

Yorkshire Water

Drainage Water Management Plan (DWMP) Draft Report March 2022 v2

Full colour thinking from Turquoise for Yorkshire Water



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1. Background

Yorkshire Water (YW) is developing a long-term collaborative plan, the Drainage and Wastewater Management Plan (DWMP), which will aid in maintaining a robust and resilient drainage and wastewater system into the future. YW has taken care to analyse the pressures it faces, such as population growth and climate change, in order to mitigate any impacts on its drainage and wastewater services that customers may experience.

DWMPs are a new emerging regulatory framework produced by Water UK, a collaborative long-term strategic plan highlighting the needs and requirements of the sewerage network for the next 25 years and beyond.

They will facilitate an increased level of partnership working across relevant stakeholders such as Lead Local Flood Authorities, NGO groups like The Rivers Trust and the Environment Agency in order to support and develop long-term solutions for their drainage networks. The DWMP framework was published in late 2018 and ensures that plans are co-created by water companies and stakeholders with an interest in integrated catchment management.

The DWMP will provide Yorkshire Water with the opportunity to:

- Develop a plan encompassing the next 25 years and beyond to meet the requirements of YW's long-term ambitions of reducing sewer flooding and their impact on the environment.
- Facilitate greater collaboration and partnership working with Stakeholders such as Lead Local Flood Authorities (LLFAs) and the Environment Agency (EA) to ensure targeted investment which benefits their environment and local communities more effectively.
- Understand customer expectations and requirements in terms of levels of service and how YW will work to meet these expectations.
- Align with strategies and regulations set out by the EA and DEFRA in order to achieve a common set of objectives and goals.
- Develop and implement future innovations and technologies through the adoption of Sustainable Drainage Systems (SuDS) and green/blue infrastructure.



2. Research Aims and Objectives

The overall aim of the research was to assess customers', citizens' and stakeholders' views of what a 'best value' DWMP plan would look like, including the drivers of investment and how this should be prioritised to ensure drainage and wastewater services in the Yorkshire Water region into the future.

The specific principal research objectives that needed to be explored were:

Wastewater Services:

- Awareness and perceptions of YW's services.
- Exploration of customers knowledge and awareness of the wastewater network and systems.
 - Exploration of customer perceptions around wastewater services and network responsibilities.
 - Knowledge and experience of wastewater issues such as sewer flooding; odour; blockages etc.

Drainage and Wastewater Issues:

- Customer knowledge, awareness and understanding of internal and external sewer flooding.
 - Why do customers think sewer flooding occurs?
 - What factors are important in deciding which sewer flooding issues should take priority.
- What are customers' expectations and requirements in terms of levels of service?
- Customer knowledge, awareness and understanding of treated effluent and storm overflows.
 - Have customers heard of treated effluent or storm overflows?
 - What do they understand and feel about treated effluent returning to the water ways and use of storm overflows?
 - How acceptable are these aspects of the wastewater service?

YW DWMP Measures and Metrics

- To understand customer priorities.
 - What issues should Yorkshire Water prioritise?
 - Flooding vs Overflows vs Environment vs Treatment.
 - Customers to rank in order of priority what is most important to them?
 - Sewer Flooding: Internal or External.
- Customer views on current YW measures and performance.

Future Challenges and Planning



- Exploration of customer awareness of the future challenges ahead on YW's wastewater network.
 - Climate change
 - Population growth
- What do customers believe YW should be focussing on given the future challenges ahead?
- Exploration and perceptions of the solution options; SuDS vs traditional solutions.
- Should YW be focussing on maintaining current performance or improving and tackling future challenges?

BVP

• Exploration of customers' BVP for the DWMP.



3. Sample and Methodology

Wastewater and drainage service is often not thought about by customers and is complex for the everyday customer to understand. Equally Best Value Plans (BVPs) must contend with emphasis on several new areas of focus. For example, defining a best-value plan requires an exploration and understanding of customers' priorities.

With this in mind, Yorkshire Water undertook reconvened, deliberative research across 10 workshops (meeting twice over a period of a fortnight), comprising a mix of household customers, citizens, as well as a range of non-household customers.

The non-household sessions were held with a mixture of water dependent businesses (e.g. food manufacturers, water dependent retail shops, farmers etc) and non-water dependent businesses. Whilst this type of approach typically engages a lower number of customers than quantitative survey approaches, it benefits from a much greater dialogue and opportunity for those involved to really understand the nuances of drainage and wastewater management thus allowing for a more educated decision on their priorities for future plans.

Each workshop was conducted using Microsoft Teams or Zoom. Reconvening workshops allowed for a more in-depth discussion with respondents who became more informed as the workshops progressed.

The 10 workshops were conducted across the usual demographics within the Yorkshire Water (YW) region. Respondents were recruited from differing areas within the region: urban, rural and coastal. In addition, we recruited customers who had been impacted by wastewater system failures.

The workshop sample was recruited utilising Turquoise's network of self-employed interviewers and recruiters who are all IQCS trained.

Locations of the groups were selected by Yorkshire Water as follows, and were all felt to be locations that had reasonable population numbers from which to 'free find' / recruit customers:

Coastal locations : Scarborough, Bridlington,

Rural locations: Thirsk, Skipton

Urban locations: Leeds, York, Doncaster

Impacted by flooding locations: Goole and Holmfirth

Based upon Client information provided to Turquoise, Holmfirth historically has a mixture of pollution incidents and wider issues which were felt would be relevant to the DWMP project and what it is in theory designed to address.

Goole was selected for its treatment failures, pumping stations and overloaded sewers. The location is known to be an extreme catchment, heavily affected by rainfall but made worse as it can also be affected by tides from the Humber.



Customers were recruited using a mix of on street and house to house methods in the locations chosen.

Workshops were constructed based on the following criteria:

- Demographics:
 - o Age.
 - Pre-family 18-35 years
 - Family 30-45 years
 - Post family 45+ years
 - State Pensioner
 - Citizens 18-20 years, Citizens 21-30 years current non bill payers.
 - Marital status.
 - o Gender.
 - Income (including low income). A broad cross-section of B, C1, C2 and D social grades across groups.
 - Vulnerability.
 - Household and business customers and citizens.
 - Some engaged water dependent business customers with a mix of SMEs with a mix of urban and rural business locations.
 - Business customers were recruited from across a number of sectors such as agriculture; retail, service and hospitality.

Pre, mid and post workshop questionnaires were additionally utilised (appended to this report) to collect information from the workshops as well as explore other avenues that time didn't allow for within the sessions themselves.

Each workshop encompassed two sessions, lasting up to 1.5 hours' duration each.

- First session included educational information via the use of stimulus and films to cover the following:
 - The water system
 - Responsibilities: Yorkshire Water vs Homeowner vs other agencies' responsibilities.
 - Video 2 explaining hydraulic flooding (internal and external)
 - Stimulus showing internal and external flooding
 - Video 3 explaining storm overflow pipes
 - Video 1 explaining the DWMP and why YW are asking customers to get involved
 - Stimulus showing DWMP objectives
 - Stimulus of YW measures (that sit under each objective).
- The second session was used to explore YW's current performance; future challenges (climate change and population growth), solution options (SuDS video 4) and customers' Best Value Plans.

The findings from the pre, mid and post group questionnaires are interwoven within the qualitative findings.

All stimulus materials are also appended to this report.

Research was conducted between the 15th February and the 3rd March 2022.



The workshop sample was structured as follows: -

Workshop 1	Workshop 2	Workshop 3	Workshop 4
15 th Feb & 1 st March	15 th Feb & 1 st March	15 th Feb & 1 st March	15 th Feb & 1 st March
HH Pre-family	HH Family Customers	HH Citizens	HH Post-family
Customers and citizens	and citizens 30-45	21-30 years	Customers 45+ years
18-35 years AB C1 C2 D	years AB C1 C2 D	AB C1 C2 D	AB C1 C2 D
Urban	Impacted	Rural	Impacted
6 respondents attended both	7 respondents attended both	6 respondents attended both	6 respondents attended both
Workshop 5	Workshop 6	Workshop 7	Workshop 8
16 th Feb & 2 nd March	16 th Feb & 2 nd March	17 th Feb & 3 rd March	17 th Feb & 3 rd March
HH Citizens	NHH Engaged Water	HH State Pensioner	NHH Non-water
18-20 years	dependent Customers	Customers and citizens	Dependent Business
AB C1 C2 D	and citizens	E Social Grade	Customers
Urban	Rural	Coastal	Urban
6 respondents attended both	6 respondents attended both	7 respondents attended both	7 respondents attended both
Workshop 9 17 th Feb & 3 rd March	Workshop 10 17 th Feb & 3 rd March		
HH Vulnerable and Low Income DE Coastal 6 respondents attended both	 NHH Water Dependent Business Customers Urban 8 respondents attended both 		



4. Executive Summary

Background:

A deliberative, qualitative approach was employed to investigate household and non-household customer and citizen views upon what the core focus and priorities should be for Yorkshire Water's DWMP.

This methodology of engagement and understanding was achieved via 10 reconvened workshops (a total of 20 workshops).

The workshops were conducted across the usual demographics across Yorkshire including urban, rural and coastal areas.

The sample was structured to ensure representation across a number of criteria:

- o Age.
 - Pre-family 18-35 years
 - Family 30-45 years
 - Post family 45+ years
 - State Pensioner
 - Citizens 18-20 years, Citizens 21-30 years non bill payers
- Marital status.
- o Gender.
- Income (including low income).
- o Vulnerability.
- Household and business customers and citizens.
- Some engaged water dependent business customers and a mix of SMEs.
 - Business customers were recruited from a number of different sectors, including, agriculture, retail, services and hospitality.

Core Findings of the Research:

Consistent with other research that has been conducted within the water industry, generally, customers and citizens took water for granted. They rarely gave any thought to the water that came out of their taps or the wastewater. When asked to think about wastewater, the water leaving their kitchen sinks and toilets, showers and baths was far more top of mind than rainwater runoff.

Most customers and citizens were aware of who was responsible for the pipes and drains on their property. Mail / communication from Yorkshire Water relating to drainage cover insurance was frequently mentioned as a good way of communicating to customers their responsibilities.

In the future, customers recognised that an increase in population and housing developments 'springing up' all over the county would put intense pressure on an already perceived 'creaking' sewage system.

Many customers and citizens had not considered the impact of climate change on wastewater services. However, upon consideration, they saw that it would put pressure on the system and more storm overflow events would occur. In customers eyes, climate change could lead to more flooding.



Customers and citizens wanted Yorkshire Water to hit their current targets as a priority. They were also aware and recognised that more investment was needed given pending population increases and climate change, along with failure to hit 3 out of 7 of the current targets.

The DWMP measures presented to respondents contained words such as 'incapacity', 'blockages' and 'collapses' which suggested a system under strain. As to whether Yorkshire Water should maintain or improve the system, the consensus was that Yorkshire Water needed to improve because maintenance would not go far enough for future challenges.

Given the noticeable rise in flooding incidents and future challenges outlined, alongside current performance, the current wastewater system was deemed 'unfit for future purpose'.

Customers were seemingly prepared to pay a small increase to fund improvements and with that increased money customers wanted Yorkshire Water to exceed statutory measures in the medium to long term. It was felt that a combination of SuDS and traditional carbon intensive solutions needed to be utilised to solve the problems in the medium to long term.

Priorities

Overall **ranking of measures** highlights the importance to customers of reducing internal sewer flooding. Whilst the table below shows the overall rankings, there was little difference between household and non-household views.

Measure	Ranking
Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall	1.
Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall	2.
Improving resilience of the wastewater and drainage system to extreme events	3.
Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network	4.
Monitoring and improving wastewater flow and quality compliance to ensure treated water discharged to river / sea meet allowed standards	5.
Monitoring and improving storm overflows on how they are operating and the effect this may have on the river water / sea water they are entering	6.

A weighting of measures was also achieved by asking customers and citizens to assign a number of points (totaling 100) to the various measures that were important to them.



The following table provides the output of this and highlights that internal sewer flooding was twice as important as the second ranked priority showing the strength of feeling towards this aspect.

Measure	Average Points Allocated
Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall	37.0
Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall	18.3
Improving resilience of the wastewater and drainage system to extreme events	14.2
Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network	14.1
Monitoring and improving wastewater flow and quality compliance to ensure treated water discharged to river / sea meet allowed standards	9.6
Monitoring and improving storm overflows on how they are operating and the effect this may have on the river water / sea water they are entering	6.8

In terms of **metrics**, the following table highlights customer priorities, with internal sewer flooding of any description being top of what customers wish to avoid.

Ranking	DWMP Metrics
1.	Internal flooding of customer properties due to overloading from heavy rainfall
2.	Internal flooding of any property due to blockages or sewer defect
3.	Internal flooding of infrastructure property (e.g. schools/hospitals) due to overloading from heavy rainfall
4.	Internal flooding of a business / commercial property due to overloading from heavy rainfall
5.	Pollution of a river with sewage due to a blockage or sewer defect
6.	External flooding of any properties due to blockages or sewer defect
7.	External flooding of infrastructure property (main roads) due to overloading from heavy rainfall
8.	A deterioration in river water quality due to sewage spills from storm overflows
9.	A deterioration in river water quality due to reduced quality of wastewater treatment works discharges to the river or sea
10.	External flooding of a business / commercial property due to overloading from heavy rainfall
11.	External flooding of a customer's garden due to overloading from heavy rainfall

Internal flooding was the core priority as it could have huge personal, emotional and financial repercussions.



Looking towards the **BVP** for YW, the key requirements (as summarised below) from a customer perspective for BVPs were:

- Reducing internal sewer flooding.
- Maintaining and upgrading the current wastewater system infrastructure.
- Starting to use SuDS where appropriate.
- Customer education and incentives.
- Working in partnership with key organisations such as the EA and developers.
- Reducing external sewer flooding and reducing environmental pollution by improving / reducing storm overflow outcomes and wastewater flow and compliance.



In terms of timeframes, the priorities for the **short term** were around hitting targets and maintaining the network.

- Meet the targets i.e. particularly internal and external sewer flooding, especially in high risk areas and to demonstrate improvements
- Reduce the amount of pollution incidents to rivers.
- Maintain the sewage network.
- Reduce leaks per year leaks have a knock-on impact on wastewater in the system.
- Reduce blockages and educate customers about preventing blockages
- Start to change customers', both household and business, mindsets, and behaviour towards taking personal responsibility for surface run off.
- Encourage customers to install water meters again, reduced usage would mean less pressure on the wastewater system.
- Work with other agencies.



The priorities for the **mid-term** were around improvements and adapting to future challenges:-

- Improve the sewage network using a combination of SuDS <u>and</u> tried and tested /carbon intensive methods i.e. building bigger tanks, and sewers.
- Work with developers to use new ways to deal with excess run off.
- Use Government legislation with developers so they use SuDS.
- Continuing to change customers' mindsets, both household and business, and behaviour towards taking personal responsibility for surface run off.
- Reduce the amount of river pollution incidents.

For the **Longer term** – customers and citizens wanted Yorkshire Water to look towards exceeding targets and continuing to adapt to future challenges:-

- Improve the sewage network using a combination of SuDS <u>and</u> tried and tested /carbon intensive methods i.e. building reservoirs, including underground reservoirs, bigger tanks and sewers.
- Utilise excess water by storing it for future use.
- Have more stringent standards for treated sewage effluent.
- Have fewer or no river pollution incidents so river quality is improved.
- Exceed the standards.
- Continue to change customers', both household and business, mindsets and behaviour towards taking personal responsibility for surface run off.

19.14 Willingness to pay:

Despite the rise in cost of living facing customers, most appeared willing to pay between 1% to 10% per annum; $\pounds 1-\pounds 5$ per month (household customers 1%-10% p.a. or $\pounds 1-\pounds 5$ pm; non household customers 5%-10% pa or $\pounds 1-\pounds 5$ pm) to help towards medium and long term improvements as outlined.

Around 1 in 5 (16%) stated they wouldn't pay / couldn't afford to pay any more and a further 10% couched any increases within affordability i.e. only if it was affordable. There was a background of a huge rise in the cost of living, with energy bills skyrocketing, and inflation rising by the highest in 30 years. Businesses were coming out of a pandemic into a fuel crisis. Some struggled to pay their fuel bills currently and therefore could not afford an increase.

Amongst those who did not want to pay more, there were a minority who wanted Yorkshire Water to demonstrate they were efficient and could hit the targets. Once the targets had been hit then they felt Yorkshire Water could increase the bills to improve and tackle future challenges with SuDS and other carbon intensive solutions.

Equally, those non-household customers more conscious of shareholder profits believed that customers should not have to pay for all improvements and that customer investment should be matched / supplemented from shareholder profits, which in their eyes could be communicated as encouragement / buy-in for any increased bills.

For businesses, a percentage rise of the bill was thought to be fairer because it related to how much water customers used and their wastewater rather than a blanket increase of $\pounds X$ amount.



Thus, it may be prudent to say that any short-term priorities should be met within the cost realms of current bills.

There was a hope that any improved efficiency could lead to cost savings in the future.

We would advocate further research with a more robust sample to test BVPs and priorities further, alongside willingness to pay. In addition, we would recommend that in testing any willingness to pay, that an actual monetary figure is used rather than % increase given customers often struggle to correctly tally a % with a monetary value in their heads.



5. Spontaneous Customer Knowledge Around Wastewater

Pre-Workshop Homework Task

Prior to the first workshop session, a pre workshop 'homework' questionnaire was sent out to all who were attending, to understand spontaneous, unbiased knowledge and awareness of customers around the area of water and wastewater. This was implemented to gain knowledge prior to any education provided and any potential 'group' biases within the workshop sessions.

This involved a number of questions being asked as follows:

- Do you give much thought to the water that comes out of your tap or the wastewater that is carried away from your sinks, drains, toilets etc.?
- Which is more important / or you give more thought to and why?
- What do you believe happens to the wastewater that leaves your property?
- What about rainwater / ground surface water what do you think happens to this?
- Who do you believe is responsible for the following issues?
 - Problems with rainwater / surface water on your property
 - Blocked pipes / drains on your property
 - Highway gullies
 - o River flooding
 - Public sewers
- Finally, what do you think will have an impact on the wastewater and drainage system in the future?

The following charts highlight the results of the pre task survey.



Responsibilities:













The charts show that household and non-household views of responsibilities were similar.

- In terms of highway gullies, there were mixed views, with a rough 50:50 split stating the local council and YW.
- Just over 1 in 10 correctly stated the EA for river flooding, with most again believing it to be either the local council or YW.
- Just over two thirds knew that YW were responsible for the public sewers.
- Over three quarters stated it was the homeowner's responsibility for rainwater and surface water run off on properties, with over two thirds stating the homeowner for blocked pipes / drains on properties.



6. Customer Perceptions of YW

6.1 Spontaneous Perceptions of Yorkshire Water

Generally, customers knew YW was their water provider. However, the majority gave water little thought, particularly household customers. When asked about water, it was the water that came out of their taps which was most top of mind, but which they generally took for granted. Wastewater gained little top of mind discussion amongst the majority, until prompted.

