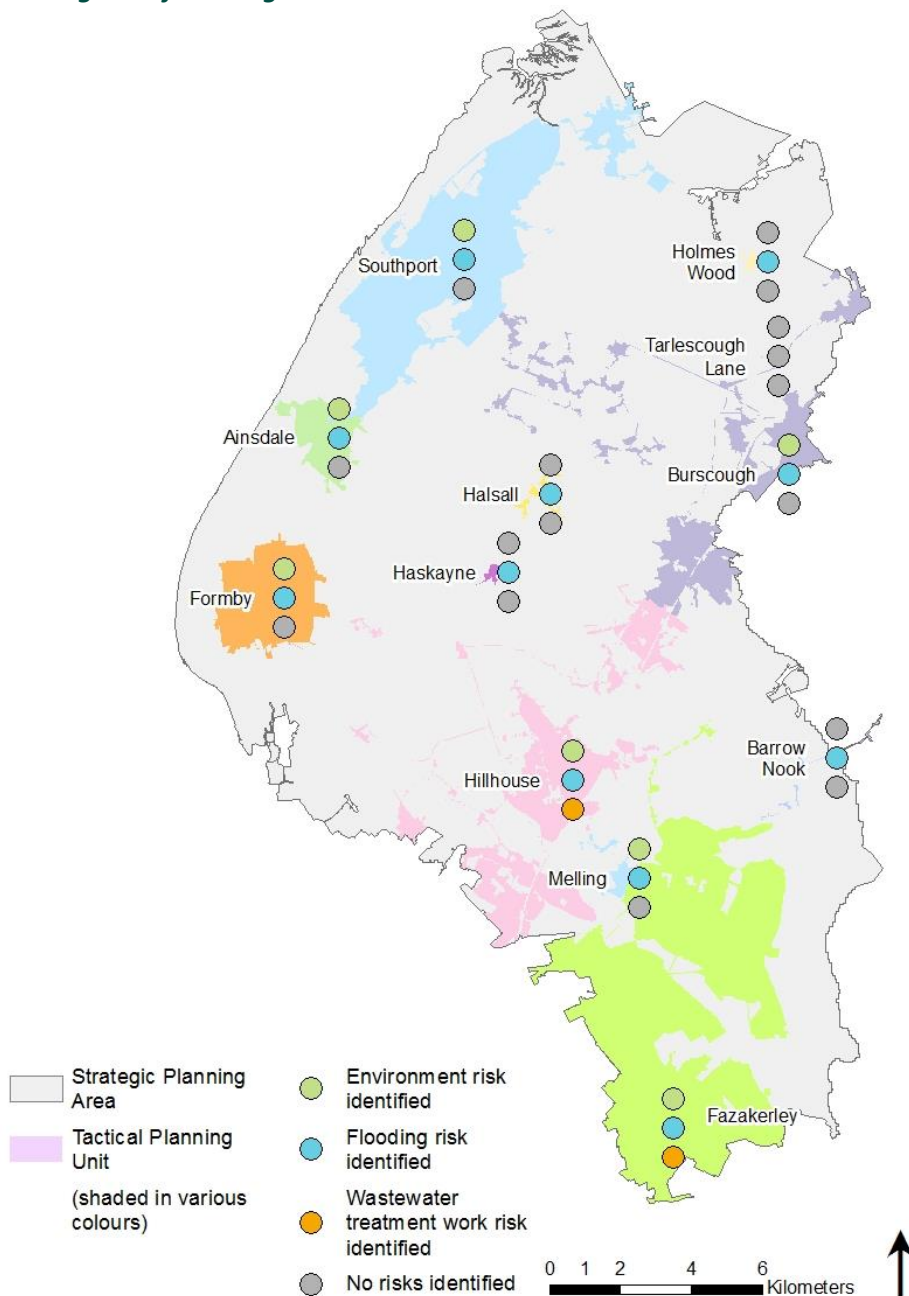
Within the Alt Crossens SPA, the RBCS stage identified 11 out of 12 TPUs that required further investigation and, therefore, passed onto the BRAVA stage (outlined in Section 3.2).

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 Alt Crossens SPA, which is supported by the highest triggered RBCS assessments, which are:

- Storm Overflow Assessment Framework – (7/12) – Environment; and
- External Sewer Flooding – (11/12) – Flooding.

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

Figure 5 Map of the RBCS results for the Alt Crossens SPA. 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 Alt Crossens SPA are outlined in Table 2 to Table 5.

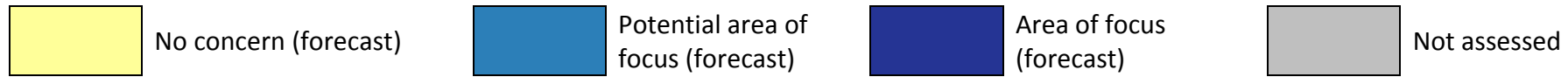
Table 2 Environmental BRAVA results

Tactical Planning Unit	Environmental					
	Pollution Assessment	Storm Overflow Performance		Bathing and Shellfish Spill Assessment		
	2020	2020	2050	2020	2030	2050
Ainsdale						
Barrow Nook						
Burscough						
Fazakerley						
Formby						
Halsall						
Haskayne						
Hillhouse						
Holmes Wood						
Melling						
Southport						

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

Table 3 Flooding BRAVA results

Key



Flooding														
Tactical Planning Unit	Internal Flooding Risk			External Flooding Risk			Sewer Collapse Risk	Risk of flooding in a storm (1:50-year)		Flooding of open spaces			Blockage Assessment	
	2020	2030	2050	2020	2030	2050	2020	2020	2050	2020	2030	2050	2020	
Ainsdale														
Barrow Nook														
Burscough														
Fazakerley														
Formby														
Halsall														
Haskayne														
Hillhouse														
Holmes Wood														
Melling														
Southport														

Table 4 Wastewater treatment works BRAVA results

Tactical Planning Unit	Wastewater treatment works		
	Risk to wastewater treatment works (WwTW) capacity		
	2020	2030	2050
Ainsdale			
Barrow Nook			
Burscough			
Fazakerley			
Formby			
Hillhouse			
Holmes Wood			
Melling			
Southport			

BRAVA	
	No concern (forecast)
	Potential area of focus (forecast)
	Area of focus (forecast)
	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
Ainsdale			
Barrow Nook			
Burscough			
Fazakerley			
Formby			
Halsall			
Haskayne			
Hillhouse			
Holmes Wood			
Melling			
Southport			
Tarlscough Lane			

Resilience	
	More resilient
	Less resilient
	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 TPUs (largely based on BRAVA). Within the Alt Crossens SPA, two TPUs were identified to be 'complex' based on problem characterisation:

- Burscough; and
- Hillhouse.

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.

As a result of this assessment no TPUs in the Alt Crossens SPA have been identified as having 'strategic growth'.

Note: Water Industry National Environment Programme (WINEP) and storm overflows guidance are still being developed. This could lead to significant changes in preferred options and could result in large-scale, short and long-term investment needs. This will be fully reviewed between draft and final DWMP publication, in addition to other aspects such as nutrient neutrality, bathing waters and shellfish water expectations. Between draft and final DWMPs the impact of storm overflow requirements will also require optimising against the other needs and opportunities.

3.3.3 Hillhouse

The Hillhouse TPU is in the south of the Alt Crossens SPA (Figure 6), consisting of over 800km of sewer network serving approximately 57,000 people and over 24,000 properties. The watercourses in the area are classed as 'moderate' under the Water Framework Directive (WFD) 2019 and includes Downholland Brook, to which the wastewater treatment works discharges.

The TPU is a complex catchment with several challenges that require a more strategic focus. The population is projected to increase by 8% by 2050, which could drive associated development and increased loading on the network and wastewater treatment works. There are a number of storm overflows within the area, and uncertainty around medium and long-term performance particularly with regards to meeting future new targets.

Through the BRAVA process, risks were identified for internal (property) flooding, external flooding, and flooding of open spaces. The areas highlighted in blue in Figure 7 Map of Hillhouse TPU with areas for further investigation highlighted in blue are key areas for further investigation. Further risks were identified around sewer collapse, blockages and pollution.

The WINEP and storm overflows guidance are still being developed. This could lead to significant changes and investment to both wastewater treatment works and the drainage network.

