



**SCOTTISH WATER**  
**SR21 LOW PRESSURE 'DEEP DIVE'**  
**REPORT FEBRUARY 2018**



“To identify customer priorities and measures of success”

**Full colour thinking from Turquoise for Scottish Water**

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# 1 INTRODUCTION

## 1.1 PROJECT BACKGROUND

Scottish Water (SW) is undertaking an extensive Customer Engagement Programme (CEP) as part of the Strategic Review of Charges (SR21).

Whilst there has already been extensive qualitative and quantitative research into customer priorities, SW has also outlined the need to undertake a ‘deep dive’ into some areas, one of which is water pressure.



The research needs to understand customer expectations of water pressure and what low pressure means to customers. The outputs will influence how Scottish Water should approach improvement in this area.

The following report details the findings of this ‘deep dive’ phase of research into water pressure.

Please note that the term ‘low pressure’ is used throughout the report to describe what customers perceive to be low or poor(er) pressure. Where the industry definition of ‘low pressure’ (less than 1 bar at the property boundary) is discussed, it will be called the ‘industry definition of low pressure.’

## 1.2 PROJECT OBJECTIVES

The specific research objectives were as follows:-

- To establish whether the industry definition of low pressure has any resonance with customers, whether it is reasonable and whether (in its current form) it meets customer needs with respect to modern lifestyles.
- To examine the impact and acceptability of the consequences of changing the management of water pressure (potential increased water wastage due to leaks/bursts).
- To probe the level of desire for technology that allows the customer to have control of the water pressure (is this desired and is it desired if it impacts the network).
- To discover whether customers would find changes to the system acceptable in the light of potential additional costs (new installations and system upgrades) and what they would expect in terms of the implications for water charges.
- To guide Scottish Water on the optimum linguistic style to use with customers if System DNA is utilised.

## 1.3 METHODOLOGY

In order to truly understand the impact low pressure has on customers, Turquoise undertook a mini-ethnography study before the focus groups took place; all interviews were carried out with customers from the low pressure register.

Turquoise filmed all the mini-ethnography interviews with respondents showing what living with low pressure looks like for them; e.g. filling a kettle, running a bath/shower impact on appliances etc. For business customers, the impact of low pressure on different elements of the business was explored.

The output from the mini-ethnography study was a short video compilation which was used to inform the subsequent focus groups. The video can be viewed by clicking this link - <https://youtu.be/w3z-cyLzn8>

In the core phase of research, a total of nine groups were conducted across January 2018; six amongst household customers and three amongst business customers.

The household customers included:-

- Life stage (pre-family, family, empty-nesters, state pensioners)
- Socio-economic group (BC1C2DE)
- Vulnerable groups (state pensioners, low income families and those struggling to pay, BAME and disability/carer/non-native English speaking)
- Urban, rural and more remote locations
- Experience of low pressure (actual) or no experience

The business customers included:-

- Medium, small and micro-businesses
- Half to be water dependent and half not. Water dependent industries are agriculture, food manufacture, breweries, cafes, hotels, hairdressers, car washes etc.
- Urban, urban/rural and rural/remote locations

Groups were conducted in the following locations:-

- Glasgow
- Inverness
- Ayrshire (Largs) and Arran

## 1.4 OUTLINE DISCUSSION AREAS FOR THE GROUPS

### Spontaneous discussion of water pressure/low pressure

- What is low water pressure? How big a problem is low water pressure? How do they know when the water pressure is low?
- What are customer expectations regarding water pressure?
- Do customers perceive low water pressure as a priority for Scottish Water?

### Use of visual stimulus derived from mini-ethnography

- Show the actual impact on homes/businesses who experience low pressure
- What do people think about low water pressure now? Opinion versus experience?
- Do customers perceive low water pressure as a priority for Scottish Water after seeing impact it can have?

### Examine the industry definition; '1 bar of pressure at the boundary of your property.'

- Spontaneous exploration of the industry definition? Any understanding, relevance and resonance?
- How does the definition meet current customer lifestyle needs? Should it be re-defined to make sense to customers?

### Evaluating pressure management

- How do customers feel about this?
- How does this effect customer expectations?
- How acceptable are the implications (e.g. burst pipes) if they want to increase pressure in their homes?

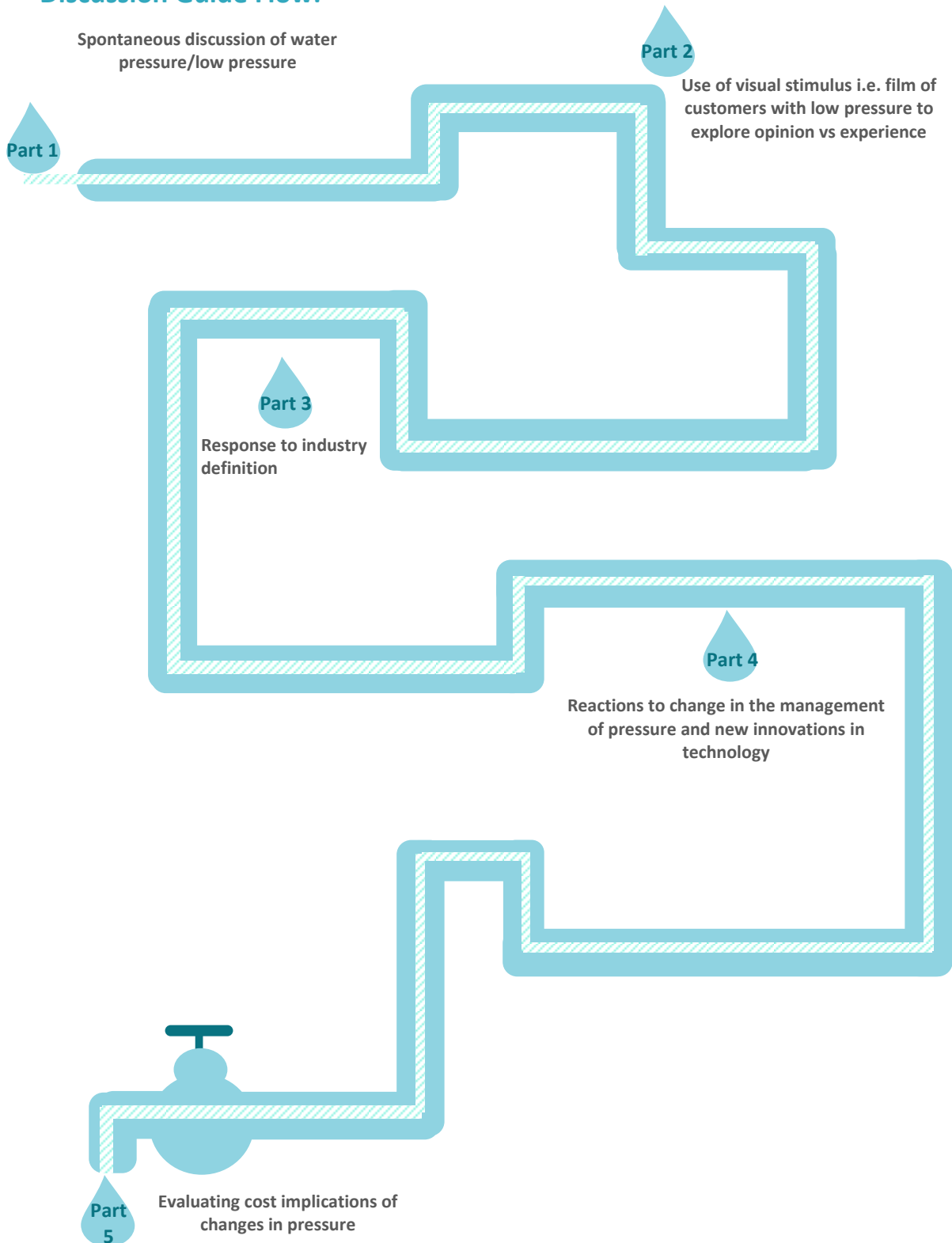
### New innovations in technology

- Desirability and implications

### Evaluating the cost implications of changes in pressure

- How this affects expectations
- Would they accept increased charges for a better service?