"I do wonder where the water comes from & how it is cleaned. Are we using the water that has been taken as waste? For me, the importance is how we dispose of wastewater. I haven't given much thought to wastewater services available." (HH customer)

"No, I don't give much thought to either the supply of water or the management of water waste. It has simply become another commodity (and as a business owner, cost) to manage. I admit I purely take for granted that water will be supplied and disposed of as a very basic service. I would place slightly higher importance on the supply of water, rather than the wastewater service as it is the most obvious need i.e. need water to wash, drink, use appliances etc. Wastewater is of course also important but on initial reflection does not seem it at first and in many cases once the water leaves the property it is then 'out of sight, out of mind'." (NHH customer)

However, there were a minority who did claim to give water some thought and in particular, wastewater. Many of these individuals were 'outdoorsy' individuals who visit the beaches and enjoy the countryside and environment they lived in. In addition, some mentioned that they had had exposure to cesspits on their parent's properties and so what they put down the drains and toilets was important to ensure no blockages.

"Yes, I do give considerable thought to the quality of water coming from my tap and equally wastewater services. Living in the North of England I feel the quality of water is fit for drinking and wish this to be my main source of hydration. I feel strongly that the quality must be maintained and is essential for the planet, in terms of plastic waste from huge quantities of plastic bottles. I try to do as much as I can in terms of what goes into my wastewater using eco-friendly products. I enjoy the outdoors and worry about water pollution and what is put into our waterways." (HH customer)

"I give more importance to wastewater as I believe too much dirty water goes straight into the sea without being cleaned. This makes swimming in the sea unpleasant." (HH customer)

"Wastewater. The run-off and outlets from homes and businesses need to be managed and treated as best as possible. It is more dangerous for untreated waste to re-enter the water table than to worry about the water that comes from the tap/hose. It is also circular, as the wastewater may pollute other water sources if not treated correctly. Water sources such from the mains or borehole, can be treated again by UV at point of use, whereas dangerous wastewater can lead to very dangerous and costly cleanup." (NHH customer)



"They are both as equally as important, but wastewater services would be a higher priority due to the risks that can come with it." (NHH customer)

Water was unsurprisingly more top of mind for water dependent businesses. Some businesses had installed water sensors to prevent people leaving the tap running. Meters had a big impact on levels of water usage.

Yorkshire Water was thought to be responsible for supplying water, taking away sewage, catching rainwater, and looking after reservoirs and treatment works.

On the whole, customers were happy with the service they received from Yorkshire Water. Yorkshire Water supplied clean water and 'got rid of' the waste.

Many felt that they ranked highly compared to other water companies on water quality. Indeed, some believed that Yorkshire Water had been consistently voted the best water in the UK. Equally, some had seen them at a stand at a country fair and had a conversation about sustainability and protecting the natural world. Others had seen Yorkshire Water dredging canals and building flood defenses.

Customer service from Yorkshire Water was also thought to be good. They were informative about meters. For those who had contacted Yorkshire Water by phone, their experience was positive; they were not left on hold but put through to a customer service rep straightaway who solved their problem. Customers believed that Yorkshire Water responded quickly to problems such as sorting out blockages and were good at keeping in contact. However, a minority had a more negative experience, such as a farmer on a tenancy farm had a problem trying to fix a small unit to the mains water. There was a dispute between the landlord and Yorkshire Water over who paid for the connection.

However, generally, there was a sense that Yorkshire Water were 'under the radar' as most had heard little about them in the press. A minority were aware that Yorkshire Water had received bad press about sewage discharges and that they were the largest polluter of the river Aire in Leeds, and in Ilkley there was an organised campaign to clean the river water and local opposition to Yorkshire Water putting sewage in the river network. Some believed that Yorkshire Water performed poorly in the past but there had been improvements in the last ten years.

Farmers were critical because they are pressured by Yorkshire Water not to put nitrates on the land, but farmers need them to grow fodder. However, they were aware that they need to avoid untreated run off ending up in rivers because of bacteria.

'I don't think about it so they must be doing a good job. If they weren't you would know about it.' (HH State Pensioner Session 1)

6.2 Yorkshire Water's Responsibilities

Within the workshop, most customers claimed Yorkshire Water were responsible for supplying clean water and for taking away dirty water. However, as far as their responsibilities to the environment, most customers were unsure.

Some knew that Yorkshire Water processed the sewage before they released it into the environment, but they were not sure how they did that. Business customers described them as a private company and a retailer who sells water and charges to take wastewater away.



Many had received letters about insurance for internal pipes, so they knew that the pipes on their property were their responsibility.

'I remember going on a school trip when I was younger to a Yorkshire Water purifying factory. I was 12. It was quite an experience'. (HH Citizen Session 1)

'There was a gully in front of my house. The council fixed the gully and made it safe. Yorkshire Water also came out to pump the water away.' (HH Family Session 1)



7. Spontaneous and Prompted Response to the Water System

Prior to session one, customers were asked what they believed happened to wastewater (both from properties and surface water / rainwater runoff). The following slides depict spontaneous comments which have been coded.





The above slides highlight the similarity in views across both household and nonhousehold customers and show some 'basic' knowledge and awareness of wastewater management. Essentially, most understood wastewater leaves



properties and enters the sewer system for treatment at wastewater treatment works (WWTW). Very few customers mention about the effluent then being recycled back into the waterways.

With regards to surface water, there were more mixed views; just under half believed it to enter the sewer system and go to WTWs and just under a third believing it to be absorbed into the ground or evaporated. There was mention of storage by around a fifth of customers, particularly non household businesses.

Within session one discussion, customers were prompted with stimulus slides that explained the water system from source. The full slide deck can be found in the appendix.



7.1 Customers' Current Understanding

When shown the water system stimulus, customers were surprised at the complexity of it. However, generally customers understood the process once they had it explained to them. For some, it answered some questions they had about how water companies deal with sewage.

'We take it for granted when we turn the tap on we get clean water. You don't think about where the water has come from, as long as it is clean and drinkable. The only time you think about it is when there is a problem.' (HH Post Family Session 1)

7.2 Associations with Wastewater

When asked about wastewater most customers thought about the water that goes down their sinks and washing machine and out of the toilet which was taken to a water treatment centre. There was little or no real knowledge about what happened to the water after it left the water treatment centre. Significantly, little thought was given to rainwater and what happens to that. Thus, the focus for



customers tended to be on what they used, not what they wasted because in their mind, this is what they are paying for. If they paid a separate amount for wastewater to be taken away (akin private cesspit), they would be more aware of it. Even though the water bill is split between clean water and wastewater, this doesn't necessarily resonate in customers' minds.

Many customers were surprised that wastewater and untreated sewage could go into rivers before it was treated i.e. overflows.

Some customers, particularly older respondents, believed that the highway drains were not cleared out as regularly as they used to be which they felt led to blocked highway drains. Now they believe the highway drains only get cleaned if you get in touch with the council. Many felt there should be a focus on prevention of highway drain blockages rather than reacting to calls when they were already blocked. For example, highway drains were seen with weeds growing out of them.

Early on in the discussion, there were comments regarding the need for an education campaign so the customers did not contribute to blockages by putting things down the drains that they shouldn't.

'When you say waste I think about what goes outside the house, what we are using and waste rather than the natural side.' (HH Family Session 1)

'I don't want open sewers on the street'. (HH Post Family Session 1)

7.3 Prompted Response to Responsibilities of Houseowners, Business Owners and Yorkshire Water

Respondents were shown the following diagram which illustrated pipe responsibility.



There was widespread understanding that pipes that were on owners' properties were their responsibility, and that Yorkshire Water were responsible for pipes on



public property. However, there was some confusion as to who was responsible when drains were shared.

'We live on an unadopted road, if our drains collapse, we have to pay for the repair.' (NHH Water Dependent Session 1)

'I live in a terrace of four houses. I'm the second one up and we share the kitchen drain. We had idiot neighbours who blocked the drain after parties. I wondered if it was my responsibility or Yorkshire Water's. My neighbours chucked bottles down there and so it floods when I put the washing machine on.' (HH Family Session 1)

'I had a blocked downstairs toilet and had to dig up the patio. Fortunately I had insurance cover through a company affiliated with Yorkshire Water.' (HH State Pensioner Session 1)

7.4 Prompted Response to Agencies' Responsibilities

The following information was imparted to customers around other agency responsibilities.



Many customers were surprised that the Environment Agency were responsible for river flooding. As seen earlier many believed it to be either the local council or YW's responsibility.

Most felt that the council played the bigger role in managing drainage in Yorkshire per se. Some customers did not realise that groundwater problems were the home or business owners' responsibility.

8. Current Understanding of Wastewater Systems



8.1 Level of Understanding/Comprehension of Wastewater

When exploring customers awareness and knowledge of what happens to wastewater once it leaves their premises and rainwater runoff, unsurprisingly, little thought was given to this area. It was a sense of 'out of sight out of mind'; because customers could not see where the wastewater went, they gave it little, if any, thought.

Most customers presumed that the wastewater went to a water treatment centre where most of the water was recycled and filtered with solids removed, and then it was tested and released back into the water cycle. However, most customers did not understand how the water was recycled. Some younger citizens believed that the water companies filtered out what was put down the toilet, so it did not matter what they put down there.

A minority of customers felt that if the effluent was too concentrated, i.e. if the river levels were low, it had an adverse effect on the river. They felt that in this day and age, there should be a more modern system to prevent that. Some went so far as to argue that in other countries they are far better systems that do not rely on putting effluent back into rivers. In the UK some felt that water companies should be aiming for zero pollution back to the environment.

When asked how acceptable it was for treatment works to put treated effluent back into rivers and the sea, some felt that it was not acceptable. Caveat, for many the word 'effluent' created confusion. Many interpreted this as being untreated until it was explained clearly.

Even prior to being prompted around increasing population growth and climate change, some customers spontaneously believed that the current system used a 'creaking Victorian infrastructure' and the consequences of an outdated sewage system i.e. sewer flooding, causes costs to businesses and homeowners. Thus, many felt that the water companies need to use knowledge, new technology and investment to tackle effluent.

Whilst many customers knew that the sewers were shared by rainwater and foul water, there were a minority who believed that some rainwater systems were separate from drainage.

Experiences or awareness of external flooding in particular, was relatively high. Most had either experienced or heard about river flooding causing issues in heavy rainfall and storms. Some customers were aware of wastewater from drains near where they lived that overflowed after rain. Generally these were considered 'an annoyance' because customers have to walk round or drive round the floods.

A minority of customers were aware that new housing developments had created run off areas where surface water soaks into the ground rather than joining the sewage system.

8.2 Consequences of not Maintaining the Drainage System Adequately

Significantly, many customers believed that wastewater drainage was fundamental to a civilised way of life.



There was awareness that if the drainage system was overwhelmed, the sewage would 'back up' and come back up the toilet. Thus, the consequences were sewer flooding, overflowing drains and pollution. Some had experienced sewage in their gardens due to a blocked drain and discussed how unpleasant it smelt and how difficult it was to get rid of the smell.

Others discussed internal sewer flooding and the emotional and financial strain and upheaval it can play alongside the health and safety aspect.

'If we didn't have wastewater drainage we would be dropping like flies because of disease. Society would crumble'. (HH State Pensioner Session 1)

8.3 Awareness and Knowledge of Blockages

Many customers were aware that inconsiderate people put unsuitable items down the toilet such as fat, wet wipes and nappies that caused blockages. Years ago, some customers claimed they used the toilet as 'another bin'. However, most of the customers we spoke to knew not to put wet wipes and fat down the drain although it helped for them to be reminded why it was so important and for them to tell their children and teenagers.

There was large scale awareness of 'fat bergs' that build up and block sewage systems due to people putting fat down the drain which then builds up and stops the water flowing. Some saw blockages as a massive problem and many admitted they had thrown wet wipes down the toilet and grease down the sink, particularly if they were in a hurry. They knew they should let the grease set, scrape the pan and put it on the bin.

A restauranteur used oil/fat in the workplace and knew how to dispose of it properly. Although he admitted mistakes happen and he used a power hose to flush the fat further down the pipe when blockages occurred.

Generally, it was believed that there seemed to be a lack of education over what you could and couldn't put down the drain and toilet for the general public. Wet wipes had it written in small print, but customers felt that many people would be unaware or oblivious to the damage caused.

'Growing up, when I had girlfriends, my mum said don't flush sanitary products down the toilet because we have a septic tank, whatever you flush down comes back and bites us, so I give it a lot of thought in that sense.' (NHH Water Dependent Session1)



8.4 Prompted Awareness of Blockages

The following information was shared with respondents around blockages.

'People account for almost 30,000 blockages a year, with 40% alone caused by wipes and things they shouldn't be flushing down the loo or putting down drains.'

Most customers were not surprised about the statement about blockages and had guessed that the general public were at fault. The scale of the number of blockages reinforced the issue. Indeed, many thought that the figure attributed to wipes would be higher as they had seen wet wipe 'reefs' on riverbanks and on the beaches. One customer mentioned they had seen the beach 'two feet deep in wet wipes' and they obviously had not wanted to sit or even walk on the beach once they saw that.

Ultimately there was widespread call for an education campaign to combat blockages and pollution in the rivers and the sea. It was felt that this in part should be about getting into schools to educate young people so that the message is 'started young'. Equally a more general mass market campaign was advocated; suggestions included Yorkshire Water producing a leaflet with a list of what can and cannot be put down the toilet. However, there was also recognition, that even with this type of approach, there will always be people who simply ignore the message and continue regardless. Thus, some customers felt that if blockages could be pinpointed to postcode, fines should be implemented for those customers who continually block drains.

Amongst non-household customers, restaurant owners were aware of the problem of blockages due to oil and tried to mitigate against it by using stops in the sink, and power washers to push the fat further down the pipe, which made the problem go away from their restaurant but obviously caused problems for Yorkshire Water.

'I'm quite ancient now but when I was at school we learnt about not leaving litter. It had a lifelong effect. You need to educate children from a young age about not putting stuff down the toilet.' (HH State Pensioner Session 1)

8.5 Impact of Wastewater Failures on Customers

Generally, the perceived impact of failures on customers was seen as high scale damage to property and loss of business from internal sewer flooding. Internal sewer flooding was more likely to be top of mind than external sewer flooding, however, unless internal sewage flooding had been experienced by customers and citizens, it was at an arm's length but something they could empathise with.

Many customers defined sewer flooding as sewers not being able to remove waste quickly enough, so it backs up, and ends up flooding houses and streets. Some had seen sewage bubbling up from drains in the road after heavy rainfall. Thus most customers believed the consequences of wastewater failures were flooding which could potentially become a health hazard.

There were also discussions around pollution (beaches and rivers) consequences, and thus possible polluted seafood (a minority).

A couple of workshops also discussed pollution from industry although most believed that this had been cleaned up in recent years.



As mentioned previously, there was a general sense that the infrastructure was 'old and crumbling' and could not cope with the huge number of housing estates that are being connected to it. Equally, another rationale proposed for increased flooding was thought to be due to housing developments being built on flood plains.

Over time, it was perceived that the impact on customers of wastewater failures would be felt in their wallets either through having to deal with internal sewer flooding themselves and the 'horrific' clean-up costs, or through higher water bills to address the problem of a collapsing sewer network.

8.6 Future Impacts of Failures on the Environment

At a spontaneous level, customers did not want to see sewer flooding of any kind. There was general widespread condemnation of any sewage pollution in rivers or the sea, and customers did not want this happening.

The key concern for customers of this type of pollution was that it causes diseases and damage to the environment, killing fish and whole ecosystems. This was then translated to the human food chain and seafood becoming polluted such as mussels. There was a strong sense that sewage in rivers and the sea impacts on everyone and everything.

Most customers felt strongly about protecting the environment and tried to do their 'bit' by being more eco-friendly where possible; attempting to buy fruit and veg from the market, using net bags, trying to avoid plastic waste that ends up in landfill and the water system. Micro plastics were often a concern discussed and it was thought they were too small to be filtered out by treatment works.

Citizens felt 'sad' about the potential impact of the wastewater system on the environment and the discussion made them aware that sewage must go somewhere but that it was a shame that the environment was becoming polluted. There was a sense that it could have a long-term environmental impact in the future. Customers and citizens agreed that they needed to take more responsibility for what they put down the drains.

Again, significantly, customers and citizens believed there was a key role for education. In the way that cigarette packets have a warning of lung damage, there was a need for wet wipes to carry a health warning of what could happen if sewers get blocked.

8.7 Perceptions of Future Challenges for the Wastewater System

The key areas in customers' minds around future challenges were the impact of new housing developments that were 'springing up' everywhere and that would have a negative impact on the wastewater/drainage system. The paving over of the countryside with tarmac and concrete meant faster runoff which caused flooding. Equally, again, it was felt that the old Victorian system could not cope with more sewage. Many of the sewage networks had been built at the same time and so it needed repairing at the same time. So customers were mindful of population increases that would impact the wastewater/drainage system.



'A lot of drains are not built for the amount of houses going up. It's going to come to a head.' (NHH Water Dependent Session 1)

'There's more run off with more houses because you are covering over the grass and then we flood more'. (NHH Water Dependent Session 1)

Customers felt that new housing developments need to deal with excess water via underground storage tanks for example. Currently, new housing developments can be built on floodplains. Going forward it was felt that developers should not be allowed to build houses on any land regardless. In addition, for new builds, rainwater that normally goes into the sewer could be collected to be used in the property or drain into a soakaway in the garden.

There was also awareness that climate change would have an impact. Most customers discussed the impact of increased rainfall, although some mentioned droughts giving rise to water effluent that was less diluted when river levels were low.

Some customers believed that if the system was poorly maintained it could have a negative effect. Vandalism of treatment works could also impact the system.



9. Flooding (Internal and External)

9.1 Understanding of sewer flooding and its potential impact on homes and businesses

In customer's minds, sewer flooding happens when the system cannot cope during heavy rainfall and excessive rainfall fills the sewers up. Many customers mentioned areas that had suffered from devastating floods in the past few years, affecting homes and businesses, such as Hebden Bridge. Flooding was thought to have a devasting effect on communities. In the last few years, there had been much media coverage about flooding in Yorkshire.

'Sewer flooding is when the volume of water going down is larger than the pipes and it spills out over the top.' (NHH Water Dependent Session 1)

'It's when the river backs up the sewer and spouts out of the toilet. It's not nice.' (NHH Water Dependent Session 1)

When internal sewage flooding occurred inside homes it was seen as an extremely serious problem. There was a strong sense that the sewage would contaminate the floors, the walls, all the fittings and contents with bacteria and 'the smell was awful'. Impacts included alternative accommodation having to be found and the financial implications were large because insurance premiums would go up. Equally, when families had to stay in a hotel they do not receive the money straight away. Emotionally, it was perceived as very hard and extremely stressful because often personal, sentimental items were lost. Some felt there was a stigma attached to internal sewer flooding and they would feel embarrassed and ashamed. It was thought to be repellent even horrific. Words such as 'devastating' and 'stressful' were used to describe the images shown in the groups.

'My sister in Carlisle got flooded. It the emotional impact, not just the physical side of it. It took her ages to get back to her house.' (HH Family Session 1)

Amongst businesses, sewer flooding could be destructive and expensive, even ruinous, and one customer had a personal experience of flooding in a warehouse in Bingley where the river overflowed and destroyed $\pounds 1.3$ million of stock. The business nearly collapsed.