Figure 6 Map of the Hillhouse TPU

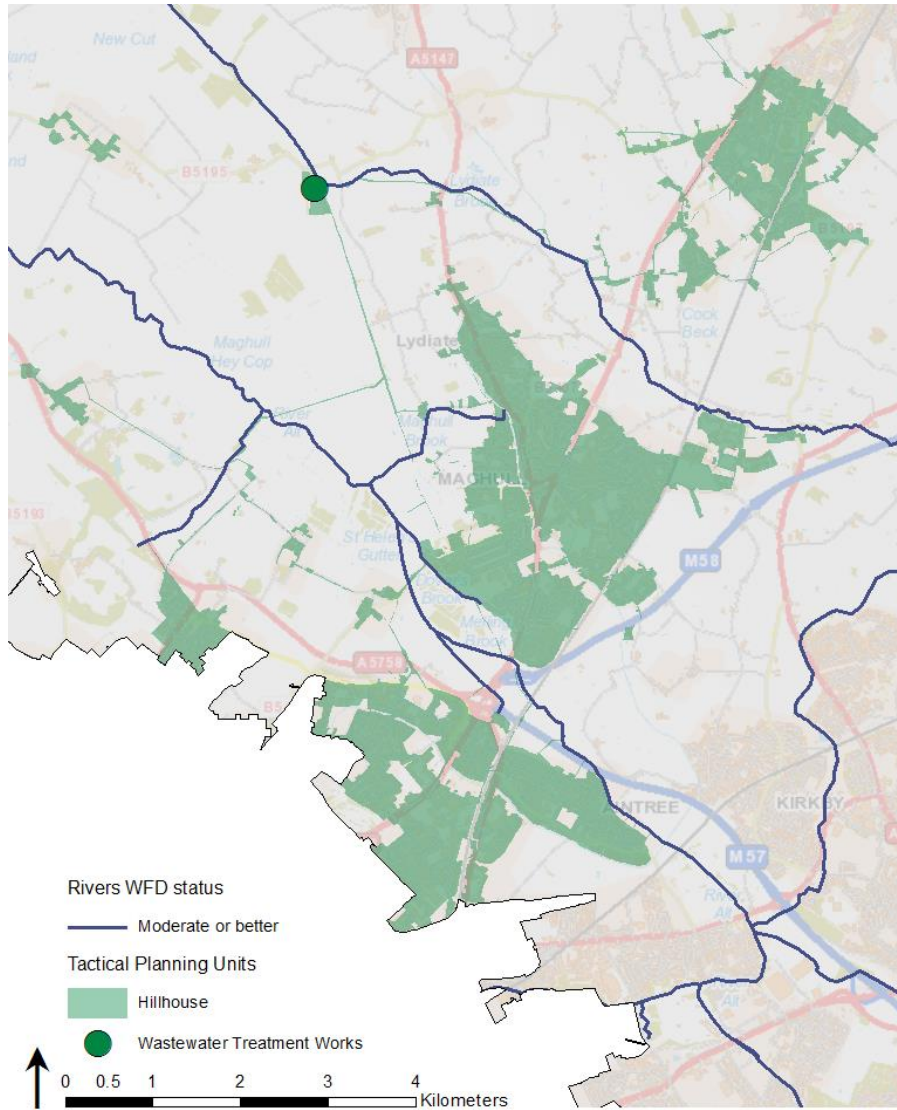
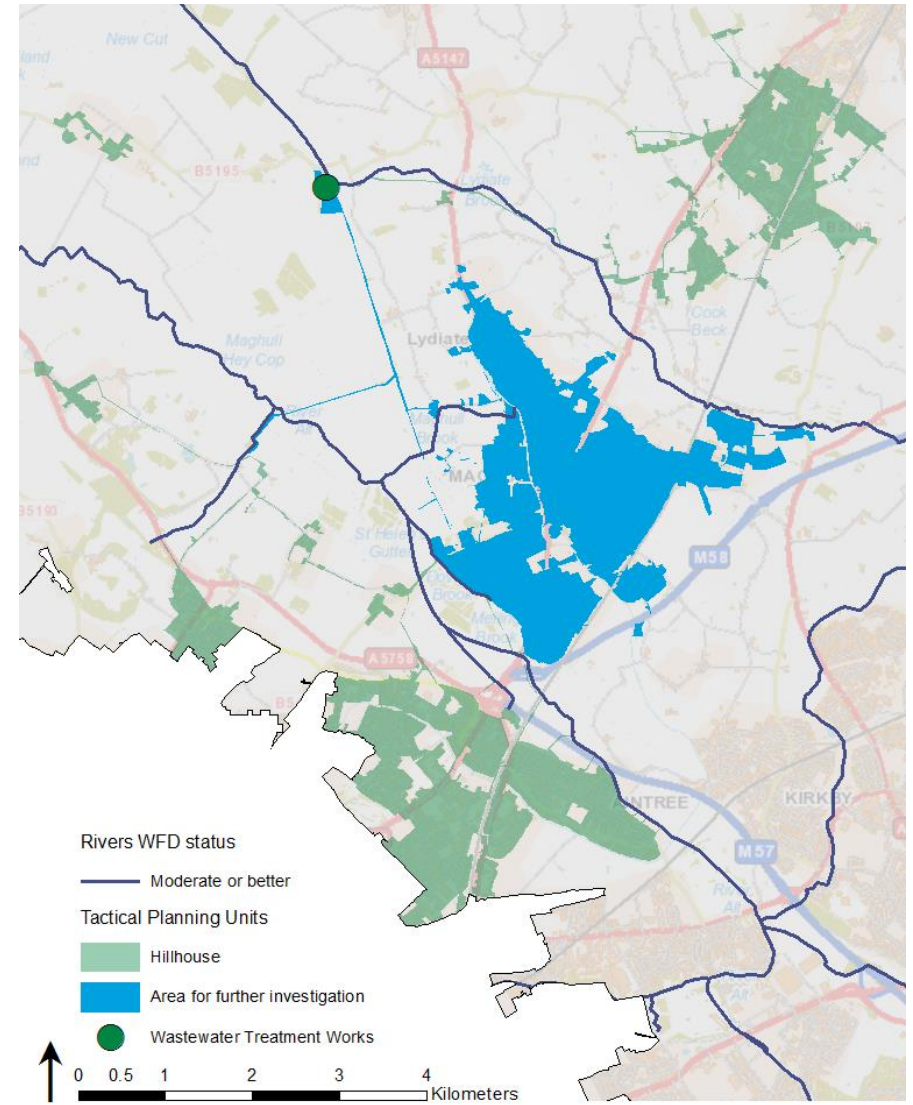


Figure 7 Map of Hillhouse TPU with areas for further investigation highlighted in blue



3.3.3.1 Hillhouse adaptive plan

Recently, sewage flows from Halsall TPU and Haskayne TPU have been transferred to Hillhouse TPU. We are currently monitoring performance and Hillhouse TPU will be reassessed when there is appropriate base data available.

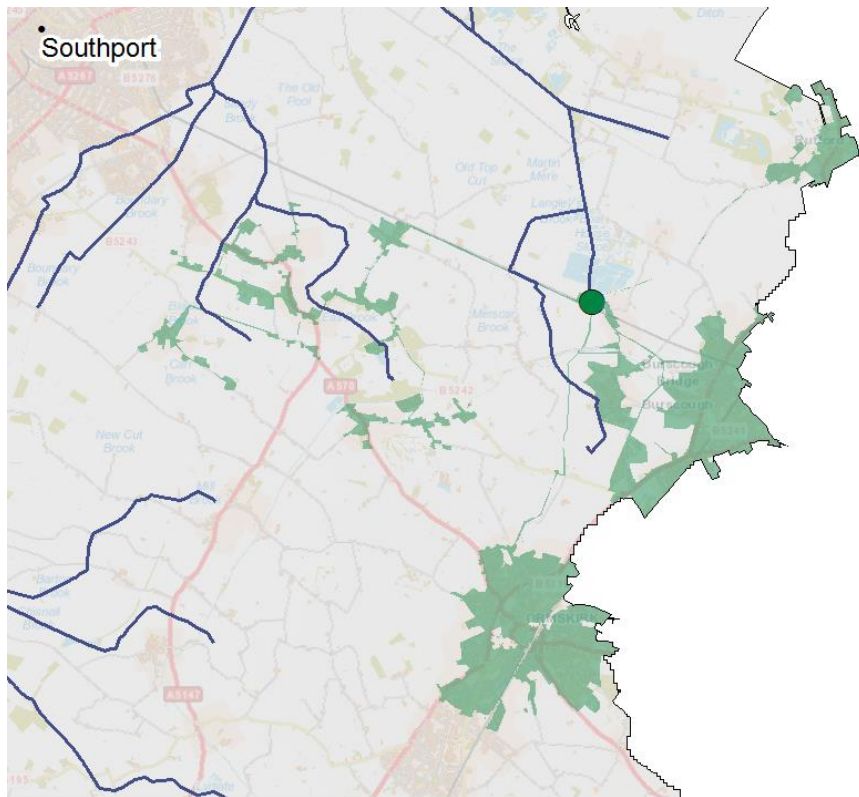
3.3.4 Burscough

The Burscough TPU is to the east of the Alt Crossens SPA (Figure 8), consisting of over 400km of sewer network serving over 13,000 properties and a residential population of approximately 33,000 people. The watercourses in the area are classed as 'moderate' under the WFD 2019.

Burscough TPU is a complex catchment, and risks have been identified through BRAVA for internal (property) flooding, external flooding, flooding of open spaces, flooding from 1 in 50-year storm events, pollution, sewer collapse, and blockages by 2050. The population is projected to increase by 12% by 2050, which could drive associated development and increased loading on the network and wastewater treatment works. There are a number of uncertainties in the area such as storm overflows, medium and long-term performance particularly with regards to meeting future new targets, and uncertainties associated with the level of investment that may be required with regards to sewer blockages as a result of forecasted demographic, economic and behavioural changes. The areas highlighted in blue in Figure 9 are key areas that models indicate areas for further investigation.

Similarly, to Hillhouse TPU, the WINEP and storm overflows guidance are still being developed. This could lead to significant changes and investment to the drainage network to ensure protection of the environment and water quality.

Figure 8 Map of the Burscough TPU



Rivers WFD status

— Moderate or better

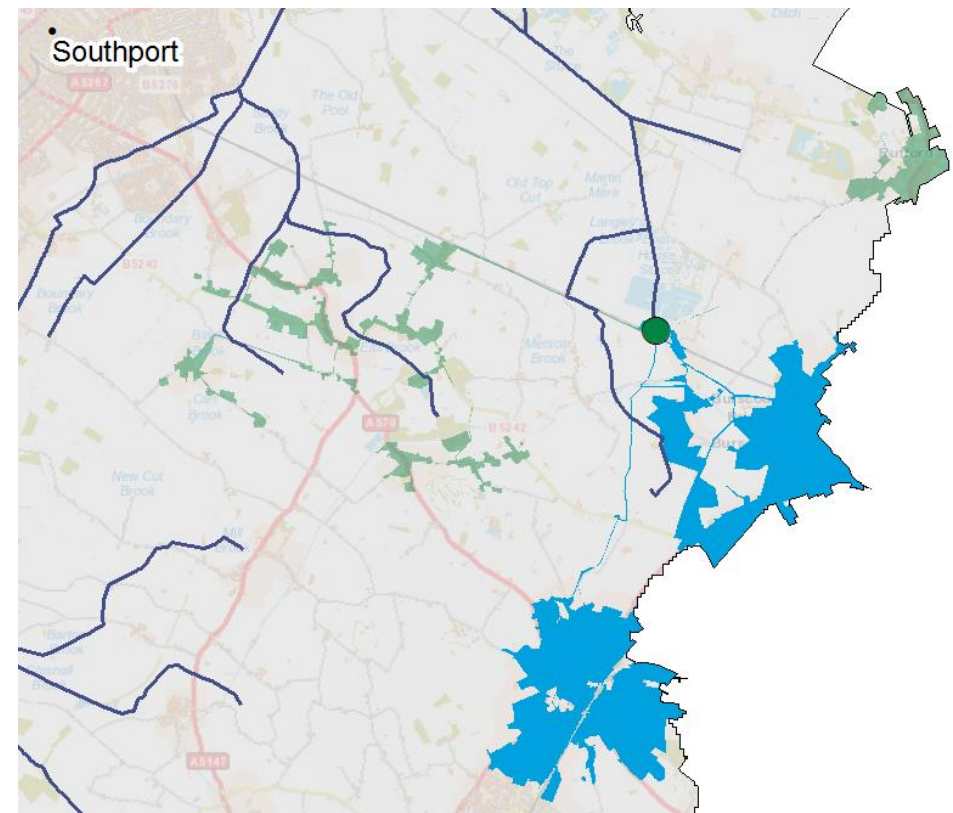
Tactical Planning Units

■ Burscough

● Wastewater Treatment Works



Figure 9 Map of Burscough TPU, with areas for further investigation highlighted in blue



Tactical Planning Units

■ Burscough

■ Area for further investigation

● Wastewater Treatment Works

Rivers WFD status

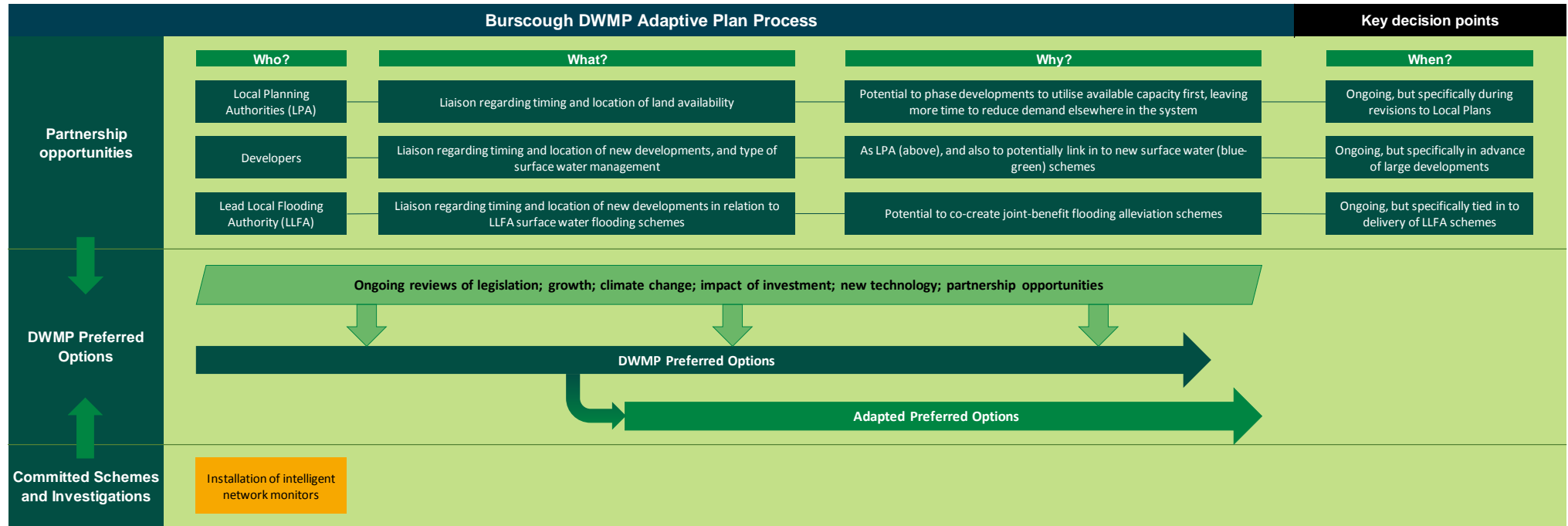
— Moderate or better



3.3.4.1 Burscough adaptive plan

The first part of the adaptive plan process (Figure 10) highlights the importance of partnership working and regular data reviews.

