

PR19 Customer Challenge Group

Meeting number: 4

Meeting Date: 1st November 2017

Paper No: 4b

Agenda No: 4

Title: WTP overview and design note

Author: Oliver Martin (WTP overview)
Paul Medcalfe / Rob Sheldon (design note)

Printing: This document does not contain any graphs or pictures and therefore does not require you to print in colour.

What is this paper about:	Outlines the approach we have taken to produce the draft measures to be tested in the Willingness to Pay (WTP).
What is the context of this paper:	First stage of drafting the WTP survey.
What is the relevance of this paper:	WTP is fundamental part of research programme.
Action needed from the CCG:	The CCG are asked to comment on the proposed approach to be undertaken and the proposed set of metrics to be tested, as outlined in the attached design note

WILLINGNESS TO PAY (WTP) OVERVIEW

We are about to commence an important stage of the PR19 research programme that involves quantitative research to understand how customers value the priorities they identified in the first stage of our research programme. The output of this research is to be used in cost-benefit appraisals (CBA) for informing the setting of performance commitment (PC) levels, and for the setting of outcome delivery incentive (ODI) rates.

Following Ofwat's publication of the PR19 draft methodology in July 2017 we have had a number of discussions with Accent and PJM Economics, who will be undertaking the research, and Frontier Economics who are supporting us in the design of our PCs and ODIs. This discussion has focussed on how we will ensure that the areas customers have said are important to them, from our stage one research, are reflected in the measures to be tested as well as ensuring we adhere to Ofwat's new requirements – specifically around the common PCs and proposed mandated performance levels.

Using both consultancies ensures that we have a good balance between the best methods of customer research to be used and the most appropriate set of measures to be tested that reflects both customer views and Ofwat's requirements.

PROPOSED WTP METHOD

The attached 'design note' from Accent/PJM summarises the discussions we have had and our proposals for the WTP research that is due to commence in November. As outlined in the design note Accent/PJM has revised their proposed approach for this stage of the research. We plan to qualitatively 'test' this revised approach in the rescheduled focus groups that will be held on 2nd November in Bracknell (note there are no viewing facilities available at this venue but we can have one person sitting in on each group) and 6th November in Canterbury (this venue has viewing facilities available which can take up to 10 people).

REQUIREMENTS OF THE CCG

The CCG are asked to comment on the proposed approach to be undertaken and the proposed set of metrics to be tested, as outlined in the attached design note.

NEXT STEPS

It should be noted that the timescales for this work have been extended due to the factors outlined above and the need to reschedule the qualitative focus groups as a result. A full timetable is being prepared and will be circulated to the CCG in due course.

PR19 WTP Survey Design

A Note by PJM Economics/Accent for South East Water, 24th October 2017

1 Introduction

PJM is working with Accent to design and implement a willingness-to-pay (WTP) research programme for South East Water (SEW). The purpose of this work is to obtain estimates of customers' WTP for service level changes. These estimates are to be used in cost-benefit appraisals (CBA) for informing the setting of performance commitment (PC) levels, and for the setting of outcome delivery incentive (ODI) rates, consistent with the requirements laid out by Ofwat (Ofwat, 2017¹).

We have recently had extensive discussions with SEW and Frontier regarding the requirements for the main stage survey design, including a particular focus on the service measures that are to be valued. As discussed with SEW and Frontier, some of these service measures are incompatible with the originally proposed framework of exercises. We have therefore developed a revised survey specification to be able to deliver these objectives.

The purpose of this note is to set out an outline of our new proposed valuation framework, and discuss some of the details surrounding this.

The remainder of the note proceeds by first setting out the service measures to be valued, before then outlining our proposed approach, and then describing the content of each exercise.

2 Selection of Service Measures

One of the first key tasks involved in designing the programme was to select and define the service measures to be valued by customers. These can then be incorporated within a design capable of valuing them.

The principles adopted for selecting and defining service measures were the following:

- They should allow WTP to be measured for the PCs/ODIs required by Ofwat
- They should include measures that draw on the findings from previous research on customer priorities
- Their number should be limited to those that are a high priority to maximise the statistical robustness of the estimates and limit the length and complexity of the survey.
- They should be worded in customer focussed language, and avoid ambiguity.

The following table contains the list of service measures proposed for the research, as agreed with SEW.