### Discussion Guide Flow:

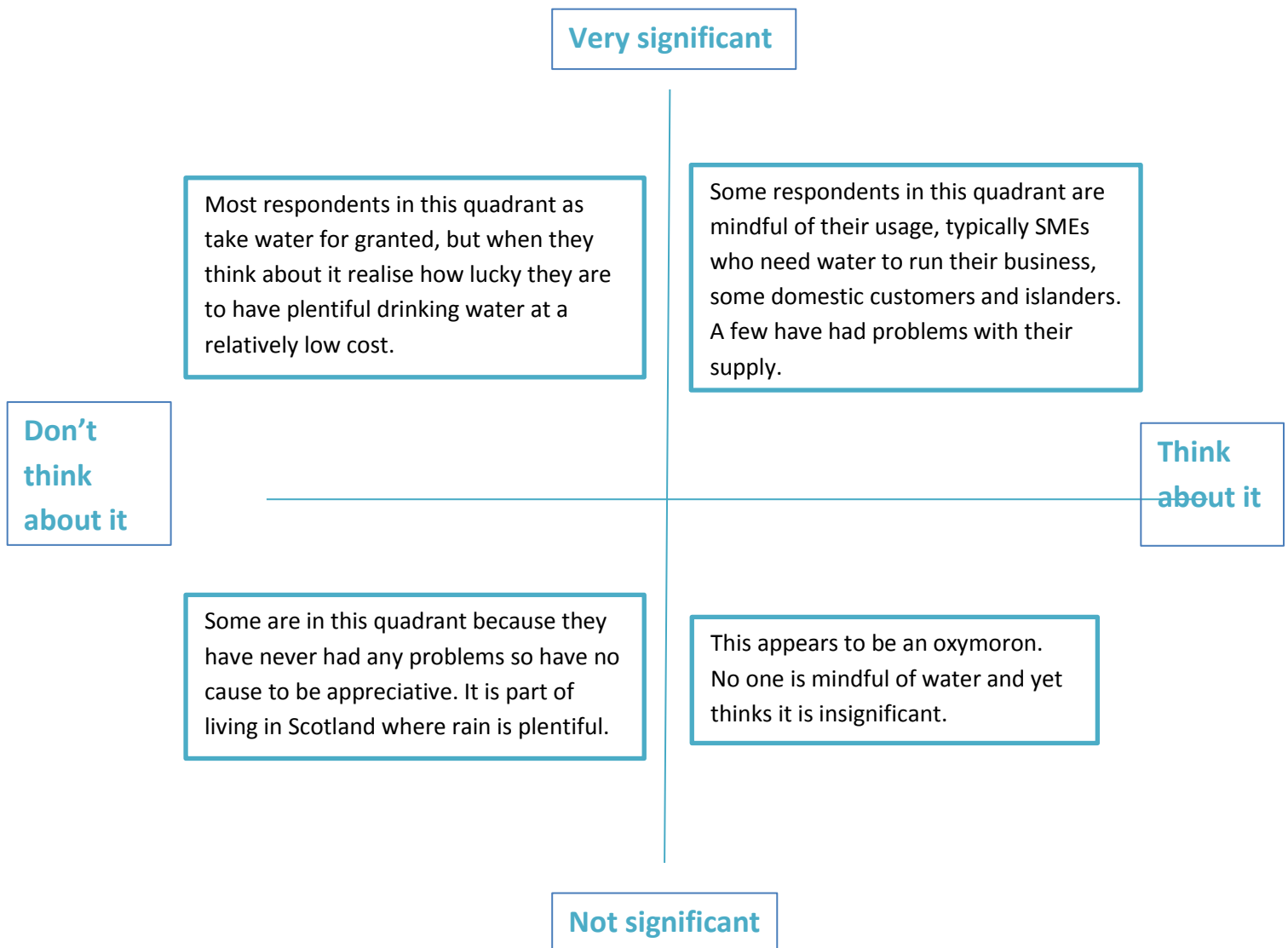


## 2. PART ONE: CONTEXT

### 2.1 INITIAL GROUP CONTEXT AND ATTITUDES TOWARDS WATER

As a means of providing a context for the commentary on the groups, Turquoise has provided a summary of customer attitudes within the grid below; the grid has the axes 'Think about it' to 'Don't think about it' and 'Water is Very Significant' to 'Water is not Significant.' Customers' views across all groups, household and business, have been plotted for the question 'how significant a part of your life is the water that comes out of the taps and do you think about it?'

Fig 1 – How significant water is, and do you think about it?





Most customers fall into the **upper-left quadrant**; for these customers, water can be taken for granted, but on reflection its significance is realised. These customers appreciate how lucky they are to have a reliable water supply and often talk about Scottish water being the best quality with the best taste.

Generally, those on the Isle of Arran are more conscious of water and tend not to take it for granted; many have lived somewhere off the mains water supply and know the expense and day to day difficulties of not having access to plentiful, quality water. These customers would fall into the **upper-right quadrant**. Customers in this quadrant perhaps have a business that relies heavily on water, such as a taxi company that washes cars, or those who work in catering or hospitality. Others think more about water because it is an on-going problem, or they have experienced problems in the past; typically relating to water quality, low pressure, or issues with waste water.

Those in the **lower-left quadrant** tend to have no problems with the water; they have rarely or never had to contact Scottish Water and are happy with the taste and pressure. These customers have had no reason to evaluate how they feel about water as they have never had cause to. However, although they take water for granted, they realise that there is a lot of work going on behind the scenes to provide customers in Scotland with their water.

There were no customers in the **bottom-right quadrant**. Simply thinking about water makes customers appreciate how lucky they are to have plentiful fresh drinking water at the turn of a tap. Many compared the water in Scotland to the water you get when you are abroad and there is no comparison. In places like Spain, water is restricted at certain times of the day in the peak season to conserve it. In other holiday destinations water cannot be consumed from the tap.

*'The water is always gushing out of your taps and until you actually have a problem with it you don't know who Scottish Water are.'*  
- Group 3 Disability

*'You notice it when you go abroad. You notice how good the water that comes out of our taps and showers is. I take it for granted when I'm here and then when I come back I appreciate it and then I'll take it for granted again.'*  
Group 2 Pre-family.

Although deeper thought about water prompted a generally positive response, it did bring to mind some grievances. Some customers were unhappy with the water quality; on Arran, some described a 'scummy' quality to their water, whilst in Inverness the water could smell of chlorine. There were also problems with discolouration; 'grey water' was reported in Glasgow (possibly due to local building work) and 'brown water' in Inverness. The customer reporting grey water in Glasgow questioned the safety of her water, whereas in Inverness, the customers believed that Scottish Water were powerless as that's 'just the way it is' as the water is 'coming off the hills.'

## 2.2 OVERALL PERCEPTIONS/ ATTITUDES TOWARDS SCOTTISH WATER

Unsurprisingly, SW is a low interest area for many. The reality is that customers rarely think about SW unless they have a problem and consequently know little about them. Customers do not receive a separate bill, so they feel they have little to no communication from them. Indeed, many feel that they rarely receive any information apart from specific notice when there may be discolouration or water interruptions. However, the fact that people don't have to think about SW is also a benefit as they (SW) quietly get on with things in the background.

Significantly, some did not know that Scottish Water was publicly owned and thus it was a moot point. Some presumed that it had been sold off along with other Government owned public assets like the Royal Bank of Scotland. Some expressed relief that it hadn't been sold off because they had a feeling that if it became private then they might introduce meters and their bills would go up. However, most knew that it was publicly owned but it was still viewed as a business that 'makes millions'.

Generally, there was a positive response to Scottish Water as an organisation; most see Scottish Water as reliable, consistent and dependable. Many customers had a good experience when contacting customer services and Scottish Water were quick to respond and acted professionally. The phone is 'answered quickly' and their problems (such as internal sewer flooding) are dealt with promptly. Scottish Water are also thought to be good at informing customers if there is going to be an interruption to their supply or if the water will be discoloured and for how long.

On Arran, where customers know their local Scottish Water team and see them around the island, Scottish Water are known for being knowledgeable and helpful. They know the infrastructure 'inside out' and are able to solve problems quickly.

On the other hand, a vociferous minority were less positive and found Scottish Water difficult to interact with. Some found they were being passed through different switchboards when contacting them had found Scottish Water to be expensive and inflexible (when connecting to the water supply for example). Other customers had a poor opinion of Scottish Water from interactions with relation to issues of responsibility; there seem to be a lot of 'grey areas' as to who is responsible or who owns the pipework. Some SMEs, often landlords or manufacturers, had been in dispute over the responsibility for maintenance of certain pipe work and view Scottish Water as intransigent and inflexible.

In Largs, it was mentioned that there was an on-going issue around flooding near Tesco's and locals felt that there had been a stand-off between the key organisations such as Scottish Water, SEPA and local councils. Thus, a minority of customers would describe Scottish Water as remote, cumbersome and bureaucratic akin to the civil service or parts of the NHS.

*'You never think of them. You don't even get a bill from them.'*

- Group 2 Pre-family

*'Scottish Water had to turn the water off in the whole building and they told us. And they put posters up too in case you missed it through your letterbox.'*

- Group 3 Disability

*'It was difficult getting hold of Scottish Water trying to get the water switched on. We had to pay our neighbours to close the road. It was pretty sad. I was pretty disappointed in them.'*

- Group 5 Families

*'I've been down South and the water is absolutely disgusting. The Scottish Water is the best one because it is purified. Water in London has been through someone six times. I give Scottish Water ten out of ten.'*

- Gp 3 Disabilities

*'I got charged £95 for having my toilet cleared. But it wasn't my fault. The plumbers told me it was an accumulation of all the flats down below coming through. It wasn't my fault but I got charged for it.'*

- Group 5 Families

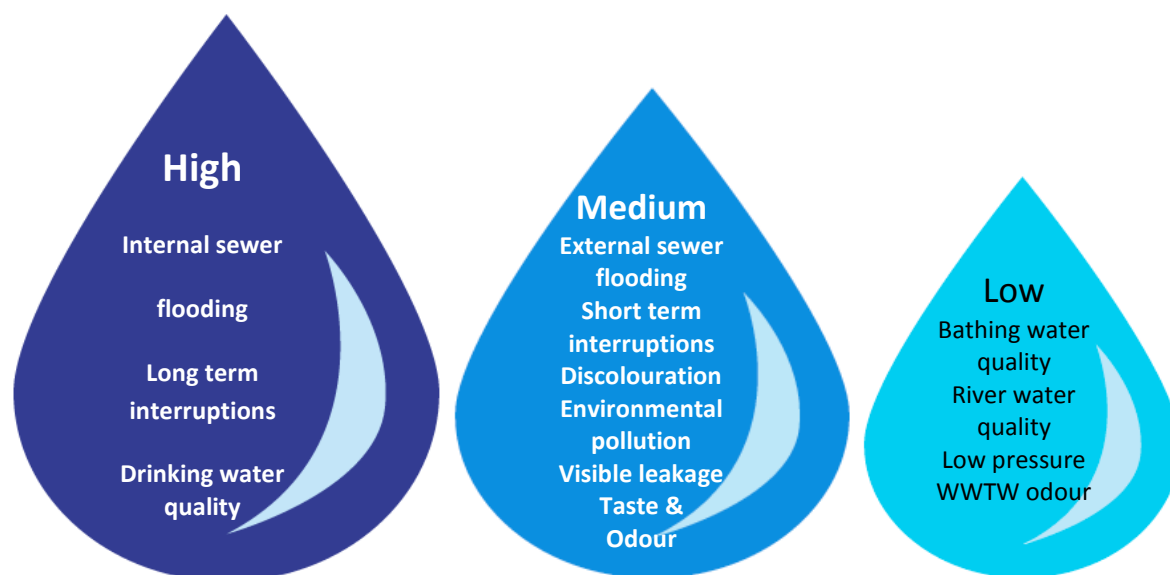
*'We had a problem with the drains choked up. Scottish Water are very efficient. They were there within 24 hours.'*

-Group 4 State pensioners

## 2.3 PERCEPTIONS OF SR21 CUSTOMER PRIORITIES

### Overall Perceptions

Fig 2 – SR21 Priorities

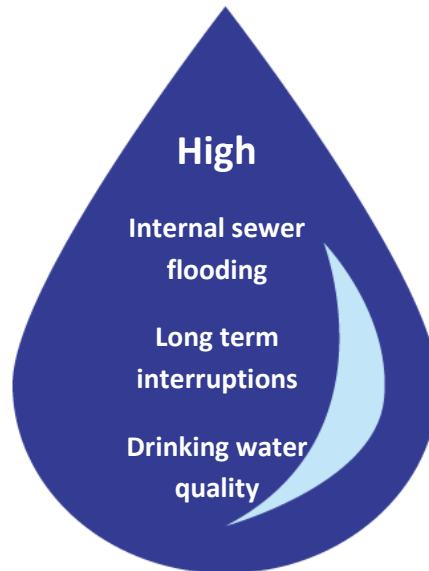


Customers within the focus groups were asked whether the priorities found in the earlier phases of research met their expectations. Generally, there was widespread consensus that the priorities in 'High' group were in the right place. However, many felt that some of priorities in 'Medium' group such as 'Taste and Odour', 'Discolouration' and 'Environmental Pollution' should be a higher priority. Similarly, some customers believed that some of the priorities in the 'Low' group should move up to Medium, particularly River Water Quality and Bathing Water Quality. Many also felt that bathing water should be more of a priority, not only from their own point of view because they went swimming in the sea, but also from a tourist's point of view – 'a good part of the Scottish economy is based on tourism and tourists will not want to visit if the beaches are dirty.'

