Appendix 5h: Understanding Customer Values_ Revealed Preference Business Survey Report

YorkshireWater

AECOM

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PR19 Understanding Customer Values: Work Package 4 – Revealed Preference Business Survey

PREPARED FOR YORKSHIRE WATER

1. Acknowledgements

AECOM would like to thank Professor Mike Christie (Aberystwyth University) for providing peer review of the work undertaken for this work package.

2. Quality information

Document name	Prepared for	Prepared by	Date	Approved by
• Work	• Yorkshire	• Paul	• 01/11/17	• Chris White
• Work	• Yorkshire	• Paul	• 30/11/17	• Chris White

1. Contents

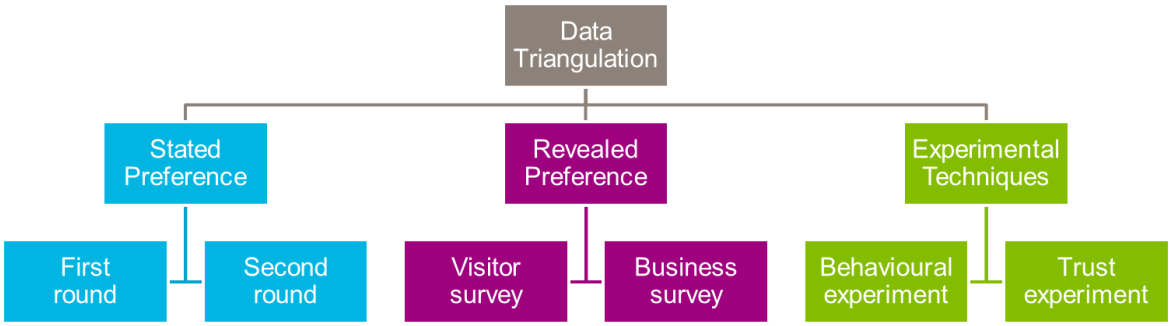
2. Work Package 4 – Business Survey

3. Context

The aim of this project is to undertake primary research to ascertain the values that Yorkshire Water (YWS) customers place on changes in service measures such as interruptions to supply or drinking water failures. These values will then be used to populate the Decision Making Framework (DMF) in order to inform the investment planning process and support the wider Outcome Delivery Incentives (ODI) work stream.

In light of Ofwat's recommendations for improving the approach to understanding customer's values in PR19, the project includes six work packages (see Figure 1) which draw on a range of data to allow methodological triangulation; whereby data of different types are used to cumulatively refine and validate research outputs.

- **Figure 1. Overview of the six work packages**



4. Aims

The aim of this work package is to quantify the values of a range of metrics for businesses residing in Yorkshire who use YWS water and waste water services (i.e. non-domestic consumers) using a revealed preference survey. The approach adopted in this work package is focused on what businesses actually do when there are issues with service delivery, particularly in terms of the avertive behaviour they carry out and what costs are incurred. Values are therefore derived based on what people actually do rather than what they say they would do in response to hypothetical scenarios as is the case for stated preference surveys, which have been used extensively in the water industry.

The benefit of this work package is that provides an additional source of data that can be used for the purposes of triangulation and to develop a more accurate understanding of consumers' values. These avertive behaviour values are based on what businesses actually pay to compensate or prevent poor water services and should be seen as minimum values; they may be willing to pay more.

5. Method

The first phase of the research involved 15 in-depth interviews with businesses to explore how they perceive water service issues. The results were used to inform a survey of businesses which collected information on the incidence of a range of water supply issues and on what businesses did as a consequence; including whether they contacted YWS and by what method. This process provided an additional avertive cost in terms of contacting YWS in relation to these issues. A range of background

information was also collected including how much they pay for water services and how critical the supply of water is to their business.

The questionnaire looked at a number of service measures which included different types of possible avertive behaviour shown under each measure (see Table 1). Information was then collected regarding now much the business had spent on each measure. Data for the main survey was collected through a telephone survey using a sample from Experian's Business Database which is the most extensive of its type in the UK.

A total of 1,000 YWs businesses completed the survey during September and October 2017. In order to make sure that a robust sample was collected; quotas were set on the basis of Industry Type (SIC), geographical sub-region, and business size. The data was then weighted so that it matched the actual market composition in terms of these variables, as revealed by the Experian Business Database prior to analysis.

- **Table 1. Avertive behaviours explored by service measures**

3. DRINKING WATER TASTE, ODOUR, AND APPEARANCE	
• Buy bottled water	• Purchase/use fridge with water dispenser
• Purchase/use water coolers	• Develop own spring/borehole
• Purchase/use jugs with water filters	• Boil/cool before use (not for use in cooking/hot drinks)
• Purchase/use kettles with water filters	• Use water purification tablets
• Purchase/use tap/under sink filters	• Use water softening products (e.g. tablets)
• Other	
4. WATER QUALITY	
• Purchase insurance to cover losses from disruption	• Invest in measures to monitor water quality
• Other	
5. DISRUPTIONS TO WATER SUPPLY	6.
• Purchase insurance to cover losses from lack of supply	• Develop/purchase water storage facilities
• Purchase bottled water for emergency use	• Purchase/hire temporary toilet facilities
• Other	
7. WATER PRESSURE	
• Purchase a water pressure booster	• Replace old pipe system
• Other	
8. WATER RESTRICTIONS E.G. HOSEPIPE/SPRINKLER BANS	
• Purchase insurance to cover losses from restrictions	• Introduce water efficiency measures/devices
• Create/develop water storage facilities as back up	• Recycle 'grey'/waste water
• Other	
9. INTERNAL OR EXTERNAL SEWER FLOODING	10.
• Purchase insurance to cover losses from flooding	• Invest in flood resistance and resilience measures
• Other	
11. POLLUTION OF WATER SUPPLY	12.
• Purchase insurance to cover losses from disruption	• Invest in measures to monitor water quality
• Other	• Invest in measures to remove pollution

6. Results

Table 2 shows the estimated avertive expenditure by service measure for a typical business in Yorkshire taking into account those who did not take part in avertive behaviour as well as those who did. One of

the areas YWS were interested in exploring in this work package was the breakdown of avertive expenditure by businesses for which water is critical to their operation and by broad SIC group. However, given the low sample sizes for most of the categories this has only been done for water taste, as the values would be even more volatile if broken down further. The results show that those companies taking part in avertive behaviour are mainly water critical companies which re-enforces the argument that providing separate values for water critical / not critical is unlikely to be meaningful.

Table 2 summarises the more detailed results shown in Table 3 and Table 4. The summary results shown in Table 2 are derived from the weighted results from these tables – the low value is the minimum value, the middle value is the median value, the high value is the mean value. As the maximum value is distorted by extreme values they have not been presented in the summary.

Table 3 and Table 4 also show the number of businesses that have undertaken each type of avertive behaviour bearing in mind that the whole sample contained 1,000 businesses (a full analysis of this is shown in Appendix 2). The results show both the weighted and unweighted totals. The unweighted total is the actual number of businesses that took part in the survey. Note, businesses that were choosing to use bottled water because of convenience or because they liked the brand were excluded from the analysis.

The results of this work package show a range of values for each service measure. The results include both weighted and unweighted data to show the impact of weighting the data. This shows that weighting the sample to match the actual market composition has the effect of reducing the values compared with the unweighted sample. For those businesses taking part in avertive behaviour, two assumptions were made about those who do not know the expenditures of their avertive behaviours. Firstly it was assumed that the costs are the same as the mean costs and secondly it was assumed that the costs are zero. The detailed results in Tables 3 and 4 provide a range of values based on: the median and mean; whether the data is weighted or not; assumptions about how unknown expenditures are dealt with, and whether the business took part in avertive behaviour or not.

As can be seen from Table 3 (unweighted sample sizes), the results for the water taste service measure are based on 503 businesses while the others are based on much smaller numbers of businesses. Disruption, for example, is based on 33, pressure is based on 17, water quality and flooding are based on 13, and pollution is based on only 3. This means that the results can be quite volatile, being distorted by a small number of outliers. This is especially the case for water quality and pollution. It should be noted that no costs were provided for service restrictions which is why this service measure does not appear in the tables.

- **Table 2. Summary annual avertive expenditure by service measure for a typical business in Yorkshire**

13. SERVICE MEASURE	14. MINIMUM 15. (LOW VALUE)	16. MEDIAN 17. (MIDDLE VALUE)	18. MEAN 19. (HIGH VALUE)
Water taste	£45.20	£100.20	£116.59
Water quality A*	£108.42	£393.02	£393.03
Water quality B*	£0.04	£0.21	£0.23
Disruption	£4.32	£7.88	£7.97
Pressure	£0.54	£1.89	£2.07
Flooding	£6.16	£20.27	£21.17
Pollution A**	£5.76	£5.76	£5.76
Pollution B**	£0.44	£0.44	£0.44
20. ANNUAL WATER TASTE AVERTIVE EXPENDITURE – SEGMENTED BY CRITICAL / NON CRITICAL AND SIC GROUP	21. MINIMUM 22. (LOW	23. MEDIAN 24. (MID	25. MEAN 26. (HIGH

		VALUE)	VALUE)	VALUE)
Overall	Overall	£45.20	£100.20	£116.59
Critical v. not critical	Critical	£43.79	£105.81	£125.71
	Not critical	£44.57	£69.12	£71.14
SIC grouping	Industrial	£25.00	£97.93	£108.27
	Commercial	£43.26	£91.61	£104.40
	Public	£40.36	£141.56	£204.14

* Water quality A – cost distorted by monitoring costs provided by two companies of £5,000 and £100,000. In Water quality B these costs have been excluded.

** Pollution A – cost distorted by one company cost of £17,000. In Pollution B this cost has been excluded.

- **Table 3. Avertive expenditure by service measure for a typical business in Yorkshire**

27. FACTOR	28. WATER TASTE	29. WATER QUALITY A*	30. WATER QUALITY B*	31. DISRUPT-ION	32. PRESSURE	33. FLOODING	34. POLLUTION A**	35. POLLUTION B**
Sample size								
No. undertaking this behaviour (weighted)	467	10	8	29	12	14	3	2
Number of businesses knowing costs	302	4	2	18	5	6	3	2
No. undertaking this behaviour (unweighted)	503	13	11	33	17	13	3	2
Number of businesses knowing costs	303	6	4	19	8	6	3	2
Weighted								
Mean cost assuming ‘don’t know’ is mean	£220.76	£677.67	£0.44	£11.80	£3.94	£33.56	£5.76	£0.44
Median cost assuming ‘don’t know’ is median	£108.08	£677.60	£0.38	£11.20	£3.10	£37.98	£5.76	£0.44
Mean cost assuming ‘don’t know’ is zero	£92.32	£108.43	£0.04	£4.55	£0.68	£6.16	£5.76	£0.44
Median cost assuming ‘don’t know’ is zero	£45.20	£108.42	£0.04	£4.32	£0.54	£6.98	£5.76	£0.44
Unweighted								
Mean cost assuming ‘don’t know’ is mean	£380.96	£683.75	£1.06	£14.40	£10.98	£29.71	£5.76	£0.44
Median cost assuming ‘don’t know’ is median	£130.38	£683.32	£0.69	£13.73	£5.59	£26.65	£5.76	£0.44
Mean cost assuming ‘don’t know’ is zero	£138.24	£145.65	£0.18	£4.77	£2.43	£6.33	£5.76	£0.44
Median cost assuming ‘don’t know’ is zero	£47.31	£145.56	£0.12	£4.55	£1.24	£5.68	£5.76	£0.44
Summary based on weighted data								
Minimum (low value)	£45.20	£108.42	£0.04	£4.32	£0.54	£6.16	£5.76	£0.44
Maximum	£100.20	£393.02	£0.21	£7.88	£1.89	£20.27	£5.76	£0.44
Median (middle value)	£116.59	£393.03	£0.23	£7.97	£2.07	£21.17	£5.76	£0.44
Mean (high value)	£220.76	£677.67	£0.44	£11.80	£3.94	£37.98	£5.76	£0.44

* Water quality A – cost distorted by monitoring costs provided by two companies of £5,000 and £100,000. In Water quality B these costs have been excluded.