Figure 10 Burscough Adaptive planning process



Partnership working

In a catchment where growth is a significant factor in future performance, it is key to maintain regular conversations with those stakeholders that have knowledge about future developments and can potentially influence their impact. Key organisations include:

- local planning authority;
- the Environment Agency;
- lead local flood authorities; and
- housing developers.

The DWMP plan for each TPU is developed based on a number of data sources. Some of these are prone to change over time, which means that original assessments can become out of date. As data from these sources change, it makes sense to re-evaluate the DWMP plan to check the impact on the plan. Examples of data that change over time are shown in Table 6.

Table 6 Examples of data that change over time and can impact upon the plan

Type of data or information	Possible impacts of changes
Government legislation	More or less stringent requirements or regulations, which may require different levels of investment, and policy changes that may drive better or worse incentives on demand.
Development growth projections	These will vary with time in line with economic conditions, changing demographics, or government policy. This can result in the number of new houses and businesses growing at a different rate than originally forecast.
Climate change projections	As more climate data becomes available, climate projections are modified, which may indicate changes to temperature and rainfall patterns.
Impact of investment	As new drainage schemes or new strategies are implemented, we will continue to evaluate their performance. If they turn out to be more or less successful than anticipated, this may allow the extent of another option type to be reduced or increased accordingly.
Development of new technology	Over time, new technology provides opportunities to address and resolve risks differently, or more efficiently.
Partnership opportunities	We will work closely with key stakeholders to address risks jointly. Over time, these stakeholders may see changes in their own risks and funding levels, which may present opportunities for greater collaboration.

Figure 11 shows the second part of the Burscough adaptive plan, reflecting the different option types identified as being appropriate for Burscough. Each line represents a different option type – e.g. schools education programme. The plan shows that each option type will be regularly reviewed in line with the method described in part one. This allows new information and opportunities to be used to adapt the plan by either increasing or reducing the extent of some option types.

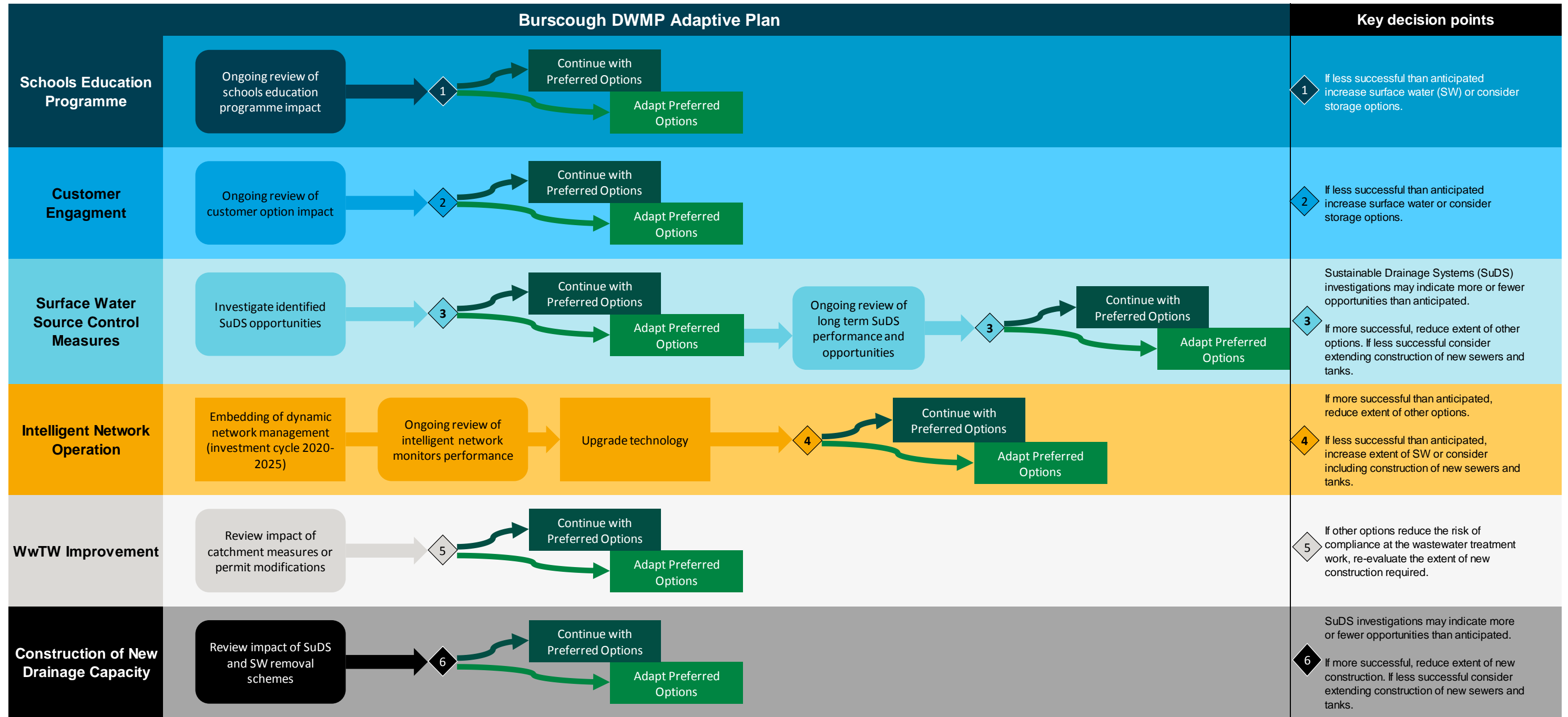
Within Burscough, there are opportunities to carry out investigations before making final decisions on the final strategy. This means that we can properly evaluate options before committing to significant investment. These investigations will take into account things such as:

- technical feasibility;
- benefit of the work;
- customer impact;
- environmental impact; and
- cost.

The adaptive plan below demonstrates multiple potential scenarios and pathways and should be read in conjunction with the optimised DWMP plan for the relevant TPU (refer to Section 5.3).

The adaptive plan should be reviewed regularly in order to incorporate potential changes in key factors such as legislation, population growth and climate change, which could impact standards or targets, as highlighted above in Figure 10. The adaptive plan may contain potential investigations, which are currently excluded from the optimised DWMP plan (refer to Section 5.3) until there is more certainty. It is, therefore, important that both the adaptive plan and the optimised plan are developed together.

Figure 11 Burscough Adaptive Plan – Possible adaptive pathways as knowledge and opportunities change over time



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 12).

An options hierarchy was then used, which has been endorsed by customers and stakeholders from across the North West to select preferred solutions (Figure 13). 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 12 Options development process

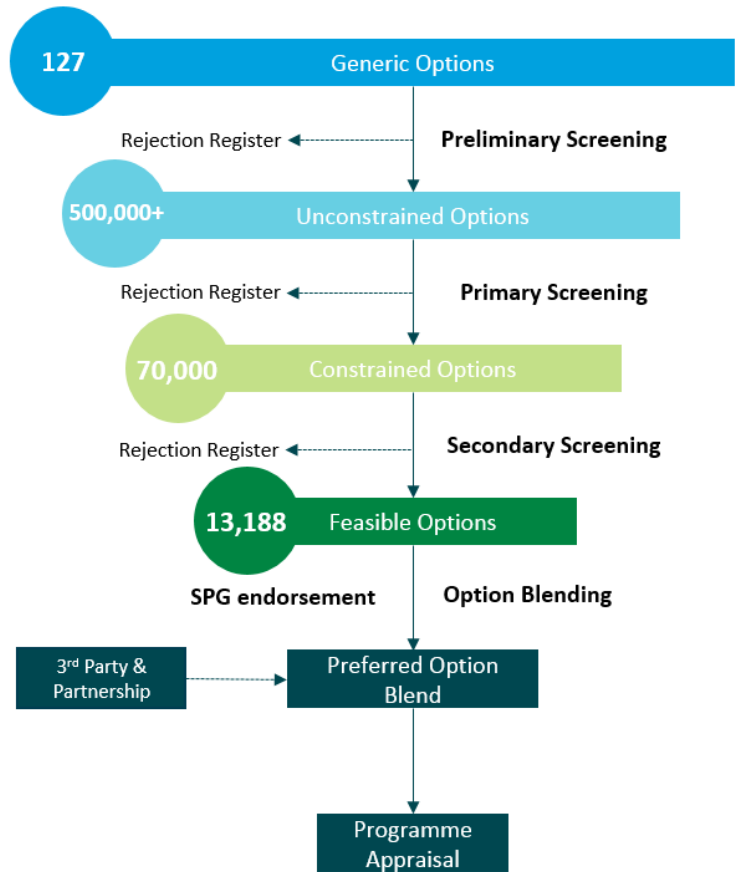
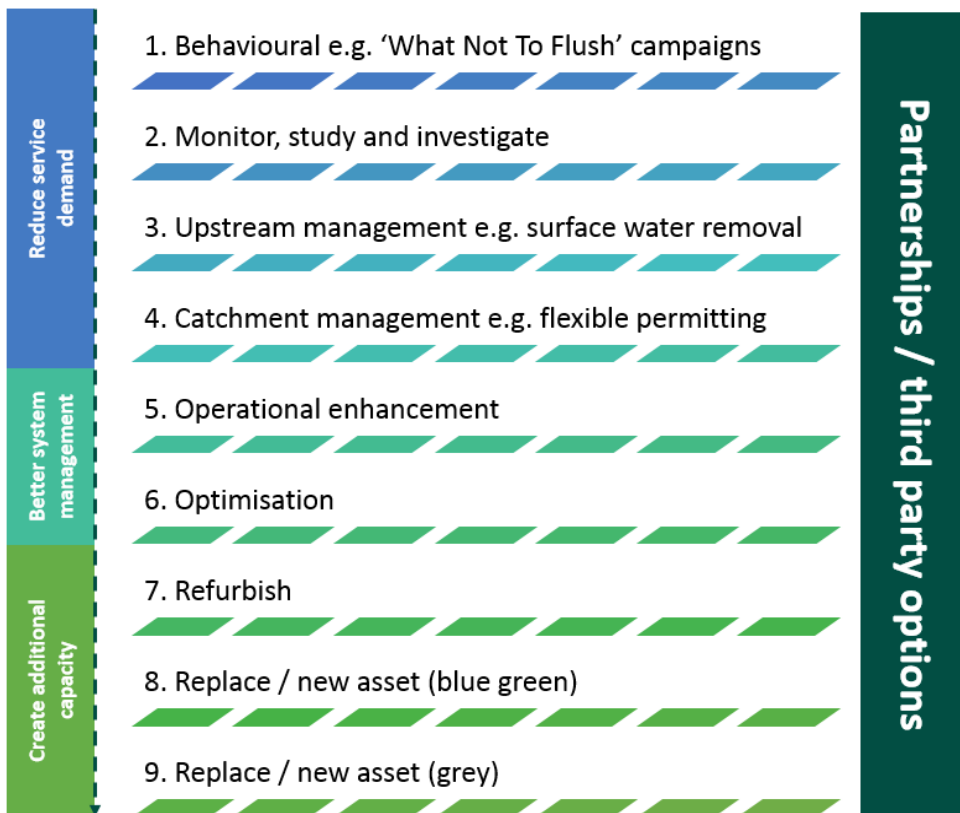