Significantly, no one mentioned that low pressure should be a higher priority in the early stages of the focus groups. Business customers were generally satisfied, however one business owner in Glasgow did question its ranking. Thus, on initial discussion, low pressure was not an area of concern or perceived weakness.

## High Priorities:

Fig 3 – SR21 High Level Customer Priorities:



### Internal Sewer Flooding

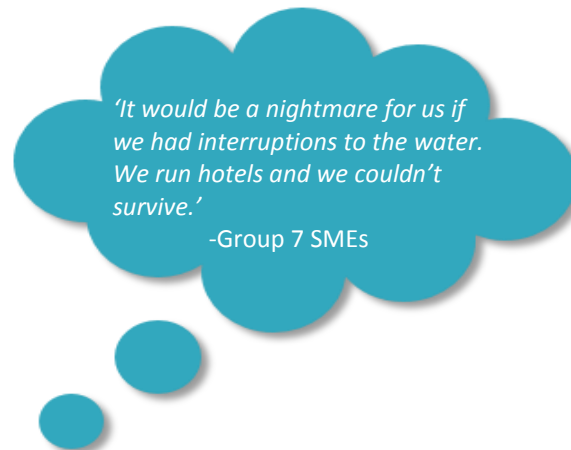
Internal sewer flooding was seen as a high priority across the board; some customers had first-hand experience of it and it was deeply unpleasant. However, they were impressed by how quickly Scottish Water reacted to the problem. The overall perception was that it rarely happened so therefore Scottish Water were clearly treating it as a priority and should continue to do so.

SMEs tended to agree with this. Although they had not experienced internal sewer flooding, so could not appreciate the potential severity of it.

*'Our back door toilet drain was overflowing so we had to phone Scottish Water. They were out within two hours because I had a young baby and the smell was up inside the house.'*  
- Group 8 Low Income

### Long term interruptions

Again, customers believed that this was correctly considered a high priority. This was especially felt amongst business customers whose livelihoods depended on water. There was, however, little understanding about how long the duration of long term Interruptions were.



### Drinking Water Quality

There was unanimous agreement that drinking water quality should be a high priority. There were some issues around this for those who saw this as solely a 'drinking water quality' and not the 'safety' of water. Some complained about taste, discolouration and odour of their water and a few customers felt that the water quality had deteriorated in the last few years.

Customers in Glasgow were particularly concerned about discolouration and odour. Anecdotally, one respondent had spoken to the local builder who described the pipes as being in a 'terrible condition' and advised her not to drink the water from the tap. If the problem is visual, like discolouration, customers start to worry and find it off-putting. Some customers disliked the cloudy or chalky colour which they experienced at night and did not realise that this was just oxygen and totally harmless and would settle if they left the glass.

*'I phoned up Scottish Water because the water was brown and they said it wasn't their fault.'*  
-Group 7 SMEs

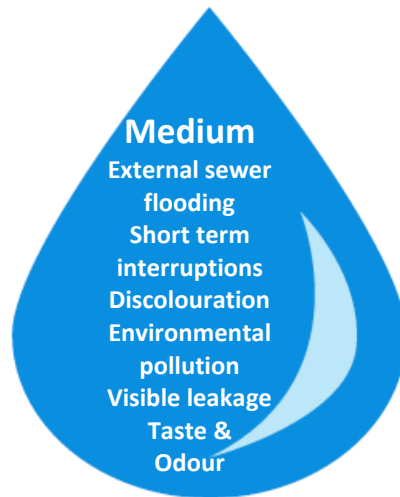
*'We have had no problem with water interruptions. There was an incident a mile away with the pipes that affected us but the water was back on really quickly.'*  
-Group 7 SMEs

*'My gran hasn't been able to drink tap water. There is a horrible taste and smell. Gran bought a water filter.'*  
-Group 8 Low Income

*'The water tastes different depending on where you are. Mines okay but in certain areas with friends and family it tastes odd.'* -  
Group 8 Low Income

## Medium Priorities:

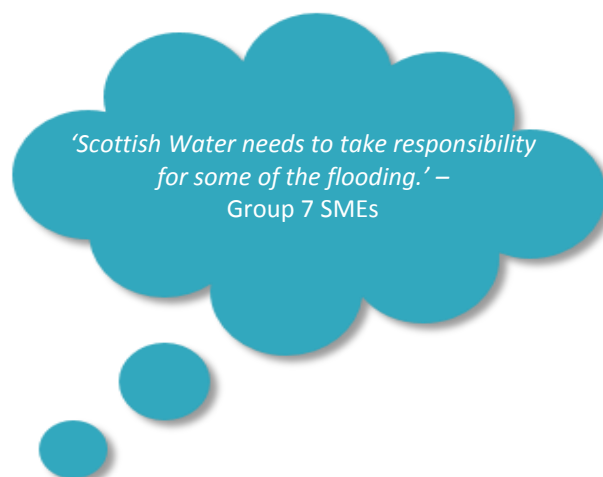
Fig 4 – SR21 Medium Level Customer Priorities:



### External Sewer Flooding:

Customers believed that external sewer flooding was less of a priority than Internal Sewer Flooding thus the medium ranking was thought to be appropriate. However, it did initiate a discussion around the knock-on effect of severe external sewer flooding and flooding in general.

In Largs, the flooding of a racecourse and roads leading up to it meant that the Scottish Grand National at Ayr Racecourse was cancelled leading a huge loss of business to pubs, taxis and hotels. Some felt that Scottish Water and SEPA had not taken responsibility for it.





### Short Term Interruptions:

On the whole, customers agreed that Short Term Interruptions were a Medium Priority. Not many customers had experienced this; for those that did it was a planned event and they had been given plenty of accurate notice and information about it.

### Discolouration and Taste & Odour (Water Aesthetics)

Customers talked about taste, odour and discolouration under the umbrella of drinking water quality. Significantly, they all felt that discolouration and taste and odour should be a high priority.

*'Sometimes we get discoloured water where we are. We've made phone calls and things but there's really nothing they can do about it because of where we are, coming off the hills and everything.'*  
Group 5 SMEs

*'The odour could have been a bit higher up in terms of priorities.'*  
Group 5 SMEs

Any changes in the colour, taste or odour of the water are deeply worrying to most customers.

*'I think it is quite important that we have no odour.'*  
Group 5 SMEs

*'It's not dirty water but brownish. If you don't live in the town you get used to it. Old Wives' Tales tell you that it is good for the skin.'*  
Group 5 SMEs

On balance, businesses generally agreed with the overall ranking of this water quality aspect.

**Environmental Pollution**

Customers generally took 'environmental pollution' to encompass the whole environment or eco system and thus they felt that for the sake of the wildlife it should be a higher priority. It was a particular concern on Arran where customers were dismayed and alarmed by the raw sewage that is pumped into the sea. They genuinely felt that in this day and age sewage should be treated.

*'In the future the major cost to Scottish Water will be meeting environmental concerns. I don't think that they should be ensuring that waste water isn't put in the sea.'*  
 -Group 9 Empty-nesters

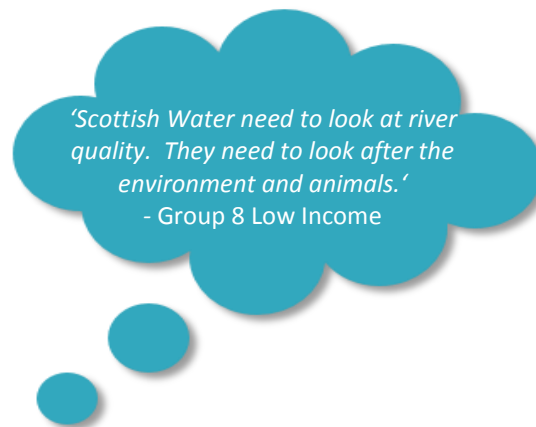
*'Our drains keep flooding when it rains.'*  
 -Group 5 SMEs

*'I think discolouration should be higher as that is quite a high-level risk.'*  
 -Group 2 Pre-Family

*'I would be concerned if the taste lingers. I'd be concerned of my health. It would alarm me if it didn't taste right or smell right.'*  
 Group 1 SMEs

**Visible Leakage**

Visible Leakage was often raised as an issue. Generally, customers did not like to see water flooding out especially if it went on for some time – for them it seems wasteful. Customers worried that they would end up paying more for their water because the water had to be treated again. However, most felt that it was appropriate that it was a Medium Priority.



### Low Priorities:

Fig 5 – SR21 Low Level Customer Priorities:



### Bathing and River Water Quality

Many customers were concerned that these two priorities were considered low priorities. Customers generally understood that bathing water quality refers to lochs and beaches; they were unhappy that Scottish Water did not see that as a priority.

Some were under the impression that the water was taken directly from rivers and so they believed that if river water quality was low this would mean that their water quality was poor. Some customers were worried about waste water from manufacturers going straight in to the sea and the effect that would have on wildlife. Some believed that bathing water quality should be a high priority due to the potential impact on tourism.

*'Bathing water quality is important. I like to swim in the sea. I want it to be nice'*  
-Group 9 Empty-nesters

*'The tourists won't come if the beaches are dirty.'*  
-Group 7 SMEs

### Low Pressure

Low pressure did not appear to be an issue spontaneously; respondents felt that it was in the appropriate group. It was not thought to be a widescale problem and although there were some household customers and SMEs for whom it was a problem from time to time, customers did not feel it warranted being placed in the medium or high priority area.

