ASSESSING CONSUMER TRUST & CONFIDENCE

*Methods appropriate for the Water Utilities*
TECHNEAU

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Colofon

Title
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1 Introduction

1.1 Aim of the Report

In this report, research techniques and methods for assessing consumer trust and confidence will be appraised, and appropriate methodologies that may be applied to the drinking water sector will be discussed, providing recommendations for future research directions. Ideally, this document should be read in conjunction with the companion Techneau document Consumer Trust: An Overview. That document makes it clear that trust is a multifaceted concept which should be discussed with reference to its causes, consequences and in relation to various underlying psychological constructs such as risk perceptions, concerns, confidence, attitudes, beliefs, preferences and acceptance.

1.2 The Status of Data

The methodological approaches discussed in this report differ in terms of their epistemological background. In the broad context of social research the two main philosophical traditions are termed positivist and interpretative. Put simply, the two approaches are based on different assumptions about the ‘nature of reality’. It is not our intention to get into the details of this debate nor defend one view over another, however some basic observations may be useful. Positivist approaches assume that knowledge is based on what is observable, experienced and quantifiable. Experimental and survey oriented research methods are typical positivist approaches, usually implemented under the principles of the hypothetico-deductive model. The interpretative tradition takes a different view of reality that is closely aligned with the notion that the social world is constructed by people. This research tradition is characterized more by inductive reasoning, with an emphasis upon qualitative data gleaned from settings such as in-depth interviews and focus groups.

Conflict between the two traditions has lead to much scholarly debate about the status of data. For example, Johnson (1999) states that the literature on trust’s origins or fundamental dimensions has severe methodological and conceptual limitations. He states that measures of trust are vague, and that researchers say very little about how they define them. He also argues that we know little about what trust related concepts mean to research participants, since research on trust has emphasized surveys based on scholars’ own assumptions about trust, rather than from the viewpoint of the public. Johnson goes on to state that before researchers make predictions about, for example, whether a person who announces trust in an institution will comply with its advice, they must be much more specific in their analysis of “what people do, say, and (by inference) think”. This requires more detailed research instruments, based upon people’s understandings and their explanations and reasoning (pp. 348).

The distinction between qualitative and quantitative approaches to data collection is often caught up in the philosophical debates about the meaning of human response data. While it is true that quantitative data necessarily involves turning non-numerical responses into numbers and qualitative data tends to consist of interpretation of texts, discourses, cultural artefacts and products this is not the end of the matter. For some researchers, the assumption that there is some ‘true’ state of affairs to be revealed by
data collection is untenable and the meaning of the research enterprise can be quite different from that implicit in the procedures, say, of the traditional survey.

The fundamental assumption of surveys is that if you wish to find out what people think about a topic then the best way to get this information is to ask them directly. Though some analytical techniques attempt to divine ‘true perceptions’ by indirect (usually statistical) means, the majority of uses assume that people will respond truthfully and that the answers reflect what people really think. It is thus assumed that they do have perceptions and attitudes etc. to report on and so claim to reflect some relatively stable internal, mental reality. For many social constructivists the very act of asking a respondent about their views leads the respondent to construct a response which may not reflect any long standing predisposition. Essentially the ‘attitude’ (which is merely the response given here) is negotiated at the time of asking and people may draw on pre-existing discourses especially if the target of the attitude is not one which is of immediate salience to the respondent.

1.3 Multi-Method Approaches

With regard to integrating qualitative and quantitative forms of evidence, until relatively recently the tenets of the two paradigms have inhibited the development of studies combining both approaches (Dixon-Woods et al, 2004). However, multi-method approaches are increasingly advocated, involving the use of more than one type of research technique within a study (e.g. Henwood and Pidgeon, 1992; Dixon-Woods et al, 2004). We also contend that there is no reason why qualitative data should not be collected to help the interpretation of quantitative data. Many research questions are best addressed by eliciting both qualitative and quantitative data. Whilst both qualitative and quantitative methods have strengths and weaknesses, quantitative methods such as questionnaires may only reveal relatively superficial information about trust, and may not fully capture the depth of people’s thinking about trust. On the other hand, the sole use of qualitative methods such as in-depth interviews runs the potential risk of reporting only atypical cases and population parameter estimates cannot be made. Greene et al (1989, cited in Dixon-Woods, 2004, pp.2) suggest the following rationale for combining qualitative and quantitative methods:

- To achieve convergence of results
- To identify overlapping facets that emerge on closer inspection using multiple methods
- To augment the information gained from an initial approach
- To identify and examine contradictions obtained from multiple sources
- To add scope and breadth to a study
- To guide the use of additional sampling, data collection and analysis techniques.

Cosla (1998) suggests that qualitative techniques can be used to identify or explore key beliefs held by selected groups of people prior to embarking on quantitative surveys designed to measure or quantify these beliefs. Qualitative approaches are also valuable in that they may help inform the selection of topics and questions that will be used in survey questionnaires. Moreover, qualitative findings can also be used to shed further light on the findings that emerge from questionnaire surveys. In essence, whilst quantitative and qualitative approaches differ, they can be used to compliment one another in iterative and interactive ways, as well as providing cross-validation and confirmation.
Although multi-method approaches raise particular challenges in, for example, integrating or triangulating data, researchers investigating trust are supportive of such approaches (e.g. Poortinga et al, 2004; Walls et al, 2004; Pidgeon et al (2003a). In researching perceptions of risk, science and governance, Pidgeon et al (2003b) aimed to develop an innovative methodology through the use of mixed-method approaches, in recognition of the fact that a) theoretical and interdisciplinary integration is needed between researchers from different perspectives; and b) that most risk related research is characterized by methodological fragmentation. They stated that quantitative surveys often fail to reflect many of the subtle contextual meanings that people place upon issues, whilst on the other hand, it is difficult to justify the sole use of qualitative techniques (such as interviews or focus groups) for use as direct inputs into decision- and policy-making cycles. Accordingly, Pidgeon et al argued that multiple and mixed-method approaches have stronger grounds for advancing research and its relevance to public policy. We argue similarly that such mixed approaches are highly relevant to the study of trust in the context the water supply.
2 Assessing Trust & Confidence

