

CRANFIELD UNIVERSITY

REBECCA SAYLES

CUSTOMER CONTRIBUTIONS TO WATER SECTOR PLANNING
AND DECISION-MAKING IN ENGLAND AND WALES

SCHOOL OF APPLIED SCIENCES

EngD
Academic Year: 2010 - 2015

Supervisor: Professor Paul Jeffrey
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This thesis is submitted in partial fulfilment of the requirements for
the degree of EngD

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ABSTRACT

Mounting recognition of the socio-political context of the management of water resources has rendered the application of technocratic approaches in isolation insufficient in addressing future management challenges with participatory approaches increasingly promoted in response. Against this background, new regulatory mechanisms in the water sector in England and Wales promise an increased role for the views of customers in water utility planning and decision-making. Yet, existing scholarship on the institutionalisation of participative approaches in water utility planning and decision-making in England and Wales is sparse.

This thesis contributes to an improved understanding of factors that hold potential to impact institutionalisation of participative approaches in this context by focusing on three specific aspects of effectiveness; motivational clarity, the influence of participative mechanism design, and the use and influence of water utility customer contributions in water sector planning and decision-making. This has been achieved through the deployment of participatory research in collaboration with the sponsoring organisation (a water utility operating in England and Wales) utilising group discussion and semi-structured interviews with domestic water customers and water utility practitioner respectively.

Findings demonstrate that preference elicitation vehicles embedded within participatory mechanisms hold the potential to influence participants expressed preferences thus representing a key design consideration where multi-mechanism approaches are deployed in planning and decision-making contexts. Furthermore, useful design considerations for multi-attribute presentation in participatory mechanisms are presented. Findings also identify a dominance of instrumental and legalistic practitioner motivations for the use of participative approaches in water utility decision-making. Foremost, it identified the significance of the regulator in driving water utility practices for the management and influence of customer contributions in planning and decision-making, and more fundamentally illustrates the significant barrier posed by a

legacy of technocratic practices for the institutionalisation of participatory approaches in water utilities.

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Keywords: Public participation; water utilities; water resource management; participatory mechanisms; knowledge management

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PUBLICATIONS, REPORTS AND PRESENTATIONS GENERATED DURING THE RESEARCH

Conference presentations

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Poster presentations

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Sayles, R. 2011, Customer engagement and decision-making: Ofwat presentation feedback, presentation at United Utilities PR14 Early Strategy Planning Workshop, Warrington, 7 June

Sayles, R. 2011, Involving customers in decisions about their water and wastewater services: Summary of Ofwat consultation, presentation to United Utilities Economic Regulation Team, Warrington, 21 June

Sayles, R. 2011, Customer engagement approaches, presentation to United Utilities Quadripartite Group, Warrington, 26 September

Sayles, R. 2011, What do customers really want?, presentation at United Utilities Food for Thought lunchtime seminar series, Warrington, 2 December

Sayles, R. 2012, Role of the Customer Challenge Group, presentation at United Utilities Water Strategic Asset Planning Conference, Warrington, 11 April

Sayles, R. 2012, Customer priorities for water and wastewater services, presentation to United Utilities Economic Regulation Managers, Warrington, 23 May

Sayles, R. 2012, PR14 Customer Priorities Research results, presentation to United Utilities PR14 Strategic Steering Group; North West Customer Challenge Group; Director of Corporate Affairs; Director of Retail Customer Services at United Utilities, Warrington, 28 May 2012

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Industry reports / notes

Sayles, R. 2011, Customer engagement and decision-making: Ofwat presentation feedback, report to United Utilities Economic Regulation managers; Strategic Asset Planning managers; and Executive Directors, Warrington, 15 June

Sayles, R. 2011, Summary of Ofwat research exploring customer attitudes to water services in a changing climate, report to United Utilities Strategic Asset Planning managers, Warrington, 1 July

Sayles, R. 2012, The Environment Agency and Community Engagement: meeting feedback, report to United Utilities Economic Regulation Managers; Stakeholder Engagement Managers, Warrington, 1 February

Sayles, R. 2012, Findings from Customer Priorities research pilot study, report to United Utilities Economic Regulation managers; Strategic Asset Planning managers; Directors; and North West Customer Challenge Group, Warrington, 11 January

Sayles, R. 2013, Recommended response to Ofwat consultation on outcome regulation – ‘Outcome 3 quality of companies engagement with customers’, report to United Utilities Economic Regulation managers, Warrington, 8 January

Sayles, R. 2013, Maintaining legitimacy for customers and building a sustainable water sector: Outcomes of Johnson Cox Key note speech at Institute of Water Annual Conference, report to United Utilities Economic Regulation Managers; Strategic Asset Planning Managers; Executive Directors, Warrington, 23 May

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LIST OF ABBREVIATIONS

AMP	Asset Management Period
AMP6	Asset Management Period for 2015-2020
CBA	Cost-Benefit Analysis
CCG	Customer Challenge Group
CCW	Consumer Council for Water
CIWEM	Chartered Institute for Water and Environmental Management
DEFRA	Department for Environment, Food & Rural Affairs
DWI	Drinking Water Inspectorate
EA	Environment Agency
EPA	Environmental Protection Agency
EU	European Union
IAIA	The International Association for Impact Assessment
IDC	Industrial Doctoral Centre
IOW	Institute for Water
IWAYP	International Water Association Young Professionals
LoS	Level of Service
MOS	Measure of Success
MRS	Market Research Society
NRM	Natural Resources Management
NEP	National Environment Programme
Ofwat	The Water Services Regulation Authority
ODI	Outcome Delivery Incentive
PLC	Public limited company
PR09	2009 Price Review
PR14	2014 Price Review
RPI	Retail Price Index
RQ	Research Question
SDS	Strategic Direction Statement
SEG	Socio-Economic Group
SME	Small to Medium Enterprise
SUDS	Sustainable Urban Drainage Systems
UK	United Kingdom
UNCED	The United Nations Conference on Environment and Development
US	United States of America
UU	United Utilities PLC

WACC	Weighted Average Cost of Capital
WASC	Water and Sewerage Company
WFD	Water Framework Directive
WOC	Water Only Company
WRMP	Water Resources Management Plan
WTP	Willingness to Pay

1 INTRODUCTION

1.1 Introduction

Water is a precious resource; it is vital in ensuring the quality of the natural environment, critical to sustainable economic growth and the health and wellbeing of society. The management of water resources is argued to increasingly demonstrate attributes of a 'resource dilemma': it reflects the subtractability and excludability of a common pool resource, involves multiple stakeholders, demonstrates interdependent physical, technological, social, economic and political relationships, and, furthermore, is controversial, complex and inherently uncertain (Blackmore, 2007; Ison et al., 2007; Munda, 2004). Pressure from a rising population (particularly in areas already water stressed); increasing customer expectations; the impacts of climate change on water availability, quality and asset performance, coupled with persistent poor practices such as failure to meet discharge consents and high-levels of abstraction (Hall et al., 2012; Defra, 2011), exacerbate an already difficult management context and arguably force difficult decisions about the future management of this important resource (Defra, 2011; Jansky et al., 2005).

1.2 Reconsidering modes of water management

Conventional modes of water management have been founded on technocratic rationales and have employed reductionist problem structuring strategies (Hanley & Spash, 1993; Munda, 2004; Brown et al., 2009; Gleick, 2000; Lach et al., 2005; Bell, 2015). Assumptions about the nature of water as limitless (Bell, 2015) and "...a controllable resource, given appropriate amounts of authority, expertise, equipment and money" (Lach et al., 2005, p3) are inherent in this mode of management and underpin the function of water in societal, cultural, economic and political development (Bell, 2015). The utilisation of extensive infrastructure systems for the abstraction, aggregation, treatment and distribution of water and wastewater reflect the dominance of 'hard' engineering practices whilst concealing the rate and consequences of water and wastewater

service consumption from consumers (Gleick, 2000; Bell, 2015; Hall et al., 2012).

Whilst that this mode of management has been successful in laying the foundation for the development of modern societal, economic and political functions (Doron et al., 2011; Bell, 2015) it is clear that this has come at considerable cost. Extensive infrastructure development has been at the expense of the environment with significant loss of urban rivers, biodiversity and habitat destruction (Defra, 2011; Hall et al., 2012; Bell, 2015; Brown et al., 2009) and the use of large-scale water transfers removing water from rural environments in order to meet urban water demands has raised concerns regarding the equitable access to water (Gilbertson et al., 2011). Furthermore, the high capital cost of these engineering interventions borne by consumers through water and wastewater charges and / or the state (dependent on incumbent governance structure) is argued to be becoming increasingly unviable (Gleick, 2000).

The increased vulnerability of incumbent management systems in light of the challenges previously outlined is demonstrated by recent significant drought events such as those in Australia between 2000 – 2010 (Bell, 2009), in the UK in 2006 and 2012 (Bell, 2009; BBC, 2012) and the on-going four year drought in California (Association of California Water Agencies, 2015) forcing the deployment of water supply restrictions. The implementation of programmes to address the sustainability of water abstraction licences on water bodies close to exceeding ecologically sustainable abstraction in the UK suggests recognition of the need for proactive, long-term action (Defra, 2011; Aitken et al., 2014; Brown et al., 2009; Boyer et al., 2012). Furthermore, strict environmental regulations protecting water resources from further biological and chemical deterioration clearly demonstrates the need for strategic action to remediate the legacy of damage inflicted, in part, by practices for the delivery of water and wastewater services (European Union, 2000; Hall et al., 2012).

1.2.1 Alternative modes of water management

In recognition of the costs associated with conventional management approaches the literature demonstrates that, in order to ensure continuity of supply, water institutions are increasingly focusing efforts on enhancing the efficiency of existing assets, exploring potential opportunities for reallocation and repurposing of existing resources and deploying schemes for the purpose of managing consumer demand (Gleick, 2000; Bell, 2015). In this vein, interventions such as: effluent re-use (also referred to as water reclamation or wastewater recycling); Sustainable Urban Drainage Systems (SUDS); decentralisation of systems; and demand management measures (including metering, rising block tariff development, promotion of water efficient appliances, water efficiency labelling and consumer behaviour campaigns) have received significant attention in the literature.

Effluent re-use schemes are a future management option highly promoted in the literature for alleviating demand on freshwater resources by re-purposing treated sewage effluent ('black-water') or treated non-sewage effluent ('grey-water') and, in the latter example, limiting pressure on existing wastewater systems. Commonly utilised for non-potable water demands, including agricultural and municipal functions and to support environmental flows, notable examples exist across Australia (Radcliffe, 2010; Kracman et al., 2001; Gardner, 2003; Smith et al., 2015; Friend & Coutts, 2006); Japan (Ogoshi et al., 2001), USA (Hermanowicz et al., 2001; Anderson, 2003); Mexico (Anderson, 2003); and Israel (Anderson, 2003; Shelaf & Asov, 1996; Friedler et al., 2006). Furthermore, the use of closed-loop systems for toilet flushing is common in Japan at varying system scales (Ogoshi et al., 2001), as is the successful deployment of dual reticulation systems in Australia (Radcliffe, 2010; Gardner, 2003; Law, 1996; Radcliffe, 2010; Gardner, 2003; Law, 1996), the UK (Smith et al., 2015; Hills et al., 2001) and the USA (Anderson, 2003). In contrast, the literature demonstrates that whilst unplanned, indirect effluent re-use for potable functions represents a common, yet unacknowledged, practice (Aitken et al.,

2014; Radcliffe, 2010) planned re-use (indirect or direct) has been slow to gain traction with numerous examples of failed schemes (Radcliffe, 2010; Hurlimann & Dolnicar, 2010) despite well-established technologies. In predominantly all of these cases, public acceptability was identified as the major barrier to the viability of these schemes (Hurlimann & Dolnicar, 2010; Baggett et al., 2006; Aitken et al., 2014; Bell & Aitken, 2008). This clearly demonstrates that, without greater recognition of societal context, the feasibility of these schemes is significantly constrained. Substantial research efforts focused on elucidating the characteristics of public acceptability for effluent reuse schemes have provisioned useful insight enabling water institutions to improve their appraisals of such schemes and the work necessary to enhance their viability. The degree of personal contact (i.e. high acceptability of reuse for low personal contact functions and vice versa) is consistently reported as a key determinant of acceptability and factor in influencing public attitudes (Robinson et al., 2005; Radcliffe, 2010; Po et al., 2005; Hurlimann & Dolnicar, 2010; Friedler et al., 2006) as is the content of their primary information source (i.e. television, newspapers, other media outlets (Robinson et al., 2005; Dolnicar & Schäfer, 2009; Dolnicar et al., 2011; Hurlimann & Dolnicar, 2012; Boyer et al., 2012) and the level of public trust in institutions responsible for delivering the scheme (Hurlimann & Dolnicar, 2010; Fielding et al., 2015; Aitken et al., 2014; Bell & Aitken, 2008). Other factors identified include: health concerns (Baggett et al., 2006; Fielding et al., 2015; Dolnicar & Schäfer, 2009); perceived risks (Hurlimann & Dolnicar, 2010; Fielding et al., 2015; Baggett et al., 2006) a 'yuk' factor (Russell & Lux, 2009; Hurlimann & Dolnicar, 2012); prior or current experience of drought and associated impacts; (Dolnicar et al., 2011; Radcliffe, 2010; Aitken et al., 2014; Gilbertson et al., 2011); prior experience of water reuse (Hurlimann & Dolnicar, 2010) and the influence of others (Dolnicar et al., 2011). No clear consensus is demonstrated in the literature as to the influence of demographic factors (Dolnicar & Schäfer, 2009; Fielding et al., 2015). These findings demonstrate a complementary, yet exceedingly necessary, agenda of work for water institutions considering potable effluent reuse schemes to undertake before they, and indeed society and the environment, are able to

reap the benefits the schemes can offer. Whilst potable effluent re-use schemes have struggled to gain support, the literature demonstrates that desalination interventions have had greater success with successful deployment of operational plants in recent years both across Australia (Gearey & Jeffrey, 2006; Gilbertson et al., 2011; Hurlimann & Dolnicar, 2012; Hurlimann & Dolnicar, 2010; Dolnicar et al., 2011); and in London (Aitken et al., 2014). The success of these schemes could be considered surprising due to the use of similar treatment processes to those used in effluent reuse for potable water coupled with high capital and energy costs, yet Bell (2015) presents a convincing argument for its popularity in that, whilst it offers those water institutions able to deploy this technology a source of potable water free from traditional constraints, it is also largely commensurate with the conventional modes of water management as outlined in Section 1.2; water continues to be treated as a limitless and controllable resource whilst also preserving the role of experts for the design and operation of these technologies. Studies by Fielding & Roiko, (2014), Dolnicar & Schäfer, (2009) and Dolnicar et al., (2011) also demonstrate that deployment of these schemes attracts considerably less public opposition, as it perhaps reflects less of a transition away from the familiar, which, for water institutions concerned about public perceptions and potential reputational impacts, may prove appealing (Doron et al., 2011).

Decentralisation of systems for the future management of water, wastewater and stormwater has also received attention in the literature due to the ability to offer context-specific solutions. A study by Makropoulos & Butler, (2010) provides a detailed review of potential decentralised technologies available for water, wastewater and stormwater management distinguishing between those that represent conventional through to increasingly novel solutions. Whilst it is acknowledged that those more novel technologies offering decentralised solutions, have been deployed in research, small scale or demonstration contexts (Pahl-Wostl et al., 2003; Hills et al., 2001; Makropoulos & Butler, 2010) there is a sparse literature on the widespread consideration of decentralised

technologies by existing water institutions. SUDS schemes are a notable exception representing an increasingly accepted solution for the improved management of stormwater improving potential capacity of incumbent sewer and treatment infrastructure in addition to flood mitigation (Barbosa et al., 2012; Bell, 2015; Bastien et al., 2012). In addition, household level rainwater harvesting technologies (i.e. rainwater tanks and water butts) for supplementing non-potable uses have been well established (Makropoulos & Butler, 2010; Bell, 2015). Whilst decentralisation of technologies for the management of water, wastewater and stormwater offer significant flexibility, partnering their deployment are issues of ownership, stewardship, asset variability and requirement for both lay and expert knowledge for their success which collectively are arguably juxtaposed against existing dominance of centralised networks of infrastructure, a legacy of historic conventional modes of management (Bell, 2015; Brown et al., 2009).

In addition to exploring supply augmentation options, water institutions have increasingly sought to address demand for water services. Strategies promoting leakage reduction, voluntary metering and associated water tariffs to incentivise more efficient use of water are common practice (Defra, 2008; Hall et al., 2012) but serious water stress has forced some water utilities in the England to consider 'universal' or compulsory metering for all customers (Environment Agency and Natural Resources Wales, 2013). Many water institutions have also deployed complementary water efficiency campaigns and promotion of water efficient appliances (Hall et al, 2012; Bell, 2015) to encourage sustained water efficient behaviours. These interventions are contingent on consumers voluntarily modifying habits and behaviours whether motivated by environmental concerns or avoidance of additional financial costs. With examples of water efficiency campaigns in the literature presenting a mixed picture as to their efficacy, the inherent assumption of rational consumer behaviour underpinning these efforts is posited to be a potential contributory factor (Bell, 2015). Studies by Doron et al.,(2011) and Howarth & Butler, (2004)

support this argument presenting a broad range of factors influencing the public adoption of water efficient behaviours. Interestingly, similar themes are identified to those previously acknowledged for effluent recycling including lack of trust, lack of awareness of issues driving need for these responses and availability of information (Howarth & Butler, 2004; Doron et al., 2011). But, whilst also identifying practical barriers to adoption of water efficient behaviours, these studies also identified more basic issues such as a lack of awareness of how water and wastewater services are provided, who their supplier was, lacked relative perspective of own water consumption (Doron et al., 2011; Howarth & Butler, 2004) This presents a challenging societal context for water institutions to address in their efforts to promote the addition of water efficient behaviours.

1.2.2 Challenges associated with alternative modes of management

Whilst the technologies in isolation promise progress towards addressing water management challenges, as has been demonstrated in Section 1.2.1, the successful deployment of these technologies by water institutions is limited unless underpinned by a nuanced understanding of its function relative to complex environmental, social, political, institutional and economic factors (Jansky et al., 2005; Ker Rault & Jeffrey, 2008; Bell, 2015). Recognition of the increasingly socio-political context of water management has led many to conclude that technocratic modes of management, whilst historically offering some functional and instrumental advantages (Bebbington et al., 2007; Lach et al., 2005; Gleick, 2000; Ofwat & Defra, 2006), are increasingly redundant in the face of future challenges (Bell, 2015; Brown et al., 2009; Bell & Aitken, 2008; Ravetz, 2005). Criticism has particularly focused on their failure to sufficiently address the complex, interrelated characteristics and relationships increasingly inherent in management decision-making exacerbated, in part, by an over-reliance on monetisation and expert knowledge, subscription of narrow value theory removed from social context and inconsistent with observed behaviours

(Spash et al., 2005; Bebbington et al., 2007; Gleick, 2000; Munda, 2004; Lach et al., 2005; Holmes & Scoones, 2000; Cass, 2006; O'Neill & Spash, 2000).

Section 1.2.1, clearly demonstrated that the knowledge and competencies required to translate these technologies and behavioural campaigns into effective management responses no longer exists solely in the realm of water institutions but, increasingly exists across multiple institutions and actors, in particular the public (Jansky et al., 2005; Ravetz, 2005; Bell, 2015; Hurlimann & Dolnicar, 2010; Brown et al., 2009; Aitken et al., 2014; Bell & Aitken, 2008). With the studies outlined in Section 1.2.1 clearly revealing the significance of public attitudes and their formation, in addition to endemic lack of public trust in water institutions, it is clear that constructing institutional mechanisms for public and stakeholder engagement in the development of water institution responses will be a necessary reform to ensure the future success of water management interventions. The literature recognises that this transition requires the evolution of institutional process and practices made more challenging by legacy of technocratic approaches. Concerns around lack of practical skills, resources and institutional capacity coupled with limited regulatory incentives have been recognised (Brown et al., 2009) and the need for significant organisational receptivity emphasised (Spiller et al., 2012).

1.3 Water service delivery in England and Wales

In England and Wales, the management of water resources for the delivery of public water and wastewater services is under the jurisdiction of ten regional utilities who hold the monopoly for the provision of water and wastewater services and a further nine regional utilities with the monopoly for the delivery of water only services (Five locally appointed utilities and eight water supply licensees also service a small number of customers water and wastewater services) (Ofwat, 2015). The provision of these services is exposed to economic, environmental and drinking water quality regulation by The Water

Services Regulation Authority (Ofwat), the Environment Agency (EA) and the Drinking Water Inspectorate (DWI) respectively. Ofwat's primary duty is to protect the interests of consumers through the promotion of competition where applicable, to ensure the financeability of water utilities and safeguard the long-term resilience of the water sector in England and Wales (Water Industry Act, 1991; Water Act, 2003; Ofwat, 2014). The EA's has responsibility for the management of flood risk and water resources allocation. In addition it aims to protect and improve the water environment by coordinating the national implementation of European environmental directives, achieved through the identification of statutory interventions in part delivered by water utilities (Environment Agency, 2014; Environment Agency, 2013; Cashman, 2006). Finally, the DWI's primary duties include ensuring the safety of the drinking water supply provided to customers by water utilities in England and Wales in line with European Directives and ensuring a sustainable level of investment in drinking water supply assets (Drinking Water Inspectorate, 2012; Drinking Water Inspectorate, 2014).

The delivery of the management and delivery of water and wastewater services in England and Wales as it now stands has been the outcome of significant evolution which has had implications for both infrastructure development and the role of public and stakeholders in water management. The scale of water management has been subject to considerable transformation moving from the delivery of highly localised services through to regional management as it now delivered (Water Act, 1973; Ofwat & Defra, 2006; Page & Bakker, 2005). Partnering transformations to the scale of water management in England and Wales were those of water service governance. Local authority management moved to regionally stated owned utilities followed by the privatisation of the sector in 1989 (Ofwat & Defra, 2006) leading to the appointment of ten regional water utilities as Limited Companies forming the basis of the present structure (Cashman, 2006). The literature demonstrates predominantly economic and political drivers for its evolution with benefits of efficiencies and access to

private capital markets being sought (Ofwat & Defra, 2006; Cashman, 2006). Yet, as has been rigorously argued by Page & Bakker, (2005), whilst opportunities for the public to influence water management do exist (i.e. through their vote, public interest groups, complaints or adoption of water efficient behaviours), the move to a privatised water sector privileged the public's role as customers, with complaints procedures dominating the extent of public influence.

The institutional development of the sectors history also had implications for the infrastructure enabling the delivery of water and wastewater services. Conventional modes of water management, as outlined in Section 1.2, arguably reflect the delivery of water and wastewater services in England and Wales with the use of extensive infrastructure networks performing functions of abstraction, aggregation, treatment and distribution of water and wastewater ensuring that water is fit for purpose at point of use or discharge (Hall et al., 2012). An estimated 1000 reservoirs, 3000 water treatment works, 450,000 km of water network, 347,000km sewers and 9000 wastewater treatment works serve to deliver water and wastewater services to almost 100 per cent of the United Kingdom (UK) (Hall et al., 2012). This infrastructure is predominantly structured as regional networks constrained by hydrological and / or institutional boundaries of asset ownership, a legacy of the sectors development (Hall et al., 2012).

1.3.1 Future management challenges in England and Wales

Water utilities delivering water and wastewater services in England and Wales face difficult planning and operational decisions commensurate with those outlined in Section 1.2. Significant geographic and seasonal variability, coupled with projected population increases, already pose water availability issues and are likely to be further exacerbated by the impacts of climate change (Hall et al., 2012; Defra, 2011). Potential risks to water utility planning and operations

posed by climate change have been identified and characterised by (Ofwat, 2011) and it is clear that those high and medium priority risks will begin to shape the extent, speed and nature of water utility responses. Furthermore, an aging and deteriorating asset base, a legacy of 19th century development, requires on-going maintenance by water utilities in order to remain operational (Hall et al., 2012). Affordability is also proving to be an increasingly significant issue with an estimated £4 billion per year invested in water and wastewater infrastructure through customer water and wastewater charges and a total of £80 billion invested since privatisation (Hall et al., 2012). With some sources identifying a prevailing view of water and wastewater services offering poor value for money (Littlechild, 2011; Consumer Council for Water, 2014) coupled with the projection that that demand management schemes are unlikely to fully negate need for supply augmentation or for continued investment in maintenance and wastewater infrastructure (Hall et al., 2012), it is an issue that is unlikely to abate.

1.3.2 Planning to address water management challenges in England and Wales

Determining responses to future water management challenges in England and Wales falls within the remit of water utilities. Working on a five-yearly planning cycle (noting a twenty-five year planning horizon for Water Resource Management Plans (WRMPs)), they determine the Level of Service (LoS) proposed to be delivered to their customers and the investment necessary to achieve this. As noted in Section 1.2.1, this may include investment to maintain or improve the efficiency of existing infrastructure, additional investment required to meet statutory legislation, to augment supply or decrease demand. Since 2009, water utilities have appraised and prioritised investment using Cost-Benefit Analysis (CBA) (Ofwat, 2008), consistent with the techno-rational modes of management discussed in Section 1.2. With water utility investment proposals having direct implications for customer charges, a quinquennial regulatory review process, known as the Price Review process, exists for its

regulation. The use of a Retail Price Index (RPI) – X incentive price control, enables Ofwat, with input from the EA and DWI, to act to protect customer interests whilst providing private investors with the confidence necessary to ensure continued financial support required for the maintenance and development of water and wastewater service provision (Baldwin et al., 2012). Whilst specific review protocol has shifted at each Price Review, in general, Business Plans generated by water utilities are subject to scrutiny and challenge with a view formed on the proportionality of the investment programme relative to statutory quality legislation, an efficient level of operating cost, the cost of capital and other financial considerations (Littlechild, 2010). Each water utility is then provided with a determination outlining the allowed revenue over the next five year Asset Management Period (AMP) with explicit implication for the magnitude, scale and pace of water utility investment and the price that is permitted to be charged for delivery of an agreed LoS over the AMP. This mechanism has functioned to enable water utilities to cover anticipated costs over the AMP whilst providing an incentive for efficiency where actual operational costs are lower than those anticipated by Ofwat increasing water utility profits (and vice versa) (Baldwin et al., 2012).

Section 1.2.2 demonstrated the case for crucial institutional process and practice reform for the effective management of water and wastewater in light of future challenges. It outlined that ensuring the success of management responses is no longer exclusive to the expert realm of water utilities and required improved understanding of consumer behaviour and public attitudes, in addition to mechanisms to foster public trust. Public participation, defined as “...the practice of consulting and involving members of the public in the agenda-setting, decision-making and policy-forming activities of organisations or institutions responsible for policy development” (Rowe & Frewer, 2004, p.512) is an increasingly established practice in the management of natural resources promising to secure legitimacy, provision better adapted solutions and ensure fairness of planning and decision-making outcomes (Fiorino, 1990; Reed, 2008;

Von Korff et al., 2012). In light of the demonstrated need for greater engagement between water utilities and the public in the development of future management responses, there is a growing appreciation of the limits of the incumbent regulatory regime as a successful coordinating mechanism (Littlechild, 2011; Page & Bakker, 2005; Kinnersley, 1998). Its complexity and burdensome nature has been argued to constrain opportunities for greater public participation in fundamental water management planning and decision-making and moreover, where efforts to engage with water utility customers were made, Ofwat were reported to give little weight to this in their determinations (Littlechild, 2011; Ofwat, 2010). This, coupled with the institutional challenges already identified in Section 1.2.2 and reinforced by Littlechild, (2011), presents a significant barrier for the successful adaption of water and wastewater service provision to the complexities, uncertainties, and controversy likely to be inherent in future planning and decision-making contexts.

1.4 Moving towards public participation in water utility planning and decision-making in England and Wales

Recognising, in part, the issues outlined in Section 1.2.2 and 1.3.1, the regulatory mechanism outlined by Ofwat for implementation at the 2014 Price Review (PR14) provides a greater role for customers in water utility planning and decision-making (Ofwat, 2011). They appear to acknowledge that engagement with customers solely as recipients of water and wastewater services is no longer sufficient and recognise the importance of customer participation in the realisation of emerging innovative and sustainable responses and in influencing approaches to long-term service delivery (Ofwat, 2011). Yet, whilst seeming to embrace greater customer participation in planning and decision-making, its rejection of regulatory mechanisms privileging significant customer influence (For example, negotiated settlements, and approach favoured by Littlechild, (2011) and used in the aviation sector), or alternatively the devolution of decision-making power to customers on some issues (Littlechild, 2011; Ofwat, 2010), instead favouring increased direct local

engagement between water utilities and their customers has been described as “...seeking to secure many of the benefits of the approach [negotiated settlements] via a less committed process” (Littlechild, 2011, p.14). In other words, it aims to achieve the benefits of participatory approaches within the existing hierarchical regulatory regime (Ison et al., 2007; Wesselink et al., 2011; Bickerstaff & Walker, 2001).

Whilst this approach may present some constraints to the scope of the participatory agenda in this context, the execution of engagement with water utility customers is clearly positioned as a key determinant in the PR14 process (Ofwat, 2011) and thus critical in securing regulatory support for future investment proposals. Success is therefore, in part, dependant on the ability of water utilities the adapt their processes and practices to facilitate successful customer participation. In particular, the development of the competencies necessary for the appropriate selection and deployment of participatory mechanisms and the embedment of knowledge management practices facilitating the incorporation of customer knowledge in their planning and decision-making practices.

The traction of participatory approaches in the wider context of water management is well established in the literature (Carr et al., 2012); most notably in response to Article 14 of the European Union (EU) Water Framework Directive (WFD) (European Union, 2000; Benson et al., 2014). Furthermore, the urban water literature, as discussed in Section 1.2.1 has demonstrated a clear need for the adoption of practices privileging greater public engagement in enhancing scheme viability and success of behaviour change endeavours. Yet, the adoption of participative approaches in the context of service provision by water utilities, and the functional implications of this, has received comparatively little attention.

The broader public participation literature provides useful insight into the structure of participatory processes but, as will be discussed in Section 2.2 demonstrate both a confusing plethora of participatory mechanisms and limited consensus over the characteristics constituting effective processes. Although general lessons can be gleaned from empirical research in broad water resources management contexts, the constraints posed by the nature of service delivery in England and Wales (i.e. regional service delivery) and the regulatory mechanisms in place pose complexities little considered in the literature. Limited practical guidance exists for water utility practitioners charged with the task of providing effective opportunities for customer participation. Given that their successful discrimination of participatory mechanisms and appraisal of their suitability to water utility planning and decision-making contexts is likely to be exposed to significant scrutiny by Ofwat, it prompts important queries regarding the influence of participatory mechanisms on the outputs they generate.

The management of the knowledge gained from the participation of customers and the influence it is privileged in institutional planning and decision-making within water utilities is likely to be critical in ensuring the success of future service delivery. The potentially new and unfamiliar practices associated with incorporation of lay-knowledge poses its own challenge. As will be discussed in more detail in Section 2.5 success in this regard will be reliant on both practitioner and organisational capacity to facilitate social processes; the collaborative negotiation of both socially-constructed and technical information and their receptivity to adopt alternative perspectives (Ison et al., 2007; Roux et al., 2006; Spiller et al., 2012). The literature demonstrates a considerable range of factors promoting and constraining successful knowledge management across a wide range of disciplines providing a comprehensive set of characteristics for consideration yet fails to fully consider the complexity and dynamic nature of the decision-making contexts faced by water utility practitioners. However, relatively little attention has been paid to knowledge

management practices in water management and, as far as the author is aware, no studies have considered these challenges in the context of water and wastewater service delivery. Gaining an understanding of practitioner experiences with respect to the incorporation of customer knowledge in water utility planning and decision-making practices promises to generate useful context-specific insight.

1.5 Aims and objectives of this thesis

This research aimed to explore functional issues relating to the contributions of domestic customers to water utility planning and decision-making in England and Wales. The findings generated are anticipated to facilitate improved water utility practices better enabling their adaption to challenges facing future water service delivery. The practice of public participation is addressed in the context of water utility planning and decision-making from both a design and procedural perspective. By undertaking empirical research with domestic water customers, the influence of participatory mechanism selection on expressed preferences for water and wastewater services was assessed. Procedural issues associated with the institutionalisation of participatory practices were addressed by exploring practitioner perspectives on motivations for public participation and the use and influence of customer knowledge in planning and decision-making processes.

Three key objectives, presented in Table 1-1, have underpinned this research inquiry. The research questions this thesis has attempted to address are outlined in Table 2-7 in Section 2.6 following a review of the literature.

Table 1-1: Thesis objectives

1)	To assess the clarity of motivations driving participative practices in water sector planning and decision-making in England and Wales.
2)	To explore the influence of participatory mechanisms and preference formation on the outputs from participatory mechanisms in water sector planning and decision-making

	processes in England and Wales
3)	To explore the use and influence of customer contributions in water sector planning and decision-making

1.6 Thesis constraints

The research presented in this thesis was undertaken directly with an industrial sponsor, a large water and wastewater utility operating in England. The studies reported in this thesis were highly responsive to issues the sponsoring organisation encountered during their PR14 business planning activities providing direction for the three studies reported in this thesis.

Two of the studies presented in this thesis, Studies A and B reported in Chapters 4 and 5 respectively, involved direct contact with the sponsoring organisations domestic customers. As a result, the sponsoring organisation aspired to directly utilise the outputs generated in their PR14 planning activities and were evidenced in the business plan submission. The implications of this were three-fold. Firstly, it constrained to some degree the extent of control the author was able to exert on the design and implementation of these studies. The author had sole design responsibility for Study A and was a primary contributor to the design of Study B (in partnership with Senior Managers from the sponsoring organisation and a Market Research sub-contractor). Secondly, the content of these studies was influenced by sponsor-specific needs relative to their business planning activities. This constrained the scope of the studies and compromised the academic agenda being pursued with respect to the influence of participatory mechanism design and the planning and decision-making contexts in which customer views were sought. Finally, the aspiration to use the outputs generated from studies A and B in their planning and decision-making activities and as evidence in the PR14 business plan submission, rendered it necessary for the sponsoring organisation to employ professional Market Research sub-contractors for the recruitment of study participants and the facilitation, recording and provision of fieldwork transcripts all in accordance

with the agreed study design. Mitigation measures implemented to address the potential impacts of these research relationships are outlined in Sections 3.4.1 and 3.4.2.

Whilst the strong collaboration between the author and the sponsoring organisation posed some constraints with respect to the nature and scope of the studies reported in this thesis, its applied nature provided a unique and timely opportunity to generate a pertinent response to current challenges encountered by the sponsoring organisation whilst also presenting a novel contribution to the scholarship on the institutionalisation of participative planning and decision-making by water utilities in England and Wales. Whilst the findings reported in this thesis are set in the context of planning and decision-making processes operating in the sponsor organisation, they have the potential to be more widely applied. However, this thesis makes no assumptions as to water utility planning and decision-making practices employed outside of England and Wales; the implications of the findings are therefore discussed in this context.

The research has focused on the contributions of domestic customers to water utility planning and decision-making; non-household (business) customer contributions to water utility planning and decision-making have not been considered. The research did not set out to discriminate between the two customer-types, however, a pilot study undertaken as part of Study A, (See Chapter 4) incorporating both domestic and non-household customers highlighted a clear difference with regards to their service needs. By focusing solely on the contributions of domestic customers to water utility planning and decision-making outputs generated through this research offered greater scope for clarity within the resources and time constraints of this research.

1.7 Thesis structure and contribution to knowledge

The thesis is organised around the exploitation of empirical research activities designed to satisfy the objectives of the research. The structure of the chapters follows a progression from the identification of research needs through to the design and delivery of empirical research outputs to the discussion and conclusions of the research findings. Figure 1.1 provides an outline of the thesis structure relative to the objectives of this research project.

This chapter has outlined the challenges for the future management of water resources and the delivery of water and wastewater services with a focus on England and Wales. It has provided broad coverage of alternative management responses available to water management institutions and demonstrated the case that has been made in the scholarship for concurrent institutional and political reform to ensure success particularly in relation to increased need for public and stakeholder participation. It outlined the increasing focus on customer participation in recent modifications of the primary regulatory mechanism in England and Wales and therefore the need for water utilities to institutionalise participative processes in their planning and decision-making.

Chapter 2 reports a review of the public participation literature to identify characteristics of effective participative practices. It provides an overview of the factors considered to be critical in the design and deployment of effective participative processes. Using these findings as the basis for further inquiry, the significance of motivational clarity and influence of mechanism selection are further explored followed by a detailed analysis of factors fostering and constraining the use and influence of participative process outputs in planning and decision-making processes. In doing so it identifies gaps in the scholarship that form the basis of the research questions (See Table 2-7) guiding the development of this thesis.

Chapter 3 reports the methodological concerns underpinning this thesis. It outlines the applied nature of this research inquiry set predominantly within the organisational context of the sponsoring organisation and the implications this had for the research design and role of the author. It provides coverage of the philosophical foundations of the methods used to address the research questions and describes the empirical research methods that have been employed and the justifications for their selection. Furthermore, it provides coverage of considerations made within the research design to ensure the validity and reliability of the research findings, the author's positionality with respect to this research and the ethical considerations adopted.

Chapters 4 to 6 provide a self-contained report of the method and discussion of results for Studies A to C respectively. Chapter 4 reports the methodology and findings of Study A: a comparative evaluation of three elicitation mechanisms for customer preferences for water and wastewater services. Using inter and intra mechanism variation as a framework to explore the influence of mechanism selection, the findings suggested low intra-mechanism variation of expressed preferences yet inter-mechanism variation was more significant particularly with the introduction of budgeting mechanisms. Study B, the methodology and findings of which are reported in Chapter 5, explored in more detail the influence of bill impact on customer preferences through exploring rationales for their acceptability of a range of investment scenarios. The findings did not support those generated in Study A with bill impact only one of many rationales used by customers in this study. It did, however, support findings generated in Study A for the use of mechanisms privileging time and resources to foster differentiation of preferences and make a case for consistent presentation where multiple investment scenarios feature. Chapter 6 reports the method and findings of Study C, which explored the clarity of motivations for the adoption of participative approaches and practitioner perspectives of the use and influence of outputs generated through customer engagement activities. Whilst the study findings are limited to practitioners in the sponsoring

organisation, it provided evidence to suggest dominance of instrumental and legalistic rationales for the acquisition and use of customer views and preferences in planning and decision-making and that this was significant in driving the organisations practices. It also isolated factors that fostered and constrained organisational efforts in the use and influence of participative outputs enabling the generation of a set of criteria reflecting knowledge management considerations to complement existing effectiveness criteria for participative approaches.

Chapter 7 provides an over-arching review of the three studies findings in the context of the literature presented in Chapters 1 and 2. It demonstrates the contributions this thesis has made to both the scholarship and water utility practice in relation to the influence of mechanism selection and design on preference formation on the outputs from participatory mechanisms; the development of effectiveness criteria for knowledge management in the development of institutional responses in participative planning and decision-making processes; the importance of motivational clarity as a driver for organisational practices and the presentation of factors observed as fostering and constraining knowledge management practices in a live organisational planning and decision-making process.

Chapter 8 reviews the success of this thesis in addressing the research aims. It provides a summary of the primary contributions to knowledge and practice were developed across the three studies deployed. Whilst this thesis has generated evidence to support existing understanding in the fields of public participation and knowledge management, it has also generated novel contributions to these fields. To summarise:

- The research provides a novel contribution to the current field of public participation by examining these practices in the context of water utility water and wastewater service delivery

- The research provides unique contribution into the motivations of a single water utility's practitioners for the use of public participation in planning and decision-making
- This research has provided a novel contribution into the rationales used by domestic customers for determining the acceptability of water and wastewater service attributes in water utility planning in England and Wales
- This research has provided a novel water utility focused contribution to the existing scholarship on practitioner-led insights into organisational barriers for public participation
- This research has generated a set of evaluative criteria reflecting factors that have been identified as fostering or constraining knowledge management in participative planning and decision-making in water utilities applicable to practitioners within the sector and more broadly

A critical appraisal of the approaches adopted in generating these contributions and the quality of the research process and findings is presented before providing recommendations for further research to explore these findings more broadly within the water sector in England and Wales to provide additional evidence for their reliability.

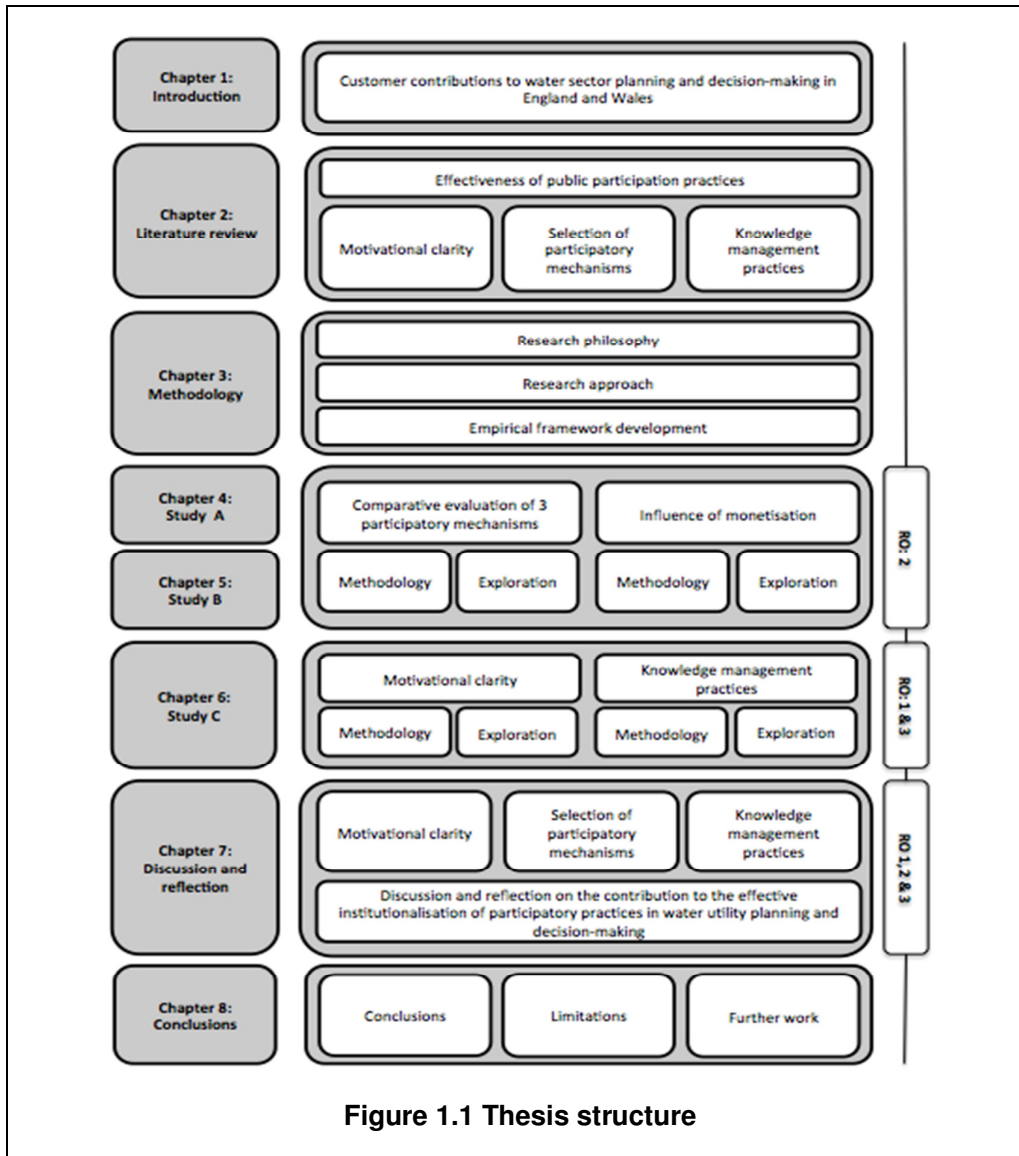


Figure 1.1 Thesis structure

2 LITERATURE REVIEW

2.1 Introduction

Chapter 1 has made a case for greater public participation in water utility planning and decision-making in response to future water management issues set to influence the delivery of water and wastewater services. It recognised recent changes to regulatory mechanisms in England and Wales that sought to privilege the views and preferences of customers in water utility planning and decision-making. Whilst the theoretical potential of public participation, visited in Section 2.1.1, is well established, Chapter 1 identified a sparse literature on the adoption of participatory processes by water utilities. With regulatory incentives attainable for the demonstration of effective engagement with their customers, it provides water utilities with a motivation to adopt participatory practices. Yet, with suggestions of potential barriers to the successful adoption of these practices it prompts an important query: How can water utilities effectively institutionalise participatory processes in their planning and decision-making?

The institutionalisation of public participation, whilst not unique to the delivery of water and wastewater services, has been a key theme in the associated literature. With the theoretical rationales for these practices now well established, mechanism development, and the appraisal of their capacity to realise the theoretical benefits claimed, has dominated discourse in this field. An abundance of participatory mechanisms are presented to practitioners, yet whilst this offers some flexibility in their approach, a paucity of rigorous evaluative research and no clear consensus on the characteristics of successful participative approaches, makes this a confusing landscape for practitioners to navigate. In addition, with evaluative efforts typically focusing on the performance of single participative mechanisms as opposed to their use and integration within a wider process further compound this issue.

The objectives set out in Table 1-1 provide an agenda for enquiry; there are well-established threads of theory and evidence, which shape the distillation of objectives into tractable research questions. The intent of this chapter is to critically engage with the literature base using the following queries to structure the investigation: a) What motivates the adoption of participative practices? b) What are the characteristics of 'effective' participative approaches? c) Is mechanism selection and design influential in determining the effectiveness of participative approaches? d) What factors offer the potential to foster or constrain the use and influence of outputs generated by participative approaches in planning and decision-making processes?

This chapter begins by briefly addressing the development of public participation agenda. It then, in Section 2.1.1, explores the motivations for the adoption of these practices and the benefits it promises to deliver over traditional forms of planning and decision-making. Section 2.2 assesses factors considered to be critical to the design and deployment of effective participative processes. The importance of motivational clarity in the design and delivery of participative processes is then discussed in Section 2.3 followed by a consideration of the significance of mechanism selection in Section 2.4. Finally, Section 2.5 addresses how outputs of participative processes have been used to influence the planning and decision-making outcomes and identifies the factors that have been argued to foster or constrain effective incorporation.

Section 1.4 acknowledged the paucity of literature directly addressing these challenges in the context of water utility water and wastewater service delivery. As a result, broader themes present within the literature have formed the basis of both Chapter 1 and this review. The interdisciplinary nature of this research required the exploration of themes across multiple intellectual traditions. The context of this research, outlined in Chapter 1, was established through exploring insights from the natural resource management (NRM) and emerging ecological economics disciplines, which emphasised the multi-dimensional

nature of NRM decision-making and the increasing recognition of the limitations of traditional approaches. Evidence from urban water traditions, coupled with insights from government and grey-literature, set these decision-making issues in the context of water and wastewater management whilst also providing examples of future management options and the implications for management approaches particularly with respect to public attitudes.

Literature from public participation traditions formed the basis of the Chapter 2, enabling an overview of the mechanisms utilised in promoting this agenda and provides coverage of the debate around characteristics of effectiveness. Having identified a need to further consider knowledge management in the context of the use of outputs achieved through the deployment of participatory mechanisms, emerging insights from knowledge exchange, adaptive management and social learning traditions were assessed across NRM, local government, utility and public service contexts as outlined in Section 2.5. It is noted that the knowledge management discipline includes considerable insights in commercial contexts. However, this was omitted from consideration in this review due to its limited relevance in the context of the water sector in England and Wales, which, whilst formed of private utilities, is heavily regulated and currently operates as a monopoly service. This chapter then concludes with a summary of the identifiable gaps in the current knowledge base outlined across Chapters 1 and 2, enabling the delineation of the study's research questions.

1.1 Development of the public participation agenda

Chapter 1 has outlined the case for increased public participation in water management planning and decision-making and more specifically in water and wastewater service delivery. The relevance of this agenda is not limited to this context; investment in public participation activities is demonstrable across a variety of thematic interests including: public service delivery (Curry, 2012); technology development (Bogner, 2012); environmental management

(Saengsupavanich et al., 2012); community planning (Kiisel, 2013) and in various natural resources management contexts (Walker & Daniels, 2001; Stagl, 2007).

Public participation has its roots in multiple scholarly disciplines including philosophy; jurisprudence; politics; economics; sociology; social psychology; organisational theory and management as is demonstrated by (Green, 2007) which may be attributable to its broad appeal. Clearly defined pragmatic roots have also been identified by Reed, (2008) whereby it is attributed to the social and politically motivated protest groups in the 1960's, the requirement for the involvement of the public in local planning decisions (Skeffington Report, 1969) and its strong coupling with the sustainability agenda (Bebbington et al., 2007; Blackstock et al., 2007; Frame & Brown, 2008; Leist & Holland, 2000; Munda, 2000) reflecting both 'bottom-up' and 'top-down' influences motivating the adoption of these practices (Richards et al., 2004). The breadth of intellectual and socio-political traditions underpinning the development of public participation coupled with the diversity of disciplines and geographical contexts in which it has gained traction is argued by Reed, (2008) to be reflected in the breadth of available definitions of public participation. That which is adopted in this thesis, stated in Section 1.4, is considered to be sufficiently broad yet comprehensive, going further than some (For example, those promoted by the IPA2 (2015) or the EPA (2015)) with coverage of the contexts in which participative efforts may be directed (i.e. agenda-setting, decision-making and policy-forming activities) and the degree of participation (i.e. consultation or shared decision-making) (Rowe & Frewer, 2004) reflecting the diversity of contexts it is likely to be employed in water management efforts.

Despite a lack of consensus in defining public participation, the drivers of its development appear to be well established in the literature. Commonly reported drivers of this agenda, include: the pursuit of increasingly complex objectives necessitating the incorporation of multiple perspectives (Stagl, 2007; Funtowicz

& Ravetz, 1994; Green, 2010); a decline in public trust and confidence in both experts and planning and decision-making processes (Rowe & Frewer, 2004; Petts, 2005); a desire to facilitate smoother implementation of controversial technologies (Pidgeon & Rodgers-Hayden, 2007) and, finally, a rejection of traditional techno-rational decision-making approaches (O'Neill, 2002; Spash, 2001; Spash, 2007; Bebbington et al., 2007; Soderholm, 2001; Holmes & Scoones, 2000). These drivers are consistent with the socio-political landscape in which the public participation agenda gained traction and also commensurate with those drivers and factors motivation the adoption of these practices in the context of water management as identified in Chapter 1. The theoretical contribution of public participation in addressing these issues is outlined in Section 2.1.1.

The broad ranging motivations, interpretation of the public participation agenda and its interpretation in practice led many to develop typologies as a tool to assist in the navigation of its diverse scope. A review of the history of public participation by Reed, (2008) provides a comprehensive review of the forms typologies developed whereby distinctions are made between those based on the degree of participant empowerment (Arnstien, 1969; Biggs, 1989; Wilcox, 1994; UNDP, 1997; Goetz & Gaventa, 2001; Lawrence, 2006; Oxley-Green & Hunton-Clarke, 2003; Lynam et al., 2007); type of communication flow (Rowe & Frewer, 2005; Fish et al., 2011); and participation objective (Glass, 1979; Okali et al., 1994; Michener, 1998); and the theoretical motivation for the adoption of these practices (Fiorino, 1990). The typology of communication flow developed by Rowe & Frewer, (2005) has been particularly successful, perhaps due to its simplicity, with its adoption as a tool to appraise the suitability of participative mechanisms reported in contexts such as health (Abelson & Gauvin, 2006; Abelson et al., 2007; Conklin et al., 2010); NRM (Newig et al., 2008); and watershed management (Hermans et al., 2007; Ozerol & Newig, 2008; Duram & Brown, 1999). Similarly, Arnstein's 'Ladder of Participation' (1969) is a well-established typology commonly referenced in public participation studies

(Amerasinghe et al., 2008; New Economics Foundation, 1998), yet as recognised by Reed, (2008) it demonstrates a clear preference for higher levels of participant empowerment failing to recognise the potential for planning and decision-making contexts whereby lower levels of empowerment may be more appropriate. The ability of typologies to provide greater clarity of the objectives of public participation such as that by Glass (1979) provides a useful starting point for the planning of participative activities and furthermore, those demonstrating the theoretical motivations for the adoption of these practices provide a useful function in providing clarity of the benefits practitioners expected to be attained. As will be outlined in the sections following, clarity regarding the use of participative approaches in planning and decision-making is critical to their success (Stirling, 2008).

2.1.1 Motivations for the adoption of participative practices

A key question this literature review aims to address is: What motivates the adoption of participative practices? Section 1.1, has outlined the academic and socio-political landscape that fuelled the development of this practice. Yet, what motivates the seemingly widespread adoption of these practices it is arguably their theoretical ability to deliver a range of avowed benefits. To summarise those commonly reported in the public participation literature, they include: better acceptance of decisions; better quality decisions; and the development of social capital (Reed, 2008; Von Korff et al., 2012; Stirling, 2006). They characterise three distinct theoretical motivations or rationales termed normative; substantive and instrumental (Fiorino, 1990; Stirling, 2006). Forming the basis of the typology developed by Fiorino (1990) (as introduced in Section 1.1), they also represent a commonly employed frame of reference employed in various evaluative studies (Bickerstaff & Walker, 2001; Wesselink et al., 2011; Blackstock & Richards, 2007). Given the significant literature already existing on this subject, this section serves to provide an overview of the normative, substantive and instrumental rationales presented in the literature relevant to this inquiry.

Heavily promoted in emerging ecological economics traditions, particularly in providing justification for deliberative modes of decision-making, are normative rationales for the adoption of participative practices (Fish et al., 2011; Frame & O'Connor, 2011; Munda, 2004; Niemeyer & Spash, 2001; O'Neill & Spash, 2000; Spash, 2007; Spash, 2008). Underpinned by the democratic ideal whereby citizens interested in, or affected by, decision-making outcomes have the right to be involved for the benefit of current and future generations (Söderholm, 2001; Sagoff, 1998; O'Neill, 2002; Holmes & Scoones, 2000); public participation is presented as capable of decreasing marginalisation and increasing the fairness of decision-making outcomes (Reed, 2008; Spash, 2011; O'Neill, 2002) in addition to fostering social empowerment and active citizenship (Reed, 2008; Stirling, 2006). Procedural issues including 'openness', 'representativeness', 'accessibility', 'facilitation of power interest' or 'suppression of strategic behaviour' coupled with the promotion of 'transparency' and 'accountability' in decision-making processes are commonly associated with the engendering normative rationales for public participation (Reed, 2008; Spash, 2011).

In contrast, substantive rationales see public participation presented as a route to enhancing the quality of decision-making outcomes by simply increasing the breadth and strength of knowledge sought and incorporated in decision-making processes (Stirling, 2008; Spash, 2001; Webler & Tuler, 2010). Heralding from traditions whereby knowledge plurality is sought in response to the increasingly uncertain, complex and controversial nature of decision-making (Brugnach et al., 2008) such as in the case of resource dilemmas (as outlined in Section 1.1) (Ison et al., 2007; Rittel & Webber, 1973), the public (as lay-persons / non-experts) are perceived to hold valuable knowledge complementing traditionally expert driven processes by contributing 'real-world' perspectives and privileging ideas, problems and issues that would often be dismissed where expert rationality prevails (Petts & Leach, 2000; Green, 2007; Wesselink et al., 2011).

The adoption of these practices is therefore presented as premised on the public involvement in decision-making to develop increasingly creative outcomes, identify potential for negative outcomes and develop solutions better adapted to the needs of those likely affected (Webler & Tuler, 2010; Reed, 2008; Lach et al., 2005; Wilson & Howarth, 2002; Holmes & Scoones, 2000).

Finally, the promise (in theory) of enhanced legitimacy (or evidence) of decision-making outcomes and improving the potential efficiency of policy or strategy implementation, characterise what the literature has termed instrumental rationales for public participation (Stirling, 2008; Wesselink et al., 2011; Holmes & Scoones, 2000). Whilst the main benefits of public participation in this regard have focused on the improvement of decision-making outcomes, largely through building capacity and fostering trust with those posing potential to affect the realisation of these outcomes (Stirling, 2008; Abelson et al., 2003), others have begun to recognise its potential to improve institutional legitimacy (Cass, 2006) (i.e. its potential to resolve conflict and improve and / or restore public credibility (Wesselink et al., 2011)). Some have cautioned against placing too greater focus on the use of public participation for the sole purpose of generating legitimacy arguing that it may lead to the adoption of participative activities only to provide sufficient justification for the institutions activities and thus become desultory in nature (Cass, 2006). Progressing this theme, Wesselink et al., (2011) present a fourth rationale describing its use to meet formal requirements (i.e. where the use of participative approaches are mandated in legislation or regulation) which they consider distinct from instrumental rationales on the basis that active uptake of participative outputs is not necessary or capacity building a key focus. Others, whilst they recognise this phenomenon, categorise it as a feature of instrumental rationales (Bickerstaff & Walker, 2001).

It is clear then, that there are well defined theoretical motivations or rationales for the use of participative approaches in planning and decision-making

contexts. Reflecting on the planning and decision-making challenges outlined in Chapter 1, it is possible to identify features of normative, substantive and instrumental rationales for the adoption of participative practices. Furthermore, the embedment of participative practices in Ofwat's proposed regulatory Price Review mechanism (Ofwat, 2011) necessitating the adoption of these practices by water utilities in England and Wales may introduce the potential for over-focusing on instrumental or legalistic rationales potentially restricting the benefits to be gained where normative and substantive motivations dominate. Section 2.3 reviews the importance of motivational clarity in determining the effectiveness of public participation efforts and reveals dominant trends in the rationales used for the adoption of participative approaches across a range of planning and decision-making contexts.