*'My toilet was perfect when I had central heating off the fire. It's only since the combi-boiler was put in that the problem started with the toilet.'*  
-Group 4 State Pensioners

*"You've got to have something to compare water pressure with. It's only when you go to someone's house and say 'oh my goodness – this is great!' So it's only when you have something to compare it with.'*  
-Group 4 State Pensioners

### Waste Water Treatment Odour

This was not raised as a priority and thus customers felt that it should stay where it was.

### 3. PART TWO: CORE FINDINGS

#### 3.1 INITIAL PERCEPTIONS OF LOW WATER PRESSURE

It was evident that water pressure was not a salient issue amongst the majority of customers; it’s was not a topic that customers gave much thought to. Overall, customers were happy with the water pressure in their homes and businesses and it was rarely discussed. Moreover, levels of awareness and understanding were low and there was little appetite for further information.

#### 3.2 WATER PRESSURE PERCEPTIONS AND EXPERIENCE

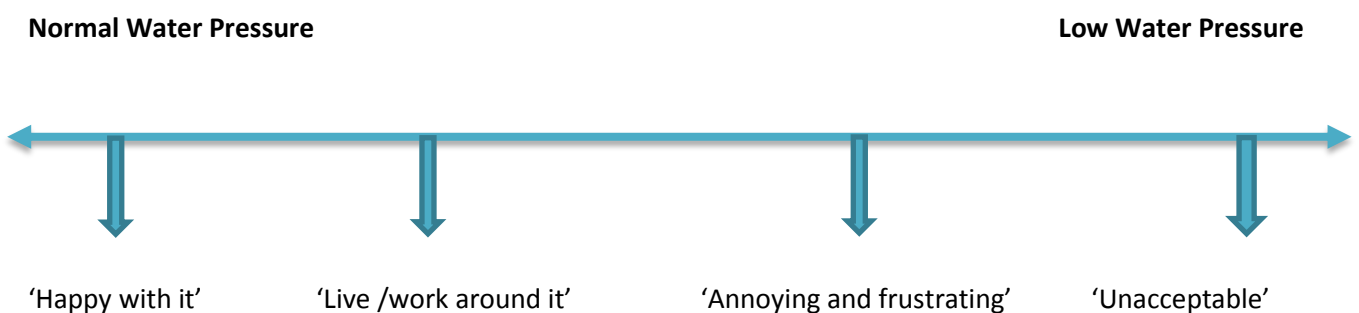
Once the issue of water pressure was probed within the focus groups it became obvious that the issue was more complex than the initial priorities had indicated. There was a continuum of experience of water pressure across household and business customers in this research.

Customers typically described water pressure as *‘the speed with which water flows through the taps’*. If the speed is slow or they just get a trickle, then that is described as poor or low water pressure. As one respondent with disabilities put it; *‘if it’s gushing out it’s good pressure, if it trickles it’s bad’*. Some notice that they have a drop-in pressure when there is insufficient hot water.

Customers across the continuum could be categorised into four key groups:-

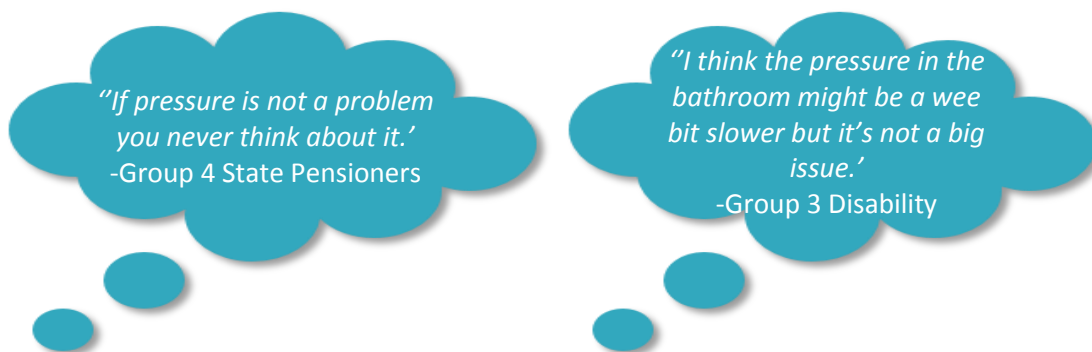
- ‘Happy with it’
- ‘Live or work around it’
- ‘Annoying and frustrating’
- ‘Unacceptable’

Fig 6 – Continuum of water pressure



- **'Happy with it'**

The majority of customers were happy with their water pressure. They described it as 'average', 'fine', 'normal' or 'good'. They were unable to define water pressure or low water pressure clearly but they were happy with how long it took to run a bath or fill a sink. Often, they compared it to when they went abroad on holidays and experienced low pressure and felt that they had excellent water pressure at home by comparison. An SME who ran a hotel chain was happy with her water pressure but she said that her customers expect a good shower and a bath and that if they didn't receive that they would expect a refund.



- **'Live or work around it'**

There were quite a few customers in this research who had low-pressure issues themselves. Often they did not realise that they had low pressure until they started discussing and comparing their water pressure to others in the group or watching the film. They probably would not describe it as low pressure but 'it takes a while to run the bath', or 'you can't run the tap if someone is in the shower', or 'I assumed it was just a problem with the boiler'. Typically, they noticed it when they were running more than one appliance at a time or when they were running a bath and someone was washing up or filling another sink. Generally, they just 'work around it', i.e. they don't do the dishes if they are running a bath – perceiving this as, simply 'the way it is'. Some thought that it was nothing to do with the water pressure but caused by old pipes, a 'dodgy' boiler or some quirk of their plumbing – i.e. an internal not an external problem. Generally, it was thought to be acceptable to live like this.

Often empty-nesters and retired/pensioners were more prepared to put up with or 'work around' low pressure. This was largely because they did not have to compete with the rest of the family for hot water and the retired were not in a hurry to leave the house for work in the morning. They could have

showers and baths out of peak times. Also, often they felt that their heating system was better now than what they had been used to growing up or in the past and so they did not feel the need to complain. However, young families and pre-family were less accommodating; time was short, and they found waiting for cisterns to fill frustrating. They liked to use multiple appliances as it saved time.

Significantly, these 'work around it' customers have nothing to compare their water pressure to and they have got used to it often over many years. In these households someone in the shower may shout down to the rest of the family to 'turn that tap off'. Or some say that you 'hear a scream' coming from the shower because it is either freezing cold or boiling hot. Others are more mindful and do not flush the toilet if someone is in the shower as they might be scalded; they know they have to moderate their behaviour. Often customers addressed the problem themselves by adjusting the stopcock. Some respondents had taken responsibility for their tenements and neighbours would ask if they could turn the pressure up for them if they were finding it too low.

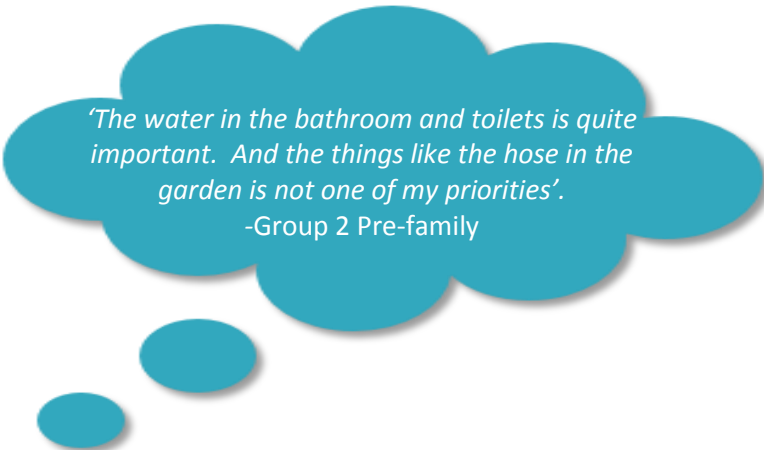
- **'Annoying and frustrating'**

A minority of customers found their low pressure 'annoying and frustrating' having at least experienced this at some point in their lives. Typically, customers find out about their low pressure via their plumber who tells them to phone Scottish Water.

When customers approach Scottish Water about their low pressure and are told that there is a 'domino effect' if many appliances are used at once, they feel that it is 'an excuse' or their 'get out clause'. Some household customers had issues with their hot water which came out 'in a trickle'. Some were so annoyed with their low pressure that they had decided to move house.

However, many customers understand and appreciate the situation. They make an analogy with computers and broadband - if there is more demand, then it will be slower.

Business customers are less able to 'live around it' or 'put up with it'. For example, in an office setting it is difficult if there are a number of staff and the toilets are not flushing properly or the pressure is so low they 'can't make a cup of tea'. In some cases, if water pressure so bad and can't be improved, the business has to consider whether to stay in the building.

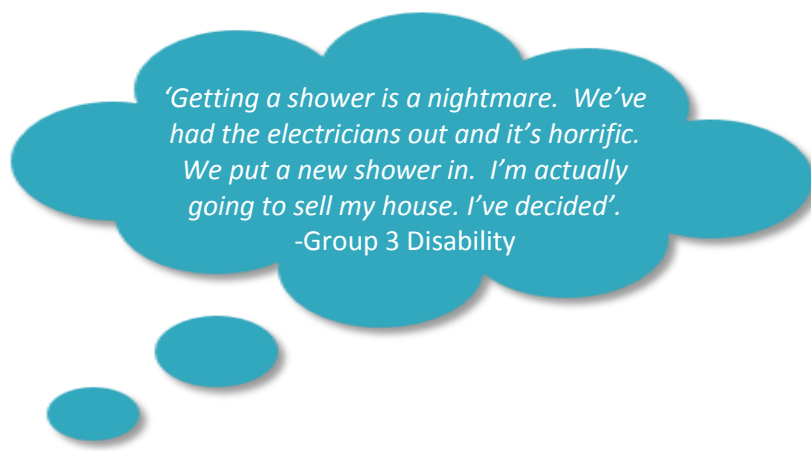


*'The water in the bathroom and toilets is quite important. And the things like the hose in the garden is not one of my priorities.'*

-Group 2 Pre-family

- **'Unacceptable'**

Some had experienced such low pressure that their businesses could not function. There were also examples of householders whose pressure had caused their combi boiler to stop working. A small number of business owners had lost staff because the facilities were not up to the standards they expect, and staff had left. For owners of hotels, low water pressure can cause scalding and thus they would be open to poor consumer reviews on Trip Advisor or Booking.com, or in the worst-case scenario law suits. There was an issue of who would be responsible for this? Would it be them as hoteliers or Scottish Water for not providing enough pressure to run showers?