2.1 The Trust/Confidence Distinction

*Trust* and *confidence* should be considered as distinct concepts. Where trust involves judgements of similarity of values and intentions (sometimes referred to as ‘social trust’) confidence is assessed through prior experience and the belief that events will meet existing expectations. Confidence should be considered as distinct from social trust, in that it is based upon consumer appraisals and past experiences of competence on behalf of the water supplier. For example, a good track record of delivering good quality water may lead to increased confidence about the provision and quality of tap water (see *Consumer Trust: An Overview* for a more detailed discussion of this distinction). Although we consider trust and confidence as distinct, the techniques used to study the two concepts are often similar, for example, through qualitative interviews and focus groups in conjunction with quantitative surveys. However, the ways in which questions are contextualised and posed is were the key distinction lies.

2.1.1 Operationalisations of Trust and Confidence

It is useful to look at how trust and confidence have been operationalised in social research so far. MORI (2003) have examined ways in which trust has been operationalised and has recognised that there are differences between trust in *the context of honesty* and *trust in service delivery*. They also note that variations in trust also appear to reflect a difference between *trust in individuals* and *trust in organisations*. Furthermore, they also state that two other factors are significant in explaining variations in trust: *shifts in public expectations* and *declining deference to authority*. Indeed, research on trust in public institutions suggests that trust in service delivery has become more salient than trust in the social trust sense of ‘telling the truth’ (MORI, pp. 16).

Unfortunately, distinctions between trust and confidence are often blurred in existing research. In the Eurobarometer time-series survey on biotechnology, respondents were asked “I’m going to ask you about some people and groups involved in various application of modern biotechnology and genetic engineering. Do you suppose they are doing a good job for society or not doing a good job for society”? According to the authors of the report, “doing a good job for society” is likely to express a view that the source is competent and behaves in a socially responsible way. “This is therefore a proxy measure of trust and confidence” (Eurobarometer, 2006, pp. 45).

Ross (2005) incorporated trust and confidence items in her questionnaire survey, specifically oriented towards the water industry.
“I have complete trust in the Water Corporation to provide me with good quality drinking water”.

“I feel confident in the Water Corporation to deliver good quality drinking water”.

“I can’t rely on the Water Corporation to supply good quality drinking water”.

“I think that the Water Corporation has good intentions in managing the quality of Perth’s drinking water”.

Level of agreement indicated on a 5-point scale.

Table 2.1. Measures of Trust (Ross, 2005)

From these items it is not clear which pertain to trust and which to confidence. In contrast, more refined measurements of trust and confidence are used by Earle and Siegrist (2006). They developed and tested a model in the context of a simulated trust situation that required participants to make judgements about individuals with whom they would not have any opportunity for interaction, but about whom some facts would be known. Items designed to measure trust included ability to trust those with a selfish disposition, motivated by their own self interests (“that person is too busy looking out for selfish interests to be helpful on the petroleum-exploration-and-development advisory team); and, willingness to rely on an individual to carry out responsibilities (“in working on the petroleum-exploration-and-development problem, that person can be counted on to do the right thing”). Items designed to measure confidence where more oriented around assessment of competence with reference to previous behaviour and track record (“based on past performance, I am confident that that person will do a good job on the petroleum-exploration-and-development advisory team”); and putting faith in an individual to carry out responsibilities (“the chances are good that that person will be a valuable petroleum-exploration-and-development advisory team member”); or conversely having low expectations (“I do not expect that person to be an effective member of the petroleum-exploration-and-development advisory team”).

Studies of trust and confidence have also been applied in the context of electromagnetic field risks. Here, Siegrist et al’s (2003) items were designed around scientific uncertainty, potential for harm, and safety. Trust related items included the awareness and expectation that mobile phone companies would communicate potential risks in an honest, open and transparent manner (e.g. “mobile phone companies communicate honestly about possible health effects of antennas” and “should it turn out that radiation from antennas is a health threat for humans, mobile phone companies would openly and honestly inform the public”) and trust in the company to serve the interests of the public as opposed to motivated by their own self-interests (e.g. “I trust the mobile companies to take public health into account when planning and operating antennas”). Items that measured confidence focused more upon perceived levels of competence and expectations (e.g. “mobile phone companies have the knowledge necessary to insure that use of mobile phones is not done at the expense of health” and “mobile phone companies possess the competence necessary to assess any health risks associated with their antennas”).
2.2 Methods of Studying Trust & Confidence

This section deals with the principal approach options available to researchers of trust and confidence. Though we focus on trust and confidence these approaches are equally applicable to studies of attitudes, risk perceptions and acceptance etc. Indeed it is rare to study trust and confidence in isolation as these concepts are usually studied because they are believed be crucial determinants of acceptance of something or actual behaviours (e.g. protest, consumption). As discussed in more detail in Consumer Trust: An Overview, the orientation of a study will depend upon overall research aims and questions. Much will depend upon whether trust is regarded as outcome in its own right or a potential causal factor within another social process. From the point of view of water companies, this is about whether they are trying to understand what is predictive of trust in their company. Conversely, it may be about understanding the role trust has in, for example, determining acceptance of something.

2.2.1 Qualitative approaches to eliciting trust

Unstructured Interviews
These are usually face-to-face interviews where a series of themes will be discussed between the interviewee and interviewer. Unstructured interviews are best employed for exploratory rather than hypothesis testing purposes. Respondents are not constrained to respond in any particular format and the researcher is able to gain access to the ways in which respondents discuss the key issues in a relatively natural way.

