

DWMP Portal Usability

June 2022

Research background

In accordance with Defra's guiding principles on the Drainage and Wastewater Management Plan (DWMP), United Utilities (UU) is creating an online customer platform allowing users to view interactive maps and gather relevant information about their area in a way that is easy to use and understand. The platform shows customers data based on modelled future risks.

An early prototype of this has been developed based on previous research and is currently divided into three main pages - sewer flooding, environment and asset conditions which details the modelled future risks in each of these areas.

The prototype is ready to test with potential users and research was sought to understand where it is successful and what further design and information enhancements are required.



Research objectives

1

How well do customers understand the portal?

- Do they understand its overall purpose?
 - How useful is the content & definitions?
 - How can the wording be enhanced to improve understanding?
-

2

How intuitive / efficient is the portal?

- How quickly are users able to complete tasks & recover from errors?
 - How satisfying is it to use (visual design, gestures)?
-

3

What additional features are required?

- What additional context do customers require before entering the portal?
 - What further information / useful links would they want to see next?
-

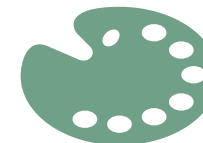
Methodology & Approach



APPROACH

15x 1hr Online Qualitative Depth Interviews

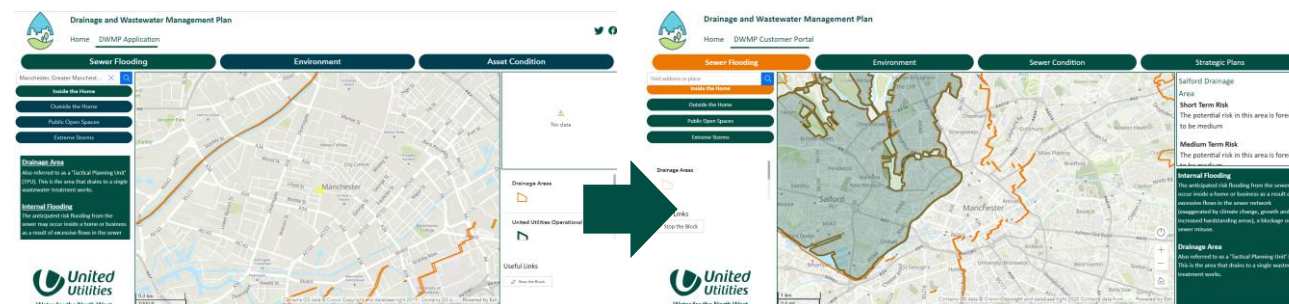
- Interviews involved participants navigating the prototype portal through a series of task-based exercises
- Conducted via Zoom, between 18-27 May 2022
- All recruited from the WaterTalk panel: 7 'returners' (had participated in previous DWMP research), 8 'fresh'
 - Mix of genders, ages, locations, tech confidence, & attitude to DWMP



STIMULUS TESTED

2x variations of the prototype portal

- An iterative process: portal refined after 9 interviews following customer feedback on functionality



9x Interviews

6x Interviews

Executive overview: Portal Relevance & Purpose

1

As seen in previous DWMP research, there are different levels of engagement on the topic of DWMP depending on personal experience and values.

- Most people are likely to only search for information related to drainage / wastewater when there is an immediate need, rather than out of curiosity.

2

The content and presentation of the portal make it feel more aimed at professionals than regular homeowners

- Many customers expect to see an interactive map with live updates about incidents in their area, and do not grasp the long term 'modelling' nature of the information
- Academics (e.g. teachers) & professionals (e.g. solicitors) may be more likely to understand the high level purpose of the portal

Executive overview: Portal Comprehension, Functionality, Look & Feel

3

Comprehension: without context, the portal raises several key questions in the customer mind, including:

- What is a drainage area?
- What are the reasons for risk?
- How will this impact me?
- What is UU doing / what should I do next?

Whilst most tab names are understood, language referring to risk & timeframes should be more specific

4

Portal **functionality** has improved through iterative feedback, but the clickable nature of the map remains unintuitive

- The shading of the map is misleading: interpreted as either an error on the page or problem areas – not as areas to click
- Instructions to 'select an area to view associated risks' should more explicitly say 'click'

5

The simple **look & feel** of the portal is appreciated, but some elements could be enhanced to aid comprehension & navigation:

- Optimising the key to explain drainage areas
- Avoiding information cutoff
- Mentioning the topic area within descriptions of risk

DWMP context & relevance



Drainage and wastewater is an important topic in the North West due to high awareness of flooding risk



Previous research on DWMP topics highlighted that regardless of personal experience and actual risk, people in the North West have a good awareness of catastrophic flooding events in the region and how devastating it can be for people who experience it

- This also leads some to overestimate the frequency and impact that floods have in the North West as a whole

We also learned from previous research that people from the North West can feel that their region is often overlooked for investment which can exacerbate situations when they occur

- There is a general belief that other regions get more investment and that if they had better infrastructure they would have fewer issues



Consideration:

Therefore, there is likely to be above average interest in this topic where customers will look to United Utilities for answers

There are different levels of engagement on the topic of DWMP which is dependent on personal experience and values