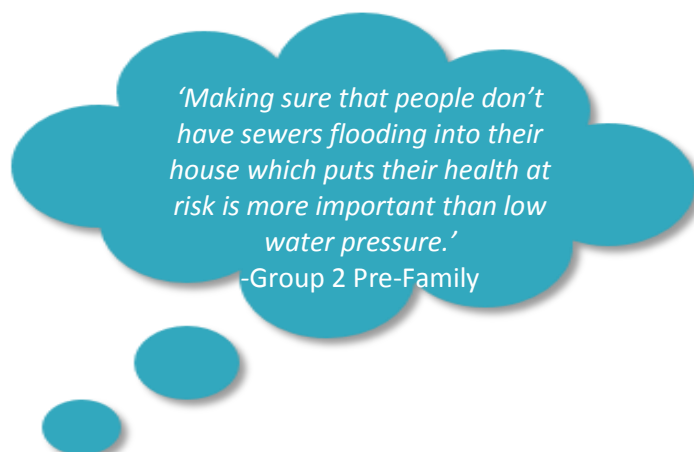


## 3.2 EXPECTATIONS OF WATER PRESSURE

When asked about expectations of water pressure, customers argued that living standards had improved and thus it was *unacceptable* to put up with low water pressure nowadays. People expected to be able to shower and to turn the taps on and both to run freely.

It was felt that people were generally time-poor and thus could not wait for a bath or cistern to fill. Many customers want and need to run several appliances at once and believe they do not have time to wait for slow water to come through a tap or to use the washing machine separately from the shower or dishwasher.

Many customers have a thin grasp of how water runs into their house. Some presume that there should be a constant flow to their washing machine no matter what else is being used. There was interest in some sort of valve or mechanism in their pipes where the cold water enters the house that would compensate for water demand and increase or decrease flow according to demand.



When prompted, customers wanted 'perfect' water pressure. They believed that they had a right to it and felt that Scottish Water should be providing a service that is fit for purpose. Thus, it seems that customers have high standards and expectations.

However, upon further discussion and consideration some customers understand that not everyone can have perfect water pressure because of ground level and proximity to the service reservoir or water tower. In addition, water pressure also depends on demand. So, although in an ideal world, customers want acceptable water pressure they understand that it is not a right.

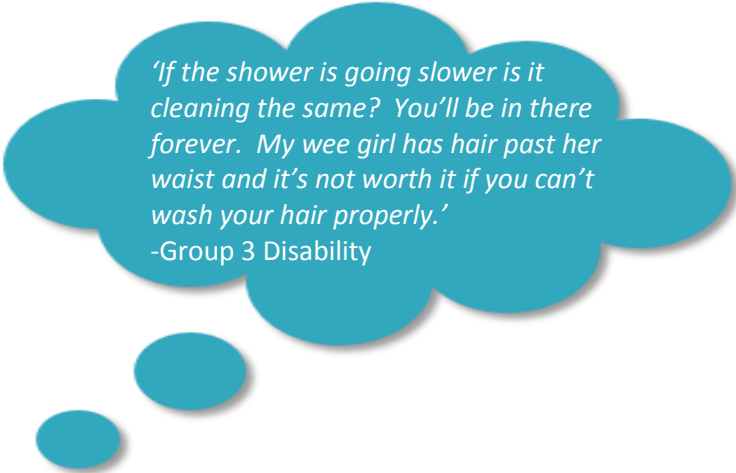
### 3.3 PERCEPTIONS OF CAUSES OF LOW WATER PRESSURE AND ITS IMPLICATIONS

There were a wide number of reasons elicited for the cause of low pressure; generally, customers thought it was due to burst pipes or poor infrastructure. Some thought it was weather related, for example pressure would be lower if it had not rained and thus the reservoirs were low. It was also hypothesised that it could also be related to air locks and blockages in the system. Customers were also aware that demand increased at certain times of the day due to usage. It could be related to what floor you are on in a flat or tenement; the higher up the lower the pressure, depending on the system.

#### Implications

Obviously, there were implications for households as it impacts on daily life. There were concerns about how time consuming it was because it would take longer to have a shower and to do their household chores. Some thought that if the boiler was running for longer it could increase gas and electricity bills.

There were also many implications for businesses. For a taxi company, it would take longer to wash the cars; for a painter/decorator, it would take longer to wash out brushes; and for the hotel, campsites and catering businesses, it could put lose them business due to customer complaints. So, it was clear that there were huge financial and logistical repercussions from low water pressure and for these customers it should be a high priority for improvement and investment.



*'If the shower is going slower is it cleaning the same? You'll be in there forever. My wee girl has hair past her waist and it's not worth it if you can't wash your hair properly.'*  
-Group 3 Disability

### 3.4 IS SCOTTISH WATER DOING ENOUGH ABOUT LOW WATER PRESSURE?

Overall, customers felt that Scottish Water is addressing low pressure; although a minority were not sure. When given the figures of customers on the low pressure register, it was seen as affecting only a minority and not seen as a widescale issue. Attitudes did, however, shift slightly after viewing the low pressure film; for some, this highlighted a problem that they were unaware of.

Some customers felt that Scottish Water should be doing more about it and were surprised that when they contacted Scottish Water and queried their low pressure, Scottish Water told them it was due to more than one appliance being used at a time. As mentioned previously, customers' expectations are high especially if they live in a modern house; they feel it is reasonable to expect to be able to wash the dishes and run a bath at the same time.

Others believed that Scottish Water may not know the breadth of the problem given that many customers will not have contacted Scottish Water about it. Scottish Water are not always the first port of call when something with the water goes wrong; the landlord, the council and the local plumber are foremost in many customer's minds. Many customers attribute their low pressure with quirky plumbing, an ageing boiler or simply the configuration of their bathrooms/house/tenement.

### 3.5 PERCEPTIONS OF HIGH WATER PRESSURE

Only a minority had experience of high water pressure. For some it was dangerous because it could lead to scalding; others felt that their heating system may not be able to cope with high pressure.

Some thought it could be addressed by turning down the stop cock.

*'Low water pressure is not debilitating. It is a small annoyance in my life. Oh come on there are bigger things to worry about than your power shower isn't strong enough.'*  
-Group 2 Pre-Family

*'My water pressure goes below a bar and then I need to put it up a bar. I usually put it between 1. and 1.5. Then I know it might go down very slightly so I might up it up to 1.5 before it comes down again. But it takes a while.'*  
-Group 2 Pre-Family

### 3.6 CONSEQUENCES OF LOW WATER PRESSURE

Spontaneously, customers mentioned not being able to wash the dishes whilst someone was in a shower as being an indicator of low pressure; or the cistern taking more than a few minutes to refill. The principal issue was with the shower running hot and cold when others in the household were running taps, this tended to cause arguments and stress within families.

Others judged it by how far you have to turn the tap on; if you start turning the tap on and after a quarter of a turn there is no more, then that is an indication of the problem of low pressure. Others with a bar type tap believe that they have good pressure because the bar is only half way up and they have a plentiful flow of water.

Respondents were prompted with a list of examples of the implications of low water pressure and their responses are elicited below:

Fig 7- Table of low water pressure implications

	What do you associate with low pressure?	Which would you put up with?	Most impact on daily life?	Unacceptable?
Taking ages to fill a bath	✓	✓	X	X
Power shower is a trickle	✓	X	✓	✓
Can't run two appliances	✓	✓	X	X
Unable to have a modern/sealed system	? (there was a lack of knowledge about this amongst some)	X	✓	✓
Can't wash car/water garden	✓	✓	X	X
Cistern takes ages to refill	✓	✓	✓	X
Scalded by shower as water over heats	✓	X	✓	✓
Takes longer to complete a cycle in washing machine	✓	✓	X	X

Key

✓ = yes

X = no

Generally, customers are prepared to 'work around' only being able to run one appliance at a time although some find it annoying and frustrating. Some were unaware that you needed a certain level of pressure to run a sealed system and for many that was unacceptable and something that Scottish Water needed to address. However, at this point customers did not know the numbers involved or how wide a problem it was.

Not being able to wash the car or water the garden was frustrating but not unacceptable. The cistern taking a while to fill had more impact on daily life as it was embarrassing and not something they wanted to acknowledge or talk about; slow filling cisterns were more problematic in work situations and in larger families with only one toilet.

Being scalded by a shower was deemed totally unacceptable and could lead to law suits if it happened in a hotel.

However, the general response to low water pressure is subjective and some are willing to put up with a lot more than others.

*'Next door I've the shower and in the next room there's a sink. If I'm in the shower and someone in the other room is trying to brush their teeth I'm like 'For God's Sake! Will you turn that tap off'.'*

-Group 6 Families

*"If pressure is not a problem you never think about it."*

-Group 4 State Pensioners

*I would have thought it was the boiler's fault if there was no hot water. I wouldn't blame Scottish Water. So maybe that is good of Scottish Water having kept this hidden for so long.'*

-Group 2 Pre-Family

*'I would be more concerned with anything that makes me run late. So the shower or clean clothes for work. Anything that interfered with my employment. Other than that I can work around it.'*

-Group 2 Pre-Family

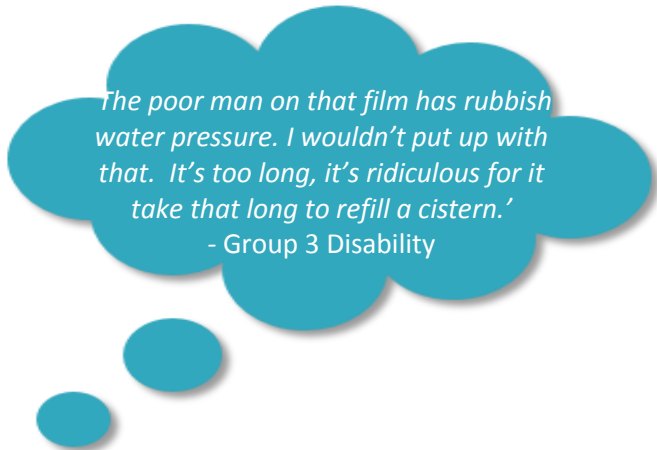
*'It depends on your house and the types of taps. We have a terraced house so don't know whether that is to do with water pressure coming into the house or to do with the pipes. It doesn't bother me. I'm happy for it to be a low priority.'*

-Group 8 Low Income

### 3.7 PHYSICAL EXPERIENCE OF LOW PRESSURE

The unanimous response to the mini-ethnography film was that customers believed, on the whole, that the people featured had far lower water pressure than they did. For a minority, there was some resonance with the slow flowing tap in the bathroom and slow flowing cistern if someone else was using the shower or running a bath (having not recognised a low pressure issue when discussing priorities at the initial discussion).