¹ Ofwat (2017) 'Delivering Water 2020: Consulting on our methodology for the 2019 price review', July 2017.

Table 1: Service measures to be valued in WTP survey

Service area	Unit of measure
Discoloured water ¹	Number of contacts per year
Taste & smell not ideal ¹	Number of contacts per year
Water supply interruptions (>3h)	Number per year
Persistent low pressure	Number of properties affected
Mains bursts	Number per year
Leakage	Percentage of water lost due to leakage
Water use	Litres per person per day
Rota cuts and/or standpipes (2 months)	Chance per year
Temporary use bans (May to Sep)	Chance per year
Low river flows	Miles of river at less than ideal flow levels (out of X miles in total) ²
Carbon emissions	Kilotonnes of CO ₂ equivalent per year

1. Duration to be inserted. 2. 'X' to be replaced by the number of miles in the SEW supply area.

The form of presentation of these service measures is currently under development, but the intention is that the descriptions of the service measures will include information on the comparative performance of SEW in relation to other water companies. This form of presentation will be tested in qualitative research prior to the main survey to ensure understanding.

3 Outline of SP Design

In our proposal for the study, we suggested that the survey would comprise two linked exercises. The first would be a 'MaxDiff' exercise requiring respondents to choose which of a list of service issues would have the most impact and which would have the least impact. This exercise would obtain estimates of the relative impact of each of the service issues. The second exercise was to be a package exercise which would offer respondents choices between whole packages of service level change covering all the service measures.

This framework requires that all service measures can be expressed as the frequency with which a type of service issue occurs. However, in the case of 'Leakage', 'Water use', 'Carbon emissions', 'Single supply source' and 'Low river flows' measures, this approach does not appear to us to be feasible.

Our revised approach would proceed as follows. First, we would include an exercise similar to the original MaxDiff exercise, but focusing only on 'Discoloured water', 'Taste & smell not ideal', 'Water supply interruptions' and 'Persistent low pressure'. Each of these service areas can be expressed as a service issue affecting customers properties that could be measured on an impact scale.

A second exercise would then be included, focused on all the remaining attributes 'Mains bursts', 'Leakage', 'Water use', 'Rota cuts and/or standpipes', 'Temporary use bans', 'Low river flows', 'Carbon emissions' plus the bill impact. This exercise would be a choice experiment and would allow different levels of service to be shown for each of the service measures included.

This includes a larger number of attributes than ideal, but this is because the attributes are all related to one another and so must be valued jointly, with the exception of 'Carbon emissions' but this is included to avoid it being left on its own. For example, 'Mains bursts' are correlated, at least in people's minds, with 'Leakage', and both 'Leakage' and 'Water use' are correlated with the level of service ('Rota cuts and/or standpipes', and 'Temporary use bans'), and with 'Low river flows'. Therefore, these attributes must be included in the same exercise in order to prevent double counting.

The third exercise would be a Package exercise containing packages of service levels covering all the service areas in the first three exercises, and an accompanying impact on the customer's bill.

In framing the Package questions, the intention is that the survey will focus on customers preferred package of service levels rather than on their preferred ODI penalty and reward rates. This is despite the fact that results will be used to inform the setting of ODI rates as well as within CBA for the setting of PC levels.

Whilst one could imagine a survey constructed around testing customers' preferred ODI penalty and reward rates, we believe that this approach is likely to be problematic due to the fact that the ODI regime is considered undesirable by a significant proportion of customers (see, for example, research conducted by Accent and PJM for SEW at PR14.) Where payment vehicles are rejected by respondents, or not fully understood, then this can lead to biases due to 'protest responses'. This type of response can lead to the incorrect inference that customers are not willing to pay for a higher level of service when, in fact, they are actually rejecting just the mechanism for paying for it.

This approach overall will be capable of valuing each of the service areas required by SEW and is consistent with best practice for SP survey design. The use of a MaxDiff exercise to avoid the need for customers to trade off small changes in the chance of service issues affecting their property represents a positive step forward from the approach taken at PR14. Furthermore, the formats of the exercises will be visually improved upon those used at PR14.

The following sections now outline these exercises in more detail, including a statement of the outstanding issues for progression of the designs in each case.

4 SP1: Service Issues at Customers' Properties

The first SP exercise would be similar to the original MaxDiff exercise, in the sense that it would be focused on deriving a relative impact measure for each of the included service issues. These would include "Discoloured water', 'Taste & smell not ideal', 'Water supply interruptions' and 'Persistent low pressure'.