** Pollution A – cost distorted by one company cost of £17,000. In Pollution B this cost has been excluded.

- **Table 4. Water taste avertive expenditure broken down by whether water is critical and SIC group**

36. Factor	37. Critical v. not critical			38. SIC grouping		
	39. Overall	40. Critical	41. Not critical	42. Industrial	43. Commercial	44. Public
Sample size						
No. undertaking this averting behaviour (weighted)	467	367	91	127	262	78
Number of businesses knowing costs	302	220	66	78	170	40
Total businesses	1,000	763	237	278	570	152
No. undertaking this averting behaviour (unweighted)	503	420	83	127	243	133
Number of businesses knowing costs	303	223	59	63	139	72
Total businesses	1,000	790	210	258	488	254
Weighted						
Mean cost assuming 'don't know' is mean	£220.76	£247.42	£101.75	£190.45	£191.12	£493.07
Median cost assuming 'don't know' is median	£108.08	£124.84	£84.73	£124.02	£102.75	£153.46
Mean cost assuming 'don't know' is zero	£92.32	£86.78	£53.52	£71.84	£80.46	£129.67
Median cost assuming 'don't know' is zero	£45.20	£43.79	£44.57	£46.78	£43.26	£40.36
Unweighted						
Mean cost assuming 'don't know' is mean	£380.96	£479.24	£130.94	£222.55	£240.69	£874.84
Median cost assuming 'don't know' is median	£130.38	£151.71	£78.13	£144.99	£115.87	£143.39
Mean cost assuming 'don't know' is zero	£138.24	£135.10	£66.17	£54.76	£78.75	£256.38
Median cost	£47.31	£42.77	£39.48	£35.68	£37.91	£42.02

36. Factor	37. Critical v. not critical			38. SIC grouping		
	39. Overall	40. Critical	41. Not critical	42. Industrial	43. Commercial	44. Public
assuming 'don't know' is zero						
Summary based on weighted data						
Minimum (low value)	£45.20	£43.79	£44.57	£46.78	£43.26	£40.36
Maximum	£220.76	£247.42	£101.75	£190.45	£191.12	£493.07
Median (middle value)	£100.20	£105.81	£69.12	£97.93	£91.61	£141.56
Mean (high value)	£116.59	£125.71	£71.14	£108.27	£104.40	£204.14

Out of the sample of 1,000 businesses only 98 contacted YWS about water supply issues for a total of 12.87 hours across all methods (phone, email, social media etc.). Using a value of time of £16.84 from the Average Survey of Hours and Earnings (ASHE) gives a total avertive cost of £216.77 or £2.21 per contact.

7. Implications

This work package has, for the first time to our knowledge, provided information on water related avertive behaviour for businesses across a wide range of service measures. These avertive behaviour values are based on what businesses actually pay to compensate them against poor water services and should be seen as minimum values, they may be willing to pay more.

The work package has found some avertive behaviour for most service measures, however, most of the sub samples are very small and the estimates of avertive expenditure can be distorted by large cost items. This this should be born in mind when reviewing these results in the context of other methods. It is noticeable that by far the most businesses taking part in avertive behaviour are water critical companies. The benefit of this work package is that it provides an additional source of data that can be used for the purposes of triangulation and to develop a more accurate understanding of consumers' values of water supply issues.

Appendices

Appendix 1 Methodology

Appendix 2 Results

Appendix 3 Questionnaire

List of Tables

Detailed Tables

References

Atkinson et al (2004) (Amenity or eyesore? Negative willingness to pay for options to replace electricity transmission towers Applied Economic Letters pp203-208)

8. Appendix 1: Methodology

8.1 Introduction

The aim of this work package was to quantify the values of a range of metrics for Yorkshire Water business (non-domestic) customers using revealed preference surveys. This focused on what businesses actually do when there are issues with service delivery, particularly what avertive behaviour they carry out and what costs are incurred.

The first phase of the research involved 15 in-depth interviews with businesses to explore how they perceive water service issues. The data from these interviews was then used to develop the business questionnaire.

Our original plan was to carry out the business survey online, but after two pilot surveys on 7th and 12th September the response rate was disappointing so we switched to a telephone method. This was successfully piloted on 20th September with 27 respondents.

8.2 Questionnaire

The questionnaire was designed on the basis of the feedback received from the in-depth interviews and was approved by the client. The questionnaire was further modified following piloting and cognitive interviews.

The purpose of the survey was to collect information on the incidence of a range of water supply issues and information on what businesses did as a consequence including whether they contacted Yorkshire Water and by what method.

A range of background information was also collected including how much they pay for water services and how critical the supply of water is to their business.

The questionnaire looked at a number of service measures (Table A1), in which each include a range of possible avertive behaviour, including where no avertive behaviour was undertaken. Information was then collected regarding now much the business had spent on each avertive behaviour.

Table A1 Avertive Behaviours Explored by Service Measures

A1 Drinking Water Taste Odour and Appearance
• Buying bottled water
• Purchase/use water coolers
• Purchase/use jugs with water filters
• Purchase/use kettles with water filters
• Purchase/use tap/under sink filters
• Purchase/use fridge with water dispenser
• Developed own spring/borehole
• Boiling /cooling before use (not including for use in hot drinks/ cooking)
• Water purification tablets
• Water softening products (e.g. tablets)
• Other
A2 Water Quality
• Purchasing insurance to cover losses from disruption to business
• Invested in measures to monitor water quality
• Other

B Disruptions to Water Supply
• Purchase insurance to cover losses incurred by lack of supply
• Purchase bottled water for emergency use
• Develop/purchase water storage facilities
• Purchase/hire temporary toilet facilities
• Other measure to mitigate loss of supply
C Water Pressure
• Purchase a water pressure booster
• Replace old pipe system
• Other measure to mitigate/manage water pressure
D Water Restrictions eg hosepipe/sprinkler bans
• Purchase insurance to cover losses incurred by restrictions on use
• Create/develop water storage facilities as back up supply
• Introduce water efficiency measures/devices
• Recycle 'grey'/waste water
• Other measure to mitigate restrictions on use
E Internal or External Sewer Flooding
• Purchase insurance to cover losses from sewer flooding
• Invested in flood resistance and resilience measures
F Pollution of Water Supply
• Purchase insurance to cover losses from disruption to business
• Invested in measures to monitor water quality
• Invested in measures to remove pollution
• Other

We also explored whether businesses contacted Yorkshire Water and if so by what method, and how long, including:

- Phone
- E-mail
- Twitter
- Facebook
- Letter
- Website (e.g. live chat)

8.3 Sample

Our sample of business contacts came from Experian's Business database, which is the largest and most comprehensive of its kind in the UK. The contact details were designed to be senior management who deal with water service issues. We obtained 15,000 contacts which had email and or phone numbers.

Our sample is shown in Table A2 below. In order to get a representative cross section of businesses, the survey sampling frame was based on:

- Industry Type (Industrial, Commercial and Public Sector based on SIC 2007);
- Geography (North, South, East and West based on location;
- Size (Micro 0-9, Small 10-49, Medium 50-249, and Large 250 and over – based on employees at site).

Table A2 shows:

- the population (total number of businesses) in absolute and percentage terms from the Experian Business database for businesses with valid email addresses; and
- our achieved sample in absolute and percentage terms.

As our achieved sub-samples are not proportional to the Yorkshire Water business population, the data was weighted in the analysis to better reflect actual shares shown in Table A2.

Table A2 Sample

	Population Actual	Population %	Achieved Sample	Achieved %
Type				
Industrial	9451	26.4%	258	25.8%
Commercial	21107	59.0%	488	48.8%
Public	5199	14.5%	254	25.4%
Geography				
North	7300	20.4%	239	23.9%
South	9846	27.5%	253	25.3%
East	3670	10.3%	249	24.9%
West	14941	41.8%	259	25.9%
Size				
Micro	26796	74.9%	721	72.1%
Small	7613	21.3%	128	12.8%
Medium	1308	3.7%	146	14.6%
Large	40	0.1%	5	0.5%
Total	35757	100.0%	1,000	100.0%

9. Appendix 2: Results

9.1 Introduction

This Appendix shows the results of the research. Before the avertive expenditure results are presented we provide some context and background to the types of avertive behaviour that businesses were involved in. The results are presented under the following headings:

- Water Criticality – this shows whether water was critical or not in the operation of the business.
- Drinking Water Taste Odour and Appearance – alternatives used and reasons for using bottled water
- Incidence – this shows the incidence of issues for each service measure faced by businesses and the type of avertive behaviours that they engaged in for the following Service measures:
    - Water Quality
    - Disruptions to Water Supply
    - Water Pressure
    - Water Restrictions
    - Internal or External Sewer Flooding
    - Pollution of Water Supply
    - Odour from Sewers and Treatment Works
    - Contacting Yorkshire Water
- Summary Avertive Expenditure by Service Measure
- Summary Water Taste Avertive Expenditure broken down by whether Water is Critical and SIC Group
- Summary Avertive Expenditure by Service Measure for a Typical Yorkshire Business
- Summary Water Taste Avertive Expenditure for a Typical Yorkshire Business broken down by whether Water is Critical and SIC Group
- Detailed Avertive Expenditure Cost Tables – Overall by Service Measure
- Detailed Avertive Expenditure Cost Tables – Water Taste Segmented by Whether Water is Critical and SEG Grouping.

9.2 Water Criticality

Whether water was critical to running of the business was an important consideration in the survey. Businesses were asked to give a score between 1 and 10 where 1 was 'Not at all critical' and 10 was 'Extremely critical'. Those who scored five or more were then defined as 'Water Critical'. Those scoring four or less were classed as 'Non critical'. Table B1 shows that overall 76% of businesses were classed as water critical.

Table B1 How critical is water/wastewater to running of your business?

	Frequency	Percent
1.0 not at all critical	120	12.0
2.0	43	4.3
3.0	40	4.0
4.0	33	3.3
5.0	114	11.4
6.0	37	3.7
7.0	55	5.5
8.0	98	9.8
9.0	53	5.3
10.0 Extremely critical	406	40.6
Total	1000	100.0
Not Critical	237	23.7
Critical	763	76.3

The reasons why water is critical is summarised in Table B2. Because respondents could give more than one reason the percentages sum to more than 100. The main reasons for water being critical were staff use for drinking/washing in toilets and disposal of waste water and cleaning and hygiene which was given by over 80% of businesses. Disposal of waste water was also given by 70% of businesses.

Table B2 Reasons why Supply of water/wastewater services critical

	Frequency	Percent
Drinking/toilets washing eg staff use	738	96.7
Disposal waste water toilets eg staff use	618	80.9
Supply customer eg cafe hairdressing washing	265	34.7
Business process eg input to manufacture	143	18.7
Business process eg output to manufacture	101	13.2
Cleaning/hygiene eg cafe healthcare	631	82.7
Disposal waste water used for cleaning	537	70.3
for Livestock	17	2.2
Other	38	4.9
Total	763	

9.3 Drinking Water Taste Odour and Appearance

The first service issue explored related to poor taste, odour or appearance of drinking water. Businesses were asked what alternatives/treatments to tap water they used for drinking water. Table B3 shows that 53% said they used no alternatives. Therefore 47% used some kind of alternative or treatment. The most popular were bottled water and water coolers, around 20% each. We have also shown the proportion in the water critical /non critical categories. There are some for example Boiling/Cooling before use, water purification tablets and water softening tablets that are only carried out by water critical companies, although the sample sizes for these are quite low.

Table B3 Alternatives to Tap water

	Frequency	Percent	% Critical	% Non Critical
None	533	53.3	72.6	27.4
Some Alternative	467	46.7	80.6	19.4
Buying Bottled Water	206	20.6	79.6	20.4
Purchase/use water coolers	218	21.8	80.3	19.7
Purchase/use jugs with water filters	36	3.6	88.6	11.4
Purchase/use kettles with water filters	82	8.2	82.9	17.1
Purchase/use tap/sink filters	20	2	94.7	5.3
Purchase use fridge with water dispenser	10	1	90	10
Develop own spring/borehole	3	0.3	66.7	33.3
Boiling/cooling before use	22	2.2	100	0
Water purification tablets	2	0.2	100	0
Water softening products	5	0.5	100	0
Other	20	2	90	10
Total	**1000**	**100**		

Table B4 shows the reasons why people use bottled water. This was asked to everyone but the table also shows the results by those who bought bottled water. This is important because not all these reasons are in response to poor quality water. For example convenience and liking the brand are not types of avertive behaviour. For this reason businesses giving these reasons have been excluded from the avertive expenditure analysis described later in Section B5.

Table B4 Reasons for using bottled water

	Total	Those who Buy Bottled Water	Total %	Those who Buy Bottled Water %
Prefer taste of bottled/filtered water	156	85	27.4	32.3
Colour of tap water	12	5	2	1.9
Health Concerns over tap water	29	14	5	5.3
Hardness of tap water	7	6	1.3	2.3
Convenience of bottled/filtered water	70	21	12.4	8
I like the brand of bottled water	10	7	1.7	2.7
Tap water has more chemicals	12	5	2.2	1.9
Quality of tap water would put customers off	16	8	2.8	3
To offer choice to customer	35	19	6.2	7.2
Other	182	79	31.9	30
Dont Know	40	14	7.1	5.3
Total	**570**	**263**	**100**	**100**

9.4 Incidence of Issues

Tables B5 to B11 show the incidence of issues with the different service measures and an indication of how many businesses took part in different types of avertive behaviour for different service measures.

The avertive behaviour section of the table shows:

- the number of businesses that took part in avertive behaviour that could provide some cost information and for these businesses the types of avertive behaviour are outlined and the number who could and could not provide cost information.
- The number of businesses that took part in avertive behaviour who could not provide any cost information and for these businesses the type of avertive behaviour

This distinction is important because where no cost information is available it is not possible to estimate an avertive expenditure cost for that type of avertive behaviour

This information has been split by whether the businesses were ‘Water Critical’ or not.