2.2 What are the characteristics of 'effective' participative approaches?

Section 1.1 has outlined the theoretical rationales or motivations for the adoption of participative approaches and the benefits promised. Whilst the benefits presented are attractive and seemingly simple to achieve, their attainment is largely predicated on the design and deployment of 'effective' participatory approaches, the processes and practices employed for the generated outputs subsequent use and the influence they are privileged within the planning and decision-making process. The last decade has seen the focus of public participation research shift towards the evaluation of participatory approaches (Reed, 2008), functioning to illuminate examples of successful public participation (Beierle, 2002; Beierle & Konisky, 1999) but, equally, revealing significant weaknesses leading some to question their efficacy and their ability to deliver the theoretical benefits claimed (Wesselink et al., 2011; Reed, 2008; Koontz, 2005; Fritsch & Newig, 2012) degrading the justification for their use (Wesselink et al., 2011). Exploring how the successful institutionalisation of participative approaches in water utilities can be achieved warrants an improved understanding of the factors promoting 'effective'

practices in order to generate a positive foundation on which to build successful practices and processes. This Section therefore aims to address the question posed at the start of this chapter: What are the characteristics of 'effective' participative approaches?

2.2.1 Isolating characteristics of 'effective' participative approaches

Evaluative studies exhibit a commonly adopted a structure involving the isolation of criteria considered to contribute to, or represent, an effective participatory process before developing and applying these in the review of their planning and decision-making processes (Rowe & Frewer, 2005). The assessment of these criteria provides a useful starting point in establishing current thinking on this issue. Exposing those criteria most prevalent (and those less common) provides an insight into their perceived value in promoting effective practices. A review of the literature exposes that, despite the notable influence of Webler's fairness and competence framework (Webler, 1995) or Beierle's social goals framework (Beierle & Konisky, 2000), evaluative frameworks employed reflect a diverse range of effectiveness criteria. Whilst, this may be explained in part by the complex multi-dimensional nature of effectiveness that can be open to various interpretations (Rowe & Frewer, 2004), it is possible to isolate the most common themes within the literature. These include: Representativeness; process transparency; the improvement and / or restoration of trust in the institution sponsoring the process; the incorporation of public views, ideas, and new information in decision-making processes; conflict resolution; and social learning. These align closely with the normative, substantive and instrumental rationales outlined in Section 2.1.1. To illustrate this, representativeness and process transparency are key features of normative rationales. Representative participation promotes the expression of a broad range of value perspectives and an important factor in promoting procedural and distributive justice. The further promotion of process transparency fosters the suppression of bias and strategic behaviour providing the conditions necessary for increased legitimacy (Spash, 2011; O'Neill, 2002).

The themes of trust and conflict resolution are central to instrumental motivations for smoother implementation of policy goals. Furthermore, the incorporation of public views, ideas and preferences reflects the substantive goal of broadening the knowledge used in decision-making.

Closer examination of the effectiveness criteria applied in these studies reveals variant characteristics reflective of recognised issues relating to the act of defining effectiveness. A detailed review of these issues was developed by Rowe & Frewer, (2004) following a large-scale review of evaluative studies and reiterated by others (Abelson & Gauvin, 2006; Chess, 2000). However, for completion, the primary difficulties associated with this task are outlined. Firstly, it is clear that some criteria could be characterised as referring to the participative process (i.e. the combination of planning, design, deployment of participative mechanisms in addition to the use and incorporation of the generated outputs) and others as referring to the desired outcome of participative approaches. A review of evaluative frameworks employed suggest that whilst some exhibit characteristics of both process and outcome criteria (Halvorsen, 2001; Kallis et al., 2006; Laurian & Shaw, 2009; Petts & Leach, 2000; Petts, 2001; Petts et al., 2003), others address only one (Beierle, 1999; Beierle, 2002; Benson et al., 2014; Carr & Halvorsen, 2001; Frewer et al., 2000; Rauschmayer & Wittmer, 2006; Rowe & Frewer, 2004; Tuler & Webler, 1999). As is often typical practice in evaluative research, the use of outcome-centred criteria are considered to be the most effectual method of establishing effectiveness enabling a direct measure of success against the original motivations or aims of the approach adopted. But, as is recognised by Rowe & Frewer, (2004), it is often the case in the use of participative approaches that outcomes are difficult to accurately define (i.e. in determining when benefits will cease to be derived) and may not be independent (i.e. other external variables pose the potential to affect the outcome). As a result, process criteria are often used as a substitute for outcome criteria with the underlying 'path-dependency' assumed between the choices made about the decision-making process and

the quality of the decision outcome (Green, 2007; Rowe & Frewer, 2004). Secondly, the specificity of effectiveness criteria varies; some demonstrate broad applicability (referred to in the literature as 'universal' criteria) whereas others exhibit greater specificity as to the context, type of mechanisms or the goal of the participative approach (referred to as 'local' criteria). Finally, Rowe & Frewer, (2004) acknowledge the long-standing issue of 'effectiveness according to whom' reflecting potential for plurality of perspectives of success. Many evaluative frameworks appear to address this issue by the inclusion of effectiveness criteria relating to the act of securing legitimacy or acceptability of both the participative process and the outputs generated (Blackstock et al., 2007; Carnes et al., 1998; Laurian & Shaw, 2009; Rowe & Frewer, 2005; Webler & Tuler, 2001; Clarke, 2008).

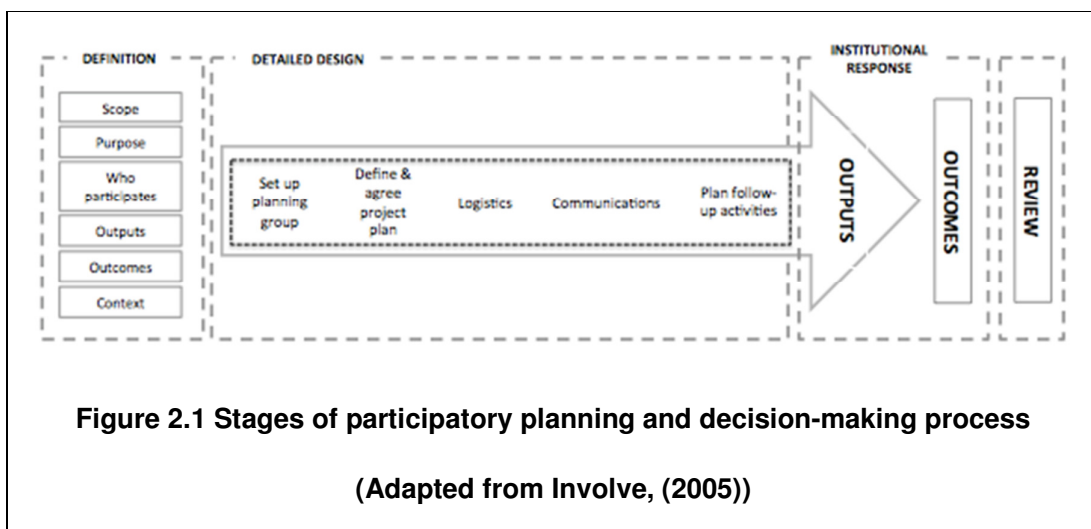
Reflecting on the evaluation of public participation approaches in the context of water and wastewater service delivery, the main focus of this thesis, it is clear that defining 'effectiveness' in this context is reflective of those challenges outlined in the literature. Indeed, the complex and interdependent nature of the resource management context in which public participation may function constrains the accurate definition and measurement of the effectiveness of public participation outcomes. Instead, evaluation of the process and outputs generated may, as outlined above, be used as a proxy for determining effectiveness.

2.2.2 Mapping effectiveness criteria to the stages of participative processes

Defining the stages of participative processes

This section, thus far, has established the need to focus on determining criteria of process and output effectiveness for the application of participative approaches in the context of water and wastewater services. Whilst the literature provisions useful insight into the range of criteria reported to determine

the effectiveness of participative approaches, its lack of structure relative to the established stages of participative process presents some limitations in its value. Whilst the synthesis of evaluative criteria such as that developed Blackstock et al., (2007) in the fields of community and collaborative management recognise the connections between research outcomes, research design, process and context, to the author’s knowledge, there is currently no literature that has explicitly related effectiveness criteria to stages of the planning and decision-making process. A model of the stages of participative planning and decision-making processes, which will be used throughout this thesis, has in this case been used to structure the effectiveness criteria relative to the stages of participative approaches serving to provide a greater understanding of where opportunities to address the criteria promoted in the evaluation literature exist and thus, one could argue, where efforts could be best focused. Furthermore, conceptualising effectiveness criteria in this way provides a more targeted and operationally motivated perspective, potentially offering more useful insight to practitioners. Figure 2.1 outlines the stages of public participation processes identified by Involve (2005), an organisation who’s focus is the improvement of public participation efforts by providing practical insight into their deployment. This model was selected as it provides the most differentiated and comprehensive breakdown of the stages of participative planning and decision-making processes.



The stages of the participative processes identified by Involve (2005) have been grouped into four main phases for clarity. The definition phase incorporates activities relating to the definition of the participative approach including: scope, purpose, participants, outputs and outcomes desired and the relationship of these factors relative to the context in which the participative approaches are being deployed. This stage is presented as one where consensus between those practitioners and / or institutions responsible for the deployment of such activities is formed providing a firm foundation for future stages (Involve, 2005). The second stage, focuses on establishing a detailed and workable participative design focusing on the practical considerations such as timelines, budget, and venues but also, importantly, the participatory mechanism(s) to be employed, their content and any materials required. In addition, it also considers communication activities to keep interested and affected parties up-to-date with progress as well as a step termed 'plan follow-up activities' which refers to planning the institutions utilisation of the outputs generated and establishing measures of success (MoS) for its use. The penultimate stage refers to the way in which institutions use the outputs generated as a result of the deployment of participative mechanisms and the level of influence they are privileged in the planning and decision-making process. A review phases is then proposed whereby the effectiveness of the efforts are evaluated using those MoS generated in the detailed design phase and the findings appraised to generate recommendations for the improvement practices. This model, whilst providing a clear structure for the design, deployment and use of participative approaches, is broad enough that enables its adaption for specific institutional structures thus making it relevant for its use in this thesis.

Mapping effectiveness criteria to stages of a model participative approach

A review of the public participation literature from across a range of disciplines including natural resources management, public service delivery, environmental management and community planning has revealed a significant range of effectiveness criteria. Having outlined a model of a participative process (Figure

2.1), where effectiveness criteria were commensurate with the aim of that stage of the process they were mapped against it. The outcome of this exercise can be found in Table 2-1 to Table 2-4.

Table 2-1 Definition phase of participative planning and decision-making processes: criteria of effectiveness

DEFINITION PHASE - Stages	Stage description (Adapted from Involve, 2005)	Criteria reported in evaluation literature	References
Scope	The clarification of the boundaries of the exercise; what can be achieved in practice i.e. how much can change, is participation appropriate, what are the risks; defining accountability and what level of participation is being sought	Adequate time within process	(Chilvers, 2008; Petts et al., 2003; Conrad et al., 2011)
		Adequate financial resources committed to process	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Blackstock et al., 2007; Frewer et al., 2000; Ozerol & Newig, 2008; Petts et al., 2003; Rowe & Frewer, 2004)
		Consideration given to potential integration with other activities	(Petts et al., 2003)
		Ambition to adopt decision outcomes by sponsoring organisation	(Benson et al., 2014)
		Commitment of sponsoring organisation	(Laurian & Shaw, 2009; Conrad et al., 2011)
		Capacity of sponsoring organisation to implement decision	(Laurian & Shaw, 2009)
		Outcome accountability	(Blackstock et al., 2007; Clarke, 2008; Conrad et al., 2011; Rauschmayer & Wittmer, 2006)
		Identification of barriers to distribution of participant interests	(Webler & Tuler, 2000)
		Legality	(Leach, 2006)
		Sensitivity of approach to decision-failures	(Rauschmayer & Wittmer, 2006)
		Equality	(Benson et al., 2014)
		Power transfer	(Benson et al., 2014)

		Shared decision-making power	(Laurian & Shaw, 2009)
		Process focused on the common good	(Carr & Halvorsen, 2001)
		Continuity of participation	(Bickerstaff & Walker, 2001; Clarke, 2008; Conrad et al., 2011)
Purpose	Establishment of clear purpose and that is agreed within the commissioning body (including all of those with an interest or influence over the process) providing a reference point throughout the process	Clear, feasible goals	(Conley & Moote, 2003)
Who participates	Identification of participants and the process by which they are selected	Representativeness	(Aldred & Jacobs, 2000; Benson et al., 2014; Bickerstaff & Walker, 2001; Blackstock et al., 2007; Carnes et al., 1998; Carr & Halvorsen, 2001; Chilvers, 2008; Clarke, 2008; Conley & Moote, 2003; Conrad et al., 2011; Laurian & Shaw, 2009; Ozerol & Newig, 2008; Petts & Leach, 2000; 2001; Leach, 2006; Petts et al., 2003; Rauschmayer & Wittmer, 2006; Rowe & Frewer, 2000; Rowe & Frewer, 2004; Rowe & Frewer, 2005; Tuler & Webler, 1999; Webler & Tuler, 2010; Webler & Tuler, 2001)
		Systematic identification of all stakeholders	(Conrad et al., 2011)
Outputs	Definition of the tangible outputs / products required from the process	Generated a substantive output	(Kallis et al., 2006)
Outcomes	Identification and agreement of desired outcomes	Conflict resolution	(Beierle, 1999; Blackstock et al., 2007; Conley & Moote, 2003; Kallis et al., 2006; Laurian & Shaw, 2009; Petts & Leach, 2000; Petts, 2001; Petts et al., 2003; Webler & Tuler, 2000)

	Capacity building - public	(Bickerstaff & Walker, 2001; Blackstock et al., 2007; Blackstock et al., 2007; Clarke, 2008; Conley & Moote, 2003; Laurian & Shaw, 2009; Ozerol & Newig, 2008; Petts et al., 2003; Petts & Leach, 2000; Leach, 2006; Rauschmayer & Wittmer, 2006; Tuler & Webler, 1999; Webler & Tuler, 2001)
	Participant trust (of institution)	(Aldred & Jacobs, 2000; Beierle, 1999; Benson et al., 2014; Carnes et al., 1998; Conley & Moote, 2003)
	Social learning	(Beierle, 1999; Benson et al., 2014; Bickerstaff & Walker, 2001; Blackstock et al., 2007; Chilvers, 2008; Clarke, 2008; Conley & Moote, 2003; Kallis et al., 2006; Petts et al., 2003; Rauschmayer & Wittmer, 2006; Tuler & Webler, 1999; Webler & Tuler, 2000; Webler & Tuler, 2001)
	Outcome cost-effectiveness	(Beierle, 2002; Carnes et al., 1998)
	Distributive justice	(Beierle, 2002; Blackstock et al., 2007; Carnes et al., 1998; Conley & Moote, 2003; Laurian & Shaw, 2009)
	Consensus building	(Conley & Moote, 2003; Laurian & Shaw, 2009; Kallis et al., 2006; Petts & Leach, 2000; Petts, 2001; Petts et al., 2003; Santos & Chess, 2003; Webler & Tuler, 2000)
	Development of shared vision	(Blackstock et al., 2007; Conley & Moote, 2003)
	Comfort	(Halvorsen, 2001)
	Satisfaction	(Halvorsen, 2001)
	Convenience	(Halvorsen, 2001)
	Raise public awareness	(Rowe & Frewer, 2005)
	Enhances institutional credibility	(Petts et al., 2003)
	Promotes trust in	(Petts et al., 2003)

		decisions made by institutions	
		Participant enjoyment	(Petts et al., 2003)
		Sponsoring organisation objectives met	(Carnes et al., 1998)
		Participants recognise changes resulting from participation	(Blackstock et al., 2007)
		Participation improved substantive quality of decisions	(Beierle & Konisky, 2000)
		Outcomes are to environments benefit	(Carnes et al., 1998; Conley & Moote, 2003)
		Outcomes are to the publics benefit	(Petts & Leach, 2000; Petts, 2001)
		The process led to an improvement in the public availability of info	(Petts et al., 2003)
		Agency is aware of public views, concerns, and preference	(Laurian & Shaw, 2009; Carnes et al., 1998)
Context	Understanding of the wider operating landscape including the decision-making environment; history; characteristics and capabilities of participants; and other relevant activities	Context	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Petts et al., 2003; Rauschmayer & Wittmer, 2006)
		Capacity of participants to participate	(Aldred & Jacobs, 2000; Blackstock et al., 2007; Conrad et al., 2011);
			(Blackstock et al., 2007)

Table 2-2 Detailed design phase of participative planning and decision-making processes: criteria of effectiveness

DETAILED DESIGN PHASE - Stages	Stage description (Adapted from Involve, 2005)	Criteria reported in evaluation literature	References
Set up planning group	Establishment of a formal planning group to promote success of participative planning and decision-making approach	Clear accountability for the process	(Blackstock et al., 2007; Conrad et al., 2011)
		Leadership	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Blackstock et al., 2007)
		Capacity of experts, organisers and officials	(Petts et al., 2003; Conrad et al., 2011)
		Agency and officials seen as legitimate by participants and general public	(Laurian & Shaw, 2009)
		Outcome accountability	(Blackstock et al., 2007; Clarke, 2008; Conrad et al., 2011; Rauschmayer & Wittmer, 2006)
Define and agree project plan	Establish detailed design including timeline, budget, actions, mechanisms to be used	Cost effectiveness	(Beierle, 1999; Blackstock et al., 2007; Chilvers, 2008; Frewer et al., 2000; Rauschmayer & Wittmer, 2006; Rowe & Frewer, 2004; Rowe & Frewer, 2000)
		Adequate time within process	(Chilvers, 2008; Petts et al., 2003; Conrad et al., 2011)
		Mechanism choice	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Bickerstaff & Walker, 2001; Benson et al., 2014; Conrad et al., 2011; Frewer et al., 2000; Petts et al., 2003; Rowe & Frewer, 2000; Rowe & Frewer, 2004; Tuler & Webler, 1999; Webler & Tuler, 2001)
		Adequate financial resources committed to process	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Blackstock et al., 2007; Frewer et al., 2000; Ozerol & Newig, 2008; Petts et al., 2003); Rowe & Frewer, 2004
		Task definition	(Conley & Moote, 2003); Rowe & Frewer, 2004; Rowe & Frewer, 2000)
		Consistent practices	(Conrad et al., 2011)

		Early participant involvement	(Bickerstaff & Walker, 2001; Conrad et al., 2011; Frewer et al., 2000; Ozerol & Newig, 2008; Rowe & Frewer, 2000; Rowe & Frewer, 2004)
		Adequate time made available to participants	(Petts et al., 2003; Webler & Tuler, 2000; Conrad et al., 2011)
Logistics	Arrange the content of the participative activity(ies); design of the briefing materials, organise venues; recruitment and other practical issues	Adequate access to information	(Aldred & Jacobs, 2000; Beierle, 2002; Blackstock et al., 2007; Chilvers, 2008; Conrad et al., 2011; Frewer et al., 2000; Kallis et al., 2006; Laurian & Shaw, 2009; Petts & Leach, 2000; Petts, 2001; Petts et al., 2003; Rowe & Frewer, 2000; Rowe & Frewer, 2004; Tuler & Webler, 1999; Webler & Tuler, 2000; Webler & Tuler, 2001)
		Participant input into design of participative process	(Aldred & Jacobs, 2000; Beierle & Konisky, 2000; Beierle & Konisky, 2000; Beierle & Konisky, 1999. Blackstock et al., 2007; Laurian & Shaw, 2009; Petts & Leach, 2000; Petts et al., 2003; Rowe & Frewer, 2004; Rowe & Frewer, 2005; Santos & Chess, 2003; Tuler & Webler, 1999; Webler & Tuler, 2000; Webler & Tuler, 2001)
		Mechanism choice	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Bickerstaff & Walker, 2001; Benson et al., 2014; Conrad et al., 2011; Frewer et al., 2000; Petts et al., 2003; Rowe & Frewer, 2000; Rowe & Frewer, 2004; Tuler & Webler, 1999; Webler & Tuler, 2001)
		Independence	(Aldred & Jacobs, 2000; Chilvers, 2008; Conrad et al., 2011); (Frewer et al., 2000; Laurian & Shaw, 2009; Leach, 2006; Rowe et al., 2004; Rowe & Frewer, 2000);
		Comfort	(Halvorsen, 2001)
		Convenience	(Halvorsen, 2001)
		Adequate analysis undertaken during process by participants and institution (inclusive of legal issues, regulation, fact checking and of the consistency, validity, uncertainty of	(Petts et al., 2003; Rowe & Frewer, 2005; Webler & Tuler, 2000; Webler & Tuler, 2001; Tuler & Webler, 1999; Conley & Moote, 2003; Conrad et al., 2011)

content)	
Choice of location, times, venues undertaken with due regard to local circumstances and participant preferences	(Petts et al., 2003)
Adequate notice given to participants of the dates and times of any event	(Petts et al., 2003; Conrad et al., 2011)
Responsive to necessary participant representation if identified	(Petts et al., 2003)
Accessibility of process	(Santos & Chess, 2003; Rowe & Frewer, 2005; Conley & Moote, 2003; Leach, 2006)
Task definition	(Conley & Moote, 2003; Rowe & Frewer, 2004; Rowe & Frewer, 2000);
Ability to facilitate convergence or illustrate diversity	(Rauschmayer & Wittmer, 2006; Petts & Leach, 2000; Petts, 2001; Kallis et al., 2006)
Complexity and uncertainty are able to be accounted for	(Rauschmayer & Wittmer, 2006)
Sponsoring organisation responsive to missing, insufficient or unavailable information required as part of process	(Petts et al., 2003)
Opportunity for participants to engage in the problem scoping	(Petts et al., 2003)
Consistent practices	(Conrad et al., 2011)

		Effective deliberation	(Aldred & Jacobs, 2000; Beierle, 1999; Beierle & Konisky, 2000; Beierle & Konisky, 1999; Benson et al., 2014; Bickerstaff & Walker, 2001; Carr & Halvorsen, 2001; Kallis et al., 2006; Laurian & Shaw, 2009; Leach, 2006; Petts & Leach, 2000; Petts, 2001; Petts et al., 2003; Rowe & Frewer, 2005; Santos & Chess, 2003; Webler & Tuler, 2000; Webler & Tuler, 2001)
		Opportunity for participants to challenge experts	(Webler & Tuler, 2000; Petts & Leach, 2000; Petts, 2001)
		Participant access to expertise	(Chilvers, 2008); Petts et al., 2003; Rowe & Frewer, 2004)
		Task definition understood by public	(Laurian & Shaw, 2009)
		Coproduction of knowledge	(Kallis et al., 2006)
		Participant understanding of issues and implications	(Carnes et al., 1998)
Communications	Establishing communication requirements and methods throughout process	Transparency	(Bickerstaff & Walker, 2001; Blackstock et al., 2007; Chilvers, 2008; Bickerstaff & Walker, 2005; Blackstock et al., 2007; (Chilvers, 2008; Conley & Moote, 2003; Conrad et al., 2011; Frewer et al., 2000; Laurian & Shaw, 2009; Leach, 2006; Petts & Leach, 2000); Petts et al., 2003; Rauschmayer & Wittmer, 2006; Rowe & Frewer, 2000; Rowe & Frewer, 2004)
		External communication i.e. those not directly involved	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Ozerol & Newig, 2008; Petts et al., 2003; Rowe & Frewer, 2005; Conrad et al., 2011)
		Participant feedback	(Bickerstaff & Walker, 2001; Petts et al., 2003; Conrad et al., 2011)
		Evaluation results shared with participants	(Petts et al., 2003)
Plan follow-up	Identify how the results (outputs) will be used and	N/A	N/A

activities	how success will be measured		
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Table 2-3 Institutional response phase of participative planning and decision-making processes: criteria of effectiveness

INSTITUTIONAL RESPONSE PHASE	Stage description (Adapted from Involve, 2005)	Criteria reported in evaluation literature	References
Institutional response	The institutions response to the outputs generated in the participative process i.e. how they are used and incorporated	Transparency	(Bickerstaff & Walker, 2001; Blackstock et al., 2007; Chilvers, 2008; Bickerstaff & Walker, 2005; Blackstock et al., 2007; (Chilvers, 2008; Conley & Moote, 2003; Conrad et al., 2011; Frewer et al., 2000; Laurian & Shaw, 2009; Leach, 2006; Petts & Leach, 2000); Petts et al., 2003; Rauschmayer & Wittmer, 2006; Rowe & Frewer, 2000; Rowe & Frewer, 2004)
		External communication i.e. those not directly involved	Beierle & Konisky, 1999; Beierle & Konisky, 2000; Ozerol & Newig, 2008; Petts et al., 2003; Rowe & Frewer, 2005; Conrad et al., 2011)
		Participant feedback	(Bickerstaff & Walker, 2001; Conrad et al., 2011; Petts et al., 2003)
		Consideration given to potential integration with other activities	(Petts et al., 2003)
		Successful integration of different knowledge types in process	(Rauschmayer & Wittmer, 2006; Kallis et al., 2006)
		Legality	(Leach, 2006)
		Consistent practices	(Conrad et al., 2011)
		Decision responsiveness	(Petts et al., 2003); (Laurian & Shaw, 2009)
		Value of participant contribution i.e. new info / ideas / innovative contribution/ thoughtful	(Beierle, 2002; Carnes et al., 1998; Petts et al., 2003)

Key decisions are influenced by the public / local knowledge	(Blackstock et al., 2007; Frewer et al., 2000; Petts & Leach, 2000; Laurian & Shaw, 2009)
Adequate weighting given to public views in decision-making process	(Conrad et al., 2011)
Decision outcomes are adopted by sponsoring institution	(Benson et al., 2014; Laurian & Shaw, 2009)
Ambition to adopt decision outcomes by sponsoring organisation	(Benson et al., 2014)
Commitment of sponsoring organisation	(Laurian & Shaw, 2009; Conrad et al., 2011)
Capacity of sponsoring organisation to implement decision	(Laurian & Shaw, 2009)
Output impact on policy	(Rowe & Frewer, 2005; Rowe & Frewer, 2000)

Table 2-4 Evaluation of participative planning and decision-making processes: criteria of effectiveness

EVALUATION PHASE	Stage description (Adapted from Involve, 2005)	Criteria reported in evaluation literature	References
Evaluation	Evaluation of the participative process deployed, the outputs generated and the outcomes achieved	Sponsoring organisation objectives met	(Carnes et al., 1998)
		Participants recognise changes resulting from participation	(Blackstock et al., 2007)
		Participants perceived their impact on the decision making outcome	(Beierle & Konisky, 1999; Beierle & Konisky, 2000)
		Participation improved substantive quality of decisions	(Beierle, 1999)
		Key decisions are improved by the public	(Carnes et al., 1998)
		Perceived quality of decision-making outcome	(Benson et al., 2014; Bickerstaff & Walker, 2005)
		Evaluation of process i.e. for future improvements	(Kallis et al., 2006; Petts et al., 2003)
		Evaluation of outcome implementation	(Laurian & Shaw, 2009)
		Evaluation results shared with participants	(Petts et al., 2003)
		Process legitimacy	(Blackstock et al., 2007; Carnes et al., 1998; Laurian & Shaw, 2009; Rowe & Frewer, 2004; Webler & Tuler, 2001)
		Outcome legitimacy	(Blackstock et al., 2007; Carnes et al., 1998; Laurian & Shaw, 2009; Clarke, 2008)

A key outcome of this exercise was the lack of clear definitions associated with many effectiveness criteria making their interpretation a challenge. In response, where clear commensurability was demonstrated between criteria offered by different authors, these were amalgamated under a single label for clarity. Conversely, where there was uncertainty, the criteria were listed individually and which may account for some observed crossover. Local and universal criteria, as defined earlier in this section, have not been distinguished within this exercise. It is important to note that Table 2-1 to Table 2-4 do not seek to present an idealised set of evaluative criteria instead, it merely re-purposes those presented in the scholarship. Practitioners tasked with the design, deployment and use of participative approaches must determine what criteria apply to the context in which they are working. Finally, this exercise considered only those studies where criteria were stated a priori through the development of evaluative frameworks; with the exceptions of Tuler & Webler, (1999); Webler & Tuler, (2001) and Webler & Tuler, (2000) whereby evaluative criteria are generated as an explicit research finding, it does not reflect the findings of evaluative studies.

As stated earlier, this exercise enabled the identification of theoretical stages of participative process whereby opportunities exist to address reported effectiveness criteria whilst also revealing the stages of the planning process where, arguably, efforts could be best focused. Stages of the process whereby many effectiveness criteria (or those most frequently reported) were associated included: a) the scoping phase, in particular with regards to sufficient resource allocation and level of decision-making power privileged to participants b) deciding who to involve in the participative process with considerable attention to representativeness as a key criteria in determining effectiveness c) establishing the desired outcomes of the exercise, which is perhaps unsurprising given the focus on outcome evaluation across many evaluative frameworks d) the organisation of process logistics with attention to the adequate provision of information and the appropriate choice of participative

mechanism emphasising particularly those adopting deliberative principles and, finally, e) the institutional response, however, the criteria within this stage are particularly broad with many merely attributing an (undefined) use or impact as a criteria of success; the literature reviewed in this exercise did not provide steer as to the process by which its use and impact could best be achieved or the extent to which its impact or use is considered to be effective.

This exercise also performs the useful function of identifying those stages of participative processes whereby few reported effectiveness criteria appear to be commensurate with their aims and thus could be argued to not be widely valued as contributing to the success or effectiveness of these approaches. Firstly, the stage whereby the purpose of adopting participative approaches is established and agreed has, surprisingly demonstrates very few commensurate effectiveness criteria. Whilst the lack of explicit attention to the definition of purpose may be attributable to a considerable focus on process outcomes akin to defining purpose, one might expect that the explicit establishment and agreement of purpose, and its role in providing a 'reference point' throughout the entire process (Involve, 2005) may have featured more strongly particularly given the extensive early efforts of the participative agenda in defining theoretical rationales for its adoption (Reed, 2008; Fiorino, 1990). Secondly, the a priori definition of the nature of the outputs required from participative processes has little been considered. Related to this is the relative lack of attention attributed to mechanism selection when compared to the large participative mechanism literature. Additionally, with a clear preference towards deliberative techniques exhibited in the effectiveness criteria, it exhibits a narrow perspective of effectiveness when considered in the context of the many non-deliberative participative mechanisms presented in the participative mechanism literature as will be discussed further in Section 2.4. Thirdly, the planning of follow-up activities, which is inclusive of the institutional ambition of their treatment and utilisation of outputs resulting from participative processes, has received very little attention. Again, this is surprising given that this step readies the institution for the arrival of participative outputs setting the

foundations for the institutions treatment and response and thus crucial to achieving the outcomes desired. This planning stage is highly linked to the institutional response, a latter stage in the process. Whilst this has received relatively more attention, as has previously been alluded to, effectiveness here is loosely defined. This may be due to the relatively context-specific nature of institutional responses but, given relatively strong literature base on factors that promote or constrain organisational success, the lack of specificity in this area is unwarranted. Finally, the context of participative processes has received little attention in the evaluative criteria. Given the potential importance of context in determining the applicability of participatory outputs (Abelson & Gauvin, 2006) one might expect this to feature more readily in the effectiveness criteria. This exercise therefore enabled the identification of gaps in coverage within the literature and assisted in identifying gaps in the current knowledge.

Reflecting on the findings of this exercise in the context of their institutionalisation of in water utilities in England and Wales, it is possible to isolate areas where further research focus would provide useful insight with respect to the incorporation of customer preferences in determining level of service / water bill trade-offs and the acceptability of investment packages. Firstly, the scant coverage of purpose definition and agreement in the effectiveness criteria outlined above contrasts with the importance placed on purpose (also referred to as rationales or motivations) in the broader participation literature as has been addressed in Section 2.1.1 in response to one of the questions structuring this review. The issue of purpose takes on some significance in the water sector given its regulated nature. In the context of the effective institutionalisation of participative practices in water utilities in England and Wales, the alignment of purpose both between regulators and water utilities and also between practitioners in water utilities would benefit from closer examination, particularly with regards to how this relates to the effectiveness of participative processes will be explored in greater detail in Section 2.3. Secondly, one of the questions this review aims to address is “Is mechanism selection significant in determining the effectiveness of participative

approaches?”. The criteria relating to the effective selection of participative mechanisms (incorporated as part of agreeing the project planning / logistics phases of participative processes) focus heavily on deliberation; consensus and enhancing participative influence inherently privileges higher levels of public involvement such as the high rungs of Arnstein’s ladder including citizen control (Arnstien, 1969). This appears to suggest that mechanism selection is significant in determining effectiveness yet, as outlined in Section 1.4, Ofwat’s approach in favouring direct engagement but with no direct decision-making influence (Ofwat, 2011) reduces the range of mechanisms potentially available to water utilities including many of those that reflect the principles outlined in the effectiveness criteria. The limited view as to successful mechanism selection therefore warrants further exploration of the influence of mechanism selection and design on the outputs they generate as a feature of effectiveness. This will be explored further in Section 2.4. Finally, water utilities have limited experience in responding to the outputs generated by participative approaches as has been recognised in Chapter 1 where institutional barriers to the participative approaches have been recognised. This review posed the question “What factors offer the potential to foster or constrain the use and influence of outputs generated by participative processes in planning and decision-making processes?” Yet, whilst it is acknowledged that the planning and deployment of institutional responses to participative outputs are important in successfully achieving the outcomes desired, the lack of coverage on criteria for the effective planning of institutional responses and a lack of specificity with regards to the their actual deployment provides an agenda for further exploration. This will be addressed further in Section 2.5.

Further examination of the establishment of planning groups may also provide useful insight for water utilities as a result of the introduction of Customer Challenge Groups (CCG) as part of the Price Review planning and decision-making process in England and Wales. Similarly, exploring the evaluation of water utility participative processes (internally and externally) would be very

beneficial. However, again, due to the timing of this research inquiry predominantly falling within the active planning and decision-making period coupled with the political sensitivity around access to CCGs during this time, further exploration of their role and evaluative efforts is unfortunately beyond the scope of the thesis.

A review of literature relating to the importance of motivational clarity (or purpose); the influence of participatory mechanisms and the development of the institutional response will be now be presented in Sections 2.3, 2.4 and 2.5.

2.3 The importance of motivational clarity in the design of effective participative processes

As has been outlined in Section 2.2, a clearly defined and agreed purpose forms a key stage in participative processes (Involve, 2005), yet this is only very briefly eluded to within the literature on effectiveness criteria. There is a lack of explicit treatment within this literature of the purpose of the use of participative processes, in other words the clarity of the motivations underpinning the adoption of participative approaches, yet it has the potential to impact the effectiveness of the entire process. The typology of rationales motivating the adoption of participative approaches and their associated benefits has been outlined in Section 2.1.1 in response to the question ‘What motivates the adoption of participative processes’? Whilst reported frustrations with participative processes outlined in the evaluation literature have been linked to a range of pragmatic attributes promoting and/or constraining the extent to which claimed benefits have been realised, some, however, have argued that a lack of motivational clarity amongst practitioners may also offer an explanation as to the increasing disillusionment with these approaches reported in the empirical literature (Wesselink et al., 2011; Stirling, 2006).

The concepts of 'motivational clarity' (Wesselink et al., 2011) and 'intentionality' (Stirling, 2006) (i.e. the purpose) have been argued to influence choices made throughout all stages of participatory approaches and, ultimately, their contribution to policy and strategy development. A deficiency of motivational clarity amongst practitioners therefore poses the potential to threaten the effectiveness of this process and constrain the potential realisation of their expected benefits. Wesselink et al., (2011) go as far as to say that:

"[I]f...motivational factors are not taken into account then the outcomes may be inappropriate or even detrimental, which undermines the long-term prospects of the participatory agenda" (Wesselink et al., 2011, p.2699).

Despite the importance of clear rationales for the adoption of participative processes in realising the theoretical benefits of public participation, comparatively few studies have explored the rationales adopted by practitioners in planning and decision-making contexts. There are, however, a few notable exceptions. Wesselink et al., (2011) interviewed government practitioners across variant environment policy areas and EU member states, to explore rationales for participation. Their study found that the dominant rationale for participation was instrumental i.e. participation to generate support. Normative and substantive rationales for participation were scarce and, as has been alluded to in Section 2.1.1, their findings supported the generation of a fourth rationale, which they termed 'legalistic'. The motivation, or rationale, in this case is purely tokenistic; a formality in order to meet requirements: e.g. of regulators or legislation. Studies by Bickerstaff & Walker, (2001) and Blackstock & Richards, (2007) generated similar findings in the context of local transport planning, and river basin planning respectively. Instrumental rationales recorded in the study by Bickerstaff & Walker, (2001) draw some parallels with the legalistic rationale observed by Wesselink et al., (2011) yet this distinction is not made. Finally, a study by Cotton & Devine-Wright, (2012) exploring public engagement in electricity network infrastructure planning found that practitioners were positive in their discussions towards public engagement but argue that this represented a "strategic language comprising a rhetorical array of terms reflective of deliberative principles and ideas of public engagement"

(Cotton & Devine-Wright, 2012, p.23). Furthermore, they observed a clear lack of appropriate processes and practices to enable the purpose of participation to which they referred (Cotton & Devine-Wright, 2012).

These findings clearly illustrate that benefits associated with substantive and normative rationales for public participation are, for the most part, not driving practitioners and their associated institutions' decisions to adopt these planning and decision-making approaches. The paucity of observed substantive and normative rationales which reflect the theoretical foundation for participative practice, particularly in water resources management and the broader environmental decision-making literature, and in key legislation such as The Rio Declaration on the Environment and Development (United Nations, 1992); the Water Framework Directive (WFD) (European Union, 2000); the US Federal Clean Water Act (US EPA, 1972) thus consequently presents a significant challenge in advancing the broader ambitions of sustainable development and adapting the impacts of climate change. These findings have been attributed to a dominance of hierarchical frameworks that privilege 'top-down' decision-making processes (Wesselink et al., 2011; Tewdwr-Jones & Allmendinger, 1998). The rationales articulated by practitioners directly responsible for enacting participative decision-making therefore, perhaps reflect less a disregard of the normative and substantive benefits offered by these approaches, and instead reflects their position in the institutional hierarchy and the implicit departure away from established practices these approaches create (Wesselink et al., 2011). The 'dilution' of these motivations among practitioners therefore represents a significant constraint in achieving these benefits particularly having previously acknowledged the critical role rationales plays in shaping the choices taken throughout participatory processes. A greater focus on institutional issues is argued to represent an opportunity for enhancing potential benefit realisation.

2.3.1 Ofwat's motivation for the introduction of participative practice to water utility planning and decision-making

These findings above clearly demonstrate the importance of a clear purpose (or motivation) in achieving anticipated benefits, particularly in hierarchical institutional structures. Addressing these findings in the context of this research, the hierarchical nature of the water and wastewater sector in England and Wales makes motivational clarity particularly important.

As has been outlined in Section 1.4, at PR14 Ofwat have placed greater emphasis on engaging with customers as part of the PR14 methodology. Their rationales for its introduction, outlined in their Customer Engagement Policy Statement (Ofwat, 2011) are broad ranging. They state that customers have professed a desire to “have a voice on all issues that affect their bills” (Ofwat, 2011, p.10) arguably reflecting a normative rationale. This is supported by acknowledging the role of customers in exploring the distributive justice of current decision-making now and in the future (Ofwat, 2011, p.10). They also reflect substantive rationales for greater customer participation in planning and decision-making, recognising that responses to future challenges may require engagement with customers as “participants in innovative and sustainable solutions” (Ofwat, 2011, p.11) and not only as recipients of service. Furthermore, it acknowledges that gaining a greater understanding of different customer views on service priorities and bills will be key in defining future investment responses (Ofwat, 2011). Instrumental rationales are also observed with Ofwat stating that: “less extensive assurance may be needed [in the PR14 pre-qualification review] as long as we have sufficient and quantitative evidence that customers accept the company's business plan” (Ofwat, 2011, p.6). Yet also coupled with statements such as: “they [the water utilities] should not seek simply to establish customer support for the business plans they have already designed. Instead, they should genuinely seek to shape their plans to reflect the desires and needs of current and future customers (Ofwat, 2011, p.15) it suggests Ofwat have multiple motivations for adoption of these practices and

importantly that participative approaches deployed by water utilities will be required to serve multiple functions.

With only two areas identified by Ofwat for necessary demonstration of customer engagement (through the use of Stated Preference surveys to support CBA and Outcome Delivery Incentives (ODIs) and in the demonstration of business plan acceptability) and an overarching steer as to their view of characteristics of good engagement practices, the realisation of their vision for introducing a greater focus on engagement with water and wastewater customers as a central feature of planning and decision-making will, in part, be reliant on water utilities making deliberate choices regarding the design and use of participatory approaches in order to reflect their motivations. Critical will be the translation of these rationales into practical strategies determining the nature of engagement with customers; the contexts believed to offer the most benefits; and, how knowledge (outputs) generated is applied in strategy and business plan development. As has been acknowledged in Section 1.4, with little experience in the deployment of participative processes (although noting some experience in Stated Preference Surveys and other ad-hoc engagement (Ofwat, 2011)) coupled with arguably limited regulatory direction regarding design practices, water utilities with a significant challenge in realising the benefits expected.

The relatively recent legislative shift towards greater participative planning and decision-making in the context of water utility water and wastewater service provision at PR14 provides a unique opportunity to explore the rationales that water utility practitioners have used to determine the choices made in designing, deploying and using public participation in its planning and decision-making. A greater understanding of these rationales may reveal the extent to which they are likely to realise the benefits that are anticipated in wider policy and literature. Furthermore, it may explicate issues that need to be addressed to enable water utilities to more effectively respond to future challenges. It will

also add to current knowledge on this issue within a single organisation or other studies across organisations. A research question to address this inquiry is proposed in Section 2.6.

2.4 The influence of mechanism selection and design in determining the effectiveness of participative approaches

Even the most cursory browse through both the academic and practitioner literature reveals an often confusing array of participative mechanisms ranging from what might be termed traditional such as surveys and focus groups, to more innovative approaches such as consensus conferences and visioning (Petts & Leach, 2000; Bickerstaff & Walker, 2001; Leach & Wingfield, 1999). Table A1-1 in Appendix A reports over 189 of those mechanisms identified in the literature. It is necessary to note that this is simply a list of mechanisms in alphabetical order, it does not seek to characterise mechanisms in any way.

Section 1.1 outlined a range of typologies reported in the literature to assist in the navigation of the field of public participation. These typologies, and others, function largely to assist practitioners in reducing the vast number of mechanisms into more manageable and useful sub-categories simplifying their selections. The significant focus on typology development to assist in mechanism selection and their popularity in practice (particularly noting Rowe and Frewer's 'communication flow' (Rowe & Frewer, 2000; Rowe & Frewer, 2005; Ozerol & Newig, 2008; Abelson & Gauvin, 2006; Abelson et al., 2007; Duram & Brown, 1999; Conklin et al., 2010; Klenk & Hickey, 2011) and Arnstein's 'ladder of participation' (Arnstien, 1969; Amerasinghe et al., 2008; New Economics Foundation, 1998) could be argued to suggest that mechanism selection is a significant factor in determining the effectiveness of participative approaches. The review of the effectiveness criteria presented in the public participation evaluation literature draws parallels with Arnstein's (1969) typology in that it privileges high levels of participant decision-making power, the

incorporation of deliberation and promotion of consensus building. Yet, when Rowe & Frewer's, (2005) communication flow typology and those promoting consideration of exercise objective (Glass, 1979) are considered relative to the effectiveness criteria whereby there no preferences are exhibited towards higher levels of empowerment, the application of existing effectiveness criteria appear to suggest that one-way communication (Rowe & Frewer, 2005) or objectives around information exchange or support building (Glass, 1979) are likely to be considered ineffective.

A review of examples of public participation mechanisms deployed in academic water and wastewater management literature (See Table 2-5) reveals that, whilst there are examples of mechanisms that incorporate those characteristics considered to promote effectiveness, there are many examples of the use of mechanisms that do not. Notable examples of what may be considered effective mechanism selection include the use of mechanisms such as deliberative visioning, scenario workshops and public meetings. However, as Table 2-5 demonstrates, mechanisms that could be characterised as 'consultative' (i.e. surveys and focus groups) or as 'information provision' (i.e. newsletters or radio advertisements) have also been widely employed.

Table 2-5 Participative mechanisms employed in water and wastewater management

Participative mechanism	Reference
Citizen Jury	(Aldred & Jacobs, 2000; Alvarez-Farizo & Hanley, 2006);
WTP	(Alvarez-Farizo & Hanley, 2006; Hensher et al., 2005)
Interviews	(Chenoweth et al., 2010)
Focus groups	(Chenoweth et al., 2010; Lennox et al., 2011; Glenk & Fischer, 2010)
Deliberative inclusive processes	(Blackstock & Richards, 2007)
Three-stage deliberative group	(Consumer Council for Water, 2008)
Steering groups	(Väntänen & Marttunen, 2005)
Survey	(Väntänen & Marttunen, 2005; Duram & Brown, 1999; Gilbertson et al., 2011; Al-Ghuraiz & Enshassi, 2006; Glenk & Fischer, 2010; Arthur et al., 2009)

Dialogue	(Väntänen & Marttunen, 2005)
Theme interviews	(Väntänen & Marttunen, 2005)
Public meeting	(Väntänen & Marttunen, 2005)
Workshops	(Väntänen & Marttunen, 2005)
Discussion groups	(Doron et al., 2011)
Multi-criteria evaluation/analysis	(De Marchi et al., 2000; Hajkovicz & Collins, 2007)
Newsletters	(Duram & Brown, 1999; Friend & Coutts, 2006)
Videos	(Duram & Brown, 1999)
Pamphlet	(Duram & Brown, 1999)
Door-to-door contact	(Duram & Brown, 1999)
Information programme	(Duram & Brown, 1999; Friend & Coutts, 2006)
Public workshop	(Friend & Coutts, 2006)
Fuzzy cognitive maps	(Giodano et al., 2005)
Scenario workshops	(Hatzilacou et al., 2007; Kallis et al., 2006)
Radio	(Howarth & Butler, 2004)
Newspapers	(Howarth & Butler, 2004)
Posters	(Howarth & Butler, 2004)
Mail	(Howarth & Butler, 2004)
Meditated modelling	(Kallis et al., 2006)
Social multi-criteria modelling	(Kallis et al., 2006)
Deliberative visioning	(Kallis et al., 2009)
Deliberative multi-criteria evaluation	(Lennox et al., 2011)
Evaluative criteria assessment	(Lennox et al., 2011)
Participatory Action Research	(Mackenzie et al., 2012)

Further evidence for the use of what may be considered 'ineffective' mechanism selection is also demonstrable in a review of mechanisms employed by Water Utilities in England and Wales at the 2009 Price review (PR09) and the 2014 Price Review (See Table A2-1 in Appendix A). Participative mechanisms reported to have been used at PR09 appear to be constrained to a limited set of mechanisms centred around focus groups, quantitative surveys and Stated Preference surveys (more widely referred to in Water Utility literature as Willingness-to-Pay surveys) with limited variation between water utilities, which arguably reflects a dominance of consultative methods. With few notable

exceptions including the use of panel meetings and workshops suggestive of higher levels of participation (Arnstien, 1969) and two-way communication flow (Rowe & Frewer, 2005) the majority of these mechanisms exhibit few of the characteristics outlined in the effectiveness criteria. This contrasts significantly with participative mechanisms reportedly deployed at PR14. Firstly, whilst those mechanisms employed at PR09 continue to feature strongly, there is a much greater range of participative mechanisms used across the sector (i.e. across all three categories of Rowe & Frewer's, (2005) typology). Secondly, whilst the range of participative mechanisms used across the sector has increased significantly, the functional equivalence of these mechanisms in some cases is unclear making it difficult to understand the actual level of variation in the mechanisms deployed (Rowe & Frewer, 2005). For example, how do deliberative forums and deliberative workshops differ and is one more effective than the other? Finally, the number of different mechanisms employed by each water utility has increased significantly. This may be a genuine reflection of the aims and variety of contexts and needs of the business in their decision-making processes and therefore the use of many mechanisms to maximise effectiveness (Green, 2007). However, it could also be a reflection of uncertainty regarding how best to enact their aims in light of Ofwat's requirement for the demonstration of such practices particularly as water utilities have little history in designing and deploying these types of mechanisms (Rowe & Frewer, 2000). With no literature available in the public domain on the rationales employed in mechanism selection it is difficult to accurately understand the motivations for water utility choices. However, what the comparison of mechanisms employed between PR09 and PR14 does demonstrate is that water utilities clearly consider them to represent a significant feature of presenting a 'successful' planning and decision-making process with the aim of gaining regulatory support.

On the process of mechanism selection (as opposed to characteristics of effective mechanisms), the public participation evaluation literature is relatively scant in detail. The literature reflects some agreement in that, whilst mechanism

selection is not a central determinant of overall participatory planning and decision-making process effectiveness, (as demonstrated by the sheer range of additional criteria identified) Rowe & Frewer, 2005); it does exert significant influence over the extent to which some benefits (or effectiveness criteria) are achieved relative to others (Chess & Purcell, 1999). It also acknowledges the interaction between participative mechanisms characteristics and contextual characteristics with the latter exerting both fostering and inhibitive influences with regards to the effectiveness of participative mechanisms (Abelson et al., 2007; Reed, 2008; Rowe & Frewer, 2000). So with mechanism selection and design demonstrated as important in theory through a focus on typology development coupled with water utilities demonstrating their practical response to the participative agenda through deployment of increasingly variant and greater number of participatory mechanisms, it is clear that participative mechanism selection and design is considered a key response for the promotion of successful practices for participative planning and decision-making. With constraints on the usefulness of evaluation literature in this context, and yet with the influence of mechanism selection in promoting some benefits over others acknowledged, it is clear that understanding how best to select and design mechanisms relative to the planning and decision-making context is an important practice. Key considerations extracted from the broader participation literature include: a) the need to fully understand the key characteristics of mechanisms (Rowe & Frewer, 2000) b) the importance of clarity with regards to the goals and purpose of the exercise (as emphasised in Section 2.3) and how this relates to the context in which the exercise is being undertaken (Glass, 1979; Newig et al., 2008) c) the need to carefully match the mechanism to the purpose of the planning and decision-making context including the level of participant involvement this requires (Reed, 2008; Glick, 2000; Fish et al., 2011; Lynam et al., 2007; Newig et al., 2008). For example, if the decisions being made are knowledge based then higher levels of participant involvement may not be required whereas in value-decisions then this may be more desirable (Rowe & Frewer, 2000) d) to consider the broader factors such as information requirements, the resource availability and timing in the planning

and decision-making process (as outlined in Table 2-2) in their selection decisions (Amerasinghe et al., 2008; Reed, 2008; New Economics Foundation, 1998) e) explore the potential of mixing methods to meet objectives (Petts & Leach, 2000; Rowe & Frewer, 2000; Bherer & Breux, 2012).

So, to address the question posed in this literature review: Is mechanism selection and design influential in determining the effectiveness of participative approaches? The literature relating to the effectiveness of participatory approaches suggests that mechanisms selection and design should privilege deliberative and high levels of participant power in order to maximise the effectiveness of participative processes. Literature focused on the practice of mechanism selection, however, adopts a more pragmatic approach suggesting that effective participative processes are achieved as a result of the relationships between the mechanisms selected, the process objectives and contextual issues. The use of multiple methods is also proposed in the literature where considered to offer potential to maximise achievement of process objectives. But, whilst it promotes this practice, the significance of mechanism selection and design where multiple mechanisms are utilised in a single planning and decision-making process has been little considered. With water utilities demonstrating the adoption of these practices (the use of multiple mechanisms) in their regulatory planning and decision-making practices (arguably a single planning and decision-making process) as demonstrated in Table A2-1 in Appendix A, the literature offers little practical insight. Of particular interest is whether the selection of one mechanism over another has the potential to impact the participant responses achieved, as it poses potential for the introduction of significant complexity into the application of this knowledge in the development of planning and decision-making responses. Comparative studies of this nature have not been identified in the literature despite greater calls for such studies (Bayley & French, 2008; Abelson & Gauvin, 2006). A greater understanding of the finer dynamics of mechanism selection and design may provide practitioners, in the water sector but also in other sectors, with greater confidence in their selections. Furthermore, it may

contribute to addressing the gap in understanding about its influence on outputs from these mechanisms particularly where multiple mechanisms are employed.

2.5 Factors promoting or constraining the use and influence of outputs generated by participative processes in planning and decision-making processes

This review aimed to explore factors affecting the effective institutionalisation of participative practices in water utility planning and decision-making. In response to a potential lack of water utility experience in using these types of outputs in planning and decision-making practices for the delivery of water and wastewater services as recognised in Chapter 1, this review aimed to address the question: what factors offer the potential to foster and constrain the use and influence of outputs generated by participative approaches in planning and decision-making processes? Sections, 1.1, 2.2, 2.3, and 2.4 have outlined the current scholarship relating to motivations for the adoption of these practices, the view as to what constituted effective participative processes and the influence of mechanism selection, all which may function to foster or constrain the use and influence of participative processes.

The review of effectiveness criteria in Section 2.2 highlighted the lack of attention given to the planning of how participative outputs were to be used and the clarification of the institutional ambition with regards to their influence in planning and decision-making. In the context of this inquiry it was argued that criteria relating to the institutional response (i.e. how the institution utilised outputs in their planning and decision-making) were too broad and loosely defined providing limited guidance to practitioners. To illustrate this, some of the themes considered to drive effective practices in this phase of participative planning and decision-making as outlined in Table 2-3 included: a) transparency b) integration with other activities c) consistency of practices d) successful integration of different knowledge types e) ensuring influence of public input

(also referred to as local knowledge) through assigning it an appropriate weighting, f) the capacity of the organisation, their commitment to the process and the value attributed to local knowledge and f) ensuring that the outputs impact planning and decision-making responses.

The deployment of participative mechanisms by water utilities as part of their regulatory planning and decision-making processes, poses potential for the generation of new forms of knowledge the likes of which most practitioners will be unaccustomed to dealing with and may introduce new complexities to their established planning and decision-making practices. Whilst participative mechanisms have been a major focus in the literature, Fazey et al, (2005) argue that the resulting accumulation of knowledge represents only the first step towards the utilisation of this in planning and decision-making; its existence does not necessarily guarantee its incorporation or use (Elton & Wolfe, 2012). The appropriate management of this knowledge by water utilities, therefore, holds significant potential to foster or constrain its effective incorporation, and is thus key to facilitating its influence and impact in planning and decision-making practices and response development (Fazey et al., 2012). The knowledge management literature offers potential useful insight in how institutional practices can promote more effective planning and decision-making responses.

To better understand the current thinking on knowledge management, it is first necessary to consider what is considered to constitute 'knowledge'. It is presented in the literature as distinct from data and information and that it can be held in a variety of forms. Primary definitions and terms adopted for the description and categorisation of knowledge in the literature are summarised in Table 2-6 though noting that this is by no means an exhaustive list (See Raymond et al., (2010) for an in-depth summary of all sub-types).

Table 2-6 Types and forms of knowledge outlined in the literature (Adapted from (Reed et al., 2013; Roux et al., 2006; Raymond et al., 2010; Fazey et al., 2005; Fazey et al., 2006; Maiello et al., 2013))

Data	Raw numbers or facts
Information	Data that has been organised i.e. through processing, analysis and / or interpretation
Knowledge	Information that is known by an individual or a group. It is a mix of experiences, values, context and intuition that form a framework by which an individual or a group evaluate and incorporate new experiences and information
Tacit	Unconscious knowledge (i.e. knowledge that we hold but are not aware of) that is difficult to articulate but has a significant impact on both behaviour and thought processes
Implicit	Tacit knowledge that can be articulated but is not in a form that is accessible to others
Explicit	Articulated or codified knowledge i.e. through reports etc. and is accessible by others
Expert	A depth of experience developed as a result of many years of practice within institutionalised contexts and through formalised procedures. Much of this knowledge is tacit some of which can be made explicit. Their knowledge allows them to recognise issues that are not easily recognised by others and enables them to reason and solve problems but can mean that their flexibility can vary
Lay	Non-expert or informal knowledge that is implicit and reflective of situational interpretation of circumstances and relationships. This 'lay' knowledge is held by those who are not practitioners of specific sectors, theory or practice.

Management of these forms of knowledge has been conceptualised in a number of ways in the literature. Horlick-Jones et al., (2007) presents a process of knowledge 'translation' through stages of gathering, presenting, disputing and agreeing, framing and re-framing before use. Whilst Reed et al., (2013) further expands this concept to include the treatment of both new and existing knowledge referring to it as a process of generating, storing, circulating new knowledge whilst identifying combining and applying existing knowledge to achieve specific objectives. These concepts reflect more recent themes within the literature of 'knowledge exchange' and 'knowledge generation/co-generation' which describe iterative processes of knowledge sharing and use and collaboration between users and producers of knowledge as more effective modes of knowledge management (Reed et al., 2013; Fazey et al., 2012).

These modes have built on the earlier theme of knowledge transfer which implies a linear transmission of knowledge from producers to users (Reed et al., 2013) i.e. from those that hold this knowledge to those that do not (Partidario & Sheate, 2013). Implicit in this mode, however, is the view that knowledge is both explicit and 'inert' which is counter to more recent thinking both with regard to how knowledge is generated and shared and is more effectively conducted through conceptualising it as a social process (Fazey et al., 2012; Elton & Wolfe, 2012).

Using these models to consider the use of participatory approaches in planning and decision-making it could be described as the process of eliciting, combining and building on tacit, implicit and explicit knowledge from both the public (lay knowledge) and practitioners (typically expert knowledge) to generate new knowledge enabling the development of more effective strategies and interventions (Roux et al., 2006). The management of information and knowledge throughout this process suggests the need for modes of knowledge exchange (Jinnings et al., 2007) as the adoption of management modes more akin to knowledge transfer may fail to account for plurality of knowledge available (Fazey et al., 2012). However, the dynamic and complex nature of these processes is acknowledged in the literature Dalcanale et al., (2011) and as is recognised by Fazey et al., (2012), remain poorly understood with respect to their application in different contexts.