The mode of analysis for qualitative data will involve making transcriptions from the recordings made. The data can be organised and categorised to ease interpretation in a meaningful way. This can include qualitative content analysis, quantitative content analysis, discourse analysis or structural analysis amongst a range of approaches. The analysis may be facilitated by computer packages (e.g. NVivo: QSR International) depending upon the research requirements. Data can later be subjected to in-depth qualitative data analysis e.g. grounded theory, interpretative phenomenological analysis, discourse analysis. Each approach differs in terms of theoretical underpinnings, and allied to this the subsequent interpretation of data (Willig, 2001).

Although there are few documented studies of in-depth interviews carried out with the public in the context of trust, some studies have documented experts’ notions of trust. Marris et al (2001) interviewed key stakeholders in studying public perceptions of GMO’s. Twenty open-ended in-depth interviews were conducted with stakeholders in five countries (France, Germany, Italy, Spain and United Kingdom). Stakeholders included biotechnology or seed firms, food manufacturers, food distributors, civil servants in relevant ministries and regulatory bodies, members of expert advisory committees, research scientists, farmers’ unions, environmental and consumer organisations (pp. 26). The interview data was complimented with participant observation and document analyses, enabling them to collect data on explicit and implicit characterisations held by stakeholders about the public. A key theme that arose from Marris et al’s analysis was that stakeholders possessed their own form of mistrust where the public were concerned (e.g. stakeholders did not seem to consider that ordinary citizens might be capable of maturely sharing with them difficult multi-faceted decisions and the uncertainties associated with them (pp. 87)).
The limitations of unstructured interviews include most seriously possible interviewer biases which may influence the responses given. These can be quite subtle and hard to detect and avoid so much self-reflection is required of the interviewer to attempt to minimise these. Additionally, subsequent transcription, analysis and interpretation are quite labour intensive.

**Focus Groups**

A focus group uses the interaction among participants as a source of data (Willig, 2001). The purpose of a focus group is to explore participants’ understandings of, and perspectives about a research issue in the presence of a moderator. Questions are asked in an interactive group setting of usually 6-12 participants. Participants are free to talk with their group members though a moderator is present to ensure that the discussion stays on the topic of interest. The proceedings are audio or video taped. The moderator would encourage interaction between the participants and also promote more in-depth exploration. The moderator is normally be expected to stop individuals dominating the proceedings and make sure everyone contributed something to the discussion, without injecting his/her own biases or preconceptions.

Focus groups can be used in at least two ways: firstly as a primary research technique, and secondly as an ancillary method within a multi-method research design. In exploring public perceptions of agricultural biotechnologies in Europe, Marris *et al* (2001) used focus groups as a primary research technique, with the rationale that focus group methods are particularly useful for exploring the categories which participants use to order their experience, as opposed to quantitative questionnaire surveys, which for the purposes of their study they deemed were more likely to impose researchers' meanings of key terms such as "risk", "trust" or "knowledge" on the respondents. Marris *et al* also felt that focus groups were particularly appropriate for a study about a topic which was not (at that time) high on the public agenda (Marris *et al*, pp. 21). They also used their focus group data to compare against policy-makers’ perceptions of the public, in order to explore differences and provide solutions for restoring trust.

One component of Marris *et al’s* study explored how much focus group participants trusted different sources of information. Here, their methodology involved presenting statements from different sources (e.g. government regulator, a company that produces genetically modified plants, and an environmental group) to participants, and then posing a series of questions to the participants, as exemplified below:

---

**Company that produces genetically modified plants**: “Crops with their own in-built insecticides mean less chemicals will need to be used. We have done feeding trials with animals and looked for any changes in the corn that could be dangerous. Based on this we conclude that genetically modified corn is just like any other corn and just as safe. This new technology is essential to increase the world food supply without having to plough up the entire planet”.

---

**[questions posed to participants]**

- **What do you think when you read such statements?**
- **Which of the above are you likely to believe – and why?**
- **What would each of these groups have to do to improve your confidence in the use of genetic modification in the agricultural and food industries?**
What role or responsibility do you think each of these organisations should have in relation to these developments?
Are these organisations likely to behave in such ways?

Table 2.2. Protocol for Focus Groups: Questions on Trust. Marris et al (2001, pp. 105)

Of course, to provide stimuli and directly ask participants whether they trust ‘organisation x’ or ‘regulatory institution y’ is fairly clear-cut, and could be explored in a questionnaire. Inevitably, discourses about trust and confidence will be inextricably embedded within understandings of, for example perceptions of science, scientific uncertainty, or expectations of service provision. We draw attention to the need to match the research question to the chosen method. Focus groups are particularly useful for exploring topics were people are still making sense of issues and do not have clear views. In these contexts they provide a good forum for understanding people’s ‘trust requirements’ around new or developing technologies, or service provision.

The main advantage of focus groups is that they allow the researcher to examine how people spontaneously discuss an issue. Focus groups represent the formation and negotiation of opinions, rather than a simple medium through which people express their views (Waterton and Wynne, 1999). In contrast to survey methods, the focus group method is useful for allowing participants to generate their own questions, frames and concepts, in their own vocabulary (Kitzinger and Barbour, 1999). This may provide insights not anticipated by the researcher or experts on the issues and may inform later stages in a larger research programme. One potential disadvantage however, is that the small sample may not necessarily be representative of the wider population, and therefore the findings may not be generalisable. Although it is argued that it is not the aim of focus groups to be representative in the same manner as quantitative surveys, this potential shortcoming could be partially addressed by ensuring the as much diversity among participants as possible, and also by conducting a series of focus groups, as in the case of Walls et al (2004, also cited as Pidgeon et al, 2003a) who conducted 30 focus groups (n=201 participants). They stated that when used in series, as in their study, focus groups permit an element of testing of emerging hypotheses.