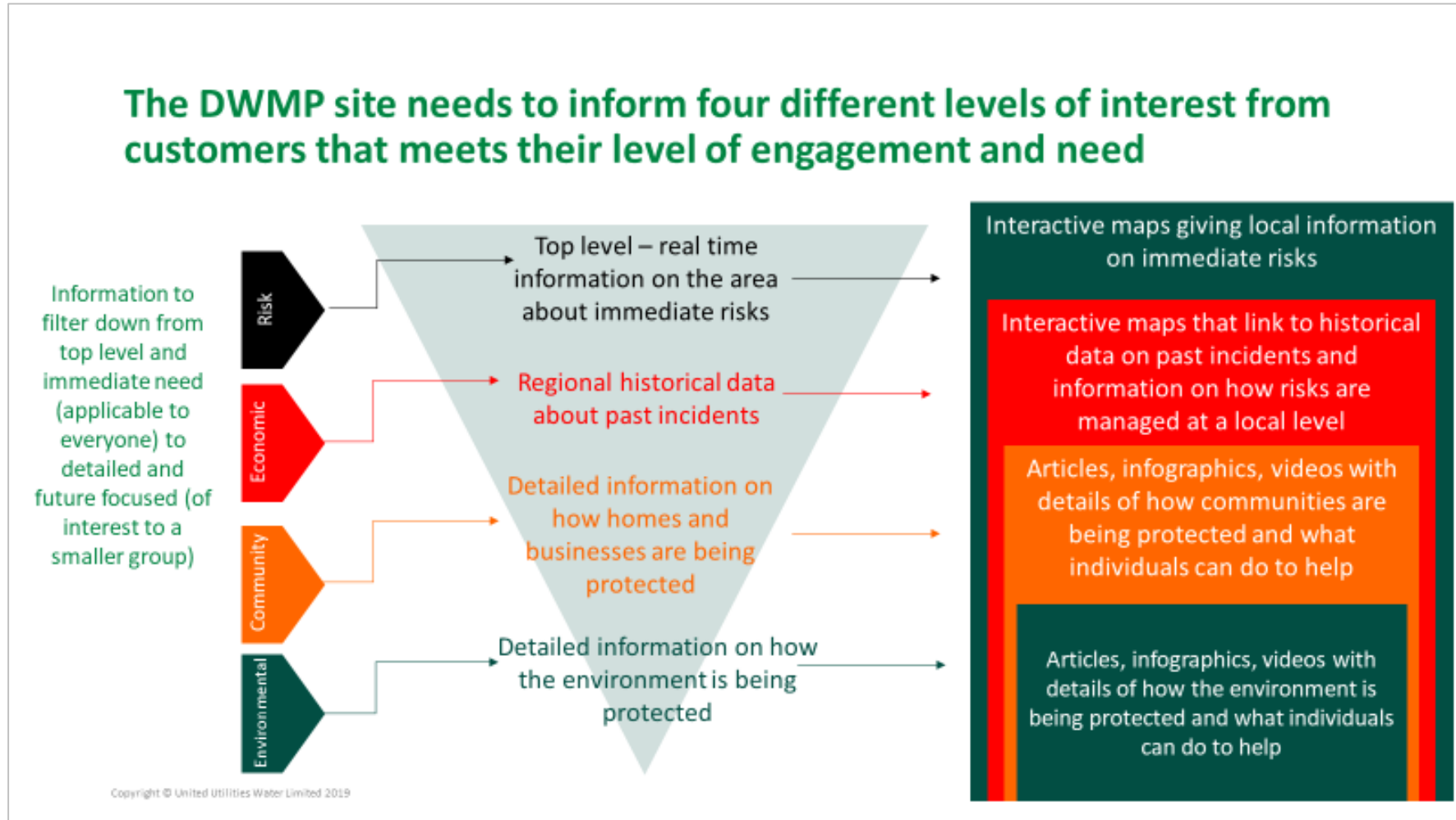
- Our previous research showed that people's experiences and attitudes to their community and environment determined what information they would want from United Utilities
- Most people are likely to fall into the **'economic'** and **'risk'** categories which means they are more likely to only search when there is a need
- Those who are more **'community'** or **'environmentally'** minded (despite there being fewer of them) are more likely to share their views on social media as well as being more likely to take action if they feel there is something irregular about what they have read

People's motivation for searching drainage and wastewater topics will determine what information and level of detail they're looking for

Are proactively searching for the <u>benefit of their surrounding area</u>	Are searching for information that is <u>relevant to them and their immediate situation</u>		
<p>Environmental</p>  <p>Will be looking to educate themselves on what they can do to protect the local environment</p>	<p>Community</p>  <p>Are looking for information that will ensure their local community is protected</p>	<p>Economic</p>  <p>Will proactively look for information relating to personal property likely triggered by a financial decision</p>	<p>Risk</p>  <p>Will only look for information when there is a potential threat to personal interests</p>

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An interactive map giving local information on immediate risks was a priority for all the groups, regardless of attitude or experience



The DWMP portal is currently more relevant for academics, professionals and activists



Although the idea that UU is planning for the future is appreciated, most people are looking for information on immediate risks and therefore were not fully engaged with the portal

- They may check on occasion when prompted by a local incident or when they are looking to purchase property – in which case, the ‘sewer flooding’ information is of most interest

Academics and professionals found the map interesting and would visit to see how the information updates over time

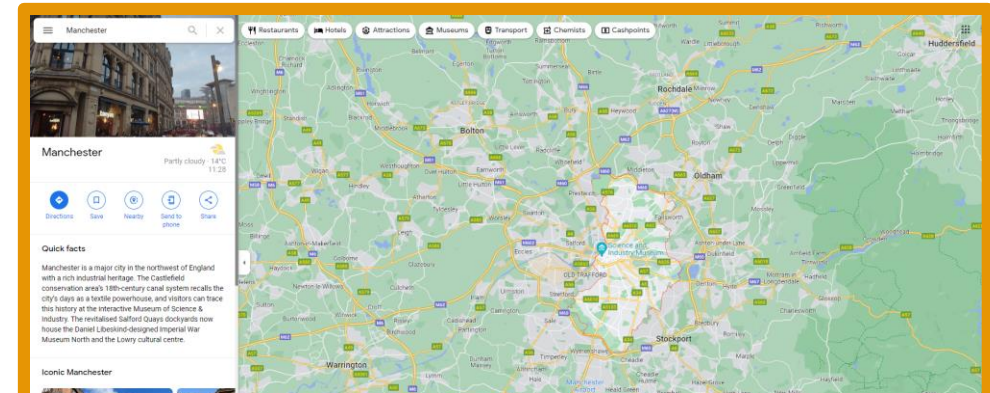
- Unsurprisingly, those who work in related fields were quick to understand the information, whereas those with no prior knowledge found it harder to understand what they were being shown, suggesting that the content is currently not universally accessible