Customers were aware of severe flooding in Hull and that on occasion people had to live in temporary accommodation, such as caravans in their gardens while their houses were being repaired. It was also perceived as a particular problem for the elderly, the vulnerable and those with babies and young children.

Internal sewage flooding was deemed far more serious than external flooding, since the effects such as ruined carpets and houses were thought to be much worse than a garage or garden.



'I'm old enough to remember when Skipton flooded in 1979. The whole town was flooded, it destroyed houses and businesses and one person died. Flood barriers have been put in since. It was insane when it happened.' (HH Family Session 1)

9.2 Sewer flooding and its Impact on the Environment

Not only were the impacts of sewer flooding seen to destroy the ecology of rivers, but it was also deemed unsafe for kids and dogs to play by rivers.

9.3 Response to Hydraulic Sewer Flooding Film

Most of the comments relating to the video were around internal sewer flooding and customers hoping that it would never happen to them. However, with climate change it was thought there was more potential for it to happen.

Internal Sewer Flooding:

The following stimulus slide was also shown to visualise potential impacts of internal sewer flooding.



The consequences of sewer failure were deemed serious. Respondents strongly believed that Yorkshire Water needed to update their sewage network. Asking customers to cut down on their water usage or encouraging the uptake of meters was not deemed to be enough to save the system from collapsing. In customer's minds, the more they are using the more they are 'putting down the drains'.



8.4 Response to External Sewer Flooding

Similarly to internal sewer flooding, customers were shown the following stimulus slide depicting the consequences of external sewer flooding.



Whilst external sewer flooding was not seen to be as serious as internal sewer flooding, it was recognised as causing structural damage to roads and property. There was a sense that with external flooding normal life could still go on; you had somewhere to live, and your business was still functioning. However, it did depend on where the external sewer flooding was. If there was raw sewage on the street where children walked to school that would be a serious issue. However, if there was a local flood, and it meant you had to use an alternative road, that was not seen as serious as internal sewer flooding.

However, it was also noted that some towns can become inaccessible when they flood and no one can get in and out, such as Skipton or Howarth. This clearly has a knock on effect on local businesses.

8.5 Priorities Around Internal and External Sewer Flooding

Following on from the video and pictorial stimulus, customers were also shown scenarios to explore what the priorities should be i.e. families; vulnerable customers; domestic vs business; frequency of flooding etc.

Internal Sewer Flooding Scenarios:



Scopario 1	Scopario 4	3110000
Scenario I	Scenario 4	
Household - Tallity Source flooding in the downstairs living areas	Dusiness - office Cover fleeding in the office	
Sewer Rooding III the downstairs tiving areas	Sewer Rooding in the office	
Occurred in winter following period of neavy rain	Occurred in winter as a result of a sewer blockage	
Flooding lasted for several nours before the levels	Flooding lasted for 1 day before the levels reduced	
House peeded to be vacated for 2 menths to be	Business closed for 3 months whilst office is allowed to dry and be repaired; some staff do not work or	
allowed to dry and be repaired	get paid during this period	
 Has experienced this before - around 5 years ago 	Experienced this before - around 10 years ago	
· Thas experienced this before - around 5 years ago	• Experienced this before - around to years ago	
Scenario 2	Scenario 5	
Care home	Household - one person has a disability	
 Sewer flooding in the downstairs living areas 	Sewer flooding in the garage and basement	
Occurred in summer as a result of a sewer blockage	 Occurred in winter following period of heavy rain 	
• Flooding lasted for 1 day before the levels reduced,	Flooding lasted for 1-2 days before the levels	
leaving carpets and furniture damaged	reduced, leaving carpets and furniture damaged	
 Home needed to be vacated for 3 months to be 	House does not need to be vacated whilst building is	
allowed to dry and be repaired	left to dry and damage repaired	
Not experienced this before	Occurs regularly - at least once a year	
Scenario 3	Scenario 6	
Household - family	School	
Restricted wastewater services - water cannot go	Sewer flooding in the classroom	
down the drains (cannot flush toilet, or let water	Occurred in summer as a result of a sewer blockage	
down sinks, or use shower/bath/washing machine)	Flooding lasted for 1-2 days	
 Portable toilet provided in the garden 	School closed whilst classrooms are allowed to dry	
Lasted for 1 week - no damage to carpets or	and be repaired; children need to go to alternative	
furniture	schools for 2 months	
Not experienced this before	Not experienced this before	

For many, the internal sewer flooding scenarios were all unacceptable and many found them uncomfortable viewing. This was because they felt that were being asked to choose between their businesses or homes or a care home and they felt they could not do that. However, if pushed, customers and citizens felt that the more vulnerable should take priority, as in the pandemic when society shut down to protect the vulnerable and the NHS, at the expense of everyone's freedom.

It was thought to be serious for care homes because residents had reduced immunity. Thus, the flooding of hospitals, care homes, schools and people with disabilities was thought to be more serious than homes and businesses. There was a public health issue and residents in a care home were more likely to be affected by bacteria.

Factors which dictate which scenarios are more urgent are the sensitivity of the place being flooded such as a hospital or school or care home and the frequency that it was flooded. Clearly, if a home or business was regularly flooded then that needed to be addressed urgently e.g. schools being impacted regularly was an issue, in particular after COVID when children had missed out on schooling.

Access was seen to be important as not having access to a business makes it more urgent. Also, if a customer is vulnerable or has disabilities it becomes a matter of importance.

'The pubs in York don't have carpets down. They are all stone floors. They know they have these floods once a year. There are things you can do to mitigate against it'. (HH Family Session 1)

External Sewer Flooding Scenarios:



		SHOWCARD 5b
 Scenario 1 Household - family Sewer flooding in the garden Prevented access to parts of the garden, but could still enter the house Occurred in winter following period of heavy rain Flooding lasted several hours before levels reduced, leaving plants and garden with minor damage Has experienced this before - around 5 years ago 	 Scenario 4 Retail shop Sewer flooding outside the shop, preventing access Occurred in winter as a result of a sewer blockage Experienced this before - around 10 years ago Flooding lasted for 1 day before the levels reduced Retail shop closed for 2 days until flood recedes and grounds cleaned up; some staff do not work or get paid during this period. 	
Scenario 2 • Park • Sewer flooding in a public park • Prevents access to the park, including children play areas • Occurred in summer following period of heavy rain • Flooding lasted 1 week, leaving the park damaged and needing clean up • Has experienced this before - around 2 years ago	Scenario 5 • Household - one person has a disability • Sewer flooding across the whole garden, prevents access to the house • Occurred in winter following period of heavy rain • Occurs regularly - at least once a year • Flooding lasted 3 days before levels reduced, leaving damaged plants and garden	
 Scenario 3 Household - family Sewer flooding in the street and pavement outside the house Still had full access to the house Occurred in winter as a result of a sewer blockage Flooding lasted for 1 day before the levels reduced Has experienced this before - around 5 years ago 	Scenario 6 • Farm • Sewer flooding in the fields • Occurred in summer as a result of a sewer blockage • Not experienced this before • Flooding lasted for 1-2 days • Farm crops are destroyed as not safe for human consumption.	

The external sewer flooding scenarios communicated the impact that external sewer flooding can have on businesses and the infrastructure, as well as homes. Hospitals were deemed the most important because if patients cannot access treatment it could have a serious knock on effect on their health. External sewer flooding to a domestic or business property was viewed as an inconvenience in comparison.

'None of us would say people in care homes have to die so that I can run my business'. (NHH Water Dependent Session 1)

External flooding to businesses such as farms was thought to be serious as it would impact on what could be grown and could negatively impact the animals. It could be devasting for produce and there might be wider impacts such as higher prices for food. Equally, flooding to businesses could have huge financial impact on a community.

However, customers strongly felt that internal flooding was more serious and important to tackle than external flooding.

Ultimately, customers found it easier to envisage the potential damage to themselves due to internal sewer flooding, such as ruined walls, carpets and furniture. With regard to external flooding, it was presumed that the water would eventually drain away without intervention – this reinforces perceptions seen in the pre task whereby quite a number of customers believed the water simply evaporated or was absorbed into the ground. Indeed, many customers stated that their gardens flooded from time to time in the winter, but they did not worry about it because it drained away. Sewer flooding in a street or in the garden was seen as less serious because it had less impact.

It was clear to customers that there was a need for investment. Some felt there needed to be a re-think about surface drainage, particularly for new builds, which would be cheaper than retro fitting water catchment systems to older properties.



At this point in the discussion customers raised the issue of Yorkshire Water needing to invest more in increasing capacity, and for a vociferous few, pay less to their shareholders. Questions such as why has the system not been updated since the Victorian age? Why is raw sewage ending up in rivers? For many this was unacceptable.

9.6 Unprompted Response to Storm Overflows

Storm overflows were thought to be overflows from excessive rain. There was a sense that the excess water had to go somewhere but most customers were not aware that untreated effluent spills into rivers and the sea.

There was some awareness that Yorkshire Water had released gallons of untreated waste into the rivers as they had seen that in the media. Many felt strongly that untreated sewage should not be allowed to enter watercourses because it was 'disgusting'. Therefore at a spontaneous level, storm overflows were viewed as unacceptable. For some, it was going back to the 'bad old days' when countries poured raw sewage onto beaches. There was an initial feeling amongst customers that this aspect needed to be looked at as a matter of urgency.

'I thought storm drains held water, in tanks so that they could be treated before being released. I didn't realise storm drains didn't hold onto water'. (HH State Pensioner Session1)

However, upon viewing the video on storm overflows and being given information that 'in 2020 YW storm overflows spilled for 2.2% of the time. Wastewater treatment works discharge treated effluent continually to the environment but storm overflows operate linked to rainfall and high flows' customers became more pragmatic and viewed them as 'the lesser of two evils'. If it meant that their toilet did not 'back up', they would prefer the sewage to go into the rivers. Some viewed storm overflows as a necessary part of the system, as an emergency measure, and it was better for this to happen than for everyone's homes to be flooded. The solution in customer's eyes seemed to be to build more and bigger treatment works.

That said, customers did not want water companies to rely on storm overflows or for them to use them too frequently. If it only happened once a year that was acceptable but if it was used several times a year there was a sense that the infrastructure needs to be updated.

However, others found this unacceptable since it suggested a high volume of untreated sewage including bleach, wet wipes and sanitary products would enter the sea and rivers.

Some customers thought that 2.2% sounded a small amount of the time, and for some it was better than they thought it be would. They would rather this than their house flooding.

Others asked whether this number had increased over the last few years. Customers guessed that it had since rainfall and the intensity of rain had increased. Moreover, and thinking ahead, the problem is deemed only likely to get worse.



Customers wanted Yorkshire Water to modernise the storm overflows, to use new technology and to put finance behind the projects. In addition, customers wanted full monitoring of the levels of pollution in our rivers and an examination of what is not living in the water anymore due to pollution. Yorkshire Water needs to be constantly checking the quality of the water.

Although upgrading of the system was likely to be expensive, the UK was seen as a rich country, but it required national level investment in technology to fix a broken system. Some felt the answer was to separate out the grey water from the sewage. It was felt that other countries such as Scandinavia had grey water collection systems in their homes.

'It's not good. I thought it all got cleaned, not chucked out.' (NHH Water Dependent Session 1)

'If farms are being targeted and I'm being fined as a farmer it makes me angry that they are putting effluent in rivers that they do worse and get away with it.' (NHH Water Dependent Session 1)

9.7 Treated Effluent

There was low awareness of treated effluent being continually discharged to rivers and seas. Response as to whether Yorkshire Water should do it or not was mixed. Some felt that if the water put back into rivers was of a high standard and regularly monitored, that was reasonable. However, some believed that it was not acceptable and that the standards set for the effluent were probably not high enough. Most felt that it was not good because of chemical and micro plastic pollutants entering the river systems.

River health was thought to be important because people enjoyed open water swimming and children liked to play in rivers. Back in the 1960s rivers were described as 'dead' and although there had been vast improvements since then, some of the rivers in Yorkshire seemed to be in poor health.

Some customers asked how treated the water was as no indication was given. Was the water that went back in 90% drinking water quality or was it sewage that had been treated a bit? If the water is treated to a high standard to improve river health and has to go through a number of stages to be acceptable then most customers were satisfied with that to a certain extent. However, most wouldn't want to swim in it.

Some customers 'bought the idea' that the effluent being released back into the river met strident standards. However, others were more cynical and asked who set the standards and are the standards high enough? A minority of customers believed that Yorkshire Water were the most fined water company for polluting rivers.

There was discussion over what other water companies did and what were the alternatives to releasing the effluent into rivers. Customers questioned what happened in London where the majority of the water was recycled. There were some concerns about what was in the water, such as birth control pills creating too much oestrogen which effects fish.


10. Response to Drainage Water Management Planning Overview

10.1 Initial Reactions to DWMP Video

Generally, customers and citizens felt it was appropriate that the different agencies were working together.

They understood that Yorkshire Water were looking at innovative and eco-friendly solutions. However, it was felt that they would not be enough to tackle the issue but should be used alongside the improvements of the current system.

10.2 Response to DWMP objectives

Customers were also shown YW's DWMP objectives as shown below.

To take care of customers' wastewater and protect customers and the environment from sewer flooding.

To protect and improve the water environment

Customers felt that these objectives were fundamental to any water company and all customers and citizens supported the statements. Many wanted proof that Yorkshire Water were doing this. Thus, they wanted time frames and how the water company was achieving this rather than what they believed to be rather vague statements.

Many found it hard to prioritise these two statements. They felt that both statements were as important as each other, and that it shouldn't be an either or. However, when pushed, some customers believed that water companies should protect the customer first from internal sewer flooding and they did not feel 'too guilty' if the rivers were less of a priority. They argued that internal sewer flooding would affect them personally, whereas untreated sewage entering rivers was awful, but it would not have an immediate impact on their lives.



10.3 Response to DWMP Measures

The following DWMP measures were also shown to customers.

	DWMP Measures
Α	Minimising risk of internal flooding of properties due to incapacity of sewers.
В	Minimising risk of external flooding of areas of land due to incapacity of sewers.
с	Improving resilience of the waste water and drainage system to extreme events
D	Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network.
E	Monitoring and improving wastewater flow & quality compliance to ensure discharges to river/sea meet allowed standards
F	Monitoring and improving Storm Overflows on how they are operating and the effect this may have on the river water/sea water they are entering.

These measures raised questions amongst customers.

For some, the words 'monitoring' and 'minimising' in DWMP Measures A and B were not strong enough and some saw them as 'woolly' and 'vague'. Customers wanted to know, for example, how E was measured and who came up with the standard?

Customer take out from measures A and B was that 'due to incapacity of sewers' meant a lack of capacity which suggested that the sewers were not big enough and needed extending with larger pipes or perhaps replacing altogether. Measures C, D, E and F were seen to be about 'improving', so when customers are asked should Yorkshire Water 'maintain' or 'improve', the answer is 'improve' because that is one of the measures.

Measure D was viewed to be about the 'collapse of sewers' and customers ask why is it happening? It suggests and reinforces their perspective that the infrastructure is old, crumbling and under pressure which leads customers to believe that sewers need replacing. In addition, in measure D, the blockages need to be addressed via an education campaign and warning notices on wet wipe packaging.

Measure E was perceived to be a fundamental measure that must be reached, i.e. that the water must reach allowed standards. Customers felt surely that this was a very basic, non-aspirational measure, and for some, it was concerning. How low are the allowed standards for discharges? Are they too low? It came across to some customers as not good enough.

Measure F also seems to lack aspiration. The aspiration should be that storm overflows of untreated sewage into rivers should never or rarely happen because the effect on rivers and aquatic life is devastating, not to mention the 'horrible things appearing on beaches' where people want to enjoy time out. Moreover, customers feel Yorkshire Water should not be 'monitoring' or 'improving' storm overflows, they should be doing everything they can to stop it happening.



10.4 Ranking of Measures

Customers were then asked to rank the measures in order of importance to them. This was done individually within the workshops and later collected via the mid-session questionnaire and again following the second workshop to understand if any rankings had changed. The following slides highlight the output.

Table	showing	overall	session	output
10010	Justice	0101011	00001011	001001

Ranking Mid- Groups	Ranking Post- Groups	DWMP Measures	Avg. Rank Mid- Group	Avg. Rank Post- Group
1.	1.	A . Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall	1.8	1.9
2.	2.	D . Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network	2.8	3.3
4.	3.	C. Improving resilience of the wastewater and drainage system to extreme events	3.9	3.5
3.	4.	B . Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall	3.5	3.5
5.	5.	E . Monitoring and improving wastewater flow and quality compliance to ensure treated water discharged to river / sea meet allowed standards	4.2	4.1
6.	6.	F. Monitoring and improving storm overflows on how they are operating and the effect this may have on the river water / sea water they are entering	5.0	4.8

Generally, the ranking of importance did not change between the two sessions as shown above.

Many customers ranked A (internal sewer flooding) first because as already seen, they felt internal flooding would have a large negative effect on a large number of households and businesses. There were some areas in Yorkshire such as Hull, Skipton, the River Aire and farmland in the Dales that were particularly affected. Customers were concerned about health issues with internal sewer flooding and the financial implications.

However, many believed that if C (improving resilience of the WW system) and D (improving the condition of the sewers) were tackled, internal and external sewer flooding would not happen. C and D were seen as preventative measures, whereas A and B were seen as reactionary. Equally, customers argued that if the sewers can better deal with rainwater, then storm overflows would not be required.

B (external sewer flooding) was seen as a major issue amongst some because if their area was flooded, they would be unable to go to school, work, or a hospital if they needed to. Equally, the financial implication of B could also be huge, like A, and so they saw it as a priority.



C (resilience of the wastewater system) was a priority for some because there was a need to make the system more resilient to extreme weather events.

For a minority, F (overflows) was the most pressing priority because of the high levels of concern of what is being discharged into rivers and the sea.

'The internal sewer flooding needs to be the top priority as it is my immediate surrounding area. How it affects me is my top priority. I'd like to be more charitable but when it comes to it, if I am affected it will be more important to me at the time.' (HH State Pensioner Session 1)

'I don't want sewage on the beach at Bridlington and fish dead, hundreds of dead fish on the beach. That's why E and F are important to me'. (HH State Pensioner Session1)

'I feel that if D was improved there would be less flooding in houses and probably outside as well. If the network was to collapse it would be a big deal, rather than just flooding. It would be a lot more to deal with.' (HH Citizen Session 1)

The following tables also show the differences between household and nonhousehold customers when ranking these measures. Both customer groups are largely aligned on top and bottom priorities.

Ranking	DWMP Measures (household)
1.	A. Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall
2.	${\bf D}.$ Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network
3.	${\bf B}.$ Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall
4.	C. Improving resilience of the wastewater and drainage system to extreme events
5.	E. Monitoring and improving wastewater flow and quality compliance to ensure treated water discharged to river / sea meet allowed standards
6.	F . Monitoring and improving storm overflows on how they are operating and the effect this may have on the river water / sea water they are entering



Ranking	DWMP Measures (non-household)
1.	A. Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall
2.	B . Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall
3.	E . Monitoring and improving wastewater flow and quality compliance to ensure treated water discharged to river / sea meet allowed standards
4.	C. Improving resilience of the wastewater and drainage system to extreme events
5.	D . Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network
6.	F. Monitoring and improving storm overflows on how they are operating and the effect this may have on the river water / sea water they are entering

Within the mid-session questionnaire, customers and citizens were also asked to allocate a number of points (totalling 100) to the different measures thus providing a weighting and highlighting their strength of feeling on priorities.