Generally, customers were surprised that the people in the film had resigned themselves to living with it; they were surprised at their lack of anger and frustration. Many felt that Scottish Water should do something about it to help these people and there was widespread sympathy for them. It was thought that low pressure had a big negative impact on their lifestyle especially those that had no hot water in the shower.



*The poor man on that film has rubbish water pressure. I wouldn't put up with that. It's too long, it's ridiculous for it take that long to refill a cistern.'*  
- Group 3 Disability

Business customers felt that it was unacceptable and those businesses that were water dependent would not be able to function.

A minority of domestic customers had zero tolerance for a situation like this, and if it could not be improved some would consider moving house; especially younger customers. Some felt that it would be more of an issue if neighbours had good water pressure and they didn't because it would appear that their neighbours are getting the lion's share of the pressure at their expense. There was also the issue of money; customers didn't feel it was fair if they all paid the same but some got a better service than others.

The film highlighted the 'plight' of low water pressure and the general feeling was that Scottish Water should solve the problem.

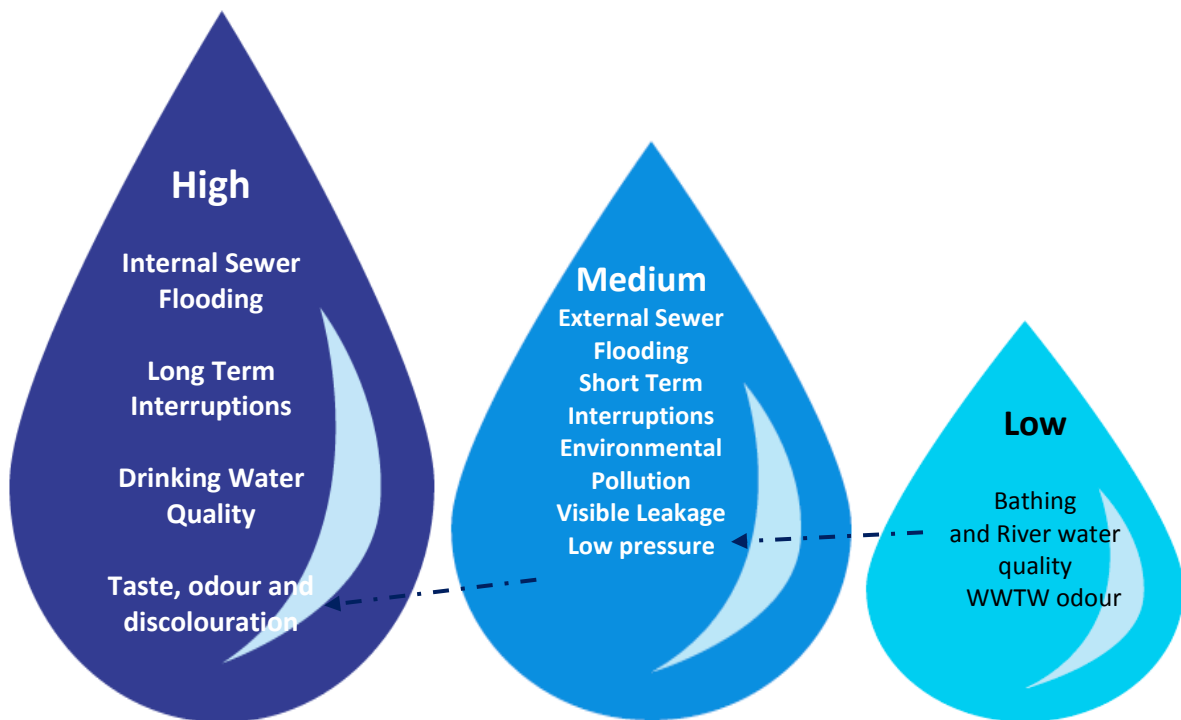
### 3.8 HAS THE PRIORITY CHANGED?

After watching the film, many customers wanted to move low pressure from a low priority to a medium priority. Some wanted to move it to high; although when challenged they agreed that it was not as high a priority as internal sewer flooding or drinking water quality; after all, customers still had access to water just not at the pressure or flow they wanted.

Although low pressure was frustrating and annoying it was not life threatening; internal sewer flooding, for example, is a potential health risk. Some detected there was a difference between having a slow flow of water from the tap to having no heating or hot water. For these customers, slow water flow would be a low priority and no heating or hot water a medium priority.

It was thought to be more of a priority if it was a business user rather than a domestic user because of the financial implications of not being able to run a business. Domestic customers can generally work around it to an extent but if you are a business customer you could lose your livelihood.

Fig 8 Revised Priorities





*'If it was really slow filling up I wouldn't get anyone coming back for a holiday. You don't want to spend half your holiday waiting for the bath to fill up.'*

*-Group 5 SMEs*

*'We go and stay with my partner's family and you can't turn the tap on downstairs if someone is in the shower because you are going to burn them. It just does not work. It is a nightmare. I have always put it down to his house being old but I am actually thinking it is not that at all.'*

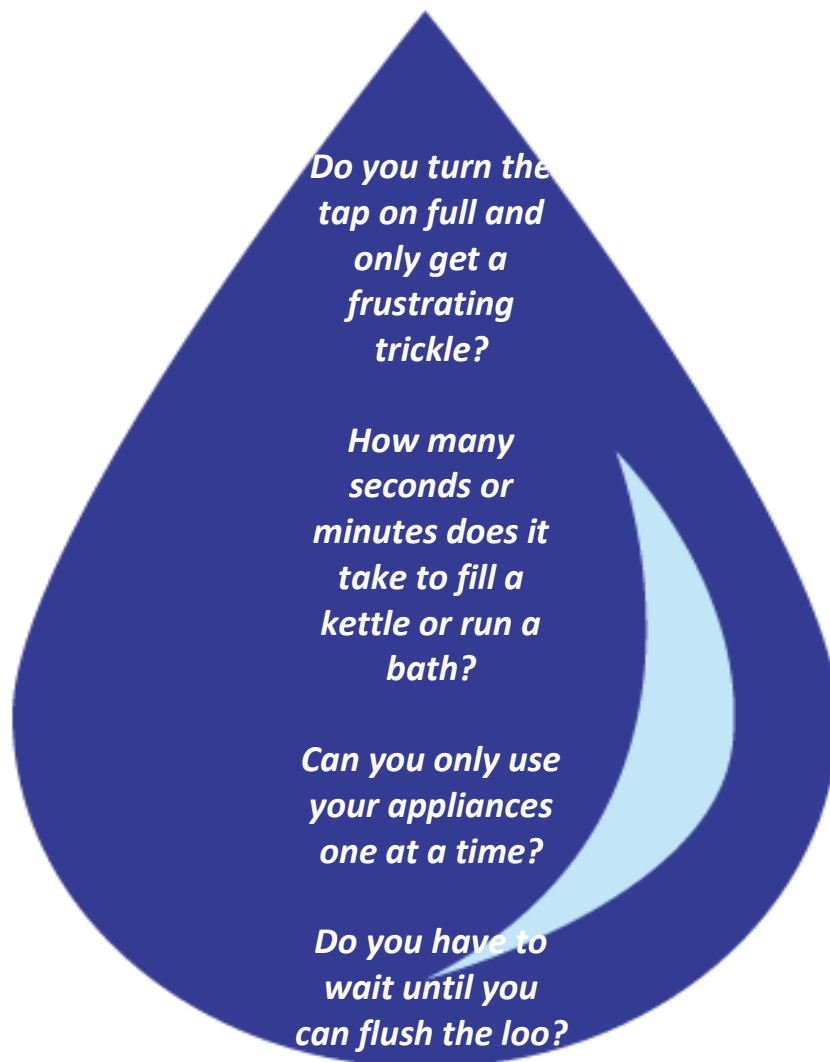
*-Group 5 SMEs*

### 3.9 THE INDUSTRY DEFINITION AND CUSTOMER FRIENDLY LANGUAGE

Across the groups there was no or little understanding of the industry definition **'the minimum service standard that Scottish Water (and other companies) is meant to deliver is 1.0 bar of pressure to your property boundary'**. No one could explain what 1.0 bar of pressure actually looks like.

As a term, it was meaningless and did not have any relevance to customers' lives. Also, there were low levels of interest in understanding bars of pressure; they simply wanted water pressure that worked. Customers required a good flow and wanted to use the shower and taps without having to moderate their behaviour, or for it to impact negatively on family or business life.

Fig 9 customer friendly language



Respondents were asked to come up with a customer friendly language version of the definition. There was a widespread feeling that 'normal' pressure meant different things to different people depending on their experiences. Therefore, customer friendly language could describe how long it takes to fill a kettle or a bath; for example, it should only take 10 seconds to fill a kettle, or 5 minutes to fill a bath, or 3 minutes to fill the toilet cistern, but if it takes 2 -3 minutes to fill a kettle you have low pressure.