Those who are in the ‘environmental’ and ‘community’ groups are more likely to scrutinise the information and will share their findings

- Therefore it is important that the information is clear and not misunderstood to prevent this smaller but vocal group from inadvertently spreading misinformation

Users are transferring their expectations of Google Maps & other 'live' maps to how they interact with the portal

- Jakob's Law states that users prefer sites to work the same way as other sites they are already familiar with. We have seen this in action where our participants expected the interactive map to follow similar patterns to maps they have previously used (mostly Google maps)
- There was also an expectation that the map was 'live' with up to date information (as this is something they have seen elsewhere on live flooding / electric board websites) therefore their expectations require managing to allow them to understand the map more quickly
- By not meeting this expectation, our participants became focused on understanding how to interact with the map rather than on the task



A screenshot of a power cut notification overlay on a map. The map shows a specific area with a yellow location pin. The notification is a dark blue box with a lightning bolt icon and the text: "Live power cut", "We are sorry you are experiencing a power cut", "We are currently investigating the issue", and "We estimate to have your power restored by 06/06/2022 14:53". The map background shows streets like Congleton Rd and locations like Macclesfield Football Club and Burger King.

The portal

Comprehension, Functionality, & Look & Feel

Feedback on the portal performance will be split into 3 core sections:



Comprehension & language

We observed how accessible the portal's terminology was for those with background knowledge of drainage systems compared to those without, to improve overall inclusivity



Functionality

The functional performance of the portal was explored. Issues were reported in order to further improve the site



Look & Feel (& user satisfaction)

The appeal and the usability of the portal was looked at and feedback was given on how to make the site more appealing



The portal

Comprehension & Language

Without context, most do not understand that the data shows 'future modelled risks,' or even comprehend what these are



Among those who are well versed in these issues (e.g. used to work in the water industry, geography teacher), the portal is largely understood to show projected risk at a high level on a variety of metrics

“ *I recognise the need for long term planning ... I can see that it's going to be done in consultation with other relevant bodies. It's a good background*

60+, Female, Merseyside



However, the majority do not understand this – it is seen as something that should show immediate risk of flooding

- Expect to see interactive icons on map, ability to report problems etc.
- Short term can be interpreted as 'in a few hours/days' - you need to do something now

“ *I'm in my area – if there were any known issues I would expect to see maybe an exclamation mark or a red dot... But I can't see anything so I would assume no issues*

50+, Female, Lancashire



Consideration:

Need to make clear in the context, as well as referencing in the portal itself, that risks shown are 'future modelled risks,' and how these are calculated, as this is currently not clear to most

There is a mismatch compared to expectations, and the portal therefore raises more questions than it answers:



What are the reasons for the risk?

- Most have limited understanding of how things currently work, and want to know more about the need for improvement, so they can judge risks for themselves

“ I wouldn't expect to see any flooding because there hasn't been any in my area for 20 years, but if they said it was because of climate change then I might understand.
50+, Male, Merseyside



How will this impact me?

- Currently, the drainage areas feel very broad – people want to know exactly how they will be affected by the risks

“ They're being very general, so I don't know how relevant this is to me. I know Oakland road, it's a steep road so I can't imagine much flooding. Whereas [next door road] I imagine would be at risk
50+, Male, Merseyside



What now?

- People want to know what UU is planning, what is being done, and what they can do next

“ If it gets that bad that I have to relocate my flat I'd want some options where I could stay for a couple of days.
30+, Female, Greater Manchester



Consideration:

- Add context around what's happening now - how things currently work in visual form, to help explain the issue, the reasons for the risk, and the need for improvement/planning. May also help with comprehension of certain portal terms



Consideration:

- Include links on the risk areas e.g. short term low risk → explain how this is calculated, what it means for the customer, & next steps (what UU is doing and what they can do).
- If possible, ensure the 'strategic plans' tab has more specific localised information than the drainage areas, as people are keen to learn more about what is being done closer to home.

Being made aware of the drainage areas is a key first step to understanding what the map is showing

Ideal information hierarchy

1 What is a drainage area?

2 How do I find a drainage area of interest

(search bar or map itself)

3 What do I want to know about this drainage area?

E.g. risk of sewer flooding

4 What does 'sewer flooding inside the home' mean?

Have I selected the right thing?

5 What is the risk of sewer flooding inside the home, in this area? *Where is the data?*

6 What does the risk data mean?

How was it calculated and what does this mean for me?

7 What's next?

What is UU doing to minimize this risk? What should I do?

Fundamentally, it is unclear what a drainage area is, which has a knock-on effect on comprehension of the entire page