The following chart highlights that internal sewer flooding was twice as important as the second ranked priority showing the strength of feeling towards this aspect.

Measure	Average Points Allocated
Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall	37.0
Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall	18.3
Improving resilience of the wastewater and drainage system to extreme events	14.2
Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network	14.1
Monitoring and improving wastewater flow and quality compliance to ensure treated water discharged to river / sea meet allowed standards	9.6
Monitoring and improving storm overflows on how they are operating and the effect this may have on the river water / sea water they are entering	6.8

In addition, customers were asked which area of drainage and wastewater management should be Yorkshire Water's biggest priority depicted by the chart below.





Overall, 67% of all customers believed Yorkshire Water's biggest priority should be reducing sewer flooding. Preventing pollution was important but not as important as reducing sewer flooding.

What's missing in the measures and metrics?

A common theme that emerged from the research was the need for more education for customers and citizens. There was a sense that if water companies were to meet their targets they needed to enlist the help of their customers to prevent blockages and help with surface water reduction by use of water butts etc. This could only happen if customers were educated.

10.5 Ranking of Metrics

Table of Overall Ranking of Metrics

Ranking Mid- Groups	Ranking Post- Groups	Wastewater and Sewage Metrics	Avg. Rank Mid- Group	Avg. Rank Post- Group
1.	1.	Internal flooding of customer properties due to overloading from heavy rainfall	3.0	2.4
3.	2.	Internal flooding of any property due to blockages or sewer defect	3.3	3.6
2.	3.	Internal flooding of infrastructure property (e.g. schools/hospitals) due to overloading from heavy rainfall	3.2	3.6
4.	4.	Internal flooding of a business / commercial property due to overloading from heavy rainfall	5.0	4.8
7.	5.	Pollution of a river with sewage due to a blockage or sewer defect	6.9	6.1



5.	6.	External flooding of any properties due to blockages or sewer defect	6.5	7.2
6.	7.	External flooding of infrastructure property (main roads) due to overloading from heavy rainfall	6.6	7.2
8.	8.	A deterioration in river water quality due to sewage spills from storm overflows	7.7	7.2
9.	9.	A deterioration in river water quality due to reduced quality of wastewater treatment works discharges to the river or sea	7.7	7.5
10.	10.	External flooding of a business / commercial property due to overloading from heavy rainfall	7.9	7.7
11.	11.	External flooding of a customer's garden due to overloading from heavy rainfall	8.2	8.7

Again, unsurprising given previous comments, internal sewer flooding metrics came out highest ranked but there were also concerns about river pollution. The order of ranking did not change significantly between sessions, with top and bottom priorities remaining consistent. It was the middle ground (rankings 4-8) that changed slightly.

The differences between household and non-household customers can be seen below. Again, both customer groups can be seen to be largely aligned on priorities.

Ranking	Wastewater and Sewage Metrics (household)	% Rank 1st	Avg. Rank
1.	Internal flooding of customer properties due to overloading from heavy rainfall	45%	2.7
2.	Internal flooding of infrastructure property (e.g. schools/hospitals) due to overloading from heavy rainfall	27%	2.8
3.	Internal flooding of any property due to blockages or sewer defect	22%	3.0
4.	Internal flooding of a business / commercial property due to overloading from heavy rainfall	0%	4.6
5.	External flooding of any properties due to blockages or sewer defect	0%	6.2
6.	External flooding of infrastructure property (main roads) due to overloading from heavy rainfall	0%	7.0
7.	Pollution of a river with sewage due to a blockage or sewer defect	0%	7.2



8.	A deterioration in river water quality due to sewage spills from storm overflows	0%	7.8
9.	A deterioration in river water quality due to reduced quality of wastewater treatment works discharges to the river or sea	5%	8.0
10.	External flooding of a business / commercial property due to overloading from heavy rainfall	0%	8.2
11.	External flooding of a customer's garden due to overloading from heavy rainfall	0%	8.6
Ranking	Wastewater and Sewage Metrics (non-household)	% Rank 1st	Avg. Rank
1.	Internal flooding of customer properties due to overloading from heavy rainfall	35%	3.8
2.	Internal flooding of any property due to blockages or sewer defect	18%	3.9
3.	Internal flooding of infrastructure property (e.g. schools/hospitals) due to overloading from heavy rainfall	12%	4.1
4.	Internal flooding of a business / commercial property due to overloading from heavy rainfall	0%	5.8
5.	External flooding of infrastructure property (main roads) due to overloading from heavy rainfall	12%	5.8
6.	Pollution of a river with sewage due to a blockage or sewer defect	6%	5.9
7.	A deterioration in river water quality due to reduced quality of wastewater treatment works discharges to the river or sea	6%	6.9
8.	External flooding of any properties due to blockages or sewer defect	0%	7.1
9.	A deterioration in river water quality due to sewage spills from storm overflows	6%	7.3
10.	External flooding of a business / commercial property due to overloading from heavy rainfall	0%	7.7
11.	External flooding of a customer's garden due to overloading from heavy rainfall	6%	7.8



11. Response to Yorkshire Water's Performance

At the beginning of session two customers and citizens were asked to share their thoughts from the previous session. Many customers claimed they were now more aware of the water they used. However, a minority were concerned because of the recent highwater river levels, and they were conscious that the river water may have sewage in it. Please note that at the time of the second session, there had been a period of extreme weather across the UK (3 storms in a week), as a result there was heightened awareness of flooding in the second workshop.

During session two of the workshops the moderator shared a number of pieces of stimulus including:

- OFWATs role and regulation of the industry.
- Current year water bills (across the differing regions).
- The breakdown of the water bill.
- Investment expenditure across 2015-2020.
- YWs current performance against measures for wastewater and the environment.
- Examples of SUDs.

Full details of the stimulus used can be found in the appendix.

11.1 Reactions towards Regulation by OFWAT



The majority of customers were aware of a small element of this information i.e. privatisation and of OFWAT being the regulator, but unsurprisingly unaware of pricing reviews.

Recent media coverage contributed to some criticism of Ofwat enabling Yorkshire Water to pump more sewage into the rivers. For some, this was unacceptable and showed blatant disregard for the environment.



'I heard it a couple of times on the radio and on Facebook that Ofwat had given Yorkshire Water more permission for dumping sewage. It flies in the face of everything else. We are trying to clean rivers up'. (NHH Water Dependent Session 2)



11.2 Reactions towards Billing Information







Most customers were satisfied with what they were paying and on the whole felt they received good value for money. A few customers had installed a water meter to keep a track on their spending. As a result, the meter had kept their bills down.

In relation to the investment level of water companies between 2015-2020, whilst £44bn sounded immense, some customers did the maths and felt that the water companies were taking too much profit. In addition, many customers felt that over time, that investment had not been enough as the infrastructure was still Victorian and not fit for purpose given climate change and population growth.

Measures	Explanation	Current Performance
A: Internal Sewer Flooding	YW are measured on the total number of internal sewer flooding incidents through the year per 10,000 sewer connections.	Currently not <u>on track to</u> meet current year targets
B: External Sewer Flooding	This performance commitment measures the total number of external sewer flooding events through the year.	Currently <u>on track</u> to mee current year targets
C: Risk Of Sewer Flooding In A Storm	As part of a national drive to improve the country's resilience to extreme weather events, this performance commitment measures how many of YW customers would be at risk of internal sewer flooding from a 1 in 50-year storm, based on modelled predictions.	Currently <u>on track</u> to meet current year targets
D: Sewer Collapses	If a part of a sewer collapses, it can block the sewer and lead to sewer flooding or pollution. This performance commitment measures the number of sewer collapses that affect our customers' supply or the environment, per 1,000 km of our sewer network.	Currently <u>on track</u> to mee current year targets
E: Pollution Incidents	YW want to make sure their operations don't harm the environment. This performance commitment measures the number of pollution incidents caused by our wastewater assets, for every 10,000km of our wastewater network.	Slightly <u>off track t</u> o meet current year targets
F: Treatment Works Compliance	YW have permits that control their discharges into watercourses. This performance commitment measures the percentage of their treatment works that comply with their discharge permits.	Slightly <u>off track</u> to meet current year targets
G: Length of River Improved	Improving our environment benefits everyone in Yorkshire. We're working hard to improve river water quality and this performance commitment measures the length of river we've improved in the 2020-25 period. We currently have four projects running, to improve 45.6km of river.	Currently <u>on track to mee</u> current year targets

11.3 Reactions towards YW's Current Performance Against Measures



The majority of customers were surprised and a little disappointed that Yorkshire Water were not on track for 3 out of 7 measures. The words 'slightly off track' created more questions in customers minds. 'How much is slightly off track?' Many translated this to mean that basically YW were underperforming.

Customers were concerned that the measure that they felt was the most serious in the first workshop sessions, i.e. internal sewer flooding, was the one measure that was currently not on track to meet current year targets. Most customers thought the priority should be with people's homes first, not the rivers and thought that Yorkshire Water's efforts should be focused on improving their current performance on internal sewer flooding.

Treatment Works Compliance was also 'slightly off track' which raised the alarm for some customers. They questioned what YW were doing and felt that the water companies and the Government should be held accountable. This area, as already witnessed, is one that has been in the recent media and so customers were 'sensitive' to it.

A minority of customers were surprised that Yorkshire Water were responsible for improving 45.6km of river, but a minority were aware that the river had been improved and salmon were now coming up to Leeds and Saltaire.

Another key issue raised with the performance measures was that there was no quantification of them - customers did not know <u>how</u> Yorkshire Water were measured or what the targets were. For some, this raised suspicion. They felt a scale percentage would be helpful to pinpoint how near or far away from the targets Yorkshire Water were. For some, a comparison with other water companies on these measures would be useful.

The fact that an external body i.e. Ofwat set the targets was important to customers.

'Your home is your castle, and the main criteria is not being met. If that was me, if I had sewage coming up, and my house was a mess, I'd be saying this is not right.' (NHH Water Dependent Session 2)

'I feel that Yorkshire Water are not doing too badly but I'm disappointed with internal sewer flooding. If that impacted you personally it would have a big impact.' (NHH Water Dependent Session 2)



12. Climate Change

12.1 General Perceptions of the Environment

Climate change was high on the agenda. Customers felt that they had developed more awareness of climate change and its impacts in the last couple of years. Most customers felt that a concerted effort was required now to stop the effects of climate change for the sake of their children and grandchildren. In the weeks prior and during the workshops the UK had three extreme weather events: storms Franklin, Eunice and Dudley. Unsurprisingly, customers mentioned them as an example of our changing weather patterns.

Customers claimed they were more mindful of their behaviour and were trying to make a difference where they could, such as driving an electric car, using less water, cutting down on plastic use etc. Whilst the Government was using legislation to force old diesel cars off the road, customers stated that moving to an electric car was unaffordable for many. For those who liked the responsiveness and speed of petrol cars, electric cars were deemed an unattractive proposition (this maybe a misunderstanding on customers behalf as some electric cars are faster than petrol).

For some, 'sustainability' seemed to be more of a corporate buzz word rather than have true meaning. However, generally, customers understood that sustainability referred to issues such as less packaging and more recycling. Some older customers believed that there were more cars on the road 'pumping out pollution' and everyone is producing more waste, and so there is a need to go back to the old ways that were more sustainable e.g. of where this this already occurring is the use of glass bottles again vs plastic.

'It's so easy to get a takeaway and throw out the take-out boxes.' (HH Pre Family Session 2)

'We are seeing more extreme weather such as Storm Eunice. We are thinking about it more and Governments are taking climate change more seriously.' (HH Post Family Session 2)

Customers believed that **more rainfall and less predictable weather** would have the biggest impact on the environment causing flooding and storm damage such as landslides. However, it was rationalised that this depended to a large extent on where in the world you lived. Some areas were experiencing droughts such as Australia and other landslides such as Brazil. However, now that customers are experiencing severe storms firsthand in the UK, they are starting to believe that climate change is real, that it is happening now and that it can affect them personally.

'Other countries have had disastrous storms, but we are seeing that here in our country now. I'm thinking maybe I need to do something but before it wasn't affecting me.' (HH Pre Family Session 2)

12.2 The Impact of Climate Change on Water Companies and the Wastewater System



Spontaneously, the impact of climate change on the wastewater system was thought to be immense because if the system cannot cope with the pressures, it is under now, it will not be able to cope in the future. With adverse weather conditions forecast, more rain would be entering the system and there was more surface water. There seemed to be more call for educating customers about what not to put down the toilet so that water can pass through the system more freely.

One farmer stated that climate change was already affecting him. The lower lands on the farm were often underwater and flooding has worsened in the past ten years.

The following information was provided to further educate the likely impacts of climate change: 'Just focusing on how climate change might impact our sewerage services: Forecasts show for wetter winters and drier summers.

In winter, the impact of climate change will result in more intense bursts of rainfall which will lead to more frequent incidents of all kinds of flooding and overflow usage. For example – forecasts show that we can expect to see a 13% increase in the average intensity of rainfall across the Humber catchment by the 2050s.

In summer, more prolonged dry spells will impact water levels in rivers. Lower river water levels means there is less water to dilute the impact of treated wastewater effluent from sewage treatment works when it enters the river, this will lead to a deterioration in river water quality. Drier weather may also lead to an increase in odour issues from the sewerage infrastructure due to less surface water to dilute the sewage and keep it moving through the system.'

Customers were unsure what the solutions were but suggested that Yorkshire Water needed to increase capacity and storage through building bigger reservoirs and to utilise that saved water in drier times. Again, the need for an education campaign to prevent people putting wet wipes and nappies and grease in the wastewater system and 'clogging it up' was also cited.

'Is the wastewater system big enough to cope or does it need updating, digging up roads, laying bigger pipes, it's not cheap.' (NHH Water Dependent Session 2)

Overall, the impending effect of climate change on the wastewater system was thought to be huge given what is happening already in current extreme weather events.



12.3 Improvement of YW Current Service vs Adaptation to Climate Change

Customers were asked their thoughts around whether YW should focus on improving their current service and performance or create plans that are more flexible over time to account and adapt for climate change.

There was unanimous agreement that Yorkshire Water needed to improve the current service now as a matter of priority. The thinking was that if Yorkshire Water are unable to get 'on track' with current measures, if they try to create more flexible solution for the future, they will fall even further behind on current performance. Hence, for many the solution was to spend 50% of the time and money on improving the current service and 50% on adapting more flexible plans over the future. Both elements were deemed necessary.

Future planning was felt to be crucial, but time was needed to shape and develop these plans. It was felt that 'prevention was better than a cure' and that reacting to issues was not the answer.

One school of thought was that Yorkshire Water need to reduce the amount of wastewater leaving households and businesses. If wastewater could be metered, that would encourage customers to waste less.

As previously mentioned, customers were concerned that Yorkshire Water were not on track for 3 of the 7 measures. Thus, it was clear that Yorkshire Water were unprepared and needed to get 'on track' now, so they are not in an extreme position in the future.

There was some spontaneous awareness of new measures that could help with surface run off such as permeable tarmac and soakaways next to new housing developments.

Farmers felt that although they were playing their part by stopping muck/slurry going into water courses, through the use of storage tanks, they were only a small part of the problem. In our sample we had a number of builders who believed the answer lay in saving surface water and pumping it back to reservoirs to prevent it reaching the sewers.

'Water companies need to stay flexible. We don't know what weather we will face. We know people don't get the weather right. Look at Michael Fish in 1987!' (HH Post Family Session 2)

'If Yorkshire Water don't have the recycling of water and have to use overflow flooding now, what is it going to be like in the future?' (HH Pre Family Session 2)

'If they have excess water at part of the year and not enough some of the time, why don't they create more reservoirs and direct the water to them?' (HH Pre Family Session 2)

'Councils are looking at forbidding tarmacking over gardens, so it is grassed and a soakaway so any water company needs to look at green space to soak up weather thrown at us in the future.' (HH Post Family Session 2)



13. Population Growth

13.1 How will population changes and growth impact on wastewater services and does it mean for Yorkshire Water and the wastewater system?

Customers and citizens were aware of population increases in the UK and many expressed surprise at the number of housing developments 'springing up' over the county. Generally, customers believed that forecasters had an idea of future populations in the UK and that water companies planned for population growth. Despite this, it felt that water companies and the Environmental Agencies did not have a say about where these housing developments were allowed to be built. However, most had not thought about the implications of population growth on the wastewater system.

It was thought population growth would again put pressure on an already 'creaking' wastewater drainage system.

There was a sense that society should be more careful about where they build, i.e. not to build on flood plains, and to restore peat bogs so that the natural ways of dealing with surface water are not impacted.

Population growth was seen to bring benefits too in the way of more money coming in that could be channeled to improve how new builds deal with surface run off, and utilitising grey water systems for example. Many felt that new Government legislation was required for sewerage. Some felt that there probably was legislation in place already, perhaps it was not fit for purpose anymore and it needed to be tightened up or enforced.

'We deliver our products to a farm, and we have been going there for a few years and in the last few years I have counted 17 housing developments. When I first started going there it was all fields'. (HH Pre Family Session 2)

'They plonk houses on any bit of land. There are new ones popping up all the time'. (HH Pre Family Session 2)

'The population keeps going up and you need the infrastructure, unless we turn into China, it needs planning and thinking about'. (HH Pre Family Session 2)

'Building houses all the time, there are just more people, too many people on the planet'. (NHH Water Dependent Session 2)

Moderators further shared the following information:

'The impact of population growth will mean more homes being built, increased infrastructure to support this increased population such as more schools / hospitals / roads etc and increased businesses. Yorkshire households are predicted to increase by 30% by 2033, with a third of that growth coming from an increase in single person households.



This will result in more wastewater to treat and potentially more paved and roof surfaces and less soakaway opportunity for rain water and therefore an increased risk of all types of flooding, and overflow usage'.

Many customers were surprised that households are predicted to increase by 30%. That seemed like a high number to customers. They felt it concerning and therefore more important that Yorkshire Water increase their current performance against environmental and wastewater measures. Some argued if Yorkshire Water were not meeting some of their targets currently, how will they cope with increased population?

Generally, it was believed that it was easier to plan for population growth than climate change. Climate change was more unpredictable.

13.2 How can Yorkshire Water support population growth without compromising on service?

Some felt that the answer may be to install more smart water meters. This would allow Yorkshire Water to know exactly how much water households use and therefore dispose of. Education was also thought to be key.

However, there was a strong feeling that unless Yorkshire Water invest heavily in the infrastructure service levels will suffer going forward. The answer for many customers was to build bigger treatment plants but there was a sense that the water companies need to spend billions just to keep up.

12.3 What can homeowners and businesses do?

There was spontaneous mention that customers should not let the tap run and take showers rather than baths. The phrase 'if it's yellow let it mellow, if it's brown, flush it down' was mentioned many times and often customers did not flush the toilet at night. When customers thought about it, they realised they could save a large amount of water over a year by limiting the amount they spent in the shower or take a shower not a bath. Some even measured out the water they use in the kettle, particularly if they are on water meter. A minority felt it was their responsibility to tell Yorkshire Water about leaks so they can be fixed straightaway.

Many spoke of water butts although typically only a handful of older respondents (45+) had one.