Water utilities present challenging environments in which to manage knowledge; reflecting back to Sections 1.2.2 and 1.4, they typically reflect large, hierarchical organisations incorporating practitioners across a range of functional areas with variant (although predominantly technical or engineering based) expertise and backgrounds, and planning and decision-making is often conducted at a regional scale resulting in the delivery of a regional service package incorporating multiple yet distinct attributes. The incorporation of participatory processes as part of planning and decision-making in water utilities

in England and Wales could be argued to further add to this complex knowledge management context. Gaining a greater understanding with regards to how knowledge generated by participative processes can be best managed in these organisations presents the opportunity for customer views and preferences to a) be incorporated in planning and decision-making processes and b) influence the future direction of strategic delivery of water and wastewater services in response to future management challenges. A review of the scholarship reveals coverage of factors that foster or constrain the use and influence of knowledge in complementary contexts but reflects little coverage with respect to the operation of knowledge management processes within water utilities. Literature from NRM, utility and local government planning contexts will be further reviewed in order to establish the current views as to the conditions, processes and practices potentially fostering or constraining the acquisition, distribution and utilisation of knowledge in planning and decision-making.

The factors identified in both Table A3-1 in Appendix A and Figure 2.2 have been generated from across a range of NRM disciplines including: environmental management (Fazey et al., 2012; Maiello et al., 2013; Raymond & Robinson, 2013; Newig et al., 2008); Wetland management (Fazey et al., 2005; Fazey et al., 2006); Environmental risk management (Johnson & Chess, 2006; Chess & Johnson, 2006); Land management (Phillipson et al., 2012; Reed et al., 2013); conservation management (Sheikheldin et al., 2010); Strategic Environment Assessment (Partidario & Sheate, 2013); ecosystem assessment (Van Wyk et al., 2008); and, finally, water management (Mostert et al., 2010; Pahl-Wostl et al., 2007; Lamers et al., 2010; Von Korff et al., 2012; Dalcanale et al., 2011). Factors from additional disciplines include: local government (Wesselink et al., 2011); Transport planning (Bickerstaff & Walker, 2001) and electricity networks (Cotton & Devine-Wright, 2012). Those studies undertaken in a water management context, which may arguably provide the most value to this inquiry, have predominantly focused on the role of social learning and the factors that foster and constrain these processes (Mostert et al., 2010; Pahl-Wostl et al., 2007). The association of social learning with the

fields of adaptive management and stakeholder participation in responding to increasingly complex and uncertain challenges facing practitioners perhaps accounts for its traction in the field of water management. However, in the context of knowledge exchange, social learning has been promoted as a complimentary process facilitating mutual understanding across pluralistic forms of knowledge and amongst multiple practitioners through ongoing interaction (Collins & Ison, 2010; Reed et al., 2013). The social learning literature in the context of water management therefore offers some useful insights into the conditions that facilitate or hinder more adaptive thinking and behaviors. However, it also recognises that the complex structures and common legacy of 'silo working' promoting caution in its application in this context (Mostert et al., 2010). Furthermore, social learning requires a balance of practitioner decision-making power, which is rarely a reflection of organisational behaviors, particularly in private organisations or government agencies where hierarchical structures dominate (Mostert et al., 2010).

The review of theoretical and empirical literature across those disciplines previously mentioned identified a range of factors identified to foster or constrain the effectiveness of knowledge management. These factors are outlined in Table A3-1. As this demonstrates, there are some similarities between those effectiveness criteria outlined earlier in this section and those reflected in the knowledge management literature. However, it reveals additional factors that warrant greater consideration in order to promote more effective institutional responses to participative outputs. It provides useful insight in to the influence of practitioner and organisation characteristics and behaviors on the effectiveness of knowledge management and thus the potential to foster or constrain effective incorporation of participative outputs in planning and decision-making processes. Figure 2.2 attempts to structure the factors identified in the literature to reflect its potential application to the use of participative outputs within planning and decision-making processes in a single organisation. Reflecting common themes in the literature, practitioners have been characterised as knowledge producers (or generators), knowledge users

(Van Wyk et al., 2008), experts and knowledge brokers. However, in adopting these categories it is recognised that these roles are not necessarily fixed and that practitioners may move between different roles at different stages of the knowledge management process (Reed et al., 2013). The knowledge exchange literature, in particular, privileges significant attention to these roles, and the interaction and relationships between them, moving away from traditional linear models of knowledge transfer that have previously dominated literature in this field. As such, effective knowledge exchange practices necessitate strong relationships, collaborative practices, interactive environments and processes, which privilege the role that practitioner characteristics and behaviors play in the generation and application useable knowledge and in maintaining the strength and continuity of relationships throughout the duration of planning and decision-making processes (Fazey et al., 2005; Elton & Wolfe, 2012; Jolibert & Wesselink, 2012; Newig et al., 2008). It is unsurprising, therefore, that studies have sought to explore the views of practitioners in order to identify practical insights to facilitate improvements to organisational knowledge management practices (Johnson & Chess, 2006; Cotton & Devine-Wright, 2012).

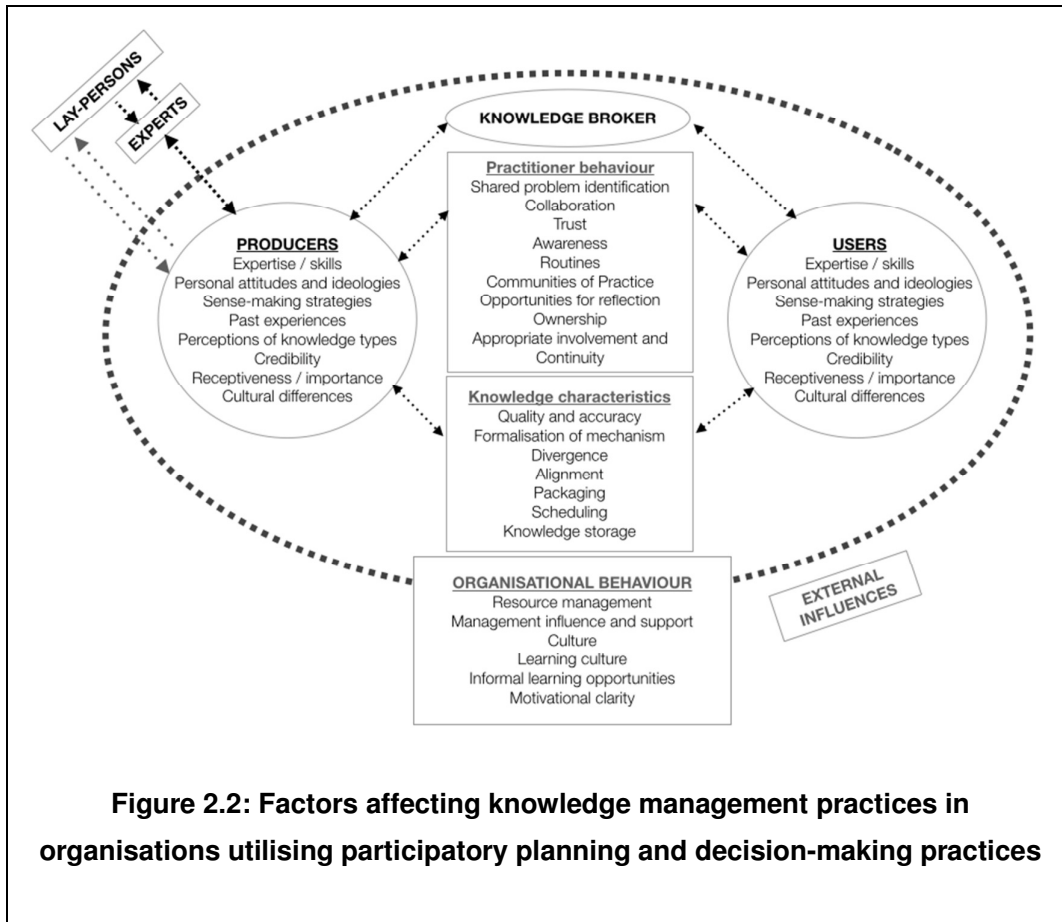


Figure 2.2 also highlights the role that organisations play in provisioning the conditions in which practitioners operate. Studies such as that by Johnson & Chess, (2006) used the ‘organisational lens’ to focus of their study and make a case for a wider adoption of this perspective in knowledge management studies. Many of the studies contributing to the knowledge management literature are the result of analysing knowledge management in formal research contracts (Roux et al., 2006). However, as recognised by Fazey et al., (2012), there is a real need for a greater insight into what can be learned about knowledge management practices in ‘live’ organisational settings to identify functional parallels between this and the existing literature and to identify any additional factors fostering and constraining effective knowledge management in these settings. Where organisational contexts have been used in studies reported in the public participation and knowledge management literature, their

focus is often diverse in nature. For example, Wesselink et al, (2011) interviewed practitioners across water and biodiversity policy institutions and a study by Chess & Johnson, (2006) reports interviewing practitioners across areas as diverse as: communications and legislation; compliance and enforcement; environmental regulation; land use management; natural and historic resources; policy and planning science and site remediation and waste management. Whilst this may offer good coverage of different functions within the business it fails to report whether these variant organisations have a shared planning or decision-making process which would require their mutual involvement in knowledge management and thus offering limited insight regarding explicit processes to manage knowledge flows in these contexts (Chess & Johnson, 2006; Johnson & Chess, 2006; Wesselink et al., 2011). Finally, a knowledge management study exploring institutional factors affecting use of participative outputs in the energy sector (Cotton & Devine-Wright, 2012) found evidence to suggest the use of significant 'political rhetoric' with respect to practitioner view regarding use of these outputs and furthermore, a lack of guiding principles, practices and routines to facilitate its use at an operational level. This provides further support for additional organisational focused research efforts.

Reflecting back of the question motivating this section of the review: What factors offer potential to foster and constrain the use and influence of outputs generated by participative mechanisms in planning and decision-making? This section has focused on exploring insights from the knowledge management literature to address this question. It has presented a range of factors reported in the literature to promote and constrain the effective management of new and existing knowledge, which, in turn, informs the use, and the level of knowledge it may be privileged in planning and decision-making processes.

In acknowledging the relevance of knowledge exchange practices in the context of this research, it has emphasised the key role that the characteristics and

behaviors of practitioners play in knowledge management processes and, as a result of their influence made a case for the use of practitioner-led research in knowledge management studies. It demonstrated the benefits of organisational-focused research efforts and recognised the limitations of the current literature base with respect to its consideration of knowledge management as part of a multi-practitioner organisational planning and decision-making process. Finally, with few examples of studies conducted in the water management field (excluding those focused on social learning) and with no coverage of water utilities identified as part of this review, the literature provides limited insight into knowledge management specifically in water utilities. With water utilities in England and Wales being faced with the task of incorporating lay-knowledge generated through the deployment of participative mechanisms in their planning and decision-making processes, it is proposed that exploring knowledge management practices employed in these organisations will provide critical insight into factors that affect the use and influence of lay knowledge and provide an agenda for the development of future improvements (Fazey et al., 2005).

2.6 Literature review conclusions and Research Questions

This literature review aimed to address four guiding questions based around the research objectives set in Section 1.5. The first question: 'What motivated the adoption of participative approaches?' was addressed in Section 2.1.1. It revealed four theoretical rationales for the adoption of these practices that were well established in the literature described as normative, substantive, instrumental or legalistic in nature. The second question: 'What are characteristics of effective participative practices?' was addressed through an assessment of the public participation evaluation literature and the isolation of criteria of effectiveness. Revealing a significant range of effectiveness criteria, these were mapped on to typical stages of a participative process to reveal which stages were effectiveness criteria were directed. Appraising this in relation to the context of this research enquiry in combination with insights from

broader public participation literature three areas were identified as offering significant promise in promoting the effectiveness of these processes and yet, were little considered in the literature. These included the definition of a clear purpose (akin to motivational clarity), mechanism selection, and the development of the institutional response (i.e. the use and influence of participative outputs); these themes formed the basis of further enquiry.

Related to the first question addressed by this review, but as a result of the review of characteristics of effectiveness, Section 2.3 explored empirical evidence on the motivations for the adoption of participative approaches. It found evidence to suggest the significance of clear motivations in achieving the benefits expected from the use of these approaches in sectors such as transport and local government but no coverage in the context of water utility planning and decision-making. Thus, there is a gap in our understanding relating to how practitioners operating in this context perceive the motivations of public participation and thus the understanding about what drives their choices throughout participatory planning and decision-making processes. Addressing this gap has become increasingly important in adapting practices to the changing nature of water and wastewater management issues and the types of responses that may be required as well as meeting the expectations of regulators. Research Question 1a and 1b propose to respond to this knowledge gap.

The third enquiry presented at the start of this chapter posed the question: Is mechanism selection and design influential in determining the effectiveness of participative approaches? A review of literature across different streams of public participation research revealed contrasting views. A review of the public participation literature and empirical examples of mechanism selection by water utilities appeared to suggest its significance to the theoretical and practical public participation agenda. Yet, a review of the evaluation criteria, explored in addressing the earlier literature review question, suggested that the practical

process of mechanism selection was not highly regarded as promoting effectiveness, but rather mechanism characteristics promoting high levels of deliberation and participant power were expressed as significant. Additional evaluation literature acknowledges the influence of mechanisms selection in promoting relative achievement of some benefits over others and provided key considerations for the practical selection of participative mechanisms. A consideration presented included the use of multiple mechanisms to promote effectiveness. Empirical examples of water utility participative mechanism selection demonstrated the adoption of multiple mechanisms; however, no literature was identified to address the implications of this on the influence of mechanisms selection. In responding to the question posed earlier, the public participation literature does not sufficiently consider the influence of mechanism selection, particularly where there is potential that multiple methods are to be employed in the same planning and decision-making context. A greater understanding of the finer dynamics of mechanism selection in the context may provide practitioners in the water sector, but also more broadly, with greater confidence in their selections and develop improved organisational practices. Research Question 2a is proposed to respond to this knowledge gap.

The final enquiry posed at the start of this chapter question: What factors offer the potential to foster or constrain the use and influence of outputs generated by participative processes in planning and decision-making processes? Section 2.5, presented a review of the knowledge management literature from across a range of NRM and planning contexts and, in doing so identified a range of fostering and constraining factors existing within the literature. A gap in the scholarship was identified with respect to knowledge management practices in organisations conducting NRM planning and decision-making and in particular those practices deployed during live knowledge management processes, particular those in large, complex and hierarchical organisations such as water utilities. Acknowledging the gap in the current scholarship with regards to the management of knowledge generated from participative mechanisms in these

settings, a practitioner-centred approach is proposed to provide useful insight into the types of practices in operation and the factors practitioners consider to promote or constrain their success. Research Question 3a and 3b are proposed to respond to this knowledge gap.

This thesis therefore attempts to contribute to the current scholarship through the development of empirical research that endeavours to address the gaps identified above. These issues are addressed in Chapters 4, 5 and 6. In order to address these knowledge gaps, the following research questions are proposed. The overarching thesis research questions and their link to the research objectives are identified in Table 2-7.

Table 2-7: Thesis objectives and research questions

Research objectives	Research questions
1. To assess the clarity of motivations driving participative practices in water sector planning and decision-making in England and Wales.	a) What do water utility practitioners believe to be the purpose of public participation in water utility planning and decision-making? b) Do water utility practitioner views reveal factors that may promote or constrain greater clarity of motivation?
2. To explore the influence of participatory mechanisms and preference formation on the outputs from participatory mechanisms in water sector planning and decision-making processes in England and Wales	a) Does the type of participative mechanisms influence the outputs these mechanisms generate in terms of the expressed views of customers for water and wastewater services?
3. To explore the use and influence of customer contributions in water sector planning and decision-making	a) What knowledge management processes are in operation in water utility planning and decision-making contexts? b) What factors do water utility practitioners identify as significant in shaping the use and the level of influence outputs of participative mechanisms in planning and decision-making contexts?

2.7 Conclusion

This thesis attempts to address issues relating to the potential role domestic customers and their contributions may play in the development of responses to water and wastewater service delivery challenges in England and Wales. In order to do this it has used the concepts of public participation and knowledge management in the context of water sector in England and Wales. The context of this inquiry required the adoption of an interdisciplinary approach combining issues from the field of water management, NRM with practices from the social sciences. Through contributing to gaps in the knowledge with regards to motivational clarity, participative mechanism selection and knowledge management in the institutionalisation of participative practices in water utility planning and decision-making, this research aims to provide insight assisting water utilities in enabling their practices, and the responses they develop, better respond to and reflect the views of water and wastewater customers and thus improving the potential quality of future management decisions.

3 METHODOLOGY

3.1 Introduction

This thesis is concerned with the exploration of factors that hold the potential to influence the effective institutionalisation of participatory processes in water utility planning and decision-making, as has been discussed extensively in Chapters 1 and 2. The organisational focus of this research presents a number of complexities that have been managed through the deployment of a systematic research methodology. The development of this has required the consideration of the philosophical assumptions underpinning this research inquiry in addition to the range of research approaches, strategies and methods available. Using Figure 3.1 to guide the structure of this Chapter, Section 3.2 outlines the key philosophical issues that underpin the achievement of the objectives of this research. Section 3.3 then assess the research strategy employed within this thesis. A review of the development of the empirical framework adopted in this thesis is then outlined in Section 3.4. Measures taken to ensure the rigour of this research are then outlined in Section 3.5 before a review of research ethics and positionality in Sections 3.6 and 3.7. Section 3.8 provides a critique of the approaches adopted in the thesis before Section 3.9 provides a summary of the main rationale outlined in this Chapter.

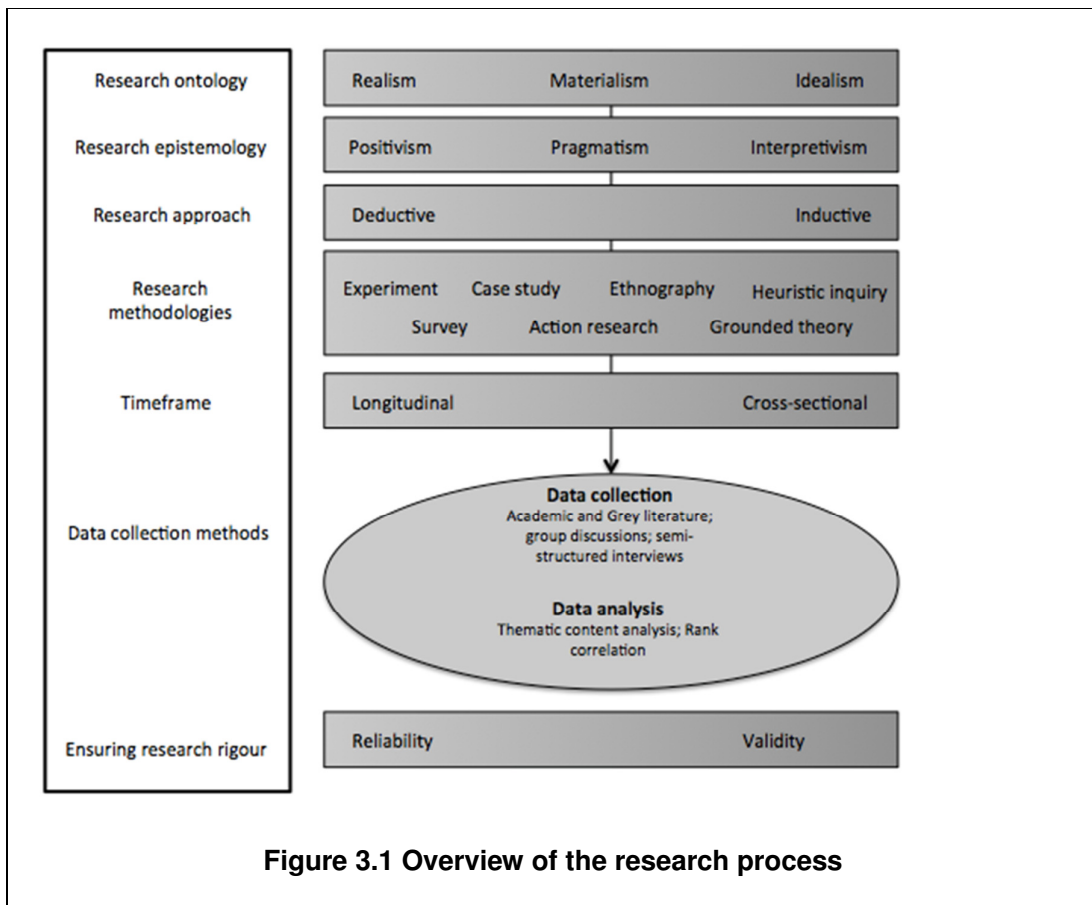
The research questions posed in Table 2-7 are addressed through the deployment of three fieldwork activities:

Study A: The deployment of three participative mechanisms in the context of exploring domestic customer preferences for water and wastewater service delivery in order to evaluate their ability to provide commensurable outputs and thus providing insight into the influence of mechanism design on the outputs of participatory mechanisms. This will be explored further in Chapter 4

Study B: In response to findings generated in Fieldwork A, group discussion sessions were used to explore the influence of bill impact as a feature of

mechanism design on domestic customer preferences for water and wastewater service delivery. This will be explored further in Chapter 5.

Study C: semi-structured interviews were proposed to be conducted with practitioners in water utilities operating in England and Wales to explore: a) their views on the purpose of public participation in water utility planning and decision-making processes and b) the factors that they consider to be significant in shaping the use and influence of participative mechanisms in planning and decision-making contexts. This will be explored further in Chapter 6.



3.2 Nature of this research inquiry and the implications for research philosophy

This section outlines the philosophical principles that underpin this research enquiry, the rationales for the methodological approach adopted and its impact on research activity design.

3.2.1 Nature of this research inquiry

The nature of this research, as has been alluded to in Chapters 1 and 2, is concerned with water utilities and their ability to effectively institutionalise public participation practices as part of the primary planning and decision-making process in England and Wales, the quinquennial Price Review. The organisational focus of this research aligns well with what Gill & Johnson (2002) have described as 'organisational research'; being 'applied' in nature, it focuses on the production of specific outputs specific driven by the needs of the sponsoring organisation whilst also addressing gaps in the current scholarship (Easterby-Smith et al., 2002; Grey, 2009). This type of research is recognised as being particularly challenging. Grey (2009) recognises the typical interdisciplinary nature; the complexities of organisations; potential for specific agendas to be held by organisational practitioners and the potential conflicts which may arise as a result of the exposure of research to the dynamics of day-to-day organisation as factors characterising the challenging nature of this research context.

A systematic approach to research design is promoted to account for the complex and dynamic nature of these research settings to ensure appropriate research design, selection of research approaches and securing quality research outcomes (Easterby-Smith et al., 2002). Emphasised is the need for clearly defined beliefs held by the researcher and channelled into the research design and execution particularly regarding the nature of the research context

and what can feasibly be known about it (ontology); the nature of knowledge and how it can be acquired (epistemology); the purpose and aims of the research; the research audience and also the role of the researcher within the research design (Snape & Spencer, 2003).

3.2.2 Research philosophy

On considering the factors outlined above, it is necessary to briefly outline the philosophical position underpinning this research enquiry; particularly the ontological and epistemological positions realism, materialism and idealism which, as demonstrated in Table 3-1, vary based on their views on the constructions of reality (Snape & Spencer, 2003). Related, but perhaps less extreme positions are also identified within the literature, for example critical or subtle realism (See Maxwell, (2012) for a full discussion).

Table 3-1 Ontological Standpoints(Adapted from Snape & Spencer, (2003)

Ontological standpoint	Definition
Realism	An external reality exists that is independent of social beliefs or understandings
Idealism	Reality is only understandable through the human mind and socially constructed meaning
Materialism	There is a real world but material or physical features present reality

Two established schools of thought exist with respect to epistemology: Positivism and Interpretivism. The factors distinguishing these positions are outlined in Table 3-2.

Table 3-2: Distinguishing features of two influential epistemological positions

(Adapted from Snape & Spencer, (2003))

	Positivism	Interpretivism
Role of the researcher	The world is unaffected by and independent of the influence of the research	The researcher and the world are inter-related and impact upon each other
Legitimacy of knowledge	Facts and values are distinct facilitating objective and value-free inquiry	Facts and values are indistinct and subject to influence by the researchers perspective and values preventing objective value free inquiry, although recognising that the research can provide transparency regarding their assumptions
Knowledge acquisition	Methods typically associated with deductive reasoning are appropriate in application to the study of social phenomena as behaviour can be viewed as 'governed by law-like regularities'	Methods typically associated with deductive reasoning are inappropriate in the application to the study of social phenomena as the world is mediated through constructed meaning which is then explored harnessing participant and researcher understanding

Whilst the ontological and epistemological outlined reflect traditional thinking in research philosophy, pragmatism, as an alternative approach to research design has gained traction in the field of social sciences, particularly where a trans-disciplinary and multi-method approaches are promoted such as that common in organisational research. This standpoint puts a greater focus on the research design (including the selection of suitable research methods) to complement the aims of the research inquiry as opposed to being influenced by the philosophical theory (Seale, 1999).

The organisational context of this research constrains, to some degree, its alignment to a single recognised standpoint. The aim to produce practical insight to specific organisational issues concerning the institutionalisation of participative planning and decision-making approaches in water utilities whereby, quantitative methods are typical (reflecting the legacy of techno-

rationale approaches to planning and decision-making), makes necessary a rigorous strategy of data collection and analysis that is neutral and unbiased and clearly evidences the interpretive stages of the analysis process to ensure its credibility (Snape & Spencer, 2003). Similarly, the nature of the research questions underpinning this study require a research design that is flexible and sensitive to the organisational context in which both water utility practitioners and water customers are rooted. In light of these constraints, this research has adopted philosophical principles from across multiple standpoints.

The ontological stance adopted within this research is compatible with a position described as ‘subtle’ realism (Hammersley, 1992). In other words, it accepts that reality exists independently of an individual’s interpretation and, in rejecting that it is possible to have an objective knowledge of this reality, it subscribes to the idea that knowledge is accessed through socially constructed meanings and that multiple versions of reality may exist for any one phenomenon (Maxwell, 1996; Snape & Spencer, 2003; Hammersley, 1992). It was important, therefore, to ensure that the research methodologies deployed provisioned the revelation of the variation in perspectives enabling a comprehensive understanding of the issue under scrutiny. The epistemological standpoint of this research inquiry drew on principles from across positivism, interpretivism and pragmatism. The relevance of these principles to this research is outlined in Table 3-3.

Table 3-3: Epistemological position and rationale(Adapted from Snape & Spencer, (2003))

Epistemological position	Principles adopted	Rationale
Scientific inquiry	Striving to incorporate objectivity and neutrality as much as possible throughout the research process in order to minimise researcher influence	This research aimed to generate practical organisation-specific outcomes offering potential to impact practice and address strategic policy needs. It required the demonstration of responsible research process design

		<p>acknowledging potential for bias and implementation of mitigation measures.</p> <p>The fulfilment of the thesis research questions required extensive interaction with water utility practitioners and the public posing the potential for researcher influence. Adoption of objective and neutral practices mitigate this influence.</p>
Interpretivism	<p>Adoption of practices which privilege the importance of understanding of an individual's views and values whilst remaining grounded within their own experiences and perceptions of reality</p> <p>Acknowledge that greater clarity of insight can be achieved through the synthesis, comparison and combination of individuals perspectives</p> <p>The use of interpretive tools to ground research findings in a broader context and aid with research accessibility</p>	<p>Understanding the views of practitioners in the context of their role and experiences in water utility organisations was crucial to the contribution of this thesis.</p> <p>Thematic content analysis enabled the synthesis and combination of practitioner perspectives and provided a rich insight of factors that influence effective practices</p> <p>The literature, as outlined in Chapter 2, highlighted the importance of using the insight of practitioners to gain a greater understanding about their roles, experiences, views and perceptions to further understanding of factors that inform the effectiveness of participative approaches</p>
Pragmatism	<p>The belief that research quality and rigour are influenced by the choice of research method which can be constrained through the alignment to a single epistemological perspective</p>	<p>The research questions that this thesis attempt to address do not align to a single epistemological perspective</p>

3.3 Research approach and methodologies adopted

The adoption of the philosophical perspectives described in Section 3.2.2 had implications for the research approach used to address the research questions posed within this thesis. Recognised as key to defining research approaches is style of reasoning with both inductive (i.e. the establishment of emerging patterns and meanings between variables to generate and assertion about potential relationships (Grey, 2009)) or deductive (i.e. hypothesis testing: the conformation, rejection or modification of an assertion based on the relationship between two or more variables (Grey, 2009)) styles recognised. Acknowledging

the required pragmatic approach to research design in line with the nature of this research, an inductive reasoning approach was largely considered to best address the research questions whilst also recognising the requirement for deductive reasoning to address elements of specific research questions. For example, an inductive approach was adopted in understanding the research context and to inform findings with respect to the clarity of motivational rationales and knowledge management practices shaping the use and influence of customer contributions to planning and decision-making. However, elements of deductive reasoning were applied in studies A and B in understanding the influence of participative mechanism selection on the outputs from participatory mechanisms in water services.

Section 3.2 identified this research as 'applied in nature' with the research findings contributing to an improved understanding of the institutionalisation of participative processes in water utilities which has implications for the role of research methods in this thesis (Ritchie, 2003). As has been outlined in Section 1.6, this research was undertaken directly with an industrial sponsor. The author was embedded as an active practitioner within this organisation for the duration of this research inquiry providing input in the form of customer preference and acceptability information resulting from the deployment of Studies A and B but also the research findings generated from Studies A, B and Study C to assist them in informing their future practices. The direction of the research has been strongly influenced by their needs and issues they encountered as part of their PR14 business planning preparations. This research inquiry has therefore been built on collaboration between the author and practitioners operating water utilities in England and Wales. With this research arguably reflective of 'participatory research' in the sense it is conducted *with* those people whose actions are under study and places emphasis on coproduction of knowledge as opposed to action or change (Bergold & Thomas, 2012; Grey, 2009) the research design needed to be sensitive to the need for practitioners to be willing to enter into a research process and to disclose their views, opinions and

experiences which can be difficult to achieve in organisational settings (Bergold & Thomas, 2012). Furthermore, it placed importance on the role of the author with regards to the deployment of flexible and reflexive approaches and had implications for the timing of research activities relative to the Price Review process, the specific implications of which are explored further in each Sections 3.4.1, 3.4.2 and 3.4.3.

The objectives and research questions this thesis attempted to address are both explanatory and evaluative in nature (Ritchie, 2003; Robson, 2002). They are explanatory in that factors, influences and motivations leading to decisions, actions, and non-action with regards to the management of customer contributions in planning and decision-making (RQ 1 and 3), are of central concern. However, with practitioners required to reflect on the factors that they perceive to have contributed to successful or unsuccessful practices in using customer contributions in planning and decision-making, and the nature of their experience being a key concern this research enquiry in part also reflects evaluative research objectives (RQ 1 and 3). Evaluative objectives are further demonstrated in considering potential responses to RQ2, which focused on establishing the significance of mechanism selection.

To summarise, the research questions posed in Table 2-7, required a research design reflecting inductive and to a lesser extent deductive approaches to reasoning, flexible and sensitive both to the organisational context in which practitioners experiences and views are rooted and reflecting both the explanatory and evaluative objectives underpinning these research questions. A overarching qualitative research design was considered to be appropriate in this context particularly in determining the research methodology and data collection methods. However, it is acknowledged that, with regards to analysis, complementary to qualitative analysis processes, the use of quantitative analysis tools will be necessary to provide insight into the extent of variability by different participatory mechanisms as required in response to RQ2.

3.4 The development of the empirical fieldwork

Given the emerging popularity of public participation approaches as a way of facilitating the adoption of alternative water and wastewater delivery practices and management approaches, understanding the impact of motivational clarity, mechanism selection and effective knowledge management practices is considered to be crucial. Whilst there is potential to explore these issues on a broader geographical scale, the context of this research is limited to England and Wales. This is because water utilities operating in this are exposed to the same regulatory landscape; the customers have experienced relatively commensurate experiences with regards to sector developments and their impact on the service they have received and, water utilities are exposed to the same planning and decision-making process in terms of the expectations for public participation.

Whilst England and Wales has been chosen as the location of interest, as has been alluded to in Section 1.3, there are currently twenty-one water utilities. It was necessary to establish whether a single water utility should be the focus of analysis or whether the research should focus on generating sector-wide knowledge. Reflecting on the RQ and their focus relative to the wider context of the water sector activity it seems that each lends its self to a different unit of analysis when taking pragmatic considerations (i.e. resources) into account. Study A and B have focused on developing findings generated through participative research with domestic customers of a single water utility. This was determined as a suitable approach as the nature of the authors collaboration with a multiple water utilities would likely prove unpopular and time-consuming in attempting to secure the participation of other water utilities during a key phase of the PR14 planning and decision-making process. Conversely, study C attempted to generate sector-wide knowledge. The study has been scheduled to promote sector-wide involvement in this study by delaying the scheduling of

this activity until after water utilities had submitted their business plans in December 2013.

Having established the overarching methodology underpinning the development of this research, the methodological development of the three research activities undertaken will be outlined. Coverage of the data collection methods employed, the timeframe, research relationships and ethical research considerations will be presented and specific details regarding the selection of research samples, and the design and deployment of research instruments will be discussed in Sections 4, 5, and 6 reporting Study A, B and C respectively.

3.4.1 Study A

As discussed in Section 2.4, a review of the literature has revealed a gap in the knowledge with regards to the influence of mechanism selection and design, in particular with respect to the use of multiple participatory mechanisms within a single planning and decision-making process. The development of research question 2a was developed in an attempt to contribute to an identified gap in the current scholarship. To recap: Does the type of participative mechanism influence the outputs these mechanisms generate in terms of the expressed views of customers for water and wastewater services? As has been outlined, this has been undertaken with the domestic customers of a single water utility, the sponsoring organisation of this research.

Data collection methods

This research question required the generation of new data, (i.e. capturing the priorities of domestic water and wastewater customers) to enable an assessment as to the commensurability of outputs generated by different participative mechanisms. New data ensured that participants were exposed to as similar as possible conditions and content mitigating the potential impact of other external variables. The generation of new data was combined with a

review of existing documentation available within the sponsoring organisation in order to illuminate future strategic issues with respect to water and wastewater service delivery and to gain a greater understanding of their strategy and policy needs enabling this to be reflected this within the content of this study.

The nature of the research question itself implies the necessary use of multiple data collection methods to facilitate the comparison of the outputs of variant participatory mechanisms. Given the constraints placed on this study by the sponsoring organisation, the extent of variation in participatory mechanisms employed was limited to what could feasibly be achieved within the financial and timescales available whilst also ensuring the concurrent achievement of the sponsoring organisation aims and objectives of this exercise. A group discussion setting was considered to provide the most suitable delivery arrangement in terms of resources and meeting sample quotas whilst it also offered the most flexible setting for the deployment of different participatory mechanisms. Group discussions describe a research method whereby a small group of participants (typically between four and ten) are recruited to discuss and share their views on a specific research topic (Ritchie, 2003). Promoted for their naturalistic research setting, they foster the development of refined and considered discussion through interaction whilst providing time for consideration and reflection (Finch & Lewis, 2003; Ritchie, 2003).

These group discussions sought the views and preferences of domestic water customers across a range of topics relating to aspects of their water and wastewater service delivery; the introduction of variant participatory mechanisms formed one element within the overall structure of the group discussion sessions. As outlined above, the context of the study constrained the extent of mechanism variance that could be explored in its own right as part of this activity because the study was required to form part of the sponsoring organisations early customer engagement efforts with the aim of facilitating an initial indication of the relative priorities of domestic customers for water and

wastewater to support them in their PR14 policy and strategy development. Accounting for this challenging context yet attempting to fully address the ambition of the research question, it was necessary to replicate different modes of eliciting priorities inherent in different forms of participatory mechanisms. This study explored: a) individual prioritisation reflecting consultative forms of participatory mechanisms such as questionnaires or surveys b) group prioritisation replicating prioritisation methods typically used in participatory mechanisms where two-way communication is facilitated such as deliberative workshops; focus groups or group discussions and c) group budgeting which reflects methods that include elements of monetisation and group deliberation such as deliberative monetary valuation; Willingness to Pay (WTP) surveys, and budget simulation tools. This range of elicitation mechanisms was selected as they represented the modes of prioritisation typically utilised in participatory mechanisms that have proven popular water utility choices in their planning and decision-making for the Price Review (as demonstrated in Table A2-1). The use of these methods enabled two particular parameters to be identified in the resulting expressed preferences: a) the influence of the mode of prioritisation (i.e. individual or group); and b) the influence of associated bill impact.

Time frame

This study was undertaken as a single research episode, which consequently had impacts on the timing of this research. As has already been outlined, this study was concurrently used to collect data to support the development of early policy and strategy as part of the PR14. The timing of this study therefore had to be conducted early in the Price Review (and in the timeline of this research process) in order to achieve the aims of the sponsoring organisation. The timing of this research was not anticipated to impact on the relative priorities of the research participants.

Research relationships

Section 1.6 outlined that the research outputs generated were required to be used by the research sponsor in the development of their business plan. An implication of this was that professional market researchers had to be employed to undertake the recruitment of research participants, the facilitation and recording of this activity. These professional market researchers were selected through a professional tender process in line with the internal organisational supply chain processes. The author was involved in establishing and reviewing the tender process to ensure that the market researchers selected had experience in water utility research, a strong background in qualitative research processes and furthermore that they were flexible and amenable to accommodating the objectives of this research. It was critical that effective relationships were developed between the author and those market research professionals in order to ensure that the deployment of the study design in line with the authors specification. This was facilitated through regular face-to-face meetings in the early stages of study preparation to ensure that the objectives of the research both from the sponsoring organisation and the author were clear and that the market researchers were bought-in and confident in the deployment of the study design. Regular email exchange and telephone conferences were then utilised as necessary, prior to the execution of the study. In order to monitor the quality of the market researchers throughout the duration of the fieldwork, the author attended each group and, on the few occasions the author was unable to attend, supplementary support was provided by water utility practitioners from the sponsoring organisation (briefed by the author). This also served the purpose of providing a point of water management expertise should the market researchers be unable to answer specific technical questions which was introduced into the research design following findings from the pilot studies whereby it was observed that the quality of the sessions could be improved through access to technical knowledge. This also formed part of the feedback from water sector quality regulators who attended the pilot sessions to offer their input. The introduction of an expert had associated risks such as biasing discussion and also the consistency of information / guidance provided

between sessions which needed to be managed. Mitigation measures included: a) the use of one expert per methodology being trialled (where possible) ensuring that the expert is familiar with the approach being used and will ensure consistency when conducting analysis of results b) The experts would be provided with briefing material covering a variety of expected topics to ensure that they are prepared to respond consistently to questions from the participants.

3.4.2 Study B

This study was developed to further explore the findings generated from Study A and thus responds to Research Question 2a. Similar to Study A, this study was undertaken with the domestic customers of a single water utility, the sponsoring organisation of this research.

Data collection methods

This research question required the generation of new data with to understand the acceptability of domestic water and wastewater customers to differences in bill impacts across a range of water and wastewater investment proposals. The generation of new data ensured that participants were exposed to as similar as possible conditions and content within each session. The generation of new data was combined with a review of existing documentation (naturally occurring data) available within the sponsoring organisation that outlined a range of proposed investment scenarios developed in response to strategic water and wastewater challenges and being considered for the PR14 business plan submission.

The nature of the research question required the use of a single data collection method. The nature of this study and its alignment with the sponsoring organisation business planning activities presented significant constraints on

the design and content of this study. It was limited to what could be achieved within the financial and timescale constraints imposed by their PR14 business plan schedule whilst also ensuring the concurrent achievement of the sponsoring organisations aims and objectives for this exercise.

Group discussions were considered to provide the most suitable delivery arrangement in terms of financial resources and meeting sample quotas whilst also aligning it with the timescale constraints set by the organisation. Group discussions have been defined in Section 3.4.1 in the context of Study A. These sessions sought to establish domestic customer acceptability of water and wastewater investment scenarios and the rationales for their decisions. Water utilities, as part of the PR14 business planning and decision-making process were required to conduct a large-scale quantitative acceptability testing study; the purpose of this study from the perspective of the sponsoring organisation was to provide practitioners in the sponsoring organisation with complementary insight into the rationales used by domestic customers to determine acceptability of investment proposals whilst in the context of this research it served to further explore the findings from Study A. The dual nature of this study meant that the researcher unable to play a significant role in shaping the design and content of this study with it being heavily driven by the requirements of the sponsoring organisation. Reflecting the themes of the quantitative study deployed by the sponsoring organisation, the study enabled two parameters to be explored a) domestic customer importance of a range of water and wastewater investment scenarios and b) their rationales for determining the acceptability (in terms of improvement delivered vs. bill impact) of these scenarios

Time frame

This study was undertaken as a single research episode, which consequently had impacts on the timing of this research. As has already been outlined, this

study was concurrently used to collect data to support the quantitative acceptability testing being conducted as part of the sponsoring organisations PR14 activities. The timing of this study therefore had to be conducted relatively late in the Price Review period in order to achieve the aims of the sponsoring organisation. The timing of this research was not anticipated to impact on the expressed views of the research participants.

Research relationships

As this study was being used to contribute to a critical element of the sponsoring organisations business planning activities, senior management and professional market researchers were required to be involved in the design of this study. In addition, professional market researchers were employed to undertake the recruitment of research participants, the facilitation and audio recording of this activity. These professional market researchers were selected through a professional tender process in line with the internal organisational supply chain processes. Those professional market researchers used in this study were the same practitioners that were used in Study A described in Section 3.4.1. The author initiated and managed the tender process to ensure that the market researchers selected had experience in water utility research and a strong background in qualitative research processes. Furthermore, that they were flexible and amenable to accommodating the objectives of this research. Having previously worked closely together in the deployment of Study A, effective research relationships had been developed between the author and those market research professionals selected. Regular face-to-face meetings in the early stages of study preparation ensured that the objectives of the research both from the sponsoring organisation and the author were clear and that the market researchers were able to deliver the aims of the research. Regular email exchange and telephone conferences were then utilised as necessary prior to the execution of the study. Similar to arrangements outlined for Study A, the quality of the market researchers deployment of each session throughout the duration of the fieldwork was monitored by the author and/or water utility

practitioner (who had been briefed by the author) and again served the purpose of providing a point of expertise should the market researchers be unable to answer specific technical questions. Risks associated with the introduction of external expertise were mitigated by ensuring a) the use of one expert per location to minimise both numbers of experts involved and minimise disruption to Market Researchers b) each expert was briefed and provided with material covering a variety of potential topics which could be discussed to ensure that they were prepared to respond consistently to questions from the participants.

3.4.3 Study C

As discussed in Chapters 1 and 2 a review of the literature identified a need for the exploration of water utility practitioner motivations for the adoption of participative practices in addition to factors fostering or constraining their use of participative mechanism outputs and their influence in water utility planning and decision-making. The development of research questions 1a, 1b, 3a and 3b were developed in an attempt to contribute to the current scholarship.

Data collection methods

A combination of naturally occurring and generated data was utilised in this study. Naturally occurring data was used primarily in the determination of the parent sample population (i.e. the water utilities to be used in the sample) and to supplement the authors understanding of the substantive content of current and historical planning and decision-making processes with regards to the incorporation and influence of customer contributions. The generation of new data was crucial to this study and relied on participants (water utility practitioners) providing relevant insights based on their re-construction, re-processing and re-telling of their personal views and experiences (either spontaneously or in response to probing by the author) in an interview setting. Whilst it is acknowledged that this type of data collection is limited by participant capacity, it represented an effective method to address the research questions posed in this study. It was proposed that the views of practitioners across the

water sector in England and Wales were captured enabling the exposure of any potential variation in practitioner motivations; the knowledge management practices deployed facilitating the use and influence of participative outputs in their planning and decision-making making the treatment of comparison crucial to the research design.

The study seeks multiple perspectives rooted in multiple contexts i.e. the perspectives of multiple practitioners captured across a range of water utilities. Whilst the aims of this research inquiry may initially reflect commensurability with a multiple case study design (i.e. where multiple cases are utilised for the improvement of reliability and generalizability or where there are multiple units of analysis) (Grey, 2009), there are a number of factors that prohibited the adoption of this form of case-study approach. Firstly, a case-study design requires each case to be treated as a separate study in its own right requiring the practitioner sample to be replicated in each case (i.e. water utility) in order to make valid comparisons. Whilst the organisational structure and distribution of responsibilities in the sponsoring organisation is known; achieving the same understanding of these factors for other water utilities is not feasible prior to the fieldwork stage. This, therefore, presents difficulties in the generation of entirely replicable samples in each water utility precluding a case-study approach. Secondly, in order to replicate practitioner samples within each case would require each water utility to commit extensive resources, which may impact on their reciprocity to participation. It is anticipated that water utilities would be more amenable to participation where a small number of practitioner resources are required as would be the case if a non-case study approach was adopted. Finally, case study approaches typically require the researcher to have a range of theories, which are then tested through comparing and contrasting cases. In this study, no prior theories have been developed commensurate with the inductive reasoning approach adopted. For this reason a case study approach was not adopted and instead comparison was built into the study design focused around variations within the sample.

In-depth interviews were selected as the most appropriate method of data collection in this study over focus groups. Table 3-4 outlines the relative merits of each approach.

Table 3-4 Merits of in-depth interview vs. focus groups (Adapted from (Lewis, 2003; Legard et al., 2003; Finch & Lewis, 2003)

In-depth interviews	Focus groups
In-depth interviews allow the collection of detailed personal context specific accounts allows these accounts to be explored in greater depth due to the ability to personalise lines of questioning and probing.	Focus groups are better suited to the generation of data that is shaped by group discussion and therefore better reflects the social context of an issue. They are also limited in their ability to the detailed exploration of issues.
In-depth interviews provide the opportunity to gain a great understanding of complex processes and issues.	Focus groups are more suited to exploring abstract and conceptual subjects.
Interviews are better suited where the potential respondents are less willing or able to travel or where there are confidentiality, power or status issues.	Focus groups rely on respondents being willing to travel but also be open and willing to share their views within the group.

In the context of this study, in-depth interviews were considered the more appropriate choice with the potential to offer the best opportunity to meet the objectives of the study. Reflecting on the research questions this study aims to address, it was important to gain a depth of understanding of practitioners personal views and experiences; the processes of refinement and reflection that would privilege the use of focus groups are not desired in this study. Furthermore, the nature of the study participants required a one-on-one research setting to ensure the confidentiality of their contributions and mitigate potential implications of these views being shared with their colleagues, rendering in-depth interviews the most appropriate choice.

Semi-structured interviews were proposed as most suitable in the case of this research. This form of interview is typically non-standardised in approach, in

that a list of issues and questions to be covered is generated but used flexibly by the interviewer alongside prompts and probes to ensure emergent issues are capable of being captured. Similarly, whilst the literature acknowledges the potential difficulties of this practice in the 'live' interview setting, the introduction of new questions is encouraged and questions can be omitted if the interviewer feels where considered relevant / non-relevant to the discussion (Grey, 2009). The complex practical nature of semi-structured interviews relies on the expertise and skills of the researcher (Legard et al., 2003) both in a personal and professional capacity, to ensure successful execution and ultimately the quality of the research outputs (Rubin & Rubin, 1995) which is recognised by (Mason, 2002) as placing various demands on the interviewers mental and practical capabilities (i.e. quickly being able to exercise judgement about what lines of inquiry to pursue and how to develop probes and questions quickly) . Others emphasise the need for the interviewer to be able to build strong rapport with the participant as key to facilitating trust, respect and putting them at ease early in the interview (Grey, 2009; Oppenheim, 1992). In this regard, Grey, (2009) and Legard et al., (2003) promote confident, flexible, credible and active listening behaviours throughout the interview process whilst also ensuring the relevance and interest of lines of inquiry.

The establishment of a good rapport is often reported as a key strategy that can function to strengthen the validity of the data collected through semi-structured interviews (Arksey & Knight, 1999). Grey, (2009) and Lewis & Ritchie, (2003) present factors considered to promote rigour in the deployment of this type of method including: establishing the appropriate length of the interview ensuring that the participants are sufficiently long to enable a full exploration of views; ensuring the incorporation of sufficient variation into the sample population ensuring sufficient coverage of pertinent perspectives and that that the sample size is sufficient. Sample population design will be covered in detail in Section 6.3. The behaviours of the interviewer are also associated with the minimisation of the effects of interview bias (Oppenheim, 1992). The use of a topic guide was

be developed to help guide the author to structure the interview process limiting the possibility of deviation from the purpose of the inquiry, unless this is to follow emergent themes relevant to the study objectives as is permitted in this type of data collection method. The topic guide used outlined key prompts and probes and the sequence by which questions should be posed (Oppenheim, 1992). Reliability was also ensured through robust recording and transcription practices; covered in more detail in Section 3.5 and 6.3.9.

Timeframe

This study was undertaken as a single research episode; consequently this had impacts on the timing of the research. As has already been outlined, the focus of this study tied directly in to the quinquennial PR14 planning and decision-making process in England and Wales. The timing of this study coincided with the latter end of this Price Review Period, the deadline for Business Plan submission being December 2013. Scheduling the research to take place after the submission of Water Utility Business Plans was considered prudent for a variety of reasons:

- a) Practitioners would be better placed to reflect on their whole experience in a measured way which may not have been possible if this study had taken place during the decision-making process
- b) Undertaking this study reasonable soon after the submission of business plans limited the potential for distorted recall and post-event rationalisation (Dex, 1995). The use of a range of probes and lines of questioning is also counter the effect of this.
- c) Practitioner availability would have been extremely limited during the lead-up to the Business Plan submission. It is anticipated that practitioners will be more amenable to participating post-submission.
- d) Practitioners would have been less amenable to discussing this type of information prior to submission of the Business Plan due commercial sensitivity.

Research relationships

The development of effective research relationships was key to the success of this study, especially in the recruitment and fieldwork phases. Following recommendations in the literature, (Ritchie, 2003; Patton, 2002; Hammersley & Atkinson, 1995) for the promotion of effective working relationships the following research practices were adopted during the recruitment phase of this study: a) Provision of clear and succinct information communicating the objectives and purpose of the study and expressing the relevance and value of their participation; b) provision of consistent communication regarding the expectations of them c) clear communication with regards to how the data collected would be utilised within the scope of the study, including how their anonymity will be protected d) clear communication with regards to the reporting and dissemination strategy e) enquire as to what could be done to secure their participation i.e. being flexible on locations, timings, and practical needs; and finally e) where necessary to utilise a single point of contact within each water utility to ensure the study is conducted in an efficient and co-ordinated manner. The author ensured that these practices were reiterated during the fieldwork stages; their explicit acceptance to proceed was sought at the start of each interview and it made clear that if there were any concerns regarding the research or where they were not inclined to respond that they were able to refrain from answering a question and / or exit the interview process.

As this research relied on participants from multiple water utilities sharing information about the use and influence of customer contributions in their planning and decision-making, it was necessary to consider what gains they could make by participating in this study. The research was presented as a two-way exchange of knowledge whereby the findings from the study (through a report) would be disseminated with those participants who participated. It was recognised that, on securing the sample population required it may be

necessary to formalise the delivery of research findings and potential sign-off requirements.

3.5 Research quality and validity

Sections 3.2 through 3.4 have made the case for the adoption of a qualitative research approach in order to address the research questions posed in Table 2-7. The philosophical assumptions underpinning this inquiry, the overarching research approach and methodologies adopted have been identified and an empirical framework outlined. This section considers how the validity and reliability of the research practices employed in this research have been addressed.

The validity and reliability of qualitative research is an area that has been exposed to much debate. Whilst a well-established feature of quantitative traditions, the often complex presentation of phenomena studied in qualitative research, coupled with the strong contextual factors at play and the deep interpretive influence of the researcher, have led some to claim that it is an “artificial goal” in qualitative research (Lewis & Ritchie, 2003, p.270). Others, however, recognise a need for the consideration of reliability and validity in this context but reject traditional forms instead adopting increasingly naturalistic terminology such as ‘credibility’, ‘dependability’, ‘confirmability’ and ‘authenticity’ (Golafshani, 2003; Grey, 2009; Lincoln & Guba, 1994). Despite the contrasting views on this subject there is some degree of clarity around broad practical principles that offer potential to promote research rigour and thus should be considered in research design. A review of the strategies and checks promoting the reliability and validity of qualitative research presented in the literature have been outlined in Appendix B. As it is anticipated that this research will inform future water utility planning and decision-making practices then it was important that these principles were considered in the research design and deployment. Using key themes identified by Lewis & Ritchie, (2003) and Grey (2009) on

validity and reliability in qualitative research, Appendix B2 aims to address how this qualitative research enquiry has addressed these issues and the identification of potential limitations whereby reliability and validity strategies were constrained.

3.6 Ethics

Ethical arrangements were an imperative consideration in the research design and there are a number of ways in which this study has ensured an ethical research process. Firstly, the informed consent of participants was sought in both the recruitment phase of each study and also at the start of the group discussions and participant interviews ensuring that participants agree for their views to be recorded and transcribed as part of the study. Secondly, the data collected was, as far as possible, be anonymised. In the case of Study C, data was also made confidential; this was clearly communicated to the respondents. Whilst it was recognised that if a single point of contact for the recruitment of water utility practitioners was utilised, the extent of anonymity within the organisation in question may be affected, but all reporting was anonymised with any direct or indirect reference to anything that can be definitively associated with a single organisation avoided. Finally, data (both recorded and transcribed) was stored in an anonymous form with the codes for identification of those recording and transcriptions stored away from the data files. An ethical research form was completed and agreed by the Cranfield Ethical Research Committee for Study C.

3.7 Positionality and reflexivity

The acknowledgement of a researcher's positionality and reflexivity in context of qualitative research is described as a 'critical' element of an ethical research process (Sultana, 2007, p.380). (Savin-Baden & Howell - Major, 2013, p.71) describe positionality as the process of locating the researchers position within the research with respect to the research subject, the research context and process and the research participants. This has been achievable by the author's

adoption of a reflexive approach throughout the research process enabling the assessment of views, positions and influences and their interaction with the research process (Holmes, 2014). This has been particularly important due to the applied nature of this research and the embeddedness of the author within the sponsoring organisation as has been outlined in Section 3.3. The author has used the framework identified by (Savin-Baden & Howell - Major, 2013) described above to structure the reflexive consideration of positionality in the context of this research.

Firstly the author's positionality with respect to the research subject will be addressed. Prior to embarking on this research the author held a regulatory role within the UK water sector with the Environment Agency in the field of water resources planning. The author therefore brought to this research subject a good understanding and range of experiences around the types of water management issues facing the sector and their interpretation by the public in addition to the increasing importance placed on customer preferences by the sectors regulators in water utility planning and decision-making following the PR09 process. These prior experiences nurtured a belief in the need for increased customer participation in water utility planning and decision-making which is reflected in the direction of this research being focused on the successful institutionalisation of participative planning and decision-making approaches for water services as opposed to questioning the need for this type of approach. However, as has been acknowledged in Section 3.8, with no prior experience in the design or application of participative or qualitative research techniques the author considers there to have been little prior views that have influenced this research.

Secondly, the author's positionality with respect to the research context and process will be addressed. Section 3.2.2 has already outlined the author's philosophical standpoints which have underpinned this research process. The context of this research as being largely conducted directly with the sponsoring

organisation which has been discussed in Sections 3.4.1, 3.4.2 and 3.4.3 and Section 3.8. This presented a complex research setting for the author to negotiate. The position adopted by the author was one of attempting to capitalise on this unique opportunity by attempting to become embedded in the sponsoring organisation with the aim of promoting the identification of relevant research topics and generation of usable research outputs for the research sponsor. The sponsoring organisations position on the research being conducted was aligned with that of the author with the author for all intents and purposes integrated into the organisation as if a member of staff; there was little feeling of being an 'outsider'. The influence of this position on the context of this research resulted in a set of research outputs that reflect responsiveness to the research needs of the sponsoring organisation. The potential constraints of this approach have been identified in Section 3.8. The author has detailed in sections 4.8, 5.7 and 6.3.10 the processes by which interpretations of the data have been formed and the author has acknowledged that care has been taken to recognise the provenance of the data.

Finally this section will consider the author's positionality with respect to the research participants. Sections 3.4.1, 3.4.2 and 3.4.3 have provided commentary around the consideration of research relationships across each of the three studies reported in this thesis. In studies A and B the author's positionality with respect to research participants was very similar. The author and the sponsoring organisation had a relationship similar to a client / consultant relationship in that the author was required to reflect service issues relevant to the sponsoring organisation, seek comments from a broad range of external stakeholders and gain sign off to proceed. Similarly, in both studies A and B the author also adopted a project management role with the hiring and day-to-day management of market research professionals whereby the author was then the client. This relationship between author and market research professional was less formal in Study B due to the legacy of collaboration developed in Study A. In both Study A and Study B the author had direct

contact with customers of the sponsoring organisation and was typically introduced to them as a representative of the sponsoring organisation for simplicity and the 'expert' status was further compounded with participant questions being referred to the author if technical or specific in nature. The author took the position that having a technical resource available to participants was likely to increase the information available to participants in forming views and preferences and whilst it posed the potential to introduce some status / power bias, the use of market researchers as primary facilitators was considered to mitigate this. The authors position relative to the research participants in study C was perhaps more complex. The author's adoption of the role of interviewer with research participants from within the sponsoring organisation was particularly important to manage sensitively with respect to existing relationships and managerial status. Whilst it is impossible for the author to fully understand the research participants personal views as to their legitimacy in this role, the intention was to build on familiarity and rapport developed having worked with them in developing the content of studies A and B) with the hope that this would encourage open, thorough and honest responses.