9.5 Water Quality

Table B5 summarises water quality issues. It shows the number of times in the last three years water supply has been affected by poor quality and this was split into biological reasons (coliforms/ecoli) and hardness. Overall 93% of businesses had not been affected by biological issues and 94% had not been affected by hardness issues.

Businesses were also asked what avertive behaviour they had taken part in.

Ten said they had. This included monitoring water quality and some other measures including included buying water coolers and filters, water jugs and making a complaint. It is interesting that all those businesses were water critical companies.

Table B5 Water Quality Issues.

	Biological	Hardness
.00	867	853
1.00	29	8
2.00	16	3
3.00	5	8
4.00	3	6
5.00	2	2
6.00	2	6
More than 6	6	20
Total	**932**	**906**
Don't Know	68	67
Number of Incidents 3 years	160	248
Businesses Experiencing Incidents	65	53

Avertive Information		Critical	Not Critical
Taking Avertive Behaviour (Some Cost Info)	10	10	0
Type of Avertive Behaviour:			
Quality Monitor	3	3	0
Other	7	7	0
Knew Costs	4	4	0
Didn't Know Costs	6	6	0

9.6 Disruptions to Water Supply

Table B6 summarises Water Disruption issues. It shows the number of times in the last three years water supply has been disrupted in supply lasting for different periods from less than 3 hours to over 12 hours defined in the following four time bands

- less than 3 hours,
- 3-under 6 hours,
- 6 to under 12 hours and;
- over 12 hours.

The proportion of businesses not being affected for each time band were 87%, 93%, 98% and 98% respectively.

Businesses were also asked what avertive behaviour they had taken part in. Thirty five said they had. Of those providing some cost information this included bottled water for emergency use and temporary toilet facilities. It is interesting that most of those businesses were water critical companies.

Table B6 Water Disruption Issues

	less 3 hrs	3-5.9hrs	6-12hrs	Over 12hrs
.00	824	877	928	928
1.00	79	47	14	14
2.00	23	13	2	2
3.00	8	3	1	0
4.00	4	0	0	0
5.00	1	0	0	2
6.00	4	3	0	0
More than 6	1	1	0	0
Total	**944**	**946**	**945**	**946**
Dont Know	56	54	54	54
Number of Incidents 3 years	202	113	21	28
Businesses Experiencing Incidents	120	68	17	18

Avertive Behaviour		Critical	Not Critical
Taking Avertive Behaviour (some cost info)	29	23	6
Type of Avertive Behaviour:			
Bottled Water for Emergency Use	27	21	6
Temporary Toilet Facilities	2	2	0
Knew Costs	18		
Didn't Know Costs	11		
Taking Avertive Behaviour (no cost info)	6	6	0
Water Storage Facilities	3	3	0
Other	3	3	0
Total Taking Avertive Behaviour	35	29	6

9.7 Water Pressure

Table B7 summarises Water Pressure issues. It shows the number of times in the last three years water supply has been affected by poor water pressure. Overall 92% of businesses had not been affected. Therefore 8% had been affected by a water pressure issues.

Businesses were also asked what avertive behaviour they had taken part in. Twelve said they had. This included water pressure booster and replaced pipes. It is interesting that most of those businesses affected were water critical companies.

Table B7 Water Pressure Issues

	Frequency		
No - adequate water pressure all times	915		
Fluctuations in Water Pressure	46		
Poor water pressure for long times	20		
Insufficient water pressure at all times	19		
Total	**1000**		
Businesses Experiencing Problems	85		
Avertive Behaviour		**Critical**	**Not Critical**
Taking Avertive Behaviour (some cost info)	12	9	3
Type of Avertive Behaviour:			
Water Pressure Booster	2	2	0
Replace Pipes	5	4	1
Other	5	3	2
Knew Costs	5		
Didn't Know Costs	7		

9.8 Water Restrictions (for example Hosepipe/Sprinkler bans)

Table B8 summarises Water restriction issues. It shows the number of times businesses had been affected by temporary restrictions on how they could use their water supply in the last three years and beyond three years. 99% of businesses had not been affected in the last 3 years. 98% had not been affected beyond that.

Businesses were also asked what avertive behaviour they had taken part in. None provided costs for any avertive activities; consequently this does not appear in the avertive expenditure assessment in Section B3. Five said they took part in avertive behaviours such as recycling, water efficiency and providing water storage facilities but no costs were provided. Consequently it was not possible to derive an avertive expenditure cost for water restrictions. It is interesting that all businesses that said they took part in avertive behaviour were water critical companies.

Table B8 Water Restriction issues

	last 3 years	Over 3 years
.00	951	889
1.00	3	4
2.00	1	3
3.00	4	0
4.00	1	0
5.00	0	0
6.00	0	2
More than 6	2	5
Total	962	904
Don't Know	38	96
Number of Incidents 3 years	37	58
Businesses Experiencing Incidents	12	14

Avertive Behaviour		Critical	Not Critical
Taking Avertive Behaviour (some cost info)	0		
Taking Avertive Behaviour (No Cost info)	5	5	0
Types of Avertive Behaviour			
Water Storage Facilities	1	1	0
Water Efficiency measures	2	2	0
Recycle grey/waste water	2	2	0

9.9 Internal or External Sewer Flooding

Table B9 summarises Sewer Flooding. It shows the number of times in the last three years businesses had been affected by flooding either internal to their premises or external to their premises. 97% of businesses had not been affected by internal flooding and 95% had not been affected by external flooding.

Businesses were also asked what avertive behaviour they had taken part in. Fourteen said they did and avertive behaviour included taking out insurance and investment in flood resistance measures. Again all businesses that said they took part in avertive behaviour were water critical companies.

Table B9 Sewer Flooding

	Internal	External
.00	945	926
1.00	11	24
2.00	6	9
3.00	6	3
4.00	0	1
5.00	4	4
6.00	0	0
More than 6	5	4
Total	976	971
Don't Know	24	29
Number of Incidents 3 years	93	100
Businesses Experiencing Incidents	31	44

Avertive Behaviour		**Critical**	**Not Critical**
Taking Avertive Behaviour (some cost info)	14	14	0
Type of Avertive Behaviour:			
Insurance	5	5	0
Flood Resistance measures	9	6	0
Knew Costs	6	6	0
Didn't Know Costs	8	8	0

9.10 Pollution of Water Supply

Table B10 summarises pollution issues. It shows the number of times in the last three years businesses had been affected by pollution. 99% of businesses had not been affected by a pollution incident.

Businesses were also asked what avertive behaviour they had taken part in. Three said they had and avertive behaviour included monitoring water quality and removing pollution. It is interesting that all businesses that said they took part in avertive behaviour were water critical companies.

Table B10 Pollution Issues

	Frequency		
.00	960		
1.00	6		
2.00	0		
3.00	1		
4.00	0		
5.00	0		
6.00	0		
More than 6	4		
Total	**971**		
Don't Know	29		
Number of Incidents 3 years	35		
Businesses Experiencing Incidents	11		
Avertive Behaviour		**Critical**	**Not Critical**
Taking Avertive Behaviour (some cost info)	3	3	0
Type of Avertive Behaviour:			
Monitor Water Quality	1	1	0
Remove Pollution	1	1	0
Other	1	1	0
Knew Costs	3	3	0
Didn't Know Costs	0	0	0

9.11 Odour from Sewers and Treatment Works

Table B11 summarises the number of times business premises had been affected by odours from sewers and treatment works. 92% of businesses had never experienced an issue.

Table B11 Odour Issues

	Frequency	Percent
Never	889	88.9
Infrequently	31	3.1
Sometimes - seasonal	18	1.8
Frequently	24	2.4
All the time	7	0.7
Total	970	97
Don't Know	30	3
	1000	100

For only two businesses odour was a consideration in the decision to locate. Only one said it has affected the cost (it had reduced it) although no costs were provided.

9.12 Contacting Yorkshire Water and Time Costs Incurred

Atkinson et al (2004) used an estimate of time spent and the corresponding estimated cost in time contacting the supplier as a measure of willingness to pay to avoid visual disamenity from electricity transmission towers. Consequently time spent contacting Yorkshire Water can be seen as another cost associated with avertive behaviour.

Table B12 shows how many businesses contacted Yorkshire water, by what method and for how long. As can be seen, the length of time that businesses spent contacting Yorkshire Water regarding water service was quite low. Overall only 12.8 hours, across the whole sample, were spent contacting Yorkshire Water on these issues.

In order to convert this into an avertive cost it is necessary to estimate an hourly employment cost. The HMRC's Average Survey of Hours and Earnings (ASHE) survey for April 2016 produced estimates of gross weekly and hourly earnings. The overall median hourly wage rate was £12.18 and the mean was £15.72. The values for the Yorkshire area were slightly lower (the median was £11.12 and mean was £14.03). Allowing for a 20% mark-up to allow for other employment costs such as pension and National Insurance the Yorkshire mean value would be (£14.03 * 1.2)= £16.84. Thus this is not a large cost overall (12.87 * £16.84= £216.77), however given this was based on only 98 contacts across the sample this does represent a cost of £2.21 per contact.

Table B12 Time Spent Contacting Yorkshire Water by Different Methods

	YW contact - Phone (Mins)	YW contact - email (Mins)	YW contact - Twitter (Mins)	YW contact - Facebook (Mins)	YW contact - Letter (Mins)	YW contact - Website (Mins)	YW contact Other (Mins)	Total
Water Taste	**24**	**1**	**0**	**0**	**0**	**2**	**1**	**29**
Mean	5.8	5.3				12	2	25.1
Median	5	8				14.7	2	29.7
Mean Total	140.4	7.1	0	0	0	26	2.2	175.7
Water Quality	**6**	**2**	**0**	**0**	**0**	**0**	**0**	**9**
Mean	3.7	3.2						6.8
Median	3	3						6
Mean Total	22.8	7.5	0	0	0	0	0	30.2
Disruptions	**29**	**0**	**0**	**0**	**0**	**2**	**0**	**31**
Mean	6.9					27.2		34.2
Median	2					30		32
Mean Total	200.5	0	0	0	0	63.3	0	263.9
Pressure	**10**	**0**	**0**	**0**	**0**	**2**	**0**	**13**
Mean	6.2					4		10.2
Median	5					4		9
Mean Total	65.4	0	0	0	0	8.3	0	73.6
Restrictions	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**3**
mean	1.2	1.5				3		5.7
median	1.2	1.5				3		5.7
Mean Total	1.2	1.5	0	0	0	3	0	5.7
Flooding	**14**	**1**	**0**	**0**	**0**	**1**	**1**	**17**
Mean	11.1	3				3.7	5	22.7
Median	5.8	3				3.7	5	17.5
Mean Total	159.8	3	0	0	0	2.6	4.9	170.2
Pollution	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
Mean	1							1
Median	1							1
Mean Total	3.2	0	0	0	0	0	0	3.2
Odour	**7**		**0**	**0**	**0**	**0**	**0**	**8**
Mean	6.4							6.4
Median	6							6
Mean Total	**47.5**	**0**	**0**	**0**	**0**	**0**	**0**	**47.5**
Total mins	**640.7**	**19.1**	**0**	**0**	**0**	**103.1**	**7**	**770**
Total Hours	**10.7**	**0.3**	**0**	**0**	**0**	**1.7**	**0.1**	**12.8**

9.13 Avertive Expenditure by Service Measure.

Table B13 shows the estimated avertive expenditure by service measure, for those businesses that have taken part in avertive behaviour. The table also shows the number of businesses that have taken each type of avertive behaviour. For this we have shown both the unweighted and weighted totals. The unweighted total is the actual number of businesses that took part in the survey.

There was a desire by Yorkshire Water to have these avertive expenditures broken down by whether water is critical to the operation of the business and by broad SIC group. Given the low sample sizes for most of the categories this has only been done for Water Taste as the values would be even more volatile if broken down by segment. The analysis earlier showed that those companies taking part in avertive behaviour are mainly water critical companies so this re-enforces the argument that providing separate values for water critical/ water not critical is unlikely to be meaningful.

This summary table is shown in Table B14 shows these avertive costs for Water Taste broken down by whether water was critical to business operations and by Industry Type, and it takes the same form as the earlier summary table Table B13.

Tables B15 and B16 use these results to show the equivalent costs for a typical business in Yorkshire and take into account those who did not take part in avertive behaviour (who had a zero avertive expenditure cost) as well as those who did.

We have shown a range of values for each service measure. We have produced weighted and unweighted results to show the impact of weighting the data. This shows that weighting the sample to match the actual market composition has the effect of reducing the values compared with the unweighted sample. We have also made different assumptions about those who do not know the expenditures of the avertive behaviours. Firstly we have assumed the costs are the same as the mean costs. Secondly we have assumed the costs are zero. From these assumptions we get a range of values (eight (2x2x2)) based on median and mean (2) whether the data is weighted or not (2) and assumptions about how unknown expenditures are dealt with (2). We have calculated the minimum maximum mean and median values from this range based on the weighted data. From this we have derived low middle and high values to summarise the range in values. There is a degree of discretion as to which of the eight values we have used for these summary values. We have used the weighted data results and have taken the low value as the minimum value, the middle value as the median value and the high value as the average value. We have avoided using the maximum value because this is highly distorted by extreme values.