A minority discussed sedum roofs, but many felt that they were expensive to install and maintain. There was some awareness of permeable patio tiles and permeable tarmac used to help surface drainage. Typically, whether to have permeable paving slabs was part of the decision making when renovating gardens for some.

Other homeowners were aware of water logging and used gravel to enhance drainage and prevent flooding in their gardens. Many customers were willing to 'help' water companies with reducing surface rainfall and some were happy to take some responsibility or ownership for it if they could afford to and if there was a benefit to themselves. Most however, would find it too difficult or expensive to take personal responsibility for reducing surface run off. It was felt to be a 'big ask' and required mass education and a change of mindset and behaviour. However, customers are slowly moving over to electric cars so they could be encouraged to take responsibility for surface drainage.



Some noted that other countries, typically Scandinavia, were better at utilising grey water for flushing toilets but there was an acknowledgement that this could be expensive to retro fit and required electricity to pump the water up to the roof. There was discussion of Government support grants to retro fit water saving devices, i.e. using bath water to flush the toilet. In the past, the Government has offered grants for wall and loft insulation.

On the whole, customers felt that it was appropriate to be encouraged to reduce wastewater through various means, although it depended on the cost. For example, a sedum roof could be expensive or replacing patio paving with permeable slabs. However, if there were savings to the water bill that would act as a good incentive, especially given the recent rises in the cost of living, this was seen as doable.

Some customers suggested that Yorkshire Water, with their buying power, could offer water butts at a cheaper rate to customers, in the same way that some councils offer cheaper compost bins. However, using water from water butts to flush toilets although it was a great idea in principle it was not practical because it was expensive to run due to needing a decent pump and filter system. Equally, this was not deemed practical for those that lived in a block of flats.

Farmers saw that they were partly to blame because peat bogs had given way to grazing land or crops. Additionally, in the past, there were more trees which absorbed gallons of water. However, it was difficult for farmers to know how to operate, since if they did not let their cows graze outside, they have to buy in feed, which has an environmental impact further down the line, but the land could then be used to store water.

A minority of businesses believed that the problem of excess surface run off on their buildings can be solved relatively easily. One example was a yard that flooded, and it was a simple fix to put in large water butts which collected run off from the roofs. The water butts were then emptied gradually.

In summary, customers accepted that there must be shared responsibility to address the problems of excess surface run off and excess wastewater. A joint approach of customers with the water companies would be more effective than the water companies trying to tackle it on their own. However, people's mindset and behaviour have to change. It was believed that shifting behaviour has worked in the past e.g. with taking bags to supermarkets or taking a water bottle, or reusable coffee cup when out and about, so it could work in the future, particularly if customers are educated and see a benefit to themselves.

'It's a generational thing. In the old days there was a limit to how much water there was. Not there is no limit'. (NHH Water Dependent Session 2)

'If we all pull together, we can make a difference'. (HH Post Family Session 2)

'We do what we can but those who don't won't'. (HH Post Family Session 2)

13.4 Right to Connect



Within the workshops, we explored the right to connect. The moderators shared the following information:

'In addition to population growth all new houses and developments have a right to be connected to the sewer network for foul waste only – this is not the case for surface water.'

There was little awareness of this aspect, and some customers were surprised. However most thought It was a good idea. It was believed that it was right that water companies be consulted about the impact of a housing development on the local wastewater system and have a say as to where the connection happens. Many customers felt that developers should take responsibility and ownership of solving excess run off given that they were creating the problem. For example, developers should put sewage infrastructure in place, such as a mini treatment plant, not just connect up to the nearest sewage network, or excess run off could be placed in a communal storage tank and a separate pressurised system could be installed to flush toilets.

It was felt that there was a need for Government legislation to force home builders to look at ways of dispensing with surface water. New builds including industrial buildings needed to deal with the water and create soakaways and alternative drainage systems to the sewer network. Some customers were aware that new builds used ponds and land drains around properties.

However, some customers became confused and struggled to understand how not connecting to main drains would work, and therefore it only seemed suitable for those who were 'off grid'. They felt that in a housing development it could cause localised flooding. Some customers believed developers would not want it because it would cost more money per unit.

Many customers and citizens believed that one solution was that the excess water in winter should be stored somewhere (storage tanks) and used in the summer, e.g. to flush toilets.

It was believed new technology would go some way to solving this issue in the future and thus could go some way to combating the problem. Retrospectively they would be expensive but going forward it would make sense to employ new systems.

'If I've built 100 houses I've increased wastewater so I should be held to account and made to pay.' (NHH Water Engaged Session 2)

'I've seen them putting 3 foot sewers in, it looks overkill, I've seen it in Bradford, but they are future proofing things now, on new builds'. (NHH Water Dependent Session 2)



The following chart shows the level of agreement with this concept captured in the final questionnaire post session two. It highlights that almost 7 in 10 customers (68%) agreed that the right to connect should be removed and YW should have some say in where developments connect allowing them to assess what impact the connection might have.





14. Sustainable Drainage Solutions (SuDS)

A video explaining SuDS was shown to customers in conjunction with the following introduction and visual example slide (script for video is in the appendix).

'Drainage solutions to account for increasing populations and climate change could look a little different. To minimise or even remove surface water from the network, Yorkshire Water aim to include more nature based solutions rather than more traditional carbon intensive solutions like storage tanks, laying larger sewers or expansion of sewage treatment works.

Nature based solutions give opportunities for added value benefits such as green spaces/recreational spaces that might enhance mental health wellbeing and offer an opportunity to increase biodiversity with different plants which attract different species.'



14.1 Response to SuDS

A minority of customers were aware of nature based solutions and generally, customers supported SuDS to help the environment, and to reduce costs in the long run.

One customer whose garden was continually flooding because they were in a water table, had dug channels and filled them with pea gravel **'the water collects in one big hole, and it is pumped out to a pond'**.

Another customer, who was involved in supplying tarmac, was aware of permeable tarmac but the perceived disadvantage was that roads have to be dug up first before the permeable layer can be put down to allow water to run through without washing the road away. They also noted that Councils are unwilling to pay for it currently because they are looking for the cheapest options.



Positives:

Whilst customers were supportive of natural solutions such as SuDS they thought they were only part of the solution. It was felt SuDS could work together with upgrading and improving the existing wastewater system.

One of the core reasons for the support of SuDS is that there were value benefits associated to them. For example, it created ponds which attracted wildlife, particularly birds, increasing biodiversity and it created places of recreation, somewhere to walk the dog.

Many believed that trees, particularly certain species such as willows, were able to soak up water. However, planting of trees / plant species to soak up water was not top of mind for many customers, and thus an education campaign was required.

Although SuDS were expensive to build, most customers felt Yorkshire Water should still build them and the majority would be prepared to pay a small increase for more natural based environmentally solutions as long as they worked and offered good value for money in the long term. The price customers were prepared to pay was between 1-15%. Those in a more positive frame of mind believed that investment now could lead to cost savings in the future if the wastewater system became more efficient. SuDS were likened to solar panals or electric were there was in initial steep investment but it paid off over time.

Many felt that if the response to SuDS is NIMBY ('not in my backyard') then nothing will change.

Negatives:

However, customers debated whether nature-based solutions were in fact better. They believed they could be more expensive and less effective, or they sceptically believed they could be an attractive concept to Yorkshire Water because they were cheaper than carbon intensive methods, but less effective.

In addition, customers believed that not all of the SuDS would work in an urban environment e.g.:

- Flats / more urbanised area.
- Those with small gardens did not want to plant trees.
- A minority of customers did not want a pond or stagnant water near where they lived. They were concerned about children drowning, mosquitos, odour etc.

Those in a more negative frame of mind suggested that the Government should fund large scale improvements to the sewage infrastructure rather than it falling on the pockets of the consumers.

Questions were asked whether permeable tarmac was up to carrying the weight of tankers, or whether it is as robust as current tarmac?

'If we are just knocking the problem down the road and it is expensive to put in SuDS then it's silly.' (HH Vulnerable Session 2)

'If you live in a village the natural things are easier. You can make a field into a water meadow. But if you live in the city, it's not practical'. (HH Post Family Session 2)



'I can see that SuDS is all about holding onto water, so it does not go straight into the drain.' (NHH Water Dependent Session 2)

'A pond would be a feature to walk around, you could go walking with the kids, nice for de-stressing people. You are doing two things at the same time, recreational and the added benefit of biodiversity.' (NHH Water Dependent Session 2)

'I like the permeable parking. I live on a housing estate, and I went for a walk and found a cul-de-sac and it had a massive tarmac area, what a waste, if it was permeable it would be so much better.' (NHH Water Dependent Session 2)

14.2 Carbon Intensive Solutions vs SuDS

Most customers believed that the solution lay in a combination of building bigger sewers alongside SuDS.

Generally, SuDS were not thought to be a big enough solution to the problem. Rather they were seen as part of the solution. Many were not convinced SuDS alone would solve all the issues of flooding and excessive surface run off. Equally, customers also question how cost effective SuDS are in comparison to more traditional solutions, and that perhaps this information should drive the split between what type of solutions are used in the future.

However customers did feel that it was right that Yorkshire Water were looking at using less carbon intensive methods.

14.3 Response to Community SuDS

Generally customers were positive towards the idea of community SuDS. Many felt that water was good for wildlife and some envisaged attractive planting to include willows and reedbeds that naturally clean the pond.

However, it was felt that not many residents would want to get involved with the maintenance of them. Equally, these type of community solutions would be dependent upon where you lived and the demographic of the community.

Typically, voluntary maintenance was expected to fall to the community minded individuals in each community such as the older retired customers and possibly voluntary groups like the Brownies. Most customers admitted they lacked time to get involved in cutting grass, litter picking or weeding.

It was deemed that in a village setting / community, this type of solution could be an attractive initiative i.e. to plant trees and create a pond that the community could enjoy.

Vulnerable and Low-Income customers living in more urban areas were concerned about vandalism and felt that ponds could soon become dangerous eyesores with abandoned trolleys and attracting anti-social behaviour.

14.4 Response to Rain Water Storage Near Residential Areas



Response to this concept was polarised. Some felt that rainwater storage would enhance the neighbourhood, offering a place of solace for a walk and attracting wildlife. However, others believed that they could potentially be dangerous for children because of drowning and attract unwanted insects e.g. mosquitos.

Rainwater stored in verges next to the road was less of an issue. Again it was felt that reeds and aquatic plants would look attractive.

14.5 SuDS Reducing Parking Spaces and Road Width

With reference to reducing car parking spaces, this was more contentious, especially in new housing developments where there were few spare parking spaces. Many argued that more car parking spaces are required not less, given that the average household has three cars.

As far as road widths were concerned, many customers were in support of this if it would prevent roads flooding in the future. Also mentioned were ditches or verges that take run off could be planted with marshy plants which would attract wildlife. A minority were concerned about mosquitos and midges and thought water filled ditches were a health and safety issue.

Equally a minority felt that they had already lost part of the road to cyclists.

'Cyclists have taken over half the road. I don't want to lose the other half!' (HH Post Family Session 2)

Taking everything into consideration, it was strongly felt that the Government should legislate for SuDS in new developments to help with run off and sewage. In other words, in order for new developments to gain planning permission they should have SuDS in place.

The following chart highlights customer agreement with SuDS captured in the post session questionnaire.





Generally, the chart above highlights that the vast majority of customers in the research were in support of SuDS based initiatives, although the caveat would be the need for these to be in conjunction with more traditional solutions.



15. Partnership Working

There was widespread support to partnership working. There was strong interest in Yorkshire Water having conversations with developers at the start of development projects so they could suggest ways of dealing with surface run off that did not entail connecting to the foul drainage system.

Beyond developers, other partnership organisations that were most top of mind were the Local Authority or the Council, The Environment Agency, and the Rivers Trust. There was a lack of clear understanding of what the remit or responsibilities of each agency was in relation to rivers. Some suggested that there should be a new trust for SuDS.

It was felt to be essential that agencies work together and that Yorkshire Water for example, has a conversation with Local Authorities and Councils about the need for permeable road surfaces.

On a more granular level, an owner of a golf course would welcome partnership working to help prevent flooding. The aim of the golf club was to become more carbon neutral and to use the excess water to build more lakes, which can become an attractive feature, i.e. a golfer's hazard, and could become part of the water storage system.

Working with schools and educating school children was also thought to be important.

The following chart, capturing customer agreement to partnership working, highlights the overwhelming support for it.





16. Maintenance Versus Improvement

Having been through the education and discussion points across the two workshop sessions, customers were asked what they believed YW should focus on for the future...maintaining current performance and meeting targets or, improving and tackling some of the areas discussed such as population growth and climate change with additional spend.

Ultimately there was desire for a combined approach. Customers wanted Yorkshire Water to improve on the old **and** utilise new technology to solve the problems of excessive wastewater. If that meant that the bills would have to go up to fund this, most customers reluctantly accepted that this needed to happen.

In terms of the ratio of maintenance vs improvement, for many it was 50:50. However, some argued that it should be 70% for maintenance to meet targets and 30% for improvement, otherwise there is a risk that the current targets will not be met.

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Given the majority of customers were surprised that Yorkshire Water were not meeting their current targets, thus, most felt that Yorkshire Water needed to get 'their house in order first' and meet the targets outlined before tackling and improving the system. If Yorkshire Water were not meeting the targets currently, they could not go beyond them.

However, upon discussion of the impact of climate change and population growth on wastewater systems there seemed to be an urgent need to improve and upgrade the current system and enhance it via SuDS. As previously mentioned, customers did not believe that SuDS alone would solve the problem.

Another solution that was discussed was improving the river flow by widening the rivers and raising the riverbanks in urban areas to prevent flooding. Some thought the solution was to build large storage tanks and reservoirs. Many wanted the water companies to save and use the excess water at times of drought, rather than seeing it as a hindrance.

For many, the ultimate focus for Yorkshire Water should be to hit the target for internal sewer flooding. Customers wanted to understand why Yorkshire Water were not hitting that target. Was it climate change or was it a failure of the Victorian infrastructure, i.e. that Yorkshire Water had not invested sufficiently?

16.1 Financial Implications

Surprisingly, given the current economic environment (rising cost of living and bills) many customers were willing to pay a small increase to tackle the problems facing Yorkshire Water as long as they can demonstrate improvements and hit the targets that they are measured against.

There was an understanding that investment needed to take place to avoid flooding in the future and there was a need for transparency as to where the money is being spent. It was pointed out that gas and electric bills had recently increased significantly but customers were not getting anything more for their money, however, if the water bills increase it will enable Yorkshire Water to create a sustainable and natural solution for the future. In other words, customers will see a tangible positive



result. However, there may be more resistance if the improvements were not in the customers' area.

Some customers felt that a meter for wastewater would reduce the amount of water wasted.

It was felt that for new builds developers should commit to being greener and pay for SuDS as part of the planning permission. Ultimately it was felt this cost would be passed onto potential buyers anyway.



17. Best Value Plan

17.1 Customer Best Value Plans (BVP)

Initially, customers were asked to individually construct and create their own Best Value Plan within the workshops.

This approach enabled unbiased views to be uncovered. These plans were again collected from respondents via the post session two questionnaire see appendix.

The following measures were displayed to customers within the workshops as a reminder of what to consider when developing their BVPs:-

Metrics: avoiding	
Internal flooding of customer properties due to overloadir	Solutions Options
Internal flooding of infrastructure property (schools/hospitals)due to overloading	Development of sustainable drainage systems
Internal flooding of a business/commercial property due	Development of traditional drainage systems
tooverloading	Combination of sustainable and traditional systems
Internal flooding of any property due to blockages or	
sewerdefect	Partnerships
External Flooding of a customers garden due to overloading	
External Flooding of infrastructure property (main roads) due to overloading	
External flooding of a business/commercial property due to overloading	
External Flooding of any properties due to blockages or sewer defect	
Pollution of a river with sewage due to a blockage or sewerdefect	
A deterioration in river water quality due to untreated sewage spillsfrom storm overflows	
A deterioration in river water quality due to reduced quality of treated wastewatetreatment works discharges to the river or sea	

Customers were asked to consider what had been discussed and shared with them over the two workshops such as all the metrics and measures, population growth, climate change, SuDS and partnership working as above. The following information was also conveyed to them prior to creation of BVPs:

'We need to understand what the DWMP plan must include in order for it to best meet your needs and priorities.

For example, your biggest priorities could be:

- bills are kept low, OR
- minimising internal domestic property sewer flooding, OR
- Reducing spills from storm overflows, OR
- Developing sustainable drainage systems, OR
- Customer education around sewer blockages
- Or, you might have a preference for hitting statutory measures OR that YW go further and beyond these measures. For example, do you simply want to maintain services or pay more for them to exceed statutory measures, or do you want to pay more for your priorities to be met sooner?'



A BVP template was shown to customers in order for them to grasp what was needed.

	Showcard 7
Best Value Plan:	
Your Target:	
Price of your bills to achieve your plan:	
	10

17.2 Best Value Plan Emergent Themes.

Priorities

From the plans created by individuals, the following visual highlights a summary of results from an overall perspective.

Key elements for BVP to include	How to pay for BVP	BVP Timings
Reduce internal sewer flooding Maintain and upgrade current drainage/sewage infrastructure Nature-based SUDS	The majority of customers are willing to increase their bills - 16% w ant no increase - 11% only if increase is affordable	Timescales should be shorter with attainable short-term targets for certain elements.
Value Plan Work in partnership with relevant	£1 - £5 a month	ightarrow Shorter time frames for targets
External sewer flooding	(£3.60pm average with £5pm the most popular choice) 1% - 10% per	→ Steady improvement over longer-term
Reduce environmental pollution by improving storm overflows and wastewater flow & compliance	(3% average with 10% the most popular choice)	→ Transparency and greater communication of where money is invested
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The key elements to include in the YW BVP, from a customer perspective, were

- Reduce internal sewer flooding, especially in high risk areas such as Hull. Some customers expressed this as maintaining the current sewer system in order to meet the targets. Others described the priority as improving the current sewer system due to collapses, incapacity, and blockages.
- Maintaining and upgrading the wastewater system so that it is fit for purpose and can cope with potential challenges ahead. Many felt that the sewage system required immediate updating given the incapacity, collapses and blockages, especially in the light of population increase and climate change.

Customers wanted Yorkshire Water to build reservoirs or storage facilities so that excess water can be reused.

- There was desire to include SuDS as part of the solution to maintenance and upgrading of the system, although as we have seen, customers rationalised that this is only part of the solution and more carbon based solutions are likely to be needed as well.
- **Customer education and incentives** were also deemed important to start changing the customer mindset of what is disposed of down the system but also around taking some accountability for rainwater runoff etc. An education programme that went wider than 'what not to put down the toilet' was felt to be needed if customers were to take more personal responsibility for surface drainage in their homes and businesses. If there was an incentive, customers were more likely to change their mindset and their behaviour. Education was also needed around SuDS to get community buy in and for customers to see and potentially reap the benefits of recreational spaces that attract wildlife.
- Partnership working is desired where possible. As seen this was especially seen as key for new housing developments (developers) and river flooding (EA). There is still appears to be little awareness of the EA's responsibilities around fluvial flooding.
- **Reducing external sewer flooding** was also important.
- **Reducing environmental pollution** by improving storm overflows and wastewater flow and compliance. From discussions, it was felt that improving the system as a whole, and taking on board the different solution options, that this latter point would to some extent, naturally follow. Customers wanted Yorkshire Water to achieve this in the short term i.e. 1-5 years.