Petts et al (2003) employed a two-phase approach in their study of risk literacy in association with MMR, air pollution and mobile phones. Trustworthiness of sources of information, and trust in experts were two components of this research. During a two-week interval participants had the opportunity to read literature in relation to the study. Two phases were used in order to allow people time to build their confidence to ask questions and discuss issues further.

The second application of focus groups in trust-related research is as an ancillary method within a multi-method research design (Walls et al, 2004; also cited as Pidgeon et al, 2003a). Here, the research team adopted a focus group methodology as a starting point for benchmarking and mapping issues of trust in relation to the Health and Safety Executive as a regulatory body. In comparison with Marris et al’s approach, the protocol used by Walls et al (2004) was more ‘free-flowing’. Rather than presenting participants with statements, in order to stimulate thought and discussion, they initially asked participants to complete a ranking exercise. The exercise involved a list of regulatory bodies, and participants were required to indicate on a scale how much they trusted
them to protect peoples’ health, safety and well-being. Thereafter, a series of prompt followed:

<table>
<thead>
<tr>
<th>prompts after ranking exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Get people to explain their trust ratings. On what basis are they made?</td>
</tr>
<tr>
<td>- Where do you get your information from for those opinions? Media – do they play an informative role?</td>
</tr>
<tr>
<td>- Who should take more responsibility for workplace safety? Government Agencies/Business and Others?</td>
</tr>
<tr>
<td>- What would you say are the qualities that would make a good regulator of public safety?</td>
</tr>
</tbody>
</table>

**Table 2.3. Focus Group Protocol. Walls et al, 2004/Pidgeon et al 2003a (Appendix 2)**

The focus groups revealed the issues of social trust and trust in institutions to be complex. Pidgeon *et al* (2003a) stated that uncovering the subtleties which underpin people’s perceptions are far from straightforward, thus reinforcing the benefits of focus groups, and emphasizing their need in the study of trust. As part of their multi-method approach they felt that a questionnaire would capture and consolidate some of the issues raised in the focus groups, albeit in a restricted manner. They also suggest that a survey would bring an element of triangulation to the study, thereby permitting the formal testing of a number of hypotheses generated by the analysis of qualitative data derived from the focus groups. In particular, they stated that a survey would have the potential to validate a range of qualitative findings on a larger, potentially more representative sample (pp. 43).

### 2.2.2 Survey Oriented Approaches to Measuring Trust

These methods are popular because of the assumed simplicity of the procedures involved. The survey, in its various forms, is the most common method used for the collection of trust, risk/hazard and service perception data. Surveys and polls can elicit data either via subject-completed questionnaire or via an interview and it may be highly structured or quite open-ended in its format.

**Semi-Structured Interviews**

This method was used by Frewer *et al* (1996) in conjunction with quantitative techniques in order to identify the underlying dimensions of trust in information sources about food-related hazards. Their aim was to develop their understanding of underlying dimensions which define trust in information sources from the descriptors produced by the respondents themselves (pp. 474). They therefore employed qualitative and quantitative methods to ensure that important constructs were not omitted from their analysis. They used a series of open-ended questions to elicit determinants of trust in different information sources. Open-ended questions were used to allow respondents to describe their reasons for trusting or distrusting different. This allowed participants to
describe sources in their own words, thus avoiding the use of experimenter-generated characteristics (pp. 474).

[questions asked]:
1. Information about food related hazards can come from many different sources. Can you name three such sources?

2. Which of the sources listed in your answer to question 1 would you trust the most to provide information about food-related hazards?

3. Please state why you gave this answer.

4. Which of the sources listed in your answer to question 1 would you trust the least to provide information about food-related hazards?

5. Please state why you gave this answer.

6. In general, why do you trust information sources?

7. In general, why do you distrust an information source?

8. What would cause you to gain trust in an information source?

9. What would cause you to lose trust in an information source?

Table 2.4. Open-ended Interview Questions. Frewer et al (1996, pp. 475)

The advantage of this method is that personal contact with the interviewer can enhance data quality. Response rates can be substantially higher in interview surveys than in equivalent pen-and-paper or e-mailed questionnaire surveys. There should be fewer missing data points if the interviewer can help clarify task demands. However, costs are substantially higher than for equivalent sized questionnaire studies so the supposed advantages of interviewing in terms of enhanced data quality would need to be very important to justify the additional resource required compares to a self-completion survey. As with the unstructured interview described earlier an oft cited limitation of interviews is that interviewers may unconsciously bias responses by suggesting (implicitly) that certain responses are desired.

Self-Completion Questionnaires
Self-completion questionnaires are very popular though much has been written about their shortcomings and the difficulties of designing good quality measures - creating a good questionnaire sounds much easier than it is. They can be used to collect open-ended responses but are probably better suited to situations where possible response options can be defined in advance. Questionnaires are relatively cheap and efficient means of gaining a large amount of data from a relatively large sample. However, there
is an inherent expectation that respondents and researchers share an understanding of the questionnaire items - if understandings differ, then the meaning of the data will be ambiguous.

In the context of measuring trust, these types of questionnaires have been typically used to examine trust in different sources of information, and the underlying dimensions of trust in information sources. Frewer et al (1996) examined whether trust in information varied according to information sources by combining qualitative and quantitative methodologies in order to examine the drivers of public perceptions. Respondents completed a quantitative questionnaire following an open-ended semi-structured interview (discussed above). Also, in a fairly simple format, participants were asked to indicate the extent to which they trusted different sources of information:

```
“Each of the following sources has provided information about the potential risks associated with alcohol use. Please indicate to what extent you would trust that information should it become available to you*”.

Sources of information included: consumer organisation, environmental pressure group, the food industry, friends, a government minister, a government ministry, a government scientist, a medical doctor, a member of parliament, a supermarket information leaflet, a tabloid newspaper, a television documentary, a television news broadcast and a university scientist.

*Ratings were made on 100mm line scales, anchored by Trust completely to Distrust completely
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Table 2.5. Structure of Quantitative Questionnaire. Frewer et al (1996, pp. 474-475)

In raising criticisms about their study Frewer and Miles (2003) noted that the study did not include concrete or realistic sources of information (e.g. ‘a government ministry’ was used in place of a named institution). They also acknowledged that the 1996 study did not take account of differences in perceptions related to different types of potential food hazards (e.g. GMO foods may yield different responses to nutritional hazards, regardless of the fact that information comes from the same source). Frewer and Miles therefore refined their approach to examine trust in information about potential risks associated with different food hazards (BSE, GMO’s, high fat diets, pesticides and Salmonella), using information sources that may be encountered in real-life contexts.