As can be seen from the unweighted sample sizes in Table B13, Water Taste is based on 503 businesses. The others are based on much smaller number of businesses. Water Disruption is based on 33, Water Pressure is based on 17, Water Quality and flooding are based on 13 and Pollution is based on only 3. This means that the results can be quite volatile with results being distorted by a small number of outliers. This is especially the case for Water Quality and Pollution. See notes 1 and 2. It should be noted that no costs were provided for service restrictions which is why it does not appear in the table.

For bottled water business that were choosing to use bottled water because of convenience or because they liked the brand were excluded from the analysis.

The results are very sensitive to large outliers and it is not clear how these should be handled. Table B13 shows the impact of including and excluding these for Water Quality and Pollution see notes 1 and 2.

The results presented in Tables B13 and B14 are the avertive expenditures for those businesses that take part in avertive behaviour.

In order to get an overall estimate of avertive behaviourfor a typical business in Yorkshire Tables it is necessary to derive an estimate for the sample as a whole, allowing for those businesses that do not take part in avertive behaviour.

Tables B15 and B16 show the annual avertive expenditure for the typical Business in Yorkshire and take the same format as Tables B13 and B14.

We have produced high middle and low values based on the weighted data using the same rationale as decribed above.

Table B13 Avertive Expenditure by Service Measure for those taking part in Avertive Behaviour

	Water Taste	Water Quality A see note 1	Water Quality B see note 1	Disruption	Pressure	Flooding	Pollution A see note 2	Pollution B see note 2
Number of Businesses taking this averting behaviour (weighted)	467	10	8	29	12	14	3	2
Number of Businesses taking this averting behaviour (unweighted)	503	13	11	33	17	13	3	2
	Weighted							
Annual Cost based on mean assuming don't know cost is same as mean	£473	£67,767	£55	£407	£328	£2,397	£1,920	£220
Annual Cost based on median assuming don't know cost is same as median	£231	£67,760	£48	£386	£258	£2,713	£1,920	£220
Annual Cost based on mean assuming don't know cost is zero	£306	£27,107	£22	£253	£137	£1,027	£1,920	£220
Annual Cost based on median assuming don't know cost is zero	£150	£27,104	£19	£240	£108	£1,163	£1,920	£220
	Unweighted							
Annual Cost based on mean assuming don't know cost is same as mean	£757	£52,596	£96	£436	£646	£2,285	£1,920	£220
Annual Cost based on median assuming don't know cost is same as median	£259	£52,563	£63	£416	£329	£2,050	£1,920	£220
Annual Cost based on mean assuming don't know cost is zero	£456	£24,275	£44	£251	£304	£1,055	£1,920	£220
Annual Cost based on median assuming don't know cost is zero	£156	£24,260	£29	£240	£155	£946	£1,920	£220
	Summary							
Minimum (Low Value)	£150	£24,260	£19	£240	£108	£946	£1,920	£220
Maximum	£757	£67,767	£96	£436	£646	£2,713	£1,920	£220
Median (Middle Value)	£282	£39,835	£46	£319	£281	£1,606	£1,920	£220
Mean (High Value)	£349	£42,929	£47	£329	£283	£1,704	£1,920	£220

No costs were provided for service restrictions Note 1 Water Quality A - cost distorted by Monitoring costs provided by 2 companies £5k and £100K – in Water Quality B these have been excluded

Note 2 Pollution A cost distorted by one company cost of £17K. In Pollution B this cost has been excluded

Table B14 Water Taste Avertive Expenditure for those taking part in Avertive Behaviour broken down by whether 'Water Critical' and SIC Group

Water Taste		Critical v Non Critical		SIC Grouping		
	Overall	critical	not critical	industrial	commercial	public
Number of Businesses taking this averting behaviour (weighted)	467	367	91	127	262	78
Number of Businesses taking this averting behaviour (unweighted)	503	420	83	127	243	133
	Weighted					
Annual Cost based on mean assuming don't know cost is same as mean	£473	£514	£265	£417	£416	£961
Annual Cost based on median assuming don't know cost is same as median	£231	£260	£221	£271	£224	£299
Annual Cost based on mean assuming don't know cost is zero	£306	£301	£192	£256	£270	£493
Annual Cost based on median assuming don't know cost is zero	£150	£152	£160	£167	£145	£153
	unweighted					
Annual Cost based on mean assuming don't know cost is same as mean	£757	£901	£331	£452	£483	£1,671
Annual Cost based on median assuming don't know cost is same as median	£259	£285	£198	£295	£233	£274
Annual Cost based on mean assuming don't know cost is zero	£456	£479	£236	£224	£276	£904
Annual Cost based on median assuming don't know cost is zero	£156	£152	£141	£146	£133	£148
	Summary					
Minimum (Low Value)	£150	£152	£141	£146	£133	£148
Maximum	£757	£901	£331	£452	£483	£1,671
Median (Mid Value)	£282	£293	£209	£264	£251	£396
Mean (High Value)	£349	£380	£218	£279	£272	£613

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Table B15 Avertive Expenditure by Service Measure for a Typical Business in Yorkshire

	Water Taste	Water Quality A see note 1	Water Quality B see note 1	Disruption	Pressure	Flooding	Pollution A see note 2	Pollution B see note 2
Number of Businesses taking this averting behaviour (weighted)	467	10	8	29	12	14	3	2
Number of Businesses knowing Costs	302	4	2	18	5	6	3	2
Number of Businesses taking this averting behaviour (unweighted)	503	13	11	33	17	13	3	2
Number of Businesses knowing Costs	303	6	4	19	8	6	3	2
weighted								
Annual Cost based on mean assuming don't know cost is same as mean	£220.76	£677.67	£0.44	£11.80	£3.94	£33.56	£5.76	£0.44
Annual Cost based on median assuming don't know cost is same as median	£108.08	£677.60	£0.38	£11.20	£3.10	£37.98	£5.76	£0.44
Annual Cost based on mean assuming don't know cost is zero	£92.32	£108.43	£0.04	£4.55	£0.68	£6.16	£5.76	£0.44
Annual Cost based on median assuming don't know cost is zero	£45.20	£108.42	£0.04	£4.32	£0.54	£6.98	£5.76	£0.44
unweighted								
Annual Cost based on mean assuming don't know cost is same as mean	£380.96	£683.75	£1.06	£14.40	£10.98	£29.71	£5.76	£0.44
Annual Cost based on median assuming don't know cost is same as median	£130.38	£683.32	£0.69	£13.73	£5.59	£26.65	£5.76	£0.44
Annual Cost based on mean assuming don't know cost is zero	£138.24	£145.65	£0.18	£4.77	£2.43	£6.33	£5.76	£0.44
Annual Cost based on median assuming don't know cost is zero	£47.31	£145.56	£0.12	£4.55	£1.24	£5.68	£5.76	£0.44
Summary Based on weighted data								
Minimum (Low Value)	£45.20	£108.42	£0.04	£4.32	£0.54	£6.16	£5.76	£0.44
Median (Middle Value)	£100.20	£393.02	£0.21	£7.88	£1.89	£20.27	£5.76	£0.44
Mean (High Value)	£116.59	£393.03	£0.23	£7.97	£2.07	£21.17	£5.76	£0.44

Table B16 Avertive Expenditure by Service Measure for a Typical Business in Yorkshire broken down by whether Water is Critical and SIC Group

Water Taste		Critical v Non Critical		SIC Grouping		
	Overall	critical	not critical	industrial	Overall	critical
Number of Businesses taking this averting behaviour (weighted)	467	367	91	127	262	78
Number of Businesses knowing Costs	302	220	66	78	170	40
Total Businesses	1000	763	237	278	570	152
Number of Businesses taking this averting behaviour (unweighted)	503	420	83	127	243	133
Number of Businesses knowing Costs	303	223	59	63	139	72
Total Businesses	1000	790	210	258	488	254
Weighted						
Annual Cost based on mean assuming don't know cost is same as mean	£220.76	£247.42	£101.75	£190.45	£191.12	£493.07
Annual Cost based on median assuming don't know cost is same as median	£108.08	£124.84	£84.73	£124.02	£102.75	£153.46
Annual Cost based on mean assuming don't know cost is zero	£92.32	£86.78	£53.52	£71.84	£80.46	£129.67
Annual Cost based on median assuming don't know cost is zero	£45.20	£43.79	£44.57	£46.78	£43.26	£40.36
Unweighted						
Annual Cost based on mean assuming don't know cost is same as mean	£380.96	£479.24	£130.94	£222.55	£240.69	£874.84
Annual Cost based on median assuming don't know cost is same as median	£130.38	£151.71	£78.13	£144.99	£115.87	£143.39
Annual Cost based on mean assuming don't know cost is zero	£138.24	£135.10	£66.17	£54.76	£78.75	£256.38
Annual Cost based on median assuming don't know cost is zero	£47.31	£42.77	£39.48	£35.68	£37.91	£42.02
Summary based on weighted data						
Minimum (Low Value)	£45.20	£43.79	£44.57	£46.78	£43.26	£40.36
Maximum	£220.76	£247.42	£101.75	£190.45	£191.12	£493.07
Median (Mid Value)	£100.20	£105.81	£69.12	£97.93	£91.61	£141.56
Mean (High Value)	£116.59	£125.71	£71.14	£108.27	£104.40	£204.14

Detailed Avertive Expenditure Cost Tables

– Overall by Service Measure

Table BA1.1 Weighted Water Taste

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	206	218	26	82	20	10	3	7	22	2	5	20	467
% of total	20.6%	22%	3%	8%	2%	1%	0%	1%	2%	0%	1%	2%	46.7%
Businesses not knowing costs	85	114	9	42	14	4	2	6	21	1	4	17	165
% of total	8.5%	11.4%	0.9%	4.2%	1.4%	0.4%	0.2%	0.6%	2.1%	0.1%	0.4%	1.7%	
Number of Businesses	121	104	17	40	6	6	1	1	1	1	1	3	302
% of total knowing cost	12.1%	10.4%	1.7%	4.0%	0.6%	0.6%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	
	Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	47.610	51.643	26.268	40.126	290.799	477.229	6706.250	2412.080	18.000	308.022	26.129	24.318	
Median	20.000	25.000	10.000	30.000	195.413	200.000	6706.250	2412.080	18.000	308.022	97.221	30.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£571	£620						£2,412	£216	£3,696	£314	£292	
Overall annual cost (median)	£240	£300						£2,412	£216	£3,696	£1,167	£360	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£5	£8	£58	£95	£335						
purch cost annualiseed (median)			£2	£6	£39	£40	£335						
annual cost (mean)	£571	£620	£5	£8	£58	£95	£335	£2,412	£216	£3,696	£314	£292	£472.72
annual cost (median)	£240	£300	£2	£6	£39	£40	£335	£2,412	£216	£3,696	£1,167	£360	£231.44

Proportion for which cost is known	64.7%
Proportion for which cost is not known	35.3%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£472.72
Annual Cost based on median assuming don't know cost is same as median	£231.44
Annual Cost based on mean assuming don't know cost is zero	£305.70
Annual Cost based on median assuming don't know cost is zero	£149.67

Table BA1.2 Unweighted Water Taste

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	226	237	41	89	24	9	7	7	22	5	13	22	503
% of total	22.6%	24%	4%	9%	2%	1%	1%	1%	2%	1%	1%	2%	50.3%
Businesses not knowing costs	101	141	26	47	16	5	5	5	21	3	10	19	200
% of total	10.1%	14.1%	2.6%	4.7%	1.6%	0.5%	0.5%	0.5%	2.1%	0.3%	1.0%	1.9%	
Number of Businesses	125	96	15	42	8	4	2	2	1	2	3	3	303
% of total knowing cost	12.5%	9.6%	1.5%	4.2%	0.8%	0.4%	0.2%	0.2%	0.1%	0.2%	0.3%	0.3%	
	Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	74.072	84.781	28.600	40.643	217.500	675.000	11000.000	3500.000	18.000	329.500	48.667	39.333	
Median	20.000	25.000	10.000	27.500	175.000	750.000	11000.000	3500.000	18.000	329.500	36.000	30.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
annual cost (mean)	£889	£1,017						£3,500	£216	£3,954	£584	£472	
annual cost (median)	£240	£300						£3,500	£216	£3,954	£432	£360	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£6	£8	£44	£135	£550						
purch cost annualiseed (median)			£2	£6	£35	£150	£550						
annual cost (mean)	£889	£1,017	£6	£8	£44	£135	£550	£3,500	£216	£3,954	£584	£472	£757.37
annual cost (median)	£240	£300	£2	£6	£35	£150	£550	£3,500	£216	£3,954	£432	£360	£259.21

Proportion for which cost is known	60.2%
Proportion for which cost is not known	39.8%

	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£757.37
Annual Cost based on median assuming don't know cost is same as median	£259.21
Annual Cost based on mean assuming don't know cost is zero	£456.23
Annual Cost based on median assuming don't know cost is zero	£156.15