The following slides show the differences between household and non-household customer BVP plans. In essence, both showed similar priorities.

Household BVPs:





Non Household BVPs:





Targets:

Short term 1-5 years – customers want Yorkshire Water to meet current standard initially:-

- Meet the targets i.e. reach the targets, particularly internal and external sewer flooding, especially in high risk areas and to demonstrate improvements.
- To reduce the amount of pollution incidents to rivers by 30%.
- To maintain the sewage network.
- Reduce leaks by 2% per year more leaks equated to more pressure on wastewater system.
- Reduce blockages and to educate customers about preventing blockages
- Start to change customers', both household and business, mindsets, and behaviour towards taking personal responsibility for surface run off.
- To encourage customers to install smart water meters again, reducing usage equated to less pressure on the system.
- Work with other agencies.

Medium term 5-10 years – customers wanted Yorkshire Water to start improving and adapting to future challenges:-

- Improve the sewage network using a combination of SuDS <u>and</u> tried and tested /carbon intensive methods i.e. building bigger tanks, and sewers.
- Work with developers to use new ways to deal with excess run off.
- Use Government legislation with developers so they use SuDS.
- Continue to change customers', both household and business, mindsets, and behaviour towards taking personal responsibility for surface run off.
- Reduce the amount of river pollution incidents.

Longer term 10-25 years – customers wanted Yorkshire Water to exceed standards and continue to adapt to future challenges:-

- Utilise excess water by storing it for future use.
- Have more stringent standards for treated sewage effluent.
- Have fewer or no river pollution incidents so river quality is improved.
- Exceed the standards.
- Continue education to change customers', both household and business, mindsets, and behaviour towards taking personal responsibility for surface run off.

Willingness to Pay

Most customers expressed a desire for Yorkshire Water to improve with additional spend.

However, customers and citizens were split on whether they were willing to pay more.

Around 1 in 5 (16%) stated they wouldn't pay / couldn't afford to pay any more and a further 10% couched any increases within affordability i.e. only if it was affordable. There was a background of a huge rise in the cost of living, with energy bills skyrocketing, and inflation rising by the highest in 30 years. Businesses were coming out of a pandemic into a fuel crisis. Some struggled to pay their fuel bills currently and therefore could not afford an increase.



Amongst those who did not want to pay more, there were a minority who wanted Yorkshire Water to demonstrate they were efficient and could hit the targets. Once the targets had been hit then they felt Yorkshire Water could increase the bills to improve and tackle future challenges with SuDS and other carbon intensive solutions.

Equally, those non-household customers more conscious of shareholder profits believed that customers should not have to pay for all improvements and that customer investment should be matched / supplemented from shareholder profits, which in their eyes could be communicated as encouragement / buy-in for any increased bills.

Others saw a pressing need to maintain and improve the sewage system given that Yorkshire Water were not hitting their current targets and further down the track they could see the joint concerns of population increases and climate change putting extra pressure on the system.

Thus, most customers were willing to pay anything between 1% to 10% per annum, with the majority willing to pay between 1% - 3% per annum more. For some that equated to \pounds 1-5 a month.

Obviously business customers who were heavy users of water expected to pay more but the average customer wanted to keep the increase below £5 a month. This was because the price of living was rising quickly at the time of the research, with energy bills doubling in the past few months. A percentage rise of the bill was thought to be fairer because it related to how much water customers used and their wastewater rather than a blanket increase of £X amount.

Caveat: many customers incorrectly tallied their % increases with monetary values within the groups.

'Yorkshire Water shouldn't charge us anymore.' (NHH Water Engaged Session 2)

'In the short term they need to fix sewer problems to houses, number one. As far as moving on they should look to use the sewer system in new ways, rain water at the side of the road, at the moment not much gets done and it goes in the main sewer. They need to get rid of it in a more environmentally friendly way.' (HH Vulnerable Session 2)

'Education can start right away. Send out information packs and seed packets targeted at children to start a water garden.' (HH Family Session 2)

'They need to rectify the problems and focus on getting it all done. Flooding in people's houses they have a lot of problems of that in Hull. They need to reduce incidents of pollution.' (HH Vulnerable Session 2)

'My plan has internal and external flooding, sustainable drainage, education, but reducing flooding immediately. The sustainable drainage will take 5-10 years.' (HH Pre Family Session 2)

'The main thing is new and traditional methods to manage all the rainfall. In the long term would be building more reservoirs, better storage. They need to do a mixture of reservoirs and SuDS. Price wise they should charge for what you waste.' (NHH Water Engaged Session 2)



'They need to keep maintaining the system and update it where possible. They need to use natural solutions where possible because water goes where it wants. Using man made solutions as a backup. With pricing look at the size of the property.' (NHH Water Engaged Session 2)

'I want to see tangible benefits if I'm paying more. I want to see them supporting businesses with solutions over how to manage wastewater.' (NHH Water Engaged Session 2)

'If the Government stepped in to reinvest we would ultimately be paying through our tax going up. They will find the money somewhere. We are the ones that pay for everything.' (NHH Water Engaged Session 2)



18. Customer Understanding of the Research

As a final exercise (within the post session 2 follow up questionnaire), customers were asked about their level of understanding of the research they had been involved in.



Given the complicated nature of the topic in question, and requirement of customers to be educated in a fairly short space of time, the chart above encouragingly highlights that the majority of customers that participated did have a good level of understanding of what was being asked of them through the process that was used. Using a 10 point scale, all indicated a score of 5 and above, with 90% overall scoring 7-10 on the scale.


19. Conclusions and Recommendations

19.1 Views on Water:

Consistent with other research conducted within the water industry, generally, customers and citizens took water for granted. They rarely gave any thought about the water that came out of their taps and even less about wastewater. When asked to think about wastewater, the water leaving their kitchen sinks and toilets, showers and baths was far more top of mind than rainwater runoff.

19.2 Responsibilities:

Most customers and citizens were aware of who was responsible for the pipes and drains on their property. Mail / communication from Yorkshire Water relating to Drain Cover Insurance was frequently mentioned and it was believed to be a good way of communicating to customers that they were responsible.

19.3 Awareness of Wastewater Services:

Customers and citizens were surprised by how complex the system was. The water system stimulus shown gave customers more of an understanding of wastewater and how it was dealt with.

Customers and citizens were surprised that treated effluent was returned to the rivers. The majority felt comfortable that it reached the required standard, but some were concerned particularly in summer months when river levels were lower which meant that the effluent was less diluted.

Whilst customers and citizens were concerned about the environmental impact, the majority trusted the regulators to keep an eye on standards to ensure they were a safe level. However, response to storm overflows was different and many customers were 'appalled' by untreated sewage going into the river systems and the sea causing harm to the environment. Initially, customers felt that reducing pollution incidents from storm overflows should be a priority for Yorkshire Water.

19.4 Broad Perceptions of Yorkshire Water:

Customers were generally satisfied with the level of service they received from Yorkshire Water and most felt they were getting good value for money. If they had any issues and had had need to call Yorkshire Water, on the whole they received a high level of service. A minority had a more negative experience, and this was usually relating to who was responsible for a blocked drain.

Typically, Yorkshire Water was thought to be 'under the radar' as far as the media or press were concerned although a minority were aware that Yorkshire Water had been fined for polluting rivers and that Ofwat had allowed them to increase the amount of Storm Overflows. Some were aware that Yorkshire Water had been voted the best water in England.

19.5 Agency Responsibilities:



Many citizens and customers were aware that the council were responsible for road gullies, and many were exasperated that they waited until the gullies were blocked with leaves and caused flooding rather than were proactive about keeping gullies free from debris. A minority were aware that the EA were responsible for river flooding, but many thought it was Yorkshire Water's responsibility.

19.6 Consequences of not Maintaining the Drainage System:

All customers and citizens knew the potential consequences of not maintaining the drainage system was flooding. Some had experienced flooding of their business premises firsthand. There was also widespread knowledge about internal and external sewer flooding due to heavy rainfall that inundates the sewage system.

19.7 Awareness of Blockages:

Customers and citizens were also aware that people caused blockages by putting wet wipes, nappies, sanitary towels, and grease/fat down the toilets/drains. However, most were surprised by the figures quoted of 30,000 blockages a year. There was a need for an education campaign as a matter of urgency.

19.8 Internal Sewer Flooding:

For the majority, internal sewer flooding was unacceptable, and customers and citizens found it impossible to say what kind of setting should take priority, i.e. care home, retailer or hospital or a vulnerable persons' home. Frequency of flooding was important, so if a setting was flooding regularly then that was seen to be a priority.

Internal sewer flooding was seen as a serious health issue, potentially causing disease as well as huge emotional and financial distress and disruption.

19.9 External Sewer Flooding:

External sewer flooding was seen as less serious than internal sewer flooding. Flooding in the garden, for example, tended to solve itself without any intervention, although if it was sewage there was a health risk and a bad odour.

Flooding in streets could cause disruption to journeys to work, school, or hospital. Some areas in Yorkshire had been completely cut off by flooding in the past. Equally, external sewer flooding could be particularly unpleasant with raw lumps of sewage and sanitary towels floating in the street.

19.10 Response to Storm Overflow River Pollution Incidents:

Whilst customers and citizens were often shocked and appalled by storm overflows, in terms of priorities, internal sewer flooding was seen as more of a priority than storm overflow spills. Once the issues were explained they felt that storm overflows were a necessary 'Plan B' or a contingency or back up plan to prevent sewage bubbling up the toilet and into their homes.

In the sample, most were not concerned about river water health and to most of them, it did not affect them.



Within most workshops there was a vociferous minority who were horrified and appalled by water companies releasing untreated sewage into the rivers. Some of these customers liked to swim in the river or go the sea. Many had seen the impact of environmental pollution on their beaches, with wet wipe debris or 'reefs' and dead fish lying on the beach. Some spoke of a bad odour particularly in the summer months. This led customers to believe that Yorkshire Water need to upgrade the wastewater system as a matter of urgency. Their view was that the wastewater system needed real investment to make it fit for the 21st Century and beyond.

19.11 Customer Priorities and Response to DWMP Measures and Targets:

Many customers ranked internal sewer flooding first because they felt internal flooding would have a large negative effect on a large number of households and businesses. Customers were also concerned about health issues with internal sewer flooding and the financial implications.

However, many also believed that if the resilience of the wastewater system and condition of the sewers were improved, internal and external sewer flooding would not happen. Tackling these issues were seen as preventative measures, whereas tackling internal and external sewer flooding were seen as reactionary. Equally, customers argued that if the sewers can better deal with rainwater, then storm overflows would not be required.

External sewer flooding was also seen as a major issue amongst some because if their area was flooded, they would be unable to go to school, work, or a hospital if they needed to. Equally, the financial implication of this could also be huge, and thus they saw it as a priority.

For a minority, storm overflows were the most pressing priority because of the high levels of concern of what is being pumped into rivers and the sea.

Measure	Ranking
Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall	1.
Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall	2.
Improving resilience of the wastewater and drainage system to extreme events	3.
Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network	4.
Monitoring and improving wastewater flow and quality compliance to ensure treated water discharged to river / sea meet allowed standards	5.
Monitoring and improving storm overflows on how they are operating and the effect this may have on the river water / sea water they are entering	6.

The table below shows the ranking of measures:

In terms of metrics, the following table highlights customer priorities, with internal sewer flooding of any description being top of what customers wish to avoid.

Ranking

DWMP Metrics



1.	Internal flooding of customer properties due to overloading from heavy rainfall
2.	Internal flooding of any property due to blockages or sewer defect
3.	Internal flooding of infrastructure property (e.g. schools/hospitals) due to overloading from heavy rainfall
4.	Internal flooding of a business / commercial property due to overloading from heavy rainfall
5.	Pollution of a river with sewage due to a blockage or sewer defect
6.	External flooding of any properties due to blockages or sewer defect
7.	External flooding of infrastructure property (main roads) due to overloading from heavy rainfall
8.	A deterioration in river water quality due to sewage spills from storm overflows
9.	A deterioration in river water quality due to reduced quality of wastewater treatment works discharges to the river or sea
10.	External flooding of a business / commercial property due to overloading from heavy rainfall
11.	External flooding of a customer's garden due to overloading from heavy rainfall

19.12 Maintenance vs Improvement

Customers and citizens wanted Yorkshire Water to hit their current targets as a priority. However, they were also mindful that more investment was needed given population increases and climate change. Thus, they felt in the short-term Yorkshire Water needed to focus on meeting the current targets since they were not hitting 3/7 of them currently.

As to whether Yorkshire Water should maintain or improve, the consensus was that Yorkshire Water needed to improve because currently the system was not fit for purpose. The measures contained words such as 'incapacity', 'blockages' and 'collapses' which suggested a system under strain. It was felt that a combination of SuDS and traditional carbon intensive solutions were utilised to solve the problems.

19.13 BVPs

The key requirements (as summarised overleaf) from a customer perspective for BVPs were: reducing internal sewer flooding; maintaining and upgrading the current wastewater system infrastructure; starting to use SuDS where appropriate; customer education and incentives; working in partnership with key organisations such as the EA and developers; reducing external sewer flooding and reducing environmental pollution by improving / reducing storm overflow outcomes and wastewater flow and compliance.

Internal flooding was the core priority as it could have huge personal, emotional and financial repercussions.





In terms of timeframes, the priorities for the **short term** were about hitting targets and maintaining the network.

- Meet the targets i.e. particularly internal and external sewer flooding, especially in high risk areas and to demonstrate improvements
- Reduce the amount of pollution incidents to rivers.
- Maintain the sewage network.
- Reduce leaks per year leaks have a knock-on impact on wastewater in the system.
- Reduce blockages and educate customers about preventing blockages
- Start to change customers', both household and business, mindsets, and behaviour towards taking personal responsibility for surface run off.
- Encourage customers to install water meters again, reduced usage would mean less pressure on the wastewater system.
- Work with other agencies.

The priorities for the **mid-term** were about improvement and adapting to future challenges:-

- Improve the sewage network using a combination of SuDS <u>and</u> tried and tested /carbon intensive methods i.e. building bigger tanks, and sewers.
- Work with developers to use new ways to deal with excess run off.
- Use Government legislation with developers so they use SuDS.
- Continuing to change customers' mindsets, both household and business, and behaviour towards taking personal responsibility for surface run off.
- Reduce the amount of river pollution incidents.

For the **Longer term** – customers and citizens wanted Yorkshire Water to exceed standards and continue to adapt to future challenges:-



- Improve the sewage network using a combination of SuDS <u>and</u> tried and tested /carbon intensive methods i.e. building reservoirs, including underground reservoirs, bigger tanks and sewers.
- Utilise excess water by storing it for future use.
- Have more stringent standards for treated sewage effluent.
- Have fewer or no river pollution incidents so river quality is improved.
- Exceed the standards.
- Continue to change customers', both household and business, mindsets and behaviour towards taking personal responsibility for surface run off.

19.14 Willingness to pay:

Despite the rise in cost of living facing customers, most appeared willing to pay anything between 1% to 10% per annum (most 1-3%); $\pounds 1-\pounds 5$ per month (household customers 1%-10% p.a. or $\pounds 1-\pounds 5$ pm; non household customers 5%-10% pa or $\pounds 1-\pounds 5$ pm) to help towards improvements as outlined.

Around 1 in 6 (16%) stated they wouldn't pay / couldn't afford to pay any more and a further 10% couched any increases within affordability i.e. only if it was affordable. There was a background of a huge rise in the cost of living, with energy bills skyrocketing, and inflation rising by the highest in 30 years. Businesses were coming out of a pandemic into a fuel crisis. Some struggled to pay their fuel bills currently and therefore could not afford an increase.

Amongst those who did not want to pay more, there were a minority who wanted Yorkshire Water to demonstrate they were efficient and could hit the targets. Once the targets had been hit then they felt Yorkshire Water could increase the bills to improve and tackle future challenges with SuDS and other carbon intensive solutions.

Equally, those non-household customers more conscious of shareholder profits believed that customers should not have to pay for all improvements and that customer investment should be matched / supplemented from shareholder profits, which in their eyes could be communicated as encouragement / buy-in for any increased bills.

For businesses, a percentage rise of the bill was thought to be fairer because it related to how much water customers used and their wastewater rather than a blanket increase of $\pounds X$ amount.

Thus, it may be prudent to say that any short-term priorities should be met within the cost realms of current bills.

There was a hope that any improved efficiency could lead to cost savings in the future.

We would advocate further research with a more robust sample to test BVPs and priorities further, alongside willingness to pay. In addition, we would recommend that in testing any willingness to pay, that an actual monetary figure is used rather than % increase given customers often struggle to correctly tally a % with a monetary value in their heads.









YW DWMP Pre-Workshop Homework Task Questionnaire

We kindly ask that you complete the following simple tasks we have set over the next few days. The tasks serve as a gentle warm-up to the workshop you will be participating in.

Q1. Do you give much thought to the water that comes out of your tap or the wastewater that is carried away from your sinks, showers, baths, drains and toilets? Which do you think is more important or that you give more thought to (water services or wastewater services) and why? Please give as much detail as you can and explain your answer. Please either type your answer or film and upload a short video of you giving your view.

Q2. What do you think happens to the wastewater that leaves your property (i.e. water that goes down the sink / shower / drain / toilet)?

Q3. What about rainwater/ground surface water? What do you think happens to this?

Q4) Who do you think is responsible for the following issues?

Problems with rainwater/surface water on your property Blocked pipes/drains on your property Highway gullies / drains found on the side of roads River flooding Public sewers

Q5. What do you think will have an impact upon the wastewater and drainage system in the future? Please either type your answer or film and upload a short video of you giving your view. Please give as much detail as possible.



YW DWMP Topic Guide for Session One

Section 1 - Introduction

<5 mins

- Introduce Turquoise.
- Explain that being as open and honest as possible is essential.
- Explain MRS code of conduct and rights to anonymity.
- Explain that the research is being conducted in the legitimate interests of our client. By agreeing to take part in the research they are consenting to the processing of the data collected; please note that the data will be used to inform future water company plans. All research will be provided to water companies in a summary format so no comments will be attributed to any of you personally. For further information on how we handle our data and your rights as a data subject, please visit the privacy policy page on our website thinkturquoise.com
- Explain audio/video recording and about Clients viewing the Session (first names – explain they will switch off their cameras shortly – hear to answer any technical questions we can't)
- Please be open and honest, there are no right or wrong answers we are entirely interested in your views.
- Your views will help us shape the future of water in your region.
- Respondent to introduce themselves briefly name, age, where they're from, etc.

Section 2 – Scene Setting

'We want to know your thoughts on your water provider and some of the aspects of services it provides to customers such as yourselves. There may be some terms you have not heard of, so if you are unsure please ask.'

- What are your broad perceptions and views of YW
 - o positives/negatives/likes/dislikes
- What are YW good at, what are they not so good at?
 - How did you know this?
- Have you seen/read/heard anything about YW in the media/press recently? What? How did that impact your perceptions?
- What services do you believe YW provide? What are YW responsible for?
 - Prompt for sewage services and environment etc.

Section 3 – Background to respondents current understanding 15 mins of wastewater services

Overview of services provided by YW.