3.8 Critique of approaches adopted in this thesis

Chapter 3 has outlined the overarching approaches adopted in this thesis to deliver the objectives outlined in Table 2-7. Acknowledging that methodologies specific to the delivery of studies A-C are reported in chapters 4, 5 and 6, this section has sought to critique the overarching approaches and methodological choices in the context of this research.

The aim of this thesis made necessary the deployment of empirical fieldwork techniques including group discussion sessions, three elicitation techniques and semi-structured interview techniques. With a background in water resources planning and environmental engineering, the author had little exposure to

participatory or qualitative research practices required to effectively address the research objectives set out in this thesis. This represented a steep learning curve with the need to gain confidence in both new empirical research techniques and in navigating a new field of knowledge, which understandably used up research time. However, the author's background in water utility planning and decision-making facilitated the cementing of public participation principles within a water utility context.

The nature of this thesis as grounded in the practices of the sponsoring organisation has had a significant impact on the scope of the thesis. Working within the sponsoring organisation, considerable time was spent gaining an understanding of the issues the organisation were facing and where potential research opportunities were presented; it involved building up networks within the organisation, critically assessing the feasibility of different avenues of inquiry in terms of its potential benefits to knowledge and practice, being flexible and adaptive to changing requirements and circumstances within the sponsoring organisation which made the design and management of research activities difficult at times. For example, the author was approached by the sponsoring organisation to design an investigation to design a study to explore customer views on sustainable solutions to hydraulic sewer flooding and reveal the motivations and barriers for the implementation of more sustainable solutions in these contexts from a customer perspective. The author's aim was to then assess how capacity was then built into organisational practices to facilitate the design and implementation of more sustainable schemes in the future. However, after proposing a full study design to practitioners within the business the author was informed that issues had arisen with regards to the funding of this research project within this AMP cycle and thus would not be able to progress within the timeline of this research project. Managing the need for rigour in research activities was an additional challenge faced by the author as it was observed that there was less of a focus on methodological and analytical precision in industry research activities when compared to an academic context,

especially with the use and qualitative customer engagement activities. The dominant focus on the sponsor organisation as the primary unit of analysis presented some constraints on the novelty of this thesis, particularly in addressing Research Objective Two which sought to explore the influence of participatory mechanisms and preference formation on the outputs from participatory mechanisms. The timing of this research project relative to the PR14 planning process also places significant constraints on the range of planning and decision-making processes being undertaken with practitioners in the sponsoring organisation very focused on the delivery of the Business Plan submission and the organisation requiring the use of the findings of the research activities undertaken with customers for use in their Business Plan submission. The timing of the PR14 process largely dictated the sequence and timing of the research activities undertaken in the development of this thesis. The author has attempted to be flexible to the needs of the organisation by accommodating the implications of these impacts within the scope of the research design process. Another constraint imparted by the strong links of this research with the concurrent development of the sponsoring organisations PR14 business plan was the need to use independent Market Researchers for the collection of data supporting Studies A and B. This requirement for the use of Market Researchers was imposed as a result of Ofwat's requirement for customer engagement research be undertaken by independent research professionals and thus by complying with this requirement it provisioned the sponsoring organisation to utilise the outputs generated by Studies A and B in their PR14 Business Plan Submission. Finally, the focus of the sponsoring organisation has limited the generalisability of the findings generated by this research project given the specific contextual factors that have been shown to influence organisational practice. Whilst the organisation specific nature of these findings is acknowledged, the regulatory driver underpinning planning and decision-making processes adopted by water utilities across the sector provides some consistency in experience permitting the findings of this research to provide a useful contribution in this context.

The breadth of this research also requires some consideration. The interdisciplinary nature of the field of public participation coupled with the applied nature of this thesis resulted in the utilisation of significant research time finding common ground and feasible research opportunities within the sponsoring organisation in order to address the gaps identified in the existing literature. The scale of the water sector in England and Wales and within that the PR14 planning and decision-making process was used to attempt to focus these research questions. The primary driver for this approach being the lack of benefit to the sponsoring organisation for wider inquiry due to the regulated nature of the sector in which they operate. Furthermore, the focus of this research was relevant to recent changes in regulatory focus making the contributions of this thesis both timely and appropriate.

The main objectives of this thesis are focused around the themes of the motivations for public participation, participatory mechanism selection and the management of knowledge generated through participatory mechanisms and its application in water utility planning and decision-making processes. It has therefore aimed to focus on the three primary phases of participatory processes. This approach was adopted as it promised the most potential in terms of generation of usable insight that addressed gaps within the existing literature and also it would concurrently generate a balance between the acquisition of customer knowledge through participatory mechanisms and the application of the knowledge generated in planning and decision-making processes. Contributions of a similar nature in the wider field of water management have focused on more specific themes for example the deployment of a single mechanism for a specific resource or planning issue. The nature of this research setting and the timing of the research meant that opportunities to deploy a similar approach were less frequent. Furthermore, as has been already outlined, the PR14 process focused less on specific themes or planning issues and instead is focused on the relativity of planning issues across the organisation constraining research opportunities to consider the relative

priorities across both water, wastewater and environmental issues (Studies A and B) and a broad practitioner sample population (Study C). Criticisms could be addressed at the consideration of public participation in the context of the PR14 process given its relatively constrained nature. Yet, whilst it does not claim to be the only planning and decision-making process that water utilities undertake, it does represent a dominant and significant process whereby the effective deployment and application of public participation principles has been incentivised by Ofwat. So, whilst this thesis does not claim to have provided a representative consideration of public participation practices across the full range of planning and decision-making processes adopted by water utilities, it is considered to have made a valuable contribution.

Evaluation of participatory processes is a dominant theme within the literature. Whilst this thesis has attempted to contribute to this field through the identification of factors observed to foster or constrain the application of customer knowledge in the sponsoring organisations planning and decision-making processes, an in-depth practitioner evaluation of the organisations practices would have generated useful insight. This, however, would have proved a large undertaking requiring significant commitment from the sponsoring organisation and may have been unachievable in the research project timeframe. In addition, the PR14 planning and decision-making was both dynamic and complex and reflected poor staff continuity. The approach adopted in this research project therefore represents a more cautious and focused set of findings in this context.

The thesis may also have benefitted from an assessment of criteria stakeholders and / or regulators adopted for the assessment of water utility efforts for the acquisition and application of customer knowledge in the PR14 planning and decision-making process. This would have identified the criteria that had been used by stakeholders and regulators (potentially through the CCG model) in determining the effectiveness of each water utility's participatory

planning and decision-making process and explored the variations in, and rationales for, the criteria adopted. This would have provisioned insight into how these criteria relate to the design and deployment of participative mechanisms in water utility business planning and generated an agenda for future customer engagement practices in this context. Whilst this study would have provided a complimentary contribution to this thesis, the fieldwork timescales of this thesis relative to the release of this information i.e. through the final determination and CCG reporting process prevented a study of this nature being conducted.

A further potential area that would support this inquiry would be to gain a greater understanding of CCGs and their role in planning and decision-making. Whilst this thesis has focused on participative processes from the perspective of customers the focus on it from a stakeholder perspective in terms of the CCG could have generated interesting insights given the important role they played and the participative nature of the interaction within CCGs and also their interactions with water utilities. This was not pursued in this research given the sensitive nature of water utilities and the confidential nature of their interactions in a live planning process. This may be an item for further work now that PR14 has completed and Final Determination provided.

3.9 Conclusion

This chapter has provided an overview of the overarching methodological concerns underpinning this research enquiry. It has identified this research as organisational research requiring a participatory (or collaborative) research approach and acknowledged the challenges associated with this type of research enquiry. It outlined that the epistemological and ontological philosophical assumptions underpinning this research and how these principles influenced the methodological approaches adopted in this research. It then went on to identify the nature of the research questions posed in this research as requiring a predominantly inductive approach and made a case for the use of a

qualitative research approach including: The section has outlined the development of an empirical research framework which has sought to justify the selection of data collection methods (including document analysis, group discussions and semi-structure interviews) in the context of this research. Information relating to ethical considerations, research relationships and the research time frame for each study has also been presented. The final section has sought to outline how this research has considered issues of research quality and rigour. Detailed design issues specific to each study are explored further in Chapters 4, 5, and 6.

4 CUSTOMER PREFERENCES FOR WATER AND WASTEWATER SERVICES: A COMPARATIVE EVALUATION OF ELICITATION METHODS

4.1 Introduction

This section describes in detail Study A: the comparative evaluation of participative mechanisms as has been introduced in Section 3.4.1. It responds directly to Research Question 2a as detailed in Table 2-7 and seeks to explore one of the central ambitions of the thesis: to explore the influence of participatory mechanisms and preference formation on the outputs from participatory mechanisms in water services.

This study reports a comparative evaluation of three elicitation mechanisms (individual prioritisation, group prioritisation, and group budgeting) used to explore domestic customer priorities for a range of water, wastewater and environmental attributes of their water and wastewater service. Elicitation mechanisms were the focus of this study, as opposed to full variant participatory mechanisms, due to the constraints placed on this study as discussed in Section 3.4.1. By analysing both intra-method and inter-method variation in expressed priorities this study explored the consistency of expressed outcomes as a function of the elicitation method. Session transcripts also provided additional evidence to support interpretation of the ranking process. This is discussed in detail in Section 4.8.

The findings, as discussed in Section 4.10 exposed low intra-mechanism variation but significant variation in some inter-mechanism comparisons. Specifically, inter-mechanism variation is associated with the monetisation of attributes in the prioritisation exercise. With little previous work in this area to compare and contrast the findings with, the discussion focuses on the internal dynamics of each method. Considerations are suggested based on these with

findings calling for a wider range of methods to be studied so as to improve practitioner confidence in the use of these tools.

4.2 Background

The aim of this study was to explore, through group sessions with domestic water customers, the influence of participatory mechanisms and preference formation on the outputs from participatory mechanisms water sector planning and decision-making. It sought to address the following specific research question: Does the type of participative mechanism influence the outputs these mechanisms generate in terms of the expressed views of customers for water and wastewater services?

It is worth briefly outlining the benefits of this study both in the context of this thesis and more broadly to the sector. The lack of differentiation exhibited by domestic water customers, presents a significant challenge where regulation is seeking to privilege their opinions and priorities in utility investment decisions. For those professionals charged with eliciting customer preferences and mapping them on to service provisions as part of the PR14 planning and decision-making process, the need to both have confidence in the selection of participative mechanisms and clearly discriminate different priorities and the value attached to them has never been more urgent. Although this can be achieved with a range of mechanisms as has been demonstrated in Section 2.4, there is little understanding of their comparative performance in terms of being able to generate consistent or commensurable outcomes. The observed historic use of multiple mechanisms in planning and decision-making processes by water utilities further emphasises the need to better understand the influence of mechanism selection on the outputs generated by these mechanisms. More specifically, the potential significance of mechanism selection on the expressed views of customers (or participants) deserves more attention than it has formerly received in the academic literature. Generating a greater

understanding of the comparative performance of variant elicitation mechanisms in being able to generate consistent or commensurable outcomes will provide practitioners with some insight into the influence of mechanism selection and enable greater discrimination in their choices, particularly where participatory mechanisms will be used in clusters i.e. within a single planning and decision-making process. The lack of attention this topic has received in the literature combined with the introduction of a customer outcome driven regulatory regime which has resulted in significantly increased variation of participatory mechanisms employed by water utilities, renders the furthering of competencies in the design and deployment of elicitation methods even more crucial.

The fieldwork activity, whilst providing the raw data for this study, was additionally commissioned by the research sponsor to provide an early indication of the relative priorities of domestic customers for water and wastewater to support them in their early policy and strategy development as part of the PR14. As has been outlined in Section 3.4.1, this placed some constraints on the design and deployment of this study. However, it also had implications on the content of the study. In water utility planning and decision-making it is typical to differentiate the provision of water and wastewater service into distinct attributes whereby levels of service are more easily measured. These service attributes were explored in detail by the sponsoring organisation through the development of strategy documents. These documents were being developed concurrent to this study by the sponsoring organisation and were made available to the author via the sponsoring organisations SharePoint site. These documents were reviewed by the author to understand the service attributes of particular concern to the sponsoring organisation based on their analysis of current and future performance and related risks and issues in relation to future performance. These service attributes were selected to be reflected in the design of this study as discussed further in Section 4.3.1.

4.3 Design of fieldwork activity

Section 4.2 has outlined the overarching rationale for the design of this study. This section outlines the design of the fieldwork activity deployed in order to generate data required to answer Research Question 2a.

4.3.1 Fieldwork activity structure and content

Three elicitation mechanisms including (i) individual prioritisation, (ii) group prioritisation and (iii) budgeting were deployed in a group setting to generate a set of customer priority data. These particular elicitation mechanisms were selected as they were common features of participative mechanisms deployed by water utilities as outlined in Table A2-1. A group facilitated discussion setting provided the most suitable arrangement in terms of efficient use of resources and meeting sample quotas, whilst also offering the most flexibility in which to evaluate different elicitation techniques. Each of three different elicitation methods was deployed three times each giving a total of nine distinct sessions. The details of each approach as adopted in this study are detailed in Table 4-3. Each of the nine sessions involved a prioritisation activity with participant's priorities for nine attributes of water and wastewater services provision captured. These outputs were then transformed into a rank, ordered in terms of investment preference.

As stated in Section 4.2 and outlined in Table 4-1 Water and wastewater services were disaggregated into five water and four wastewater/ environmental attributes each representing a significant area of particular concern to the research sponsor but also common to broader water utility consultation exercises.

Table 4-1: Water and wastewater service attributes

Service Attribute	Service type
Providing water that is safe to drink	Water

Providing water that tastes and smell good and is not discoloured	Water
Ensuring satisfactory water pressure at the tap	Water
Reducing the need for hosepipe bans in a drought	Water
Reducing bursts which interrupt supply of water	Water
Preventing homes from being affected by sewer flooding	Wastewater
Preventing gardens and local areas from being affected by sewer flooding	Wastewater
Managing the level of nuisance (e.g. odour) generated from wastewater treatment works	Wastewater
Preventing accidental pollution from wastewater treatment works	Wastewater

Each of the nine sessions was preceded by a number of introductory activities. Their function was to familiarise participants with the attributes of their water and wastewater service prior to undertaking the prioritisation activity. One of these activities required participants to complete a table whereby they rated the attributes of their water and wastewater services as high, medium or low, providing a baseline set of information with regards to customer priorities. This introductory exercise was followed by discussion about each attribute and the motivations for participants' ratings. Finally, one of the three prioritisation elicitation mechanisms were used to reflect on and revise (if desired) the earlier stated priorities.

4.3.2 Selection of the research population and sampling strategy

Participant selection for the study involved a purposive non-probability sampling approach, privileging relative significance of group membership over simple statistical representation (Patton, 2002). This sample selection approach is well established in qualitative research and promoted for use in small-scale, in-depth studies (Ritchie et al., 2003; Ritchie, Lewis and Elam, 2003).

The primary unit of analysis in this study were domestic water and wastewater customers receiving their service from a single water utility operating in

England. The sample frame for this study reflected the desire to yield sample coverage of domestic customers across the following parameters including: SEG; customers in receipt of means-tested benefits; age (20-44 and 45+); household setting (urban, rural and coastal) and whether the household had a metered or un-metered supply. These parameters reflect those typically selected for customer engagement exercises within the water sector in England and Wales as they represent potential drivers for variation in preferences for water and wastewater services.

A definitive sample size was not established as part of the design of this study. However, it is generally recommended that between six – twelve participants per session is a suitable range taking into account the conditions needed for active conversation and manageability of the session whilst working within the constraints of available resources (Millward, 2012). Each group was composed of participants with similar characteristics facilitating ease of discussion and analysis. Access to the sample population will be discussed in Section 4.6. Table 4-2 outlines the desired sample frame for this study.

Table 4-2: Sample frame

Group ref:	Location:	SEG	Age	No. of participants	Measured / unmeasured	Prioritisation method
1	Urban	ABC1	20-44	8	Mixed	Group
2	Urban	ABC1	20-44	8	Mixed	Individual
3	Urban	C2DE	45+	8	Mixed	Budgeting
4	Urban	C2DE	45+	8	Mixed	Budgeting
5	Urban	C2DE	45+	8	Mixed	Individual
6	Rural	ABC1	20-44	8	Mixed	Budgeting

7	Rural	ABC1	20-44	8	Mixed	Individual
8	Coastal	ABC1	45+	8	Mixed	Group
9	Urban	Low income	20-44	8	Mixed	Group

4.4 Development of research instruments

Participants were recruited to take part in a group discussion session lasting approximately one hour and forty-five minutes. This duration represents the total length of the session inclusive of the introductory activity, the primary prioritisation activity and subsequent activities not discussed in this research enquiry. The duration of 1 hour forty-five minutes falls within the range of one to two hours recommended for group sessions (Millward, 2012).

Two pilot activities were carried out in December 2011 to trial the proposed content of the sessions with modifications and improvements being made to the structure and content of the sessions as a result of these experiences. The pilot sessions are discussed in more detail in Section 4.5.

Building on the feedback from the pilot sessions, three mechanisms were deployed in this study; each designed to elicit participant's relative priorities for attributes of their water and wastewater service in a different way. They were all preceded by the same introductory activity as previously outlined. Table 4-3 sets out how each of the elicitation mechanisms was executed.

Table 4-3: Elicitation mechanism procedures

Elicitation mechanism	Execution of each elicitation mechanism
Individual prioritisation	Participants rated attributes as high, medium or low importance to them. [This was a repeat of the introductory prioritisation activity]
Group prioritisation	The individual responses from the introductory prioritisation activity were aggregated to form a ranked list.

	<p>Time was provided for participants to exchange their views on the aggregated ranked list in its existing state.</p> <p>Participants were provided with the opportunity to make amendments to the ranked list of attributes based on the outcomes of their discussions, outlining their rationales for any changes.</p>
Budgeting	<p>Participants were shown a table that provided information showing:</p> <ul style="list-style-type: none"> – The current LoS received by customers for each service attribute – The LoS that could feasibly be achieved by 2020 with investment by the water utility – The associated annual bill impact per customer for the delivery of the proposed improvements to LoS <p>Participants were provided with a nominal budget (the totalled bill impact of all proposed improvements) with which they could purchase service improvements</p> <p>Participants were prompted to discuss each attribute and then each vote to determine whether to purchase an improved LoS</p>

The design of this fieldwork activity provided three sets of water and wastewater prioritisation data generated by domestic customers through the deployment of three different elicitation mechanisms.

4.5 Development of the pilot study

The provisional research instruments outlined above were tested in a pilot study. Two of the elicitation mechanism activities were deployed as part of these pilot studies: Individual prioritisation and group prioritisation. Participants were recruited using local face-to-face interviews as will be described in Section 4.6. Participants for two groups sessions were successfully recruited; one domestic customer group and one Small to Medium Enterprise (SME) group. The rationale for this approach resulted from the initial desire of the sponsoring organisation to include both domestic customers and business customers in their sample population; as will be discussed later in this section, following the pilot study it was decided to focus solely on eliciting the views and preferences of domestic customers. Table 4-4 details the participant characteristics of each group.

Table 4-4: Achieved pilot study sample frame

Session date	Customer type	Participant type	Location	Method used
12/12/2011	Domestic	SEG: ABC1 Age: 20 - 44	Urban	Group prioritisation
14/12/2011	SME (business)	Mixed sector business owners	Urban	Individual prioritisation

The author and an additional observer (Consumer Council for Water (CCW) representative for the domestic customer group and an EA representative for the SME group session) were present at each pilot study to monitor the quality of the session and the success of the structure of the research instrument. A questionnaire was deployed to capture the views of the participants of the session to identify required changes from their perspective. Transcripts of the sessions reviewed by practitioners responsible for strategy development; the anticipated end users of this data generated.

Key limitations with the research design were identified: Firstly, SME customers had strongly variant characteristics related to the function of water relative to their business type. The group sessions did not represent an effective forum in which to explore these views in any depth. As a result it was decided that this study would focus on domestic customers, allowing a fuller exploration of their views. Secondly, the initial study design required participants to identify attributes of their service (as opposed to pre-determined by the water utility), which then formed the basis of subsequent prioritisation activities. This approach was initially adopted to ensure the priorities of the sponsor organisation did not overly influence the discussion but, whilst this approach was useful in revealing what attributes customers perceive to constitute their water and wastewater service, its simplicity was perceived data insufficiently aligned and differentiated to meet the needs of the users of this data (the sponsoring organisation). The sponsoring organisation instead preferred to

introduce pre-defined attributes and definitions of water and wastewater services enabling more consistent alignment and greater clarity for use within their business planning. The early detection of this issue made it possible to modify the research instrument by introducing pre-defined attributes and associated definitions of water and wastewater services as the focus of discussions and prioritisation activities. This approach was trialled with the SME group and was observed to improve the clarity and differentiation of session outputs.

Finally, it was observed that the participants were directing challenging questions to the facilitators of the group discussion sessions. Whilst they had been thoroughly briefed and had experience in conducting water utility customer engagement exercises, it was felt that the introduction of an 'expert' observer, who's role would be to respond to questions when prompted, would introduce the potential for greater clarity and accuracy of responses. The introduction of an 'expert' introduced associated risks including the potential to bias of discussion and inconsistency of information provided across different groups. Furthermore, it had the potential to shift power balances. The mitigation measures adopted included, where possible: the use of a single expert where possible across each elicitation mechanism to reduce the potential for influence; and the development of a resources pack which included briefing material covering a variety of anticipated topics to ensure preparedness and consistent messaging.

4.6 Deployment of fieldwork activity

This section provides a summary of the approach adopted in the deployment of this fieldwork activity. It outlines the recruitment strategy adopted and the rationale for the selection of research locations. The ethical conduct of this fieldwork was outlined in Section 3.6.

As outlined in Section 4.3.2, a purposive sampling approach was adopted to identify the sample population parameters to be reflected in the participant population. As outlined in Section 3.4.1, it was necessary to employ a professional market research company operating within the supply region of the sponsor organisation to undertake the recruitment of research participants. The use of a screening questionnaire to identify appropriate participants presented the most efficient means by which to access the sample population. This screening questionnaire was developed in conjunction with the market research professionals based on the sample quota outlined in Table 4-2. Market Research Society (MRS) Code of Conduct was adhered to throughout this process. Interviewers were required to declare on each interview questionnaire that these were conducted in line with this, providing assurances that the recruitment process was conducted in an ethical manner. The recruitment questionnaire deployed in this study can be found in 9C1. They deployed local face-to-face interviewers in areas selected as potential locations for the group sessions to be held. Interviewers were fully briefed about the purpose of the study and clearly informed about the task that they were being set; the recruitment of participants in line with the sample quota that were willing and able to attend groups sessions at pre-defined dates and times. Participation was incentivised with the gift of £40 for their time and was distributed to participants following the completion of each group session. Monetary incentivisation is a commonly utilised market research recruitment technique and was considered necessary in this study to secure attendance given the expected duration of each session and the time commitment required from participants (Kreuger & Casey, 2000). Those members of the public that agreed to participate were given a letter and an information sheet providing details about the services that the sponsoring organisation undertake in delivering water and wastewater services to their customers. This was intended to provide participants with a basic understanding of the different elements of their water and wastewater service to prepare them to engage on these issues in the group sessions. Further opportunity to reappraise these services would be provided in

the design of each session. The letter and the information sheet provided to participants can be viewed in Appendix 9C2.

The actual locations for the group discussion sessions represented a balance of urban, rural and coastal settings within the water utility supply region, where good relationships had been built with recruiters offering an efficient method of ensuring good participation at each event. Venues for the group sessions were selected by the market research company taking into account accessibility, convenience and the availability of established contacts that had developed in, or near, these locations.

4.7 Timing of fieldwork activity

The pilot sessions of this study were undertaken in December 2011 and the main study sessions were conducted between the 4th April 2012 and 1st May 2012. The delay between the pilot and main study resulted from a desire of the newly formed CCG to review and agree the scope of the main study. The research was given clearance to proceed in March 2012. The overall timing of this research reflected the interdependencies of this study relative to the sponsoring organisations timetable with respect to their PR14 Business Plan preparations. It was also important to schedule this research to avoid coinciding with holiday periods and / or major events that may have affected participant availability. Furthermore, the group sessions were predominantly conducted on an evening after work hours to ensure maximum availability.

4.8 Data collection and analysis

Group session facilitators (market research professionals) were responsible for the data collection and, dependant on the elicitation mechanism deployed used digital audio-recordings, flip-chart notes and questionnaire responses. Consent for audio-recordings was requested both at the recruitment stage and also prior

to the commencement of each group session. The use of audio recording removed the need to take notes enabling facilitators to focus on the discussion at hand (Grey, 2009). Furthermore, it ensured full written transcript of each group session could be developed facilitating accurate data analysis (Patton, 2002). Market Research Professions were responsible for the transcription of audio-recordings into Word documents in addition to generating Excel spread sheets reporting the results from each prioritisation exercise. All subsequent analysis was undertaken in Excel by the author. Data generated by the Market Research Professionals into Excel was crosschecked against the raw data and cleaned to remove any obvious errors for example errors observed relative to the original data collected.

This study was concerned with understanding the influence of mechanism on the expressed preferences generated. Variation in priorities was therefore assessed in groups that were exposed to the same elicitation mechanism (Intra-method variation) and also across groups that were exposed to different mechanism (Inter-group variation). Raw data collected from each group session did not facilitate direct comparison between each elicitation mechanism and thus a ranked list of water and wastewater service attributes was generated from the outputs of each elicitation mechanism to enable the variation in priorities to be explored. Furthermore, the outputs from each elicitation mechanism were subject to data transformation. The assumptions applied are outlined in Table 4-5. In addition to undertaking a descriptive analysis of the data from the sessions, Spearman's rank analysis was employed to explore both the intra-method and inter-method variation in preferences across all data sets. Transcripts generated from each session were subject to thematic content analysis to provide further insights, where possible, into customer priorities and enable the extraction of quotes to support analysis where relevant.

Table 4-5: Data transformation requirements for intra-method and inter-method analysis

Elicitation method	Data transformation required for Intra-method analysis	Data transformation required for Inter-method analysis
Individual prioritisation	<p>A data set was generated for each group. This involved counting the number of High, Medium and Low ratings for each attribute across individual participant responses. Scores of three, two and one were assigned to a rating of high, medium and low respectively. Each attribute was therefore assigned a total score. The attributes were then sorted to provide a ranked list based on the total rating score.</p>	<p>The method as set out for intra-method analysis was applied to individual responses collated across all three groups.</p>
Group prioritisation	<p>No data transformation was required to the outputs of this activity for this analysis</p>	<p>The product of each group was a ranked list of service attributes. To collate these three data sets to form one ranked list representing the views across all three groups, scores of 9 to 1 were assigned to each rank position from highest to lowest and multiplied by the number of times the attribute was ranked at each position. Each attribute was therefore assigned a total score. The attributes were then sorted to provide a ranked list based on the total rating score.</p>

Budgeting	<p>In order to convert the outputs from the budgeting activity into a ranked list a number of assumptions were applied:</p> <ul style="list-style-type: none"> – Those items that were ‘purchased’ were considered to be highly important to participants (assigned a high rating) – Those items that were not purchased were considered to be of low importance to participants (assigned a low rating) – Cheaper options were observed to be more frequently purchased in the budgeting exercise indicating a preference for these options over those that had a greater potential bill impact. Attributes were therefore sorted from lowest to highest cost within the high and low classifications in order to generate a ranked list. This was justified on the basis that cheaper options were more frequently purchased indicating a preference for those improvements that had a greater potential bill impact. <p>This process was undertaken on the outputs of each budgeting activity thereby producing a ranked list per group</p>	<p>This involved counting the number of High and Low ratings for each attribute across all three group outputs, as established by applying assumptions a) and b) as for intra-method analysis. Scores of three and one were assigned to a rating of high and low respectively. Each attribute was therefore assigned a total score. The attributes were then sorted to provide a ranked list based on the total rating score.</p>
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Appendix B2 outlines the strategies employed to promote validity and reliability of the research findings and the limitations acknowledged with the research design.

4.9 Results

This section reports the comparative evaluation of the three elicitation mechanisms described in Sections 4.1 through 4.8. It does not seek to report the results of the introductory activities or those activities that occurred subsequent to the prioritisation activity. It focuses on the analysis of intra-method and inter-method variation as a mode of addressing the research question posed. Understanding the variation in the expressed priorities for water

and wastewater services facilitates the exploration of the function of elicitation mechanisms in the generation of these priorities. It is acknowledged that, there is no standard process for conducting this analysis, with few previous examples of this type of study.

Section 4.3.2 outlined the sampling strategy design. As Table 4-2 showed, this sample design offered a balance of SEGs, age, group and locations for each elicitation mechanism. The market research company employed for the purpose of recruiting domestic water and wastewater customers encountered several difficulties during this phase, in particular with regards to the scheduling of venues, the availability of facilitators and securing the participation of domestic customers in line with the sample quota. The combinations of these issues resulted in unfortunate amendments to the study sample to facilitate the delivery of data within the time period defined by the sponsoring organisation. These changes affected the relative spread of SEGs and ages within the sample population. The face-to-face recruitment interviews had attempted to recruit 10 participants for each group session assuming an attendance rate of approximately 80%. Expected attendance was achieved for four out of ten of the groups. One group exceeded the expected attendance rate and four groups were under attended. The final sample size of domestic customers was sixty-five. Table 4-6 outlines the achieved sample for this study.

Table 4-6: Achieved participant sample

Group ref:	Location	SEG	Age	No. of participants	Measured / unmeasured	Prioritisation method
1	Rural	ABC1	20-44	8	Mixed	Individual
2	Rural	C2DE	20-44	5	Mixed	Individual
3	Urban	ABC1	45+	8	Mixed	Budgeting
4	Urban	C2DE	45+	8	Mixed	Budgeting
5	Coastal	ABC1	45+	9	Mixed	Budgeting
6	Coastal	C2DE	45+	7	Mixed	Group
7	Urban	C2DE	45+	6	Mixed	Group
8	Urban	Low income	20-44	6	Mixed	Group
9	Urban	Low income	45+	8	Mixed	Individual

Table 4-7 sets out the findings of the Spearman's rank correlation coefficient (Pearson correlation coefficient between the ranked variables) analysis for both the intra-mechanism and inter-mechanism cases. Briefly, this suggests that little variation is exhibited when outputs of group sessions using the same elicitation mechanisms are compared. Conversely, significant variation is exhibited where the outputs of group sessions utilising different elicitation mechanisms are compared. This suggests that the selection of elicitation mechanism may function in the generation of the expressed preferences of domestic customers. Data analysis can be found in Appendix 9C4 for further examination.

Table 4-7: Spearman's rank analysis of intra and inter mechanism comparison

Intra-mechanism comparison	
Individual prioritisation	p = 0.77
Group prioritisation	p = 0.87
Group budgeting	p = 0.78
Inter-mechanism comparison	
Individual prioritisation and Group prioritisation	p = 0.82
Individual prioritisation and Group budgeting	p = 0.02
Group prioritisation and Group budgeting	p = 0.03

4.10 Analysis of results

This section describes in more detail the results from this study using interpretive framework of intra-method and inter-method analysis to structure this discussion.

4.10.1 Intra-mechanism variation

Analysis of intra-mechanism variation clearly suggests that priorities elicited by groups using the same mechanism exhibit a low level of variation. The relationship was observed most strongly in the group prioritisation exercise (p=0.87). Whilst, arguably still a strong relationship, the individual prioritisation and budgeting activities exhibited higher level of variation with a p value of 0.77 and 0.78 respectively. This analysis specifically identifies variation in preferences generated using the same mechanism. The participants were exposed to the same information and relatively similar experiences. The main variables within this sample, therefore, relate to the participant characteristics such as age, SEG, whether they are a metered or unmetered customer or, perhaps most importantly, their experiences in terms of their water and wastewater services. A review of the transcripts reveals that participants attending these groups generally reported no significant existing problems with their water service experience. An overall finding from this analysis suggests,

therefore, that participant characteristics do not appear to be a significant driver for preference variation in this study.

As Table 4-7 shows, the priorities elicited from the individual prioritisation activity and the budgeting activity do suggest a slightly higher level of variation than that observed in the group prioritisation exercise. This is, perhaps, not unexpected. In both the individual prioritisation activity and the budgeting activity, achieving consensus was not an inherent part of the elicitation methodology, unlike in the group prioritisation exercise. Participants were therefore able to express individual opinions, either through a questionnaire instrument as in the individual prioritisation activity, or through a voting mechanism as in the budgeting activity. This may have enabled participants to be more open in expressing their true views and priorities. It may also indicate that in the group prioritisation activity people are less at ease to express their true opinions; where strong opinions are pacified if they are radically different from the social norm and thus an increasingly stable set of outputs is generated.

4.10.2 Inter-mechanism variation

In the analysis of inter-method variation a more mixed picture emerged. Outputs compared across the individual and group prioritisation activities exhibited a low level of variation ($p=0.82$). When the ranked lists, generated based on data from the individual prioritisation and group prioritisation, were compared to the ranked list generated from the budgeting exercise, high levels of variation were exhibited with p values of 0.02 and 0.03 respectively.

The low variation observed when the results from the Individual and group prioritisation activities were compared may be explained by an observation emerging from one of the group prioritisation session transcripts. This suggested that there was a reluctance to engage in discussion about the water

and wastewater service attributes. The session gave the opportunity for participants to engage in modifying the ranked attribute list but only one group chose to do this and, when prompted, struggled to defend their proposals. In two out of the three groups an aggregated view of individual priorities captured in the introductory prioritisation activity represented the outputs of the group prioritisation activity. Participants were recorded to have remarked, "To me the way that has come out is pretty good. I don't think there is much to argue with on that – unless you try and force it in some way" (*Group 7*). Whilst such comments suggest that participants were content with the ranked list presented to them as an aggregation of individual views expressed in the introductory prioritisation exercise, it could also be argued that it may reflect a lack of engagement in the activity.

The high level of variation observed on comparing results of the budgeting exercise and the outputs from the individual and group prioritisation exercises was very pronounced. The budgeting exercise differed from the individual and group prioritisation exercises by the introduction of an additional data into the elicitation activity. The expression of importance of an attribute, unlike in the individual and group prioritisation activities, was revealed through the purchasing (or non-purchase) of a service improvement. This required the addition of new data for each attributes for consideration by participants, including: current levels of service, potential achievable improvements to LoS and also the bill impact of that potential improvement. A number of assumptions were adopted in the analysis phase as outlined in Table 4-5. Whilst it is acknowledged that these assumptions may be a potential driver of the observed differences, this assumption was underpinned by initial analysis of the raw outputs this mechanism provided (See Table 4-8) whereby it can be seen that choices for purchases were driven by the extent of potential bill impact. For example, those attributes that represented a bill impact of £1 were more likely to be chosen than those that were valued over £1 in value. Out of the twelve purchased improvements across all groups, 10 were valued at below a £1 in

value. The need to generate relative prioritisations and therefore the need for a ranked list conceals the diversity of the total bill impacts. Across the groups this ranged from £11.18 in total to £0.60 and the number of items purchased from six service improvements to one.

Table 4-8: Budgeting activity results

	Cost to improve	Group 3 purchases	Group 4 purchases	Group 5 purchases
Sewer flooding homes	<i>£2.62</i>		X	
Water pressure	<i>£0.03</i>		X	X
Sewer flooding gardens	<i>£0.76</i>		X	X
Drinking water quality	<i>£4.83</i>			
Hosepipe bans	<i>£5.17</i>			
Nuisance	<i>£0.12</i>			X
Discolouration	<i>£0.39</i>		X	X
Leakage	<i>£9.28</i>			X
Pollution	<i>£0.60</i>	X	X	X
TOTAL	£23.80	£0.60	£4.40	£11.18

4.11 Discussion of the results

It should first be noted that this is, to the author's knowledge, the first study to offer an explicit comparative analysis of the commensurability of the outcomes of different elicitation mechanisms within a water services context. These results provide a cautious insight into the expressed priorities of water and wastewater domestic customers as a function of the elicitation mechanism selected. Although previous work on participatory mechanisms is to some extent pertinent to this research agenda, even here there have been few attempts to explore the congruence of outcomes generated by methodological variations. However, whilst there is little previous evidence and knowledge to compare the findings with, some observations can be made about both the implications of this research for knowledge and practice and also its reliability.

As has been outlined, the results of this study suggest two main findings a) that the outputs generated by groups using the same participatory mechanisms exhibit low levels of variation; and b) the use of budgeting mechanisms, when compared to individual and group elicitation mechanisms, introduces significant variation.

Addressing first the low level of intra-mechanism variation exhibited, it is in one sense encouraging that the three tested mechanisms exhibit such internal consistency in reflecting preferences. It suggests that careful practices adopted in the deployment participatory mechanisms are a key factor in determining the reliability of outputs. Where a mono-mechanism approach is adopted in planning and decision-making it could therefore be posited that the selection of participatory mechanisms incorporating a single elicitation mechanism plays a less significant role than that of consistent deployment practices. This broadly reflects the current thinking on this issue whereby it is the relationship between contextual issues and the mechanism employed that appear to determine the ability to generate effective outputs (Involve, 2005; Rowe & Frewer, 2005).

It is also consistent with the literature in that domestic water customers lack differentiation (or variation) with regards to priorities and preferences for their water and wastewater service (Chenoweth et al., 2010). Participant characteristics do not appear to be driving variation in expressed priorities. This lack of differentiation presents potential issue to water utility practices with regards to how this information is used to inform their planning and decision-making, particularly where their ability to demonstrate this is likely to be subject to scrutiny by regulators and stakeholders.

The application of a mechanistic perspective to the exploration of this finding could suggest that where preferences are not highly developed the selection of participatory mechanisms could play a more important role. In particular, the

selection of mechanisms that are structured such that there is the opportunity for participant to gain a greater understanding about the different attributes of their service combined with opportunities for reflection and reconsideration. The group prioritisation mechanism had attempted to provide these opportunities, however, analysis of the transcripts of these sessions suggest a limited appetite to engage in discussion sessions and, where they did, a difficulty in discussing the reasons for their preferences. The veracity of this finding, however, must be set in the context of the deployment of these elicitation mechanisms as part of an overall group session. This is despite the provision of information packs in advance of the sessions and time spent familiarising participants with the different attributes of their water and wastewater service. A longer time spent on this activity within the overall session would have provisioned greater opportunity for probing and exploration of views. With regards to mechanism selection, it may be that a multi-session approach be employed whereby complexity is gradually introduced to the participants with time allowed between sessions for participants to reflect and deliberate on the material provided. Similar staged approaches have been used in participative approaches that incorporate deliberative, visioning or multi-criteria analysis techniques (Consumer Council for Water, 2008; Kallis et al., 2006). It is thought that this promotes more engaged participants and nurtures responses that are more considered. It is also suggested that, where a discussion-based approach is utilised, the subject being discussed is relatively specific in nature. In the case of this study, the subject being discussed was broad covering both water and wastewater services; a subject where it has been demonstrated customers hold relatively undifferentiated priorities. Nurturing a relationship with customers over days or weeks rather than hours has the potential to pay strong dividends in their understanding of the participation process and their willingness to reciprocate the commitment to ensuring a productive outcome. The implication on time and resource constraints would need to be carefully considered.

The slight differences in variation in the expressed priorities of domestic customers when considering intra-method variation may be a reflection of the elicitation mechanism employed. For example, where participants were required to work together to form a consensus as in the group prioritisation activity as opposed to the individual and budgeting elicitation mechanisms whereby priorities were recorded individually. With regards to mechanism selection this suggests the need for consideration as to whether divergent or convergent opinions are desired as this has potential implications for the types of outputs generated and ease of using this data. Furthermore, it also serves to highlight the prudence of capturing views on the participant experience, particularly where mechanisms include group elicitation. This may help to reveal how easily participants felt they could contribute and provide some assurances as to the validity of the data collected.

To summarise, the elicitation mechanism (i.e. individual, group or budgeting) deployed appear to produce internally consistent outputs. This both, reflects the importance of consistent deployment practices but also raises concerns about the usefulness of this information where differentiated preferences (i.e. for different service attributes) are required for planning and decision-making processes. It is posited that the use of multi-phase elicitation mechanisms or mechanisms that promote extended contact may be important factors to consider in participatory mechanism selection in this context in order to provision a more in-depth exploration of views, but, this needed to be weighed up against the greater resources required by these forms of mechanisms. Furthermore, these findings have served to highlight the importance of considering the aim of elicitation i.e. to seek divergent or convergent preferences and ensuring that the selection of participatory mechanisms and the processes in place to use these outputs are compatible with these aims.

Secondly, the analysis of inter-method variation suggested that the prioritisation results generated from the use of budgeting as an elicitation mechanism

provided significantly different results than those generated by individual and group prioritisation mechanisms where levels of inter-mechanism variation were low. The low levels of inter-mechanism variation will be addressed first. This result can be partially explained by the observed lack of appetite to engage by participants exposed to the group prioritisation mechanism. As described in Section 4.10.2, where participants did not amend the prioritised set of water and wastewater service attributes (generated from the introductory activity) the resulting ranking was commensurate with having undertaken the individual prioritisation activity. Therefore, whilst little can be said here about the variation in elicited preferences, as has been outlined above, it does serve to highlight some potentially important considerations with respect to the structuring and aims of participatory mechanisms. More interesting perhaps, is the deployment of the budgeting elicitation mechanism as the sole precursor of significant variation in expressed priorities. This has been speculated to be attributable to the introduction of monetisation as a factor in the budgeting prioritisation exercise when compared to the individual and group prioritisation exercises. Participants appear to be sensitive to bill impact in determining their priorities. This reveals a significant challenge that water utilities may face when discussing service level improvements across a range of both attributes and bill impacts. The provision of information with regards to how customer bills are set and the process by which this is regulated to ensure customer interests are protected may provide some assurances to customers and help to alleviate any suspicion regarding bill increases. However, it does promote the need for caution where using budgeting as the sole or joint elicitation activity in single or across multiple participatory mechanisms in planning and decision-making. Water utilities may consider reframing budgeting type activities in future studies in order to elicit a more robust set of priorities. The re-framing of this activity would mean that instead of providing participants with the opportunity to purchase improvements from a pre-determined total budget, participants would be informed that their bill would be subject to a specific monetary increase and they would be asked to determine what proportions of their bill they would want to spend across each attribute. This could be achieved by providing participants

with tokens each representing a nominal percentage of the total budget. This would remove the potential for observed bias towards cost based decisions, providing an improved reflection of participants' true priorities and provide a more comparable data to accompany other prioritisation-based activities.

There are several features of the study that warrant some comment in terms of possible constraints on its veracity and generalisability. Firstly, whilst the results have suggested that participant characteristics did not play a major role in influencing the outputs of each session, issues with recruitment prevented accurate replication of participant characteristics across groups using different methods. Because group membership was unique for each session, it might be argued that there is no *a-priori* reason why the outcomes should be commensurate either within or between the three tested methods. However, several features of the study (constrained attribute set, common participant experience of service levels, single service supplier etc.) offer important reasons why similarity of priorities might well be expected. Secondly, the prioritisation activities that were considered in this study were time constrained and this limited the capture of richer data in relation to how participants were forming and reasoning their prioritisations. Spending greater time on these activities would nurture a more insightful comparison. Finally, due to the nature and format of the outputs from the various activities, some data transformation (as discussed above) has been implemented in order to generate comparable metrics for the three tested methods.

The incorporation of public opinion and preferences in investment decision-making is both an indicator of democratic governance and an important feature of consensual service provision (Chess, 2001; Ravetz, 2005; Renn et al., 1993). Regulatory obligations and incentives to embrace customer aspirations (and importantly to evidence robust and convincing processes for doing so) provides a non-trivial challenge to both public and private enterprises to become more competent at deploying and integrating customer views into their investment

plans. The wide variety of mechanisms available to enact public participation raises specific challenges for practitioners who are tasked with the successful design, deployment and embedment of customer views and preferences. In particular they need to be able to confidently discriminate between different mechanisms and have clarity around the implications of their choices particularly where they are used in clusters as has been demonstrated in Section 2.4. The findings suggest that each of the three tested mechanisms (group prioritisation, individual prioritisation, and group budgeting) generate broadly internally consistent outcomes. When considering the outputs across the three mechanisms however, those from the group budgeting activity are inconsistent with those from the other two methods. Furthermore, the lack of differentiation of domestic customer views has been highlighted. These findings provide insight into the some factors that influence the design and deployment of elicitation mechanisms (reflecting those typical to participatory mechanisms) in the context of exposing priorities for water and wastewater services. They also have broader relevance for public participation and priority elicitation processes across a range of sectors. With very little previous work having been conducted to compare intra and inter method reliability, our findings can only really be seen as indicative and caution is required in extrapolating their inferences. Further comparative examination of a wider range of participatory mechanisms (including variants of the same method), the exploration of these in more depth and the development of new experimental procedures to ensure objective testing will allow practitioners to have greater confidence in the tools they use and better understand how they might influence preference ranking outcomes. Furthermore, research should maintain a strong practitioner focus with evaluations being conducted in as realistic a context as possible. Credibility of process is vital to the integrity of participation processes and this contribution offers a constrained but stimulating contribution to addressing this gap in knowledge.

4.12 Conclusions

This study has contributed to the exploration of the influence of participatory mechanisms and preference formation on participative mechanism outputs by exploring output variation within single elicitation mechanisms and between variant elicitation mechanisms in the context of customer priorities for water services. The study has generated findings that suggest limited intra-mechanism output variation and yet significant inter-mechanism variation in outputs, particularly with respect to budgeting elicitation mechanisms. Whilst the experimental weaknesses of this study have, to some extent, limited the veracity of the findings, it has served to highlight potential important methodological considerations for participation and water utility practitioners when designing and deploying single and multiple mechanism participatory planning and decision-making approaches in this context. This study has also highlighted the need for further work in this area, particularly with regards to the development of experimental procedures.

5 EXPLORING CUSTOMER ACCEPTABILITY OF WATER AND WASTEWATER INVESTMENT SCENARIOS: A REFLECTION ON THE FINDINGS FROM STUDY A

5.1 Introduction

This chapter describes in detail Study B. This study is concerned with the further exploration of the influence of ‘bill impact’ as a feature of participative mechanisms deployed with domestic water and wastewater customers. It represents an additional contribution to address one of central tenets of this research: to assess the significance of participative mechanism selection and design in water utility planning and decision-making.

The findings from Study A (see Section 4.10) highlighted that the use of budgeting mechanisms, when compared to individual and group elicitation mechanisms introduces significant variation. It was suggested that where water and wastewater service improvement proposals had a lower bill impact they were more likely to be selected as part of a budgeting exercise. Given the purpose of that study was to explore preferences across a range of different elicitation mechanisms (in order to explore potential impact of elicitation mechanisms), it did not provision an in-depth assessment as to the reasons for their views. With the need for water utilities to explore customer acceptability in relation to their proposed water and wastewater investment proposals as part of the PR14 planning and decision-making process, it is increasingly important to understand the extent to which bill impact (or indeed other factors), as a feature of participative mechanism design, drives water customer rationales for acceptability.

Section 1.2.1 has presented and discussed findings from studies exploring public attitudes towards alternative water sources and water efficiency behavioural campaigns. In these cases the concept of ‘acceptability’, and its constituent characteristics, was explored relative to specific technological

interventions by water institutions i.e. the introduction of indirect effluent reuse or desalination schemes. Whilst this provides a useful contribution to discussion on 'customer acceptability' it fails to fully position acceptability of these water management approaches in the context of the overall service and the potential impact this has on water and wastewater bills. Although surveys and other research to identify the priorities of customers for domestic water and wastewater services is a common practice amongst water utilities across many countries, and may yield insights pertinent to this enquiry, disappointingly little finds its way into either the academic or practitioner literature. Two notable exceptions, Willis et al. (2005) and Consumer Council for Water, (2008), suggest that the delivery of water and wastewater services is an area where customers do not possess highly differentiated priorities. It is acknowledged that consumers find it difficult to articulate priorities or even may not have considered their preferences for a service that they take for granted or rarely consider (Kelay et al., 2008). The presentation of 'bill impact' could arguably be considered a key determinant in customer decision-making.

International academic studies into the delivery of water services have shown that in general, participants prioritised the quality and safety of drinking water over the reliability of the supply (Chenoweth et al., 2010; Kelay et al., 2008). Chenoweth et al (2010, p.4339) argue that this may reflect the relative stability of the water services in the study countries and hypothesise that "When supply is unreliable, reliability takes precedence. Once the water supply is reliable, quality issues come to the fore as the priority of water customers". Alternatively, some argue that this result reflects the public health factors inherent in discussions around water quality, which are less explicit in other attributes of water services (Kelay et al., 2008). It is also pertinent to consider the impact of individual customer experiences in the development of priorities for water services. Customers are strongly influenced by their sensory perceptions and may use these as the basis for assessing the perceived safety or quality of their drinking water (Falahee & MacRae, 1995; Skellett, 1995). Conversely, it is possible that customers may only generate highly differentiated preferences for other elements of service based on their own

experiences or, in some cases, those of others around them. For example, there is some evidence that customers who have experienced problems with their drinking water are more likely to seek alternatives to tap water as a way of minimising their concerns regarding potential health risks (Harding & Anadu, 2000). In comparison, the relatively sparse evidence base in the literature on customer preferences for wastewater services only highlight high levels of concern over sewer flooding incidents (Arthur et al., 2009). The evidence described above, which is corroborated in the UK context a study by CCW (2008), suggests that customers have relatively undifferentiated priorities for investment in water and wastewater services. So, for those professionals charged with determining customer levels of acceptability for water and wastewater investment proposals they need to be able to clearly discriminate whether proposed bill impact (as a feature of mechanism design) is the driver of their views or whether other factors are at play. This study reports the findings of domestic customer acceptability testing to further explore the findings generated by Study A.

5.2 Background

The aim of this study was to explore the extent to which the bill impact of water and wastewater investment proposals (as a feature of mechanism design) was a driver of their acceptability. This study was designed to further explore the findings generated by Study A; it does not address a specific research question but provides support for addressing Research Objective 2 in relation to the influence of participative mechanism selection and design and preference formation on the outputs from participatory mechanisms in water services.

Section 5.1 outlined the relevance of this study in light of water utility responsibility for the deployment of acceptability testing with its customers for its PR14 business plan submission. Furthermore, it highlighted the lack of published research about customer preferences for attributes of water and

wastewater service delivery. The lack of attention this topic has received in the literature, combined with the greater focus on evidencing customer acceptability of investment proposals as part of the Price Review regulatory framework, renders the furthering of understanding about the characteristics of customer acceptability and whether exposure to 'bill impact' as a feature of the mechanism design impacts their expressed preferences. The fieldwork activity, whilst providing the raw data for this study, was additionally commissioned by the research sponsor to support a quantitative acceptability testing study providing additional insight into drivers of customer acceptability across a range of water and wastewater investment proposals and supporting them in their strategy and business planning. As has been outlined in Section 3.4.2 this placed constraints on the content of the study. In water utility planning and decision-making it is typical to differentiate the provision of water and wastewater services into distinct attributes whereby levels of service are more easily measured. Investment proposals around these key attributes formed the basis of the sponsoring organisations business plan and were used in both this study and the complementary quantitative study commissioned by the sponsoring organisation.

5.3 Design of fieldwork activity

Section 5.2 has outlined the overarching rationale for the design of this study. This section will now provide and outline the design of the fieldwork activity deployed in order to generate data required gain further insight into the findings generated by Study A.

5.3.1 Fieldwork activity structure and content

Group discussions were used to explore customer acceptability of investment proposals across a range of water and wastewater attributes of service. Of particular interest was the acceptability of the LoS and associated bill impact. A group discussion setting provided the most suitable arrangement in terms of efficient use of resources and meeting sample quotas.

Each group discussion session followed the same structure and used the same content. The structure of the sessions centred around fifteen investment proposals across a range of water and wastewater attributes. The sponsoring organisation sought to make a distinction between non-discretionary areas of investment (i.e. investment required to meet statutory legislation i.e. WFD) and those that were discretionary. Non-discretionary investment was termed 'legal' for simplicity. Table 5-1 provides an outline of the investment proposal areas adopted, the descriptions that were provided to customers, their associated service type and their classification as 'legal' (if appropriate). Each water and wastewater attribute was associated with a high, medium or low investment scenario, each with a performance improvement (or deterioration) and an associated bill impact. The performance and bill impact features of each scenario and for each attribute are outlined in full in Appendix 9D1. The information already described resulted from the sponsoring organisations business planning and, as has been described in Section 5.2, was also used in a large-scale quantitative study conducted to explore % customer acceptance for variant investment and price scenarios. In order to maintain consistency with the sponsoring organisations quantitative study the author was privileged no control over this content.

Table 5-1 Investment proposal areas, descriptions and service types

Investment proposal	Service type
<p><i>Unexpected interruptions to supply</i></p> <ul style="list-style-type: none"> • Unexpected interruptions to water supplies may happen without warning because of burst pipes or other emergency works. • Affected properties can be without water for between 12 – 24 hours. • Investment by [name of water utility] can reduce the risk of this occurring, for example by replacing ageing pipes sooner, adding new mains supply pipes, and using improved technology to manage the network. 	<p><i>Water</i></p>
<p><i>Taste and smell of tap water</i></p> <ul style="list-style-type: none"> • Some customers experience incidents of an unpleasant taste and/or smell from their tap water. This can be caused by algae in reservoirs in summer months or chemicals used to treat the water to make it safe to drink (e.g. chlorine). • Properties can be affected over a period of time (e.g. a week). Running the tap does not remove the taste or smell • Investment by [name of water utility] can reduce the number of incidents, by adding additional treatment at water treatment works. 	<p><i>Water</i></p>
<p><i>Discoloured tap water</i></p> <ul style="list-style-type: none"> • Some customers temporarily experience discoloured tap water due to disturbance of deposits that accumulate in supply pipes, which can be caused by burst pipes or work on the network. • When this happens the tap water is usually brown in colour. Running the tap for several minutes does not remove the discolouration. • Discoloured water is normally safe, but customers who experience this often prefer not to use their tap water whilst experiencing the problem. 	<p><i>Water</i></p>

- Investment by [name of water utility] can reduce the number of customers affected by removing deposits or preventing them from accumulating in pipes.

Unexpected low pressure

Water

- Short term unexpected drops in the pressure of water supply to a property may happen without warning because of exceptional demand peaks, burst pipes or other emergency works.
- Affected properties will typically have very little water flow through their taps for 1 to 12 hours, but sometimes this can last for more than 12 hours.
- Low pressure can affect the use of appliances (e.g. washing machines) and ground floor showers and toilets. There may be no water in upstairs bathrooms and showers.
- Investment by [name of water utility] can reduce the risk of this occurring by replacing ageing pipes, increasing the amount of water that can be stored and supplied through existing assets and pipes, and using improved technology to manage the network.

Leakage from water pipes

Water

- ‘Leakage’ is treated water that is lost from water pipes. It includes water lost from United Utilities’ distribution network (85% of leakage) and water lost from customers’ supply pipes (15% of leakage).
- Some leaks in water pipes are unavoidable as water can seep from joints and pipes can be damaged by ground movement caused by freezing weather or the weight of traffic on a road above.
- [Name of water utility] can reduce leakage from water pipes, by repairing pipes, replacing old iron pipes with modern plastic pipes, and improving management of the water supply network.

Improving rivers

Wastewater

- By 2027 all rivers in Europe are required to meet ‘Good’ or better environmental standards that have been set by the
-

European Union.

- Rivers that meet the 'Good' standard support a wide range of wildlife. Lower standards in the rivers can be due to discharges from sewers or wastewater treatment works, or due to taking water from rivers for water supply (abstraction), which reduces river levels and flow.
- Currently 30% of the total length of rivers in the [name of region] meets the 'Good' standard or better. Investment by [name of water utility] is needed to ensure that all rivers meet the 'Good' standard by 2027.

Replaces water supplies

Water (Legal)

The water supply network in the [name of region] is integrated ('joined-up') across most of the region. This means that water can be easily shared between different parts of the region. However the supply network in [name of area] is separate from the rest of the region and relies on a small number of water sources, including [name of reservoir].

As water cannot be shared with [name of area] there is a higher risk of short periods of drought, for example, following periods of below average rainfall. This investment will develop alternative sources of water to supply the [name of area] region. It will also help conserve an internationally protected species of freshwater mussels that is found in the [name of area].

Maintaining the water system

Water (Legal)

Investment by [name of water utility] to maintain water pipes and treatment works against wear and tear, climate change (such as preventing flooding of water treatment facilities and adjusting to lower volumes of rainfall due to drier summers), and factoring in higher energy prices.

Drinking water standards growth

Water (Legal)

[Name of water utility] needs to meet changes to legal obligations for drinking water quality, to ensure new properties are connected to the water network, and to ensure that there are sufficient supplies of drinking water to meet the growing population.

<i>Internal sewer flooding</i>	<i>Wastewater</i>
<ul style="list-style-type: none"> • Blocked or overloaded sewers can very occasionally flood the inside of properties with wastewater (e.g. from drains and toilets). This can be caused by failures in the sewer system (e.g. a collapsed sewer) or heavy rainfall. • Affected properties typically experience this type of flooding once every 10 years. Impacts include foul smells, floors and walls that need to be cleaned, carpets that need to be replaced, and damage to other possessions. • Investment by [name of water utility] can reduce the risk of internal sewer flooding occurring by replacing old sewers or adding storage to cope with heavy rain. 	
<i>External sewer flooding</i>	<i>Wastewater</i>
<ul style="list-style-type: none"> • Blocked or overloaded sewers can very occasionally flood gardens or other areas outside of properties with wastewater (e.g.: from drains). This can be caused by failures in the sewer system (e.g. a collapsed sewer) or heavy rainfall. • Roads, pavements and parks may also be affected. • Affected areas typically experience this type of flooding once every 10 years. Impacts include damage to plants and grass lawns may need re-turfing. • Investment by [name of water utility] can reduce the risk of external sewer flooding occurring by replacing old sewers or adding storage to cope with heavy rain. 	
<i>Wastewater pollution incidents</i>	<i>Wastewater</i>
<ul style="list-style-type: none"> • Pollution incidents can be caused by failures or blockages in the sewer system, and also by periods of heavy rain, which overload sewers. This can result in the discharge of untreated wastewater to rivers or the wider environment. • In most cases the impacts are temporary and will last only a few days. Impacts are mostly visual (e.g. visible litter) and wildlife is not significantly affected. • Investment by [name of water utility] in the monitoring and operation of the wastewater network can reduce the number of 	

pollution incidents that happen.