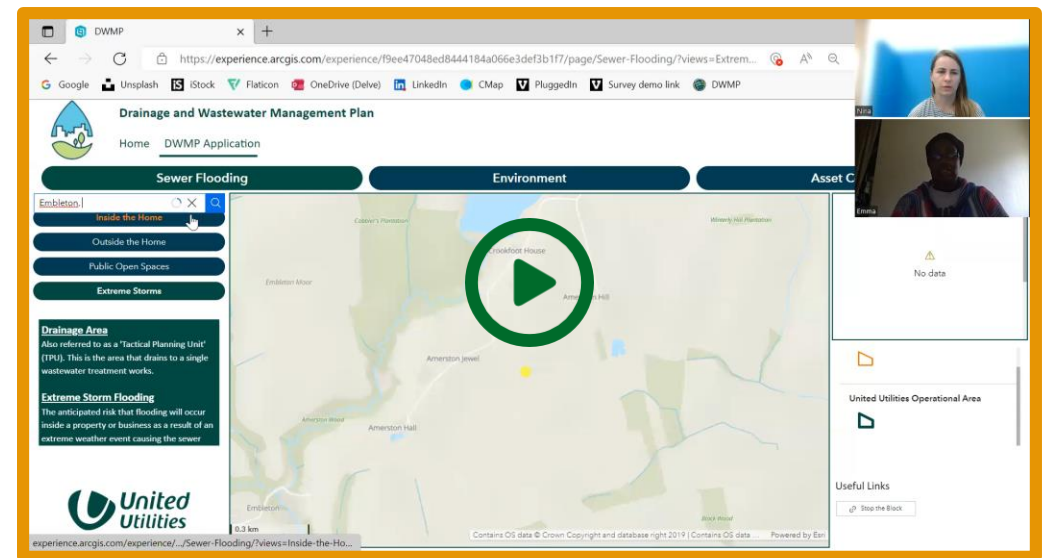
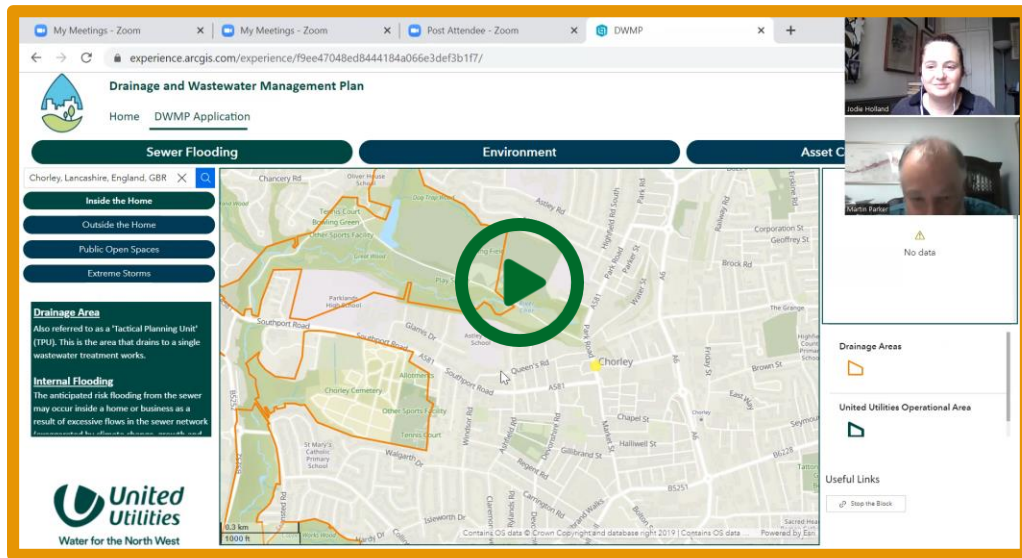
- The key does not explain much, and the definition is unclear and located on the bottom right of the page
- This means there can be multiple interpretations of what the orange outlined areas are showing:
 - Pipes?
 - Where the problems are?
 - A selected area?



Consideration:

- Whilst we have moved the definitions box to the right so it is near to the data box, this has negatively impacted comprehension of drainage areas
- Ideally, the definition of drainage areas should be on the left next to the key, and the other definitions should remain on the right next to the data box.

The drainage areas are unclear, causing initial confusion for many:



The language used to refer to risk is vague, and often scrutinized by customers

Low/med/high risk is not specific enough to help customers, and raises questions:

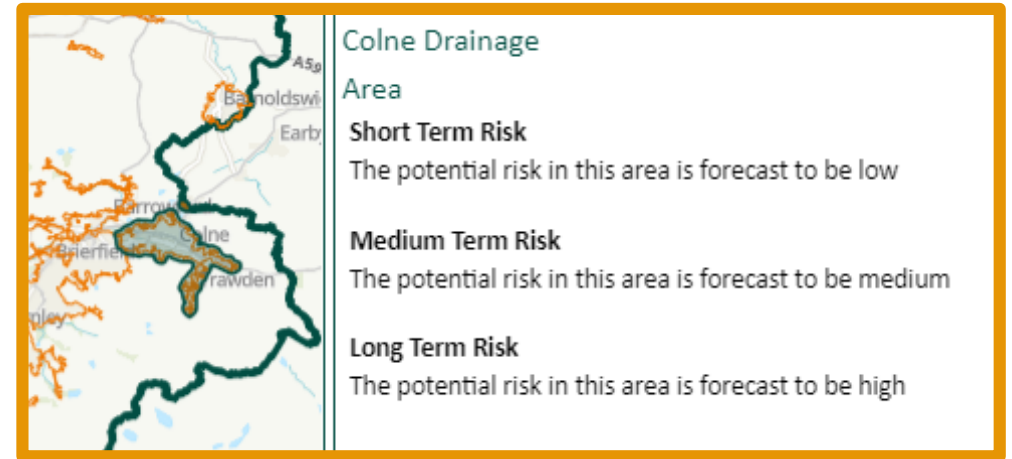
- **How true is this:** Have there been any recent incidents in this area? If not, high risk doesn't mean as much as if there has been a track record of such incidents
- **How relevant is this to me:** Where is the risk coming from? On my drive? A few miles away? Will I be impacted? Risk levels mean less when they're seen to cover such a broad area, and can be assumed to be a default
- **What is 'medium' risk:** low/high at least suggests limited or significant concern / call to action, but medium means very little

For some, hearing 'high risk' raises alarm bells, but others want more information to know how the risk been calculated, so they can make their own judgments about their particular situation

“ Short term risk of what? ... It doesn't tell you. It just says potential risk
50+. Male, Greater Manchester

“ Walking down the street at night is a risk, but how many people get knocked over? The risk isn't directly comparable to what might actually happen. I want to know how many incidents there have been in the past few years, then I can form a view

60+, Male, Greater Manchester



Consideration:

- In general, there is a lot of text to read– can this be mitigated / clarified by a traffic light system?
- **Minimal concern / emerging concern / area of focus** is preferred over low/med/high, as it feels the least severe, & suggests UU is thinking and acting. 'Area of focus' suggests something is being done, meaning less of an immediate risk, which is reassuring
- **Monitor / actively monitor / priority area** – can work, but for some it's unclear who needs to monitor (is this the customer or UU?)