Show <u>Showcard 1</u> – The water system (explains whole process, once this is covered explain, that it is the latter part that we want to focus on)

• What are your views and understanding of what's involved?



5 mins

- How much were you aware of, what, if anything, is new that you have learned?
- When you think about wastewater what do you think about?
 - The wastewater from your house only?
 - Rainwater run off?
- How much thought do you give to this area, if at all?
 - How does that fit with what you think about in relation to water i.e. if the clean water that comes through your taps more important to you than what is carried away? – why?
 - Who do you think is responsible for the pipes and drains on customers properties? What do you think YW is responsible for.?
 - If there was a blockage in a drainage pipe or sewer on your property, what would you do first? Who would you call? Who do you think is responsible for fixing it?

SHOWCARD 2

Moderator read out:

As a homeowner, you're responsible for:

- 1. all the pipes inside the property. These include toilets, sink drains and any outdoor guttering or pipes attached to the property.
- 2. the section of pipe that goes into the ground, either directly or into a gully close to the property, until it reaches a shared drainage pipe or public sewer.

Yorkshire Water, are responsible for:

- drains shared between more than one property
- drains outside of the property boundary
- public sewers.

SHOWCARD 3:

Other agencies are responsible for – highway drains = highways/local councils, groundwater = env health/customer, EA = rivers / fluvial flooding (A fluvial, or river flood, occurs when the water level in a river, lake or stream rises and overflows onto the surrounding banks, shores and neighbouring land)

- Anything surprising here? Were you aware of this before today?
- Who do you feel plays the biggest role in managing drainage in Yorkshire?

Section 4 – Background to respondents current understanding of WW systems 15 mins



- What do you think happens to the wastewater or sewage that goes down your drains or toilet goes?
 - Does anyone know? (probe awareness and understanding of storm overflow pipes / treatment works)
- What about rainwater? Where does this go?
- How important do you think the drainage and wastewater system is?
 Why/why not?
- What do you think are the potential consequences of not maintaining the drainage system adequately?
- Probe awareness, knowledge and experience of.....
 - Sewer flooding (probe internal and external (hydraulic) flooding)?
 - Pollution
 - o Odour
 - Blocked drains/toilets
 - Other?
- How do you think these issues might arise?
- What about awareness and knowledge / experience of.....
 - blockages, heavy rainfall, YW failures.
 - What are their thoughts/perception of YW in these instances?
- If not mentioned, explore customer misuse of sewerage system

• How much do you think people are at fault for the issues mentioned mainly blockages, sewer flooding and pollution as a result?

People account for almost 30,000 blockages a year, with 40% alone caused by wipes and things they shouldn't be flushing down the loo or putting down drains.

- What are your thoughts on this statistic?
- Were you aware of this before today?
- Unfortunately, these blockages can lead to pollution of becks, streams, rivers and the sea. Probe for customers thoughts on this
 - What should YW do about this?
- Back to failures again, so, what about the impacts of these failures on you as customers? – what are these, how do you feel about them, how important are they to you and why?
- What about the impact of these failures **on the environment**? What do you think these are, how do you feel about them, how important are they to you and why?
- What about the future what future impacts do you think might affect the wastewater / drainage system and why?



Section 5 – Flooding (internal and external)

20 mins

- What do you think sewer flooding is?
- How do you think sewer flooding impacts on homes and businesses?
- How do you think it impacts on the environment?
 - Have you or anyone you know been directly affected by sewer flooding? If yes, what was the impact?

Video 2 explaining hydraulic flooding (internal and external flooding)?

Explain the focus is on hydraulic flooding linked to too much rainfall for the pipe (rather than blockages due to wipes) as this is the main focus of the DWMP

The pipes can be as much as 50 years old and the changes in Yorkshire over time with new housing developments, extensions and patios, and climate change now mean they need to take more flow and can be overloaded.

- Probe thoughts and understanding
- Probe what factors are important and what are not in deciding which issues to deal with?
- What is acceptable and what is not e.g. if it affects domestic property, business, critical infrastructure such as hospital? (use roads, schools)

Internal flooding

Internal sewer flooding is typically distinguished by whether or not it enters properties.

SHOWCARD 4a

- Thinking now about flooding that is severe enough to enter homes and other buildings, how serious do you consider this to be?
- What can be the impacts? Prompt: how long properties can be unusable, health and safety, damage, loss of business, etc.

SHOWCARD 4b

 Looking at the different scenarios – which are the most unacceptable and why? – what factors dictate how you would prioritise their level of urgent attention and why?

External flooding

SHOWCARD 5a

300@

- Thinking about flooding of external areas only such as in the street or gardens. How serious do you consider this to be?
- What do you think are the impacts of such flooding? Prompt access, health and safety, damage, congestion, clean up.

SHOWCARD 5b

- What factors are important and what are not in deciding which issues to deal with? What is acceptable and what is not?
 - What about how often the flooding occurs how does this affect acceptability i.e. occasional vs every year or more often?
 - Do you view all flooding of internal / external areas the same or are some types worse than other and why?
 - Which is most important to tackle internal or external flooding and why?

Section 6 – Treated Effluent

10 mins

• What happens to wastewater from your home/business when it reaches the Sewage Treatment Works

Explain that wastewater treatment works treat the wastewater to a standard that is acceptable to return to the river or the sea, wastewater is constantly being returned to the river or sea from all treatment sites, this is standard across the country. The levels wastewater has to be treated to are set by the Environment Agency. The treatment process is mainly biological and not a chemical process like clean water treatment.

The treated water which goes back in to the river is known as 'effluent'

- What do you think about the wastewater treatment process?
 - How do you feel about wastewater treatment works discharging treated effluent continually into rivers and the sea?
- Probe understanding / acceptability / good or bad for the environment?

Are there any alternatives? What else could YW do with treated effluent instead of putting it back in to the river or the sea?
 Section 7 – Storm Overflows
 10 mins

- Have you heard of storm overflows?
- What do you know about them?
- Are they good/bad? Why?

Stimulus / video 3 explaining about storm overflow pipes



Explain the difference between treated effluent (planned, treated and tested water quality using mainly biology not chemicals) and storm overflows (untreated wastewater but screened to remove the majority of debris), both are permitted by the EA. Storm overflows are used during heavy rainstorms to protect properties from flooding and to prevent sewage from overflowing into streets and homes, overflows mostly operate during heavy rainfall so the waste is heavily diluted.

- What do you think of storm overflows now?
- What do you see the role of storm overflow?
- Probe: what do you believe would be the consequences if they weren't there
- How do you feel about storm overflows discharging untreated wastewater into rivers and the sea?

Probe for customers priorities here, what is more important - flood properties v overflows usage and impact river water quality

Read out: in 2020 YW storm overflows spilled on average 30 times each for 2.2% of the time. Wastewater treatment works discharge treated effluent continually to the environment but storm overflows operate linked to rainfall and high flows.

- What are your thoughts on this?
- How much are you concerned about river water health?
- Why is the health of the river water important ? (e.g. to swim in/ sports/ look at/ environment species etc)

• What are your expectations with regards to YW wastewater process and storm overflows? Are there any changes you would like to see? Why?

What do you think should be YW's priority here when the weather overwhelms the sewerage system? Protecting homes? Protecting the river water quality?

Section 8 – Drainage and Wastewater Management	20 mins
Planning Overview	

Show Video (1) stimulus (Introduction) –explanation of the DWMP and why we are asking customers to get involved

What are your views on the video you just watched and what has been said?
 Positive / negative and why?

So just to clarify, YW have organised these sessions to gather customers priorities for wastewater services now and in the future so they can create the DWMP with these included.

In order to deliver the DWMP, YW have centred their entire plan around two important objectives - Outline and show DWMP objectives...<u>SHOWCARD 6</u>

- What are your overall thoughts and views about the objectives
 - good /bad?
 - Are they acceptable / not acceptable?
 - See a show of hands for those that support it?
 - Why?



- What about those who don't?
 - Why not?
- Is there anything missing that your feel is important with regards to drainage and wastewater?
 - What? Why?
- What would be the key area(s) of importance for yourselves?
 - Why that/those?
 - For areas not considered, why not those?

Prioritisation of DWMP objectives exercise:

Ok, we are now going to do an exercise to look at each of the measures which sit under each objective. These measures outline the risk of something happening which may impact on achieving the overall objectives we've just taken you through

SHOWCARD 7

- How important are each of these measures to you?
 - Why that/those?
 - For areas not considered, why not those?
 - Which is most important and why?

We would like you to prioritise them.

You will see that each has been coded with a letter (A-F), and we want you to prioritise each from 1 to 6.

Number 1 is the measure you regard as most important, 2 is the measure you regard as the second most important, 3 is the third most important, and so on.

On a piece of paper please write the letters from A down to F, down the left-hand side. Then, write the number that you ranked that objective against the letter.

Moderator to collect information and complete a grid for each person in the group.

- Why have you chosen that order?
 - Probe on top 3.

Obtain an explanation of why people have prioritised as they have

• Explore the impact of internal vs. external sewer flooding, which risk would customers most like to reduce and why?

Section 9 – Summary and Introduction to Session 2

5 mins

Summarise customers views on objectives and priorities



- Explain what will be covered in Session 2. (climate change, partnerships, growth, solutions – nature based v concrete tanks, maintain service v improve, extent and improvements — ie where focus investment)
- Explain that they will receive a post-group questionnaire (Sent the day after each session).
 - Establish whether customers understood everything,
 - Whether they agree with the consensus reached in the groups.

Thank everyone for their input.



Stimulus Material – Session One







River flooding



The Environment Agency is responsible for river flooding and will be able to help you if you're at risk.

Highway gullies



Your local council is responsible for problems with highways gullies. These are the ones that are found by the side of the road. If you notice a blocked gully, give your local council a ring to let them know.

Groundwater



It's your responsibility to sort out groundwater problems on your property.





		SHOWCARD 4b
 Scenario 1 Household - family Sewer flooding in the downstairs living areas Occurred in winter following period of heavy rain Flooding lasted for several hours before the levels reduced, leaving carpets and furniture damaged House needed to be vacated for 2 months to be allowed to dry and be repaired Has experienced this before - around 5 years ago 	Scenario 4 • Business - office • Sewer flooding in the office • Occurred in winter as a result of a sewer blockage • Flooding lasted for 1 day before the levels reduced • Business closed for 3 months whilst office is allowed to dry and be repaired; some staff do not work or get paid during this period. • Experienced this before - around 10 years ago	
 Scenario 2 Care home Sewer flooding in the downstairs living areas Occurred in summer as a result of a sewer blockage Flooding lasted for 1 day before the levels reduced, leaving carpets and furniture damaged Home needed to be vacated for 3 months to be allowed to dry and be repaired Not experienced this before 	Scenario 5 Household - one person has a disability Sewer flooding in the garage and basement Occurred in winter following period of heavy rain Flooding lasted for 1-2 days before the levels reduced, leaving carpets and furniture damaged House does not need to be vacated whilst building is left to dry and damage repaired Occurs regularly - at least once a year	
 Scenario 3 Household - family Restricted wastewater services - water cannot go down the drains (cannot flush toilet, or let water down sinks, or use shower /bath/washing machine) Portable toilet provided in the garden Lasted for 1 week - no damage to carpets or furniture Not experienced this before 	Scenario 6 • School • Sewer flooding in the classroom • Occurred in summer as a result of a sewer blockage • Flooding lasted for 1-2 days • School closed whilst classrooms are allowed to dry and be repaired; children need to go to alternative schools for 2 months • Not experienced this before	

Flooding of outside / external areas

SHOWCARD 5a





	SHOWCARD 5b
Scenario 1 Scenario 4 • Household - family Retail shop • Sewer flooding in the garden Sewer flooding outside the shop, prevented access to parts of the garden, but could still entry the house Sewer flooding outside the shop, prevented access to parts of the garden, but could still entry the house Occurred in winter following period of heavy rain • Flooding lasted several hours before levels reduced, leaving plants and garden with minor damage Retail shop • Has experienced this before - around 5 years ago Sever flooding outside the shop, prevented this before - around 10 years ago	venting access wer blockage /ears ago avels reduced di recedes and t work or get
Scenario 2 Scenario 5 • Park Household - one person has a disabilit • Sewer flooding in a public park Sewer flooding across the whole garde access to the park, including children play areas • Occurred in summer following period of heavy rain Occurred in winter following period of heavy rain • Flooding lasted 1 week, leaving the park damaged and needing clean up Flooding lasted 1 week period of years ago	ty en, prevents of heavy rain - educed, leaving
Scenario 3 Scenario 6 • Household - family Farm • Sewer flooding in the street and pavement outside the house Sewer flooding in the fields • Still had full access to the house Occurred in winter as a result of a sewer blockage • Flooding lasted for 1 day before the levels reduced • Not experienced this before - around 5 years ago	ewer blockage for human





DWMP Measures

Showcard 8

8

	DWMP Measures
Α	Minimising risk of internal flooding of properties due to incapacity of sewers.
В	Minimising risk of external flooding of areas of land due to incapacity of sewers.
с	Improving resilience of the waste water and drainage system to extreme events
D	Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network.
E	Monitoring and improving wastewater flow & quality compliance to ensure treated discharges to river/sea meet allowed standards
F	Monitoring and improving Storm Overflows on how they are operating and the effect this may have on the river water/sea water they are entering.



Yorkshire Water Post Group Questionnaire 1

- In the workshop we introduced you to the proposed measures and asked you to rank them from 1 to 6 where 1 was the most important to you, 2 was the second most important to you etc. Please could you confirm how you ranked them from the notes you took. SHOWCARD USED IN GROUPS WILL BE SHOWN Ranking 1 - 6
- A. Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall
- B. Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall
- C. Improving resilience of the wastewater and drainage system to extreme events
- D. Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network
- E. Monitoring and improving wastewater **flow and quality** compliance to ensure treated water discharged to river / sea meet allowed standards
- F. Monitoring and improving storm overflows on how they are operating and the effect this may have on the river water / sea water they are entering
- 2. Thinking about the measures again we would like you to allocate points to them to show how important they are to you. You have a total of 100 points to give to the 6 measures, you can give as many points as you would like to each of the measures, you can give some to all of them or only choose to share the points out to a selection, it all depends on what you think is important (the more points given the more important it is) however the total must add up to 100.
- A. Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall
- B. Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall
- C. Improving resilience of the wastewater and drainage system to extreme events
- D. Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network
- E. Monitoring and improving wastewater **flow and quality** compliance to ensure treated water discharged to river / sea meet allowed standards
- F. Monitoring and improving storm overflows on how they are operating and the effect this may have on the river water / sea water they are entering
 - 3. Is there anything missing from the list of measures that you think companies should be considering with regards to wastewater and sewage services?

Open

4. In addition to the objectives and measures we have discussed earlier, Yorkshire Water (YW) also have a number of wastewater and sewage metrics



which they measure their performance against. Yorkshire Water record how many failures they have against each of these metrics. The aim is to reduce the number of failures. Therefore we would also like you to rank the following metrics in order of which you would <u>most like YW to avoid happening.</u> i.e. no.1 would be the worst thing that would happen, no.2 would be the second worst thing and so on.

- A. Internal flooding of customer properties due to overloading from heavy rainfall
- B. Internal flooding of infrastructure property (e.g. schools/hospitals) due to overloading from heavy rainfall
- C. Internal flooding of a business / commercial property due to overloading from heavy rainfall
- D. Internal flooding of any property due to blockages or sewer defect
- E. External flooding of infrastructure property (main roads) due to overloading from heavy rainfall
- F. External flooding of a customer's garden due to overloading from heavy rainfall
- G. External flooding of a business / commercial property due to overloading from heavy rainfall
- H. External flooding of any properties due to blockages or sewer defect
- I. Pollution of a river with sewage due to a blockage or sewer defect
- J. A deterioration in river water quality due to sewage spills from storm overflows
- K. A deterioration in river water quality due to reduced quality of wastewater treatment works discharges to the river or sea
- 5. Having read the above options, at an overall level, can you tell me which area of drainage and wastewater management should be Yorkshire Waters biggest priority?

Reducing sewer flooding

Preventing pollution / river water quality deterioration due to the use of storm overflows

Preventing pollution / river water quality deterioration due to the quality of wastewater treatment works discharges

6. Why is that? Open



YW DWMP Session 2 Topic Guide Draft

Section 1 - Introduction

<5 mins

- Re-introduce yourself.
- Quick recap on legals/MRS Code
- Explain that the research is being conducted in the legitimate interests of our client. By agreeing to take part in the research they are consenting to the processing of the data collected; please note that the data will be used to inform the water resources plans and future water company plans. All research will be provided to water companies in a summary format so no comments with me attributed to any of you personally. For further information on how we handle our data and your rights as a data subject, please visit the privacy policy page on our website thinkturquoise.com
- Explain audio/video recording and about Clients viewing the Session.
- Please be open and honest, there are no right or wrong answers we are entirely interested in your views.

Section 2 – Recap/scene setting

5 mins

- Quick recap and thoughts after session one
 - What are your thoughts on YW now anything changed? What and why?
- Introduction to the topic/scene setting for tonight
 - Regulation & Customer bills
 - More about areas that need to be considered in the DWMP:
 - the impact of **climate change**;
 - the impact of **population growth**;
 - solutions to help mitigate the impact;
 - partnership working
 - The customers **best value plan**

Section 3 - Yorkshire Water Regulation & Performance Measures 15 mins

Yorkshire Water are a regulated company, which means that customer bills and their levels of service and performance are signed off by OFWAT (the industry regulator).

SHOWCARD 1 – Privatisation and Regulation by OFWAT

<u>SHOWCARD 2</u> – National Billing Information

This shows what the average annual bill price is across England and Wales, how this is split between clean water and wastewater and how much water companies invested over the last 5 year investment cycle.

<u>SHOWCARD 3</u> – Average Bills showing YW v other companies and average charges

<u>SHOWCARD 4</u> – Current Performance



- This shows you how YW are currently performing on wastewater measures. Performance against the measures bring reward and penalty linked to how well the measures are achieved.
- •
- What are your thoughts on YW's performance?
 - Anything impressive / disappointing/surprising?
 - Having heard that targets are agreed with OFWAT, does this change your perception of YW in any way or their performance? How and why?
 - Does how we are regulated change your perception of YW in any way?

Section 4 – Climate Change and Future Planning 15 mins

- What are your views around the environment and climate change generally (not in a water context at first)? Why do you feel like this? Has this changed in recent years/is this a new consideration?
 - Generally, what aspect of climate change do you feel will have the biggest impacts on the environment and why?
 - How do you feel water companies will impact the environment?
 - How do you think climate change will impact upon the wastewater system?

Just focusing on how climate change might impact our sewerage services:

Forecasts show for wetter winters and drier summers.

In winter, the impact of climate change will result in more intense bursts of rainfall which will lead to more frequent incidents of all kinds of flooding and overflow usage. For example – forecasts show that we can expect to see a 13% increase in the average intensity of rainfall across the Humber catchment by the 2050s.

In summer, more prolonged dry spells will impact water levels in rivers. Lower river water levels means there is less water to dilute the impact of treated wastewater effluent from sewage treatment works when it enters the river, this will lead to a deterioration in river water quality. Drier weather may also lead to an increase in odour issues from the sewerage infrastructure due to less surface water to dilute the sewage and keep it moving through the system.