Figure 13 Options hierarchy



4.1 Alt Crossens partnership options

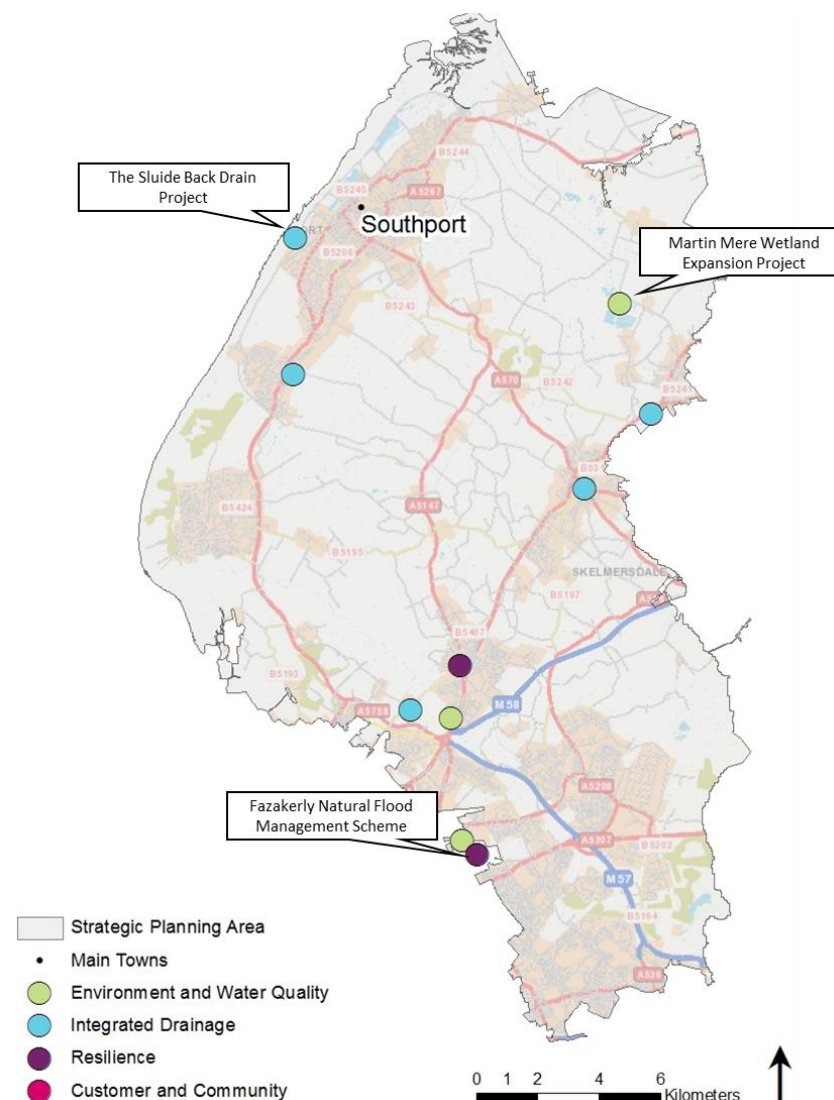
In order to identify and develop potential partnership options in the Alt Crossens SPA, through the SPG we have shared the results from the risk identification stages such as BRAVA. This was done through a series of workshops and the purpose was to identify areas of shared risk and partnership opportunities, which have been reviewed against the wider DWMP options development process (refer to Section 5.2).

The options shared were reviewed by the DWMP team and a second SPG workshop was held to gather additional information regarding potential partnership opportunities. This allowed us to understand timescales, likelihood of investment and potential organisations involved. An opportunities pipeline 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 necessarily funded schemes. However, they provide an indication of areas where we may be able to work collaboratively with partners in the future when more certainty is ascertained about need and funding. Examples of potential partnership locations are shown in Figure 14.

We have actively engaged with our SPGs to ensure that this is a collaborative process. Moving forwards, we are currently developing our Partnership Framework for the investment cycle 2025–2030 and beyond. The DWMP partnership opportunities pipeline will feed into this, forming an initial view of partners and opportunities. When developing the business plan, further engagement will be undertaken to where an opportunity is aligned to a 2025–2030 investment need. In addition to scheme specific collaboration opportunities, 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 14 Overview of the potential partnership opportunities in the Alt Crossens SPA



5. Options for the Alt Crossens

5.1 Options considered

Following a number of iterative screening processes outlined in Section 4, a list of feasible options was developed for each TPU within the Alt Crossens catchment. Options can be categorised into a number of categories:

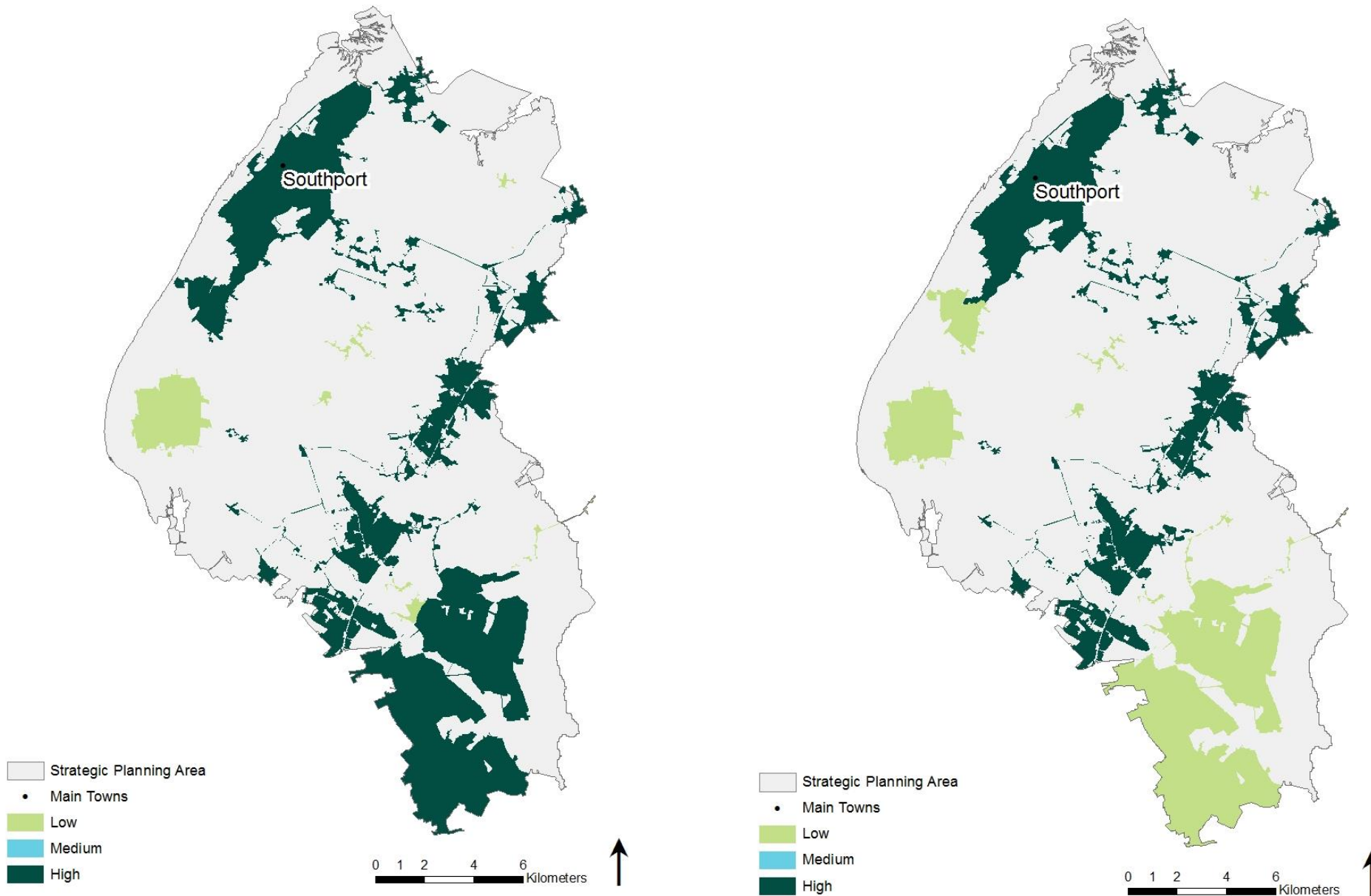
- Customer engagement;
- Monitor and investigate;
- Upstream management;
- Catchment management;
- Operational enhancement;
- Optimisation;
- Refurb/New asset (blue/green); and
- Refurb/New asset (grey).

Of these options 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 Alt Crossens SPA, customer engagement options (Figure 15) 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 Fazakerley and Burscough 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 Southport and Burscough TPUs (Figure 15).

Figure 15 Maps show the benefit of implementing regional customer engagement (left) and sustainable drainage solutions (right) options across the Alt Crossens SPA



5.2 Preferred options

Note: Water Industry National Environment Programme (WINEP) and storm overflows guidance are still being developed. This could lead to significant changes in preferred options and could result in large-scale, short and long-term investment needs. This will be fully reviewed between draft and final DWMP publication, in addition to other aspects such as nutrient neutrality, bathing waters and shellfish water expectations. Between draft and final DWMPs the impact of storm overflow requirements will also require optimising against the other needs and opportunities detailed in this section to assess synergy/conflict and best value.

The data below do not include planned investment in addressing storm overflows. The future standards for overflows are currently the subject of the Government’s Storm Overflow Discharge Reduction Plan Consultation, and the outcome is not yet determined, so it has not been possible to include these in the screening process described below.














A high-level regional assessment has been carried out to estimate the likely investment requirements to address all overflow risks, but due to the uncertainty described above, this has not been broken down by Strategic Planning Areas. This information can be found in the DWMP main document.

Utilising data collected at the various stages of developing the DWMP (BRAVA, partnership opportunities and the data in Figure 15), preferred options were selected using a decision support tool and following the hierarchy principles. We have also included in this plan high confidence schemes that we believe are likely to have secured investment.

In addition, the partnership opportunities highlighted in Section 4.1 are considered key for delivery of the options set out below. These will be investigated in detail in preparation for the investment plan for the period 2025–2030.

The following colour schemes are used for all charts and graphs in this section to represent each option type (Figure 16).

Figure 16 Option types

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

The first four option types are all grouped under the strategic heading of 'Reduce Service Demand', and are options that focus on either reducing the amount of wastewater that is produced, or preventing it from reaching the sewer network.

The second strategic group is 'Better System Management' and looks to try and manage and operate the existing assets in a more efficient or effective manner.

The final group is 'Create Additional Capacity'. This is about 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.