```
“Each of the following sources has provided information about the potential risks associated with [food hazard]. Please indicate to what extent you would trust that information should it become available to you”.


*Ratings were made on a 7-point scale, anchored by
I would not trust information from this source at all to
I would trust information from this source completely
```

Table 2.6. Structure of Quantitative Questionnaire. Frewer and Miles (2003, pp. 262)

Repertory Grid Technique
The repertory grid technique permits respondents to describe a set of targets (called ‘elements’) in their own, idiosyncratic terms (called ‘constructs’), whilst still permitting numerical analysis. Respondents are not as constrained to respond within predefined response categories as is the case with traditional questionnaire techniques. Frewer et al (1996) used this technique in their multi-method approach. In their study, the repertory grid method was divided into two phases. The first phase involved the elicitation of constructs describing various facets of trust in information sources. The second phase involved the rating of each source on each construct. Thirty five respondents were given a questionnaire in which the sources of information presented in groups of three on separate pages. Each source was presented twice within the questionnaire, in order to give a total of ten triadic combinations. Respondents were asked, “which of following sources of information do you trust the most, and why?” for each triadic presentation. Respondents were also asked “Which of following sources of information do you distrust the most, and why?” The respondents therefore listed reasons or constructs which they used to distinguish between the different sources of information. For example, a respondent might identify one source to be more distrusted than another it had been “proven wrong in the past,” or because the source “does not know what it is talking about.” On the basis of these data a personalised questionnaire was produced for each respondent. Respondents returned after one week to complete their own individual questionnaires, where each respondent rated each of the sources of information for each construct (pp. 478-479). Frewer et al (1996) used Generalised Procrustes Analysis (GPA) on the data allowing an evaluation to be made of the relative importance of the subject’s constructs by means of multidimensional configurations of points. The configuration is shown in Figure 2.1.
Figure 2.1. Results of the Repertory Grid Study. Frewer et al (1996, pp. 481)

Criticisms of the repertory approach include subjects finding the task very complex. Also, the triadic sorting task may force participants to generate differences even though they might not perceive real differences. Raats (1992) commented that if information is needed from a large group of subjects the repertory grid method could become overly time consuming.

In order to examine how different components of trust influence perceptions of, and reactions to information sources, Frewer et al (1996) assessed underlying dimensions of trust in the different information sources using constructs featured in Table 2.7. These items were constructed on the basis of the combined open-ended survey method and repertory grid method findings about the characteristics that were important in determining trust in information sources. Frewer and Miles (2003) also used the same items for the same purpose.

1. To what extent do you think information about food-related hazards from each of the following sources is *trustworthy*?

2. To what extent do you think information about food-related hazards from each of the following sources is *accurate*?

3. To what extent do you think information about food-related hazards from each of the following sources is *factual*?

4. To what extent do you think the following sources are likely to *withhold* information about food-related issues from the public?
5. To what extent do you think information about food-related hazards from each of the following sources is distorted?

6. To what extent do you think information about food-related hazards from each of the following sources is truthful?

7. To what extent do you think information about food-related hazards from each of the following sources is biased?

8. To what extent do you think the following sources have the freedom to provide information to the public about food-related hazards?

9. To what extent do you think the following sources of information have a vested interest in promoting a particular view about food-related hazards?

10. To what extent do you think information about food-related hazards from each of the following sources has been proven wrong in the past?

11. To what extent do you think each of the following sources of information is knowledgeable about food-related hazards?

12. To what extent do you think each of the following sources feels a responsibility to provide good food-related information to the public?

13. To what extent do you think each of the following sources of information is expert in the area of food-related hazards?

14. To what extent do you think each of the following sources provide sensationalized information about food-related hazards?

15. To what extent do you think each of the following sources have a good track record of providing information about food-related hazards?

16. To what extent do you think each of the following sources provide accurate information about food-related hazards only to protect themselves?

17. To what extent do you think each of the sources is accountable to others (for example, regulatory bodies) if mistakes are made in the food-related information provided?

18. To what extent do you think each of the following sources of information about food-related hazards are concerned about public welfare?

19. To what extent are you personally in favor of using each of the following sources to obtain information about food-related hazards?

*Ratings were made on a 7-point scale

Table 2.7. Trust Characteristics Rated in the Study. Frewer and Miles (2003, pp. 263)

In addition to different survey formats, different designs can be used to deploy surveys.

**Computer Aided Telephone Interviewing (CATI)**

Random Digit Dialling (RDD) survey techniques are rapidly gaining acceptability within the social sciences. This is really a cross between a sampling strategy and a data collection technique. Put very simply, a computer randomly generates telephone numbers and the researcher conducts a simple screening procedure to see if anyone answering the telephone is a member of the population of interest to the study. If so, a telephone interview is carried out. Attempts are usually made to make such procedures as random as possible and traditional objections to the technique on the grounds that not everyone has a telephone, while still relevant, are now regarded as less serious than in the past (Marcus and Crane, 1986; Groves, 1989). However, it remains to be seen whether state of affairs will persist as more people abandon land-lines in favour of
mobile telephones. There are early suggestions that people are less willing to cooperate with surveys directed to mobile telephones but formal research findings on this are not yet available. Also, there is potential for bias, given that a growing number of households no longer have a landline (Brick et al, 2006).