- What are your thoughts on this?
- What do you think this means for future wastewater services?
- What should YW be prioritising regarding WW services?

Should they be **improving current service** or **creating** plans that are more flexible over time to account and adapt for climate change? What is more important to customers?

10 mins



 How do you think population changes and growth will impact on wastewater services? What will it mean for YW and the wastewater system?

The impact of population growth will mean more homes being built, increased infrastructure to support this increased population such as more schools / hospitals / roads etc and increased businesses. Yorkshire households are predicted to increase by 30% by 2033, with a third of that growth coming from an increase in single person households.

This will result in more wastewater to treat and potentially more paved and roof surfaces and less soakaway opportunity for rain water and therefore an increased risk of all types of flooding, and overflow usage

- What are your thoughts on this?
- How can YW support population growth without compromising on service? What is the priority here?
- What can households do?
- What can the Government do?

In addition to population growth all new houses and developments have a right to be connected to the sewer network for foul waste only – this is not the case for surface water.

Do you feel this is the right thing? Are you surprised by this? Would you welcome a national change to this approach?

 Any other suggestions on how YW can support population growth and reduce the impact of climate change?

Section 5 – Solution Options

Drainage solutions to account for increasing populations and climate change could look a little different. To minimise or even remove surface water from the netwok Yorkshire Water aim to include more nature based solutions rather than more traditional carbon intensive solutions like storage tanks, laying larger sewers or expansion of sewage treatment works.

Nature based solutions give opportunities for added value benefits such as green spaces/recreational spaces that might enhance mental health wellbeing and offer an opportunity to increase biodiversity with different plants which attract different species.

Show video

- What do you feel about the information in that video?
 - Were you aware of nature based solutions/SUDS?
 - What is your preference? Tried and tested traditional methods or new and natural solutions? Why?



10 mins

Approaches to managing surface water that take account of water quantity (flooding), water quality (pollution) biodiversity (wildlife and plants) and amenities are collectively referred to as Sustainable Drainage Systems (SuDS).

SuDS mimic nature and are designed to store, treat and transport surface water, and slow it down before it enters sewers or watercourses during heavy rainfall. SuDS are drainage systems that are considered to be environmentally beneficial.

<u>SHOWCARD 5</u> – SUDS Examples

- Thoughts on nature based solutions/SUDS Positives /negatives? Supportive of this approach or unsupportive? Why?
- •
- Should YW be conscious of carbon intensive solutions such as building bigger tanks and sewers, or more environmentally friendly ones such as nature based solutions?
- How do you think you as customers can help with reducing surface water / rainfall run off?
- Probe: thoughts around using of water butts/planting certain types of trees/rain gardens (removing surface water connection to sewer from house & garage roofs and hard surfaces like patios/driveways)
 - a. How do you feel about taking some ownership in reducing surface water from your property reaching the sewers as discussed?
 - b. What about if there were community SuDs (larger scale surface water (NOT sewage) reduction – would look like a pond) – would you support this or get involved in maintaining it? Cutting grass, weeding, litter picking – why / why not?
- How would you feel if rain water was stored near to where you live e.g. if recreation areas or verges were designed to deliberately flood when it rains to prevent drains and sewers from being overloaded and flooding homes or to reduce the use of overflows spilling into rivers?
 - What are your thoughts on this? Likes? Dislikes? Supportive of this approach or unsupportive? Why?
- In some cases, SUDs can also potentially reduce the number of parking spaces available near homes or in car parks or the width of the road.
 - What are your thoughts on this? Likes? Dislikes? Supportive of this approach or unsupportive? Why?
- If nature based solutions were sometimes more expensive to build, should YW still do them? Remember that its your bill that pays for the investment.
 - Would you be willing to pay more to invest in these more natural based environmentally friendly solutions? Why / why not?



your needs and priorities.

300@

- 100
- The best value plan may not necessarily be the cheapest plan for customers. The cheapest plan may simply address maintaining and meeting current service levels and measures, without taking into account broader considerations of value such as improving the environment The plans can be created using a number of metrics and YW must consider

customer and stakeholder wants and needs in their decision-making. It is therefore

We need to understand what the DWMP plan must include in order for it to best meet

important that customers outline their wants and needs from the YW DWMP.

We now want to turn your attention to developing a best value DWMP (BVP) that will meet the wastewater needs of our region, in a way that ensures long term wastewater services up to 2050 and beyond.

improving vs maintaining current performance-which and why? Section 8 – Creating a Best Value Plan 20 mins

- Which kind of wastewater activities do you think would suit a partnership approach? - how much responsibility should be YW vs other organisations?

think YW should partner with and why? • How can this benefit customers?

• How can this benefit YW?

Section 7 – Maintenance or Improvement?

5 mins

- Thinking about all that we have discussed and using the information we have provided to you across the two sessions.....
 - Do you wish YW to **maintain current performance** and meet targets outlined or, do you want them to improve and tackle some of the areas we have

 - discussed with additional spend?

 - Enhancing the service as opposed to maintaining it, may come at a cost to customers as it is more expensive - how do you now feel?

 - Are there any areas in particular that you would wish YW to focus on

What are your thoughts on partnership working i.e. YW working on small, local or

services and solutions?

How much more, if anything, would you be willing to pay (%?) – what is the cut off i.e. A couple of pounds per year? 1%, 2%, 5% / 10% etc (this can be placed in the context of how much of customers current bill is spent on wastewater services)? Refer Back to showcard 2&3 bills

large citywide projects with other organisations such as the Environment Agency, local authorities, planning bodies, health trusts etc to help deliver wastewater

Thinking about sewage services and rivers or the sea. Which organisations do you

Section 6 – Partnership Working

5 mins

For example, one of your biggest priorities could be:

- bills are kept low, OR
- minimising internal domestic property sewer flooding, OR
- Reducing spills from storm overflows, OR
- Developing sustainable drainage systems, OR
- Customer education around sewer blockages
- Or, you might have a preference for hitting statutory measures OR that YW go further and beyond these measures. For example, do you simply want to maintain services or pay more for them to exceed statutory measures, or do you want to pay more for your priorities to be met sooner?

Ok, so it is now time for you to develop your best value plan. We want you to write down, in your own words on a piece of paper, what you think YW should be focussing on for the future (similar to this structure – <u>SHOWCARD 7</u>).

Please think about all of the knowledge you have gained throughout both sessions – so please consider all the metrics and measures, population growth, climate change, sustainable drainage solutions, partnership working etc discussions we have had.....

SHOWCARD 6&7

Best Value Plan:

- Taking into consideration everything we have discussed across the last two sessions, what is important to you as a customer, for YW to focus on in the future and why?
- What are the priorities? 1st, 2nd, 3rd etc
- Any other considerations around the delivery of these priorities e.g. partnership working, nature based solutions vs traditional carbon intensive solutions?

Would you prioritise any areas of Yorkshire first? (the ones with more problems first?) **Customer Targets:**

- When do you want YW to achieve this / these by? Remember this is a 25 year plan and not everything can be improved all at once as it is prohibitively expensive for customers so are you looking to meet these in the short term (what is that?)? Mid term (what is that?)? Long term (what is that?)?
- So, thinking about the priorities you cite, when do you want these achieve by?

Price of the bill to achieve your BVP :

• The price you would be willing to pay, **if anything in addition to what you pay now**, to enable these things to be achieved - this could be as simple as 1% of your current bill, £1 per year, £5 per year, 50 pence per month etc.



Explore each persons BVP in turn and why they have chosen that / those aspects.

We will collect this information once again via a post session questionnaire.

Section 7 -	Summary	v of Session 2

- Summarise customer views on DWMP. • Check they are happy that reflects what was said?
- Summarise customers views on the population growth and climate change • Check they are happy that reflects what was said?
- Summarise customer views on their best value plan. • Check they are happy that reflects what was said?
- Explain that they will receive a post-group questionnaire (Sent after the sessions).

Thank everyone for their input.

5 mins

Stimulus Material Session 2:













Current Performance	Wraste	Wate&	Environmental	measures	Showcard 4

Measures	Explanation	Current Performance
A: Internal Sewer Flooding	YW are measured on the total number of internal sew er flooding incidents through the year per 10,000 sew er connections.	Currently not_on track to meet current year targets
B: External Sewer Flooding	This performance commitment measures the total number of external sewer flooding events through the year.	Currently <u>on track</u> to meet current year targets
C: Risk Of Sewer Flooding In A Storm	As part of a national drive to improve the country's resilience to extreme weather events, this performance commitment measures how many of YW customers would be at risk of internal sew er flooding from a 1 in 59 ear storm, based on modelled predictions.	Currently <u>on track</u> to meet current year targets
D: Sewer Collapses	If a part of a sew er collapses, it can block the sew er and lead to sew er flooding or pollution. This performance commitment measures the number of sew er collapses that affect our customers' supply or the environment, per 1,000 km of our sew er netw ork.	Currently <u>on track t</u> o meet current year targets
E: Pollution Incidents	YW want to make sure their operations don't harm the environment. This performance commitment measures the number of pollution incidents caused by our wastewater assets, for every 10,000km of our wastewater network.	Slightly <u>off track</u> to meet current year targets
F: Treatment Works Compliance	W have permits that control their discharges into watercourses. This performance commitment measures the percentage of their treatment works that comply with their discharge permits.	Slightly <u>off track</u> to meet current year targets
G: Length of River Improved	Improving our environment benefits everyone in Yorkshire. We're working hard to improve river water quality and this performance commitment measures the length of river we've improved the 202025 period. We currently have four projects running, to improve 45.6km of river.	Currently <u>on track t</u> o meet current year targets





Metrics: avoiding	Shorrea
Internal flooding of customer properties due to overloadir	Solutions Options
Internal flooding of infrastructure property (schools/hospitals)ue to overloading	Development of sustainable drainage systems
Internal flooding of a business/commercial property due to overloading	Development of traditional drainage systems Combination of sustainable and traditional systems
Internal flooding of any property due to blockages or sewerdefect	Partnerships
External Flooding of a customers garden due to overloading	
External Flooding of infrastructure property (main roads) due to overloading	
External flooding of a business/commercial property due to overloading	
External Flooding of any properties due to blockages or sewer defect	
Pollution of a river with sewage due to a blockage or sewerdefect	
A deterioration in river water quality due to untreated sewage spillsfrom storm overflows	
A deterioration in river water quality due to reduced qualityof treated wastewatetreatment works discharges to the river or sea	

	Showcard 7
Best Value Plan:	
Your Target:	
Price of your bills to achieve your plan:	
	9



YW Final Post-Group Questionnaire

Q1. In the three boxes below, please type in each element of your 'best value plan' made during the second session.

If you want to upload a picture of your plan, you can also do that here. However, please only upload a picture if it is of high enough quality and the writing is legible. Thanks.

Best Value Plan: please outline what is most important to you, this should take into consideration everything we have discussed across the last two sessions, and should outline what is important to you as a customer, for YW to focus on in terms of wastewater services in the future and why? What are your priorities? – 1st, 2nd, 3rd etc

Also are there any other considerations around the delivery of these priorities e.g. partnership working, nature based solutions vs traditional carbon intensive solutions?

Would you prioritise any areas of Yorkshire first? (e.g. the ones with more problems first?)

Your target (s) for your plan: When do you want YW to achieve this / these by? Remember this is a 25 year plan and not everything can be improved all at once as it is prohibitively expensive for customers - so are you looking to meet these in the short term (what is that in terms of years?)? Mid term (what is that in terms of years?)? Long term (what is that in terms of years?)?

So, thinking about each of the priorities you cite above, when do you want these achieve by?

Price of your bills to achieve your plan: What is the price you would be willing to pay, **if anything, in addition to what you pay now**, to enable these things to be achieved - this could be x%, £X per year £x per month, whatever you feel comfortable with.

Q2. Within the second workshop, we discussed a number of areas that need of be considered for the Drainage and Wastewater Management Plan.



Please can you tell us to what extent you support each of the following using a 5point scale where 5 = strongly supportive and 1 = strongly unsupportive. Use scale – DK, strongly unsupportive, unsupportive, neither support nor unsupportive, support, strongly support.

- The right to connection for all new houses and developments, for foul waste only, should to be removed to enable YW to have a say in where developments connect allowing them to assess what impact the connection might have
- YW using more nature based drainage solutions to minimise / remove surface water entering the sewer network (e.g. roof gardens; soakaways; permeable tarmac etc) rather than traditional carbon intensive solutions (e.g. storage tanks, laying larger sewers or expansion of sewage treatment works).
- YW installing recreation areas or verges that deliberately flood when it rains to prevent drains and sewers from being overloaded and flooding homes or to reduce the use of overflows spilling into rivers
- YW working in partnership with other organisations such as local authorities, housing developers etc

We've already asked you the below questions in the previous survey so apologies if this seems repetitive. We want to understand if any of your priorities have changed based on your new understanding of our performance and the additional discussion you had during your last workshop.

- 3. In the first workshop we introduced you to the proposed measures and asked you to rank them from 1 to 6 where 1 was the most important to you, 2 was the second most important to you etc. Please could you re-confirm your ranking based how you feel now. SHOWCARD USED IN GROUPS WILL BE SHOWN Ranking 1 - 6
- G. Minimising risk of internal flooding of properties due to incapacity of sewers during heavy rainfall
- H. Minimising risk of external flooding of areas of land due to incapacity of sewers during heavy rainfall
- I. Improving resilience of the wastewater and drainage system to extreme events
- J. Improving the condition of the sewers e.g. by predicting blockages and / or collapses along the network
- K. Monitoring and improving treated wastewater **flow and quality** compliance to ensure treated water discharged to river / sea meet allowed standards
- L. Monitoring and improving storm overflows on how they are operating and the effect this untreated water may have on the river water / sea water they are entering
- 4. And again, we'd like you to conduct the same exercise for the metrics below. Just to remind you, Yorkshire Water, record how many failures they have


against each of these metrics. The aim is to reduce the number of failures. Based on your last discussion we are keen to explore if your ranking of the below has changed at all.

We would now like you to rank the following metrics in order of which you would <u>most like YW to avoid happening.</u> i.e. no.1 would be the worst thing that would happen, no.2 would be the second worst thing and so on.

- L. Internal flooding of customer properties due to overloading from heavy rainfall
- M. Internal flooding of infrastructure property (e.g. schools/hospitals) due to overloading from heavy rainfall
- N. Internal flooding of a business / commercial property due to overloading from heavy rainfall
- O. Internal flooding of any property due to blockages or sewer defect
- P. External flooding of infrastructure property (main roads) due to overloading from heavy rainfall
- Q. External flooding of a customer's garden due to overloading from heavy rainfall
- R. External flooding of a business / commercial property due to overloading from heavy rainfall
- S. External flooding of any properties due to blockages or sewer defect
- T. Pollution of a river with sewage due to a blockage or sewer defect
- U. A deterioration in river water quality due to sewage spills from storm overflows
- V. A deterioration in river water quality due to reduced quality of wastewater treatment works discharges to the river or sea
- Overall, to what extent did you understand the topics covered in both sessions? Please use 10-point scale, where 10 = I understood everything and 1 = I didn't understand anything.
- 10 I understood everything
- 9
 8
 7
 6
 5
 4
 3
 2
 1 I didn't understand anything



6. Given all you've learned in the last two weeks, do you have any parting comments or advice for Yorkshire Water in terms of drainage and wastewater management?

<free text>

THANK AND CLOSE



Video Scripts

<u>Video 1</u> - <u>Explanation of the Drainage and Wastewater Management Plan and why</u> we are asking customers to get involved

(2 min)

We collect and treat around 1 billion litres of wastewater every day, from homes and businesses, and rainwater, that goes into our 52,000km of sewers.

To do this we operate over 600 wastewater treatment sites, and over 2000 wastewater pumping stations to safely collect, and treat wastewater and rainwater before returning it safely back to the environment

We re making a plan to keep our drainage and wastewater system strong and more resilient to future pressures through to 2050 and beyond. Climate change and population growth will affect our wastewater network, but our plan will reduce the impact on our customers.

We II create our Drainage and Wastewater Management Plan with the help of organisations like Lead Local Flood Authorities, The Rivers Trust and Environment Agency. Working in partnership with these organisations will ensure we deliver longterm solutions with the best value and benefits for our customers.

The drainage and wastewater management plan will help us:

- keep our wastewater and drainage system strong
- cope with population growth
- adapt to climate change
- reduce sewer flooding
- manage our impact on the environment
- understand our customers' expectations
- meet our customers' needs
- create sustainable drainage systems
- create nature-based solutions.

We want you, our customers to be involved, to engage with and to understand what our plan will mean for you, your local community and the region of Yorkshire.

We're building a plan which covers the whole of Yorkshire but broken down into river basins and local catchment areas (**Strategic Context document will help**). This will help us to develop solutions to combat the issues such as sewer flooding, storm overflows, climate change and an increasing population.

Video 2 – Hydraulic flooding



1 min 45 sec

In times of prolonged, heavy rainfall, the combined sewer system continues to take away foul flows from your property but also takes rainwater that lands on your roof, garden and the surrounding roads. This can lead to the sewer becoming overloaded. In some circumstances where the sewer is full, and where rainfall continues, these flows may escape from the sewer into homes, businesses, gardens, roads or other public spaces. We call this hydraulic sewer flooding and the data we are analysing for this Drainage Water Management Plan is looking to predict the risk and address the issues where needed.

The sewer network can also become clogged with wet wipes, fats, oils and greases which can lead to blockages. This reduces the amount of flow a sewer can handle, which may lead to water escaping causing flooding.

Internal sewer flooding occurs when flows which escape from a sewer enter a property.

External sewer flooding occurs when flows which escape from a sewer only impact the outside of a property such as gardens, roads and public spaces.

All rainfall and storms are different in terms of intensity, frequency and impact and our plan will take data across a range of rainfall events to predict the risk of flooding in the future. Climate change estimates suggest that more intense rainfall will occur more frequently, which in turn will lead to a greater risk of flooding.

Video 3 – Storm Overflows

1 min 15 sec

For many decades the sewer system was based on the use of combined sewers. Combined sewers carry both foul water from homes and businesses as well as the rainwater which falls onto paved areas, roofs, and highways. Usually, all this wastewater travels to one of our wastewater treatment works to be treated before it s safely returned to the environment.

However, as rainfall can be unpredictable, the system was designed to include storm overflows to act as a pressure release valve. They help to reduce the pressure on sewers during heavy rainfall events by allowing a dilute mixture of wastewater and rainwater to be spilled into our rivers and the sea. This prevents the system from backing up and flooding homes and gardens.

Storm overflows are permitted by the Environment Agency and we are committed to tackling any adverse impact through careful reporting on how often they operate and by carrying out necessary investment when storm overflows operate more often than expected.

Video 4 – Solutions: Traditional (tanks) vs Sustainable Drainage Systems (SuDS)

40 secs



In order to manage the impact of flooding and reduce the reliance on storm overflows to act as pressure reliefs, we have to look at options to fix the problems. In our plans we are looking to design solutions based on a mixture of traditional storage, like tanks and larger pipes which we have we have many of already, or more nature based and sustainable solutions that offer wider benefits to the community and the environment. These can include everything from rain gardens, water butts, permeable road surfaces and tree planting. (**use slow the flow examples/diagram**).