Table BA1.3 Weighted Water Quality

	Poor water quality - quality monitor - one off £	Poor water quality - quality monitor - annual £	Poor water quality - other - one off £	Overall
Businesses Claiming avertive behaviour	3	3	7	10
% of total	0.3%	0.3%	0.7%	1.0%
Businesses not knowing costs	1	2	6	6
% of total				60.0%
Number of Businesses	2	1	1	4
% of total knowing cost				40.0%
Mean	£261	£67,712	£15	
Median	£225	£67,712	£15	
	one off	annual	one off	
Assumed life Years	5		5	
One off Cost annualised (mean)	£52		£3	
One off Cost annualised (median)	£45		£3	
annual cost (mean)	£52	£67,712	£3	£67,767
annual cost (median)	£45	£67,712	£3	£67,760

nb £67,712 based on 2 observations - £5,000 and £100,000

Proportion for which cost is known	40.0%
Proportion for which cost is not known	60.0%

	Water Quality
Annual Cost based on mean assuming don't know cost is same as mean	£67,767.40
Annual Cost based on median assuming don't know cost is same as median	£67,760.33
Annual Cost based on mean assuming don't know cost is zero	£27,106.96
Annual Cost based on median assuming don't know cost is zero	£27,104.13

Table BA1.4 Unweighted Water Quality

	Poor water quality - quality monitor - one off £	Poor water quality - quality monitor - annual £	Poor water quality - other - one off £	Overall
Businesses Claiming avertive behaviour	6	6	7	13
% of total	0.6%	0.6%	0.7%	1.3%
Businesses not knowing costs	3	4	6	7
% of total				53.8%
Number of Businesses	3	2	1	6
% of total knowing cost				46.2%
Mean	£467	£52,500	£15	
Median	£300	£52,500	£15	
	one off	annual	one off	
Assumed life Years	5		5	
One off Cost annualised (mean)	£93		£3	
One off Cost annualised (median)	£60		£3	
annual cost (mean)	£93	£52,500	£3	£52,596
annual cost (median)	£60	£52,500	£3	£52,563

nb £52,500 based on 2 observations - £5,000 and £100,000

Table BA1.5 Weighted Disruption

	Disruptions - bottled water for emergency use -one off £	Disruptions - bottled water for emergency use -annual £	Disruptions - temp toilet facilities -one off £	Overall
Businesses Claiming avertive behaviour	27	27	2	29
% of total	2.7%	2.7%	0.2%	2.9%
Businesses not knowing costs	12	25	1	11
% of total				37.9%
Number of Businesses	15	2	1	18
% of total knowing cost				62.1%
Mean	£18.32	£138.64	£250.00	
Median	£10.00	£126.37	£250.00	
	one off	annual	one off	
Assumed life Years	1		1	
One off Cost annualised (mean)	£18		£250	
One off Cost annualised (median)	£10		£250	
annual cost (mean)	£18	£139	£250	£407
annual cost (median)	£10	£126	£250	£386
Proportion for which cost is known				62.1%
Proportion for which cost is not known				37.9%
				Disruptions
Annual Cost based on mean assuming don't know cost is same as mean				£406.96
Annual Cost based on median assuming don't know cost is same as median				£386.37
Annual Cost based on mean assuming don't know cost is zero				£252.60
Annual Cost based on median assuming don't know cost is zero				£239.82

Table BA1.6 Unweighted Disruption

	Disruptions - bottled water for emergency use -one off £	Disruptions - bottled water for emergency use - annual £	Disruptions - temp toilet facilities - one off £	Overall
Businesses Claiming avertive behaviour	30	30	3	33
% of total	3.0%	3.0%	0.3%	3.3%
Businesses not knowing costs	14	28	2	14
% of total				42.4%
Number of Businesses	16	2	1	19
% of total knowing cost				57.6%
Mean	£30.44	£156.00	£250.00	
Median	£10.00	£156.00	£250.00	
	one off	annual	one off	
Assumed life Years	1		1	
One off Cost annualised (mean)	£30		£250	
One off Cost annualised (median)	£10		£250	
annual cost (mean)	£30	£156	£250	£436
annual cost (median)	£10	£156	£250	£416
Proportion for which cost is known				57.6%
Proportion for which cost is not known				42.4%
				Disruptions
Annual Cost based on mean assuming don't know cost is same as mean				£436.44
Annual Cost based on median assuming don't know cost is same as me				£416.00
Annual Cost based on mean assuming don't know cost is zero				£251.28
Annual Cost based on median assuming don't know cost is zero				£239.52

Table BA1.7 Pressure Weighted

	Pressure - WP Booster - one off £	Pressure - replace pipes - one off £	Pressure - other - one off £	Overall
Businesses Claiming avertive behaviour	2	5	5	12
% of total	0.2%	0.5%	0.5%	1.2%
Businesses not knowing costs	1	3	3	7
% of total				58.3%
Number of Businesses	1	2	2	5
% of total knowing cost				41.7%
Mean	£704.14	£707.44	£584.12	
Median	£704.14	£726.55	£224.63	
	one off	one-off	one off	
Assumed life Years	5	10	5	
One off Cost annualised (mean)	£141	£71	£117	
One off Cost annualised (median)	£141	£73	£45	
annual cost (mean)	£141	£71	£117	£328
annual cost (median)	£141	£73	£45	£258

Proportion for which cost is known	41.7%
Proportion for which cost is not known	58.3%

	Pressure
Annual Cost based on mean assuming don't know cost is same as mean	£328.40
Annual Cost based on median assuming don't know cost is same as median	£258.41
Annual Cost based on mean assuming don't know cost is zero	£136.83
Annual Cost based on median assuming don't know cost is zero	£107.67

Table BA1.8 Pressure Unweighted

	Pressure - WP Booster - one off £	Pressure - replace pipes - one off £	Pressure - other - one off £	Overall
Businesses Claiming avertive behaviour	6	5	6	17
% of total	0.6%	0.5%	0.6%	1.7%
Businesses not knowing costs	3	3	3	9
% of total				52.9%
Number of Businesses	3	2	3	8
% of total knowing cost				47.1%
Mean	£1,083.33	£689.50	£1,800.00	
Median	£1,000.00	£689.50	£300.00	
	one off	one-off	one off	
Assumed life Years	5	10	5	
One off Cost annualised (mean)	£217	£69	£360	
One off Cost annualised (median)	£200	£69	£60	
annual cost (mean)	£217	£69	£360	£646
annual cost (median)	£200	£69	£60	£329

Proportion for which cost is known	47.1%
Proportion for which cost is not known	52.9%

	Pressure
Annual Cost based on mean assuming don't know cost is same as mean	£645.62
Annual Cost based on median assuming don't know cost is same as median	£328.95
Annual Cost based on mean assuming don't know cost is zero	£303.82
Annual Cost based on median assuming don't know cost is zero	£154.80

Table BA1.9 Weighted Flooding

	Flooding - insurance - one off £	Flooding - flood resistance - one off £	Flooding - flood resistance -annual £	Overall
Businesses Claiming avertive behaviour	5	9	9	14
% of total	0.5%	0.9%	0.9%	1.4%
Businesses not knowing costs	4	6	7	8
% of total				57.1%
Number of Businesses	1	3	2	6
% of total knowing cost				42.9%
Mean	£500.00	£4,487.47	£1,000.00	
Median	£500.00	£6,062.88	£1,000.00	
	one off	one-off	annual	
Assumed life Years	1	5		
One off Cost annualised (mean)	£500	£897		
One off Cost annualised (median)	£500	£1,213		
annual cost (mean)	£500	£897	£1,000	£2,397
annual cost (median)	£500	£1,213	£1,000	£2,713
Proportion for which cost is known				42.9%
Proportion for which cost is not known				57.1%
				Flooding
Annual Cost based on mean assuming don't know cost is same as mean				£2,397.49
Annual Cost based on median assuming don't know cost is same as median				£2,712.58
Annual Cost based on mean assuming don't know cost is zero				£1,027.50
Annual Cost based on median assuming don't know cost is zero				£1,162.53

Table BA1.10 Unweighted Flooding

	Flooding - insurance -one off £	Flooding - flood resistance -one off £	Flooding - flood resistance -annual £	Overall
Businesses Claiming avertive behaviour	5	8	8	13
% of total	0.5%	0.8%	0.8%	1.3%
Businesses not knowing costs	4	4	7	7
% of total				53.8%
Number of Businesses	1	4	1	6
% of total knowing cost				46.2%
Mean	£500.00	£3,925.00	£1,000.00	
Median	£500.00	£2,750.00	£1,000.00	
	one off	one-off	annual	
Assumed life Years	1	5		
One off Cost annualised (mean)	£500	£785		
One off Cost annualised (median)	£500	£550		
annual cost (mean)	£500	£785	£1,000	£2,285
annual cost (median)	£500	£550	£1,000	£2,050
Proportion for which cost is known				46.2%
Proportion for which cost is not known				53.8%
				Flooding
Annual Cost based on mean assuming don't know cost is same as mean				£2,285
Annual Cost based on median assuming don't know cost is same as median				£2,050
Annual Cost based on mean assuming don't know cost is zero				£1,054.62
Annual Cost based on median assuming don't know cost is zero				£946.15

Table BA1.11 Pollution – weighted/unweighted same

	Pollution - monitor water quality -annual £	Pollution - remove pollution - one off £	Pollution - other -one off £	Overall
Businesses Claiming avertive behaviour	1	1	1	3
% of total	0.1%	0.1%	0.1%	0.3%
Businesses not knowing costs	0	0	0	0
% of total				0.0%
Number of Businesses	1	1	1	3
% of total knowing cost				100.0%
Mean	£200.00	£17,000.00	£100.00	
Median	£200.00	£17,000.00	£100.00	
	annual	one-off	one off	
Assumed life Years	1	10	5	
One off Cost annualised (mean)	£200	£1,700	£20	
One off Cost annualised (median)	£200	£1,700	£20	
annual cost (mean)	£200	£1,700	£20	£1,920
annual cost (median)	£200	£1,700	£20	£1,920
Proportion for which cost is known				100.0%
Proportion for which cost is not known				0.0%
				Pollution
Annual Cost based on mean assuming don't know cost is same as mean				£1,920.00
Annual Cost based on median assuming don't know cost is same as median				£1,920.00
Annual Cost based on mean assuming don't know cost is zero				£1,920.00
Annual Cost based on median assuming don't know cost is zero				£1,920.00
nb one off cost £17000 spread over 10 years				

Detailed Avertive Expenditure Cost Tables

– Water Taste Segmented by Whether Water is Critical and SEG Grouping

Table BA2.1 Water Taste Weighted Critical

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	144	175	31	68	19	9	2	2	22	2	5	18	376
% of total	18.9%	22.9%	4.1%	8.9%	2.5%	1.2%	0.3%	0.3%	2.9%	0.3%	0.7%	2.4%	
Businesses not knowing costs	66	97	17	38	13	3	1	1	21	1	4	15	156
Number of Businesses knowing	78	78	14	30	6	6	1	1	1	1	1	3	220
	Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	47.610	60.822	21.388	42.815	290.799	477.229	6706.250	5000.000	18.000	308.022	26.129	24.318	
Median	20.000	27.994	10.000	30.000	195.413	200.000	6706.250	5000.000	18.000	308.022	97.221	30.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£571	£730						£5,000	£216	£3,696	£314	£292	
Overall annual cost (median)	£240	£336						£5,000	£216	£3,696	£1,167	£360	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£4	£9	£58	£95	£335						
purch cost annualiseed (median)			£2	£6	£39	£40	£335						
annual cost (mean)	£571	£730	£4	£9	£58	£95	£335	£5,000	£216	£3,696	£314	£292	£514.40
annual cost (median)	£240	£336	£2	£6	£39	£40	£335	£5,000	£216	£3,696	£1,167	£360	£259.54

Proportion for which cost is known	58.5%
Proportion for which cost is not known	41.5%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£514.40
Annual Cost based on median assuming don't know cost is same as median	£259.54
Annual Cost based on mean assuming don't know cost is zero	£300.98
Annual Cost based on median assuming don't know cost is zero	£151.86

Table BA2.2 Water Taste Weighted Not Critical

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	38	43	4	14	1	1	1	1	0	0	0	2	91
% of total	16.0%	18.1%	1.7%	5.9%	0.4%	0.4%	0.4%	0.4%	0.0%	0.0%	0.0%	0.8%	
Businesses not knowing costs	12	17	1	4	1	1	1	0	0	0	0	2	25
Number of Businesses knowing	26	26	3	10	0	0	0	1	0	0	0	0	66
	Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	24.783	24.568	46.186	31.998	0.000	0.000	0.000	2000.000	0.000	0.000	0.000	0.000	
Median	20.000	20.000	25.622	34.059	0.000	0.000	0.000	2000.000	0.000	0.000	0.000	0.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£297	£295						£2,000	£0	£0	£0	£0	
Overall annual cost (median)	£240	£240						£2,000	£0	£0	£0	£0	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£9	£6	£0	£0	£0						
purch cost annualiseed (median)			£5	£7	£0	£0	£0						
annual cost (mean)	£297	£295	£9	£6	£0	£0	£0	£2,000	£0	£0	£0	£0	£264.99
annual cost (median)	£240	£240	£5	£7	£0	£0	£0	£2,000	£0	£0	£0	£0	£220.66