Although this approach is relatively cheap and allows a potentially quick turnaround of data, telephone surveying is becoming unpopular with the public many of whom resent being interrupted by such calls. Also, many people will have become sceptical about such approaches by the widespread use of RDD/CATI by ‘suggers’ or ‘fruggers’ - those selling (or fundraising) under the guise of research. A newly recognised variant are ‘chuggers’ - referring to charities fundraising under the guise of research.

*Computer Aided Personal Interviewing (CAPI)*

With this method, instead of collecting data on paper questionnaires, interviewers use portable computers to enter data directly via a keyboard. This type of survey automatically takes interviewers to the next appropriate question thereby solving potential ‘routing’ problems, so interviewers cannot miss questions by mistake or ask the wrong questions. CAPI can allow questions to be 'customized' dependent upon the respondent’s previous answers. The software can check for inconsistent responses, thus errors in pen-and-paper surveys arising from separate data entry are eliminated (Sainsbury et al, 1993). CAPI is provided by specialized software, with programmes like Sawtooth (Sawtooth Software, Inc.) that enable complex willingness to pay studies.

CAPI approaches can be applied in the context of CATI surveys, face-to-face interviewer led surveys or via internet delivery for self-completion by the respondent. CAPI’s quick delivery of data ready for analysis make it particularly attractive and it cuts out the costs and potential for errors associated with manual data entry. This saving is offset by the need to put more resource into the up-front design and programming of the survey protocol and, if interviewers are used, the costs associated with their labour.

*Opinion Polls vs. Surveys*

Poll questions are those items used by market researchers usually in face-to-face structured interviews, telephone interviews or simple questionnaires. Usually the aim is to collect data from a large number of people fairly quickly with the intention of generalising sample responses to the population. Such interviews and questionnaires are necessarily brief. The superiority of surveys over opinion polls is perhaps overplayed by academics since both polls and surveys can vary widely in the degree of rigour with which they are conducted. As a crude generalisation, opinion polls tend to be comparatively short in duration for the respondents (usually < 15 minutes) and tend to be highly structured and directed. Whereas polls involve basic descriptive statistical analysis, surveys, on the other hand, can be more elaborate and consequently permit more sophisticated analyses but there is no agreed point at which a poll becomes so large that it is regarded as a survey. One of the points worth noting about studies of trust is that it is nearly always considered in relation to other variables, either as a predictor or in some sense an outcome of some social process. Thus, surveys are generally more suitable for measuring a range of variables and/or relationships.

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### 2.2.3 Case and Field Studies
Not an elicitation method per se but an orientation towards a social research problem that involves a number of techniques. In the risk area studies of particular incidents or planned developments are common. In such cases the aim is to understand the thinking and actions of key players (including the public) and to document the events surrounding the risk/hazard event. For example, Walker et al (1998) undertook comparative research in their study of public perceptions around seven different major hazard sites. These included a chemical production site, a major petrochemical complex and a water treatment works. The study explored the ways in which public perceptions of risks in major accident hazards are embedded contextually, and in part the influence of trust in industry and regulators on public risk perceptions. Rather than focussing exclusively upon perceptions of hazard characteristics, in their approach Walker et al explored the interaction of risk perceptions with attitudes towards aspects of industry, the local area, regulatory bodies, and the broader social and economic contexts within which local communities were situated. Walker et al (1998, pp. 3) considered this contextual approach to be appropriate on the following grounds:

- It can provide a richer and more sensitive understanding of risk perceptions and how they vary between different subgroups within society.

- It can help identify the specific factors which affect the uptake and effectiveness of public information (such as emergency planning), and thus define realistic good practice measures.

- It can help allay ‘destructive surprises’ for authorities, by alerting them to the sometimes fundamentally different logics held by the public, which are often for good reason located within local and historical contexts.

Methodologically, the case studies were based around focus group discussions with local residents who lived within the consultation or public information zone of each site. The focus group discussions included land planning scenario’s to explore planning issues, as well as quantitative exercises that were designed to elicit participants’ views about the local site. For each of Walker et al’s seven sites background research was also carried out, including interviews with company management, site operators, regulators and other key actors. Also, local archives were researched.

Although it has been argued that case studies tend to be idiosyncratic and contain a number of generalisations (Sparks and Shepherd, 1991), they are a useful way of bringing together a portfolio of methods (as reviewed in this report). The merit of such an approach is that multiple perspectives on a problem can be investigated in order to provide comparisons that may vary temporally or spatially. They also allow different levels of analysis and abstraction in order to understand the processes that operate in different contexts, which serve to define people’s views.

2.3 Common Survey Designs

This section outlines the common study designs used in survey research. They apply most naturally to quantitative surveying approaches but can be easily adapted if the aim is to collect qualitative data – many of the same pros and cons apply equally in this case.
The four designs considered here are the cross-sectional study, the time-series study, the longitudinal study and the longitudinal cohort-sequential study.

2.3.1 Cross-Sectional Studies

This is the simplest survey design as it involves approaching a sample of respondents on a single occasion. Since the sample is regarded as a cross-section of the population(s) under study it is possible to make comparisons between subgroups (e.g. males vs. females, older vs. younger people etc.) and look for relationships between variables.