However, on the basis that there are only four measures now to be valued in this exercise, we suggest that the exercise could be simplified to the following sequence.

First, we would show respondents all these types of service issue, with different orderings shown across the sample, and ask:

Q1: ‘Which of these service issues would have the greatest impact on you, and which would have the least impact?’

Then, we would show respondents the two remaining service issues excluding the ones chosen at Q1, and ask:

Q2: ‘Which of these service issues would have the greatest impact on you?’

The answers given by respondents to this simple exercise could be used within our analysis in the same way as originally intended for the MaxDiff exercise, to produce an index of relative impact for each of these four service issues.

In order to complete the design for this exercise, we would need only to agree the form of wording to be used, and the mean duration of the service issues to be included.

5 SP2: Water Use

The second exercise would comprise a discrete experiment of six questions per person, formatted as in the below figure. (The visual representation will be worked on as part of the design process.)

Figure 1: Example SP2 question

	Option A	Option B
Mains pipe bursts (no. per year)		
Leakage (% of water lost)		
Water use per person per day (litres)		
Rota cuts and/or standpipes (chance per year)		
Temporary use bans (May to Sep) (chance per year)		
River flows lower than ideal (miles of river out of X miles in total) ¹		
Carbon emissions (kilotons of CO ² emitted per year)		
THE CHANGE IN YOUR ANNUAL WATER BILL above inflation to provide the service package above		

1. ‘X’ to be replaced by the number of miles in the SEW supply area.

In this exercise, the levels of each of the attributes would vary across the options and the sequence of questions for a respondent, and across the sample, according to an experimental design. The approach taken to design would seek to ensure that each service level could be efficiently (in statistical terms) valued on a utility index, whilst imposing restrictions on the possible combinations of attribute levels within an Option to ensure plausibility.

We would also intend to impose a restriction on the design to limit the number of attributes that could take different levels across alternatives to three. This approach is to make the choices significantly less complex for respondents than having up to eight

attributes varying at once. This is known as the ‘partial profiles’ approach in the literature.²

To complete the design for this exercise we would need to agree with SEW the levels that each of these measures should take across the exercise.

6 SP3: Package Exercise

A ‘Package’ exercise would be included following the first two exercises with the aim of obtaining estimates of customers’ willingness to pay for service level changes across the two previous exercises. This exercise would comprise two service package attributes plus the bill impact, and would also consist of four choice questions per person.

Figure 2 displays a mock-up example of the type of format that would be used for this question. (The visual representation will be worked on as part of the design process.)

The design would include levels for the attribute blocks as a whole, plus the bill, rather than allowing each of the service measures within each block to independently vary. This approach will allow us to obtain valuations of the attribute block which we will then be able to apportion amongst the individual service measures by means of the lower level exercise analysis.

Figure 2: Example SP3 Package exercise question

	Option A	Option B
Discoloured water ¹ (contacts per year)		
Taste & smell not ideal ¹ (contacts per year)		
Water supply interruptions longer than 3 hours (no. per year)		
Persistent low pressure (properties per year)		
Mains pipe bursts (no. per year)		
Leakage (% of water lost)		
Water use per person per day (litres)		
Rota cuts and/or standpipes (chance per year)		
Temporary use bans (May to Sep) (chance per year)		
River flows lower than ideal (Miles of river out of X miles in total)		
Carbon emissions (kilotons of CO ² emitted per year)		
THE CHANGE IN YOUR ANNUAL WATER AND SEWERAGE BILL above inflation to provide the service package above		

1. Duration to be inserted.

The choice of levels to be used in the Package exercise is important. The options should include, as a minimum, choices between current levels of service and the base level of service anticipated given Ofwat’s expectations of improvement, e.g. to upper quartile level for certain common PCs (Ofwat target); and choices between this new base level

² Kessels, R., Jones, B., and Goos, P. (2011) Bayesian Optimal Designs for Discrete Choice Experiments with Partial Profiles, *Journal of Choice Modelling*, 4(3), 52-74

and a stretch upper target level of service. The analysis will then examine how WTP varies around the Ofwat target.

In order to progress the design of the Package exercise we would need to agree the service levels to be used for each of the service measures shown.