Proportion for which cost is known	72.5%
Proportion for which cost is not known	27.5%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£264.99
Annual Cost based on median assuming don't know cost is same as median	£220.66
Annual Cost based on mean assuming don't know cost is zero	£192.19
Annual Cost based on median assuming don't know cost is zero	£160.04

Table BA2.3 Water Taste Weighted Commercial

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	110	121	24	50	14	1	0	0	10	1	2	10	262
% of total	19.3%	21.2%	4.2%	8.8%	2.5%	0.2%	0.0%	0.0%	1.8%	0.2%	0.4%	1.8%	
Businesses not knowing costs	49	58	11	25	11	0	0	0	9	0	2	8	92
Number of Businesses knowing	61	63	13	25	3	1	0	0	1	1	0	2	170
	Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	43.832	43.406	25.401	41.219	281.736	500.000	0.000	0.000	18.000	359.000	0.000	30.000	
Median	18.355	25.000	10.000	30.000	243.111	500.000	0.000	0.000	18.000	359.000	0.000	30.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£526	£521						£0	£216	£4,308	£0	£360	
Overall annual cost (median)	£220	£300						£0	£216	£4,308	£0	£360	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£5	£8	£56	£100	£0						
purch cost annualiseed (median)			£2	£6	£49	£100	£0						
annual cost (mean)	£526	£521	£5	£8	£56	£100	£0	£0	£216	£4,308	£0	£360	£415.79
annual cost (median)	£220	£300	£2	£6	£49	£100	£0	£0	£216	£4,308	£0	£360	£223.54

Proportion for which cost is known	64.9%
Proportion for which cost is not known	35.1%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£415.79
Annual Cost based on median assuming don't know cost is same as median	£223.54
Annual Cost based on mean assuming don't know cost is zero	£269.79
Annual Cost based on median assuming don't know cost is zero	£145.04

Table BA2.4 Water Taste Weighted Industrial

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	50	59	7	20	3	8	3	3	6	1	1	2	127
% of total	18.0%	21.2%	2.5%	7.2%	1.1%	2.9%	1.1%	1.1%	2.2%	0.4%	0.4%	0.7%	
Businesses not knowing costs	20	33	4	10	2	3	2	2	6	0	1	2	49
Number of Businesses knowing	30	26	3	10	1	5	1	1	0	1	0	0	78
	Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	27.121	52.236	34.840	44.458	200.000	456.351	5000.000	2000.000	0.000	300.000	36.000	0.000	
Median	20.000	25.000	10.000	40.000	200.000	200.000	5000.000	2000.000	0.000	300.000	36.000	0.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£325	£627						£2,000	£0	£3,600	£432	£0	
Overall annual cost (median)	£240	£300						£2,000	£0	£3,600	£432	£0	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£7	£9	£40	£91	£250						
purch cost annualiseed (median)			£2	£8	£40	£40	£250						
annual cost (mean)	£325	£627	£7	£9	£40	£91	£250	£2,000	£0	£3,600	£432	£0	£416.89
annual cost (median)	£240	£300	£2	£8	£40	£40	£250	£2,000	£0	£3,600	£432	£0	£271.49

Proportion for which cost is known	61.4%
Proportion for which cost is not known	38.6%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£416.89
Annual Cost based on median assuming don't know cost is same as median	£271.49
Annual Cost based on mean assuming don't know cost is zero	£256.04
Annual Cost based on median assuming don't know cost is zero	£166.74

Table BA2.5 Water Taste Weighted Public

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	23	39	4	12	2	1	1	1	5	0	1	8	78
% of total	15.1%	25.7%	2.6%	7.9%	1.3%	0.7%	0.7%	0.7%	3.3%	0.0%	0.7%	5.3%	
Businesses not knowing costs	10	25	3	7	0	0	0	0	5	0	0	7	38
Number of Businesses knowing	13	14	1	5	2	1	1	1	0	0	1	1	40
	Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	112.742	86.882	9.779	25.601	338.508	1000.000	17000.000	5000.000	0.000	0.000	0.000	30.000	
Median	18.326	16.630	9.779	20.000	411.475	1000.000	17000.000	5000.000	0.000	0.000	0.000	30.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£1,353	£1,043						£5,000	£0	£0	£23.74	£13.74	
Overall annual cost (median)	£220	£200						£5,000	£0	£0	£23.74	£48.89	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£2	£5	£68	£200	£850						
purch cost annualiseed (median)			£2	£4	£82	£200	£850						
annual cost (mean)	£1,353	£1,043	£2	£5	£68	£200	£850	£5,000	£0	£0	£24	£14	£960.86
annual cost (median)	£220	£200	£2	£4	£82	£200	£850	£5,000	£0	£0	£24	£49	£299.05

Proportion for which cost is known	51.3%
Proportion for which cost is not known	48.7%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£960.86
Annual Cost based on median assuming don't know cost is same as median	£299.05
Annual Cost based on mean assuming don't know cost is zero	£492.75
Annual Cost based on median assuming don't know cost is zero	£153.36

Table BA2.6 Water Taste Unweighted Critical

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	152	200	36	77	22	8	6	6	22	5	13	22	420
% of total	19.2%	25.3%	4.6%	9.7%	2.8%	1.0%	0.8%	0.8%	2.8%	0.6%	1.6%	2.8%	
Businesses not knowing costs	76	123	24	43	14	4	4	5	21	3	10	19	197
Number of Businesses knowing	76	77	12	34	8	4	2	1	1	2	3	3	223
	Monthly Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	100.132	98.558	25.583	42.765	217.500	675.000	11000.000	5000.000	18.000	329.500	48.667	39.333	
Median	20.000	30.000	10.000	25.000	175.000	750.000	11000.000	5000.000	18.000	329.500	36.000	30.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£1,202	£1,183						£5,000	£216	£3,954	£584	£472	
Overall annual cost (median)	£240	£360						£5,000	£216	£3,954	£432	£360	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£5	£9	£44	£135	£550						
purch cost annualiseed (median)			£2	£5	£35	£150	£550						
annual cost (mean)	£1,202	£1,183	£5	£9	£44	£135	£550	£5,000	£216	£3,954	£584	£472	£901.44
annual cost (median)	£240	£360	£2	£5	£35	£150	£550	£5,000	£216	£3,954	£432	£360	£285.35

Proportion for which cost is known	53.1%
Proportion for which cost is not known	46.9%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£901.44
Annual Cost based on median assuming don't know cost is same as median	£285.35
Annual Cost based on mean assuming don't know cost is zero	£478.62
Annual Cost based on median assuming don't know cost is zero	£151.51

Table BA2.7 Water Taste Unweighted Not Critical

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	39	37	5	12	2	1	1	1	0	0	0	1	83
% of total	18.6%	17.6%	2.4%	5.7%	1.0%	0.5%	0.5%	0.5%	0.0%	0.0%	0.0%	0.5%	
Businesses not knowing costs	11	18	2	4	2	1	1	0	0	0	0	1	24
Number of Businesses knowing	28	19	3	8	0	0	0	1	0	0	0	0	59
	Monthly Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	32.357	28.947	40.667	31.625	0.000	0.000	0.000	2000.000	0.000	0.000	0.000	0.000	
Median	15.000	20.000	12.000	35.000	0.000	0.000	0.000	2000.000	0.000	0.000	0.000	0.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£388	£347						£2,000	£0	£0	£0	£0	
Overall annual cost (median)	£180	£240						£2,000	£0	£0	£0	£0	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£8	£6	£0	£0	£0						
purch cost annualiseed (median)			£2	£7	£0	£0	£0						
annual cost (mean)	£388	£347	£8	£6	£0	£0	£0	£2,000	£0	£0	£0	£0	£331.30
annual cost (median)	£180	£240	£2	£7	£0	£0	£0	£2,000	£0	£0	£0	£0	£197.68

Proportion for which cost is known	71.1%
Proportion for which cost is not known	28.9%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£331.30
Annual Cost based on median assuming don't know cost is same as median	£197.68
Annual Cost based on mean assuming don't know cost is zero	£235.50
Annual Cost based on median assuming don't know cost is zero	£140.52

Table BA2.8 Water Taste Unweighted Commercial

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	101	114	22	41	14	3	0	0	11	2	5	8	243
% of total	20.7%	23.4%	4.5%	8.4%	2.9%	0.6%	0.0%	0.0%	2.3%	0.4%	1.0%	1.6%	
Businesses not knowing costs	48	66	13	19	11	2	0	0	10	1	5	7	104
Number of Businesses knowing	53	48	9	22	3	1	0	0	1	1	0	1	139
	Monthly Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	51.774	50.146	30.444	45.227	226.667	500.000	0.000	0.000	18.000	359.000	0.000	30.000	
Median	20.000	25.000	10.000	30.000	150.000	500.000	0.000	0.000	18.000	359.000	0.000	30.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£621	£602						£0	£216	£4,308	£0	£360	
Overall annual cost (median)	£240	£300						£0	£216	£4,308	£0	£360	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£6	£9	£45	£100	£0						
purch cost annualiseed (median)			£2	£6	£30	£100	£0						
annual cost (mean)	£621	£602	£6	£9	£45	£100	£0	£0	£216	£4,308	£0	£360	£483.35
annual cost (median)	£240	£300	£2	£6	£30	£100	£0	£0	£216	£4,308	£0	£360	£232.69

Proportion for which cost is known	57.2%
Proportion for which cost is not known	42.8%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£483.35
Annual Cost based on median assuming don't know cost is same as median	£232.69
Annual Cost based on mean assuming don't know cost is zero	£276.49
Annual Cost based on median assuming don't know cost is zero	£133.10

Table BA2.9 Water Taste Unweighted Industrial

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	49	51	10	24	5	5	4	4	5	1	3	3	127
% of total	19.0%	19.8%	3.9%	9.3%	1.9%	1.9%	1.6%	1.6%	1.9%	0.4%	1.2%	1.2%	
Businesses not knowing costs	20	34	7	16	4	4	3	3	5	0	2	3	64
Number of Businesses knowing	29	17	3	8	1	1	1	1	0	1	1	0	63
	Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	36.690	45.048	42.667	35.909	200.000	600.000	5000.000	2000.000	0.000	300.000	36.000	0.000	
Median	20.000	25.000	10.000	30.000	200.000	600.000	5000.000	2000.000	0.000	300.000	36.000	0.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£440	£541						£2,000	£0	£3,600	£432	£0	
Overall annual cost (median)	£240	£300						£2,000	£0	£3,600	£432	£0	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£9	£7	£40	£120	£250						
purch cost annualiseed (median)			£2	£6	£40	£120	£250						
annual cost (mean)	£440	£541	£9	£7	£40	£120	£250	£2,000	£0	£3,600	£432	£0	£452.11
annual cost (median)	£240	£300	£2	£6	£40	£120	£250	£2,000	£0	£3,600	£432	£0	£294.54

Proportion for which cost is known	49.6%
Proportion for which cost is not known	50.4%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£452.11
Annual Cost based on median assuming don't know cost is same as median	£294.54
Annual Cost based on mean assuming don't know cost is zero	£224.28
Annual Cost based on median assuming don't know cost is zero	£146.11

Table BA2.10 Water Taste Unweighted Public

	bottled water for drinking	water coolers	jugs with water filters	kettles with filter	Tap/under sink filter	Fridge with water dispenser	borehole/spring	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	Overall
Businesses Claiming avertive beh	41	72	9	24	5	1	3	3	6	2	5	11	133
% of total	16.1%	28.3%	3.5%	9.4%	2.0%	0.4%	1.2%	1.2%	2.4%	0.8%	2.0%	4.3%	
Businesses not knowing costs	19	45	6	15	1	0	2	2	6	2	3	9	61
Number of Businesses knowing	22	27	3	9	4	1	1	1	0	0	2	2	72
	Monthly Cost of buying bottled water for drinking £	Monthly Cost of buying water coolers £	Purch Cost - jugs with water filters £	Purch Cost - kettles with filter £	Purch cost Tap/under sink filter £	Purch cost Fridge with water dispenser £	Purchase Cost of borehole/spring £	Ann Maint Cost of borehole/spring £	Boiling water before Use Monthly cost £	Water purification tablets Monthly cost £	Water softening products Monthly cost £	Other Treatments Monthly cost £	
Mean	214.000	177.259	9.000	35.222	215.000	1000.000	17000.000	5000.000	0.000	0.000	55.000	44.000	
Median	20.000	25.000	10.000	20.000	125.000	1000.000	17000.000	5000.000	0.000	0.000	55.000	44.000	
type	monthly	monthly	purch	purch	purch	purch	purch	yearly	monthly	monthly	monthly	monthly	
Overall annual cost (mean)	£2,568	£2,127						£5,000	£0	£0	£23.74	£13.74	
Overall annual cost (median)	£240	£300						£5,000	£0	£0	£23.74	£48.89	
assumed life years			5	5	5	5	20						
purch cost annualised (mean)			£2	£7	£43	£200	£850						
purch cost annualiseed (median)			£2	£4	£25	£200	£850						
annual cost (mean)	£2,568	£2,127	£2	£7	£43	£200	£850	£5,000	£0	£0	£24	£14	£1,670.75
annual cost (median)	£240	£300	£2	£4	£25	£200	£850	£5,000	£0	£0	£24	£49	£273.85