By far the greatest advantage of this approach is the relatively low cost associated with gathering the data. Compared to other survey designs, response rates are relatively high. After devising the study, the turnaround of results tends to be fairly high. Conclusions can be drawn and published quickly in time for other agencies to make use of your data for policy change purposes etc. However, the data may be unduly susceptible to time of measurement effects. These are influences on responses that are due to immediate historical events. For example, attitudes towards the water supply might be changed dramatically by the announcement of high salary awards for directors on the morning that your survey takes place. In a more subtle manner, media attention on the topic of your study may influence responses to some of your items. Often only a part of your sample (e.g. TV watchers) will be exposed to this and you may not know which part has been so exposed. Sometimes this may seem like a good thing since there may be an added interest in media influences on attitudes but, since this is a hypothesis about change, then the cross-sectional design is not really appropriate.

2.3.2 Time Series Surveys

These are best thought of as a series of cross-sectional surveys on the same topic using the same (or very similar) survey instruments. Having selected a suitable period for separating the surveys, you draw a new sample for each wave of questioning. Opinion polls such as the regular polls reported in national newspapers are usually part of a time series of surveys. Monthly assessments of trust in political parties can be plotted to see if levels of support have changed systematically in response to political/historical events that occurred between waves of questioning.

There has been extensive research by MORI and Eurobarometer tracking trust. MORI time-series data dating back to 1983 suggests that levels of trust in public institutions have remained fairly static, when respondents were asked "would you tell me whether you generally trust [public institution] to tell the truth?". However, other time-series data suggests that levels of trust have declined (Strategy Unit, 2002; OECD, 2001, cited in MORI, 2003). The authors comment that whilst the different sets of data suggest different conclusions, it is likely that subtle differences in wording caused the public to consider trust in different contexts (pp. 16), thus representing difficulties regarding the comparability of different sets of time-series data.

in the claim that there is a crisis of trust in actors involved in biotechnology in Europe. Since 1999 there has been substantial improvement in how university and industry scientists, and industry itself is trusted. The authors acknowledge that these types of opinion polls are "useful as general indicators of the contours of public perceptions". However, they contend that such research approaches are not ideal when it comes to fine detail, thus requiring other types of social research (pp. 9).

The main advantage of adopting this approach is that it specifically aims to assess the impact of time of measurement effects. In the poll example, the research questions are usually about whether historical events changed response e.g. whether risk episodes or events serve to erode public perceptions of trust. The main disadvantage is that studies are more expensive to mount since you need multiple samples of around the same size as a single cross-sectional survey if you want accurate measures of key variables.

_Cohort effects_ can become confounded with time of measurement effects. Although each sample is assumed to be equally representative of the relevant population they may well differ from one another as a result of simply being a different cohort of people. Problems arise when trying to attribute differences to historical events and these events alone. The observed differences may just reflect the fact that you are asking a different cohort of people for their responses.

### 2.3.3 Longitudinal Designs

Longitudinal designs involve drawing a single sample and measuring their responses on more than one occasion. Any number of re-contacts is possible in theory and these designs are especially useful for tracking changes and the psychological impact of events over time. The main advantage of this approach is the ability to track individual responses and to monitor the impact of events on responses. It also permits the study of time dependent change. Since changes can be monitored within individuals, the problems of cohort effects are removed. A score on a measure of trust, say, can be compared with the same individuals’ scores at an earlier time.

As far as disadvantages are concerned, apart from the obvious increased cost over cross-sectional studies, these designs suffer from _sample attrition_. At each subsequent wave of questioning some people will drop out of the study leaving a reduced sample of people to provide usable data at all points in the study. The people who stay with the survey may be a biased sample. While it may be possible to start with a fairly representative sample, those who stay may be systematically different from those who leave, for various reasons: they may be more interested in the topic of the research, they may be more compliant, they may be the kinds of people who do not move house often etc. Moreover, problems may be encountered recruiting participants. Attracting people to the study in the first place may be more difficult if they are forewarned about future contacts. Some people may be happy to fill in one questionnaire but unwilling to commit themselves to filling in four.

A further difficulty with longitudinal designs concerns _sample conditioning_. People who are studied on several occasions soon come to know what is required of them and the types of questions that will be asked. Because of this they may no longer be 'naïve'
respondents and some may intentionally attempt to find out more about the research topic in the lapses of time.

2.3.4 Longitudinal Cohort Sequential Designs

The longitudinal cohort-sequential design (LCSD) combines elements of age-related change, time of measurement effects and cohort effects into one large design, allowing potential to investigate any effects and possible interactions. Some cohorts of respondents are studied longitudinally while other new cohorts are added at a later date for comparative purposes. However, as with the standard longitudinal design, sample attrition remains a problem. Such approaches are extremely expensive and given that the impact of attrition problems still cannot be entirely avoided LCSD designs are relatively rarely seen and probably impractical for most of the kinds of study planned within the TECHNEAU project.
3 Conclusions and Recommendations

This report has presented a range of methods suitable for measuring and enhancing trust and confidence in the water industry. As identified in our companion TECHNEAU document Consumer Trust: An Overview, existing models and conceptualisations of consumer trust are somewhat disjointed, however we point out that there is considerable scope for investigation.

1) Existing research indicators of consumer trust and confidence in the water sector are ambiguous. This is in part due to lack of rigour on behalf of researchers in the definition and use of key terms like trust, confidence, acceptance, risk perception, concern, attitude etc. Ambiguity also stems from a weak understanding of what issues consumers face in the water industry context.

2) A key recommendation therefore is that, as a precursor to conducting research with consumers, qualitative interviews are conducted with relevant stakeholders such as water industry experts, regulators, and consumer representatives in order to identify how they conceptualise consumers, and what they believe the key trust and confidence issues (as faced by consumers) to be. This exercise will be beneficial in generating a baseline typology/classification scheme of industry relevant themes e.g. trust in products and services; trust in the supplier to produce safe water; confidence in products; confidence in new technologies; as well as providing useful comparative data against consumer responses.