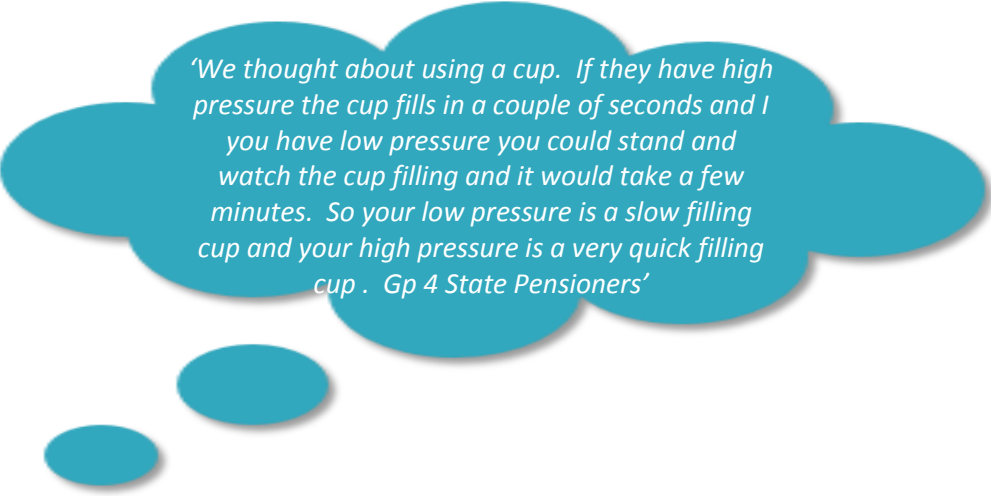
An alternative was a visual expression with a dripping tap <1 bar and a flowing tap with 1-2 bars of pressure. Some came up with a gauge type bar with a colour range where red was below 1 bar, green was 1-2. There was also interest in a definition that described the number of appliances you could run; for example, if you could only run one sink at a time then your pressure = less than 1 bar.

Other customers wanted to focus on emotions; for example, if your water comes out in a 'proverbial trickle' then you are likely to be frustrated but if you have good pressure you are likely to be happy. Further to this, it could be about behaviour; do you have to moderate how you live because of the pressure in your house or business?

Significantly, all customers felt that it was admirable that Scottish Water's aspiration is to provide 2 bars of pressure to the property boundary. Most felt that one bar was not enough particularly because you need more than one bar to run a combi boiler. Thus, some felt that 2 bar should be the minimum standard especially as not all customers would achieve that. However, many were concerned that raising the pressure might lead to more bursts and leaks. Some felt that 2 bar was too high because their boiler did not want more than 1.5 bar of pressure without hissing and popping. Others felt that perhaps older heating systems and older ceramic pipes underground could not cope with higher pressure which would lead to more bursts and leaks.

### In summary

Customers believed that Scottish Water should communicate information about water pressure so that customers know what they are entitled to, like a Service Level Agreement, and what normal water pressure looks like. It was felt that Scottish Water may have to use social media or an advertising campaign to raise awareness and educate people, given that most admit that they don't read leaflets sent in the post. However, some felt Scottish Water might be reluctant to do that because it could cause a lot of work for them and more may be added to the low pressure register. Some argued it was actually in Scottish Water's interest to keep this 'under the radar.'



*'We thought about using a cup. If they have high pressure the cup fills in a couple of seconds and if you have low pressure you could stand and watch the cup filling and it would take a few minutes. So your low pressure is a slow filling cup and your high pressure is a very quick filling cup . Gp 4 State Pensioners'*

### 3.10 PRESSURE MANAGEMENT

*‘Managing the water pressure in the pipes is one of the methods Scottish Water uses to limit the amount of drinking water lost through leaking and burst pipes while also ensuring a continuous supply.’*

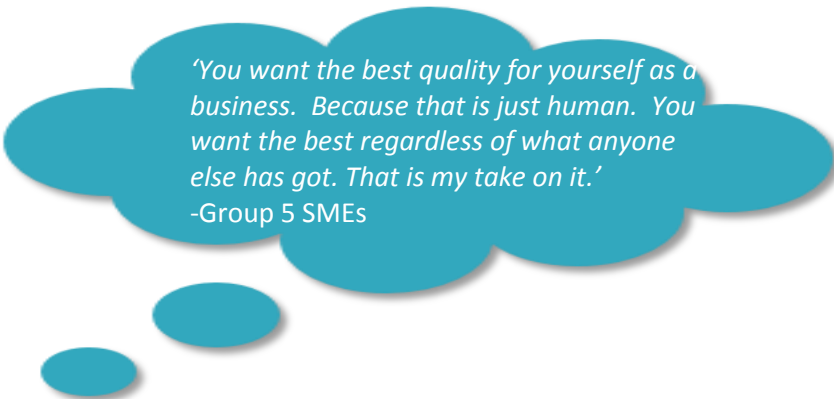
*Most customers would not see a difference in their supply while some may experience lower pressure than they have been used to. This may mean some appliances may not work. Pressure management can also highlight if there are any issues within a customer’s private pipe network.*

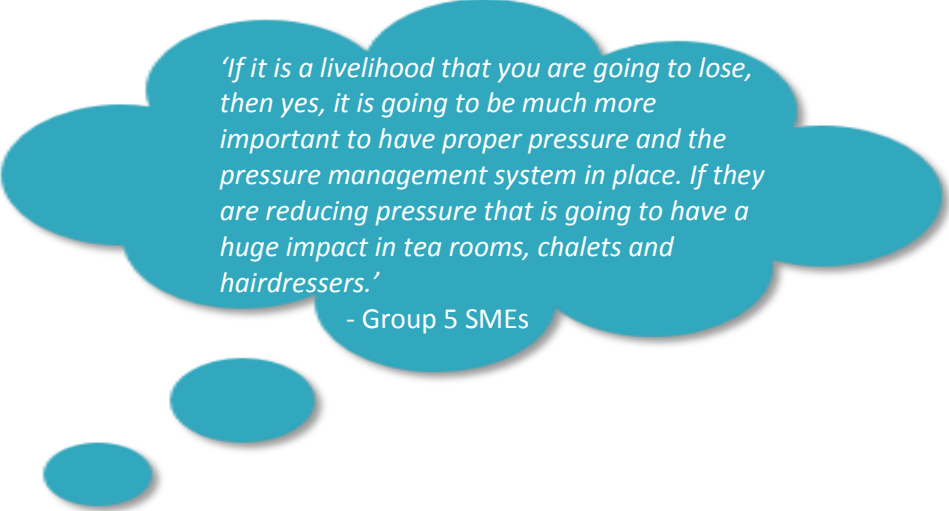
*For some customers who struggle with low pressure, their pressure can’t simply be altered or turned up.’*

Water pressure management was perceived to be a bit of a vague term lacking meaning and clarity. Some were suspicious of it and thought it was Scottish Water ‘massaging the figures’. This view was not uncommon and reflects the general lack of understanding of industry terms.

Significantly, there were concerns with Scottish Water’s pressure management. Indeed, many customers were alarmed by the phrase ‘some customers may experience lower pressure than they have been used to’ and ‘this may mean some appliances may not work.’ These customers wanted to know if the lower pressure that some customers would experience would be long term. For some, water pressure management sounded like an increased strain on the system.

The general feeling was that Scottish Water should reduce the pressure in areas where pressure is higher to minimise the risk of damaging the system as the consequences of damage is more waste and higher costs for customers. However, it also highlighted the issue that, going forward, modern appliances rely on higher water pressure in order to work so Scottish Water have to prepare for that and invest in their infrastructure. Scottish Water needs to ensure that the infrastructure can cope with modern demands so that they can raise the pressure without bursting the pipes.





*'If it is a livelihood that you are going to lose, then yes, it is going to be much more important to have proper pressure and the pressure management system in place. If they are reducing pressure that is going to have a huge impact in tea rooms, chalets and hairdressers.'*

- Group 5 SMEs

Customers generally understood why Scottish Water wanted to manage water pressure in the pipes. High pressure is thought to cause problems because it may burst the pipes. But also, there may be differences in demand and so the water company needs to adjust for that. Nevertheless, customers need to have the benefits of water pressure management spelt out to them; such as pipes last longer, water supplies are more reliable with fewer interruptions, and there is reduced need for excavation work.

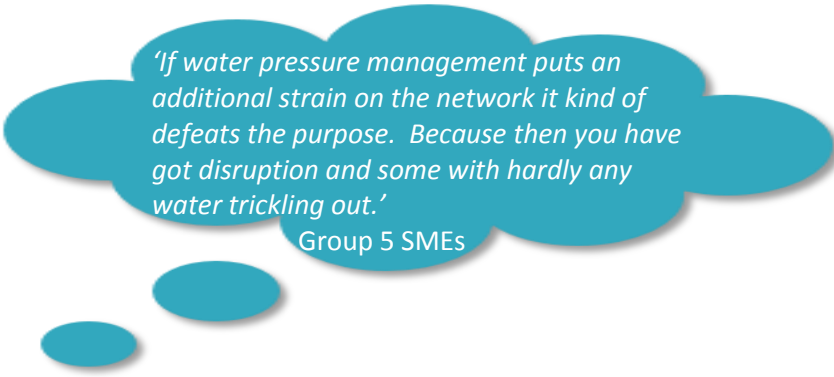
Views on whether customers should pay for the network upgrade were polarised. Most would rather pay more than lose pressure. Some believed that, given SW are publicly owned, they should borrow money at a low interest rate to do the work; they questioned why customers should pay when Scottish Water are 'making millions'. Others were happy to pay a small amount to ensure better quality water pressure for everyone. They felt that all customers should move forward and so they didn't mind paying a small amount extra to help them achieve better water pressure.

A point raised by some customers was that if the proportion of customers on the low-pressure register was so small then would it be cheaper to find individual solutions for these customers such as tanks, pumps etc, rather than try and upgrade the entire network?

In terms of whether customers have a role or a responsibility with regards water pressure, most customers who are home owners feel that they have a responsibility to make sure their appliances including their boilers are working to the best they can and if that means turning the stopcock up or the gauge on the combi then that is the right and smart thing to do. Some respondents already offer to maintain pressure by adjusting the stopcock in tenements on behalf of their neighbours where there is a shared supply.

Overall, there are going to be 'winners and losers' with pressure management. Those who have low pressure may have an increase in pressure but those who will get higher pressure may experience more leaks. A minority believe if Scottish Water are minimising the risks with their infrastructure then it is acceptable that a few customers should pay the price with lower pressure. In the scheme of things, the suffering or inconveniencing of a few customers is seen as a small price to pay. Some wondered whether Scottish Water should invest huge amounts of money if it was only to help a few customers.

Customers appreciate that Scottish Water is trying to make sure everyone has enough water supplied everywhere. It would be reassuring for customers to know that Scottish Water are not attempting to improve the whole network at once but rather adjusting small amounts of the network at a time using smart technology where possible to manage the flow.