Proportion for which cost is known	54.1%
Proportion for which cost is not known	45.9%
	Water Taste
Annual Cost based on mean assuming don't know cost is same as mean	£1,670.75
Annual Cost based on median assuming don't know cost is same as median	£273.85
Annual Cost based on mean assuming don't know cost is zero	£904.46
Annual Cost based on median assuming don't know cost is zero	£148.25

Appendix 3 – Questionnaire

Yorkshire Water RP Questionnaire – Final

Yorkshire Water Business Customer Survey

Yorkshire Water* have commissioned AECOM to identify the issues that businesses face in connection with water supply and disposal. **The answers you provide will help Yorkshire Water deliver improved services to businesses**.
If you deal with Yorkshire water on behalf of the business, we would be grateful if you would take a few minutes to answer some questions. **If you are not this person we would be grateful if you would send this to the most appropriate person.**

If you have any queries relating to this survey, please phone Freephone 0800 652 8646
As a token of our gratitude, all completed responses will be entered into a prize draw to win one of three prizes for £100. If you win, this can be for you, or a charity nominated by you
The survey is being carried out under the Market Research Society's Code of Conduct so your confidentiality is assured. AECOM are Market Research Society Company Partners.
**You may have switched from Yorkshire Water since the business market opened but even if you have switched they will still supply your business with water and waste water services.*
Thank you very much.
Best Wishes
Paul Murphy
Associate Director Social and Market Research

S Screening Section

S01	Are you a Business Customer of Yorkshire Water?		
	1	Yes	*Go to S02*
	2	No	*CLOSE*
	99	Don't know	*CLOSE*

S02 Firstly, we need some background information about your organisation – check with details provided – enter if different

Company Name	
Company Address	
Company Post Code	

All questions relate to this site only

S1a	Approximately how many employees are typically on site at your premises?		
	1	0-9	
	2	10-49	
	3	50-249	
	4	250 or more	
	99	Don't know	

S1b	What is your business' core activity?

and now some information about your water use (you may need to refer to a recent water bill)

S2	Do you pay water service bills to Yorkshire Water?		
	1	Yes	*Go to S4*
	2	No	*Go to S3*
	99	Don't know	*Go to S4*

S3	Who do you pay for water services?	
	<is there a list of companies – YW? or open ended>	*Go to S4*

S4	How much does your business/organisation pay for water and sewerage charges either per month or per year (refer to bill if possible)?		
	1	Less than £250 per month	Less than £3,000 per year
	2	£250-£833 per month	£3,000-£9,999 per year
	3	£834-£1,249 per month	£10,000-£14,999 per year
	4	£1,250-£2,499 per month	£15,000-£29,999 per year
	5	£2,500 or more per month	£30,000 or more per year
	99	Don't know	

S5	Approximately how much water does your business/organisation use at this site and state whether this per month, per quarter or per year? Enter _____cubic metres, and state if this is…		
	1	Per month	
	2	Per quarter	
	3	Per year	
	99	Don't know	

S6	Approximately what proportion of your overall operating costs does your water bill account for?		
	1	1-25%	
	2	26-50%	
	3	51-75%	
	4	More than 75%	
	99	Don't know	

S7	On a one to ten scale, where one is 'not at all critical', how critical is the supply of water and wastewater services to the day to day running of your business/organisation?									
	Not at all critical									Extremely critical
	1	2	3	4	5	6	7	8	9	10
	IF 5 or above go to S8 ELSE GO TO Section A1									

S8	In what ways is the supply of water and wastewater services critical to the day to day running of your business/organisation? Tick all that apply		
	1	For drinking, toilets etc (e.g. for staff use)	
	2	For disposal of used/waste water toilets etc (e.g. for staff use)	
	3	To supply customer services (e.g. café, hair dressing, launderette, car wash etc)	
	4	For business processes (e.g. input to manufacture)	
	5	For business processes (e.g. output to manufacture)	
	6	For cleaning/hygiene (e.g. café, health care etc)	
	7	For disposal of waste water used for cleaning, hygiene (e.g. café, health care etc)	
	8	For livestock	
	9	Other – please specify	

To help Yorkshire Water plan for improved service delivery, we will now ask some questions about the impacts on your business of a number of service attributes, for example, taste and appearance of water supplied, disruptions to supply, water pressure, pollution.

Section A1 – Drinking Water Taste, Odour and Appearance

A1	How would you describe the normal taste, smell and appearance of the tap water at your business/organisation?			
		Taste	Smell/odour	Appearance
	Bad	1	1	1
	Poor	2	2	2
	Adequate	3	3	3
	Good	4	4	4
	Excellent	5	5	5
	Don't know	99	99	99

A2	What alternatives/treatments to tap water for drinking does your business/organisation use? Tick all that apply THEN ASK A3		
	1	None	*Go to A15*
	2	Buying bottled water	*Ask A4*
	3	Purchase/use water coolers	*Ask A5*
	4	Purchase/use jugs with water filters	*Ask A6*
	5	Purchase/use kettles with water filters	*Ask A7*
	6	Purchase/use tap/under sink filters	*Ask A8*
	7	Purchase/use fridge with water dispenser	*Ask A9*
	8	Developed own spring/borehole	*Ask A10*
	9	Boiling /cooling before use (not including for use in hot drinks/ cooking)	*Ask A11*
	10	Water purification tablets	*Ask A12*
	11	Water softening products (e.g. tablets)	*Ask A13*
	12	Other *specify*	*Ask A14*
	99	Don't know	*Go to A15*

A3	Why is this? Tick all that apply		
	1	Prefer the taste of bottled/filtered water	
	2	Colour of tap water	
	3	Health concerns over tap water	
	4	Hardness of tap water	
	5	Convenience of bottled/filtered water	
	6	I like the brand of bottled water	
	7	Tap water has more chemicals	
	8	Quality of tap water would put customers off	
	9	To offer choice for customers (cafes, restaurants etc)	
	10	Other – please specify	
	99	Don't know	

We would like to understand the costs to your business of purchasing alternatives/treatments to tap water for drinking that you have mentioned. In each case, please give your best estimates - **figures should EXCLUDE VAT.**

A4	**Can you estimate the cost to your business/organisation of purchasing bottled water for drinking? Enter 0 if nothing**	**Monthly Cost £ _____** **99 Don't Know**

A5	**Can you estimate the cost to your business/organisation of purchasing water coolers? Enter 0 if nothing**	**Monthly Cost £ _____** **99 Don't Know**

	Can you estimate: the purchase cost to your business/organisation, and lifespan (years between replacement) for…			
		Purchase cost (£)	Replacement period(Months)	Don't Know
A6	Jugs with water filters			99
A7	Kettles with filter			99
A8	Tap /under sink filter			99
A9	Fridge with water dispenser			99

A10	Can you estimate the cost to your business/organisation of the borehole/spring? 1 Yes 2 No 99 Don't Know			
		Purchase cost (£)	Annual maintenance cost (£)	When installed (YEAR)
	Cost of borehole, spring			

	Can you estimate any costs to your business/organisation of any of these other water treatments you make to tap water prior to drinking it.	
		Monthly cost (£)
A11	Boiling before use (EXCLUDING FOR MAKING HOT DRINKS)	1 Yes 2 No How Much £___
A12	Water purification tablets	1 Yes 2 No How Much £___
A13	Water softening products	1 Yes 2 No How Much £__
A14	Other treatments	1 Yes 2 No How Much£___

A15	In the last three years, can you recall any problems with the taste, smell and appearance of the tap water at your business/organisation?				
		Taste	Smell/odour	Appearance	
	None at all	1	1	1	*Go to Section A2*
	Yes, but infrequent	2	2	2	*Go to A16*
	Yes, sometimes	3	3	3	
	Yes, frequently	4	4	4	
	Don't know	99	99	99	*Go to Section A2*

A16	Have you contacted Yorkshire Water about this issue?		
	1	Yes	*Go to A17*
	2	No	*Go to Section A2*
	99	Don't know	*Go to Section A2*

A17	Did you use any of the following methods for contacting Yorkshire Water? Please estimate how long you spent contacting and responding with Yorkshire in hours (this does not include elapsed time for example between sending and receiving a reply) just the time you spent directly interacting with Yorkshire Water			
		Contact method		Time Spent
	1	Phone	1 Yes 2 No	_____Mins
	2	E-mail	1 Yes 2 No	_____Mins
	3	Twitter	1 Yes 2 No	_____Mins
	4	Facebook	1 Yes 2 No	_____Mins
	5	Letter	1 Yes 2 No	_____Mins
	6	Website (e.g. live chat)	1 Yes 2 No	_____Mins
	7	Other – specify_____	1 Yes 2 No	_____Mins

Section A2 – Water Quality

A18	Thinking about the last three years, on how many occasions has the water supply for your business been affected by poor quality?	
		Number of occasions in last three years
	Mains supply – biological/chemical (coliforms/ecoli)	0 1 2 3 4 5 6 more than 6 Don't know
	Mains supply – hardness	0 1 2 3 4 5 6 more than 6 Don't know

IF NONE IN LAST THREE YEARS, GO TO SECTION B

A19	Have you taken (or are you considering) any of the following actions as a result of poor quality of water supplies? Tick all that apply		
	1	None	*Go to A24*
	2	Purchasing insurance to cover losses from disruption to business	*Ask A20*
	3	Invested in measures to monitor water quality	*Ask A21*
	4	Other	*Ask A22*
	99	Don't know	*Go to A24*

We would like to understand the costs to your business of mitigations for poor water quality you have mentioned. In each case, please give your best estimates - figures should EXCLUDE VAT.

	Can you estimate the costs, either as a one off or ongoing annual charge?				
		One-off cost (£)	Annual charge (£)	Not yet but considering	Don't Know
A20	Purchasing insurance to cover losses from polluted supplies			97	99
A21	Invested in measures to monitor water quality			97	99

A22	What other measure have you taken to mitigate against poor quality water?			
	Specify			
		One-off cost (£)	Annual charge (£)	Don't Know
A23	What costs were associated with this?			99

A24	Have you contacted Yorkshire Water about this issue?		
	1	Yes	*Go to A25*
	2	No	*Go to Section B*
	99	Don't know	*Go to Section B*

A25	Did you use any of the following methods for contacting Yorkshire Water? Please estimate how long you spent contacting and responding with Yorkshire in hours (this does not include elapsed time for example between sending and receiving a reply) just the time you spent directly interacting with Yorkshire Water			
		Contact method		Time Spent
	1	Phone	1 Yes 2 No	_____Mins
	2	E-mail	1 Yes 2 No	_____Mins
	3	Twitter	1 Yes 2 No	_____Mins
	4	Facebook	1 Yes 2 No	_____Mins
	5	Letter	1 Yes 2 No	_____Mins
	6	Website (e.g. live chat)	1 Yes 2 No	_____Mins
	7	Other – specify_____	1 Yes 2 No	_____Mins

Section B – Disruptions to water supply

B1	Thinking about the last three years, on how many occasions has your business premises been affected by…	
	Loss of supply lasting for…	Number of occasions in last three years
	Less than 3 hours	0 1 2 3 4 5 6 more than 6 Don't know
	3 to 6 hours	0 1 2 3 4 5 6 more than 6 Don't know
	6-12 hours	0 1 2 3 4 5 6 more than 6 Don't know
	More than 12 hours	0 1 2 3 4 5 6 more than 6 Don't know

IF NO DISRUPTION TO SUPPLY IN LAST THREE YEARS, GO TO SECTION C

IF ANY DISRUPTION, ASK B2

B2	Have you taken any of the following actions as a result of this disrupted supply? Tick all that apply		
	1	None	*Go to B9*
	2	Purchase insurance to cover losses incurred by lack of supply	*Ask B3*
	3	Purchase bottled water for emergency use	*Ask B4*
	4	Develop/purchase water storage facilities	*Ask B5*
	5	Purchase/hire temporary toilet facilities	*Ask B6*
	6	Other measure to mitigate loss of supply	*Ask B7*
	99	Don't know	*Go to B9*

We would like to understand the costs to your business of mitigations for loss of supply that you have mentioned. In each case, please give your best estimates - **figures should EXCLUDE VAT.**

	Can you estimate the costs, either as a one off or ongoing annual charge?			
		One-off cost (£)	Annual charge (£)	Don't Know
B3	Purchase insurance to cover losses incurred by lack of supply			99
B4	Purchase bottled water for emergency use			99
B5	Develop/purchase water storage facilities			99
B6	Purchase/hire temporary toilet facilities			99