Maintaining the wastewater system

***Wastewater
(Legal)***

Investment by [name of water utility] to maintain sewers and wastewater treatment works against wear and tear, climate change (such as preventing flooding of treatment works in periods of heavy rainfall through improving drainage), and factoring in higher energy prices.

Ensuring bathing waters meet minimum standards

***Wastewater
(Legal)***

Bathing waters are beaches that are classified for use by bathers and swimmers. Bathing waters are measured against European Union standards as either 'Poor', 'Sufficient', 'Good' or 'Excellent'. From 2015 all bathing waters must meet the 'Sufficient' standard. This is the minimum legal standard for human health for swimming and other activities that involve contact with the water.

Twenty bathing waters in the [name of area] do not meet the minimum standard. Discharges from sewers and wastewater treatment works can contribute to bathing waters being classified as 'Poor'. Investment by [name of water utility] will help ensure that these bathing waters meet the 'Sufficient' standard.

Wastewater standards for growth

***Wastewater
(Legal)***

[Name of water utility] needs to meet changes to legal obligations for the treatment and disposal of wastewater, to ensure new properties are connected to sewers, and to ensure that there is sufficient capacity to deal with the growing population.

The group sessions were split into two parts. Part one, the first section was used to familiarise the participants with the different attributes of their service using the descriptions in Table 5-1 as a focus for discussion. They were informed about factors that can impact bills i.e. efficiency savings, inflation, new legislation and where the water utility can choose to improve performance. They were then asked to complete a simple form that got them to rate the importance of each attribute on a scale of 1 – 5. Part two, used these attributes to present an investment scenario (the ‘medium scenario’) which proposed a level of improvement and the associated bill impact for each attribute. If participants found this investment scenario acceptable they were then asked if they would pay more for a greater improvement. If yes, then a ‘higher scenario’ was presented. However, if participants found the ‘medium scenario’ unacceptable then a ‘lower scenario’ was explored.

5.3.2 Selection of the research population and sampling strategy

Participant selection for the study involved a purposive non-probability sampling approach privileging relative significance of group membership over simple statistical representation (Patton, 2002). Justification for use of this method is commensurate with that provided in Section 4.3.2, for Study A.

The primary unit of analysis in this study were domestic water and wastewater customers receiving their service from a single water utility operating in England. The sample frame for this study reflected the desire to yield sample coverage of domestic customers across the following parameters including: SEG; customers in receipt of means-tested benefits; age (20-44 and 45+); household setting (urban, rural and coastal) and whether the household had a metered or un-metered supply. These parameters reflect those typically selected for customer engagement exercises within the water sector in England and Wales representing potential drivers for variation in preferences for water and wastewater services.

A definitive sample size was not established as part of the design of this study. However, as with Study A, between six – twelve participants per session was considered a suitable range taking into account the conditions needed for active conversation and manageability of the session whilst working within the constraints of available resources (Millward, 2012). Each group was to be composed of participants with similar characteristics to facilitate ease of discussion and analysis. Table 5-2 sets out the desired sample frame for this study.

Table 5-2 Anticipated sample population

Location	SEG	Age	No. of participants	Measured / unmeasured
Urban	ABC1	20-45	8	Mixed
Urban	C2DE	46-75	8	Mixed
Urban	C2DE	20-45	8	Mixed
Urban	ABC1	45-75	8	Mixed
Rural	ABC1	20-45	8	Mixed
Rural	C2DE	46-75	8	Mixed
Rural	ABC1	20-45	8	Mixed
Rural	C2DE	46-75	8	Mixed
Low income		20-45	8	Mixed
Low income		46-75	8	Mixed

5.4 Development of research instruments

Participants were recruited to take part in a group discussion session lasting approximately two hours. This duration falls at the latter end of the recommend time lengths for group sessions (Millward, 2012) but was necessary to gain feedback on all service attributes.

The extremely tight schedule for the delivery of this study (required to enable the sponsoring organisation to use the outputs generated in their PR14 planning and decision-making) precluded the use of pilot study, which would have enabled the testing of attribute descriptions and the structure of the sessions. However, the descriptive content of this study replicated that which

was used in the concurrent quantitative study that had undergone thorough pilot testing with relation to the wording and presentation of attributes with domestic customers. The author was therefore satisfied that this would not present an issue in the case of this study, particularly given the discursive nature of group discussions provisioning opportunity for participant clarification should this be necessary. To mitigate against structural issues with this study in light of no pilot study, the first two groups were monitored to ensure that the structure of the sessions was appropriate. No issues were identified as requiring modification as a result of this session observation.

A PowerPoint slide show was generated with a slide for each service attribute. This provided a) the descriptions outlined in Table 5-1 b) a range of pictures demonstrating showed the impacts of potential service failure c) the 'medium' investment proposal for each service attribute with associated bill impacts. Further slides were generated for 'higher' and 'lower' scenarios to be used as necessary. On presenting each attribute the following areas of discussion were proposed:

- What are your initial reactions?
- Is this LoS and the corresponding impact on your bill acceptable? Why? / Why not?
- Would you be prepared to pay more for a higher LoS? Why? What would you be prepared to pay? [If the participants were prepared to pay more the 'high scenario' was presented and reactions explored]
- Would you be prepared to accept a lower LoS in return for a lower impact on your bill? Why? What would you accept? [If participants were prepared to accept a lower LoS then the 'low scenario' was shown and reactions explored]

The different groups of investment attributes (water, wastewater and legal) were then grouped together and presented as a package of water, wastewater or legal investment and reactions were explored. Participants were then asked whether they changed their opinions now that they had seen them as a package and whether they would make any changes within that

package of investment. The same exercise was then conducted with the total package of investment and total bill impact. This activity therefore provided a set of importance ratings and qualitative assessment of acceptability relative to bill amount and LoS and the rationales for their choices. The topic guide developed for use in this study is available in Appendix 9D2.

5.5 Deployment of fieldwork activity

This section provides a summary of the approach adopted in the deployment of this fieldwork activity. It outlines the recruitment strategy adopted and the rationale for the selection of research locations. The ethical conduct of this fieldwork was outlined in Section 3.6.

As outlined in Section 5.3.2, a purposive sampling approach was adopted to identify the sample population parameters to be reflected in the participant population. As outlined in Section 5.2, it was necessary to employ a professional market research company operating within the supply region of the sponsor organisation to undertake the recruitment of research participants. A screening questionnaire was utilised to identify appropriate participants as this reflected the most efficient means by which to access this sample population. This screening questionnaire was developed in conjunction with the market research professionals based on the sample quota outlined in Table 5-2. MRS Code of Conduct was adhered to throughout this process. Interviewers were required to declare on each interview questionnaire that this protocol was adhered to, providing assurances that the recruitment process was conducted in an ethical manner. The recruitment questionnaire deployed in this study was similar to that used in Study A (in Appendix 9C1) noting the difference in dates and the use of this study's sample quota. They deployed local face-to-face interviewers in areas selected as potential locations for the group sessions to be held. Interviewers were fully briefed about the purpose of the study and clearly informed about the task that they were being set i.e. the recruitment of participants in line with the

sample quota that were willing and able to attend groups sessions at pre-defined dates and times. Participation was incentivised with the gift of £40 for their time distributed to participants following the completion of each group session. Justification for the use of monetary incentivisation was outlined in Section 4.6. Those members of the public that agreed to participate were given a letter explaining what details of the session and a brief introduction to what they would be discussing.

The actual locations for the group discussion sessions represented a balance of urban, rural and coastal settings within the water utility supply region, where good relationships had been built with recruiters offering an efficient method of ensuring good participation at each event. Venues for the group sessions were selected by the market research company taking into account accessibility, convenience and the availability of established contacts that had developed in, or near, these locations.

5.6 Timing of fieldwork activity

The main study sessions were conducted from the 13th May – 23rd May 2013. The overall timing of this research reflected the interdependencies of this study relative to the sponsoring organisations timetable with respect to their PR14 Business Plan preparations. It was also important to schedule this research to avoid coinciding with holiday periods and / or major events that may have affected participant availability. Furthermore, the group sessions were predominantly conducted on an evening after work hours to ensure maximum availability.

5.7 Data collection and analysis

The data was collected by market research facilitators using digital audio-recordings, and questionnaire responses. Consent for audio recording was requested both at the recruitment stage and also prior to the commencement

of each group session. Justification for the use of audio-recording is commensurate with that provided in Section 4.6 for Study A. Full written transcripts of each session were developed facilitating accurate data analysis (Patton, 2002). Audio recordings were transcribed by the Market Research Professionals into Word documents and the transcript content was then imported into Excel for further analysis.

Data inputted into Excel was crosschecked and then cleaned to remove any obvious errors observed. As audio-recordings of each session were not provided to the author, only basic spelling errors could be addressed. The data was sorted by group and then by investment proposal. The verbatim discussion from each group and for each investment proposal was then analysed with the aim of determining the level of acceptability that was observed for each attribute of service for each investment proposal across the entire sample. Each groups response was classified as either: Acceptable, Mixed Views or Unacceptable and determined by the extent to which agreement was observed amongst participant discussion recorded in the transcript data. Using thematic content analysis (See Section 6.3.10 for outline of process), the primary rationales for each group's assessment of the investment scenario was, or was not acceptable were recorded. An excerpt from the thematic chart employed in this analysis is available in Appendix 9D3. The importance ratings data generated at the start of each session were provided to the author as an averaged rating, per attribute, per group. The group data was therefore averaged across all groups to provide a total rating for each attribute across the whole sample.

5.8 Results

This section reports the findings this study has generated with respect to the importance of each investment proposal and the assessment of acceptability for each investment proposal across each group. Analysis of these results is discussed in Section 5.9.

Section 5.3.2 outlined the sampling strategy design. As Table 5-2 showed, this sample design offered a balance of SEGs, age, group and locations for each elicitation mechanism. The face-to-face recruitment interviews attempted to recruit ten participants for each session assuming an attendance rate of approximately 80%. Table 5-3 outlines the achieved sample. Expected attendance rate was achieved for five out of the ten groups. Over attendance was reported at two out of the ten groups and under attendance was reported at three out of the ten groups. The achieved sample size for this study was seventy-eight out of the anticipated eighty.

Table 5-3 Achieved sample population

Group ref:	Location	SEG	Age	No. of participants	Measured / unmeasured
1	Urban	ABC1	20-45	7	Mixed
2	Urban	C2DE	46-75	8	Mixed
3	Urban	C2DE	20-45	8	Mixed
4	Urban	ABC1	46-75	9	Mixed
5	Rural	ABC1	20-45	6	Mixed
6	Rural	C2DE	46-75	8	Mixed
7	Rural	C2DE	20-45	8	Mixed
8	Rural	ABC1	46-75	7	Mixed
9	-	Low income	20-45	9	Mixed
10	-	Low income	46075	8	Mixed

Table 5-4 outlines the importance ratings data that was captured in the group sessions. The ratings were provided to the author as an averaged group rating and these have been collated to for an average rating across the whole sample.

Table 5-4 Importance ratings data (Full Sample)

Service attribute / investment area	Importance rating (Full Sample)
Maintaining the water system	4.8
Maintaining the wastewater system	4.7
Drinking water standards growth	4.6
Internal sewer flooding	4.6
External sewer flooding	4.3
Leakage from water pipes	4.2
Wastewater pollution incidents	4.2
Taste and smell of tap water	4.1
Discoloured tap water	4.1
Wastewater standards for growth	4.1
Ensuring bathing waters meet minimum standards	4.0
Improving rivers	3.7
Unexpected interruptions to supply	3.2
Unexpected low pressure	2.8
Replaces water supplies	2.8

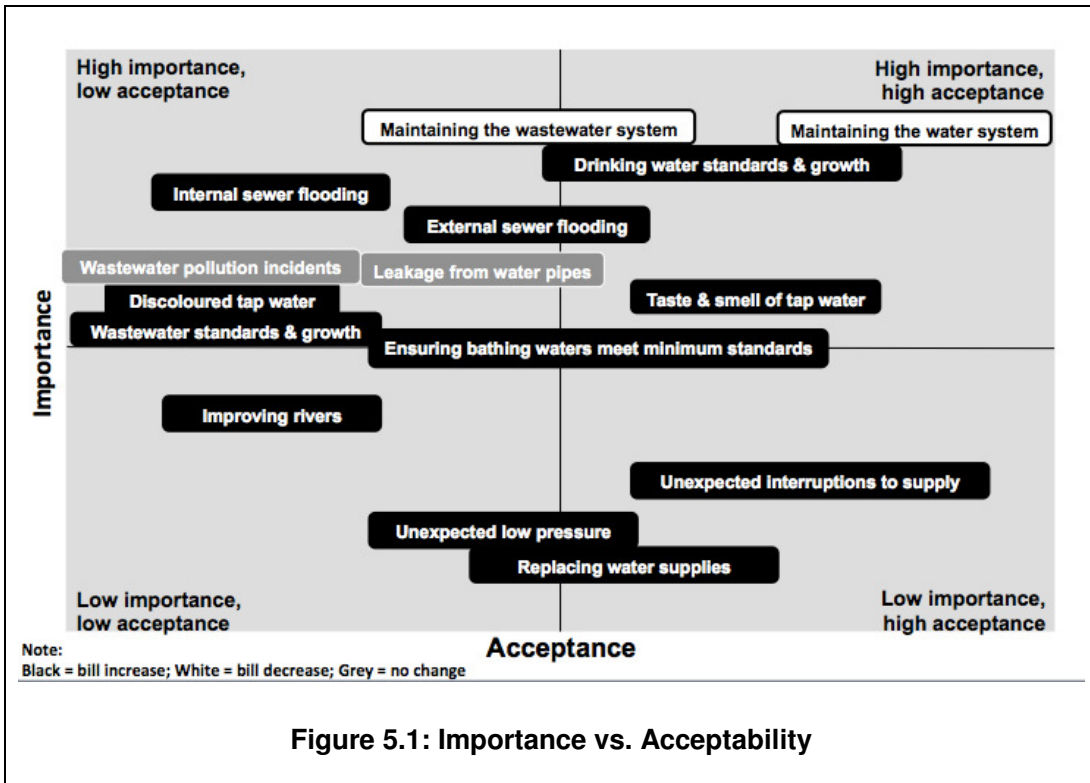
Table 5-5 outlines the assessments made for each investment area. For the purpose of this study only the 'medium' scenario has been used as this was presented across each investment area unlike the 'higher' and 'lower' scenarios. A 'Y' response indicated that the scenario was acceptable to participants, a 'M' indicated that there were no dominant theme reflected indicating acceptability or unacceptability by participants, a 'N' indicates that the investment proposal was not acceptable to participants. An N/A indicates where no level of acceptability could be assessed due to there being no coverage of this in the transcripts for each group provided by the Market Researchers.

Table 5-5 Acceptability assessment per group per service attribute

	BWQ	DWSG	RWS	WM	WWM	WWSG	DISC	LEAK	LOWP	T&O	UNEXP	ESF	ISF	POLL	RIV
	£12.31	£3.28	£1.10	-£12.31	-£20.46	£15.70	£1.27	£0.00	£0.54	£0.02	£0.67	£0.09	£4.45	£0.00	£8.10
GROUP 1	M	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	M	M	Y
GROUP 2	Y	M	Y	M	M	N/A	N	N	N	Y	M	M	Y	N	N
GROUP 3	N/A	Y	N	Y	M	N	N	M	N	M	Y	Y	N	N	N
GROUP 4	Y	Y	M	Y	N/A	N	M	Y	Y	Y	Y	Y	M	N	M
GROUP 5	Y	Y	Y	Y	Y	M	Y	N	Y	Y	Y	M	Y	M	Y
GROUP 6	M	M	M	Y	N/A	N	M	N	M	Y	M	N	M	M	M
GROUP 7	Y	Y	Y	Y	Y	N/A	M	N	M	N	Y	Y	M	M	M
GROUP 8	N	Y	Y	Y	Y	Y	M	N	Y	N	Y	N	M	M	M
GROUP 9	Y	Y	M	Y	N/A	N	M	Y	N	Y	M	M	M	M	N
GROUP 10	N	N	Y	Y	M	N/A	N	Y	M	Y	Y	M	M	M	M
TOTAL Acceptable	5	7	6	9	4	1	2	3	4	7	7	4	2	0	2
TOTAL Mixed views	2	2	3	1	3	1	5	1	3	1	3	4	7	7	5
TOTAL Unacceptable	2	1	1	0	0	5	3	6	3	2	0	2	1	3	3
TOTAL No response	1	0	0	0	3	3	0	0	0	0	0	0	0	0	0

KEY: (BWQ – Bathing water quality) (DWSG – Drinking water standards and growth) (RWS – Replacement water supply) (WM – Water maintenance) (WWM – Wastewater maintenance) (WWSG – wastewater standards and growth) (DISC – discoloured water) (LEAK – Leakage) (LOWP – low pressure) (T&O – taste and odour) (UNEXP – Unexpected interruptions) (ESF – external sewer flooding) (ISF – Internal sewer flooding) (POLL – wastewater pollution) (RIV –improving rivers)

Using the total acceptability ratings from Table 5-5 and the importance ratings from Table 5-4, Figure 5.1 has attempted to demonstrate the association between the importance rating associated with each investment proposal and the level of acceptability assessment.



Briefly, this provides a very high level representation of the results which suggest that those attributes that are associated with a bill decrease or no impact to the bill, despite being important to the participants, reflect a differing level of acceptability. Similarly, some of those investment proposals that reflect a bill increase received high levels of acceptability despite not being important to the participants.

Further analysis of the levels of acceptability relative to the bill impacts associated with each was undertaken. Each service attribute investment

proposal has an associated monetary value. These service attributes were banded to reflect the range of bill impacts presented. Table 5-6 outlines the adopted value banding classification. The percentage of responses characterised as acceptable, mixed or unacceptable across all investment proposals within each value band was then determined. This data was charted to establish the associations between the value of the investment proposal and the classification of response. The percentage of responses across each classification, and within each price band, was then calculated within the responses gained from each group to identify whether any relationship between value band and acceptability existed.

Table 5-6 Investment proposal value banding

Value band	No. of investment proposals in band
< £0.00	3
£0.00 - £0.99	6
£1 - £4.99	11
£5 - £9.99	2
£10+	2

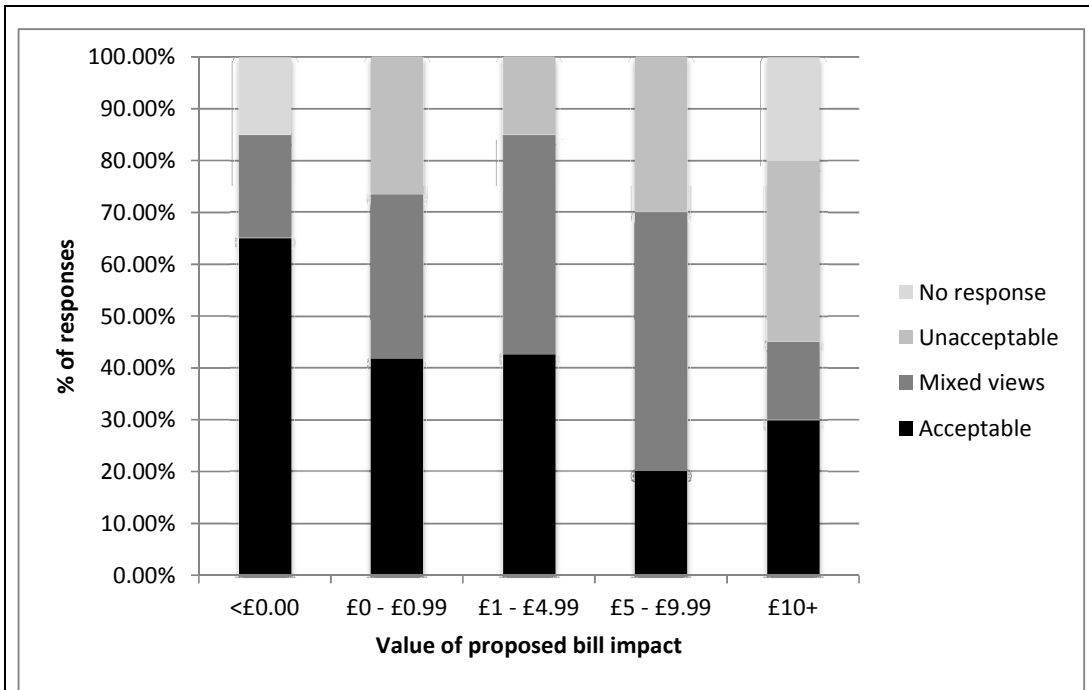


Figure 5.2 Chart showing the % of responses across the total sample relative to the value of proposed bill impact

Figure 5.2 shows that there are a higher percentage of acceptable responses associated with investment proposals with a value less than £0.00. The percentage of acceptable responses does not decrease consistently with increasing bill impact suggesting that other factors may be associated with participant decisions. Similarly, there are higher levels of unacceptability with associated with investment proposals with a value of £0 - £0.99 than there at £1- £4.99.

The findings from Study A (See Section 4.10) suggested that price (or bill impact) was a key determinant of selection (or acceptability) in the participatory budgeting exercise that was deployed. This study aimed to explore further the influence of bill impact (as a feature of participative mechanism design) on practitioner choices. Figure 5.1 and Figure 5.2, whilst providing only cursory

insight into the data collected from this study, suggests that whilst bill impact may be an influential factor in participant's decisions, it is, however, not the only factor that appears to be driving acceptability. An in-depth analysis of the transcript data has been used to investigate further what other factors influence participant responses.

5.9 Analysis of results

This section will describe in more detail the results from this study and outline the main findings. The investment proposal attributes outlined in Table 5-1 will structure the discussion.

5.9.1 Rationalisation strategies

There were several broad strategies employed by participants in their rationalisation of the acceptability of investment proposals. These included:

- a) The calculation of monthly bill impact of the proposed investment from the annual impact provided
- b) Delaying the provision of views on the acceptability / unacceptability of investment proposals on the basis that they want to see the overall total bill (indicating a propensity towards cost related decision-making)
- c) On-going tracking of aggregate bill total
- d) The estimation of revenue from the overall supply region on the basis of the proposed investment

By examining the occurrence of these strategies relative to the attribute investment proposal being discussed and the proposed bill impact of that investment proposal there doesn't appear to be a correlation between these strategies and the value of the bill impact or attribute type. Whilst it suggests that the presentation of bill impact within participative mechanisms triggers participants to consider bill impact as a feature of their decisions, these strategies were observed in discussions of both high value and low value

investment proposals and across a range of service attribute types suggesting this suggesting these strategies are not triggered by size of bill impact.

The finding that some participants divided the annual bill impact into monthly bill impact suggests that participants may find this presentation easier to relate to. This is supported by the data collected from the introduction section of each focus group where the participants discussed their current bill levels. The majority of participant described their current bill level in terms of a monthly amount. The occurrence of this rationalisation strategy was strongly aligned to an 'acceptable' response from participants.

The concern about overall bill total which underpins the strategies of delaying of providing a response and the on-going tracking of aggregate bill totals signals a strong influence of cost in the decision-making process but also the potential influence of attribute sequencing i.e. the order in which attributes (of differing bill impacts) are presented to participants. Methods for alleviating the potential sequence bias would be to provide participants with the overall bill impact at the start of the session as opposed to the end of the session thus alleviating the underlying concern about aggregate bill totals. These were typically associated with an overall mixed view of acceptability.

The estimation of the potential regional revenue from investment proposals was typically strongly related to an "unacceptable" response. Whilst this was observed in discussion for a range of service attributes and proposed bill impacts, analysis of the transcripts suggests that this rationale is predominately employed where participants find the proposed bill impact expensive. The analysis also suggests that subtly underpinning this is a feeling of not wanting the water utility to benefit from the bill increase.

5.9.2 Bathing water quality

This attribute is in the highest investment proposal value band. However, four out of the ten groups considered the investment proposal for Bathing Water Quality to be acceptable. Analysis suggests that in the majority of the groups the main driver behind their response is the perceived benefit they will gain from the investment. Many state that they enjoy using the beach as a resource and therefore appear to value the potential amenity and recreational benefits for both themselves personally but also their family. Cost does appear to be minor influence in these decisions with the majority of groups finding the annual bill impact acceptable (as presented) or acceptable when disaggregated into a monthly bill impact. Those that found the bill impact to be unacceptable acknowledged that despite this they considered the investment to be a high priority. Those groups considered this investment proposal to be unacceptable generally considered this area of investment to be of lower priority with there being a desire to invest in other service attributes instead potentially where they feel there will be greater personal benefit. With regards to cost they are generally concerned about the accumulation of cost, perhaps because it is in the higher value band. There was also concern about the level of potential revenue accrued from this investment proposal and this was linked to levels of profits and lack of re-investment. Thus, in summary, it appears that the main factors influencing the acceptability of this investment proposal are the perceived personal benefits of the investment and cost played a more minor role despite being in the highest value band.

5.9.3 Drinking water standards and growth

With a bill impact of £3.28 this attribute is classified in the middle level value banding. Seven out of the ten groups were classified as finding the proposed investment to be acceptable. Cost appeared to be a greater influence on the acceptability of investment into this service attribute. Some considered cost relative to the benefit they considered the investment to provide i.e. the continued delivery of water that meets drinking water standards and it is

acknowledged to be a vital to health. Other groups however, judged the acceptability of this investment purely on the cost (Manchester ABC1) or their view of the contribution of the bill impact of this investment proposal to the overall cost so far (Preston C2DE). Where this investment proposal was deemed unacceptable the rationale provided was that they were happy with the existing LoS and therefore did not feel happy with paying for improvement which they did not feel was necessary. Linked to this was a feeling expressed in one of the groups that they would not be able to personally perceive any improvement in quality.

An element of this proposed investment did appear to cause participants some concern and was a common theme amongst those groups that recorded a response of mixed views. This was in relation to developer costs. Participants appeared to believe that they were paying for the connection of new developments to the existing infrastructure as opposed to the increasing costs of supplying the additional resource as a result of the additional developments. Whilst this did not appear in the majority of cases to affect the overall view it was picked up as an area of concern. It would be suggested that in future studies attention must be paid to make this distinction. In summary, it appears that the nature of this attribute i.e. its contribution to health and safety and therefore its criticality was the main driver in its acceptability however, cost was a strong feature in many of the responses.

5.9.4 Replacing water supplies

The proposed investment is valued at £1.10, which places it in the lower value banding. Six out of the ten groups found this investment to be acceptable. Those groups that found this acceptable used a variety of rationales. It was generally accepted that the cost of this proposed investment was acceptable, with some groups stating that you wouldn't notice this impact (Southport ABC1) and that it was affordable for even the lowest of incomes. It was frequently reduced to a monthly impact in their decision making process. Another equally influential rationalisation was that the investment proposed intended to resolve

the issue therefore preventing this on-going cost of this in the future. The investment was therefore considered good value. One group found this acceptable on the basis that everyone has the right to have access to a water supply. There was some underlying minor concern expressed about the localised impact of the investment but this did not appear to influence the acceptability as it was noted that this was a short-term investment. There was one group, which found this to be an unacceptable investment. Their rationale for the investment being unacceptable was that they felt that if the area where the investment was to be focused was already supplied with water then this was sufficient. It was stated that they would be happy with the scope of the investment if there were no associated bill impact. Furthermore they were not prepared to fund this investment, which is focused on providing additional benefit to others. In summary, the primary rationales used in generating an acceptable response were cost, which was considered to be affordable, and scope which participants felt fully resolved the issue. Where an unacceptable response was recorded this was founded mainly on an unwillingness to pay to improve service for other customers so the financial value of the investment was not the issue but the localised benefit of the investment.

5.9.5 Maintaining the water system

Maintenance of water systems was in the lowest investment value band as it offered a bill reduction of £12.31. Investment into this attribute of service was considered to be acceptable by 9 out of the ten groups. As might be expected with the investment proposal associated with a significant bill reduction, cost was the predominant factor discussed. The majority of groups strongly supported the proposed bill reduction. In some responses UU were commended for being able to pass on these savings to their customers. However, in one group whilst they were happy with the investment proposal stated that they would have been prepared to take a smaller bill reduction with that money being reinvested to prevent greater bill rises in the future. One group highlighted that this was a critical service attribute and whilst the bill reduction was acceptable

this would have to happen regardless of the proposed investment bill impact. Therefore, in this case cost was the major driver in the decision-making process however it could be suggested that a likely high level of acceptability would typically be associated with this service attribute regardless of the bill impact. Analysis also highlights that some groups were questioning of the ability to provide a bill reduction, which suggests that they were not influenced by only the cost but also took into consideration whether the bill reduction had any associated trade-offs with service. However, others were quicker to make a decision and appeared not to engage in any richer discussion of their rationales. The one group that provided a mixed response did so on the basis that they felt that the sponsoring organisation were providing them with mixed messages stating “I feel that they are giving with one hand and taking back with the other” (Group 3). In summary, in this case cost was the main influence in determining the acceptability whilst recognising that it is a critical service attribute. Where the investment garnered a mixed response it was done so on the basis that the participants felt that they were receiving an inconsistent message in terms of investment proposal bill impacts.

5.9.6 Maintaining the wastewater system

Wastewater maintenance is the complimentary attribute to water maintenance and provides customers with another bill reduction at £20.46. Despite this, only four of the ten groups considered this investment to be acceptable. Limited discussion appears to have taken place with regards to this particular investment proposal. This may be due to the nature of the service attribute in that it is critical and an expected attribute of service therefore participants have limited material to trade-off. However, it appears that it may be related to the significant bill reduction with the majority of groups providing cost related responses. Where mixed view responses were reported it was mainly as a result of concern about the concept of a bill reduction. It was felt that they have paid their bills for money to be invested into improvements and therefore the money should be retained within the company for future investment as opposed

to returned to customers. There was also concern that the proposed significant bill reduction it may be a result of over-investment in this area in the past whereas the view is that investment should have been spread out across other service attributes. In summary, cost was typically associated with acceptable responses whereas unacceptable responses were associated with concern over the concept of bill reductions unrelated to this particular service attribute.

5.9.7 Wastewater standards and growth

The complimentary service attribute to drinking water standards and growth, this proposed investment results in a bill impact of £15,70, the highest bill increase presented to participants. Unlike the proposed investment into drinking water standards and growth where seven out of the ten groups found the proposed investment acceptable, only one group found the proposed investment into wastewater standards and growth acceptable with five out of the ten groups finding the proposed investment to be unacceptable. The data suggests that the main rationale used in presenting an unacceptable response developed from a misunderstanding regarding an element of the investment proposed to supply an increasing demand for wastewater services and instead felt that they were being asked to pay for new developments to be connected to the existing network. This misunderstanding appears to be the main factor influencing a response of unacceptable. Other concerns that were raised as secondary issues included that the bill impact was too great and that there was unease about what this investment would actually be doing. Some groups stated that they would appreciate more formal communication about this issue. Discussion about this service attribute, therefore appears to have generated a more general concern about what their bill is being used for, this is likely created from the high bill impact of this investment proposal. The essential nature of this service attribute had been largely ignored by most groups apart from the group that considered the investment proposal to be acceptable. Their main rationale for the response was based on the attributes critical nature. They

also focused on the meeting of legislative standards and did not focus on the growth element of the investment proposal unlike the other groups.

In summary, the data suggests that, in the case of this proposed investment, a misunderstanding about the consequent use of the money generated from the proposed bill increase is the cause of the large number of unacceptable responses. Whilst efforts were made by the facilitators of the groups to correct misunderstanding it appears that this was largely unsuccessful. Cost appears to have been a minor consideration in the decision-making process. Where an acceptable response was reported this appears to be as a result of the appreciation of the essential nature of this service attribute.

5.9.8 Discoloured tap water

The scenario presented to participants was valued at £1.27 placing it into the middle investment proposal value band. Two groups found this investment proposal to be acceptable, three groups found it to be unacceptable and five groups recorded a mixed response. Where an acceptable response has been recorded they state that this investment is acceptable as they would not like to be personally affected i.e. they want to avoid the impact of a service failure. It is also noted in one group that they consider the extent of the issue to be widespread. Those that returned an unacceptable response appeared to also primarily be considering the impact to them as a result of a service failure. Many believe that the impact is not severe as it is usually temporary and doesn't impact on health. The stated service levels were also used to bolster their point for example participants compared the number of properties affected to the number of complaints generated and came to the conclusion that as the number of complaints was significantly lower than those properties affected the issue is not a priority for those that are affected. It was stated in one group that they would rather invest in a bottle of water if they should be affected rather than pay to reduce the risk of a service failure and they were not prepared to invest to reduce the impact to those that are affected. Participants also estimated the regional revenue that would be generated from this investment proposal and

used this as a method of displaying their dissatisfaction with the cost of the investment. In some cases this discussion led on to a discussion about corporate behaviour for example the lack of re-investment of profits, bonuses etc.

Where mixed views were reported a variety of rationales were presented which ranged from impacts and cause of a potential service failure, the proposed scope of investment and the apportionment of costs. Where a potential service failure was considered to be caused by an accidental occurrence, such as a burst pipe that typically cannot be predicted, investment was questioned on this basis. Also the duration of the impact has been a consideration and as the impacts of a service failure are described as temporary the majority felt that it was therefore not worth investing in. The scope was felt by some to make good inroads in reducing the number of complaints, whilst others felt that it did not go far enough and would consider paying more to make greater progress. An interesting point that was also raised in discussion was that it was felt this type of investment would already be done as part of preventative maintenance. As a result of this, the participants felt that they were being charged multiple times to do the same work. For example, one participant stated "*If they [the water utility] are maintaining the pipes earlier [referring to the investment proposal outlined for maintaining water service], if you are paying for them to maintain it you are paying for them to be repaired, you are paying for this that and the other but hang on it's the same pipe*" (Group 7). The replacement of a length of pipe will have multiple benefits but as these costs have been separated out in to the attribute costs it has given some participants the impression that they are also being charged multiple times for doing the same job. Others felt that they did not have a choice regarding the investment if they wanted to avoid being affected in the future and some felt that they would want to pay to avoid what they described as the "psychological impact" seeing discoloured water.

In summary, the data suggests that acceptable responses are underpinned by a desire to avoid the potential impact of a service failure, unacceptable responses are also typically rationalised by a focus on the potential impacts of a service

failure but in the sense that the participants consider them not to be severe enough to warrant investment. Where a mixed view was reported this stemmed from a range of views. Potential impact of a service failure therefore appears to significantly underpin both acceptable and unacceptable responses and the tolerance of participants is the counterpoint.

5.9.9 Leakage from water pipes

This scenario for leakage from pipes had no bill impact, which placed it into the lowest value band. When presented to customers three out of the ten groups found the proposed investment to be acceptable, six groups found it to be unacceptable and one group recorded mixed views. The majority of groups expressed shock at the existing level of leakage. However, despite this they mainly rationalised this as an acceptable investment proposal as they felt that maintain the current level of leakage had not direct impact on them and was considered to be tolerable as long as the leakage was not visible. A minor influence was the fact that there was no bill impact associated with this investment. Where a view of unacceptable was recorded this was predominately as they felt the scope of the investment was insufficient and participants expressed a willingness to accept a small impact on their bill to fund improvement to the LoS in this area. Many stated that they felt this was more important area for investment than other service attributes and they felt let down that this was not being addressed through the bills. Groups also expressed concern about the potential knock-on effects of a high level of leakage. The one group that reported a response of 'mixed views' appeared to disagree on the basis of whether or not the scope of this proposed investment was sufficient enough. Those that were happy to maintain the current LoS stated that this was because the water was clean and therefore is hygienic.

In summary, the data suggests that acceptable responses were influenced by the perceived lack of visual impact and a direct impact to them as customer. Unacceptable responses were associated with insufficient investment. There were concerns about the subsidiary impacts of leakage but rationalised that if

the water leaking was clean and therefore hygienic it was not an investment priority.

5.9.10 Unexpected low pressure

The investment proposal presented to participants with regards to low pressure was valued at a bill impact of £0.54 and therefore classified as one of the lower value bandings. Four of the groups considered this investment proposal to be acceptable, three groups found this unacceptable and three groups presented mixed views. The main rationale underpinning an acceptable response is suggested to be in relation to the trade-off between cost and scope. Whilst the participants acknowledge that the impact of a service failure is generally perceived to be low, the scope of the proposed investment in relation to the proposed bill impact presents the participants with value for money. Where an unacceptable response is recorded, it is again typically related to the trade-off between cost and scope, which is not considered to provide participants with good value for money. A secondary influence is the potential impact, which in this case is considered to be low as it is temporary, not impacting health and whilst inconvenient, is easily adapted to. Where a mix of views is recorded this is typically the result of cost and impact considerations with a counterpoint of views around these two issues. Some were happy to pay for the benefit of others whilst other groups were explicit about their lack of concern for the impact on other customers. In summary, the trade-off between cost and scope appears to be the main rationale underpinning all response types with the resulting characterisation dependant on the dominant view as to whether the trade-off of cost to scope is acceptable or not.

5.9.11 Taste and odour of tap water

The scenario presented to participants with regards to the management of taste and odour was valued at £0.02 and therefore feature in the lower value band. It received seven acceptable responses out of the ten groups. Two groups found

the investment proposal to be unacceptable and one group recorded a response of mixed views. The data suggests that those groups that considered this scenario to be acceptable typically used cost as their main rationale. For example despite believing the scope to be insufficient the investment proposal was deemed to be acceptable based on the low bill impact. It was also used as a rationale for exploring whether the scope could be increased. The complaints metric used to describe the LoS again caused issues, with participants finding it difficult to understand what the investment would effect and raising issue such as some people are more likely to complain than others. Similar views were raised in the groups that had a mixed view on this investment proposal. Whereas in those groups that felt that this investment proposal was unacceptable justified this on the basis of the scope being insufficient. In summary, cost was the main justification for a response classified as acceptable. An unacceptable response was recorded on the basis of insufficient scope.

5.9.12 Unexpected interruptions to supply

The scenario presented to participants for unexpected interruptions to supply was valued at £0.67 and therefore in the lower value bands. Seven of the groups provided acceptable responses. Three groups reported a mixed response. The data suggests that those providing an acceptable response understood that infrastructure does not work in perpetuity and that failures can happen from time to time and it therefore was a necessary cost. Whilst some raised concerns about the impact it could have on their daily life, others rationalised that they are easily dealt with. Some participants thought that the scope was insufficient and that it didn't go far enough but that they deemed it acceptable on the basis of the low bill impact. One group felt it represented a good return on their investment. Those groups presenting mixed views predominantly though that the cost was acceptable but that the scope of the improvement was insufficient. Here, there was confusion about how the water utility could improve this LoS when the failures were unexpected. One group

thought that this would be reactionary (or 'emergency') work and therefore couldn't rationalise how the increase in bill would have the proposed effect; it was out of the control of their control. Similarly, one group felt that the investment that would go into reducing the risk of unexpected interruptions would be classed as maintenance and therefore felt that they were being charged twice. In contrast others felt that replacements need to be invested in at some point and some would even pay more to prevent this failure impacting others.

In summary, the main justification for this response appears to be the appreciation that assets can fail and were therefore amenable to the need to invest. Whilst the scope of improvement was deemed to be low the low cost made this more acceptable. Concern was raised however, about the cross over investment in this service attribute with water maintenance activities and therefore being charged twice.

5.9.13 External sewer flooding

This investment scenario was valued at £0.09 and therefore in the lower value bands. Despite this investment scenario being low in bill impact, only four out of the ten groups considered this investment to be acceptable. Four groups demonstrated a mixed response and the remaining two groups found it to be unacceptable. Those groups that found it to be acceptable had little discussion to offer largely as a result of the low bill impact. One participant had been previously affected by external sewer flooding and therefore was very supportive of improvement. One issue raised was that the proposed investment did not cover incidents on roads, which were thought to be a high priority due to knock-on effects of road closures. Those that expressed mixed views largely felt that the scope was insufficient and that more should be done with some expressing a wish to have a higher bill impact for a greater improvement. Other agreed but would still accept the current scenario. Those that exhibited unacceptable responses did so on the basis of insufficient scope. In summary, scope appears to have been a big driver for acceptability. Mixed and

unacceptable responses were largely due to scope. Low bill impact was the main driver for acceptable responses generated despite the insufficient scope.

5.9.14 Internal sewer flooding

This investment scenario was valued at £4.45 representing one of the higher value investments. Only two out of the ten groups found this investment area to be acceptable. Seven out of the ten group responded with mixed views. One group found this investment scenario to be unacceptable. Those groups that provided acceptable responses suggest that whilst the investment is expensive it is imperative to reduce the risk of failure and thus avoid impact. Those exhibiting mixed views expressed concern over the potential impact to their house and their possessions. One participant had been affected and described the experience as being 'horrendous' (Group 6). Those that were supportive of the proposed investment wanted to invest to solve the entire issue not part of it. However, many others stated that they have never been affected, or know of anyone that has been affected, so therefore considered the impacts to be too localised and didn't want to pay to lower the risk of failure for other customers. Many reflected on this investment proposal as being similar to taking out insurance; they were worried what would happen if they didn't pay. Those that found this to be unacceptable did so largely on the relative improvement versus cost. They did not consider there to be enough improvement to warrant the extent of the bill increase.

In summary, there was concern about the personalised impact of internal sewer flooding which led many to want to pay or feel like they had to pay to prevent or reduce the risk of this happening to them and were worried what would happen if they didn't pay. Others felt it was too expensive for the improvement delivered.

5.9.15 Wastewater pollution incidents

This investment scenario had no bill impact and was therefore in the lowest value band. It received no 'acceptable' responses, seven groups expressed mixed views and three provided unacceptable assessments. Those groups that exhibited mixed views were largely accepting of the zero impact to bills but some expressed that they would rather pay more to see an improvement and some stated that the water utility should at least commit to do something. However, others stated that they trusted the water utility to invest where they felt it should be and were happy to accept this investment scenario on the basis that wildlife were not affected. There was some confusion around the responsibilities for managing litter in waterways, which affected some participant's views. Those that expressed unacceptable responses were unsupportive of no investment into pollution incidents and considered it an important issue to be addressed. In summary, participants were generally supportive of no bill impact but others were concerned about the lack of any improvement in this area.

5.9.16 Improving rivers

This investment scenario was valued at £8.10 and therefore represented one of the higher valued investment scenarios presented to participants. Two groups found this scenario to be acceptable, five groups expressed mixed views and three groups did not find this investment scenario to be acceptable. Those groups who found this investment scenario to be acceptable were both ABC1 groups. They expressed that they would rather invest in improving rivers than in improving bathing waters. They considered to be a very important area of investment and perceived it to be "*investing in the future*" (Group 1). Those groups that expressed mixed views, whilst they were mostly supportive of the need to invest their views were highly influenced by the link to the EU or to government in the attribute description (i.e. investment is being done as a result of the WFD), whom they thought should be funding through a taxes route as opposed to water utilities, due to the fact that everybody in the country can

benefit from the amenity value of rivers. Others were prepared to pay more as good quality rivers bring in tourism and provide other amenity values. Finally, those who expressed 'unacceptable' responses largely did not on the basis of cost versus the scope of the investment. Some also thought that money should be spent tackling the source of the problem and not the effect. In summary, whilst many were supportive of the need to invest and appreciated the value that cleaner rivers can provide, others questioned whether the water utility customers should be funding these improvements as opposed to through everybody's taxes. Some also felt tackling the source of pollution would be a more appropriate course of action.

5.10 Discussion of results

This study was conducted to generate additional evidence to explore the findings of Study A (as reported in Section 4.10). In doing so it has provided a useful contribution to the existing academic literature base on water customer preferences and priorities for their water and wastewater services. Whilst other studies in this field have focused on single attributes of service in depth (Chenoweth et al., 2010; Arthur et al., 2009; Falahee & MacRae, 1995; Skellett, 1995; Kelay et al., 2008) or on customer satisfaction of their water and wastewater supply (Al-Ghuraiza & Enshassib, 2006), this study has provided coverage of both water and wastewater attributes of service providing a more comprehensive coverage of the whole service. It is also, to the author's knowledge, the first contribution to the academic literature (acknowledging that WTP studies and other commensurate research are generated within water utility organisations) qualitatively exploring domestic customer acceptability across a range of investment scenarios using bill impact and improvements to Levels of Service as the basis of the discussion.

As set out in Section 5.2, this study did not set out to address a specific research question. It does, however, provide additional insight into the influence

of mechanism design on mechanism outputs (Research Objective 2) particularly around the influence of 'bill impact' as a feature of participative mechanism design and the presentation of proposed investment scenarios in exploring preferences for water and wastewater service attributes. It should be acknowledged that the results presented in Section 5.9, were derived from domestic customers of a single water utility operating in England and Wales. Whilst the findings therefore are specific to this context, and with little published literature commensurate with this study some caution should be applied in translating these findings to the broader water sector in England and Wales. What this study does do is provide additional data with which to assess the findings generated by study A, relating to the influence of bill impact as a driver of expressed preferences.

Study A generated evidence to that suggested price was driving participant preferences for water and wastewater service attributes, and was responsible for divergent findings when these results were compared to the results generated from two variant elicitation mechanisms deployed in the same context. It is acknowledged that the methodology adopted in Study A was time constrained and prevented the capture of a richer data set in relation to how participants were forming and reasoning their prioritisations. However, a critical comparison between the findings generated in Study A and those outlined here reveals that in this case price (or bill impact) is not the sole driver of expressed customer preferences. In other words, it does not substantiate the suggested explanation of 'price' or bill impact as an explanation of the findings of Study A. These findings have shown that, whilst cost has played a role in determining the extent of acceptability expressed by participants, it often does not represent the driving motivation for their choices. These findings from this study do suggest that 'importance' as a sole determinant of preference will likely yield a relatively undifferentiated set of priorities as demonstrated in Figure 5.1. This lack of differentiation is commensurate with a lack of variation in participant responses in Study A where importance was the key determinant of preference (i.e. in the

individual and group prioritisation activities). The findings generated in this study contrast with those presented by the Consumer Council for Water (2008) whereby it is claimed that the main influences on customer's choices are the impact on water bills, the media, altruistic notions and affordability. As had been outlined in Section 5.9 this study has provided evidence for a range of rationales used by customers to determine their acceptability of investment scenarios for water and wastewater services. These related to: value for money; benefits; causes and impacts of service failures.

A key observation from this study is that participants frequently used a 'value for money' mode of reflecting on the investment scenarios. They looked at the scope of the improvement proposed relative to the impact it would have on their bill. For example, if the scope of the investment proposed was not deemed to be value for money compared to the impact on their bill then would generally express caution in declaring this to be an acceptable area of investment. The scope of the investment was also a key driver for non-acceptability of investment scenarios with little or no bill impact. Participants were concerned about the lack of ambition and the potential for storing up future problems and in some cases were prepared to spend more now to do more.

They also considered the benefits that investments provided. This extended to cover themselves personally, for their friends and family, more broadly to the customer base or public or for future generations. Also considered was the benefits specificity to their local area i.e. in the form of tourism.

The investment scenarios were presented to customers using the service failure as a mode to demonstrate a case for investment. For example, the description for Unexpected Low Pressure described the need for investment in terms of avoiding "unexpected drops in pressure that can happen without warning" and that "affected properties will have very little flow through their water taps for up

to 12 hours”. Or, “Blocked or overloaded sewers can very occasionally flood the inside of properties with wastewater” and that “impacts include foul smells, floor and walls that need to be cleaned, carpets that need to be replaced and damage to other possessions”. This prompted participants to explore issues such as: duration of service failure, frequency of service failure, potential impact to health, perceived severity, scale of impact, extent of impact i.e. visual, odour or damage, perceived exposure to service failures and finally the cause of the service failure i.e. whether it was avoidable, unavoidable or accidental.

On reflection, then, it may be possible that the observed trade-off mode of rationalising acceptability in this study (i.e. between cost, scope, benefit and service failure impact) may provide an explanation for the results generated in Study A. In that study, two of the elicitation mechanisms, the individual prioritisation mechanism and the group prioritisation mechanism asked participants to rank attributes of service by importance. It was only the budgeting mechanism that introduced a trade-off element to the participant’s decisions. It could be argued that this was a determinant in the generation of such contrasting results when inter-mechanism analysis was conducted.

Whilst this study is not aligned to a specific thesis research question, the findings generated have some contribution to the research objective concerned with the influence of participatory mechanisms and preference formation on the outputs from participatory mechanisms in water and wastewater planning and decision-making contexts. Whilst the results generated don’t substantiate those generated in study A, it provides evidence to suggest that where ‘bill impact’ is presented as a feature of participative mechanism design, there are specific considerations that need to be addressed. The observed concern about overall bill costs and observed ‘tracking’ of aggregated bill impacts throughout this exercise, signals that the order in which attributes (of differing bill impacts) are presented to participants could introduce potential sequence bias i.e. those scenarios introduced later in the sequence are more likely to be less

acceptable. An alleviation method that may act to reduce the risk of sequence bias and tracking behaviours would be the introduction of the overall total bill impact at the start of the activity as opposed to at the end of the activity. This may provision the alleviation of their concerns about the aggregate overall bill allowing them to better engage in discussion.

This study has demonstrated that, with adequate information, time for reflection, and when provided with a Cost versus LoS decision, customers express differentiated views for their water and wastewater services. As, when importance is considered as a single determinant of preference, as demonstrated in Figure 5.1 limited differentiation occurs. It supports the need for the use of participatory mechanisms that privilege participants the time and resources to be able to explore different service scenarios to enable them to better understand the implications of their choices. This supports this conclusions generated in Study A. It has demonstrated that this approach can generate significant insight into how participants form their decisions around acceptability of service proposals. Their use of service failure as a mode of exploring the acceptability of investment scenarios makes a case for consistent presentation of service improvements and failures across all attributes where possible to ensure that presentational inconsistencies are not driving observed responses. In particular, the use of reduced customer complaints as a metric of improvement presents a confusing case for participants and efforts to present cases more consistently across attributes would provision more robust responses.

5.11 Conclusions

This study has explored rationales for domestic water utility customer acceptability across a range of investment scenarios. It has generated findings that suggest that participants (domestic water customers) use a range of rationales for determining their acceptability of water utility investment scenarios

in planning and decision-making. The findings from this study do not, therefore, substantiate the suggested explanation of 'price' or bill impact as the sole explanation of the findings of Study A. The findings do, however, support the case for the use of participatory mechanisms that provision greater time and resources for reflection. It also makes a case for the importance of consistent presentation of investment scenarios in customer engagement activities. This study has demonstrated that with sufficient time and information on which to reflect on their views, domestic customers are able to demonstrate relatively differentiated preferences for water and wastewater services. By provisioning a greater understanding of the rationales underpinning the choices made by domestic customers for the acceptability of investment scenarios, it provides a rich set of data which can be used by practitioners to support their planning and decision-making activities and generated further understanding about the influence of participative mechanism design and preference formation on the outputs from participative mechanisms in water service planning and decision-making.

6 FACTORS INFLUENCING THE USE AND INCORPORATION OF CUSTOMER CONTRIBUTIONS IN WATER SECTOR PLANNING AND DECISION-MAKING

6.1 Introduction

This chapter will outline the design of Study C. Through the deployment of semi-structured interviews with practitioners across the water sector in England and Wales, it sought to explore their views with regards to the purpose of customer participation in planning and decision-making and the ways in which the knowledge generated was managed within their organisations. This study addresses the ambitions of research questions 1a and 1b and 3a and 3b. In the context of the broader research, this section reflects on the phases of participatory planning processes focusing in particular on the detailed planning phase and the institutional response phase as outlined in Figure 2.1. It utilises the themes of normative, substantive and instrumental rationales and knowledge management practices respectively to structure these findings.

Section 6.2 provides a summary of the background to this study building on gaps in current knowledge Section 6.3 will discuss the methodology and implementation of the fieldwork pertaining to this study. Section 6.4 outlines the fieldwork results. Section 6.5 presents the analysis relating to motivational clarity and discusses the findings whereas Section 6.6 moves on to present the analysis and discussion around knowledge management practices. Section 6.7 will provide conclusions with respect to the function of this section relative to the aims of the thesis.

6.2 Background

The literature review has highlighted the paucity of practitioner-focused research with respect to public participation and water utility planning and

decision-making. Chapter 1 has highlighted that the knowledge and competencies required to translate the alternative technical and behavioural campaigns into effective management campaigns into effective management responses likely required to address future resource management challenges no longer exists solely within water utilities, but instead, exists across multiple institutions in particular the public. It made the case for the use of increasingly participative approaches to planning and decision-making in addressing water and wastewater service provision challenges, but recognised the significant evolution of organisational processes and practices that this would require. Section 1.4 presented the regulatory incentives set by Ofwat at PR14 to promote increasingly participative practices, thus requiring water utilities to overcome a legacy of technocratic planning approaches, a perceived lack of organisational capacity and receptivity towards the use of customer contributions for them to be successful in the Price Review. Section 2.2 sought to outline the main phases of participative processes and map what is currently considered to constitute effective practices to each stage. This process revealed three main areas whereby greater clarity was felt could be beneficial to practitioners in the water sector (and perhaps more broadly) whilst also facilitating a greater understanding about the implementation of participative practices in water utility organisations. Chapters 4 and 5 sought to address the influence of participative mechanisms and preference formation on the outputs from participatory mechanisms in water service planning and decision-making. This section will address the remaining thesis objectives (research objectives 1 and 3) through responding to the research questions outlined in Table 2-7.

Unlike research activities A and B, this research sought the views of practitioners (as opposed to domestic customers) and was independent of customer engagement activities conducted by the sponsoring organisation with respect to their PR14 Business Planning. The study was therefore subject to less constraints provisioning greater flexibility with regards to method and to content. This activity was designed to seek the views of practitioners from a

number of water utilities across the water sector in England and Wales to understand both their views on the purpose of the use of participative approaches for water utility planning and decision-making and their experiences and practices with respect to management of the outputs of participative processes. Semi-structured interviews were conducted with practitioners to capture these views. Thematic content analysis was then conducted to generate findings to address the research questions.

6.3 Study C research methodology

Section 3.4.3 outlined the overarching empirical framework relating to this study. This section addresses the detailed methodological design including: the research sample, the research instrument and its deployment in the field, the timing of the research and data collection protocols.

6.3.1 Identification of the sample frame

The case for the use of semi-structured interviews was outlined in Section 3.4.3. Reflecting the nature of this study, a purposive sampling approach was adopted for the identification of the sample frame. The justification for the use of this approach reflects that provided for studies A and B (See Section 4.3.2 and 5.3.2). The primary unit of analysis in this study was the practitioners operating in the water sector of England and Wales, in particular those that have been actively generating or using the outputs of participatory mechanisms in planning and decision-making. Factors that pose the most potential to affect the coverage of the research questions were considered to ensure that this diversity was reflected in the sample population. Several factors were identified as posing potential for affecting responses. Firstly, managerial level was considered to hold potential to influence responses based on the extent of variance in their exposure to internal or external decision-making drivers, which practitioners at lower or non-managerial positions may not. Secondly, the business function in which practitioners were based may vary their perspectives

as a result of the types of investment challenges and solutions they faced, the nature of regulatory pressures and typical behaviours for example in terms of ways of working or decision philosophies. Thirdly, their role within the business may have influenced the nature of their interaction with participative processes for example, their role may involve assisting in the generation of knowledge or, conversely it may involve the use of participative outputs or indeed both. Finally, other factors such as the breadth of the programme of participative approaches, the range of participative mechanisms employed in their planning and decision-making and the business functions where customer views were sought also offered the potential to impact the type, extent and content of the outputs available to practitioners to use in their planning and decision-making and thus were considered in the sample frame. The views and experiences of practitioners that have not had any interaction with participative processes as part of their water utility's planning and decision-making were excluded from this study. Whilst the focus of this study was to understand what practices existing within water utilities to manage and facilitate the use of participative outputs, drawing on the findings from the academic literature it was considered necessary to involve practitioners that may offer complimentary insights so for example those that may have been involved in shaping the design of participative processes. This sample population was considered to provide sufficient number of potential participants for the provision of a high quality sample whilst taking account of a level of non-participation and potential attrition.

The sample frame incorporated practitioners across variant water utility organisations, with one of these organisations being the sponsoring organisation of this research. In this particular organisation it was possible, both through the networks developed throughout the research placement and the availability of documentation detailing organisational structure, to generate a sufficiently diverse sample population. However, for the other water utilities it was necessary to use a combination of sampling approaches in order to

generate sufficient quality sample as the structure and distribution of responsibility and practices was unknown and difficult to access.

6.3.2 Sampling strategies

A maximum-variation sampling strategy was adopted for the identification of participants within water utility organisations. This strategy aimed to facilitate the capture of central themes and outcomes across a diverse sample (Patton, 1990). The identification of common themes emerging from a diverse sample were of particular interest and value in furthering understanding of shared experiences in developing the organisational response to the outputs of participative mechanisms.

Concurrent to this phase of research, Ofwat released their Pre-Qualification Risk Based Review results to each water utility (Ofwat, 2014). Discussions with numerous practitioners revealed that whilst this information had been anticipated, the extent of information and detail provided by Ofwat justifying their decisions had far exceeded expectations. These results revealed Ofwat's views as to the quality of each water utilities customer engagement activities providing a 'grade' (A-D) for each organisation (Ofwat, 2014). Interrogating the results of this report revealed a significant spread of 'grades' having been assigned to the perceived quality of water utility customer engagement activities. The introduction of this information was felt to provide a relevant and interesting insight complementary to this research inquiry. The grading system applied by Ofwat was based on three 'tests' including: a) the quality and breadth of customer engagement activities b) dialogue with other regulators and c) evidence has been developed and used throughout the business plan (Ofwat, 2014). Tests a and c were of particular interest to this study. It was therefore decided to use the grading system applied by Ofwat to calibrate the recruitment strategy for targeting water utilities in the wider sector. This is presented in Table 6-1.