Across the Alt Crossens SPA, the outcomes seen as a result of potential investment and benefit in each option type are shown in Figures 18, 19 and 20 respectively.

Figures 18 and 19 show how investment could be split between the three high-level option strategies – reduce demand, system management and new capacity – and then further sub-divides these into the individual option types.

Figure 18 shows potential options to address environmental planning objectives, which incorporate:

- wastewater treatment work permit compliance;
- WINEP compliance; and
- pollution of watercourses.

Figure 19 shows potential options to address flooding planning objectives, which incorporate:

- internal flooding;
- external flooding;
- highway and open space flooding; and
- 1 in 50-year flooding.

Note that the percentages shown in Figures 17 and 18 are the proportions of investment within each planning objective type (flooding and environmental), but the total values of flooding and environmental investment are not equal. This split can be seen in more detail for each TPU in Section 5.3.

Figure 20 shows how these options could contribute to addressing the planning objectives – environmental and flooding.

Figure 17 Alt Crossens Strategic Planning Area: Distribution of environmental investment by option type

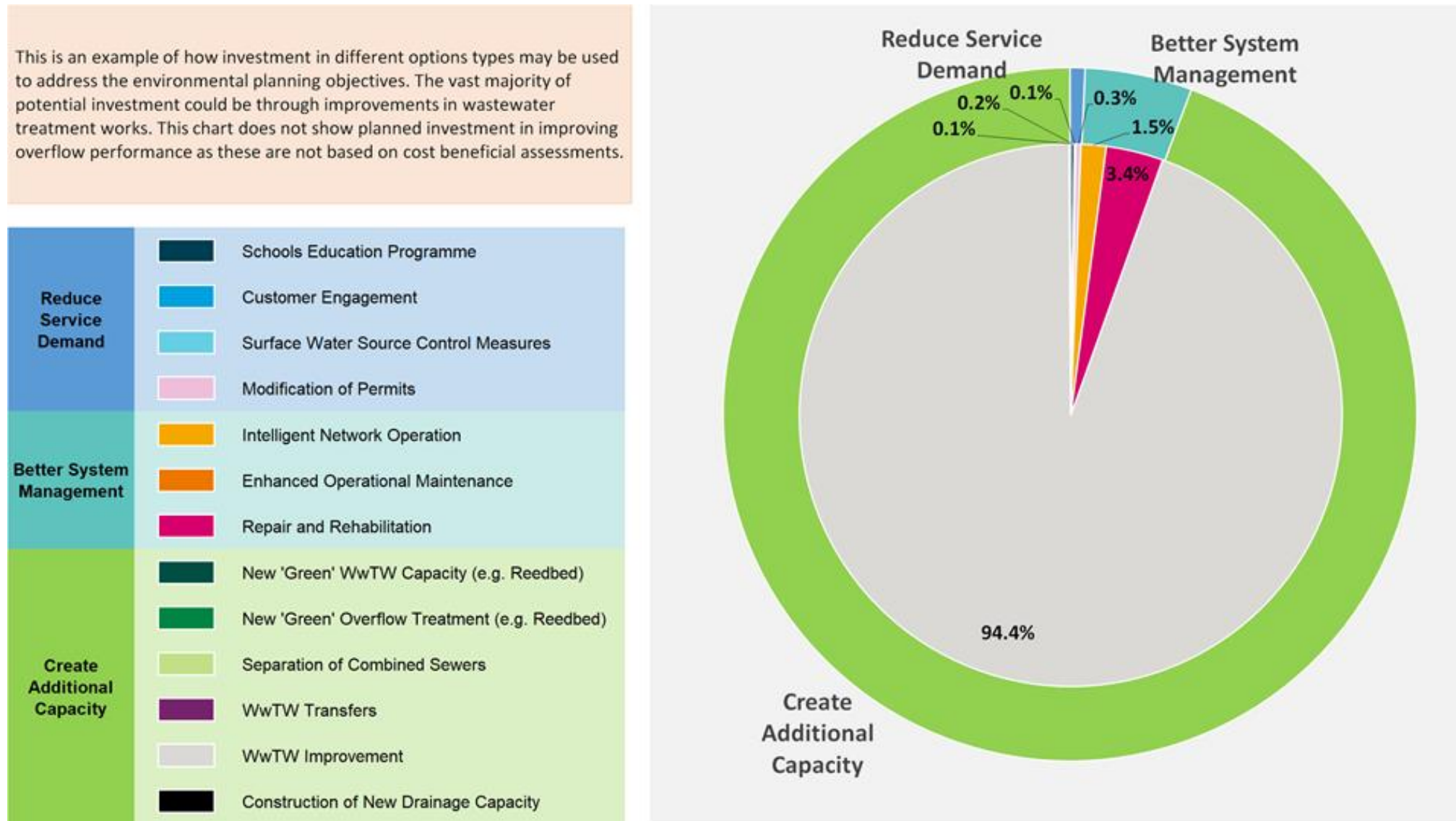


Figure 18 Alt Crossens Strategic Planning Area: Distribution of flooding investment by option type

This is an example of how different options types may be used to address flooding planning objectives. Two thirds of the potential investment could be through a strategy to reduce demand on the sewer system. This potential investment could be through surface water source control measures such as SuDS and schools and engagement programmes.

Around 1% of potential investment could be in the construction of new drainage capacity. Around 49% could be used to improve existing system management with options such as enhanced maintenance and repair and rehabilitation.

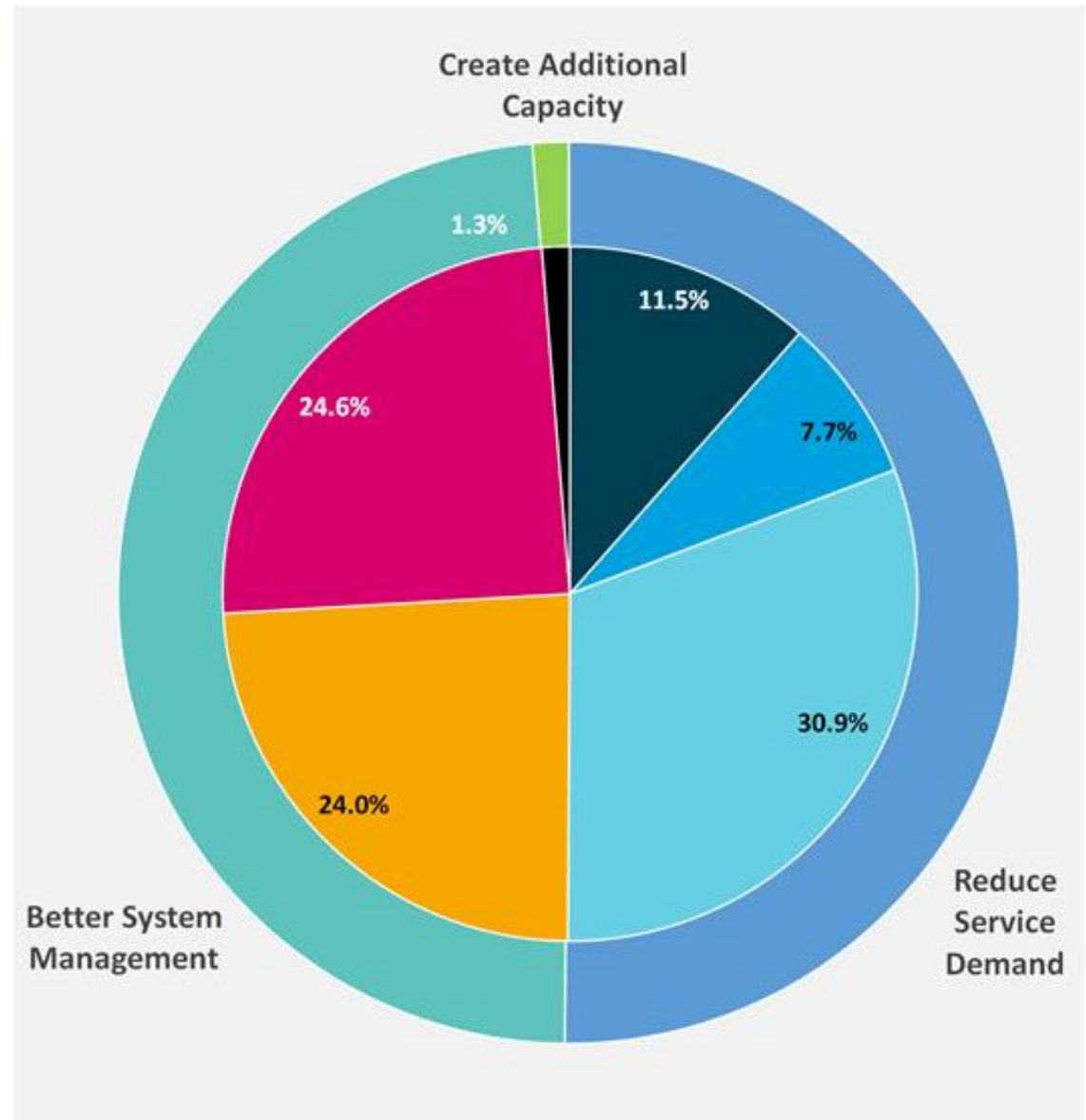


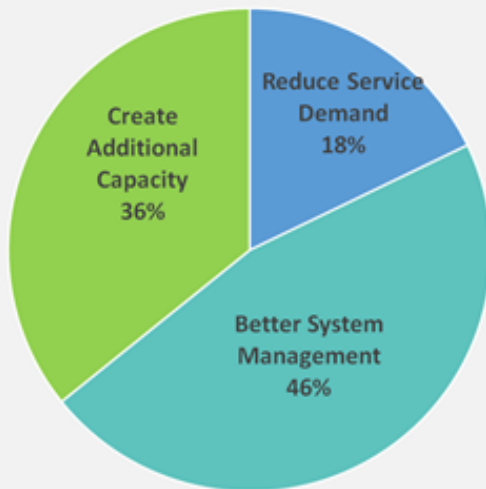
Figure 19 Distribution of benefit by option type within Alt Crossens SPA

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

United Utilities Water (UUW) commitments to improving flooding performance could be met through the reduction of surface water flows, construction of new stormwater drainage capacity, the installation of intelligent network and the repair and rehabilitation of existing network, supported by schools and customer engagement programmes.