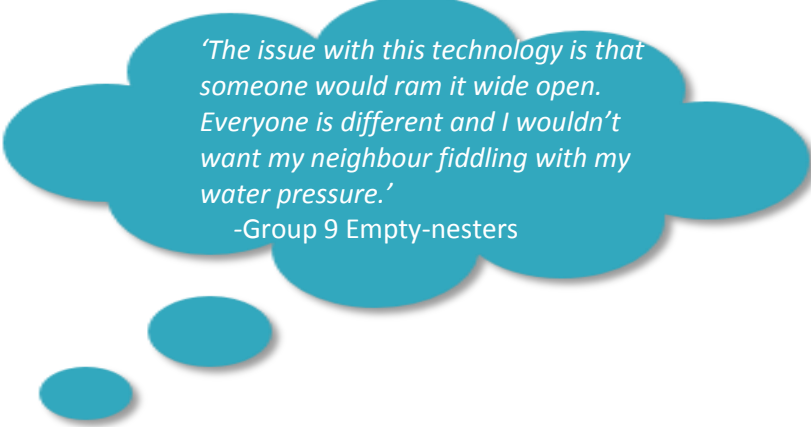


*'If water pressure management puts an additional strain on the network it kind of defeats the purpose. Because then you have got disruption and some with hardly any water trickling out.'*

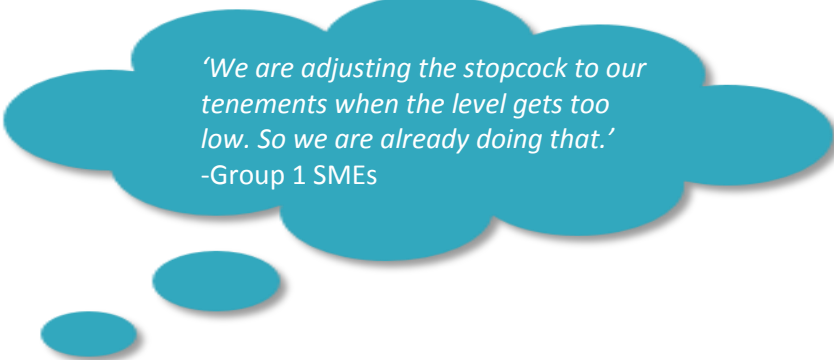
Group 5 SMEs

### 3.11 RESPONSE TO INNOVATIONS

Customers were asked if Scottish Water should invest in solutions and services that would allow a customer to alter the pressure coming into a household, even though there are no current solutions available. Generally, there were widespread reservations about this. Mostly, customers, especially those who lived in tenements with shared water, were concerned with individuals adjusting the pressure to suit their needs because this could lead to problems with leaks and overly high water pressure in parts of the network. There was also a fear that this could be vandalised, leading to insurance becoming invalid and the question of who is liable if there is a burst pipe.



*'The issue with this technology is that someone would ram it wide open. Everyone is different and I wouldn't want my neighbour fiddling with my water pressure.'*  
-Group 9 Empty-nesters



*'We are adjusting the stopcock to our tenements when the level gets too low. So we are already doing that.'*  
-Group 1 SMEs

## 4 CONCLUSIONS

### PRIORITIES

- Water is generally a low interest area until customers encounter a problem with it. However, this indifference is often seen as a positive; the perception being that Scottish Water are doing the job properly.
- Scottish Water is regarded as **reliable, approachable and efficient**.
- In terms of the priorities, **customers are mostly concerned with drinking water quality**; also, more specifically, the odour, taste and colour of water. In customers' minds these were bread and butter areas of concern.
- Water pressure in general, and low pressure in particular, is **not an issue for most customers**. When looking at the customer priorities unprompted, there was little mention of low pressure and no arguments about its position as a low priority.

### EXPERIENCES OF WATER PRESSURE

- There was a continuum of responses to experiences of water pressure. Customers roughly fell into four groups: -
  - 'Happy with it'
  - 'Live around it'
  - 'Annoyed or frustrated'
  - 'Unacceptable'
- The majority were **'happy'** with their water pressure and did not have a problem with it.
- Some customers had problems with their water pressure but **'worked around it,'** many had done so for years. Typically, empty-nesters and state pensioners with less demand on water in their households.
- A few customers, typically young families, found the water pressure to be so low as to be **'frustrating and annoying'**. Often, they had contacted a plumber, landlord or council to address the problem and sometimes were referred to Scottish Water with varying results. Some were unhappy to be told that it is normal for water pressure to drop if you are running more than one appliance and that they have to 'live with it'.
- A minority had water pressure that was **'unacceptable'**. Some businesses were thinking of moving premises and householders moving to a new house because they could not live with it.



## LOW PRESSURE AS A PRIORITY

- **Business customers see low pressure as more of a priority than domestic customers** because it affects their livelihoods. It was felt that Scottish Water had a responsibility to ensure that business customers had sufficient water pressure to allow them to run their business.
- Several customers experienced low pressure from time to time but **often attribute it to their own internal plumbing**, 'dodgy' boiler or the quirky configuration of bathrooms in their homes.
- Upon seeing the low pressure film, there was some surprise and shock that the problem was so bad for some customers. Many customers were **sympathetic and surprised** that customers had resigned themselves to living with low pressure. As a result, many felt that this was an issue that Scottish Water needed to address and should become a medium or even high priority.
- Customers felt that it was unfair that some customers should put up with low pressure even though some of them were not having to pay for water on their bills. As customers, they would **prefer to pay for a good service rather than pay nothing for a poor one**.
- On the other hand, **some felt that it should remain as a low priority** because it affects relatively few customers and the implications for addressing it are too large.
- There was a sense that the issue of water pressure should remain 'low key' or 'under the radar' because many who are living with low water pressure do not realise it is a supply issue rather than a boiler or internal pipes issue. **If awareness is raised about low pressure, there was a sense it could be expensive for Scottish Water and their customers** if the costs are passed on to them.

## KNOWLEDGE, EDUCATION AND THE INDUSTRY DEFINITION

- **The term '1 bar of pressure' has little resonance with customers**; most do not know what bar of pressure is.
- **Customers prefer language that describes what low pressure would look like**. For example, how many seconds it should take to fill a kettle or how many minutes to run a bath. So, 3-4 seconds to fill a kettle is good pressure but a minute or so is low pressure.
- Language such as 'a trickle' for low pressure and 'fast flowing' for good or higher pressure were also preferred to bars of pressure.

- There was **widespread interest in more information to educate customers about low pressure**. For example; is the water pressure issues to do with the pressure coming into their homes? Is it because of an old boiler or faulty plumbing? How long should it take to fill my bath/kettle/cistern?
- Customers wanted to have some literature through their door that explained **what is being done to upgrade the infrastructure in relation to water pressure**, where it is being done, and what are the benefits.
- It **surprised some customers that Scottish Water are only required to provide 1 bar of pressure**, particularly as this is not enough to run a combi boiler. It was thought that 2.0 bar should be the industry minimum. They are **appreciative of Scottish Water's aspiration to get all customers up to two bars**.

## WATER PRESSURE MANAGEMENT

- There was a **polarised response to the implications of water pressure management** to get everyone up to 2.0 bar of pressure at the property boundary.
- Some customers felt that it was **not worth the stress on the infrastructure** by causing leaks and interruptions for the sake of a few customers who were experiencing low pressure, many of whom were 'living around it'.
- However, **others felt that they should be investing** in getting the infrastructure fit for the needs of modern lifestyles.
- There was a similarly **polarised response to potential additional costs**. Those who did not suffer from low pressure were less inclined to pay more. They felt that Scottish Water makes money which they should then invest back into the infrastructure; typically, these were business customers.
- People living with disabilities and those on a low income, and many other household customers seemed to have more empathy for those living with low pressure; they **were willing to pay a small amount to help them have better quality water pressure** and a better quality of life.
- **Little appetite was expressed for new technology that allows customers to have control of the water pressure**. It was felt that human nature was selfish and that some customers would adjust the water pressure to their benefit at the detriment of their neighbours. There was also a concern of vandalism like hydrant abuse.
- However, there was **widespread desire for Scottish Water to be innovative** and have new technology to manage their own systems.

- In terms of the wording of 'Pressure Management,' many customers found it **a little alarming**, especially '*some may experience lower pressure than they have been used to. This may mean some appliances may not work*'. It would be reassuring for customers if the lower pressure comment was mitigated with an explanation that this may mean that it will take a couple of seconds longer to fill a kettle or 'x' minutes longer to run a bath.
- Also, the words '*Pressure management can also highlight if there are any issues within a customers' private pipework*' is also troubling. It **raises issues that customers are most fearful** of; specifically, locating a leak, digging up driveways, huge expense etc.
- Customers need to have the **benefits of water pressure management spelt out** to them such as pipes last longer, water supplies are more reliable with fewer interruptions, and there is reduced need for excavation work.
- It would be **reassuring for customers to know that Scottish Water are not attempting to improve the whole network at once** but rather adjusting small amounts of the network at a time using smart technology where possible to manage the flow.

## 5. RECOMMENDATIONS

- On balance, we would recommend that low pressure should remain a 'Low Priority.'
  - Spontaneously, low pressure was not seen as a medium or high priority.
  - Although there are only 32 (figures quoted by SW prior to research) on the low pressure register, there are many customers who do not know they have low water pressure or are accepting of it and work around it.
  - Low pressure was not seen to be as serious as the other issues such as external sewer flooding and short-term Interruptions.
  - When customers examined the implications of increasing water pressure through water pressure management (increase in burst pipes, leaks and waste), they felt it was not worth the pain for such a small gain.
- If desired, Scottish Water could move it to a medium priority.
  - There is an acceptability amongst customers to pay increased costs to tackle it.
  - Upon scrutiny, customers felt that it was unfair that some customers should have to put up with it and many felt that it should be a medium priority.
  - Customers had sympathy for those with low pressure and many argued that the system was not fit for purpose.
  - In extreme cases, for both water dependent businesses and non-water dependent businesses, low pressure was 'unacceptable.'
- Where low pressure was 'unacceptable,' Scottish Water could provide tailored advice about coffin/header tanks, pumps and suitable types of boilers to help increase pressure, through a dedicated 'low pressure team' or helpline.
- The industry definition of 'low pressure' does not resonate and more customer friendly language should be used. For example, how long it takes to fill a kettle or a bath.
- There is a need for customers to be made aware of the benefits of water pressure management not just the risks. The benefits of Water Pressure Management need to be communicated clearly to allay concerns and fears about water pressure reducing and appliances stopping working.
- Water Pressure Management that focuses on one area at time using new technology is more acceptable and customers feel this should be taking place.
- There is little desire for technology that allows the customer to have control of the water pressure. Customers feel this should be in the hands of Scottish Water.

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