The timeframes are left open to interpretation, and can get confused with risk levels

Short/med/long term is subject to a wide range of interpretations:

- Short term can feel very immediate (e.g. next few hours/days), to 'within the next 5 years.'
- Long term can be interpreted as 'in a few years' to 10-20 years away. For some it is assumed that this might be too far in the future to feel relevant (e.g. will I even be alive then?)
- As with risk levels, 'medium' is a fuzzy in-between

Combining Risk levels and Timescales can also be logically confusing:

- For some, 'High risk' is interpreted as an 'immediate risk' and 'Low risk' interpreted as 'not immediate / long term'
- Some can get confused by 'Short-term low risk,' or 'Long-term high risk,' as these feel like contradictory terms



Consideration:

Specify the timeframe for short, medium & long term, to avoid ambiguity & confusion with low / medium / high risk terms

“

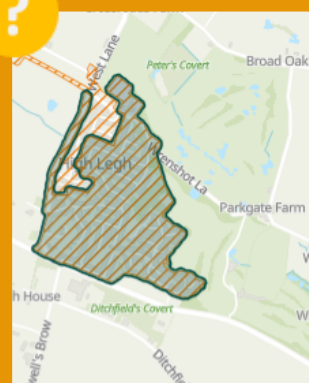
What are they quantifying as short term? Just a few hours? What are they quantifying as medium term? Is that just a couple of days?"

60+, Female, Merseyside



The messaging for small population size & minimal risk areas is understood, but may make some feel undervalued

?



High legh Drainage Area

Short Term Risk
The population within this drainage area is considered too small to publically publish information

Medium Term Risk
The population within this drainage area is considered too small to publically publish information

Long Term Risk
The population within this drainage area is considered too small to publically publish information


“ Why could they cover the other areas quite satisfactorily but can't cover this area?

60+, Female, Merseyside

“ They don't really think that this drainage area is very important because there isn't enough people living there but obviously it is important for people who do live there

60+, Female, Merseyside

✓



Blennerhasset Drainage Area

Short Term Risk
The risk in this area is considered minimal so a further assessment was not required

Medium Term Risk
The risk in this area is considered minimal so a further assessment was not required

Long Term Risk
The risk in this area is considered minimal so a further assessment was not required

“The risk in this area is considered minimal so a further assessment was not required”

- This is ok – reassures that the risk is low, customers do not require any further information
- No changes needed

“Population within this drainage area is considered too small to publicly publish information”

- Feels like UU don't care enough about this area
- Could be high risk and wouldn't know
- Should at least be contact info to find out more specifics, if can't be included here

Consideration:

Although only a small risk due to small population size, consider including contact information for people in low population areas to find out more information if desired.

Most tab names are intuitive to understand, but could be enhanced by hovering definitions in simple language

✓ Sewer Flooding

Sewer flooding: makes sense as language and feels relatable, not something people want anywhere near their house

? Environment

Environment: vague – could be about anything environment related (although it's clear this is where they should click to find out about wastewater release)

✓ Sewer Condition

Sewer condition: much clearer language than 'asset condition' – intuitively expect to find sewer blockage / collapse

✓ Inside the Home

Understood as flooding inside private homes

✓ Outside the Home

Understood as flooding in private gardens, but could also be interpreted as public areas outside the home

✓ Public Open Spaces

Understood as flooding in parks, roads etc

? Extreme Storms

For some unclear why this goes under sewer flooding – how is this related? Need to make explicit link to *flooding* caused by extreme storms

? Pollution

Understood as wastewater contaminating waterways - but the difference between that and 'overflows operating' is unclear

? Overflows Operating

Unclear on the difference between 'release' and 'escape' of wastewater. For some, it's clear that one's intentional and one's not, but what's the relevance?

✗ Capacity

Unclear: Capacity of what? What are permit requirements? Unsure of relevance - what does this mean?

✓ Sewer Blockage

Understood as blockages to sewers (possibly caused by flushing things down the toilet that you shouldn't), risking overflow & flooding

✓ Sewer Collapse

Understood as risk of sewers breaking down, causing leakage / flooding



Consideration:

While most tab names are intuitive, many do not look to the definitions box on the other side of the screen to know exactly what they mean. Hovering definitions may help reassure. Definitions in Plain English could also help clarify more difficult concepts

The portal

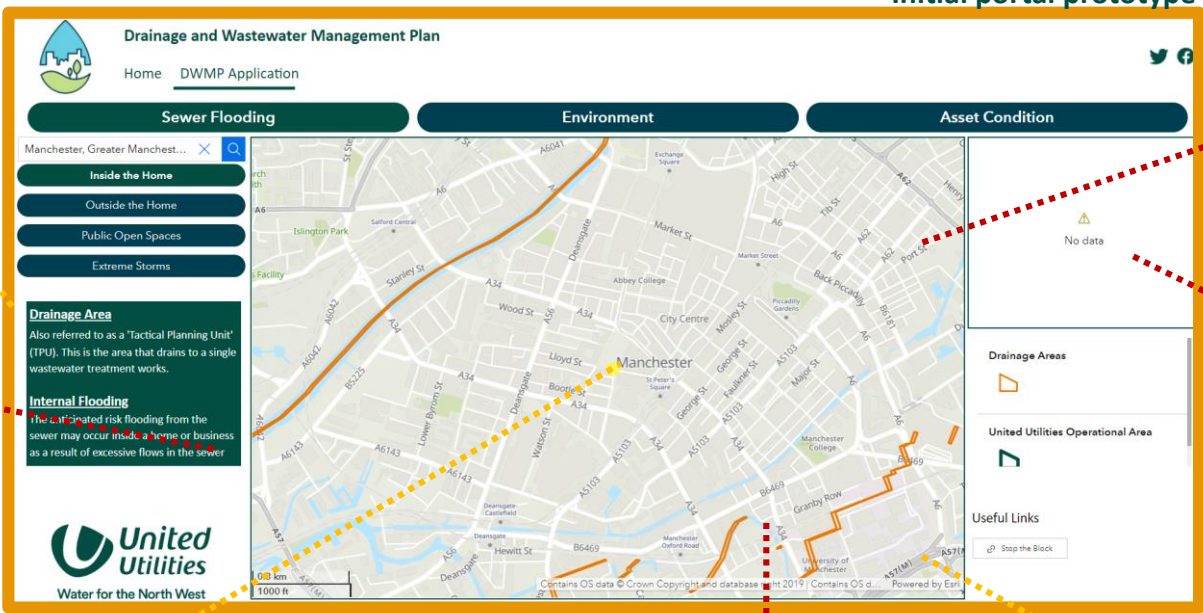
Functionality



- = functionality that did not work / frustrating
- = functionality that was confusing
- = functionality that worked well