B7	What other measure have you taken to mitigate loss of supply?			
	Specify			
		One-off cost (£)	Annual charge (£)	Don't Know
B8	What costs were associated with this?			99

B9	Have you contacted Yorkshire Water about this issue?		
	1	Yes	*Go to A17*
	2	No	*Go to Section C*
	99	Don't know	*Go to Section C*

B10	Did you use any of the following methods for contacting Yorkshire Water? Please estimate how long you spent contacting and responding with Yorkshire in hours (this does not include elapsed time for example between sending and receiving a reply) just the time you spent directly interacting with Yorkshire Water			
		Contact method		Time Spent
	1	Phone	1 Yes 2 No	_____Mins
	2	E-mail	1 Yes 2 No	_____Mins
	3	Twitter	1 Yes 2 No	_____Mins
	4	Facebook	1 Yes 2 No	_____Mins
	5	Letter	1 Yes 2 No	_____Mins
	6	Website (e.g. live chat)	1 Yes 2 No	_____Mins
	7	Other – specify_____	1 Yes 2 No	_____Mins

Section C –Water pressure

C1	**Thinking about the last three years, has your business premises been affected by poor water pressure?** Tick all that apply		
	1	No - adequate water pressure at all times	*Go to Section D*
	2	Fluctuations in water pressure	*Go to C2*
	3	Poor water pressure for long periods	*Go to C2*
	4	Insufficient water pressure at all times	*Go to C2*

C2	**Have you taken (or are you considering) any of the following actions as a result of inadequate water pressure?** Tick all that apply		
	1	None	*Go to C7*
	2	Purchase a water pressure booster	*Ask C3*
	3	Replace old pipe system	*Ask C4*
	4	Other measure to mitigate/manage water pressure	*Ask C5*
	99	Don't know	*Go to C7*

We would like to understand the costs to your business of mitigations for low water pressure that you have mentioned. In each case, please give your best estimates - **figures should EXCLUDE VAT.**

	Can you estimate the costs, either as a one off or ongoing annual charge?				
		One-off cost (£)	Annual charge (£)	Not yet but considering	Don't Know
C3	Purchase a water pressure booster			97	99
C4	Replace old pipe system			97	99

C5	**What other measure have you taken to mitigate inadequate water pressure?**			
	Specify			
		One-off cost (£)	Annual charge (£)	Don't Know
C6	What costs were associated with this?			99

C7	**Have you contacted Yorkshire Water about this issue?**		
	1	Yes	*Go to C8*
	2	No	*Go to Section D*
	99	Don't know	*Go to Section D*

C8	Did you use any of the following methods for contacting Yorkshire Water? Please estimate how long you spent contacting and responding with Yorkshire in hours (this does not include elapsed time for example between sending and receiving a reply) just the time you spent directly interacting with Yorkshire Water			
		Contact method		Time Spent
	1	Phone	1 Yes 2 No	_____Mins
	2	E-mail	1 Yes 2 No	_____Mins
	3	Twitter	1 Yes 2 No	_____Mins
	4	Facebook	1 Yes 2 No	_____Mins
	5	Letter	1 Yes 2 No	_____Mins
	6	Website (e.g. live chat)	1 Yes 2 No	_____Mins
	7	Other – specify_____	1 Yes 2 No	_____Mins

Section D –Water Restrictions, e.g. hosepipe/sprinkler bans

D1	**On how many occasions has your business premises been affected by temporary restrictions on how you can use your water supply, within the last 3 years and longer than 3 years ago?**	
		Number of occasions in last three years/longer than last three years
	Temporary use ban (hosepipe restrictions) **in last 3 years**	0 1 2 3 4 5 6 more than 6 Don't know
	Temporary use ban (hosepipe restrictions) **longer than 3 years ago**	0 1 2 3 4 5 6 more than 6 Don't know

IF NO RESTRICTIONS, GO TO SECTION E

D2	**Have you taken (or are you considering) any of the following actions as a result of temporary restrictions on how you can use your water supply?** Tick all that apply		
	1	None	*Go to D9*
	2	Purchase insurance to cover losses incurred by restrictions on use	*Ask D3*
	3	Create/develop water storage facilities as back up supply	*Ask D4*
	4	Introduce water efficiency measures/devices	*Ask D5*
	5	Recycle 'grey'/waste water	*Ask D6*
	6	Other measure to mitigate restrictions on use	*Ask D7*
	99	Don't know	*Go to D9*

We would like to understand the costs to your business of mitigations for temporary restrictions on how you can use your water supply that you have mentioned. In each case, please give your best estimates - **figures should EXCLUDE VAT.**

	Can you estimate the costs, either as a one off or ongoing annual charge?				
		One-off cost (£)	Annual charge (£)	Not yet but considering	Don't Know
D3	Purchase insurance to cover losses incurred by restrictions on use			97	99
D4	Create/develop water storage facilities as back up supply			97	99
D5	Introduce water efficiency measures/devices			97	99
D6	Recycle 'grey'/waste water			97	99

D7	**What other measure have you taken to mitigate restrictions on use?**
	Specify

		One-off cost (£)	Annual charge (£)	Don't Know
D8	What costs were associated with this?			99

D9	**Have you contacted Yorkshire Water about this issue?**		
	1	Yes	*Go to D10*
	2	No	*Go to Section E*
	99	Don't know	*Go to Section E*

D10	**Did you use any of the following methods for contacting Yorkshire Water?** **Please estimate how long you spent contacting and responding with Yorkshire in hours (this does not include elapsed time for example between sending and receiving a reply) just the time you spent directly interacting with Yorkshire Water**			
		Contact method		Time Spent
	1	Phone	1 Yes 2 No	_____Mins
	2	E-mail	1 Yes 2 No	_____Mins
	3	Twitter	1 Yes 2 No	_____Mins
	4	Facebook	1 Yes 2 No	_____Mins
	5	Letter	1 Yes 2 No	_____Mins
	6	Website (e.g. live chat)	1 Yes 2 No	_____Mins
	7	Other – specify_____	1 Yes 2 No	_____Mins

Section E –Internal or External Sewer Flooding

E1	Thinking about the last three years, on how many occasions has your business premises been affected by sewer flooding?		
		Number of occasions in last three years	
	Internal to your premises	0 1 2 3 4 5 6 more than 6 Don't know	
	External to your premises	0 1 2 3 4 5 6 more than 6 Don't know	

IF NONE IN LAST THREE YEARS, GO TO SECTION F

E2	Have you taken (or are you considering) any of the following actions as a result of sewer flooding? Tick all that apply		
	1	None	*Go to E5*
	2	Purchase insurance to cover losses from sewer flooding	*Ask E3*
	3	Invested in flood resistance and resilience measures	*Ask E4*
	99	Don't know	*Go to E5*

We would like to understand the costs to your business of mitigations for sewer flooding you have mentioned. In each case, please give your best estimates - **figures should EXCLUDE VAT.**

	Can you estimate the costs, either as a one off or ongoing annual charge?				
		One-off cost (£)	Annual charge (£)	Not yet but considering	Don't Know
E3	Purchase insurance to cover losses from sewer flooding			97	99
E4	Invested in flood resistance and resilience measures			97	99

E5	Have you contacted Yorkshire Water about this issue?		
	1	Yes	*Go to E6*
	2	No	*Go to Section F*
	99	Don't know	*Go to Section F*

E6 **Did you use any of the following methods for contacting Yorkshire Water?**

Please estimate how long you spent contacting and responding with Yorkshire in hours (this does not include elapsed time for example between sending and receiving a reply) just the time you spent directly interacting with Yorkshire Water

		Contact method		Time Spent
	1	Phone	1 Yes 2 No	_____Mins
	2	E-mail	1 Yes 2 No	_____Mins
	3	Twitter	1 Yes 2 No	_____Mins
	4	Facebook	1 Yes 2 No	_____Mins
	5	Letter	1 Yes 2 No	_____Mins
	6	Website (e.g. live chat)	1 Yes 2 No	_____Mins
	7	Other – specify_____	1 Yes 2 No	_____Mins

Section F –Pollution of Water supply

F1	Thinking about the last three years, on how many occasions has the water supply for your business been affected by pollution?								
		Number of occasions in last three years							
	Water Pollution	0	1	2	3	4	5	6	more than 6	Don't know

IF NONE IN LAST THREE YEARS, GO TO SECTION G

F2	Have you taken (or are you considering) any of the following actions as a result of pollution to water supplies? Tick all that apply		
	1	None	*Go to F8*
	2	Purchase insurance to cover losses from disruption to business	*Ask F3*
	3	Invested in measures to monitor water quality	*Ask F4*
	4	Invested in measures to remove pollution	*Ask F5*
	5	Other	*Ask F6*
	99	Don't know	*Go to F8*

We would like to understand the costs to your business of mitigations for pollution you have mentioned. In each case, please give your best estimates - figures should EXCLUDE VAT.

	Can you estimate the costs, either as a one off or ongoing annual charge?				
		One-off cost (£)	Annual charge (£)	Not yet but considering	Don't Know
F3	Purchase insurance to cover losses from polluted supplies			97	99
F4	Invested in measures to monitor water quality			97	99
F5	Invested in measures to remove pollution			97	99

F6	What other measure have you taken to mitigate pollution to supply?			
	Specify			
		One-off cost (£)	Annual charge (£)	Don't Know
F7	What costs were associated with this?			99

F8	Have you contacted Yorkshire Water about this issue?		
	1	Yes	*Go to F9*
	2	No	*Go to Section G*
	99	Don't know	*Go to Section G*

F9	Did you use any of the following methods for contacting Yorkshire Water? Please estimate how long you spent contacting and responding with Yorkshire in hours (this does not include elapsed time for example between sending and receiving a reply) just the time you spent directly interacting with Yorkshire Water			
		Contact method		Time Spent
	1	Phone	1 Yes 2 No	_____Mins
	2	E-mail	1 Yes 2 No	_____Mins
	3	Twitter	1 Yes 2 No	_____Mins
	4	Facebook	1 Yes 2 No	_____Mins
	5	Letter	1 Yes 2 No	_____Mins
	6	Website (e.g. live chat)	1 Yes 2 No	_____Mins
	7	Other – specify_____	1 Yes 2 No	_____Mins

Section G –Odour from Sewers and Treatment Works

G1	Thinking about the last three years, on how many occasions has your business premises been affected by odours from Sewers and Treatment Works?		
	1	Never – none nearby	*Go to Section H*
	2	Infrequently	*Go to G2*
	3	Sometimes - seasonal	*Go to G2*
	4	Frequently	*Go to G2*
	5	All the time	*Go to G2*
	99	Don't know	*Go to Section H*

G2	Have you contacted Yorkshire Water about this issue?		
	1	Yes	*Go to G3*
	2	No	*Go to Section G4*
	99	Don't know	*Go to Section G4*

G3	Did you use any of the following methods for contacting Yorkshire Water? Please estimate how long you spent contacting and responding with Yorkshire in hours (this does not include elapsed time for example between sending and receiving a reply) just the time you spent directly interacting with Yorkshire Water			
		Contact method		Time Spent
	1	Phone	1 Yes 2 No	_____Mins
	2	E-mail	1 Yes 2 No	_____Mins
	3	Twitter	1 Yes 2 No	_____Mins
	4	Facebook	1 Yes 2 No	_____Mins
	5	Letter	1 Yes 2 No	_____Mins
	6	Website (e.g. live chat)	1 Yes 2 No	_____Mins
	7	Other – specify_____	1 Yes 2 No	_____Mins

G4	Was odour from Sewers and Treatment Works a consideration when deciding on a location for this business?		
	1	Yes	*Go to G5*
	2	No	*Go to G5*
	99	Don't know	*Go to G5*

G5	Has the odour from Sewers and Treatment Works had and impact on the purchase/rental costs of your premises' location?		
	1	Yes it has increased the cost	*Go to G6*
	2	Yes it has reduced the cost	*Go to G6*
	3	No	*Go to Section H*
	99	Don't know	*Go to Section H*

G6	If yes can you estimate how much?	
	One Off Cost	£
	Annual Charge	£
	Don't Know	99

Section H –Impacts of Water Supply

H1		Thinking of all the aspects, have there been any impacts to your business/organisation from any of the issues?					
		None – Not Applicable	Loss of trade	Staff inconvenience	Loss of production	Closure of premises	Other - specify
	Water taste, smell, appearance	0	1	2	3	4	5
	Water Quality	0	1	2	3	4	5
	Disruptions to supply	0	1	2	3	4	5
	Water pressure	0	1	2	3	4	5
	Temporary restrictions (hosepipe ban)	0	1	2	3	4	5
	Sewer flooding	0	1	2	3	4	5
	Quality/ pollution	0	1	2	3	4	5
	Odour from sewer and treatment works	0	1	2	3	4	5

And finally,

Please give us your contact details, so we can let you know if you are successful in the prize draw.

Your Name	
Your email address	
Your phone number	

Three £100 prizes are to be given to three respondents drawn at random from all the survey responses returned by the above date. The prize draw will take place on 31st October 2017, and the winner will be notified by email. The result of the prize draw can be obtained by calling 0800 652 8646
Thank you for your help

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