Table 6-1: Ofwat pre-qualification test outputs (Adapted from Ofwat, (2014))

		Test 1	Test 2	Test 3
WASCs	High grade [A]	Anglian Severn Trent South West	Anglian South West	
	Mid grade [B]	Welsh Water Northumbrian Southern Water UU Wessex Yorkshire	Welsh Northumbrian Severn Trent Southern UU Wessex Yorkshire	Anglian Severn Trent South West UU
	Low grade [C]	Thames	Thames	Welsh Northumbrian Southern Thames Wessex Yorkshire
WOCs	High grade [A]	South East Water Sutton and East Surrey	None	
	Mid grade [B]	Affinity Bristol Dee Valley Portsmouth Bournemouth South Staffs	All	Affinity Bristol South East Water South Staffs Sutton and East Surrey
	Low grade [C]	None	None	Dee Valley Portsmouth Bournemouth

The sample of water utilities aimed to ensure sufficient coverage within each classification and also ensure coverage of both water-only companies (WOCs) and joint water and sewerage companies (WASCs) within the sample. Three water utilities, one in each grading category as identified in Table 6-1 were to be approached. A phased approach was adopted with recruitment of WASCs being targeted first with WOCs to follow given the potential for WASCs to contribute a greater number of practitioners to the overall sample.

6.3.3 Access to sample population

A snowball sampling approach was utilised, provisioning access to information-rich practitioners within unknown organisational structures. The process began by informing known, well-situated practitioners in each water utility about the research. These practitioners were identified through documentary analysis of CCG reports and CCG meeting minutes from each water utility, and where applicable cases personal contacts of the author resulting from previous roles in the water industry). This was achieved through the deployment of an email wherein a common format was adopted (see Appendix 9E1). This initial dialogue informed them about the aims of the project and a request was made for their assistance in selecting practitioners from within their organisation to take part in the study. They were provided with a list of criteria to assist in the selection process whilst being encouraged to include diversity within their overall choices. The intention was that contact details would then be provided for each of the proposed practitioners who would then be contacted separately via a second email (of a common format) to inform them about the research and negotiate their consent to take part in the study (See Appendix 9E.1.3). At this stage it was also necessary to ensure that those participants proposed by the key water utility contacts met the relevant criteria for participation whilst keeping the sample as diverse as possible within the boundaries of the sample population. It is acknowledged that this approach introduces the potential for key water utility contacts to bias the sample. They may, for example, have selected potential practitioners they felt would have provided a positive view of the organisation or those that had very strong views etc. Whilst this was a limitation of the sample approach, it was considered to be the most suitable method of gaining access to participants in an unfamiliar organisational structure within the time and resource constraints posed by this study.

6.3.4 Sample Matrix

The qualitative nature of this study favours smaller sample sizes than those typically sought in quantitative studies. The sample is considered to be of sufficient size where the objectives of the study can be addressed within the bounds of the resources available (Patton, 1990; Ritchie et al., 2003). Using the criteria for the practitioner sample frame previously discussed in Sections 6.3.1 and 6.3.2 a prioritised list was generated to inform the development of the sample matrix. Primary criteria were those which were attributed greatest importance within the sample, secondary criteria were more loosely controlled and, finally, tertiary criteria were not controlled for but were monitored throughout the overall sample population. The prioritised criteria can be found in Table 6-2.

Table 6-2: Sample criteria

Primary criteria	Secondary criteria	Tertiary criteria
Practitioner perspective (i.e. function within the business)	Managerial level	Gender
Practitioner organisation classification	Role type	Experience in the water sector
Practitioner organisation service provision (i.e. WASC or WOC)		

The practitioner's perspective was considered to be a primary-criterion in the sample as this offered the opportunity to explore variations in practitioner approaches across a broad scope of planning and decision-making contexts allowing exploration of potential variations in approaches and views. It also provided diversity within the sample population. The organisation in which the practitioner was based was synonymous with the location factor typical in other qualitative studies. A range of water utilities, all of which are regional monopolies, were included in the sample, however, as opposed to utilising this as a criterion in itself, water utilities were classified based on the range of methods and non-retail business areas covered by their customer engagement

activities. This provided a way of incorporating a varying degree of customer engagement research output type and the extent to which customer research practitioners may have been exposed into the sample population.

Secondary criteria included the managerial level, which represents a nested criterion of practitioner perspective. Whilst this was an important factor in the sample population, it was not considered necessary to strongly control this element of the sample. Rather, a level of variation of managerial level was included within each business function sampled. The same was included for a variation of role types. It should be noted that as it was intended to sample practitioners within organisations of unknown structure it was not possible to be specific about the potential role types, rather a variation was sufficient. Tertiary criteria included both gender and experience in the water sector. These factors were not considered to be crucial to the sample frame and were therefore monitored throughout the sample recruitment.

Water sector sample matrix

Table 6-3 details the hypothetical sample matrix that this study utilised in the recruiting of practitioners within the wider sector sample to ensure coverage of all main factors associated with the sample frame. The numbers in the cells represented the minimum number of practitioners to be recruited from that classification.

Table 6-3: Water sector sample matrix

Business function	High grading		Medium grading		Low grading		Managerial level	Role type	Gender	Experience in sector
	WASC	WOC	WASC	WOC	WASC	WOC				
Customer engagement	1		1		1		Mixed	Mixed	Mixed	Mixed
Regulation	1		1		1		Mixed	Mixed		
Water	1		1		1		Mixed	Mixed		

resources planning							
Water (infrastructure)	1	1	1	Mixed	Mixed		
Water (non-infrastructure)	1	1	1	Mixed	Mixed		
Wastewater (infrastructure)	1	1	1	Mixed	Mixed		
Wastewater (non-infrastructure)	1	1	1	Mixed	Mixed		
Environment	1	1	1	Mixed	Mixed		

As the matrix suggests, practitioners were to be recruited from water utilities within each grading classification providing a range of coverage with regards to the perceived quality of their customer engagement activities. They were to also be recruited across a range of different business functions within each classification. Diversity of managerial and role type were to be monitored for within each business function population, whilst gender and experience were mixed across the whole sample population. The total minimum sample was considered to be approximately twenty-four practitioners across the sector. It was important that the design of the sample was flexible and responsive to emergent themes. Therefore, if inadequacies with the sample began to occur the intention was to address these whilst the fieldwork was in progress. For example, if an area of the business that has heavily used customer engagement outputs that had not been included or when a saturation of findings has been reached.

Sponsoring organisation sample matrix

With regards to practitioners from within the sponsor organisation, it was decided that practitioners would be oversampled. The purpose of this approach facilitated an in-depth organisational view of interest to the sponsoring organisation. Furthermore, recognising the risks associated with attempting a sector-wide enquiry, it provided a 'safety net' if issues were encountered in

achieving the practitioner sample within the wider sector. The sample matrix design is set out in Table 6-4. It was anticipated that a minimum of fourteen interviews would be necessary to ensure the capture of a full range of views across the organisation. However, as with the wider sector sample, the sample size would be flexible and reactive to emergent findings.

Table 6-4: Sponsor organisation sample matrix

Business function	No. of practitioners required (min)	Managerial level	Role type	Gender	Experience in sector
Customer engagement	1	Mixed	Mixed	Mixed	Mixed
Regulation	1	Mixed	Mixed		
Water resources planning	2	Mixed	Mixed		
Water (infrastructure)	2	Mixed	Mixed		
Water (non-infrastructure)	2	Mixed	Mixed		
Wastewater (infrastructure)	2	Mixed	Mixed		
Wastewater (non-infrastructure)	2	Mixed	Mixed		
Environment	2	Mixed	Mixed		

Recruitment of participants was monitored against these sample matrices throughout the process and the categories and quota limits were reviewed and adjusted if recruitment difficulties were encountered. Outcomes of the recruitment process was recorded to identify variation from the desired sample frame to assist with determining the effectiveness of this sample strategy and potentially assist in the analysis stage of this research.

6.3.5 Development of research instrument

Two research instruments were required in this study including the recruitment email required to recruit the parent population; an email to recruit the secondary population and; the topic guide which was used by the author to structure and guide the content and progress of the interview. The content of the recruitment

emails were discussed in Section 6.3.3. The topic guide used in this study is available in Appendix 9E2. The Interview topic guide aimed explored the following eight themes with practitioners.

- a) Introduction to the aims of the research
- b) Personal characteristics of the participant
- c) Attitudes to seeking customer contributions (i.e. through the deployment of participative mechanisms) for use in planning and decision-making
- d) Practitioner awareness of, and involvement, in efforts to seek customer contributions to planning and decision-making
- e) Types of participative output exposed to and in what contexts
- f) Process by which participative outputs were used within the planning and decision-making
- g) Influence of participative outputs in planning and decision-making
- h) Benefits and limitations

The use of the topic guides is a standard practice in qualitative interviewing as it enhances the consistency and systematic coverage of the topics discussed across the sample (Arthur & Nazroo, 2003). The isolation of these topics was based on a combination of the themes identified in the review of the literature detailed in Chapter 2, focusing particularly on those identified in Table A3-1 in Appendix A and themes needed to address the research questions. These themes formed the dominant structure of questioning within the interview. Subtopics were also identified in addition to areas for follow-up and potential probes. Accounting for the semi-structure nature of interviews deployed in this study, these were non-directive and flexible to ensure that they did not overly constrain the direction of interaction. Whilst this detail was included in the topic guide to assist the author in structuring the content and direction of the interview, it was kept at a high level in terms of the language and terminology to ensure that the author was able to focus and be responsive to the interaction with the participant and not solely on the following the detail of the topic guide (Arthur & Nazroo, 2003; Arksey & Knight, 1999). The topic guide was designed to facilitate an interview of approximately one hour in duration. This falls within the one to two hours recommended for interviews (Arthur & Nazroo, 2003). This

length was selected as it offered a suitable duration in which to address the topics covered at a reasonable depth whilst, representing a unit of time that would be deemed more favourable by potential participants thus maximising recruitment potential. The topic guide was tested prior to being deployed with the main sample as is discussed in Section 6.3.7.

6.3.6 Deployment of fieldwork activity

This study was undertaken in two main phases to maximise available opportunities, resources and time. The first phase of fieldwork was conducted within the sponsor organisation. This provided the opportunity to gain confidence with the research instrument in an organisational setting that was relatively familiar before being deployed in the wider sector. Furthermore, this phased approach provided an extended period of time in which to recruit and secure participants from variant water utility organisations across the sector. It also provided flexibility as to the scheduling of the interviews to ensure that they suited the availability of participants. The second phase of the fieldwork was then intended to begin following the completion of phase one. The intention of phase two was, where possible to geographically cluster interview opportunities to ensure efficient time management.

Venues were to be selected in collaboration with the participant to ensure that it suited their convenience. In the case of the participants in the sponsor organisation, where the author was based, it was intended that interviews would be conducted at their office. Acknowledging the need to address power imbalances in qualitative interviewing, the small literature on this issue was considered. For participants based in water utilities in the wider sector, the mode by which the interview was conducted was to be determined by the participant with potential options including face-to-face interviews, telephone or Skype interviews. The literature presents a mixed perspective of the merits of each method. Some argue that face-to-face interviews are preferable due to the

potential for loss of non-verbal data; loss of contextual data; and loss of distortion of verbal data identify and respond to non-verbal cues (Novick, 2008). Whilst this raises some concerns, others have argued that telephone interviews represent a credible alternative to face-to-face interviewing generating the collection of comparably rich and in-depth data whilst offering improved access to disparate geographical locations (Sturges & Hanrahan, 2004) It is acknowledged that the use of differing methodologies for the deployment may promote differing levels of power imbalance between author and participant, particularly with those participants recruited from water utilities in the wider sector whereby pre-existing relationships are less likely thus increasing the hierarchical nature of the power relationships (Creswell, 2013). It is necessary to accept that these power imbalances do exist, particularly in organisational research. A strong focus on building rapport at the start and throughout the interview in addition to avoiding leading questions is anticipated to be beneficial in reducing the potential effects of power imbalances (Creswell, 2013).

6.3.7 Development of the pilot study

The research instrument was trialled to determine its suitability for use in this study. The pilot study was conducted with research participants from the sponsoring organisation in late February 2014. Given the relatively small sample population for this study, it was determined that a comprehensive pilot study may pose a risk that transcripts from potentially knowledgeable and forthcoming participants are rejected from the study. An alternative approach was, therefore, to undertake pilot testing with two practitioners within the sponsoring organisation to trial the suitability of the language, themes, structure and duration of the topic guide prior to being deployed. Only one of these sessions was recorded. The outputs of the recorded trial were included in the analysis of the main research phase as the amendments made to the topic guide as a result of this pilot phase reduced the level of structuring and maintained the substantive themes. These trials identified five issues with the topic guide in its original format. Importantly, the duration was considerably in

excess of the specified one hour thus requiring a number of modifications to reduce the content in a way that would not compromise the quality and depth of the interview response. The following amendments were made:

- a) The amalgamation of two sections including one that explored attitudes to seeking customer contributions, and one exploring attitudes to the use of customer contributions. Participants tended to talk interchangeably about seeking and using customer contributions thus the amalgamation of these sections was considered not to affect the quality of responses.
- b) A section relating to practitioner awareness and involvement in seeking customer contributions was altered to reflect a more open questioning style, as the previous themes were considered to be too focused restricting the direction of participants views
- c) A number of sub-topics were removed as it provided excessive structure and prevented flow of interaction. They were instead re-defined as potential probes which increased author flexibility
- d) Reduced the use of abstract themes that had been taken from the literature and instead re-framed questions to capture this information in a less direct way
- e) Some areas were considered to be repetitive and were therefore removed

As has been outlined, the study trial was conducted within the sponsoring organisation accounting for the increased accessibility of the participant sample within the sponsoring organisation. Thus, if major changes were required then a reasonably sized sample was still available for recruitment if necessary despite the loss of pilot study respondents. Furthermore, it was anticipated that, whilst there would be some contextual factors to be accommodated, if the topic guide was successful at eliciting the views of practitioners in the sponsor organisation then there should be no major issues with its deployment in the wider sector. The resulting topic guide is provided in Appendix 9E2.

6.3.8 Timing of this fieldwork activity

Section 3.4.3 outlined the rationale for the timing of this study in the context of the wider regulatory landscape of the water sector and in the context of the thesis in terms of its ability to address the research questions. The main fieldwork activity took place between March and April 2014. This accounted for Business Plan submission in Mid December 2013, holiday periods, the recruitment phase and the deployment of the pilot study.

6.3.9 Data collection and analysis

This section outlines the approach adopted for the collection of the data generated by this fieldwork activity. Each interview was audio-recorded allowing the author to remain focused on the participant and the development of effective follow up questions and probes. It also ensured the accuracy of data collected enabling specific language, hesitations and tonal variations to be captured (Legard et al., 2003). Furthermore, it limits signals from the interviewer to participants regarding the level of interest in their response, unlike note taking (Legard et al., 2003). It served the additional purpose of ensuring a full and detailed transcript was generated facilitating in-depth and accurate data analysis (Patton, 2002). It was acknowledged that the use of audio recording might provoke unease in some participants (Grey, 2009). However, consent was sought both in the recruitment stage and re-iterated at the start of each interview to ensure that the participant agreed to this arrangement. Participants were reassured as to the anonymity and confidentiality of their contribution and that they could refuse to answer or withdraw from the study at any time. The audio-recording data was tested prior to the commencement of each interview to ensure the equipment was operational and to reduce the likelihood of equipment failure.

Audio data from each interview was digitally captured as a MP3 file. Using Dragon Dictate software, the author manually verbatim transcribed each audio-

file into a Microsoft Word document. Non-verbal and background sounds were not transcribed, as they were not considered to be relevant to the analysis in this study. A standardised template was adopted in the generation of each transcript to assist in the ease of comparison between participants. Author speech was emboldened to distinguish it from that of the participant. The generation of the transcripts was an incredibly time intensive exercise with each hour of recording resulting in between six to eight hours of transcription. The adoption of an author-generated transcription approach, as opposed to the use of a professional transcription service, was motivated by the need to ensure the generation of high quality transcripts. The use of a transcription service may have saved time, however, it would have resulted in the need for extensive sense checking by the author. The author's direct involvement in the interview process, and the tendency for practitioners to use sector specific language and terminology, were considered to add to the rationale for the author-led approach. It also served to be a valuable exercise in terms of re-familiarising the author with the data from each interview (Grey, 2009). An example transcript is provided in Appendix 9E3. The full set of transcripts can be provided if required.

6.3.10 Data analysis

The literature reveals many approaches to the analysis of qualitative data that are associated with specific approaches and qualitative traditions including grounded theory (Strauss & Corbin, 1998; Glaser & Strauss, 1967); Content analysis (Robson, 2002); Discourse analysis (Tonkiss, 2000) or phenomenology (Smith & Osborn, 2008). The analysis of this research used a Framework approach (Ritchie et al., 2003) reflecting a 'general inductive approach' to qualitative data analysis (Thomas, 2006). This approach, developed by the National Centre for Social Research, facilitates rigorous and transparent data management from the initial identification of themes within the data through to the development of explanations based on the findings from the data (Spencer et al., 2003). The analysis of the data generated by this a study was a six-stage manual process. Computational analysis tools (such as Nvivo) were not utilised

in the analysis of this study. With the author having no previous experience in using these types of tools, it was considered to be infeasible within the timeframe of this study to develop the competencies to use this skill to a level high enough to ensure the generation of high quality outputs. A manual approach to the data analysis was therefore adopted and the stages of the thematic Framework approach (Ritchie et al., 2003) adopted have been summarised below.

Data cleaning

The first stage of data analysis was the cleaning of the raw data, which was necessary to ensure the accuracy of the transcribed data relative to the audio recording and facilitate the transfer of quality data throughout subsequent stages of data analysis. This involved a five stage process including:

- a) The checking of transcript labelling of each transcript relative to each audio-recording
- b) Reading each transcript in full whilst listening to the audio-recording
- c) Cases of spelling errors, mis-transcription (i.e. where the dictation software has mis-interpreted the authors dictation and inserted incorrect words) were identified and highlighted in the transcription text
- d) Highlighted areas of the transcripts were then cross-checked with the original audio-recordings and amended to reflect verbatim the original recordings
- e) Spot checks were then undertaken on each transcript as a final quality check.

Identification of initial themes

As part of the second stage of analysis, each transcript was read in full to enable the research to fully engage with the themes of the interview responses. In doing this, the author noted key themes that were emerging from the data. These themes were then used to develop a thematic framework, which can be found in Appendix 9E4. The data generated from this study was used to answer two research questions each with a different focus. It was decided, therefore, to group these themes into broader topics reflecting both the main themes in the

topic guide and key themes in the public participation evaluation and knowledge management literatures. This approach represented the most effective method by which to structure the data to achieve the dual and complementary purpose of addressing each research question. The central themes in the thematic framework were: Attitudes to customer contributions (captured through the use of participative mechanisms); seeking customer contributions (i.e. the design and deployment of participative mechanisms); using customer contributions; influence of customer contributions; and success indicators. Sub themes were assigned to each central theme and assigned a reference number for use in the next stage of analysis.

Application of thematic framework to interview data

In this stage of analysis the thematic framework was applied to the interview transcripts. Each sentence was reviewed to establish its contribution and significance relative to the themes present within the framework and then labelled with the theme reference. This allowed easy reference to each occurrence of the theme within the context it was delivered assisting in the later stages of analysis. This process also identified four modifications of the thematic framework to improve its suitability to the interview data.

Thematic sorting and summary of the interview data

This stage of analysis used the indexed interview data as a tool to sort this into themes, which provided the opportunity for more in-depth analysis across within each theme. A thematic chart was used to structure this stage of data analysis (Ritchie et al., 2003). An example of a section of the thematic chart used in this analysis is available in Appendix 9E5. A chart was developed for each thematic category and detailed the sub-themes that underpin it. For each transcript, the occurrence of each sub-theme was summarised keeping as much of the language as possible and a page reference provided for ease of reference back to the transcript.

Detection, classification and categorisation

Within each theme the range of perceptions, views, experiences and behaviours were identified providing an insight into the dimensions that underpin each theme. These dimensions were then analysed to understand the extent to which broader categories or classifications could be identified within these dimensions.

Development of associations and explanations

The research questions that this study intended to address were then used to structure the inquiry and interrogation of these categories and classifications in order to establish a response.

The analysis of practitioner attitudes to the purpose, importance and value of public participation was of particular interest in understanding the clarity of practitioner motivations. This required additional analysis whereby the responses to this set of questions posed in the topic guide were categorised and counted across the whole sample population to generate an understanding of the range and extent of the views held. It was possible to associate these responses to the rationales for participation discussed in Section 2.1.1. The frequency of occurrences of each rationale was recorded to generate an insight into the relative dominance of responses reflecting each motivation. Whilst acknowledging that numerical representation of data generated thematic content analysis is unorthodox (Lewis & Ritchie, 2003), this approach was justified on the basis that it was reflective of approaches adopted by Wesselink et al. (2011); and Bickerstaff & Walker, (2001) in understanding rationales for public participation in different sectors and fields.

Strategies employed to ensure the rigour and quality of the data analysis method used is outlined in Section 3.5 and outlined in 9B2.

6.4 Results

6.4.1 Effectiveness of the recruitment strategy

This study, as outlined in Section 6.3, intended to recruit practitioners from both within the sponsoring organisation and from water utilities across the water sector in England and Wales. The purpose being to gain a greater understanding as to the purpose practitioners associate with participative approaches to planning and decision-making but also to better understand the knowledge management practices water utilities across the sector deployed in using the outputs generated from participative approaches.

This study achieved mixed success with regards to achieving the rate of recruitment in relation to the anticipated recruitment rate. Addressing first the recruitment rates within the sponsoring organisation, the achieved sample population reflected a balance of practitioners across different business functions, managerial roles and years' experience. Anticipated practitioner characteristics and overall number of participants was not achieved, however, it is still considered to be capable of providing a rich insight into practitioner views and experiences within the organisation. A study by Van Wyk et al., (2008) utilised a smaller sample size of nine practitioner semi-structured interviews. Table 6-5 outlines the achieved sample.

Table 6-5: Achieved sample population

Ref.	Date	Business function	Anticipated sample	Achieved sample	Managerial status	M / F	Years in sector
813_0014	12/03/2014	Customer engagement	1	1	Mid - level	M	1
813_0012	10/3/2014	Regulation	1	2	Senior	F	26
813_0015	13/3/2014				Mid-level	F	8
813_0013	11/03/2014	Water (infrastructure)	2	2	Senior	M	8
813_0011	21/02/2014				Analyst	M	4

813_0020	18/03/2014	Water (non-infrastructure)	2	1	Senior	F	24
813_0023	10/04/2014	Wastewater (infrastructure)	2	1	Senior	M	20
813_0016	13/3/2014	Wastewater (non-infrastructure)	2	2	Senior	F	15
813_0021	24/3/2014				Analyst	F	7
813_0019	17/03/2014	Environment	2	1	Mid - level	M	14
813_0022	26/03/2014	Water resources	2	2	Senior	F	9
813_0017	14/3/2014				Senior	M	9

A further seven practitioners within the sponsor organisation were invited by email to participate in this study. This initial participation selection took into account that a 100 per cent recruitment would not be achieved. Six of these practitioners did not respond to the email invitation. The email was re-sent to the participants two weeks later in order to attempt to stimulate a response. However, no response was received from five of these practitioners. As a result it is not possible to establish their reasons for non-participation. One participant did respond. However, it was outside the period of main fieldwork and thus the offer of participation was not accepted. The remaining practitioner declined to be involved in the study as they felt that they did not have the required experience and understanding to be able to participate. A recruitment rate of 85% was therefore achieved relative to the anticipated sample. Recruitment within the wider sector was largely unsuccessful. One water utility responded to this request but was cautious to commit too many resources to the study due to the high workload that the Ofwat risk based review had generated. No response was received from the remaining water utilities approached. The lack of response was followed up with a further invite to participate to alternative key contacts in each organisation. However, this recruitment approach was also unsuccessful. At this stage, it was necessary to reconsider this phase of the study. The clearly demonstrable increased workload associated with the

outcome of Ofwat's risk based approach, the increasingly political nature of the sector at this time, coupled with the growing pressures this study was placing on the timeline of this research meant that a decision had to be made with regards to the continuation of this element of the study. On reflection, it was decided that the aim to capture the views of participants in the wider sector would be abandoned and, instead, the study would focus solely on the response of those practitioners already interviewed (i.e. those within the sponsoring organisation). The results presented in the remainder of this chapter thus represent the views of practitioners in the sponsoring organisation only.

The scope of the research objectives as set out in Table 2-7 necessitated a study that facilitated the exploration of water utility practitioner's views from across the water sector in England and Wales. However, as Section 6.4.1 has outlined, whilst the recruitment strategy was successful in gaining access to twelve practitioners within one water utility (the sponsoring organisation), unfortunately it failed to secure access to practitioners within other water utilities in the water sector in England and Wales. The failure to capture the views of practitioners across a range of water utilities has prevented this study from generating the sector-scale insight necessary to fully address the research questions and research objectives of this thesis. It has, however, generated insight which addresses each research question but at an organisational-scale. The findings from this study are, therefore, organisation-specific and caution would be promoted in generalising from them more broadly. However, whilst Section 8.4 makes a case for further sector-wide research on this issue, the findings generated from this study provide a useful starting point in understanding how water utility practitioners in the regulated England and Wales water sector perceive the purpose of customer engagement and how these views have manifested in the knowledge management practices adopted within the organisation in the PR14 planning and decision-making context. In doing so, it identified pragmatic and regulatory barriers to the institutionalisation of public participation (or customer engagement) for water and wastewater

service delivery and questioned the extent of the contribution that water utilities participatory planning and decision-making practices, in their current state, will go towards the achieving the anticipated benefits of its introduction. The results of this study were presented to the sponsoring organisation with attendance from across the organisation including several of those who were interviewed as part of this study. Positive feedback was received and the author was asked to put forward a set of recommendations to be taken forward with the Director of Corporate Affairs.

The remainder of this chapter is structured around the analysis and discussion of the results generated for each research theme addressed in this study a) motivations for public participation in water utility planning and decision-making and b) knowledge management practices.

6.5 Motivations for public participation in Water Utility planning and decision-making

6.5.1 Analysis of results

Section 6.3.10 outlined the approach adopted in the analysis of participant responses. The interview questions sought to generate an understanding of practitioner's attitudes towards public participation in water utility planning and decision-making. Responses relating to the purpose, the importance and value of public participation were of particular focus in understanding practitioner views as to the motivations for its adoption. These responses were categorised across the whole sample population to generate an understanding of the range and extent of views held. It was possible to associate these responses to the rationales for participation discussed in Section 2.1.1. Table 6-6 below demonstrates some examples participant responses for each of the identified rationales. The frequency of occurrences of each rationale was recorded to generate an insight into the relative dominance of responses reflecting each motivation. This approach reflects those similarly adopted by Wesselink et al.,

(2011); and Bickerstaff & Walker, (2001) in understanding rationales for public participation in different sectors and fields. Table 6-7 details the distribution of rationales over the entire sample.

Table 6-6 Examples of rationale characterisation

Rationale	Verbatim examples from transcripts
Normative	<i>"We have a social obligation...we need to take the views of these customers into account because, you know, they don't have an alternative, they can't go and buy something from somewhere else.."</i> (813_012 p1)
Substantive	<i>"...I can sit at my desk and think that everybody should think like I do and this should work but you don't actually know until you go out and start speaking to people and you find out that nobody thinks the same as you"</i> (813_022 p1) <i>"...so I guess there is something there about striking balance and I think, to some degree, having the customer input is a good counterbalance to regulators and stakeholders who often have political agendas particularly on the environmental side."</i> (813_017 p1)
Instrumental	<i>"...getting the evidence to back up what we think they [the customers] think"</i> (813_015 p1) <i>"By asking the customer we are demonstrating that what we are doing has got their support "</i> (813_011 p1)
Legalistic	<i>"We've done things because the regulators have wanted us to take those particular boxes and try to do the right things as far as we can understand compared to what the regulator said we wanted you to be doing."</i> (813_014 p2) <i>"... now yes we've been led to it like it we were being led to a trough. We were led to it by Ofwat, whether or not we'd have actually done it if it wasn't part of the PR process, I suspect not"</i> (813_013 p2)

Each of the four rationales expressed in the theoretical literature were found in practitioner responses, albeit to varying extents. Participants appeared to hold multiple perspectives and were therefore associated with multiple rationales throughout their responses. Instrumental rationales were by far the most dominant rationale for the purpose of public participation in water sector planning and decision-making followed by legalistic rationales. Responses related to substantive and normative rationales were rarely observed.

Table 6-7: Distribution of rationales over the entire sample population

	Rationales			
	Normative	Substantive	Instrumental	Legalistic
Business area				
Water infrastructure	0	0	11	5
Water non-infrastructure	0	0	4	1
Water resources	0	5	11	4
Wastewater infrastructure	0	1	4	0
Wastewater non-infrastructure	0	1	8	0
Environment	0	1	6	1
Regulation	2	0	11	5
Customer engagement	0	1	3	2
Managerial level				
Analyst	0	0	14	3
Mid-level	0	2	17	8
Senior	2	7	27	7

Practitioner responses most commonly reflected instrumental rationales; where the purpose of public participation was that it was needed to develop strategies and plans that are well evidenced. In this context, public participation was considered to serve a range of purposes, which can be grouped around six key factors:

- a) It collects information about the views, preferences and priorities of water customers that would otherwise have been assumed as part of the planning and decision-making process
- b) It facilitates the improved programme development including the enhanced prioritisation, targeting and sizing of investment proposals better reflecting customer affordability and investment priorities.

- c) It provides an evidenced justification and validation of water utility planning and decision-making proposals enabling plans to stand up to scrutiny
- d) It allows water utilities to demonstrate that it has conducted an effective process
- e) It educates customers about the activities of the water utility
- f) It is a political tool both internally in terms of fostering internal buy-in to strategy proposals but also externally in gaining stakeholder buy-in and suppressing negative external views.

Practitioners often referenced that the purpose of customer engagement / public participation was in order to meet regulatory requirements set by Ofwat. This reflected legalistic rationales for public participation. These rationales were often found in combination with instrumental rationales providing additional context around their views. Practitioners frequently referred to water utilities motivation for public participation as being because they were told to do it or that it allowed them to get through the Price Review. Some practitioners went as far as to suggest that it would not have been done had there not been a regulatory driver there. Additional comments suggested that it was tokenistic, as it does not represent Business as Usual; it does not endure outside of the Price Review process. It is thus a reflection of the increased importance placed on public participation by Ofwat. Some practitioners identify the fact that, unlike other utility sectors, water utilities have a legacy of being dependant on regulators for direction, which perhaps underpins these perspectives.

Practitioner responses rarely reflected substantive rationales for public participation. The few examples that were observed identified the benefits it provided in terms of gaining a greater understanding of the views of customers providing a real insight into their preferences and views. This is distinct from the collection of information perspective that has been discussed as part of the commentary on instrumental rationales as here practitioners associate the benefit with the additional knowledge and understanding gained and not the benefit to the process as a result of it. Some practitioners also associated public

participation with providing a complementary focus for historically asset-focused planning and decision-making. Furthermore, it could counterbalance the views of stakeholders and external political pressures.

Only two responses across the analysis of the entire sample population reflected normative rationales. Here public participation was considered to be a social obligation given the regional monopoly service provision meaning that customers cannot choose their supplier. This view was further substantiated by the view that whilst water utilities represent private organisations they deliver a public service.

Whilst not associated with particular rationales for public participation. Practitioner made explicit references to the development of the role of public participation relative to entrenched practices that became clearer over the duration of the Business Plan development. Explicit references to the importance of public participation in planning and decision-making reflected similar patterns. Practitioners considered the importance of public participation to be higher where there were no statutory obligations whereby practitioners then had to manage two sometimes conflicting perspectives albeit one with a legal driver. Here they found that customer contributions were a complication. This will be discussed further in Section 6.6, but provides an insight into the difficulties experienced by practitioners with respect to plurality of perspectives. The importance of public participation was also considered to be more explicit at more senior roles in the organisation and very much role-dependant. It was considered to be an area that was important to differentiate between water utilities further illustrating the regulatory –focused mind-set.

Practitioner responses revealed a mixed view with respect to the value they placed on public participation in water utility planning and decision-making. It was considered to not represent business as usual, which substantiates

instrumental and legalistic rationales. Furthermore, many practitioners related slight disappointment with the discontinuity interpreted as being displayed by Ofwat with respect to the focus on customer engagement as a central feature of water utility planning and decision-making, in particular following the release of Ofwat's Risk Based Review outputs. Practitioners felt that their efforts in this respect had been to little end. This also reveals an entrenched dependence on Ofwat for direction with practitioners questioning the extent of its worth based on this one factor. Others did not value public participation characterising customers as disengaged and possessing a limited understanding. Others felt there was a conflict of interest as customers only wanted low-cost investment, which could impact their strategy development and 'pet projects' and also conflicting messages from customers, which made it difficult to use.

As this study aimed to address the research objective concerned with the clarity of motivation within the organisation, it was important to understand the distribution of views relative to the practitioner characteristics of the sample population. Table 6-7 attempts to reflect this disaggregation relative to different characteristics of the participants including: business function; management rank which were primary and secondary characteristics that were recruited as part of the purposive sampling approach outlined in Section 6.4.1.

Analysing the distribution of perspectives across the different business functions within the organisation reflects some interesting patterns. Firstly, practitioners within water infrastructure and water non-infrastructure functions dominant perspectives appear to most reflect instrumental and legalistic rationales. The perspectives of those in Water Resources functions also appear to reflect similar dominance. However, the categorisation of some responses as substantive set this particular function apart from their water colleagues. Practitioners in Environmental and Customer Engagement functions reflect similar perspectives. Wastewater infrastructure and non-infrastructure practitioner perspectives also display similarly instrumental characteristics.

However, they do not exhibit the same tendency towards legalistic perspectives as in other functions. Instead, revealing a greater prevalence of substantive perspectives. Regulatory business functions stood out as the only function to display normative perspectives. Potential explanations for these findings revolve around the scope of potential impact; nature of the role relative to exposure to customer views; extent of regulatory intervention; direct exposure to government policy.

Reflecting on the influence of managerial level also provides an interesting insight. Those nearer the lower level of the managerial hierarchy (i.e. such as analysts) appear to hold predominantly instrumental and legalistic perspectives of the function of public participation. This potentially reflects their exposure to more procedural issues and less exposure to decisions around responses and the nuances of quality discussions. The higher up the managerial hierarchy practitioners are the more substantive and normative rationales are observed. It is difficult to definitively identify causes of these patterns. One potential explanation is that the interview responses analysed in the context of senior managers reflect to some degree a rhetoric response; they are more likely to have been directly engaging around regulatory issues and less involved in the day-to-day application of customer knowledge. It is hoped that through the deployment of effective interview technique, the frequency of rhetoric type responses was reduced.

6.5.2 Discussion

Motivational clarity, or 'intentionality' has been described by Wesselink et al. (2011) and (Stirling, 2006) as crucial in influencing the choices made throughout the deployment of participatory planning and decision-making. The motivations of individual practitioners or, more broadly, their organisations for seeking to involve the public or stakeholders, or in the case of this study water customers, represents the main driver for the determination of the choices made with

respect to the design and deployment of the participatory interaction and how the resulting knowledge functions to achieve the benefits anticipated. Using an example from Section 1.2.1 to illustrate this point, if the water utility is motivated to adopt participatory practices to better understand factors influencing customer adoption of water efficiency behaviours so as to design more effective strategies and campaigns to promote sustainable behaviour change, a water utility could be argued to be motivated by a desire to genuinely seek the public's views and opinions and thus would need to design a process that facilitate the realisation of these aims. If the water utility was also seeking to gain public acceptability for the introduction of a new effluent reuse scheme, it is driven by different motivations; it seeks to resolve potential conflicts that pose a threat to the viability of the scheme and validate a pre-determined proposal. One would not expect the same design choices, decisions and resulting knowledge functions to be the same in each case.

The literature presents a small set of studies that have empirically explored the presence of Fiorino's (1990) rationales in practitioner discourse for the purpose of public participation in context of environmental policy (Wesselink et al., 2011); local transport planning (Bickerstaff & Walker, 2001); river basin planning (Blackstock & Richards, 2007) and electricity network infrastructure (Cotton & Devine-Wright, 2012). This study provides a novel contribution to this field through the empirical exploration of practitioner rationales for the purpose of public participation in a water utility in England and Wales. In addition, the findings provide a timely industrial contribution as, with the PR14 process now over, there is an opportunity to reflect on the success (or not) of the embedment of greater customer focus within the regulatory framework in England and Wales and the extent to which the motivations for its introduction were achieved.

This findings generated in this study have provided empirical confirmation for the presence of Fiorino's (1990) normative, substantive and instrumental

rationales in the views of practitioners operating in a water utility within the regulatory framework of England and Wales. It has also provided evidence to suggest the presence of legalistic rationales as distinct from instrumental rationales, providing support for the view that these represent a distinct viewpoint as was posed by Wesselink et al. (2011).

Whilst evidence for the presence of all rationales has been generated in this study, the evidence has suggested the dominance of instrumental rationales for public participation or, as it has been termed by Ofwat, customer engagement. Here practitioners discussed that the purpose of customer engagement was to facilitate the development of strategies and a business plan that was well evidenced and that would stand up to scrutiny. This study also observed, although to a slightly lesser extent, that practitioners reasoned that engaging with customers facilitated them being able to demonstrate compliance with regulatory requirements set out by Ofwat. This clearly aligns with a legalistic rational for customer engagement in water utility planning and decision-making. Evidence for the presence of substantive and normative rationales was generated and found that these positions were rarely used to describe the purpose of customer engagement. Where substantive reasoning was demonstrated, these rationales were held by practitioners whose field provisioned greater current or future interaction with the customer compared to other functional areas of the water utility. For example, practitioners in Water Resources Management functions who engage with customers about water saving behaviours whereby co-generation of knowledge with customers represents a positive approach to reducing demand. Alternatively, those in Wastewater infrastructure teams who may need to explore sustainable solutions to hydraulic sewer flooding. In these cases, practitioners appeared to value the additional of customer knowledge and the non-asset centric perspective that it provided. Normative rationales for customer engagement were rare and reflected that customers, as recipients of a monopoly water and wastewater service, have a right to be engaged about the services they receive.

The organisational scale of this study constrains the extent to which the findings generated can be stated as representative of practitioners across the water sector in England and Wales. However, the dominance of instrumental and legalistic rationales for customer engagement (or public participation) represent comparable findings to those generated across a range of other sectors. The commensurability of these findings with those generated by similar studies but in different contexts provides some confidence to the veracity of the findings generated by this study.

The motivations of practitioners observed in this study provide insight into the benefits that they expect to gain from customer engagement; in this case predominantly the generation of strategies and business plans that were well evidenced with customer support which would support the water utility through the PR14 determination process. Using the logic argued in the literature that motivational clarity determines the choices made by practitioners and the organisation (Stirling, 2006), it stands to reason that, upon scrutiny, the practices they adopt for the acquisition and application of customer knowledge in their planning and decision-making would reflect their dominant motivations facilitating the achievement of their anticipated benefits. In other words, do the practices adopted by practitioners and more broadly the organisation demonstrate motivational clarity?

In addition to exploring the motivations for customer engagement in water utilities, this study explored the practices adopted by the organisation for the management of customer knowledge in the PR14 planning and decision-making process. This has allowed an assessment of motivational clarity as expressed through the organisational practices adopted. This represents a novel contribution to the knowledge

Evidence for motivational clarity as a driver for organisational practices

The study identified seven distinct phases of the organisations approach to participatory planning and decision-making reflecting similar phases to those outlined by Involve (2005) and in Figure 2.1 The examination of these practices, using the instrumental and legalistic motivations as a reference point for the choices made, has found that the influence of these rationales is demonstrable in the practices adopted.

The organisations approach to defining its practices for the management of customer engagement within the Price Review planning and decision-making process was demonstrated as being contingent on the dissemination of Ofwat's reporting requirements. Practitioners outlined the primary reporting requirements that obligated the acquisition of customer knowledge, which included the deployment of WTP and Acceptability Testing activities and collaborative definition of organisational Outcomes. Ofwat's requirement for the use of these approaches was set in the context of a need for broader customer engagement but was not prescriptive as to what water utilities should engage on or how water utilities should manage the knowledge generated from these additional activities (Ofwat, 2011). The influence of Ofwat's requirements on the organisations planning and decision-making practices was clearly demonstrated by one practitioner:

"Now, yes we have been led to it, it was like being led to a trough. We were led to it by Ofwat, whether or not we'd have actually done it if it wasn't part of the price review process I suspect not. We are an asset management company, an engineering company, what we do is pour concrete and laying mains" (813_013 p2)

One practitioner expressed similarly legalistic reasoning:

"...at the end of the day, it's the regulator who makes the decisions about the price review, who makes the decisions about what they are going to take account of, what they're not going to take account of, in

terms of what goes into increasing their determination; and the focus is on the things that the regulators interested in. So, yes, if in five years time the regulators aren't very interested in customer challenge groups, they go well that didn't really work very well, or whatever, then nobody will be doing that, they will be doing whatever the next new thing is. It's a sad thing to say, sorry, I wish it wasn't like that, but at the end of the day they let you set the prices so they effectively they are the Paymaster.” (813_012 p6)

The findings suggest that the activities deployed by the organisation were strongly defined by the reporting requirements set out by Ofwat and leading to the design and deployment of multiple customer engagement activities. As Table E7-1 set out, these included both regulatory and non-regulatory driven engagement activities and spanned a range of different mechanism types (i.e. communication, consultation and participation). Focusing on the fifteen consultative or participative activities outlined, seven of the activities were aligned to seeking WTP, Acceptability Testing or the definition of Outcomes. The further seven activities were aligned to the development of the Water Resources Management Plan which, whilst it forms a part of the organisations Business Plan, is generated separately. These findings clearly demonstrate that the organisations choices with respect to the overall acquisition of customer knowledge were aligned to its motivation for providing well evidenced plans and demonstrating that the use of mechanisms required by Ofwat. Those activities aligned to water saving devices however reflected a substantive need to gain a better understanding of customer views:

“if you're doing a campaign to reduce demands then it has got to be customer driven because I can sit at my desk and think that everybody should think like I do and this should work, but you don't actually know until you go out and start speaking to people and you find out that nobody thinks the same as you. And what you think might work often has the opposite effect” (813_020 p1)

The findings demonstrate that the two dominant areas for the application of customer knowledge were in Outcome Delivery Planning and in the Investment Plan development. These processes required only the knowledge generated through WTP or acceptability testing activities; those activities that were required by Ofwat. Practitioner frequently discussed this purpose of Customer knowledge using terms such as 'validate' 'evidence' 'justifying' 'or rationalising'. Whilst some practitioners stated that they felt that customer knowledge perhaps should play a greater role in 'shaping' plans it was acknowledged that the extent of influence that customers were provided in water utility decision-making was actually very small and therefore precludes a 'shaping function':

There are pinning points that you have to get for example, if Ofwat say WACC is low, the DWI saying you must sort out lead, the environment agency saying you must sort out Ennerdale. You have these rigid pinning points, and they are the pinning points for example pinning down a trampoline. The customer engagement is a force that is exerting a stretch on that, where the customers wanted it. As it gets more and more tightly stretched there is much less elasticity in the system to reflect what the customer wants so therefore you go back to how do we satisfy all these fixed criteria and the customer engagement stuff is more of a luxury or a nice to have. (813_011 p4)

Customer knowledge that did not provision Outcome Delivery Planning or Investment Plan development was reported by practitioners to have been applied primarily within the business plan chapter text and thus performed little role in actual planning and decision-making contexts. One practitioner described the approach to application of customer knowledge:

"...I think the methodologies drove down the numbers because Ofwat worked examples used the WTP data to calculate your ODI, so I don't think that was an option really we had to use those...But maybe I was

just cherry picking bits [of qualitative activity outputs] but surely that's what it was for really, to support the business case.” (813_020 p10)

The unstructured approach to the use of non-regulatory driven customer engagement outputs was similarly described by another practitioner:

“so we had vox pops, well not vox pops, but evidence from the research that we could throw in to the plan if the word count permitted we could chuck it in and that would, be would be fine. But, unfortunately, there were bits of research that we can't just chuck in because that wasn't necessarily a great niche to put it into. There were bits that wasn't used. But the persuasive bits we could chuck-in.” (813_015 p11)

This study also provided insight into the level of influence that the practices adopted by the organisation privileged customer knowledge. As perhaps expected, the main areas of influence were in Outcome Delivery Planning and Investment Plan development. The main thrust of the influence was that customer knowledge influenced water utility practitioners to modify their plans to better reflect the extent to which they valued improvement and the price implications of these investments. The extent of influence was predominantly considered to be large, which reflects the extent to which organisation changed their plans in order to be able to evidence customer support. One practitioner operating in a water function stated:

“If you look at what we were planning to do at the beginning [of PR14 process] and look what we've planned to do at the end, at least for water you can see it's a massive difference. We had all of these strategic proposals to, you know, to almost perfection on water quality and all of these things that would have cost more and, probably halfway through the process, and in response to, principally the acceptability testing, we changed that. We've gone to very much a, we

will maintain service and will try to have extra performance where it doesn't cost anything to the customer. It's about maintaining service apart from where we have to meet statutory obligations. It's actually quite a fundamental change. If you look at the strategies from last year the targets now are unrecognisable because it has clipped the wings really as a result of that work. So I think it is, I would say actually, it's had the greatest impact on the shape of the plan overall to date. Subject to whatever happens with Ofwat" (813_0017 p2)

Whereas a wastewater practitioner stated:

"If we hadn't done customer research, I think, the wastewater program will probably be even bigger than what we've got now, because we're trying to think long term as an organisation. We've got this water framework directive [target] in 2027, so we were trying to build a program to deliver as much of that early as we possibly could to get ahead of the game and hopefully have a bill reduction in the future. But the clear steer from customers was that they didn't want that, so we've perhaps now had to cut even more out of that. But it's still got to be done, this will have to be done in the future, so I think we definitely adapted our plan and therefore who knows what will happen in the future" (813_017 p6)

Whilst functional differences shape the type of influence customer knowledge had in the overall strategies and business plans developed, the findings clearly demonstrate a focus towards the development of plans that can evidence customer support. It also indicates that the greatest influence of customer knowledge was generated through econometric mechanisms. Those mechanisms employed that were more participative and discursive in nature appear to have generated limited influence in the generation of the Outcome delivery incentives and Investment Plan development.

Whilst not directly aligned to a planning or decision-making stage, it is prudent to also address the organisations approach to engagement with the CCG and the influence their views were privileged in the planning and decision-making process. The intention of the CCG was to challenge the water utility with respect to its approach to the deployment and application of customer engagement. The findings of this study suggest that the effective engagement with the CCG became a considerable focus for the organisation and saw considerable resources deployed with the aim of achieving a positive assessment with them with regards to the acquisition and application of customer knowledge. One practitioner described the organisations focus on gaining the support of the CCG:

“the customer challenge group and their report was seen as being very important and there were directors that were going to that group that were very focused on what the group wanted. So, it almost became not what the customer wants but what is it that your customer challenge group want and, if they are a good representation of customer views, which are supposed to be, then that ought to be the same thing. But there was, at director level, we have to do what the customer challenge group, want have to get a good report from them. We have to show that we've responded to their comments, so if they want us to do something again then we do something again.”
(813_012 p4).

The focus on pleasing the CCG and meeting their needs is commensurate with the motivations of the organisation. Practitioners described that the CCG were primarily driven by a cost focus in order to drive down bills:

“they were challenging, but challenging from a cost point as opposed to challenging from a serviceability point which is fair enough because

that's, the CCG were the chair and their main focus is bills" (813_013 p3)

However, the strong focus on gaining support from the CCG has been interpreted as potentially the cause of a lack of support for their planning and decision-making from Ofwat:

"so I think what the price review process is showing this time is this CCG's views are very different to Ofwat so whilst we got our plans through the CCG, Ofwat didn't like it." (813_022 p11)

So, in summary, this study has generated findings that clearly demonstrate that the organisations practices were commensurate with the dominant instrumental and legalistic rationales for customer engagement. By focusing its efforts on WTP and acceptability testing activities, it not only generated customer knowledge to quantitatively drive the development of plans and strategies that were well evidenced by customer preferences and demonstrated customer support but also functioned to demonstrate it had met regulatory reporting requirements. Furthermore, the use of non-econometric customer engagement activities provisioned qualitative information for use in Business Plan narratives to qualitatively establish support and also demonstrate that it had conducted direct, qualitative engagement with customers going beyond what was deemed to be required. Similarly, it demonstrated a focus on embedding structured routines within the organisation to provision clear routes for the use of WTP and acceptability testing data in planning and decision-making, whilst other customer engagement outputs were able to be used flexibly. Its focus on meeting the needs of the CCG further supports the instrumental and legalistic motivations of the organisations customer engagement practices.

Through exploring the extent to which the organisations instrumental and legalistic motivations have driven its customer engagement practices it has also demonstrated that the practices it has developed does not, currently, function to support the normative rationales for participation expressed by those few participants. Similarly, whilst some substantive rationales were observed the mode in which organisational practices applied customer knowledge and the influence these practices privileged raises some doubt with respect to the achievement of the anticipated benefits associated with these rationales.

The findings generated by this study warrant some reflection on their relevance to modes of water and wastewater service delivery as explored in Section 1.2. They have provided evidence to suggest a subtle departure away from traditional modes of water and wastewater service delivery but remaining predominantly rooted in techno-rational practices and conventional intervention development. The strong dominance of instrumental rationales in this study is demonstrative of a legacy of expert-driven practices embedded into practitioner and organisational behavioural norms. Supporting this claim, some practitioners discussed their role (and the organisations) in the context of delivering ‘hard’ engineering dominated solutions or the ambition of achieving near perfect water quality performance. Furthermore, there was a perceived ‘shift’ in organisational practices, particularly around the introduction of Investment Plan Acceptability Testing, whereby customer views have presented significant challenge to expert judgements with respect to proposed LoS targets and the pace of investment delivery. In some cases this was reported to have been poorly received by experts who expressed an ‘attachment’ to their justification for investment; here, the findings were suggestive of their long-held paternalism for the delivery of water and wastewater services being eroded.

The dominance of legalistic rationales are also arguably unsurprising, based on strong legacy of regulatory compliance in the water sector. Ofwat’s introduction of requirements for the demonstration of increasingly participative practices is

largely the main factor underpinning this response. But, as was outlined in Section 2.3 an over emphasis of conducting participative processes purely for the demonstration that they have been done represents tokenistic engagement (Cass, 2006); this study demonstrated evidence for this behaviour with respect to the deployment of non-regulatory driven customer engagement processes which appear to have performed little function in the planning and decision-making process and thus arguably performs little benefit to the development of more effective responses to management challenges. The observed recalibration by the organisation from 'what are customer LoS and investment preferences and priorities' to 'what are the CCGs LoS and investment preference and priorities' expressed by some practitioners again is reflective of expert and regulatory driven practice, shifting the challenge into a realm more akin to conventional management approaches.

The dominance of these two rationales may be a feature of the challenges the sponsoring organisation has and is facing with respect to the delivery of water and wastewater services. Section 1.3 acknowledges the variation in management challenges affecting water utilities across the sector as a result of the geographical variability and the extent of flexibility or interconnectedness inherent in water utility infrastructure. The sponsoring organisation, not being in an areas of water stress and having developed a highly inter-connected regional network of infrastructure perhaps has not yet found need to consider the types of sustainable responses outlined in Section 1.2.1. However, with the high levels of uncertainty associated with future management challenges this does not preclude the potential for future need to consider these interventions, in which case shifts in the relative motivations for customer participation may begin to be observed.

The observed, though albeit slight, expression of substantive motivations for customer participation by practitioners involved in demand management strategy development was encouraging; it represents a transition away from

assuming rational consumer behaviour which is demonstrated as crucial for the success of developing strategies to promote sustained behavioural change (Bell, 2015). The broader lack of substantive rationales for participative planning and decision-making is reflective of the nature of the types of responses sought by practitioners within the organisation (in itself a reflection of the PR14 methodology) whereby input into what and how interventions could be deployed were not considered. Furthermore, where conflict arose between practitioner and customer views, interview responses suggested these were resolved largely not by seeking further insight into their views or considering more innovative or efficient modes of delivery, instead customer views were considered a barrier to progress with investment delayed or abandoned in favour of no service improvement. Reflecting on the lack of normative motivations for customer participation in the context of water delivery in England and Wales, suggests that the strong regulatory role of Ofwat as protecting consumer interest with respect to distributive justice and intergenerational equity has precluded this as a primary consideration by water utilities. In summary, the findings regarding motivations underpinning the views of practitioners from the sponsoring organisation for customer participation are consistent with a attempts to subtly shift away from conventional water and wastewater delivery practices whilst still exhibiting highly expert and regulatory driven. It has posited that these motivations may be a reflection of the nature of the challenges the sponsoring organisation has or is facing and receptivity to increasingly participative practices may shift if and when more sustainable water and wastewater interventions are considered.

6.6 Knowledge management practices

6.6.1 Analysis of results

Section 6.5 examined practitioner attitudes towards public participation in water utility planning gaining an insight into their views as to the motivation for its adoption. This has sought to address RQ 1a and 1b. This section will now seek to address RQ 3a and 3b by exploring the use and influence of customer

contributions to water sector planning and decision-making and the factors that foster and constrain these practices. This study has sought to explore the approach adopted by a water utility (referred to in this section as 'the organisation') to the use of customer contributions (from customer engagement activities using participative mechanisms) and the influence they were privileged in their planning and decision-making processes. The primary planning and decision-making process addressed in this study was that undertaken during the development of the organisations business plan for PR14 supported also by the WRMP. The context of these planning and decision-making processes are described in more detail in Section 1.3.2.

The development of the organisations business plan submission was divided between retail and wholesale functions; each developing their own five-year business plan. This study has focused on the planning and decision-making undertaken by the wholesale function and the use and influence of customer contributions in this process. Whilst it is acknowledged that customer contributions play a critical role in the development of retail solutions, coverage of this is beyond the scope of this thesis as it relates more typically to 'customer service' and not the management of water resources, management of assets provisioning the delivery of water and wastewater services or decisions around future interventions.

As has been outlined in Section 1.3.2 water utilities in England and Wales have a legacy of techno-rational planning and decision-making and have thus privileged the use of technical and scientific knowledge. The introduction of CBA, and thus WTP as a form of benefit valuation, as a reporting requirement by Ofwat at PR09, facilitated the introduction of a broader range of values into asset management practices as part of the Price Review process enabling the valuation of different levels of performance (i.e. the LoS received by customers) and slowly incorporating customer preferences more readily into these types of decisions but remained faithful to techno-rational modes of management. The

methodological approach outlined by Ofwat at PR14, as described in more detail in Section 1.4, placed significantly more importance on broader engagement with customers and, with varying motivations for doing so, with implications for the suitability of the organisations existing planning and decision-making practices. With the exception of WTP exercises conducted at PR09 and some customer engagement work undertaken by the Strategic Water Resources Team around water demand behaviours, planning and decision-making in the wholesale business lacked embedded practices and routines for the deployment of customer engagement exercises with implications for the ready availability of insight into the views and preferences of customers, but also for the routines of those practitioners involved in this planning and decision-making process. Practitioners within the organisation identified existing customer contact data as a potentially valuable source of customer knowledge but acknowledged that the sophistication of the organisations systems limited the value of these contributions at a strategic level instead being used in an operational planning capacity. Practitioner involved in this study held skills and expertise in predominantly engineering and technical fields requiring the routine use of asset, operational and performance data and involvement in a mix of top-down and bottom-up asset management practices (set against Strategic Direction Statement (SDS), for the development of strategic programmes of proposed investment. These reflect the organisations dominant mode of management reflects traditional planning and decision-making practices as has been outlined in Section 1.2. The lack of existing customer insight within the organisation, resulting from legacy planning and decision-making practices, drove an organisational focus on the acquisition of customer knowledge with the intention of this being used to support the planning and decision-making process at PR14. This study examines the practices adopted by the organisation in managing customer knowledge and identifies factors perceived by organisational practitioners to have fostered or constrained the effectiveness of their practices.

6.6.1.1 Actors

Recognising the strong social and relational influence in knowledge management practices reflected in the knowledge management literature as demonstrated in Section 2.5, a review of practitioner involvement (both in terms of actor identification and the extent of contribution and influence) in the management of participative processes and the knowledge generated was important. The data generated from this study identified twenty actors contributing to participative planning and decision-making processes. Fifteen ‘internal’ actors (i.e. operating within the organisation) and five ‘external’ actors (i.e. operating outside of the organisation) yet, who reportedly contributed to the acquisition of knowledge acquisition and use. Table 6-8 and Table 6-9 identify the actors operating internally and externally to the organisation respectively and outline the primary functions they performed.