Initially, customers faced several functionality issues, which made it frustrating to navigate the portal

Initial portal prototype



The underlined text looked clickable which lead to some confusion and frustration when nothing happened

The **scroll function** in the definition and risk boxes was difficult to use, particularly for those who didn't have a click wheel mouse to scroll. This meant some information was missed

The purpose of the **yellow dot** was unclear and distracting for many, especially when more than one appeared

The **map was difficult to orient whilst using a trackpad**. Users found the map tended to spin around and it was difficult to navigate which way was North

It was not intuitively obvious that participants needed to click the map to reveal data - **the map did not look clickable**, therefore information was missed

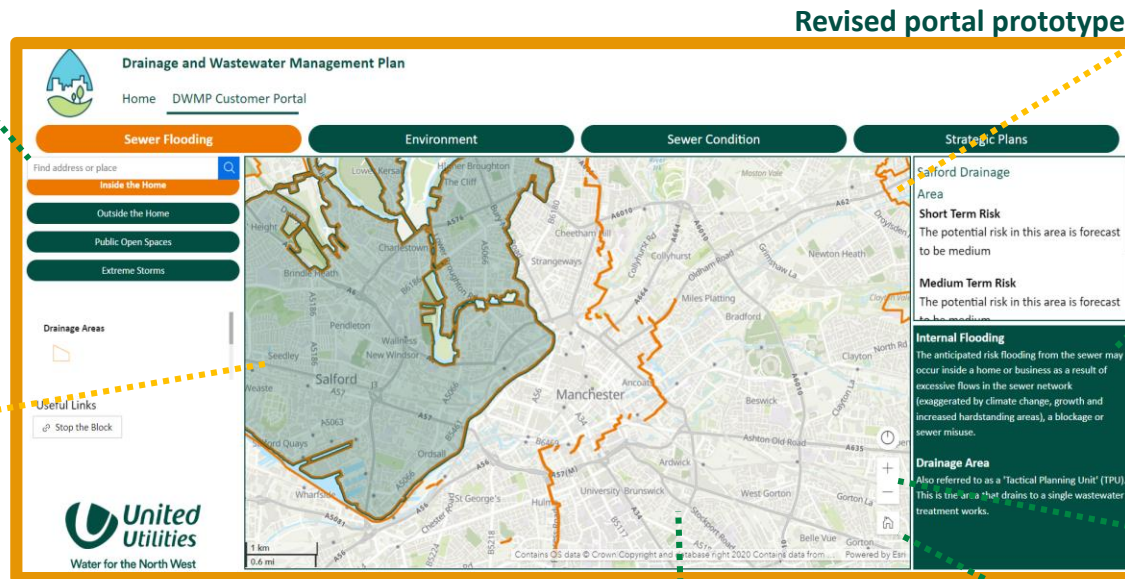
Clicking away from the map made the data disappear. It was not clear to most that they needed to have an area highlighted for the data to appear, therefore information was missed

The **zoom buttons** were not consistently present. This made the map difficult to navigate for older customers who relied on these buttons

- = functionality that did not work / frustrating
- = functionality that was confusing
- = functionality that worked well

Many of these issues have since been fixed, aiding map navigation in particular, but the clickable nature of the map remains unintuitive

The address bar search function works – users find it easy to use and navigate



The lined shading of the map is misleading: interpreted as either an error on the page or problem areas – not as areas to click

Despite instructions to 'select an area to view associated risks,' it is still not intuitively obvious that they need to click on the map to reveal data. Some assume that by typing in an address they have already selected an area

Enlarging the definitions box eliminated previous scrolling issues

Zoom buttons no longer disappear, and the new position on the bottom right feels intuitive (aligned with expectations from Google Maps)

Removal of yellow dots means users are no longer confused or distracted by this

The addition of a 'home' button & compass helped – users found it helpful to re-orient themselves



Consideration:

Reword instructions to be more explicit e.g. 'click on an orange area of the map (drainage area) to view its associated risks. You may need to zoom in to view outlined areas.' Play with alternating shading

Functionality issues as demonstrated by participants:

Drainage and Wastewater Management Plan
Home DWMP Application

Sewer Flooding Environment Asset C...

cleveleys

- Inside the Home
- Outside the Home
- Public Open Spaces
- Extreme Storms

Drainage Area
Also referred to as a "Tactical Planning Unit" (TPU). This is the area that drains to a single wastewater treatment works.

Extreme Storm Flooding
The anticipated risk that flooding will occur inside a property or business as a result of an extreme weather event causing the sewer network and sewer stations to be flooded.

United Utilities

0.3 km

https://experience.arcgis.com/experience/f9ee47048ed8444184a066e3def3b1f7/page/Sewer-Flooding/?views=Sewer-Blockage%2CExtreme-Storms

Drainage and Wastewater Management Plan
Home DWMP Customer Portal

Sewer Flooding Environment Sewer Condition

Wyn, Lancashire, England

- Sewer Blockage
- Sewer Collapse
- United Utilities Operational Area
- Useful Links
 - Stop the Block

Sewer Blockage
The anticipated risk that a blockage may occur in the sewer network as a result of sewer misuse.

Drainage Area
Also referred to as a "Tactical Planning Unit" (TPU). This is the area that drains to a single wastewater treatment works.