3) On the basis of the typology yielded from stakeholder interviews, existing methodologies drawn from the social sciences can be utilized to explore consumer attitudes and perceptions regarding trust and confidence in the water sector. In order to ensure a thorough and comprehensive account of consumer views we advocate multi-method approaches involving qualitative and quantitative research techniques.

4) Decisions as to the specific methods used will be context-specific. This will provide the opportunity to refine our understanding and/or identify the real concerns of consumers and stakeholders more accurately, and the chance to identify the intensity of consumer and stakeholders’ concerns about various issues, and whether there are discrepancies between views as held by consumers and experts.

5) Despite the recommendations in (2) and (3) above about the importance of using stakeholder interviews to assess the key aspects of trust we recommend the use of techniques that allow consumers to define the key aspects of trust and confidence themselves rather than relying entirely on stakeholders to know what these are.

6) Two-stage techniques that first elicit consumers’ key concerns and then turn them into more formal quantitative measures are likely to be more informative than procedures that present consumers with the task of responding to survey items generated by researchers and stakeholders alone.
4 References


Raats, M.M. (1992) The Role of Beliefs and sensory responses to milk in determining the selection of milks of different fat content, AFRC Institute of Food Research

CSIRO. ARCWIS Occasional Paper.


[http://www.soc.surrey.ac.uk/sru/SRU3.html](http://www.soc.surrey.ac.uk/sru/SRU3.html)


## 5 Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptable risk</td>
<td>See ‘tolerance’</td>
</tr>
<tr>
<td>Acceptance</td>
<td>Willingness to receive, willingness or ability to tolerate. Also an affirmative answer to a proposal</td>
</tr>
<tr>
<td>Attitude</td>
<td>An evaluation of a social object (broadly defined)</td>
</tr>
<tr>
<td>Belief</td>
<td>Consumers’ cognitive representations of an object. We use the term primarily to refer to consumers’ representations of water and the supply system. There is no requirement that beliefs coincide with reality</td>
</tr>
<tr>
<td>Concern</td>
<td>Expressed anxiety or unease over an object broadly defined (e.g. tap water, a proposal).</td>
</tr>
<tr>
<td>Confidence</td>
<td>An expectation that something will occur as anticipated. For e.g. an expectation that safe water will be provided to your tap. Confidence is usually based on previous confirmations of expectations.</td>
</tr>
<tr>
<td>Consumer</td>
<td>Private/civil society consumers of water</td>
</tr>
<tr>
<td>Customer</td>
<td>Purchaser of drinking water – usually a house holder but also the purchaser of bottled water</td>
</tr>
<tr>
<td>End user</td>
<td>The water company/industry</td>
</tr>
<tr>
<td>Expectation</td>
<td>Two definitions: one is the act of expecting or looking forward the other, more technical one, being the probability of an event</td>
</tr>
<tr>
<td>Harm</td>
<td>Injury or damage to health, property or the environment (IEC)</td>
</tr>
<tr>
<td>Hazard</td>
<td>Any biological, chemical, physical or radiological agent that has potential to cause harm (WHO) or source of potential harm or a situation with a potential of harm (IEC).</td>
</tr>
<tr>
<td>Hazardous agent</td>
<td>Agent (i.e. biological, chemical, physical or radiological agent) that has the potential to cause harm (WHO).</td>
</tr>
<tr>
<td>Hazard identification</td>
<td>Process of recognizing that a hazard exists and defining its characteristics (IEC).</td>
</tr>
<tr>
<td>Hazardous event</td>
<td>An incident or situation that can lead to the presence of a hazard (WHO) or event which can cause harm (IEC).</td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td>Consumers’ factually accurate beliefs about something usually the supply and/or regulatory system in the present case</td>
</tr>
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<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Perception</strong></td>
<td>As a belief above but with the emphasis on the notion that this belief may not accord with some other representation of the same ill-defined object e.g. ‘Lay’ vs. ‘Expert’ representations of risk. Also the attitudes and intuitive judgments about risk. (EC)</td>
</tr>
<tr>
<td><strong>Preference</strong></td>
<td>Used primarily to mean an option that has greater/greatest anticipated value among a number of options</td>
</tr>
<tr>
<td><strong>Public awareness</strong></td>
<td>Consumers’ beliefs about the water sector and system</td>
</tr>
<tr>
<td><strong>Risk</strong></td>
<td>The likelihood of identified hazards causing harm in exposed population(s) in a specified timeframe, including the magnitude of that harm and/or the consequences or combination of the frequency, or probability, of occurrence and the consequence of a specified hazardous event (IEC). Statistical risk assessments assess the probability of an outcome (sometimes the odds rather than probability). Risk assessors/actuaries use it to mean a combination of the probability of an event combined with an assessment of its seriousness/impact. Social scientists note that lay assessments of risk also include notions of controllability and knowledge of exposure. For e.g. the probability of death from a skiing holiday is higher than the probability of death from exposure to radiation from a nuclear power plant meltdown yet most lay people would regard the latter as a greater ‘risk’ since they have little control over their exposure to the hazard and indeed may not know they have been so exposed. They also give more weight to the degree of damage caused than its probability of occurrence.</td>
</tr>
<tr>
<td><strong>Risk analysis</strong></td>
<td>Systematic use of available information to identify hazards and to estimate the risk to individuals or populations, property or the environment (IEC).</td>
</tr>
<tr>
<td><strong>Risk assessment</strong></td>
<td>Overall process of risk analysis and risk evaluation (IEC)</td>
</tr>
<tr>
<td><strong>Risk aversion</strong></td>
<td>Unwillingness to accept risk</td>
</tr>
<tr>
<td><strong>Risk communication</strong></td>
<td>Exchange or sharing of information and science based opinions considering risk among decision-makers, scientists and other actual or potential stakeholders (based on EC and ISO)</td>
</tr>
</tbody>
</table>
Risk perception  See ‘perception’

Stakeholder  Actor within the water system e.g. anyone that have influence on the water supply system (for example policy-makers, professional employees, NGOs, Academics, Experts)

Trust  A firm belief in the reliability or truth or strength etc. of a person or thing. Willingness to make oneself vulnerable based on a perceived similarity of the values and intentions of another (person/group/organization etc.). Also used in the literature to mean confidence in the sense of having an expectation that something will happen.

Water system  “from source to consumer” covering water resources and its catchments, water extraction, drinking-water production, water distribution, consumer water usage