Table 6-8: Organisational actors

Actors	Primary functions performed
Executive Team	Provision of top-down influence with respect to use and influence of customer engagement outputs Liaison with CCG, Steering Groups
Steering Groups	Agreement of research scope Provision of top-down influence with respect to use and influence of customer engagement outputs Liaison with CCG, Executive Team and practitioners within strategy teams, Economic Regulation and Customer research practitioners.
Economic Regulation Team	Interpretation and synthesis of regulatory requirements relating to the Price Review methodology Research management for econometric, acceptability and customer priorities research activities Research design management incl. content management and associated internal consultation Liaison with experts; researchers; fieldworkers Liaison with CCG; CCG subgroups; organisation steering groups and directors Dissemination of research results to customer research practitioner, users, to stakeholders, steering groups, and to CCG Provision of support to users of research outputs
Customer Research Team	Commissioned new qualitative research where required Ensured research conducted adhered to sector best practice

	<p>Conducted analysis of where gaps in research requirements</p> <p>Analysis and transformation / codification of research outputs for dissemination</p> <p>Lead development of the customer research library – a collated and rationalised set of summarised research outputs</p> <p>Dissemination of research outputs to users</p> <p>Provision of guidance on research outputs</p>
External Communications Team	Co-ordination of social media and communications campaigns
Water Resources Strategy Team	Provision of data for content of research Validation of research design content
Water non-infrastructure Strategy Team	Generation of strategy document Using research outputs to determine investment proposals
Water infrastructure Strategy Team	Generating chapters for business plan outlining strategic investment approaches for the next 5-years
Environment Strategy Team	Provision of support to CCG
Wastewater non-infrastructure Strategy Team	
Wastewater infrastructure Strategy Team	
Asset Management Team	
OPTIMUS Team	Use of WTP and AT data in investment prioritisation tool OPTIMUS
Investment Planning Team	
PR14 Management Team – <i>in the latter stages of the Price Review process</i>	<p>Liaison with CCG</p> <p>Co-ordination of customer research and dissemination activities relative to PR14 submission timetable</p> <p>Dissemination of organisations approach to the PR14 regulatory methodology</p> <p>Co-ordination of strategic decision-making output generation in line with PR14 methodology and timescales</p>

Table 6-9: External actors

Actors	Primary functions performed
Ofwat	<p>Determination of Price Review methodology and reporting requirements</p> <p>Dissemination of Pre-Qualification results</p>
CCG	<p>Key approvers on research scope and design</p> <p>Provision of input to research design through consultation and pilot testing</p> <p>Review and influence how organisation used outputs of customer engagement research</p>
Stakeholders	<p>Determination of quality regulations</p> <p>Engaged on specific issues throughout planning and decision-making process</p> <p>Some stakeholders were members of the CCG</p>

Experts	Advised on research design (in particular: Econometric research, social research, survey based research, qualitative research) Implementation of research activities Generation of research outputs Provision of research peer review Dissemination of research results to CCG – supporting organisation practitioners
Fieldworkers	Implementation of research activities and collection of raw data

Throughout this section all actors will be referred to by the names in Table 6-8 and Table 6-9. However, for the purpose of actors in Strategy Teams they will be referred to collectively as Strategy Managers with distinctions made where applicable. The range and significant number of practitioner involved in participative planning and decision-making processes (and the associated knowledge management processes) demonstrates the interdisciplinary nature of this type of process. It represents a complex setting in which to explore the management of knowledge. It is also worth highlighting the dominance of engineering and technological focused actors and the significantly few actors contributing to the process who hold more interdisciplinary or expertise in social sciences. This again highlights potential issues relating to actor capacity to engage in these processes.

The sample of population of organisation practitioners achieved was outlined in Table 6-5. The aims of the study did not extend to explore the views of those external to the organisation. When the achieved study sample population is examined relative to the actors outlined in Table 6-8 it can be seen that it provides coverage of eight of those actor types. Those actors identified with no coverage in the achieved study sample include: Executive Team; Steering groups; External communications; Asset Management; Investment Management; OPTIMUS Team; and PR14 management team. These functions were not included in the original sample design as these functions specific to the nature of the sponsoring organisation and not commensurate with the

original scope of the study (i.e. to explore practitioner views over the wider sector). Whilst the inclusion of these actors in the sample population of this study would have provided complementary insight, the insight generated demonstrates that these actors used the outputs of participative mechanisms 'indirectly' i.e. through using sophisticated modelling tools to generate quantitative outputs or contact through the overarching management of the PR14 process. The author considers the achieved sample to provide sufficiently detailed information regarding the management of customer knowledge within this process and thus this lack of coverage is not considered to affect the robustness of the findings.

6.6.1.2 Characterisation of the stages of the planning and decision-making process adopted by the organisation

This section reports the process adopted by the organisation at PR14 with respect to the use of customer engagement in its planning and decision-making process. Analysis of the practitioner responses provisioned the generation of the stages of the participative planning and decision-making process adopted by the organisation, demonstrated in Figure 6.1. In doing so, it does not claim to be a full representation of the intricacies involved at each stage of the process but provides a suitable framework with which to structure the discussion of the findings. As will be explored in Section 6.6.1.6 the organisation's approach to using customer engagement in its planning and decision-making was one that evolved. The acquisition of customer knowledge was not undertaken as a coherent programme of work but rather as a set of individual projects. The resulting knowledge acquisition phase outlined in Figure 6.2 therefore seeks to represent those stages that were common to the majority of projects. Having acknowledged in Section 2.5 the variant forms of knowledge, it is necessary to recognise that that the stages in Figure 6.1 privilege the management of explicit knowledge, conceding the difficulty of representing the management of tacit or implicit knowledge in such a diagram.

Analysis of the interview responses suggests seven high-level stages of the planning and decision-making process were adopted and four sub-stages:

- a) Determination of regulatory reporting requirements
- b) Activity scoping
- c) Detailed Customer Engagement Activity design
- d) Customer Engagement Activity output generation
- e) Transformation and packaging of Customer Engagement Activity outputs
- f) Distribution and dissemination of Customer Engagement Activity outputs
- g) Use of Customer Engagement Activity outputs
 - i. Outcome delivery planning
 - ii. Development of investment plan
 - iii. Business Plan document authoring
 - iv. Water Resources Management Plan

The primary stages outlined here are, whilst not identical, largely characteristic of the stages of participatory planning and decision-making outlined in Figure 2.1. For example, the definition, detailed design and institutional response phases map on to stages a)-b), c)-f) and g) outlined above respectively. The evaluation phase recognised in Figure 2.1 was not reflected in practitioner responses. Having established the primary actors within the planning and decision-making process (See Table 6-8 and Table 6-9) it was possible to map their contribution on to the stages of the planning and decision-making process outlined above. Appendix 9E6 outlines actor contributions at each stage of the planning and decision-making process and this will be discussed in Section 6.6.2.

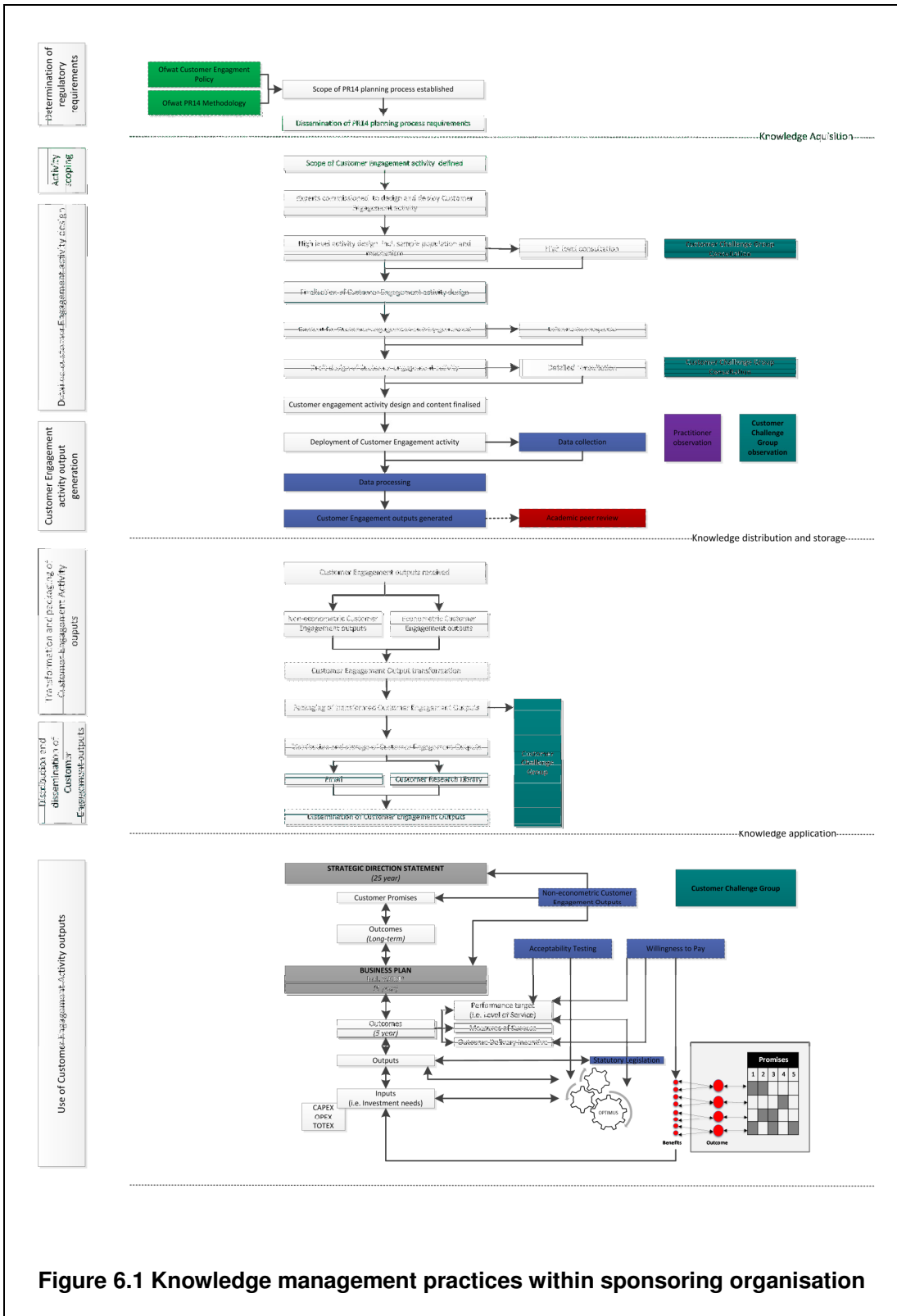


Figure 6.1 Knowledge management practices within sponsoring organisation

6.6.1.3 Knowledge management phases

The planning and decision-making process adopted by this organisation, introduced in Section 6.6.1.2, can also be characterised as distinct knowledge management phases. Using categories identified in the literature and introduced in Section 2.5, the process adopted by the organisation for the management of customer knowledge can be characterised as:

- a) Knowledge acquisition
- b) Knowledge transformation
- c) Knowledge distribution and storage
- d) Knowledge application

Table 6-10 provides a rationalisation of the planning and decision-making processes (identified in Section 6.6.1.2) associated with each Knowledge Management Phase in addition to identifying the primary and secondary actors and the sections of this Chapter in which these Knowledge Management phases are explored in greater detail. The following sections will now address each knowledge management phase. Each section will: outline the practices that the organisation adopted and identify the implications for knowledge management.

Table 6-10 Rationalisation of knowledge management phases versus participatory planning phases

Knowledge management phase	Associated planning and decision-making processes	Primary actors	Secondary actors	Section
Knowledge acquisition	Determination of regulatory reporting requirements Activity scoping Detailed Customer Engagement activity design Customer Engagement output generation	Economic Regulation Customer Research Strategy Teams CCG incl. stakeholders Experts Fieldworkers	Executive Team Steering groups External communications PR14 management team Ofwat	6.6.2
Knowledge transformation, distribution and storage	Transformation and packaging of Customer Engagement outputs Distribution and dissemination of Customer Engagement outputs	Economic Regulation Customer Research	CCG incl. stakeholders Executive Team PR14 Management Team Experts	6.6.3
Knowledge application	Outcome Delivery planning Development of investment plan Business plan authoring Water Resources Management Plan	Strategy Teams Asset Management, OPTIMUS and Investment Planning Team CCG incl. Stakeholders Steering Groups Executive Team	Economic Regulation Customer Research PR14 Management Team	6.6.4

6.6.1.4 Knowledge acquisition process

Whilst it is acknowledged that the direct theme of this study is examining the use and influence of customer contributions to planning and decision-making, analysis of interview responses suggested interdependency between knowledge acquisition practices (reflecting design and deployment of participative mechanisms) and those associated with the use and influence of customer knowledge. Practices adopted for acquiring knowledge have therefore been reviewed to provide context for the findings set out in Section 6.6.1.5,

6.6.1.6, and 6.6.1.7. The Knowledge Acquisition phase encompasses both the organisations approach to developing an understanding of a) the PR14 regulatory reporting process set out by Ofwat and b) customer views and preferences on a range of issues relating to the delivery of water and wastewater services. Figure 6.2 (an excerpt from Figure 6.1) provides an overview of the organisations knowledge acquisition process.

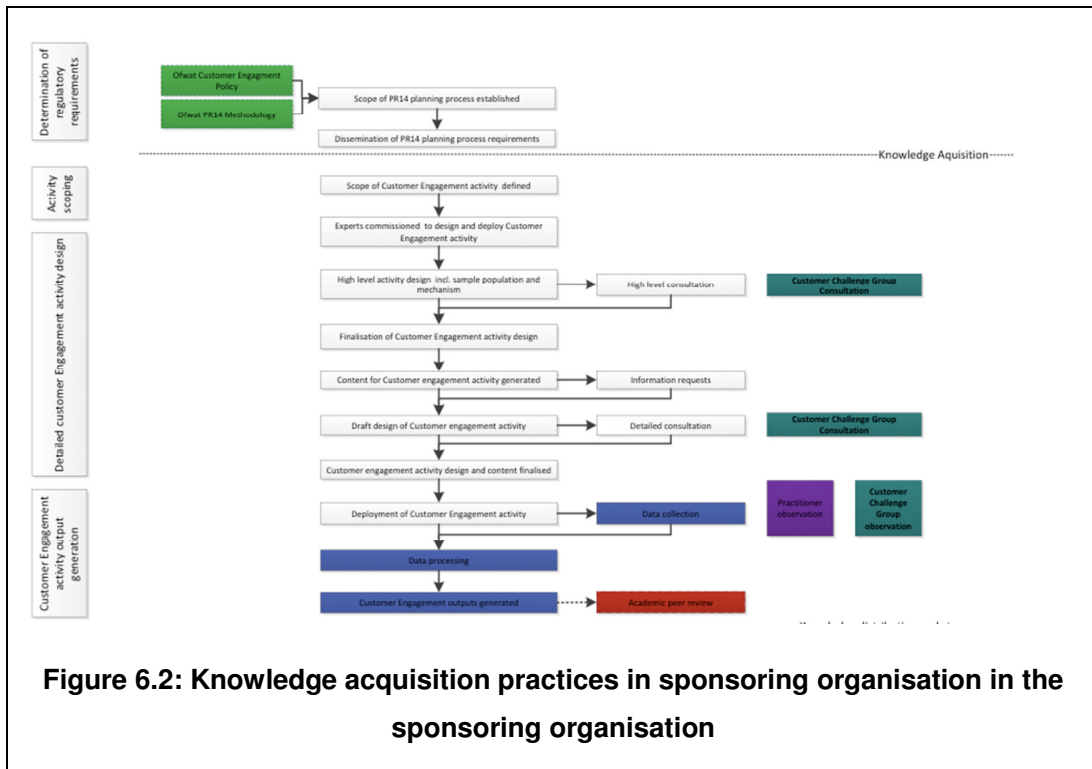


Figure 6.2: Knowledge acquisition practices in sponsoring organisation in the sponsoring organisation

Determination of regulatory reporting requirements

The adoption of increasingly participative approaches to planning and decision-making has the potential to introduce new forms of knowledge which practitioners may be unaccustomed to using in their practices potential bringing with it new challenges and complexities. Section 6.5 outlined the primary rationales held by practitioners in this study for the use of participative approaches to planning and decision-making. Whilst a range of rationales were identified it was clear that, underpinning these views, the primary driver of the

actual adoption of these practices across the sector was Ofwat's Price Review submission expectations. Analysis of the interview data suggests that Ofwat's motivations and expectations with respect to the introduction of greater customer engagement at the Price Review were disseminated within the organisation by circulation of Ofwat's documents; firstly the Customer Engagement Policy Statement (Ofwat, 2011) followed later by the PR14 methodology statements (Ofwat, 2013). Analysis of the interview data revealed only one reference to their being any additional influences (other than Ofwat) in the development of the organisations approach to the acquisition of customer knowledge:

"...to look at any gaps that were occurring relative to what Ofwat was telling us that was needed to be best practice or what we gleaned to be best practice by looking more broadly at the water industry and looking at other competitive markets "(813_014)

However, the specific contribution of these additional influences to the development of the organisations approach was not substantiated. This therefore suggests that Ofwat's guidance formed the dominant foundation for the development of the organisations approach.

Ofwat's Price Review submission expectations were primarily made available to organisations as 'Explicit Knowledge'; practitioners operating as part of the Economic Regulation team were identified as its primary recipients. This range of expertise in this team included practitioners responsible for defining the regulatory strategy of the organisation and also practitioners responsible for economics and competition, who were, in PR09, responsible for the design and delivery of customer research in the form of WTP studies. The data suggests that it was their role at this stage of the process to interpret the requirements set out in the documents received from Ofwat combining it with their organisation specific knowledge and experience prior to its dissemination within the organisation. Drawing on concepts introduced in Section 2.5 it could be argued

that the role of practitioners in Economic Regulation was commensurate with those of a 'knowledge broker'.

The strong organisational focus on instrumental and legalistic rationales for public participation in planning and decision-making, as outlined in Section 6.5, is suggested to be a feature of the practitioners co-ordinating this activity within the organisation. Economic Regulation, like the name suggests, are strongly driven by regulatory protocol with their main role being to interpret this within the organisation and similarly ensure that the activities conducted by the organisation are in-line with the regulatory contract and do not contradict any elements of their licence to supply water and wastewater services. It is perhaps not unsurprising that these similar behaviours were applied to their role in the acquisition and deployment of customer knowledge within the organisation.

Interview responses reveal that there was a delay in the organisations receipt of the PR14 methodology statement and the strategy development process was already significantly underway prior to this information being available and interpreted by Economic Regulation practitioners. This reportedly had implications for both the acquisition of customer knowledge and its application in the planning and decision-making process. No information is available with regards to the extent of transformation and translation undertaken by practitioners within the economic regulation team prior to its dissemination.

Acquisition of customer knowledge

The practices for the acquisition of customer knowledge set out in Figure 6.2, represent an amalgam of common stages adopted across customer engagement activities deployed; it doesn't claim to fully reflect the totality of each individual customer engagement activity.

Section 6.5 outlined that the organisations practices were commensurate with instrumental and legalistic rationales and were identified as a driver of organisational practices. This finding was further supported by the dominance of Ofwat methodology statements as a motivator for the customer knowledge acquisition. Analysis of the data suggests that the delay in the arrival of the PR14 methodology was perceived by practitioners to be a significant constraint to the development of effective knowledge acquisition processes. Whilst this is indicative of a lack of independent process and practice, economic Regulation practitioners perceived there to less reliance on Ofwat to lead planning and decision-making processes at PR14 and that organisational practices reflected independence in determining opportunities for the acquisition of customer knowledge (i.e. discretionary research). The contrast in views here may reflect to some degree the use of rhetoric by economic regulation practitioners given the similarity of this theme to that expressed in Ofwat's customer engagement policy statement (Ofwat, 2011).

Interview responses highlight that the acquisition of customer knowledge was not undertaken as a strategic programme of work. Instead, it was conducted through the scoping, design and deployment of individual projects. This approach had implications for practice in subsequent knowledge management phases, as outlined in Section 6.6.1.6. Individual 'project' needs were determined largely through a top-process managed by Economic Regulation and Customer Research practitioners. Interview responses suggest that scoping the acquisition of customer knowledge was driven by a) regulatory drivers b) to address divergent messages arising from preceding customer engagement activities c) to address specific strategic issues, or d) to target specific customers i.e. hard-to-reach or vulnerable customers. Interdependencies between different activity streams appear to have been largely overlooked.

Figure 6.2 demonstrates the use of experts and fieldworkers contracted from outside the organisation to assist with the detailed design, logistics and deployment of customer engagement activities. The use of external resources to perform these key functions was associated with a) a lack of the specialist skills within the organisation (and to some extent the sector) required to design and deploy these activities, and b) the greater level of credibility associated with the use of expert generated outputs. Experts, in particular, were perceived to have played a significant role in the design of Customer Engagement activities and the use of raw data to generate Customer Engagement outputs for use within the organisation. The role of fieldworkers, however, was assigned to the deployment of activity design directly with customers, generating raw data to be then processed by experts. In some cases fieldworkers were not used with the experts directly engaging with customer on behalf of the organisation.

Analysis of the interview data suggests that initial detailed design of customer engagement activities was predominantly undertaken by Economic Regulation or Customer Researcher practitioners in collaboration with experts with high-level consultation with the CCG, Executive Team and steering groups. This included the selection of participatory mechanisms and the overarching themes to be covered. A lack of collaboration with 'users' (i.e. those practitioners in Strategy Management Teams) at this stage means that success is predicated on the ability of Economic Regulation practitioners and Customer Research practitioners to adequately translate the perceived 'need' or 'requirement' for customer knowledge into an activity that will generate outputs suitable for use in planning and decision-making. Analysis suggests a more constrained design and consultation approach undertaken for Customer Engagement activities designed exclusively for use in the WRMP.

On receiving agreement on the customer engagement activity design, Economic Regulation practitioners and Customer Research practitioners reportedly set about generating specific content to populate the customer

engagement activity designs. This was described as being done through 'requests for information'; limited collaboration was reported. Information requests were largely directed to Strategy Managers across the various Strategy Teams within the organisation. Economic Regulation practitioners and Customer Research practitioner provide conflicting responses regarding the success of this approach. Analysis of the interview data then suggests that Economic Regulation and Customer Research practitioners then transferred the information received from Strategy Managers to the (external) experts to finalise the design and content of customer engagement activities.

Customer engagement activity design was then finalised through a broad consultation process managed by Economic Regulation and Customer Research practitioners. This provided Strategy Managers, CCG, Executive Team, Steering groups with the opportunity to provide feedback on the final activity design and content prior to the deployment of the activity with customers. This was largely undertaken through email interaction. However, one example of a collaborative approach to consultation was described in the finalisation of the Acceptability Testing activity. Again, a more constrained approach to consultation was adopted for Customer Engagement activities designed exclusively for the WRMP.

Experts and Fieldworkers managed the recruitment of customers to participate in the Customer Engagement activities and then the direct engagement with them through the deployment of Customer Engagement activities. This study sample population did not include Experts or Fieldworkers involved in the deployment of Customer Engagement activities so the extent to which interview responses generated insight into this process was therefore limited. However, interview responses suggested that some Economic Regulation, Customer Research, Strategy Manager and CCG practitioners were provided with the opportunity to attend some of the 'live' customer engagement activities as an observer enabling them to gain some insight into the deployment process.

Similar to the deployment of research mechanisms, the lack of experts and fieldworkers in the sample population of this study constrained the extent to which this study has been able to generate insight into the process by which customer engagement outputs (i.e. customer knowledge) was generated, in particular, the process by which raw information was processed (i.e. selected, rejected and/ or transformed). The interview data suggests that the type of outputs generated was agreed as part of the activity scope largely including: Reports, PowerPoint 'Slide packs' or in some instances an Excel Spread sheet. Finally, econometric Customer Engagement activities were described as being subject to academic peer review. Economic Regulation practitioners managed this process, however, specific details of this process were not revealed in interview responses.

Table E7-1 in Appendix E outlines the primary Customer Research activities designed and deployed by the organisation for the acquisition of customer knowledge for use in planning and decision-making. It makes a distinction between regulatory and non-regulatory driven research and the level of participation exhibited by those mechanisms chosen. It demonstrates the significant extent of regulatory driven customer engagement and, conversely, a paucity of engagement exercises which have been driven by water utility derived need. A notable exception is engagement with customers that has been conducted for the development of the WRMP. Yet, whilst it is encouraging to see a greater customer engagement activity directed towards demand management responses, this demonstrates a focus on communication-type mechanisms and thus does not typically gain substantive outputs for use in planning and decision-making.

6.6.1.5 Knowledge transformation, distribution and storage

Section 6.6.1.4 has outlined the practices adopted by the organisation with respect to knowledge acquisition. This section considers the transformation (if any), distribution and storage practices adopted by practitioners identified as receiving this knowledge (from experts). Factors that were identified as fostering and/or constraining the effectiveness of the organisations practices with respect to transformation, distribution and storage are integrated into Section 6.6.1.5. The findings are presented such as factors fostering and constraining the organisations practices in this knowledge management phase were identified in the context of the process of applying customer knowledge in planning and decision-making processes. Figure 6.3 outlines the processes adopted in this knowledge management stage as documented in the interview responses.

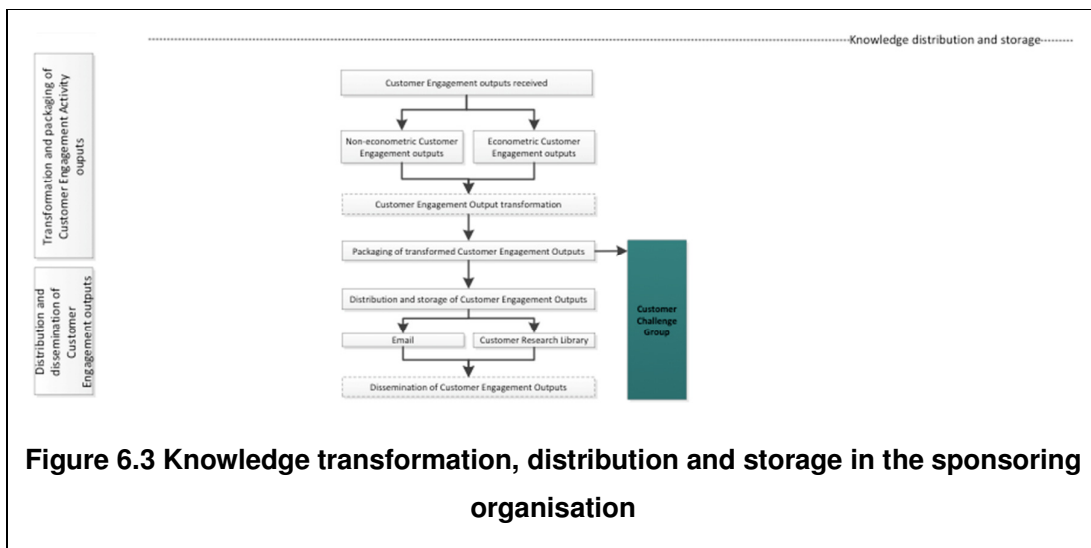


Figure 6.3 Knowledge transformation, distribution and storage in the sponsoring organisation

Knowledge transformation and packaging

The results suggest that the primary forms of customer knowledge generated by external experts were packaged as reports, as PowerPoint Presentation 'slide pack' or as Excel Spread sheets. Output packaging appeared to be driven by resource or regulatory considerations. For example the selection of 'slide packs'

as the primary customer engagement output was attributed to associated cost-savings associated with this form of output (as compared to a report) and the ease of digesting the information and if necessary its re-dissemination. It was suggested that there was a preference for outputs in the form of reports were it might be scrutinised by regulators. No information was provided to justify the selection of Excel Spread sheet outputs.

Interview responses suggest that Economic Regulation practitioners and the Customer Research practitioner were the primary recipients of expert generated Customer Engagement outputs. The Economic Regulation practitioners, as outlined in Section 6.6.1.1 were largely responsible for econometric Customer Engagement activities (including the WTP and Acceptability Testing outputs) whereas the Customer Research practitioner was responsible for non-econometric Customer Engagement activities (mostly using qualitative mechanisms). The extent of transformative practices applied to the outputs varied greatly. Outputs intended for use within the organisation, were subject to significant transformation by Customer Engagement practitioners prior to dissemination whereas Economic Regulation practitioners were described as disseminating outputs largely as received i.e. with little or no transformation. For those outputs intended for the CCG (or stakeholders), interview responses indicate that members were provided with un-transformed customer engagement outputs with subsequent supporting presentations at CCG meetings that communicated the salient points and modified language to be understandable by the broad membership of the CCG.

Customer Research practitioners reportedly consistently adopted a multi-stage approach to the transformation and translation of the qualitative customer engagement outputs. The stages can be summarised as follows:

- a) Review historic customer engagement outputs (where applicable) and summarise relevant findings

- b) Reviewed current (PR14 and WRMP related) customer engagement outputs and, using the 'key findings' and 'conclusions' sections in PowerPoint Slide packs or reports, generated two-page summaries of each customer engagement activity
- c) Themes present within the research summaries were mapped against the organisations agreed set of 'Outcomes'
- d) Each 'Outcome' was assessed as to how well evidenced it was by customer engagement outputs - if inconsistencies within the research findings emerged, or if organisational 'Outcomes' were perceived to be less well evidenced, additional qualitative customer engagement activities were commissioned where possible
- e) Themes within each 'Outcome' were formed into narratives. Where 'Outcomes' were less well-evidenced and additional research not feasible, comparable themes were identified and the main thrust translated to be applicable in a new context. One example provided included an 'Outcome' around sludge management. No customer engagement outputs contained any findings relating to sludge management, as this was not a topic explored with customers. Pollution however, was a topic explored with customers and thus the customer views and preferences around pollution were translated across to be used as evidence as part of the sludge management outcome
- f) Production of Customer Engagement matrix at an 'Outcome' level
- g) Production of Customer Engagement high-level summary document across all qualitative customer engagement activities (including historic and current customer engagement outputs)
- h) All summaries, the Customer Engagement matrix, Customer Engagement high-level summary and original customer engagement outputs were uploaded on to the Customer Research Library on the organisation SharePoint site.

Non-econometric customer engagement outputs were therefore exposed to significant transformation at this stage of the process with the outputs being

customised for use in the PR14 planning process. The success of this transformation and customisation thus relied on the ability of the Customer Research practitioner to effectively select findings relevant to the planning and decision-making issues facing practitioners and develop meaningful knowledge to develop to assist in the development of strategic solutions. The Customer Research practitioner interviewed as part of this study stated no formal qualitative analysis tools or techniques were adopted in this process with Spreadsheets and brainpower the primary tools. Economic Regulation practitioners reported that they primarily received outputs in the form of reports that they then disseminated directly to users. Additionally, they selected salient sections of the reports and transformed these into PowerPoint slide packs to accompany the reports. The interview responses did not provide details as to how they selected data to be presented in the PowerPoint slide packs.

Analysis of the interview responses suggests that practitioners in Strategy Teams, as the dominant users of customer engagement outputs, were largely unaware of the process of output transformation and translation adopted by the Customer Research practitioner and to a lesser extent the practitioners in the Economic Regulation Team suggesting that these knowledge transformations were undertaken in isolation with little or no collaboration of users in this process. The role adopted by Customer Research practitioners, in particular, arguably represents the exertion of significant power. Their decision-making around knowledge selection, rejection and its transformation has the potential to yield significant influence on the totality and form of findings entering the planning and decision-making process with potential implications for investment solutions. Some Strategy Managers expressed some apprehension about the transformation process adopted by the Customer Research practitioner, but reconciled that it performed a useful function in rationalising the perceived 'noise' of qualitative data to provide key conclusions. The roles adopted by Economic Regulation practitioners and the Customer Research practitioners in the transformation of customer knowledge arguably reflects the position of what is termed in the literature as a 'Knowledge Broker'.

Associated with their involvement in the transformation of customer knowledge, the Customer Research and Economic Regulation practitioners were also responsible for determining the packaging of transformed customer engagement outputs for its distribution into the organisation. The primary outputs identified by users within the organisation included: a) reports b) Slide packs c) Customer engagement matrix d) Customer engagement findings summaries.

Reports were the primary form of packaging selected by Economic Regulation practitioners for the dissemination of customer engagement outputs, largely as outputs were untransformed and thus was a direct distribution of expert generated outputs. These outputs reported the methodology used, and the results obtained from both the pilot and main stages of the WTP study. Whilst not the dominant form of packaging used by the Customer Research practitioner, 'transformed' outputs were reportedly supplemented with original expert generated outputs reports where applicable. Reports as a form of output received a mixed reception by those using them in planning and decision-making.

The Customer Engagement Matrix developed by the Customer Research practitioner reported summarised key findings from qualitative customer engagement activities and presented them by topic and by outcome for use by Strategy Managers. The Customer Research practitioner and practitioners in Economic Regulation also referred to the generation of slide packs and Customer Engagement summary reports, reference to them by those using customer engagement outputs in the planning and decision-making process was not found in interview responses.

Knowledge distribution and storage

The distribution of these outputs was largely co-ordinated by Economic Regulation and Customer Research practitioners for the duration of the planning and decision-making process. The assembly of a PR14 management team part way through the process provided assistance in the co-ordination and scheduling of these activities relative to the concurrent strategy and business plan development.

The distribution of explicit knowledge to those practitioners using them for planning and decision-making was reportedly through three primary methods: email, storage on a SharePoint site called the 'Customer Research Library' and the storage of WTP benefit values in the corporate Benefits Framework.

Both Economic Regulation and Customer Research practitioners used emails, with it being the preferred mode of distribution for the former. The Customer Research Library was reportedly the storage repository for outputs of all customer engagement activities conducted in the wholesale business including: two-page summaries of key findings for each customer engagement activity; reports or slide packs delivered to organisation by experts for each customer engagement activity; customer engagement summary report; and the customer engagement matrix. Motivations for the development of this resource were not revealed in the interview responses. The Customer Research Library was intended for practitioners involved in using customer knowledge in the organisations planning and decision-making for PR14; access was restricted to Strategy Managers as well as PR14 management team; Economic Regulation as well as steering groups and Executive Team. The motivation behind this approach was unclear. Yet it appeared that a similar approach had been adopted in the storage of non-PR14 related Water Resources demand management customer engagement activities with the availability of this information restricted only to those in the Water Resources Strategy Team.

Broad organisational access to the outputs of customer engagement activities was, therefore, largely restricted. The perceived success of the Customer Research Library is discussed in Section 6.6.1.5. Finally, storage of WTP benefit values in the Corporate Benefits Framework was managed by the OPTIMUS team. Further detail is provided on the Benefits Framework is provided in Section 6.6.1.6.

To supplement the distribution of customer engagement outputs, the Customer Research and Economic Regulation practitioners reportedly used 'briefings' or 'presentations' which were attended by Strategy Managers. The interview responses indicate these were either general or bespoke in nature. General briefings included broad coverage of the customer engagement activities undertaken and associated high-level results. These were delivered by Customer Research practitioners at PR14 briefing sessions or functional team meetings. Economic Regulation practitioners reportedly limited the extent of bespoke dissemination sessions due to the perceived workload and time pressures faced by Strategy Managers. Interview responses indicate that bespoke dissemination sessions were used for communicating the outputs of the Acceptability Stage One findings (See Table E7-1). In this case, two round table discussion sessions were prepared, one for water strategy teams and one for wastewater strategy teams, whereby the methodological approach was discussed and the findings and implications for their specific strategies discussed in detail. The investment of time in this approach for the Stage One research reportedly enabled Economic Practitioners to use less resource intensive dissemination approaches (i.e. email) to disseminate Stage two research building on the knowledge capital developed through these sessions.

This section so far has focused on the distribution and storage of customer engagement knowledge within the organisation, but Economic Regulation practitioners and Customer Research practitioners were also responsible for the distribution and dissemination of the customer engagement outputs to the CCG.

It was widely perceived that this was a major focus for them; comparatively less time and effort was perceived to have been applied to internal organisational dissemination. The interview responses identified that experts (those responsible for the generation of econometric research) were contracted to assist practitioners with the dissemination of these Customer Engagement outputs with the CCG. It also suggested that greater consideration was attributed to the complexity of outputs provided and presented to the CCG, as compared to within the organisation, in order to account for different levels of skills and expertise amongst CCG members to avoid damage to relationships.

6.6.1.6 Knowledge application

Sections 6.6.1.4 and 6.6.1.5 have sought to outline the organisational approach to knowledge acquisition, knowledge transformation, distribution and dissemination acknowledging the observed interdependencies of knowledge management practices in these stages for subsequent use (and influence) in the PR14 planning and decision-making process. This section focuses attention to the application of customer engagement outputs. It identifies the primary practices adopted in the organisation for the application of customer in the planning and decision-making process. Section 6.6.1.8 then seeks to identify factors that are perceived to have fostered successful knowledge transformation, distribution, storage and application practices within the organisation and, conversely, those that are perceived to have constrained the success of organisational practices in this context.

Figure 6.4 outlines the organisations knowledge application practices identified in the interview responses generated by this study.

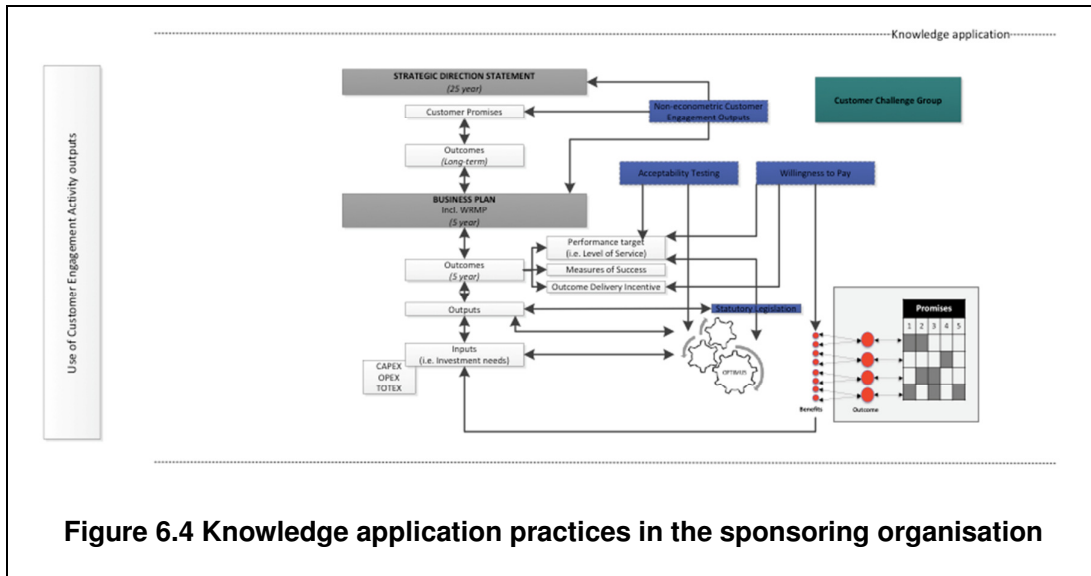


Figure 6.4 Knowledge application practices in the sponsoring organisation

Table 6-8 and Table 6-9 have identified multiple actors as contributing to the application of customer knowledge in planning and decision-making. Economic Regulation and Customer Research practitioners were not as dominant in this stage of the planning and decision-making process unlike preceding stages. Their contribution centred on the provision of support in the interpretation of research outputs through one-on-one support. The dominant actors in developing the institutional response were therefore the Strategic Investment Management teams; the Asset Management, OPTIMUS and Investment Planning teams with input from the CCG and, to a lesser extent, the organisational steering groups and Executive Teams. It is interesting to note that practitioners identified that these actors / teams had limited contribution in the definition and design stages of the process. This is a theme that will be explored in more detail in later sections. The PR14 management team provided a co-ordinating role during the later stages of the Price Review process ensuring that research outputs were reaching the right people and the institutional response was being developed in-line with organisational timescales and across different functions.

Analysis of interview responses suggests that, overall, little consideration was formally given to the subsequent application of customer knowledge gained in the knowledge acquisition phase. This is particularly relevant to the outputs of non-econometric customer engagement activities; however the strong regulatory reporting expectations behind the use of non-discretionary customer engagement activities such as WTP and Acceptability Testing appear to have driven a more structured approach to its use.

The interview responses clearly indicate six key uses of customer engagement outputs within the organisations PR14 planning and decision-making. They can be broadly split into four categories including:

- a) Outcome delivery planning
- b) Development of investment plan
- c) Business Plan document authoring
- d) Water Resources Management Plan

The use of customer engagement outputs in outcome delivery planning was reported as comprising three specific activities. Firstly, a mixed-mechanism customer engagement activity called 'Customer Promises' was used to influence the 'Outcomes', or 'Promises', the organisation set. These statements outlined the service and delivery commitments made by the organisation. Examples include "Providing high quality and reliable drinking water, with minimal restrictions or disruptions" or "Clean bathing waters and beaches, with minimal impact from our activities". The use of customer engagement outputs to develop the organisations 'Outcomes' enabled practitioners to then develop MoS; metrics that allowed the organisation, and the regulator, to measure the organisations performance against each outcome.

Secondly, WTP outputs were used to provide a benefit value for improving or decreasing the LoS provided across a range of service attributes (and strategy themes). The LoS received by customers is aligned to the organisations asset

operation condition; it constrains how the organisation operates their assets, defines a benchmark for the assessment of asset performance and identifies the need for asset investment (Deadman, 2010). For example, where customers have demonstrated a WTP for improvements to an attribute of their service over and above the *Status Quo*, it provided the organisation with the opportunity to explore combinations of asset management options (i.e. acquisition of new assets; operational modifications; maintenance, renewal and disposal) that would facilitate this improvement. Conversely, if customers did not express a WTP for improvements to service over and above the *Status Quo* then, unless there were regulatory drivers for improvements to performance, it limited the justification for improvement driving the organisation to identify combinations of asset management options that maintain current LoS or deteriorate service if customers express a Willingness to Accept (or tolerate) a lower LoS. The development of the organisations strategies was reportedly an iterative process. Initial strategies were developed prior to the commencement of any customer engagement activities. A combination of asset performance and risk analysis coupled with initial indications of statutory requirements enabled the development of a range of performance scenarios each associated with multiple independent benefit streams held in a corporate Benefits Framework. The benefits framework contained a broad range of monetised benefit areas valued using a range of different methods. Stated Preference methods, referred to here as 'WTP', was the method used to monetise the benefit (or dis-benefit) customers associated with a unit improvement in service for each service attribute i.e. £ - per risk reduction – per year – per household / customer affected. These values were added to the Benefits Framework. Separately, Asset Managers had built up a catalogue of Capital Expenditure (CAPEX) 'Asset Needs' within OPTIMUS, a corporate optimisation system. Users aligned each 'Need' with the (monetised) benefit areas it would impact. OPTIMUS then calculated a benefit score for each 'need' and generated a cost-benefit score. Using the various performance scenarios developed by Strategy Managers, Investment Planners then identified the optimal combinations of 'Asset Needs' to deliver the performance benefits (or dis-benefits) associated

with each scenario generating an overall programme cost-benefit score. Through this iterative process, Strategy Managers were able to establish those performance scenarios that provided the most benefit to customers relative to the cost to deliver this and thus establishing the optimal Target LoS to be associated with the MoS, described above, developed to measure outcomes.

The final area where customer engagement outputs were used in Outcome Delivery Planning was in the calculation of the ODI. Ofwat required each MoS to be incentivised; incentives could be financial, reputational or procedural in nature. Strategy Managers used the Incentive Framework developed by Ofwat to determine the type of incentive associated with each MoS. Where the need for a financial incentive was identified, WTP outputs were used to calculate a £ million /%/ Year reward for out-performing the target associated with each outcome (those associated with each MoS), or, a £ million/ %/ Year penalty associated where the organisation has failed to deliver targets associated with outcome (associated with each MoS).

The second category is the development of the overall investment plan. Interview responses suggested that was a latter stage process that was driven by the introduction of Acceptability Testing outputs . The Acceptability Testing activity saw customers presented with three different investment plan scenarios. One, which was the preferred scenario based on the outcomes of the Outcome Delivery Planning, and then one higher and one lower scenario, each with attribute level performance and bill impacts. The outputs from this study provided a % level of acceptability for each investment plan scenario in addition to a % level of acceptability for each attribute of service (corresponding to each customer facing MoS) across each scenario. Practitioners stated this provided important insight facilitating the re-optimisation and prioritisation of performance targets and associated investment through the addition of expenditure thresholds in OPTIMUS reflecting customer acceptability of affordability.

The two categories of knowledge application outlined thus far represent elements of the planning and decision-making processes heavily influenced by Ofwat PR14 methodology; customer knowledge was used as part of a relatively structured process. Practitioners also describe the use of WTP and Acceptability Testing in a less structured way by Steering Groups and the Executive Team in providing top-down direction as to Outcome development and Investment Planning. A similarly unstructured use of customer engagement outputs was its use with the CCG. Specific examples of uses of customer engagement outputs with the CCG were not found in interview responses. However, practitioners allude to its use to campaign for certain targets and schemes.

The core WTP and Acceptability Testing activities conducted largely represent non-discretionary customer engagement outputs i.e. the acquisition of this knowledge was required by Ofwat. The organisation did develop discretionary qualitative customer engagement activities to support the WTP and Acceptability activities as outlined in Table E7-1 in Appendix E, however, the interview responses did not detail specific uses of these outputs in the Outcome Delivery planning or in the Investment Plan development.

Qualitative research undertaken was reportedly used primarily in developing text within the Business Plan and Strategy documents. Strategy Managers frequently described the use of quotes taken from qualitative customer engagement outputs to justify the investment choices. They reported there was no structured method to the use of these outputs with practitioners stating that they used it where they saw fit.

Finally, customer engagement outputs were reported by Water Resources practitioners to have been used extensively in the WRMP development. Whilst investment requirements and solutions identified in the WRMP translate across to the PR14 planning and decision-making processes, its use in developing and measuring the success of demand management interventions (such as Water Saving Devices) is largely independent of the PR14 process. An interview with Water Resources Practitioner demonstrated significant communication efforts in relation to water efficiency behaviours.

6.6.1.7 Influence of customer knowledge in the organisations planning and decision-making

Analysis of interview responses enabled the isolation of examples of the influence customer knowledge in the organisations planning and decision-making outcomes. These examples were characterised as either a limited or significant influence and were associated with the four categories of knowledge application observed in the organisations planning and decision-making set out in Section 6.6.1.4 which included Outcomes delivery planning; the development of the investment plan; Business Plan document authoring and the Water Resources Management Plan. These will be addressed in turn.

Outcome delivery planning

Analysis of the interview responses suggest that customer knowledge had a significant influence in Outcome delivery planning with practitioner stating that what were the original strategies (incorporating outcomes) are now unrecognisable as a result of the application of customer knowledge. The overarching contribution was the definition of the performance targets associated with MoS and the associated Outcome delivery incentives. Additionally, it functioned as an affordability check for Strategy Mangers in the development of the Outcomes and provided a positive counterbalance to the views of regulators and stakeholders. Its primary influence was in moderating

the investment aspirations of the organisation with some areas proposing now to maintain current performance levels and not proposing performance improvements. This was widely believed by strategy managers to have led to unambitious set of performance targets across service attributes and constrains Strategy managers to explore innovation in terms of low cost solutions instead of innovation for improved performance.

Analysis of the interview responses also identifies examples of where customer knowledge had a limited influence in Outcome delivery planning. The executive team and Steering groups decided that, in general, performance improvements would not be proposed unless they were incentivised (i.e. that there was an incentive for outperformance). This rendered strategy areas that had attracted low benefit valuations through WTP unable to claim performance improvements even when they were through low-cost in-house solutions with no bill impact to customers. Issues with mis-alignment between customer engagement outputs and outcome MoS also limited the extent of influence customer knowledge had in these contexts. Whilst customer knowledge provided a counterbalance to stakeholders and regulator views it was privileged little influence in comparison as a result of the potential penalties facing the organisation through non-delivery of statutory investment. Users of customer knowledge believe that it should also limit the influence of customer knowledge for issues where public health or health and safety are put at risk. Finally, practitioners believe that customer knowledge will be privileged far less influence in amendments to Outcome delivery planning following the release of Ofwat's pre-qualification announcements whereby they appeared focused on addressing issues they raised regarding the ambition of the Outcome performance targets, despite meaning this limits the influence of customer knowledge in these decisions.

Customer knowledge significantly influenced the performance targets for water strategy teams (both infrastructure and non-infrastructure). Its main influence was in modifying the overall endpoint of performance targets. Low benefit

valuations for infrastructure performance targets (perceived to be the result of errors made in the presentation of WTP attribute), as compared to higher benefit valuations received for non-infrastructure related performance targets triggered both teams to work collaboratively to develop non-infrastructure interventions that delivered benefits across both infrastructure and non-infrastructure performance. Conversely, high customer benefit valuations led to a large incentive for out-performance for leakage performance influencing the investment approach of the strategy manager who is now examining where the highest 'Cost to Serve' areas within the water network are and aiming to target leakage reduction in these areas to maximise performance relative to cost.

Whilst customer knowledge was reported to affect the overall endpoint of performance targets for water strategy teams, it reportedly performed a different function in wastewater / environmental strategy teams instead affecting the pace of increased performance delivery. The high level of statutory quality performance targets affecting wastewater teams means that the overall endpoint performance target remains, largely, fixed. The customer engagement outputs revealed a preference for maintained performance delivery with no improvements, which has deferred performance delivery till later AMPs (and thus investment and bill increases) which strategy managers do not think is a sustainable delivery approach. It also impacted the size of the sewer flooding improvement programme. However, practitioners state that compared to other service attributes, customer knowledge can have less of an influence when used outside of OPTIMUS by Executive Team and Steering Groups as they don't view it as a high profile area due to the localised failure impact posing less of a reputational risk.

Investment plan development

Analysis of the interview responses suggest that customer knowledge generated from Acceptability Testing activities had a significant influence in the

development of the organisations investment plan. In particular, it provided a constraint on the overall cost of the investment plan (relative to bill impact) allowing prioritisation and programming within these constraints. It also enabled the rationalisation of cross-functional expenditure. For example, overall investment in water programmes was restricted to accommodate additional expenditure in wastewater programmes. The price constraint on the overall investment plan was also reported to drive strategy managers and Asset Managers to explore operational solutions to reduce expenditure costs. However, the influence of customer knowledge was limited in the generation of strategic programmes of delivery (i.e. strategic programmes of investment versus small isolated projects), as this issue was not addressed in customer engagement activities.

Business plan document authoring

The use of quotes and other qualitative customer insight was reportedly influential in the development of the text developed within the Business Plan chapters to justify the organisation approach.

Water Resources Management Plan

The WRMP outlines the organisations existing supply-demand balance, identifies intervention needs and proposes solutions to address supply-demand imbalance over a twenty-five year period. As has been outlined in Section 1.2.1 interventions can be to improve supply or reduce demand. Water resources strategy managers report that customer knowledge had a significant impact on their demand management strategy. Micro-component analysis of water component use across a range of SEGs has allowed a model to a micro-component model to be generated for use in their demand forecasting. In addition, customer engagement activities exploring water saving device installation behaviours has enabled water resources strategy managers to

develop more robust estimates of water saving device installation rates further improvement the robustness of their demand forecasting.

6.6.1.8 Summary of factors fostering and constraining knowledge management practices within the organisation

Sections 6.6.1 has so far presented an analysis of practitioner interview data relating to the processes by which customer knowledge have been acquired, translated, distributed and applied and the perceived influence it had on the water utility's investment strategies for water and wastewater service delivery. This section addresses Research Question 3a and provides an insight into the practices and processes adopted by the water utility for the management of customer knowledge and its relative influence in their planning and decision-making activities. To address Research Question 3b, posed in Table 2-7, analysis of the interview data also extended to the isolation of factors promoting and constraining knowledge management practices in the institutionalisation of participative practices in water utility planning and decision-making. Section 2.5 provided a review of knowledge management practices and in doing so isolated factors considered to promote and constrain effective knowledge management practices; these were reported in Table A3-1 in Appendix A. Figure 2.2 conceptualised these factors highlighting their function relative to organisational knowledge management practices.

This structure was used to explore the relevance of these insights to practitioner experiences documented in this study. Factors identified in the study analysis and commensurable with those in the literature are presented as either relevant to the: practitioner characteristics; practitioner behaviour; information management; organisational behaviour or as external influences. In doing this, the actors identified as reflecting variant roles (or practitioner characteristics) within the organisations knowledge management process have been disaggregated into those belonging to knowledge producers and knowledge users, experts and knowledge brokers (relative to their identified contribution as

outlined in Section 6.6.1.1) to enable greater clarity in the presentation of these findings and to account for their different functions in knowledge management practices. Whilst acknowledging that practitioner roles are not always fixed and may actually vary at different stages of the knowledge management process, the findings presented in Sections 6.6.1.1.1 through to 6.6.1.6 have generated robust case for the associations developed (reported in Table 6-11).

Table 6-11 Rationale for practitioner characteristics categories

Role type	Characterisation of actors within this study	Rationale for characterisation
Knowledge producers	Economic regulation and Customer Research practitioners	Reflects primary responsibility for the acquisition of knowledge
Knowledge brokers	Economic regulation and Customer Research practitioners	Reflects their primary role in transformations and dissemination of customer engagement outputs
Experts	External experts and fieldworkers	Commissioned to design and deploy customer engagement activities
Users	Strategy Teams, Executive Team, Steering Groups	Primary role was to apply customer knowledge; secondary role in the generation of customer engagement activity design
External influences	CCG, Ofwat	

Figure 6.5 provides an overarching view of the relevance of the factors derived from the knowledge management literature to this study. Fostering and constraining influences are not presented in Figure 6.5 but are demonstrated in Appendix 9E8 to 9E10. It demonstrates the relevance of the factors existing in the knowledge management literature to practitioner perceptions of the effectiveness of organisational knowledge management practices. Furthermore, it provides a tentative indication of their relevance 'live' planning and decision-making processes within water utilities and demonstrates their potential in exploring knowledge management approaches adopted in 'live' organisational knowledge management processes in a broader context.

Analysis of the factors identified as fostering or constraining knowledge management practices adopted by the organisation for the PR planning and decision-making process has been undertaken relative to the knowledge management phases that have structured discussion. The findings from each knowledge management phase are reported in Appendix 9E8 to 9E10. A summary of the prevalence of identified fostering and constraining factors relative to each knowledge management phase is provided in Table 6-12. This will be discussed in detail in Section 6.6.2.

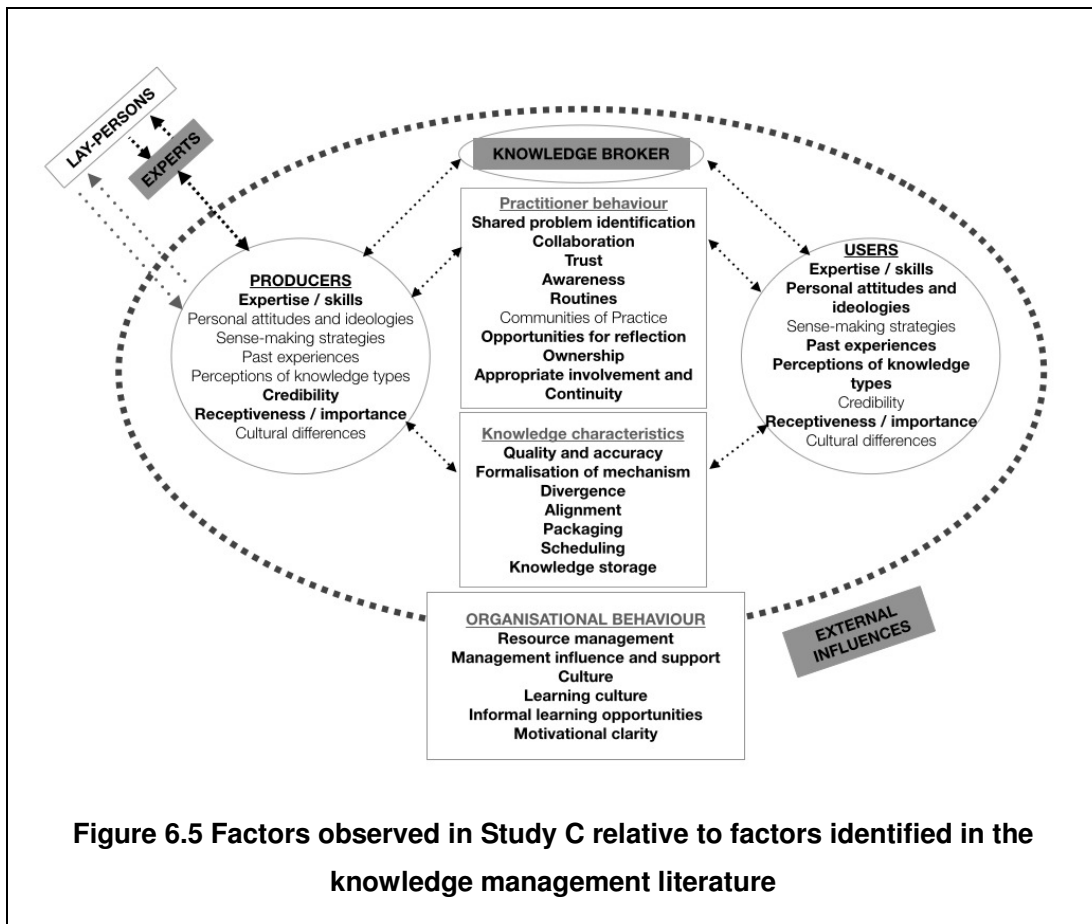


Figure 6.5 Factors observed in Study C relative to factors identified in the knowledge management literature

Table 6-12 Summary of factors fostering and / or constraining knowledge management practices

	Customer knowledge acquisition		Customer knowledge transformation, distribution, storage and application		Customer knowledge influence	
	<i>Foster</i>	<i>Constrain</i>	<i>Foster</i>	<i>Constrain</i>	<i>Foster</i>	<i>Constrain</i>
Expertise / skills						
Personal attitudes and ideologies						
Sense-making strategies						
Past experiences						
Perceptions of knowledge types						
Credibility						
Receptiveness / importance						
Experts						
Knowledge brokers						
Shared problem Identification						
Collaboration						
Trust						
Awareness and receptiveness to others views						
Routines						
Communities of Practice						
Opportunities for reflection and feedback						
Ownership						
Right people involved and continuity						
Quality and accuracy						
Formalisation of participatory mechanisms						
Divergence						
Alignment						

Packaging						
Scheduling						
Knowledge storage						
Resource management						
Managerial influence and support						
Culture						
Learning culture						
Opportunities for informal learning						
Motivational clarity						
External influence						

6.6.2 Discussion

Section 6.6.1 has generated clear evidence to suggest that water utility practitioners motivations are commensurate with those expressed in similar studies in the literature in fields of environmental policy, and local transport planning (Wesselink et al., 2011; Bickerstaff & Walker, 2001). Practitioners in this study predominantly adopted instrumental or legalistic rationales for engaging with customers. It has also demonstrated that the organisations overarching practices was commensurate with practitioner motivations; at an organisation scale motivational clarity was achieved.