United Utilities
Water for the North West

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The portal

Look & Feel, Satisfaction

“

The layout is simple, there's a lot of clarity which is good. A lot of websites tend to hit you with too much information at once, but this doesn't. I may sound contradictory now, but the only downside is it could do with more pointers in terms of how to use it.

60+, Female, Greater Manchester

Overall, customers appreciate the simple design of the page, and consistent UU colours

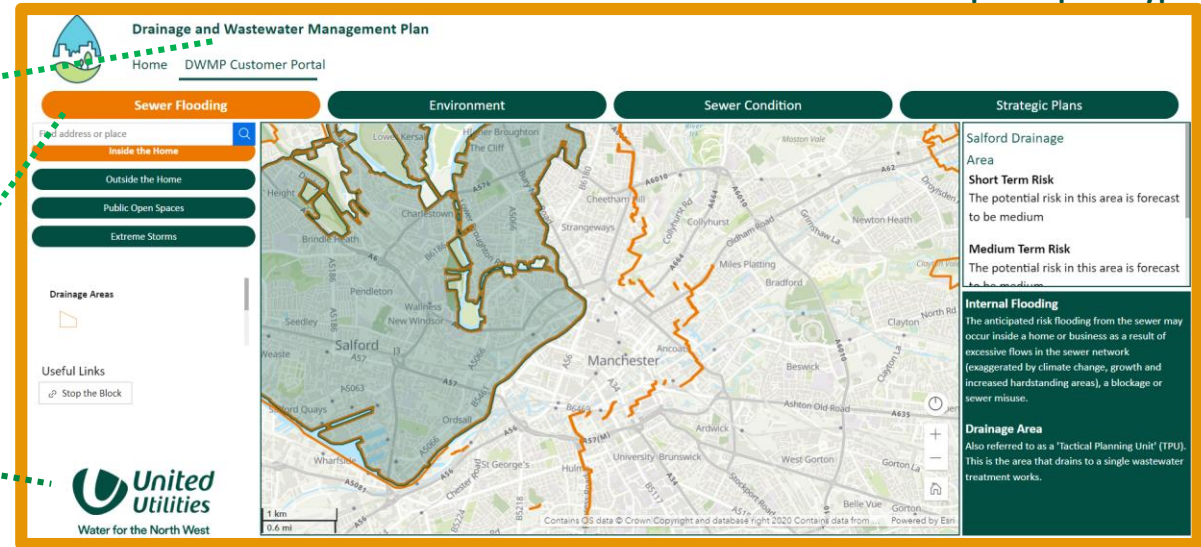


Revised portal prototype

The DWMP Heading is clear & understandable to most

The colour contrast in tabs helps customers easily & intuitively know where they are on the site

Plain page design & consistent UU colours – does not feel too busy / overwhelming, and aligns well with the United Utilities brand



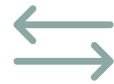
- = design elements that did not appeal
- = design elements that were confusing
- = design elements that worked well

However, there are some elements of the page look & feel that could be improved to aid overall comprehension & satisfaction



The sewer flooding tab as the default starting point can be confusing to some

There is an expectation of being able to click this tab and see something change. When this doesn't happen it can be initially frustrating



Grouping the information together on the same side of the screen

Moving the definitions box has made it easier to follow what the risk data is referring to at any one time, but this is still a challenge for some & there is room to optimise



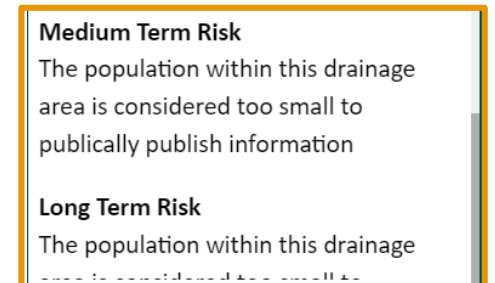
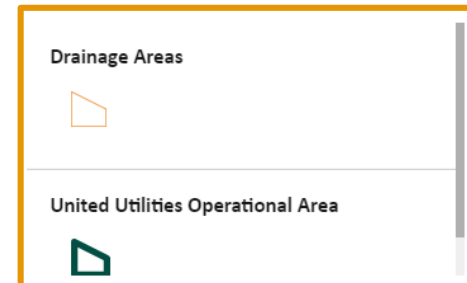
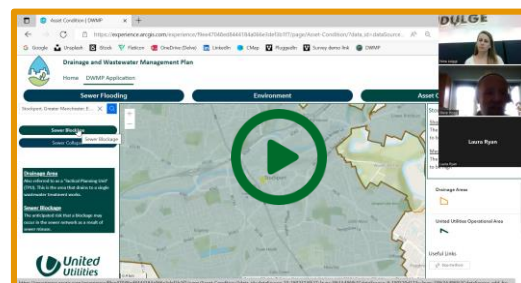
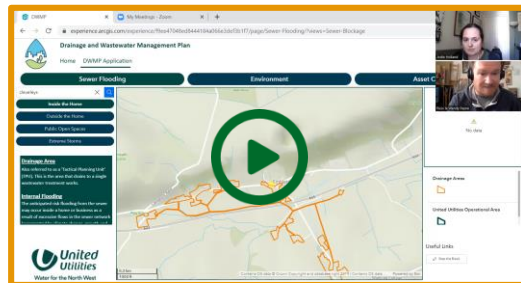
The key doesn't currently explain much to site visitors

It is unclear what drainage areas are without looking to the other side of the page



Information in the data boxes cuts off on smaller screens

Especially when the data box contains more text than usual – perceived as a site error and unfinished work



If possible, add some sort of cue to let people know something happens when they click on 'sewer flooding.' Refer to the topic area when describing the risks, e.g. *"The potential risk for [sewer collapse] in this area is..."* Add a simple definition for 'drainage areas' next to the key if possible (whilst keeping other definitions near the data box). Alter the size of the data box as discussed.



Moving Forwards...