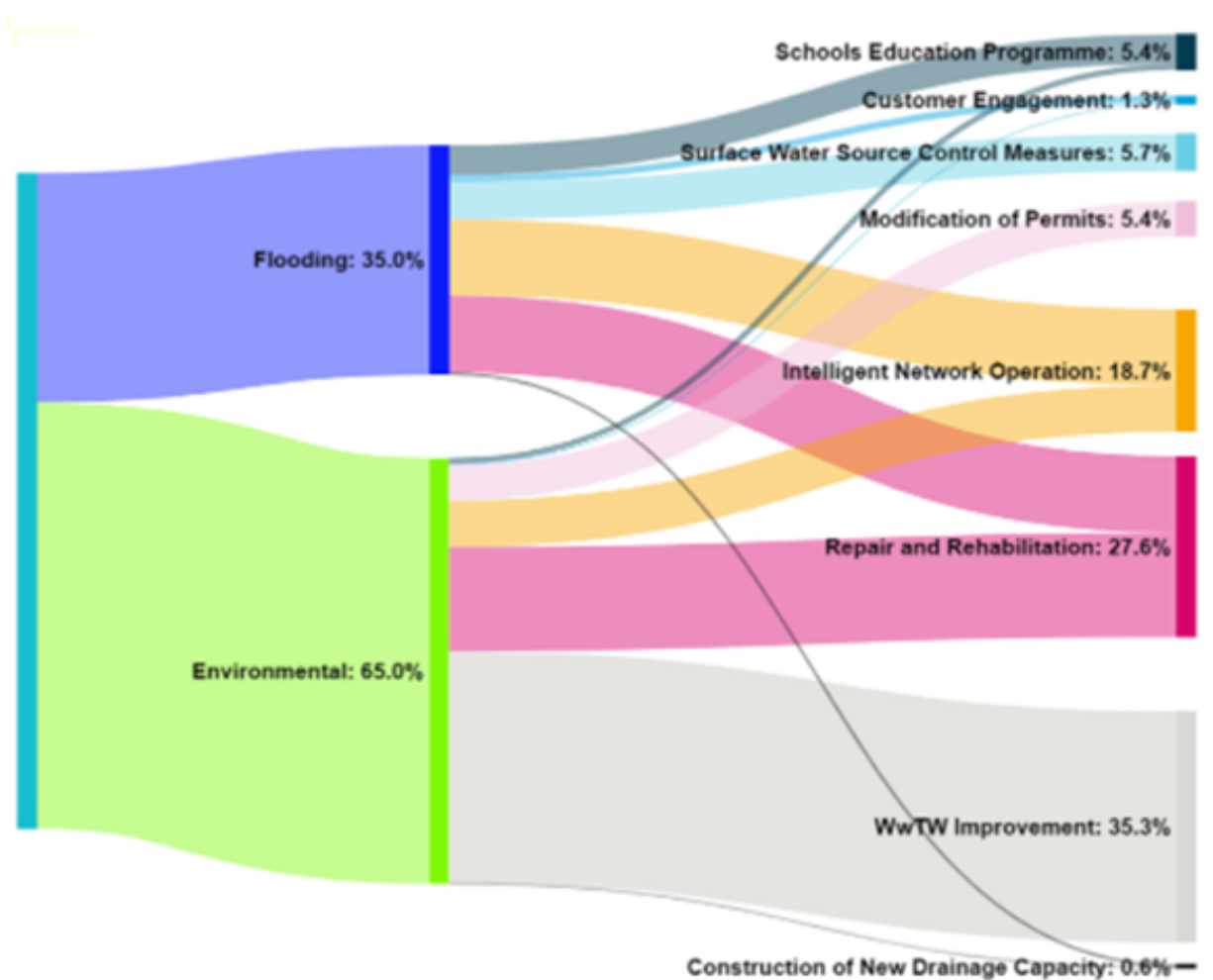
Environmental planning objectives could be met mainly through improvements to wastewater treatment works, construction of new drainage capacity, new 'green' wastewater treatment, modification of permits and installation of intelligent network.

Overall planning objective benefits:
Alt Crossens



Planning objectives

Option type

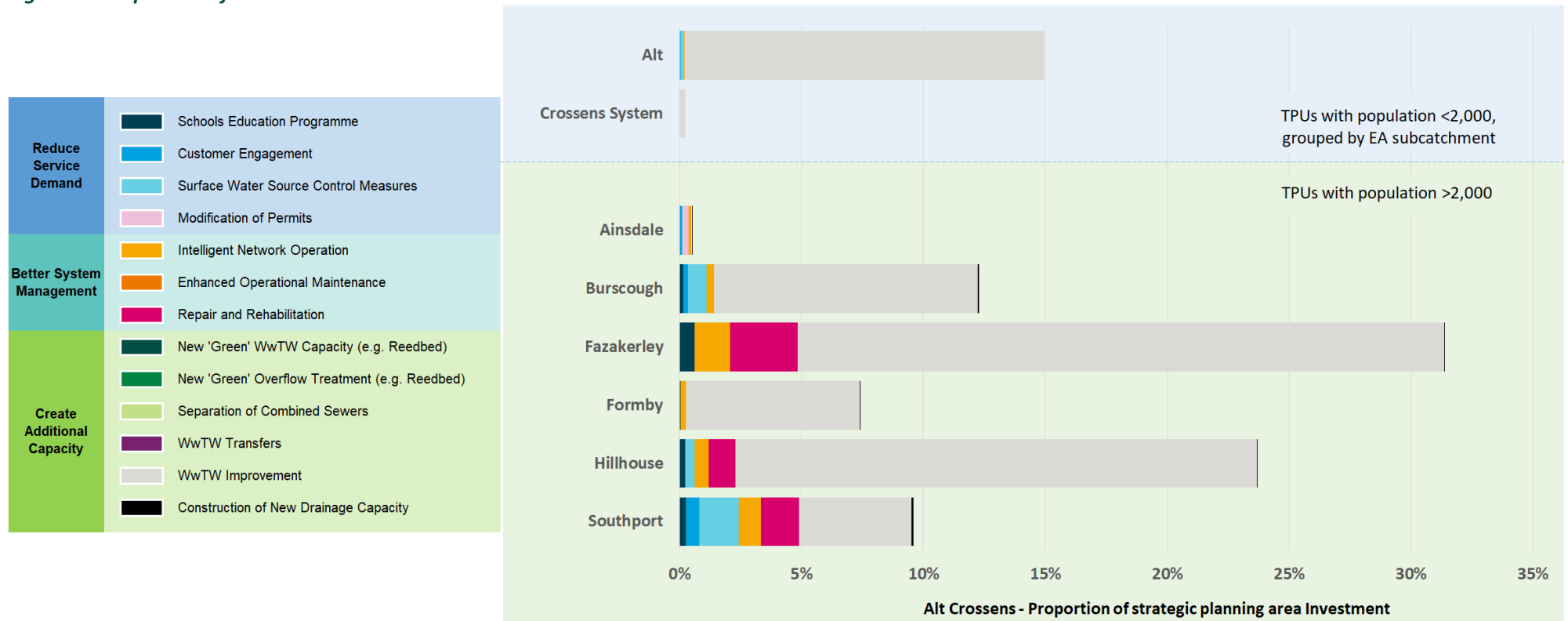


5.3 Overview of preferred options in each TPU

Figure 21 shows the proportion of Alt Crossens SPA potential investment in each TPU, split up by option type. 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 SPA sub catchment (Environment Agency Operational Catchment boundaries).

It can be seen that in the Alt Crossens SPA, the largest TPUs see the largest potential investment, which is split predominantly between surface water control, improved system management, and construction of new storm water storage tanks.

Figure 20 Proportion of investment seen in each TPU within the Alt Crossens SPA



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.

5.3.1 Ainsdale

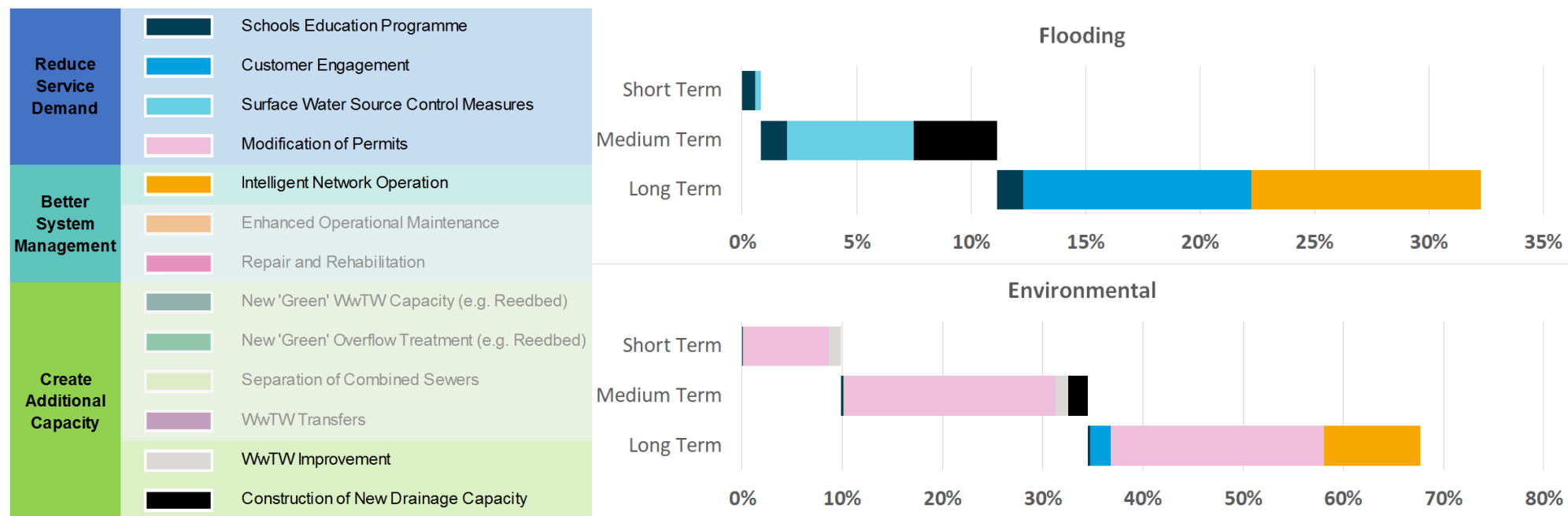
The results from the DWMP show that if we were to invest in Ainsdale over the next 25 years, around 32% of the investment could be to address flooding risks, and around 68% of investment could be to address environmental risks (Figure 22).

In the short term, potential investment could be through school education programmes, modification of permits and wastewater treatment works improvements.

In the medium term, school education programmes and permit modifications could continue and there could be investment in surface water source control measures, such as SuDS. Additional new drainage capacity within the catchment could also be implemented.

In the longer term, new intelligent network monitoring systems could be implemented. School education programmes could continue and be supplemented by customer engagement programmes.

Figure 21 Short, medium and long-term investment in the Ainsdale TPU, distributed by option type



5.3.2 Burscough

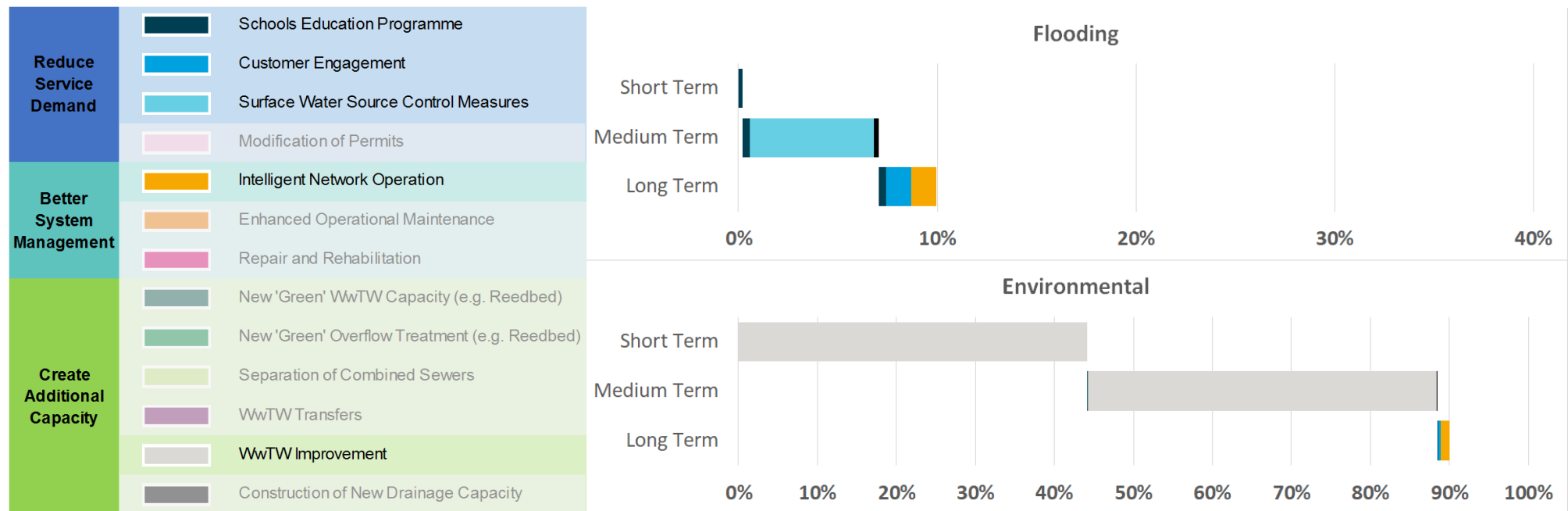
The results from the DWMP show that if we were to invest in Burscough over the next 25 years, around 10% of the investment could be to address flooding risks, and around 90% of investment could be to address environmental risks (Figure 23).

In the short term, potential investment could be in wastewater treatment works improvements. School education programmes could also be introduced.

In the medium term, wastewater treatment works improvements could continue to be increased. There could also be investment in surface water source control measures, such as SuDS.

In the longer term, the existing intelligent network monitoring systems that are already in place may be replaced or updated. School education programmes could continue and be supplemented by customer engagement programmes.

Figure 22 Short, medium and long-term investment in the Burscough TPU, distributed by option type



5.3.3 Fazakerley

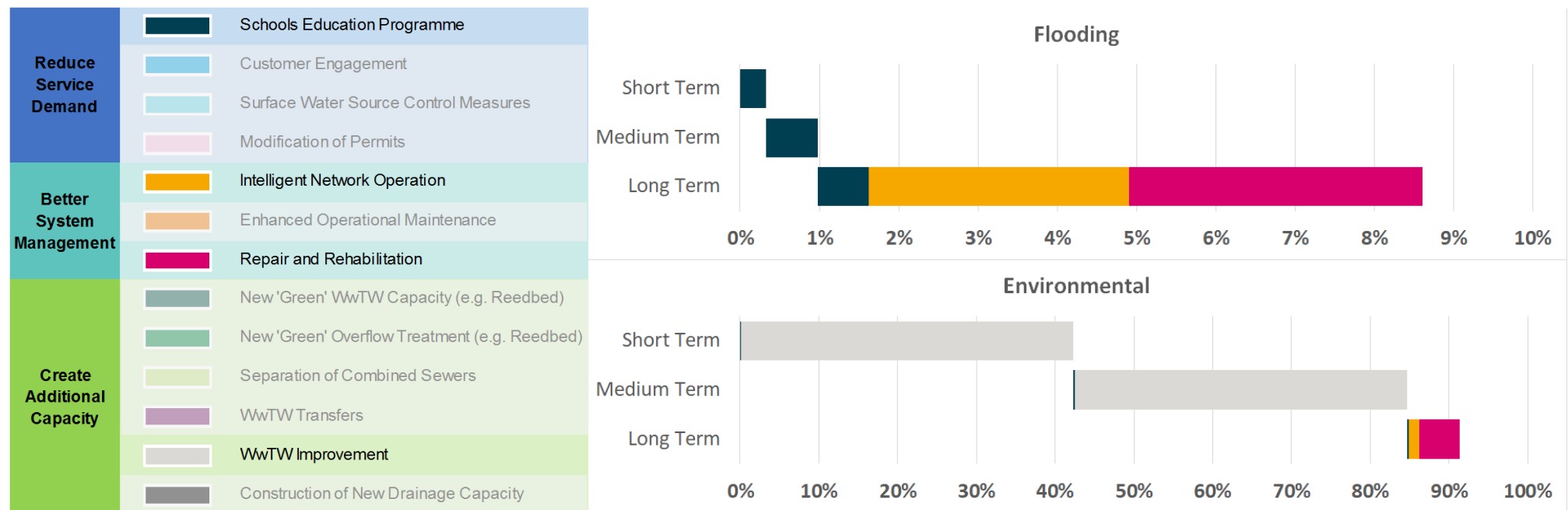
The results from the DWMP show that if we were to invest in Fazakerley over the next 25 years, around 9% of the investment could be to address flooding risks, and around 91% of investment could be to address environmental risks (Figure 24).

In the short term, potential investments could be in additional wastewater treatment works improvements. School education programmes could also be introduced.

In the medium term, school programmes could continue, and the wastewater treatment works improvements could continue to increase.

In the longer term, the existing intelligent network monitoring systems that are already in place may be replaced or updated. Existing sewers could be maintained through repair and rehabilitation programmes.

Figure 23 Short, medium and long-term investment in the Fazakerley TPU, distributed by option type



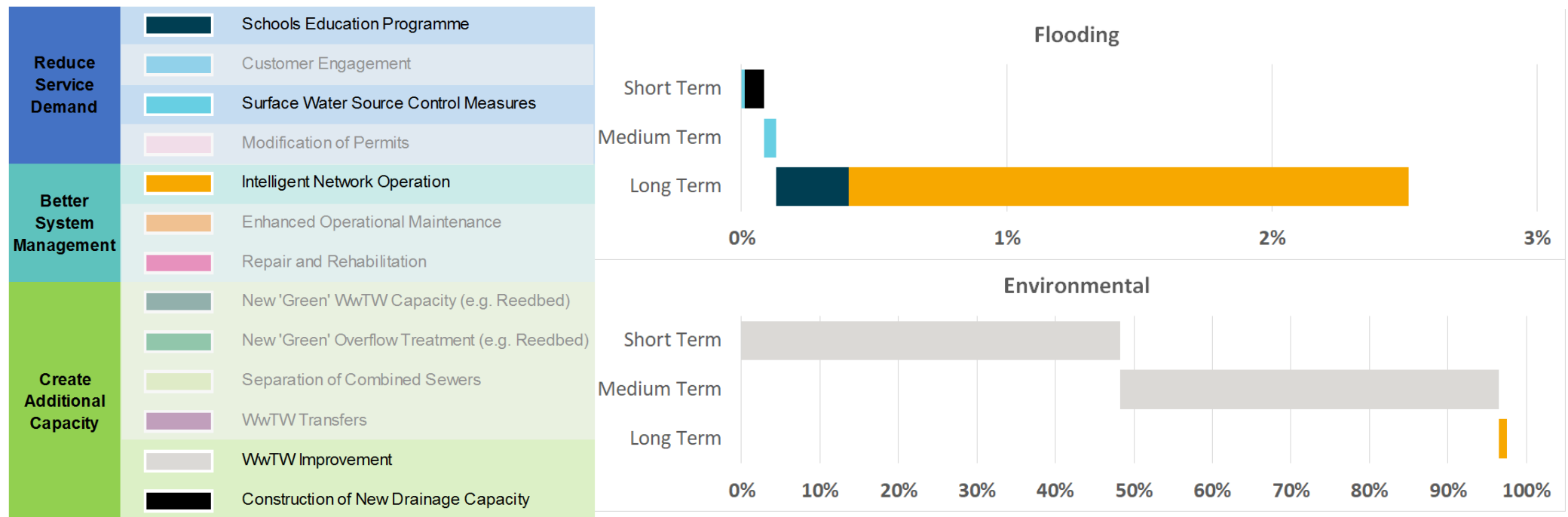
5.3.4 Formby

The results from the DWMP show that if we were to invest in Formby over the next 25 years, around 3% of the investment could be to address flooding risk, and around 97% of investment could be to address environmental risks (Figure 25).

In the short and medium term, potential investments could be in wastewater treatment works improvements to address environmental risks. At the same time, flooding risks could be addressed through surface water control measures and construction of new drainage capacity.

In the longer term, new intelligent network monitoring systems could be implemented.

Figure 24 Short, medium and long-term investment in the Formby TPU, distributed by option type



5.3.5 Hillhouse

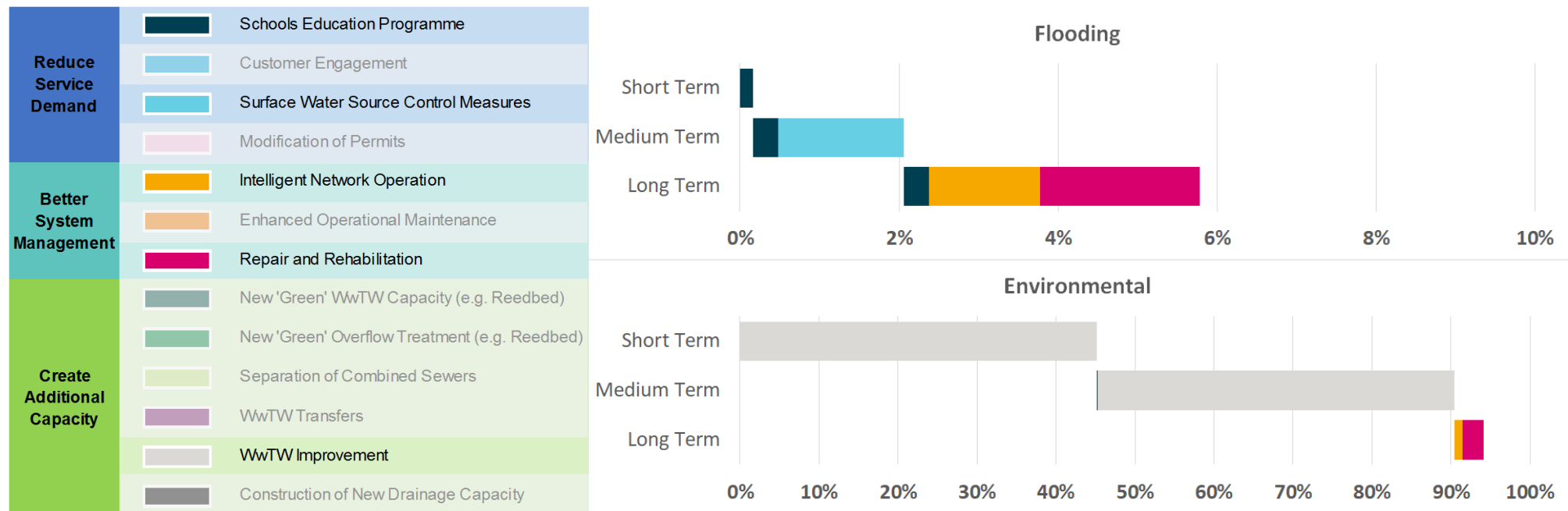
The results from the DWMP show that if we were to invest in Hillhouse over the next 25 years, around 6% of the investment could be to address flooding risks, and around 94% of investment could be to address environmental risks (Figure 26).

In the short term, potential investment could be in wastewater treatment works improvements. School education programmes could also be introduced.

In the medium term, the wastewater treatment works improvement could continue to increase. Surface water source control measures could also be implemented.

In the longer term, the intelligent network monitoring systems that are already in place may be replaced or updated. Existing sewers could be maintained through repair and rehabilitation programmes.