Next Steps:

1

Extra context needed:

Make clear that risks shown are **'future modelled risks'** – not a live / interactive map

Explain **what a drainage area is**, and how these are relevant to the portal (i.e. you need to click inside each drainage area to see data about its status)

Explain **how risks are calculated** – what exactly is meant by different risk levels

Explain what's happening now - **how things currently work, and what problems might be**, in visual form, to ensure terms are understood & set context for the risks

2

Language optimisations:

Clarify the data box, e.g.:
In the next [1-2 years]:
[Sewer flooding inside the home] in this drainage area is forecast to be *[an area of concern]*

Use language such as **'minimal Concern / emerging concern / area of focus'** – this feels the least severe, & suggests UU is thinking and acting rather than simply declaring 'risk'

Specify the timeframe (e.g. number of months / years) for short, medium & long term, to avoid ambiguity

Explore **alternative names for the 'Environment' tab**, to ensure this is intuitively understood

Include **contact information** for those in low population areas

3

Functionality/ look & feel optimisations:

Play with **shading of drainage areas & clicking instructions** to make it clear where to click on the map, e.g. *'Click on an orange area of the map (drainage area) to view its associated risks. You may need to zoom in to view outlined areas'*

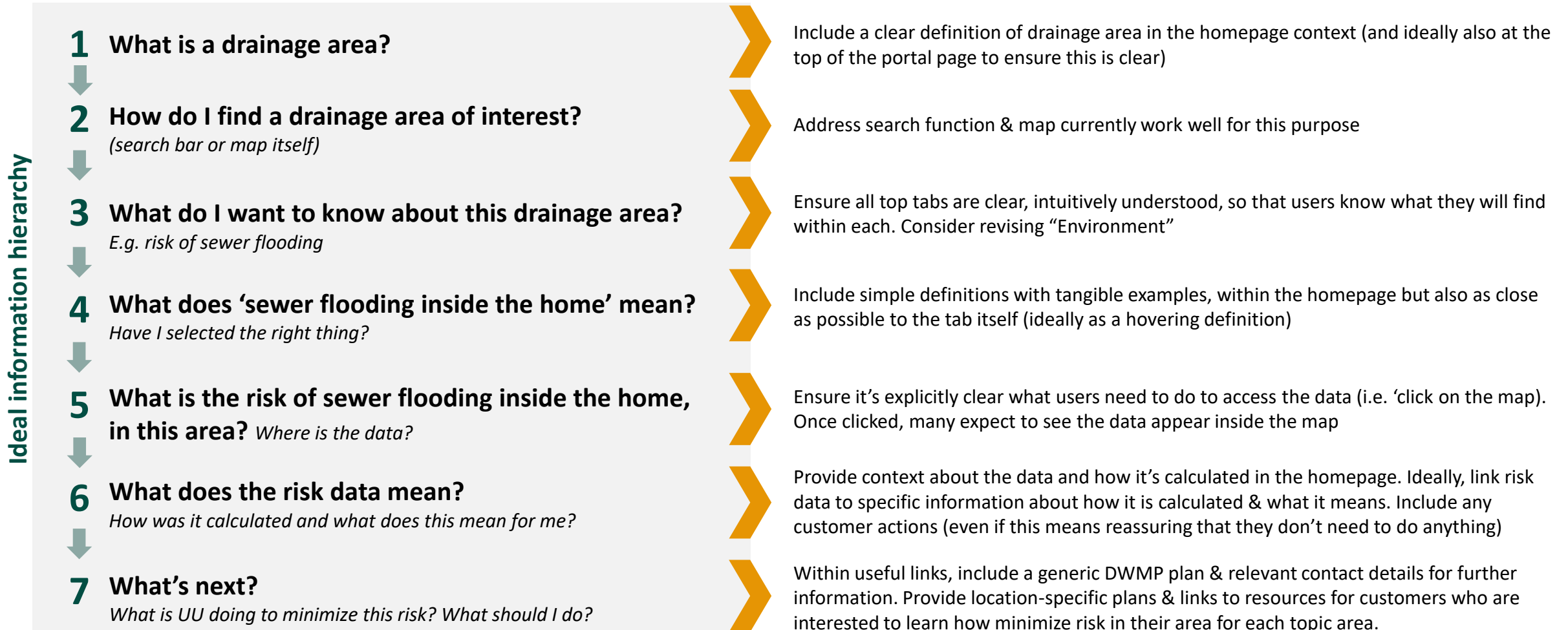
Ideally, drainage area definition should be on the left of the screen near the key, while the tab definitions remain on the right near the data

If possible, add a **cue** to let people know something happens when they click on 'sewer flooding'

Alter the size of the data box to ensure no text is cut off

While a homepage will help, we cannot guarantee that customers will read & retain all contextual information before entering the portal

In an ideal world, the design of the page would be optimised with a more intuitive flow of information, to help the reader understand



The WaterTalk panel

- Water Talk is an online community designed to reflect the views of those in the North West who have access to the internet (circa 90% of the population)
- Customer panels typically provide a deeper level of engagement with customers than ad-hoc pieces of research
- It provides rapid research access to UU customers
 - This can provide fast and cost effective feedback on a wide range of issues
- Where appropriate, work is supported with other methodologies and samples to represent those not present on WaterTalk
- Nearly 8,000 UU customers are on the panel:
 - 3,600 have taken part in a research activity in the last 6 months

To find out more about using the WaterTalk panel to meet your business needs, please contact **Shy Sharma**:



Shy Sharma

Customer Insight and Exploration Manager

Shy.Sharma@uuplc.co.uk

Appendix

We noticed the following typos during our interviews...



Wastewater Pollution

The anticipated risk that wastewater from our assets may **escpae** as a result of excessive flows in the sewer network (**exxagerated** by climate change, growth and increased hardstanding areas), equipment or structural failure, a blockage or sewer **miuse**.

- Escape
- Exaggerated
- Misuse



External Flooding

The anticipated risk flooding from the sewer may occur within the **curtlidege** of a home or business as a result of excessive flows in the sewer network (exaggerated by climate change, growth and increased hardstanding areas), a blockage or sewer misuse.

- Curtilage

...however, we understand that the definitions may have already been changed, and therefore these are no longer an issue