Figure 25 Short, medium and long-term investment in the Hillhouse TPU, distributed by option type



5.3.6 Southport

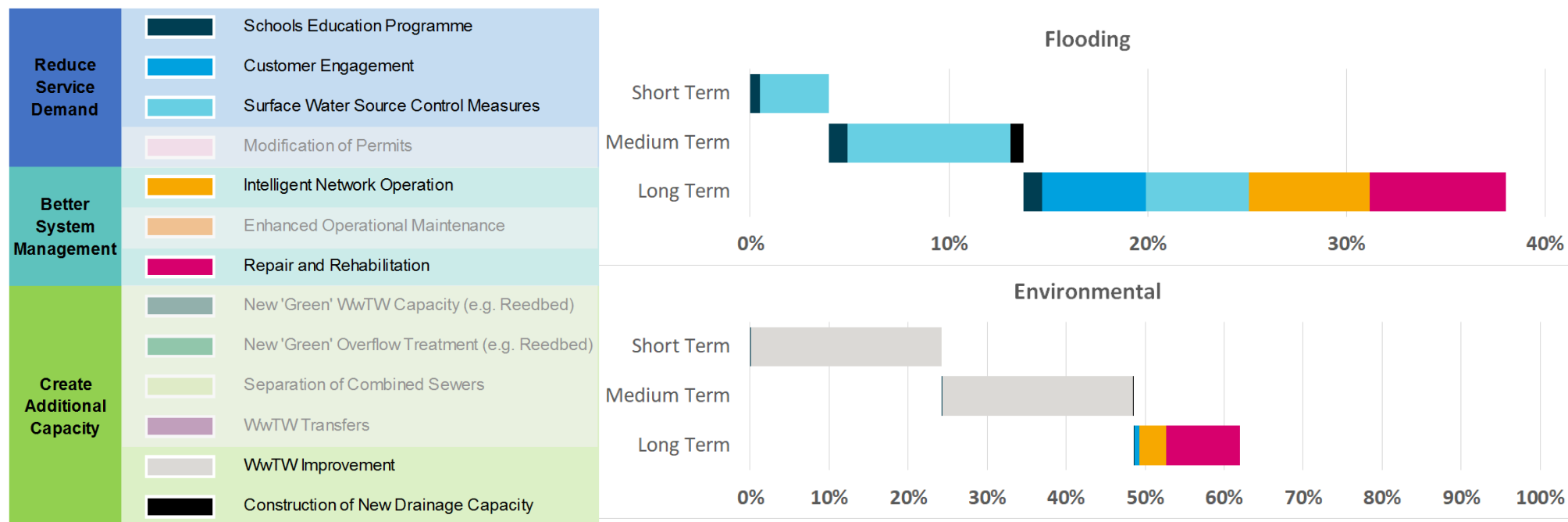
The results from the DWMP show that if we were to invest in Southport over the next 25 years, around 38% of the investment could be to address flooding risks, and around 62% of investment could be to address environmental risks (Figure 27).

In the short term, potential investment could be in wastewater treatment works improvements. Surface water source control measures could also be implemented.

In the medium term, the wastewater treatment works improvements and surface water source control measures could continue to increase.

In the longer term, the existing intelligent network monitoring systems that are already in place may be replaced or updated. Existing sewers could be maintained through repair and rehabilitation programmes and customer engagement programmes could be introduced.

Figure 26 Short, medium and long-term investment in the Southport TPU, distributed by option type



5.3.7 TPUs with population less than 2,000: Alt sub catchment

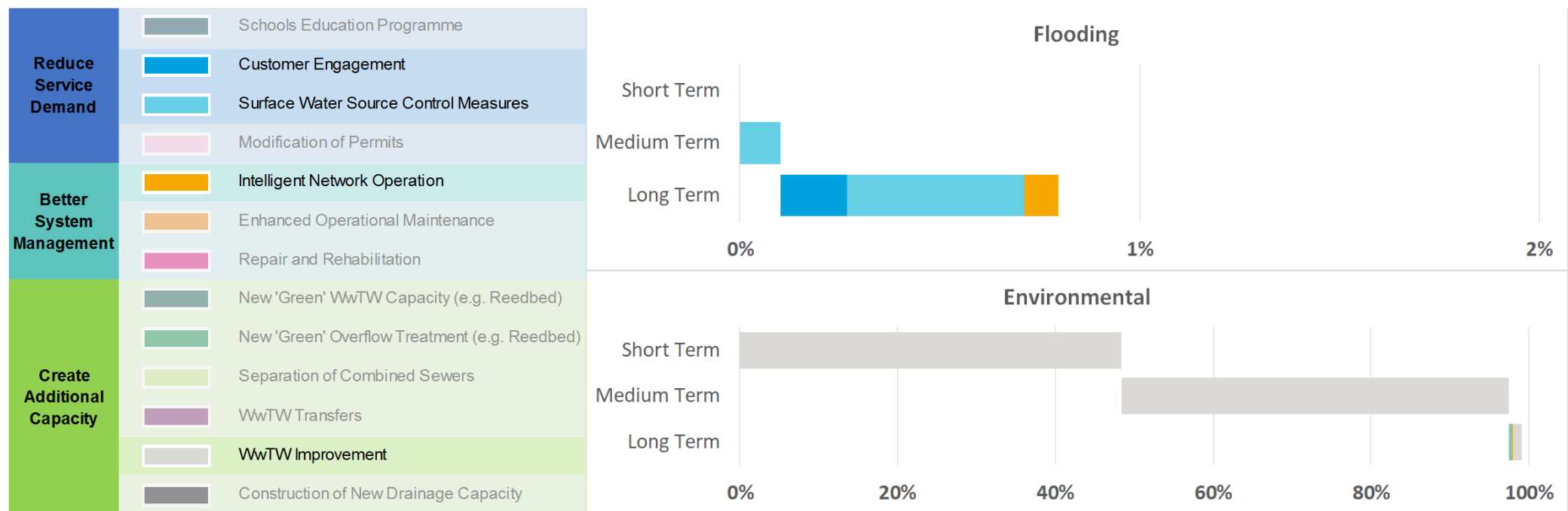
The following TPUs each have a population of less than 2,000, and have therefore, been grouped together:

- Barrow Nook;
- Halsall;
- Haskayne; and
- Melling.

99% of the potential investment in these small TPUs will be to address environmental risks. 1% of investment could be to address flooding risks (Figure 28).

Short, medium and long-term investments in these small TPUs could be wastewater treatment works improvements. Investment to address flooding risks could be through surface water source control measures and customer engagement programmes.

Figure 27 Short, medium and long-term investment in TPUs with population less than 2,000 (Alt) distributed by option type



5.3.8 TPUs with population less than 2,000: Crossens System sub catchment

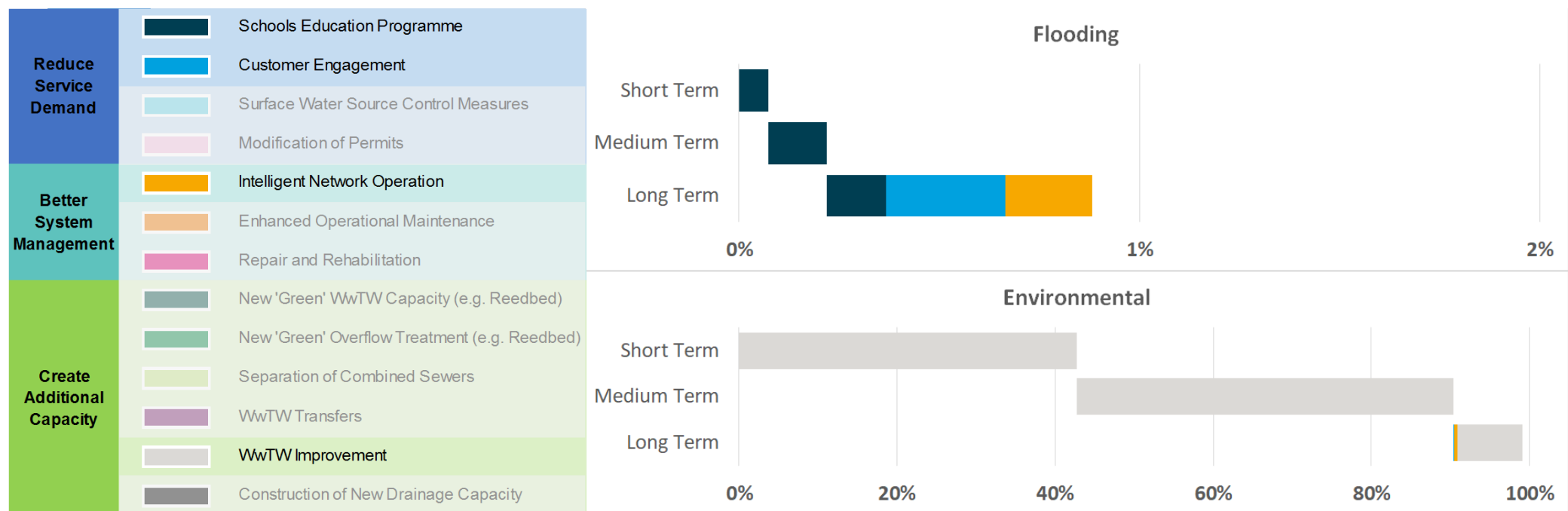
The following TPUs each have a population of less than 2,000, and have therefore, been grouped together:

- Holmes Wood; and
- Tarlscough Lane.

99% of the potential investment in these small TPU will be to address environmental risks. 1% of potential investment could be to address flooding risks (Figure 29).

Short, medium and long-term investments in these small TPUs could be wastewater treatment works improvements. Investment to address flooding risks could be through surface water source control measures, and school education and customer engagement programmes.

Figure 28 Short, medium and long-term investment in TPUs with population less than 2,000 (Crossens System) distributed by option type

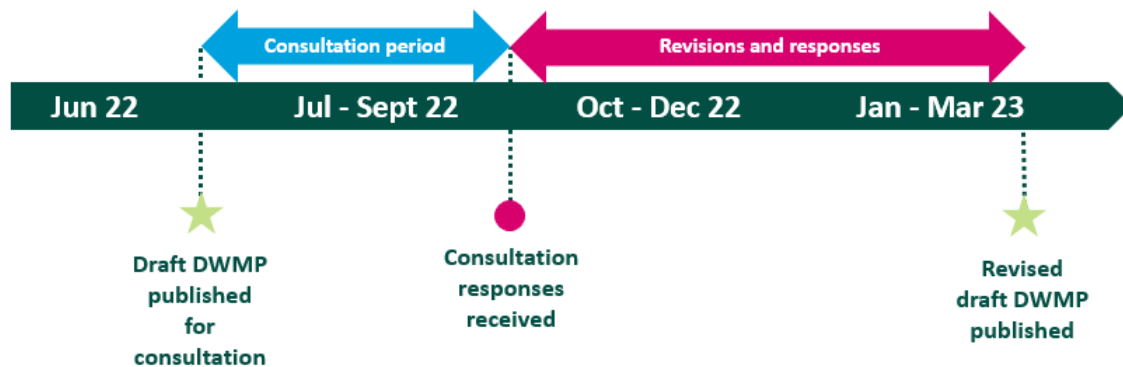


6. Next steps

The DWMP is inherently not a static plan so we will continue to work with stakeholders to develop partnership options and strategies, which will make a difference within the Alt Crossens SPA.

We are currently at draft publication (Figure 30) and between now and final publication in March 2023, we will reflect on updated guidance such as WINEP and storm overflows, and incorporate the feedback that we receive to ensure that the DWMP can build the best foundation to allow the North West to thrive in years to come.

Figure 29 Timeline between draft and final publication



We welcome your feedback on our draft publication of our first DWMP. Please get in touch using our mailbox:

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7. References

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