The use of the ‘motivational lens’ to explore the effectiveness of the organisations practices for the acquisition and application of customer knowledge has proved useful in considering the effectiveness of the organisations high-level approaches relative to its dominant ambitions. It has demonstrated that a lack of commensurability between the practices adopted and the benefits it expected would unlikely be the root cause of any disillusionment had their ambitions not been realised. This does not preclude, however, that there were additional factors that served to foster or constrain their practices with regards to the acquisition and application of customer

knowledge in their planning and decision-making approaches and ultimately the level of influence that was privileged to customer knowledge.

The public participation evaluation literature, as discussed in Section 2.2, has set out a range of criteria that have been associated theoretically or empirically with the design and deployment of 'effective' participatory approaches. In Section 2.2, it was argued that whilst these criteria provide a useful set of considerations for those designing and deploying participative approaches, it presents some issues in its application in practice. Firstly, it lacks consideration of contextual issues that hold potential to impact effectiveness. Whilst it may be understandable that the broad range of contexts in which public participation is applied may negate further clarity being developed, the important role contextual attributes play in these processes and the need for a greater attention to their influence in participatory processes has been acknowledged (Abelson et al., 2007). Secondly, it reflects a lack of specific criteria relating to the application of public knowledge and limiting our understanding of the practices that can affect the effectiveness of public participation. Typical evaluative criteria relating to this are centred around vague themes such as 'key decisions are influenced by public knowledge' (Blackstock et al., 2007; Frewer et al., 2000; Petts & Leach, 2000; Laurian & Shaw, 2009) or 'Successful integration of different knowledge types in process' (Rauschmayer & Wittmer, 2006; Kallis et al., 2006) whilst others attempt to provide more practical measures of effectiveness such as 'consideration given to potential integration with other activities' (Petts et al., 2003) or 'consistent practices (Conrad et al., 2011). Yet despite this, it represents a lack of insight into the attributes that foster or constrain the effective generation of the 'institutional response'. Whilst, the use of mechanisms that privilege the public significant decision-making influence such as Citizens Juries (Aldred & Jacobs, 2000) or Consensus conferences (Anderson & Jaeger, 1999) negate the need for this to be considered, the use of less 'participative' (Arnstien, 1969) participatory mechanisms generate knowledge that then has to be managed. As Elton and

Wolfe (2012) have argued, the accumulation of knowledge is only the first step and doesn't necessarily guarantee its application and influence. Using the embedment of public participation principles in Water Utilities as an example, the regulated nature of the sector precludes customers from being privileged decision-making power on issues relating to their water and wastewater supply in engagement activities with their water and wastewater provider. It is therefore the responsibility of practitioners within that organisation to appropriately manage the acquired knowledge to ensure its application and influence in planning and decision-making practices.

Organisational settings however, unlike the management of knowledge in specific research contracts, present significant challenges to the effective management of knowledge, the effectiveness of which holds potential to foster or constrain the its influence in planning and decision-making. Water utilities, in particular, represent complex environments for managing knowledge due to their scale, diverse range of practitioner expertise, broad remit, significant external influences and regional-scale planning and decision-making. The additional need to successfully acquire and apply customer knowledge (in combination with technical knowledge) within these settings therefore presents a significant challenge. The literature reveals little coverage with respect to knowledge management in 'live' organisational settings or in water and wastewater service delivery contexts which, coupled with the lack of specific insight in the participation evaluation literature, highlights a key area for contribution.

This study, using coverage of factors identified as promoting or constraining effective knowledge management practices in complementary settings, has established their influence in a water utilities practices with respect to the acquisition and application of customer knowledge in their planning and decision-making practices. This offers three distinct and novel contributions:

- a) It establishes the relevance of factors identified as fostering and constraining effective knowledge management function in a live, complex organisational setting
- b) It establishes factors that have fostered and constrained knowledge management in a water utility PR14 planning and decision-making process
- c) Presents a set of considerations for water utility practitioners (or public participation professionals more broadly) with regards to the management of the acquisition and application of customer knowledge.

It should be noted that the original intention of this study provisioned the generation of this contribution through the translation of practitioner insight captured across the water sector in line with the original sampling approach to this study. The failure to capture practitioner responses at the sector scale limits to some extent the veracity and generalisability of these insights but presents a useful set of considerations that may provide a starting point for evaluating current practices and if necessary, providing an agenda for improvement.

Knowledge management practices centre around the concept of knowledge flow with traditional models representing a transfer of knowledge from producer to user (Reed et al., 2013). However, accounting for increasing pluralism in NRM contexts, knowledge exchange has been promoted as a model for more effective knowledge management as it acknowledges that knowledge is not inert and is best managed as a social process through collaborative interactions and co-generation (Elton & Wolfe, 2012). So, to what extent were knowledge exchange and co-generative practices exhibited in the practices of the water utility examined in this study? The answer to this question is two-fold.

Collaborative practices between practitioners responsible for the coordination of knowledge acquisition, steering group members and the CCG were frequently

reported, perhaps reflective of their strong focus on regulatory compliance. Whilst the CCG process largely represented a formal forum whereby the organisation presented proposals for customer engagement activities and sought the group's feedback and approval, it did function to rationalise divergent perspectives between customer and stakeholder knowledge in its application in the planning and decision-making process. Furthermore, strong collaborative relationships were evidenced between practitioners responsible for the acquisition of customer knowledge and the external experts and fieldworkers who were commissioned to design and deliver these outputs. Yet, despite strong evidence for collaborative practices with the CCG and with external experts, this study suggested that collaborative practices did not extend to the management of knowledge within the organisation. The findings identified very little evidence for knowledge exchange through the deployment of collaborative practices and interactions facilitating shared problem development (Pahl-Wostl et al., 2011; Mostert et al., 2010; Van Wyk et al., 2008). In fact, only two incidences of collaborative working were identified in the practitioner responses. Firstly, in the development of the Acceptability Testing stage One design and in the dissemination of the results. The driver for collaboration in this case appeared to be that this engagement activity was novel both to both those responsible for design and delivery of customer engagement outputs as well as for those users. Interestingly, there were few issues raised with regards to the quality of the knowledge generated from the Acceptability Testing activities as opposed to those generated in non-collaborative contexts. Secondly, where practitioners across both infrastructure and non-infrastructure teams collaborated to develop a programme of work that used infrastructure solutions to deliver network benefits, enabling some network performance to be delivered but at no cost to the customer who were shown to not highly value improvements in service in this area.

The findings from the study provided considerable insight into what factors practitioners believed constrained the use of collaborative approaches for the

acquisition and application of customer knowledge in the PR14 planning and decision-making process. It also provided insight into the implications practitioners perceived to have been a result of a lack of these practices serving to highlight the extent to which these factors can impact the level of influence customer knowledge can have in these decision-making contexts.

Factors constraining collaborative knowledge management practices within the organisation

The findings suggest that there were four primary categories of factors that constrained the use of collaborative practices within the organisation. These categories related to:

- a) The characteristics of practitioners, both those responsible for the coordination of customer knowledge acquisition and those responsible for its use
- b) Practitioner behaviours
- c) Organisational behaviours, and
- d) The characteristics of the knowledge being generated

Practitioner characteristics

It stands to reason that, with the call for greater socialisation of knowledge in the promotion of effective management, practitioners, as actors in the knowledge management process, impart a significant influence on its success (Fazey et al., 2012). The findings generated from this study identified practitioner characteristics to impart a significant constraint to the use of collaborative practices for the management of customer knowledge in the PR14 planning and decision-making process. Three distinct factors included: a) the range of expertise and skill sets of the actors involved in management of customer knowledge, b) a lack of receptiveness to the use of customer knowledge in planning and decision-making and c) a lack of past experience in the use of customer knowledge or water utility planning and decision-making.

The findings indicated that there were three distinct sets of expertise exhibited by practitioners involved in the management of customer knowledge. Firstly, those who were responsible for the application of customer knowledge in planning and decision-making typically had highly specialised technical knowledge that was centred around the specific issues that they faced in their role for example, practitioners demonstrated expertise in the management of wastewater infrastructure or in the management of water demand. These users, whilst forming a coherent function in the use of customer knowledge in planning, were in practice disaggregated into functional teams grouped around these specialist knowledge areas. Secondly, those practitioners responsible for the co-ordination of the acquisition of customer knowledge largely had highly developed skills in customer research either through the deployment of econometric research mechanisms or through qualitative mechanisms. Whilst they had a broad overarching knowledge of the functional areas of water and wastewater service delivery they did not have the in-depth technical knowledge of who would be applying customer knowledge in the planning and decision-making process. Finally, the use of external experts, who were responsible for the in-depth design and delivery of customer engagement activities for the generation of customer knowledge, had highly developed expertise in this field without which the acquisition of customer knowledge could largely have not been achieved, but lacked an in-depth knowledge of water and wastewater technical knowledge and an awareness of the organisation-specific issues. Whilst, Roux (2006) suggests that differences in types of expertise and levels of skills present significant opportunities for learning, it is also acknowledged that it presents significant obstacles, which would need to be addressed. The findings corroborate that the extent of the knowledge gap presented significant constraints. Those practitioners with a strong technical specialism appeared to find it difficult to adapt their mental models for key concepts around water and wastewater delivery, which, they felt, precluded their ability to engage in the design of customer engagement activities. This resulted in a reliance on experts to adapt technical knowledge into a form that was relatable by customers but, in

doing so, prompted a lack of confidence in the abilities of fieldworkers and experts to be able to articulate clearly the complex trade-offs the organisation has to make. Their highly technical knowledge was not coupled with an understanding of the mechanisms for the acquisition of customer knowledge, which also acted as a barrier to collaboration particularly for WTP, which was called a “black art”. Their lack of awareness around what was involved in the design, deployment and application of customer engagement activities prevented them pushing for greater involvement. The findings also suggested that the highly developed research skills of those practitioners responsible for the delivery of customer engagement activities promoted an unwillingness to adapt their ideas to accommodate the request of the users, particularly in the design of the WTP activity.

Evidence was suggestive of a lack of receptiveness to the application of customer knowledge in planning and decision-making, predominantly amongst Strategy Managers responsible for its application in Outcome Delivery Planning, the development of the Investment Plan and the authoring of the Business Plan. The findings suggested that practitioners saw it as a threat to their ownership of the strategies and solutions they produce requiring them to devolve some of their paternalistic claims over the development of the organisations strategic response. The evidence does, however, suggest that receptiveness to customer knowledge did evolve over the course of the planning and decision-making process, receptiveness was perceived to have been low during the primary knowledge phases of knowledge acquisition.

The quinquennial nature of the Price Review process promotes some constraints in the embedment of practitioner routines relating to their role in the process. Very few of the practitioners interviewed had prior experience of a Price Review process. This was reported to have presented significant constraint to collaborative approaches as they lacked the understanding of what was required of them and the interdependencies between concurrent activities.

Those who had past experience of a Price Review provided evidence to suggest that those without experience would have been on a steep learning curve due to the demands of the PR14 process limiting their active involvement in collaborative processes. Interestingly, one practitioner with past experience of a Price Review process recalled reflected negatively on their experiences at the last Price Review and stated this caused them to lack confidence in the ability of the organisation to deploy an effective process.

Practitioner behaviours

The highly differentiated skill sets within the organisation reflected a legacy of technocratic planning and decision-making routines whereby little sharing of knowledge outside of their team was required. Collaborative practices and the acquisition of customer knowledge did not therefore represent typical routine behaviours. This was further supported by evidence to suggest that they didn't consider the acquisition of customer knowledge to affect Business as Usual activities and thus was not privileged the importance it perhaps warranted.

The behaviours of knowledge producers, particularly those whose primary roles were in economic regulation, were highly evidenced as constraining collaborative knowledge management in the Price Review process. Firstly, they were not perceived to have been the right people to coordinate the acquisition of customer knowledge as it did not form the primary part of their role and thus they were not solely focused on ensuring its success. In addition, their role has inhibited them having a relationship with the customers calling into question their ability to best interpret customer views. Secondly, the findings suggested a strong collaborative relationship with the external experts, which whilst beneficial in terms of actual knowledge generation, users felt precluded them to develop collaborative practices within the organisation. Finally, they lacked a broader awareness of the extent of the difference in both skills and receptiveness between them and those practitioners in strategy teams. The

findings suggested a dichotomy of perspectives with respect to collaboration with those practitioners in Economic Regulation adopting the view that users would take an active role in influencing knowledge acquisition so as to benefit in the application phase and were thus surprised at the level of perceived receptiveness. It demonstrates a lack of consideration of the barriers that a lack of customer engagement skills and lack of receptiveness can have on knowledge management. It was assumed collaboration would occur without formal intervention.

Organisational behaviour

The study also highlighted several organisational characteristics that acted to constrain collaborative practices. Firstly, this thesis has focused on engagement with customers as part of the wholesale water utility operations. It has not sought to address customer engagement practices in the retail function of water utility operations. Yet, this part of the organisation was perceived by practitioners to have considerable skills in these types of practices and also access to considerable amounts of information that would provide useful insight for wholesale planning and decision-making, the access to which was prevented at PR14 due to the lack of relationship between these two functions of the organisation. Secondly, the focus on collaboration with the CCG demanded considerable resources, the extent of the demands placed on these resources as a result of the unanticipated requirements of the CCG left little resources to facilitate greater collaborative practices within the organisation. Similarly, those with little experience of Price Review processes did not feel that they could commit to collaborative efforts due to the impact on resources with their teams and was not perceived to be a priority compared to other concurrent workloads. Thirdly, in addition to a lack of collaboration between knowledge producers and knowledge users, the findings from this study point to a lack of collaboration and shared problem identification at a more strategic level, for example between knowledge producers and the executive teams and steering groups. This implications of this were three-fold: a) it led to lack of co-ordination

between customer engagement activities being conducted across the organisation b) led to a focus on participatory mechanisms that allowed close management and control as opposed to using innovative tools to capture insight for the business c) it led to a lack of alignment at the interface between the content of aims and content of customer engagement activities and the concurrent development of water and wastewater strategies, Outcome Delivery and Investment Plan development. This became more clearly aligned with appointment of a PR14 management team but occurred after the deployment of several key customer engagement activities. Finally, the findings indicate a lack of consideration for the scheduled delivery of customer knowledge to users both across customer engagement activities and also in line with concurrent strategy timescales. There was a tension between the need for early delivery of activities like WTP to ensure it can influence planning and decision-making but that if it is done too early then the content is themed around strategy attributes that, due to concurrent strategy development, are no longer relevant. Similarly, that the views of customers driving plans are not considered to be invalid due to the length of time passed between acquisition and Business Plan submission.

Implications of poor collaborative practices within the organisation

The findings generated by this study relate to barriers to collaborative practices in the context of knowledge exchange as a recommended mode of knowledge management in participative planning and decision-making processes. Whilst the literature has made a convincing case for the benefits of knowledge exchange practices and its ability to promote adaptive thinking and behaviours amongst practitioners working in interdisciplinary settings (Mostert et al., 2010; Huitema et al., 2009; Pahl-Wostl, 2009) (an increasingly required practice in developing suitable responses to future water and wastewater service delivery challenges), little insight has been generated in an organisational context as to the implications that can arise where knowledge isn't generated and applied in a social context in water utility planning and decision-making. The findings suggest that, broadly, a lack of collaboration and shared problem identification

practices in the management of customer knowledge in the Price Review process has impacted the potential for the use and influence of customer knowledge in planning and decision-making. Practitioner responses suggest that a lack of collaborative practices had implications for both the perceived quality of the knowledge received for application in the organisations planning and decision-making, but also in terms of additional expectations placed on the users.

A lack of collaborative practices reportedly led to a range of issues relating to the quality of the customer engagement outputs as perceived by the users. Particular issues raised included issues with wording choices, errors in reporting Levels of Service, missing coverage of themes, and a limited scope of inquiry. In the case of some WTP attribute benefits, poor quality outputs led to the need to transform, and scale the outputs they did have to ensure its use and thus inevitable influence but with compromises on its robustness. Where there were more serious alignment issues additional customer engagement activities were required to be deployed in order to re-capture insight or provide coverage in more detail. The findings suggest that the lack of collaborative practices had the biggest impact on the engagement activities using econometric research methods. There is no evidence to suggest that the same level of scrutiny was applied to engagement activities generating qualitative outputs. The findings suggest that this is because the organisation adopted significantly embedded analysis and optimisation tools to facilitate the development of the Outcome delivery and Investment Plans. Whilst the use of these tools facilitate a low impact on practitioner routines in that they don't require the tacit knowledge to understand it and that it provisions broad and consistent application with the organisation, the significance of any issues with data quality and causes a greater loss of influence. In the case of this study, practitioners noted that issues with quality of the customer engagement outputs resulted in significant strategy implications where MoS were abandoned meaning that the organisation may not now focus on improving performance in this area. In some

cases the issues reported were coupled with the view that the outputs provided didn't justify the expense in seeking expert resources, or the importance privileged to these types of mechanisms in the organisation.

So whilst the issues raised with regards to knowledge quality appear to be derived from poor content generation and agreement, the poor quality of qualitative customer engagement outputs issues appear to be derived from a lack of understanding and skills to know how it should be used: they didn't know how it was generated, why it was generated and where and how it should be used. This is in part a skills issue in that they hold technical expertise as opposed to one that has enabled greater contact with knowledge derived through engagement processes.

Significant analytical efforts were reported to facilitate the increased use of qualitative customer engagement outputs. The role of Customer Research practitioners played a key role in the process of transforming qualitative customer engagement outputs into a 'customer engagement matrix' designed to enable easy identification and access to insight against each theme. This process was made difficult by a lack of consistent sample population strategies, limited consistencies in the approaches used in the presentation of attributes of water and wastewater service. These issues limited the extent to which themes could be extrapolated across research activities for use within the organisation. Whilst the packaging of qualitative customer engagement outputs was reported to have been well received, due to its alignment with Outcomes and MoS its quality was perceived to be poor as the users were not aware of how it had been generated. As Section 6.6.1 outlines, this presentation only used the key findings pages from qualitative outputs to generate insight severely limiting the depth and breadth of customer knowledge reaching users; simplistic presentation was traded off against depth. Little collaboration prompted a need for the packaging of customer engagement outputs to be simple and be capable of improving confidence in the process. In this case users, whilst admitting it

was a risk, reported having to trust that these outputs represented an accurate reflection of the in-depth outputs received, as they did not have the time or the skills available to explore this in any depth.

The lack of collaboration and shared problem development led users to believe that the process of customer engagement was frantic and not well coordinated. Poor scheduling of customer engagement outputs relative to concurrent strategy development was a significant factor constraining the use of customer engagement outputs. Practitioner reported that some outputs didn't arrive until after the Business Plan investment planning cycles had been locked down meaning that the information could not be used to influence planning and decision-making. Similarly, poor scheduling of acceptability testing relative to concurrent strategy development led to one strategy taking a completely different direction due to the findings from the outputs meaning that the time and resources spent on developing that strategy over a number of years was wasted.

The lack of collaborative practices coupled with a lack of customer engagement skills, placed a greater need for opportunities for face-to-face dissemination activities, wide access to stored knowledge, a strong support network and sufficient time made available for reflection and feedback. However, findings from this study suggested that such provisions were not made available. Users of customer knowledge commonly reported that they needed more time for reflection, even more so where there were errors and divergent information to address. This deficiency reportedly made the experience of using customer knowledge both stressful and resulted in a lack of engagement of users with the knowledge generated. Poor scheduling of the delivery of customer engagement outputs seemingly exacerbated this issue with frequent reports of 'too much data too little time'. This reflects the issue of information overload described by Van Wyk et al., (2008) and Collins & Ison, (2010). Users also reported there being a lack of support for users in the application of customer engagement

practices; due to the range of different knowledge producers and the use of expert's users didn't know whom to approach. More in-depth dissemination activities were required to allow for opportunities for feedback and questions. Whilst some evidence of this was observed in the study findings users claimed that they were too high level and not customised to the needs of the audience.

Knowledge producers talked about the use of a Customer Research Library as the store of both qualitative customer engagement outputs and summaries as well as the formal reports generated from the econometric research. Yet many users were not aware of its existence, significantly restricting some users access to customer knowledge to that which was embedded in corporate systems.

The practice implications that have been outlined in this section thus far have been associated with a lack of collaborative practices in the acquisition of customer knowledge that were outlined in Section 6.6.1.4. This lack of acknowledgement of the interdependencies between the knowledge acquisition process and the subsequent application of this process was seemingly not well anticipated. Whilst the lack of collaboration had impacts on the both on the quality of knowledge generated and the extent to which it could be applied it also prevented users being able to anticipate how and where they were going to be applying customer knowledge in their strategy and business planning and so they were not able to prepare their routines effectively. The findings suggest that many practitioners become 'attached' to the strategies that they have spent sometimes several years developing and reportedly become frustrated where outputs from customer engagement activities seemingly go against their better judgement. Similarly, the need to justify strategies and proposals from a customer perspective as opposed to an asset perspective, as in the past, represented a significant change.

Organisation and external influences on knowledge management practices within the organisation

This section so far has outlined the causes and implications of a lack of collaborative practices in organisations. Organisational and external influences also played a role in limited collaborative practices.

The lack of a collaborative approach to customer engagement across the wholesale function resulted in there being no formal strategies in place to address divergence in customer views between different participatory mechanisms. It was typical that where the divergence existed between qualitative and econometric research outputs then the qualitative outputs would be disregarded. This was commensurate with the structured approach to the application of econometric research outputs. Where divergence occurred between customer preferences (generated through econometric mechanisms) and stakeholder preferences significantly more rigorous approach was adopted. Strong external influences were exerted by statutory legislation and managed by stakeholders. This typically resulted in additional research being commissioned or top-down deliberation between steering groups, the Executive Team and the CCG; however, the statutory legislation was usually given privilege.

The strong top-down influence of steering groups and the Executive Team was a key theme evidenced in practitioner responses. Whilst it was credited in providing a focus where divergent interests became an issue, exploring potential political and reputational impacts of planning and decision-making, and providing a corrective mechanism for low receptiveness to customer engagement within the strategy teams, it was also reported to not actively seek the views of those who developed the organisations strategies and Business plan which they felt resulted in missed opportunities. Users also complained that they were slow to communicate their decisions down through the business.

It also functioned to embed organisational norms around regulatory compliance. The findings suggested that they compared the quality of their own customer engagement activities to what was asked of them and then ensured they 'did more'; as in acquired additional customer knowledge. The legacy of a strong top-down focus on SIM, however, did appear to slow the traction that a focus on customer engagement gained within the organisation. SIM focuses on avoidance of customer contact and some practitioner were nervous about actively engaging with customers in case this resulted in negative customer contacts. The perceived tension between SIMs focus on avoiding customer contact and the seeking of customer contact through customer engagement activities represented a barrier to customer engagement outside of the formal regulatory process.

The findings suggested that the organisation had a legacy of conducted 'lessons-learned' practices to identify good practice and ensure that poor practice is addressed. However, many practitioners stated that, whilst these practices were deployed, the findings were not mobilised sufficiently within the business to generate any lasting impact.

6.6.2.1 Rationalising knowledge management and effectiveness of public participation

This study has demonstrated a strong case for the embedment of collaborative practices for knowledge management practices in water utility participative planning and decision-making processes. However, it identified significant obstacles particularly around legacy skills sets, regulatory dependencies, issues of receptiveness, lack of opportunity for reflection and the power imbalance that comes with a large hierarchical organisation. This complex setting makes achieving knowledge exchange in the sense that it has been described in the literature a significant challenge.

It has demonstrated that potential for effective application of customer knowledge in planning and decision-making is mobilised through effective collaboration and shared problem identification at multiple levels throughout the organisation during the scoping and knowledge acquisition phases. However, it has also demonstrated that many of the factors identified as promoting and constraining effective knowledge management also play a considerable role in this context. This promotes a need to reflect again on the evaluative criteria for effectiveness identified in Table 2-1 through to Table 2-4 to identify the presence of existing criteria relevant to this inquiry and whether there are any additions to be made as a result of this study. Table E11-1 in Appendix E, demonstrates existing criteria that represent key features of effective knowledge management in participatory planning and decision-making processes. However, the study has also generated empirical evidence for the inclusion of additional criteria of effectiveness based on those factors identified as promoting and constraining knowledge management. These are shown in red in Table in Appendix E.

6.7 Conclusions

This study has provided evidence that suggests the use of instrumental and legalistic rationales by water utility practitioners for the acquisition and use of customer engagement practices in planning and decision-making. It also provided evidence that these rationales drove their organisational practices. It has developed insight into the management of knowledge in a water utility context and provisioned the identification of factors that fostered and constrained its effectiveness. Using this evidence this study has generated a set of knowledge management evaluative criteria to complement existing public participation effectiveness criteria within the evaluation literature. This provides a two useful contributions: a) to public participation practitioners with regards to the management of public knowledge throughout the planning and decision-making process and b) to water utility practitioners considering embarking on

customer engagement activities within their planning and decision-making processes or the improvement of existing practices.

7 DISCUSSION

7.1 Introduction

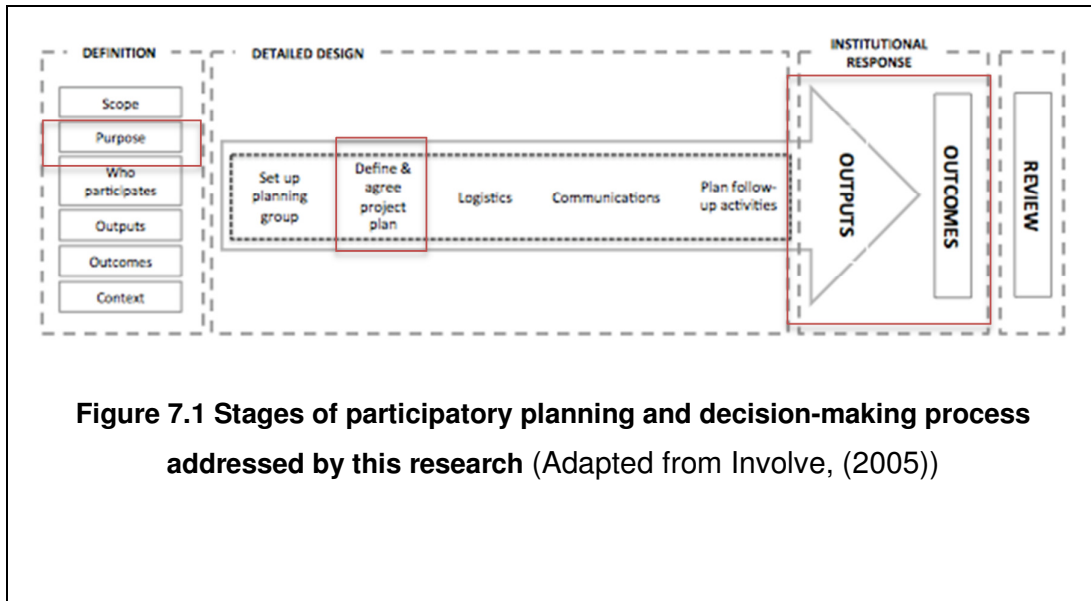
The aim of this thesis has been to provide new insight into the practices that influence the effective institutionalisation of public participation in water sector planning and decision-making in England and Wales. Understanding the factors that promote or constrain effective public participation in water utility planning and decision-making may assist in the development of improved practices contributing to the development of more effective policies and strategies for the delivery of water and wastewater services. A greater regulatory focus on customer engagement in the water sector in England and Wales make this research a timely contribution. This thesis, has not attempted to illuminate the detailed data relating to customer views and preferences as a result of the deployment of participative mechanisms and its in planning and decision-making processes. Instead, it is concerned with the practices that are deployed within water utility organisations to facilitate the generation and the use of customer contributions relative to planning and decision-making processes. The findings of this research have been shared widely with members of the sponsoring organisation and with their key stakeholders including the CCG throughout the course of this research; the specific presentations and reports generated are outlined in the publications, reports and presentation section of this thesis. Similarly a business plan was presented to United Utilities for consideration based on the findings of this research particularly in relation to Study C which was positively received.

7.2 Reconsidering the participatory agenda in water utility planning and decision-making in England and Wales

In Chapter 2, public participation was positioned as a well-established concept. The theoretical benefits associated with these practices were firmly accepted yet it highlighted that debate still surrounded how to achieve these anticipated benefits in practice. Chapter 1 outlined the case for greater public participation

in the management of water resources and delivery of water and wastewater services in the face of future water management challenges. It highlighted that, whilst public participation is a well-evidenced practice in water management more broadly, absent was a consideration of the role that water utilities may play in furthering the participatory agenda. With an increasing pressure to develop more sustainable solutions, coupled with a growing expectation from regulators and stakeholders that water utilities demonstrate increasingly participative practices, the generation of insight into practices that influence the effectiveness of participative processes is both relevant and timely. This thesis has aimed to provide a significant contribution to the field of public participation through exploring the institutionalisation of these practices in water and wastewater service delivery planning and decision-making by water utilities in England and Wales.

Chapters 1 and 2 have outlined the gaps in the existing literature to date and, in doing so, identified the domains of contribution afforded by this thesis. Revisiting the participatory planning and decision-making framework developed by Involve (2005) introduced in Section 2.2 helps to illustrate the arenas of contribution made by this thesis with respect to the institutionalisation of participative practices for water utility planning and decision-making in England and Wales. To summarise:



- a) Motivational clarity (i.e. a clear purpose) was argued to promote effective participative practices. However, a gap in our understanding of how water utility practitioners perceive the motivations for public participation and what drives their choices in planning and decision-making was identified. Study C was developed to address this gap in our knowledge in the context of water utility practitioners and the contributions of this thesis to knowledge are outlined in Section 7.3.
- b) The selection of appropriate mechanisms through careful characterisation and through establishing a clear fit between mechanism and purpose (including using a mixed methods approach) whilst also provisioning sufficient time and resources was argued to foster effective participation. However, the existing literature does not consider the influence of participative mechanism design on mechanism outputs where multiple methods are employed within the same water planning and decision-making context. Studies A and B were developed to address this gap in our knowledge in the context of water utility planning and decision-making and the contributions of this research to knowledge are outlined in Section 7.4

- c) The effective management of knowledge holds potential to privilege the influence of knowledge in planning and decision-making processes. However, there is a paucity of knowledge in the existing literature with respect to knowledge management in both live organisational settings and in water utility planning and decision-making processes. Study C was developed to address this gap in our understanding and the contributions of this research to knowledge are outlined in Section 7.5.

7.3 Water utility practitioner motivations for public participation in their planning and decision-making

The literature has argued that motivational clarity is a key driver of the choices made throughout all stages of participatory approaches, and consequently determines the extent of influence privileged to the knowledge gained in planning and decision-making practices. This thesis posed two research questions in this context:

- a) What do water utility practitioners believe to be the purpose of public participation in water utility planning and decision-making?
- b) Do water utility practitioner views reveal factors that promote or constrain greater clarity of motivation?

Findings generated from this research have provisioned these questions to be addressed at an organisational level but, as has been described in Section 6.4.1, recruitment of the anticipated sample population from across the sector (non-inclusive of the sponsoring organisation) was unsuccessful. This research has generated evidence for the presence of all four rationales for public participation in the literature (Fiorino, 1990; Wesselink et al., 2011). This research has generated evidence that suggests the dominance of instrumental and legalistic rationales for public participation (or customer engagement as it is

referred to by practitioners within the sponsoring organisation). This both provides a novel contribution through the addition of a complementary water utility practitioner perspective to the existing understanding of practitioner motivations for public participation. It also corroborates findings from similar studies from the fields of environmental policy and local transport planning. The commensurability of these findings with these studies provides some confidence to their veracity yet, despite this, they cannot be presented as representative of the views of practitioners operating in other water utilities within the sector. The research also demonstrated that substantive and normative rationales are rarely used by water utility practitioners to describe the purpose of public participation. Where these rationales were observed, they were typically held by those in roles (such as water resources management or wastewater infrastructure contexts), whereby 'alternative' modes of management responses (such as those identified in Section 1.2.1) hold potential to gain greater traction (compared to other functional areas. This is an encouraging finding given the importance of practitioner / organisation and public cogeneration of knowledge will be in these cases (Roux et al., 2006; Partidario & Sheate, 2013). Normative rationales for customer engagement were rare and reflected that customers, as recipients of a monopoly water and wastewater service, have a right to be engaged about the services they receive. It is clear, then that this findings generated in this thesis have addressed Research Question 1a.

In addition to corroborating the presence of theoretical rationales for participative processes in the context of water utility planning and decision-making, it has generated findings that present the organisational practices adopted for the acquisition and application of knowledge as commensurate with the expressed views of practitioners. This further supports the literatures construction of motivational clarity as a driver for choices made within the participative process (Stirling, 2008; Wesselink et al., 2011). In considering Research Question 1b, the research has generated clear evidence to suggest

that Ofwat, as the economic regulator, is a significant promoting factor for practitioner responses through both its role in generating the planning and decision-making methodology and also through their determination of the quality of water utility business plans and thus how much water utilities can charge their customers. Similarly, a strong top-down influence within the organisation appears to have embedded a propensity towards regulatory compliance as an organisational norm, reflecting similar top-down influences as observed in the electricity sector (Cotton & Devine-Wright, 2012).

The review of the case for the adoption of participative practices in the environmental public participation literature demonstrates a propensity towards the deployment of normative and substantive rationales. For example, the case for public participation promoted on the basis that current approaches are over-reliant on monetisation and a subscription to a narrow value theory removed from social context and inconsistent observed behaviours represents normative rationales for its adoption (Spash et al., 2005; Bebbington et al., 2007; Bell, 2015; Brown et al., 2009; Bell & Aitken, 2008; Ravetz, 2005; Gleick, 2000; Munda, 2004; Lach et al., 2005; Holmes & Scoones, 2000; Cass, 2006); (O'Neill & Spash, 2000). Furthermore, cases for public participation based on an over-reliance on expert knowledge at the expense of stakeholder and lay-knowledge, and a recognition that the knowledge potentially required to ensure the success of increasingly 'alternative' water and wastewater management responses exists beyond the water utility realm, (Holmes & Scoones, 2000; Cass, 2006; O'Neill & Spash, 2000; Jansky et al., 2005; Ravetz, 2005; Bell, 2015; Hurlimann & Dolnicar, 2010; Brown et al., 2009; Aitken et al., 2014; Bell & Aitken, 2008). Similarly, substantive and normative rationales form the basis of key water and environmental management literature such as The Rio Declaration on the Environment (United Nations, 1992) or the Water Framework Directive (European Union, 2000). Section 2.4 has also considered the rationales presented by Ofwat for its greater emphasis on water utility customer engagement and found that it promotes normative, substantive and instrumental

rationales for its introduction. Instrumental rationales are promoted on the basis that they require quantitative evidence that customers accept the company's business plan and that this evidence has been collected using independent experts (Ofwat, 2011, p.7) It also argues that customer engagement will provision the exploration of sustainable solutions and investment approaches and that customers need to be engaged "...not simply as recipients of services, but as participants in innovative and sustainable solutions" (Ofwat, 2011, p.11) These examples in particular are highlighted as, as has been demonstrated in this research, practitioner rationales and, therefore resulting choices regarding participative process design, do not appear to suggest full commensurability with these anticipated benefits. Whilst substantive rationales were observed in this study, they were infrequently expressed across the practitioner sample. Similarly, normative rationales raised by Ofwat relating to distributive justice and the public request for a 'voice' on all issues affecting their bills were not observed in this study. Whilst these findings only reflect the views of practitioners within one water utility within the sector, it raises some concerns about the extent to which Ofwat's ambitions for customer engagement (or public participation) will be realised if these findings were to be reflective of views across the sector.

As has already been outlined, Ofwat and the dominance of top-down decision-making within the organisation were credited with fostering the dominance of instrumental and legalistic rationales observed in this study. Studies by Tewdwr-Jones & Allmendinger, (1998) and Wesselink et al., (2011) also attribute an observed dominance of instrumental and legalistic rationales to hierarchical frameworks that privilege top-down decision-making and are thus reflections of their relative position within this hierarchy and the implicit departure that participative approaches create (Wesselink et al., 2011). Whilst the practitioner motivations for public participation suggested within this study appear to be incongruent with some of those motivations expressed by Ofwat, if the commensurability of instrumental rationales expressed by both Ofwat and water

utility practitioners is considered further, it could be argued to be a reflection of the focus of the legacy of regulatory frameworks deployed in the sector. The regulatory framework, in which the sponsoring organisation and water utilities within the water sector in England and Wales are exposed, represents the primary route by which water utilities can set their prices (the Price Review process) and Ofwat, as a result, has garnered a strong culture of regulatory compliance within the sector. The quinquennial nature of the Price Review process has seen an incremental influence of customer knowledge within the regulatory framework, firstly, at PR09 with the introduction of CBA (and the associated use of Stated Preference surveys to facilitate the generation of benefit values) (Ofwat, 2008) and now at PR14 with the introduction of an Outcomes regulatory regime (Ofwat, 2013) with customer engagement reported to be a central consideration in their determination approach (Ofwat, 2011). The slow accretion of customer 'voice' in water utility planning and decision-making demonstrates a timid institutional response to the case for greater public participation in these contexts, reflecting similarities with findings generated by Lach et al., (2005) in the context of water utilities in the US. This study suggests that it is this regulatory framework to which water utilities are exposed that represents a significant driver for legalistic rationales. Examining more closely the mechanisms of the Price Review processes, whilst the PR14 process goes further than at PR09 with the introduction of ODIs and water utility-led Acceptability Testing, it remains focused on justification and evidencing water utility Outcome proposals. Whilst advocating additional engagement with water utility customers, it does not provide a structured route for this information to directly influence planning and decision-making processes as part of the Price Review; instead it states that it will not prescribe a method for the acquisition and application of this in water utility practices. The practices adopted by the sponsoring organisation evidenced by this research, whilst having demonstrated the acquisition of customer knowledge through the deployment of non-econometric routes, it has shown that this had limited impact with practitioners and was reportedly used mostly in supporting the authoring of the Business Plan text. This research argues that is potentially representative of

legacy behaviour; that without clear direction and remit from the regulator customer knowledge is relegated to a supporting role.

The PR14 process as it stands provides limited structure for the achievement of substantive or normative benefits of customer engagement as anticipated by Ofwat. It provides an open remit for water utilities to develop their own practices that present the opportunity of achieving substantive and normative benefits as anticipated by Ofwat. It is questioned, the extent to which water utilities would re-define their organisational practices to such an extent that it is not aligned to a specific regulated process (Bickerstaff & Walker, 2001; Wesselink et al., 2011) and with no real incentive for them to do so (i.e. doesn't form part of the regulatory mechanism). For example, the exploration of sustainable schemes such as SUDS require broad input and buy-in from customers and stakeholders unlike more conventional solutions, which are covered by the water utilities legal powers for their delivery. On the basis of the findings from this research, this thesis tentatively argues that for Ofwat's views on the broader benefits of customer engagement to be realised, water utilities, as the main providers of water and wastewater investment, need to be subject to regulatory frameworks that have embedded the need to be motivated by such benefits in order for it to drive its practices. Ofwat needs to be able to capitalise on the culture of regulatory compliance and dependence to better enhance the change of water utilities adopting such approaches to meet their needs. Similar recommendations have been made in the fields of local transport planning (Bickerstaff & Walker, 2001). The influence Ofwat privileged to customers views in its own determination was also called into question by practitioners within this study. Practitioners in the sponsoring organisation stated that, despite them presenting a Business Plan supported by customer preferences and acceptability as set out in the PR14 methodology (Ofwat, 2014), Ofwat critiqued the level of ambition demonstrated in their proposals which disregarded the expressed preferences of customers. On the basis of Ofwat's critique, investment proposals and their ODIs were amended, privileging customer views

and acceptability less influence. This clearly highlights the need for greater clarity with respect to the role Ofwat anticipates customer knowledge playing in water utility business planning. This thesis argues that, whilst the substantive and normative motivations for the introduction of customer engagement outlined by Ofwat were to some extent incongruent with the practices deployed by the sponsoring organisation, motivational clarity was observed with respect to instrumental rationales, calling into question then why the organisations plans, which documented well evidenced customer support were not considered to reflect ambition. Rather than motivational clarity within the organisation, or even between the organisation and Ofwat, this research instead suggests that it is Ofwat who lack a clear motivation for the use of customer knowledge in water utility business planning and thus constraining the extent of its influence in planning and decision-making outcomes. On the basis of these findings it is suggested that water utilities are unlikely to be motivated to engage with customers until there is a clearer statement of intent as to how customer engagement practices will be taken into account in the regulatory mechanism.

In considering these findings in the broader context of this research in relation to the effective institutionalisation of participative planning and decision-making this study has demonstrated the importance of a clear purpose or motivation and the impact this can have on achieving the anticipated benefits of the use of these approaches. It makes a case for wider adoption of clear motivation or purpose as a criterion of effectiveness such as that adopted by (Conley & Moote, 2003).

7.4 The influence of participatory mechanisms and preference formation on the outputs from participatory mechanisms in water sector planning and decision-making processes in England and Wales

The literature has argued that that the selection of appropriate mechanisms through careful characterisation (Rowe & Frewer, 2000) and through establishing a clear fit between mechanism and purpose (including using a mixed methods approach) (Väntänen & Marttunen, 2005; Glass, 1979; Newig et al., 2008; Reed, 2008; Fish et al., 2011; Lynam et al., 2007; Glicken, 2000; Rowe & Frewer, 2000; Petts & Leach, 2000) whilst also provisioning sufficient time and resources is argued to foster effective participation (Reed, 2008; Amerasinghe et al., 2008; New Economics Foundation, 1998). However, the literature does not consider the influence of mechanism selection where multiple methods are employed within the same planning and decision-making context. This research therefore posed the following research question:

- a) Does the type of participatory mechanism influence the outputs these mechanisms generate in terms of the expressed views of customers for water and wastewater services?

The findings from study A, as discussed in Section 4.11, have provisioned this research question to be addressed. The nature of the findings generated in this study warranted further exploration to improve the veracity of their contribution; study B provided this opportunity and provisioned a broader contribution in addressing the influence of participatory mechanisms and preference formation on the outputs from participatory mechanisms in water services providing useful insight commensurate with the Research Objective Two of this thesis.

The use of inter-mechanism variation and intra-mechanism variation in Study A as an analytical tool to explore the influence of elicitation mechanism selection

represented a novel, yet cautious, contribution into their influence on the expressed views of customers for water and wastewater service delivery. It found that, whilst intra-mechanism variation was relatively consistent, when three elicitation mechanisms (individual prioritisation, group prioritisation and participatory budgeting) were analysed in terms of inter-mechanism variation that the budgeting mechanisms represented a significant pre-cursor of variation. More subtle variations in expressed preferences between individual and group prioritisation mechanisms were also observed. In the context of the Research Question posed by this thesis it was posited that a potential driver of the observed variation between participatory budgeting outputs and those generated through individual and group mechanisms was the introduction of a bill impact component to the information provided to participants as part of this activity based on the results observed in Table 4-8. It also suggested that the subtle variation in preferences observed between individual and group variation was a result of the variant approach to opinion formation i.e. whether it privileged the convergence or divergence of opinion.

Study B set out to explore further the influence of bill impact, as a feature of mechanism design, in driving expressed preferences. This was explored in the context of establishing customer acceptability across fifteen investment scenarios for water and wastewater services, each with a bill impact and LoS impact. The aim of this study was, therefore, to identify the extent to which the conclusions drawn in relation to Study A were observed in a comparable context. These findings also represent a novel contribution to the existing academic literature (acknowledging that WTP studies and other commensurate research are generated within water utility organisations) qualitatively exploring domestic customer acceptability across a range of investment scenarios using bill impact and improvements to Levels of Service as the basis of the discussion.

The findings this study (Study B) generated suggested that the explanation of bill impact for the variation in expressed preferences observed following analysis of inter-mechanism variation could not be supported. Whilst cost has played a role in determining the extent of acceptability expressed by participants, it often does not represent the driving motivation for their choices. The results suggested that customers demonstrated a range of rationales for determining the acceptability of investment proposals including: bill impact versus proposed scope of improvement; cause and impact of service failure, the perceived benefits of investment and value for money. However, findings from this study are commensurate with findings from study A in that the use of 'importance' as a sole determinant of customer preference will likely yield a relatively undifferentiated set of priorities for water and wastewater attributes of service as demonstrated in Figure 5.1. As Table 5-4 outlines, there are only marginal differences between eleven of the fifteen attributes of service. This lack of differentiation is commensurate with a lack of variation in participant responses in Study A where importance was the key determinant of preference (i.e. in the individual and group prioritisation activities).

This research argues that it is the decision-making mechanisms embedded within variant participatory mechanisms that present the greatest opportunity to influence the outputs these mechanisms generate in terms of the expressed views of customers for water and wastewater services. These findings provide some support for poor functional equivalence as a driver for a perceived lack of effectiveness of participatory approaches (Rowe & Frewer, 2005). Whilst some participatory mechanisms offer highly structured approaches (i.e. a citizens jury or 'Future Search' (Involve, 2005)) other demonstrate a lack of formal process by which these mechanisms are employed. Using examples of participatory mechanisms reported to have been used by water utilities at PR14, in this case deliberative workshop or deliberative groups or a deliberative forums (See Table A1-1), other than the use of deliberation, these mechanisms are flexible to the needs of those deploying them. In other words, a deliberative group could

be used by one organisation to explore preferences for water and wastewater services using relative importance, then, as part of the same planning and decision-making process deploy a deliberative forum again to explore preferences for wastewater services but instead ask customers to express their preferences for water and wastewater services using relative bill impacts and service improvements. To make further use of this this example, this research argues that it is not the explicit use of a deliberative group or a deliberative forum that determines the extent of variation exhibited in the expressed preferences of both groups but instead the use of 'importance' or 'trade-offs' (or other variant vehicles for preference elicitation) as the primary vehicle of preference. The use of variant vehicles for preference formation will likely yield divergent results where findings compared are generated in a mixed mechanism context such as those exhibited by water utilities at PR14 (See Table A2-1 in Appendix A). This research therefore corroborates the existing guidance within the literature with the need for clear purpose and understanding of the characteristics of the mechanism intended for deployment (Rowe & Frewer, 2000). This research also emphasis that, where mixed mechanisms are to be employed within the same planning and decision-making context, in particular where mechanisms privilege the practitioner greater control of content and structure (i.e. where the mechanism does not explicitly follow pre-determined sequence of activities or protocol), greater consideration of the potential influence of the role the preference vehicle can play in influencing the findings generated will be important.

The findings from Study A and B, together, also identified other presentational issues that can play a role in determining the outputs generated. Study A and B have identified the need for domestic water customers to be provisioned with significant information and resources in order for them to form their views. This provides empirical evidence supporting the importance of this criteria in the public participation evaluation literature. In discussing the findings generated from Study A, it was postulated that in the case of the group prioritisation

activity, those participants exhibited a reluctance to engage in discussion as a result of insufficient information and stimulus material. The design of study B purposefully incorporated significantly more information that participants could reflect on during the process and this yielded improved levels of engagement in discussions. Additionally, the findings from study A argued for the need to increase complexity over time to facilitate a slow familiarisation with the material to ensure the validity of the responses being captured. It is suggested that this is especially important in the context of water and wastewater service delivery whereby domestic customers reportedly take these services for granted and therefore potentially don't hold highly differentiated preferences (Kelay et al., 2008). Further findings from Study B also generated presentational recommendations, albeit specific to the exploration of preferences for water and wastewater services. The research called for consideration to be given to attribute sequencing and the provision of information to customers detailing how bills are formed and how customers are protected. Furthermore, greater consideration for the presentation of investment scenarios in these types of activities particularly around the presentation of service failures is encouraged. Comparable presentation should be generated for each investment scenario as much as possible to ensure framing bias is not affecting the validity of the results collected; it is acknowledged that this may require collaboration across variant service attributes. An example might be in the way that improvements to service are measured i.e. in customers or properties. The research demonstrated the use of 'reduction in complaints' as a metric of improvement was not well received amongst participants. In summary, with respect to the Research Question (2a) posed, this research has generated evidence to suggest that characteristics inherent to variant participatory mechanisms are more significant in generating variation in customer expressed preferences than the explicit mechanism itself. It provided evidence for the need for considerable attention in assessing the preference vehicle inherent in different mechanisms, particularly where used in multi-mechanism contexts, arguably placing more demands on the skills of those practitioners responsible for mechanism selection. Furthermore, it presented considerations relating to characteristics of

participative mechanisms for eliciting preferences or priorities for water and wastewater service attributes, providing a useful contribution to practice.

In considering these findings in the broader context of this research, i.e. the effective institutionalisation of participative planning and decision-making, this study has demonstrated the relevance of a number of the effectiveness criteria identified in Table 2-2 associated with the definition and agreement of a project plan, and the logistics stages. Those criteria which Studies A and B demonstrate particular support for include: the importance of consistency of practices (Conrad et al., 2011); the need for adequate time available to participants (Petts et al., 2003; Webler & Tuler, 2000; Conrad et al., 2011); the need for adequate access to information (Aldred & Jacobs, 2000; Beierle, 2002; Blackstock et al., 2007; Chilvers, 2008; Conrad et al., 2011; Frewer et al., 2000; Kallis et al., 2006; Laurian & Shaw, 2009; Petts & Leach, 2000; Petts, 2001; Rowe & Frewer, 2000; Rowe & Frewer, 2004; Tuler & Webler, 1999; Webler & Tuler, 2001; Webler & Tuler, 2000) which also goes hand in hand with ensuring that participants understand the issues and the implications of their choices (Carnes et al., 1998); the opportunity for participants to have access to experts whom they can challenge should this be deemed necessary (Chilvers, 2008; Petts et al., 2003; Petts & Leach, 2000; Petts, 2001; Rowe et al., 2004; Webler & Tuler, 2000). However, whilst mechanism choice already features frequently in participative planning and decision-making evaluative studies as is demonstrated in Table 2-2, studies A and B have made a case for greater granularity of this criteria for multi-mechanism contexts with respect to understanding the characteristics of participative mechanisms and understanding the ability of these characteristics in achieving the identified purpose of the participative process.

7.5 Exploring the use and influence of customer contributions to water sector planning and decision-making

The knowledge management literature has argued that the existence of accumulated knowledge does not guarantee its use (Elton & Wolfe, 2012). With

the Public Participation literature having focused heavily on participatory mechanism development and thus the generation of participatory outcomes, comparatively little consideration has been given to the management of the knowledge acquired on reaching the sponsoring organisation. When considering the deployment of some participatory mechanisms developed privilege the public significant decision-making power (Arnstien, 1969), the sheer range of participatory mechanisms available renders knowledge management a necessary consideration in the deployment of participative processes. Water utilities in England and Wales recently completed the PR14 Business Planning process, which required them to acquire and apply customer knowledge as part of their planning and decision-making. This introduction represents a significant variation to practice. Whilst water utilities have limited experience in the acquisition of customer knowledge, the primary variation has been introduced with the extent and range of customer knowledge that water utilities were required to apply in its practices. This provided a timely opportunity to explore practices deployed in the organisation for the management of customer knowledge.

The use of a practitioner-led assessment of knowledge management practices has privileged a novel insight into this field and has provisioned a unique contribution to the literature with respect to knowledge management in a water utility's 'live' business planning process. Typical studies in this field have used a researcher-led approach to explore knowledge management practices. However, similar to Cotton & Devine-Wright, (2012), Johnson & Chess, (2006) and Chess & Johnson, (2006), this study has used the views of practitioners in an organisational setting to lead the exploration of practices and identify factors they personally believe to have impacted the use and influence of customer knowledge. Similar to Cotton & Devine-Wright, (2012), this study has used semi-structured interviews as the primary research method to capture practitioner views provisioning original insight into the practices adopted within the organisation and factors that have acted to foster and / or promote effective

practices. This contrasts with Chess & Johnson, (2006) and Johnson & Chess, (2006) whereby Q methodology was deployed, limiting the emergence of context specific issues. Practitioners recruited to participate within the sponsoring organisation were highly receptive to the aims of this study. For some it represented an opportunity to reflect on the rationales driving the practices employed within the organisation at PR14. One practitioner stated:

“I think as a result of your interview, I’ll probably go away and do a lot of thinking because these are good questions” (813_020) p3

This evidences a positive impact of these types of study for both author and participant. The presentation of an opportunity to reflect on the norms of their practices promotes double-loop learning which forms an important component in building capacity within organisations (and practitioners) responsible for resources management (Jinnings et al., 2007; McIntosh & Taylor, 2013) and recognised as a key feature of effective participative processes (Petts et al., 2003; Conrad et al., 2011).

This research demonstrated a dualistic approach to the management of customer knowledge within the organisation. As has been outlined in Section 6.6.2 the organisation exhibited significantly more collaborative practices with the CCG than within the organisation. Research by Mostert et al. (2010) argue that factors such as close interaction, the use of meetings with a specific intent and limited numbers of people are a few of many factors that promote effective exchange of knowledge and may account for the observed practices. Yet, as has been outlined in Section 6.6.2, practitioners did not identify significant levels of collaborative or co-generative practices during the Price Review with only two being identified. This is important as Partidario & Sheate (2013) argues actors are more likely to use knowledge where they were involved as equal partners in its creation. Similarly, Raymond et al., (2010) argues that the use of knowledge is influenced by an understanding of how it is created thus making collaborative

practices in the early stages of participative proves design in interdisciplinary areas such as water utilities and important practice. The findings outlined in Section 6.6.2 support this finding. If water utilities are to be able to provision the development of more effective water and wastewater strategies including sustainable and innovative solutions as a result of the incorporation of customer engagement as is anticipated by Ofwat (Ofwat, 2011), water utility organisations need to be able to build the capacity within their practices and their practitioners to facilitate the fusion of customer knowledge with their own through experiential learning processes or in other words embedding collaborative practices as behavioural norms within the organisation (Roux et al., 2006).

Sections 6.6.2 identifies a range of factors constraining effective knowledge management practices within the organisation. Focusing on a few key themes here, the organisational deployment of formalised processes for the synthesis of WTP and Acceptability Testing data has, through the embedment of these practices as organisational norms defined to practitioners the significance of these customer engagement outputs and thus influenced, in part, practitioner views as to what customer knowledge is and what is not meaningful as part of the PR14 process (Newig et al., 2008). Whilst the embedment of processes has been well received amongst practitioners as they avert a substantial impact on embedded routines, this research argues that it has shifted their attention away from the use of non-econometric customer engagement, which represent mechanisms more commensurate with the principles of public participation and represents a lost opportunity for practitioner to further develop their practices (Maiello et al., 2013; Fazey et al., 2005). Similarly, the use of knowledge brokers as the primary co-ordinators, transformers and disseminators of customer knowledge within the organisation (Reed et al., 2013; Partidario & Sheate, 2013), has further reduced their involvement and exposure to this type of knowledge, the implications of which have been well documented in Section 6.6.2. The culture of regulatory compliance within the organisation has been discussed at length in Section 7.3 and it is necessary to reiterate here the

influence that Ofwat also have on organisations knowledge management practices through the regulatory framework it outlines in its PR14 methodology statement (Ofwat, 2013) and the determinations it sets (Ofwat, 2014). They represent a significant external influence on the management of customer knowledge in water utility planning and decision-making. Finally, the legacy of technocratic and reductionist approaches to water and wastewater investment planning within the water sector were observed with respect to the dominant skill sets and their distribution within the organisation. Whilst these approaches privileged technical specialisms and the management of resources through the development of specialised areas (Pahl-Wostl et al., 2011) or 'silos', the need for multi-stakeholder, multi-disciplinary and pluralistic forms of knowledge are well established in the literature as being necessary to build adaptive capacity within institutional practices. The current techno-centric skill sets and organisational structure represent a significant constraint for knowledge management practices.

In considering the broader implications of these findings in the context of exploring factors affecting the effective institutionalisation of participative planning and decision-making it is necessary to reflect back on Section 6.6.2 which reported the outcome of a rationalisation exercise undertaken in the analysis of the findings from Study C whereby the key factors identified to be fostering or constraining effective knowledge management in this study were mapped across to existing public participation effectiveness criteria identified in Table 2-3. In undertaking this exercise the path dependencies between decisions made in each stage of the participative process become very clear i.e. the effectiveness of an organisations knowledge management is contingent on effective definition and planning stages. In conducting this exercise deficiencies in existing public participation criteria were identified and additional effectiveness criteria suggested. Whilst they have been generated on the basis of an organisation focused study they provide a useful contribution to an area of public participation research which has otherwise received limited attention.

They have generated supplementary criteria for further consideration by general public participation practitioners or those within water utility contexts. Table E11-1 in Appendix E outlines the proposed additions.

8 CONCLUSIONS

8.1 Satisfaction of the thesis aim

This thesis has focused on the practices that influence the effective institutionalisation of public participation in water sector planning and decision-making in England and Wales. It has been argued that by better understanding the factors that promote or constrain effective public participation in this context it may assist in the development of improved practices and the development of more effective policies and strategies for the delivery of water and wastewater services. This aim has been addressed through undertaking empirical research with both domestic water customers and practitioners of the organisation sponsoring this research. As Section 6.4.1 outlined, attempts to engage with practitioners from across the water sector in England and Wales were unsuccessful preventing a sector-wide set of findings being developed. Whilst this has hindered the achievement of the scope of this thesis, the findings generated present a useful contribution to this field and present scope for further study.

8.1.1 Research Question 1a conclusions

This research question has been addressed through Study C. It generated evidence of four distinct rationales for public participation in water utility planning and decision-making used by practitioners of the sponsoring organisation. It provides empirical evidence for both the relevance of these rationales to water utility planning and decision-making and supports existing evidence for the dominance of instrumental and, to a lesser extent, legalistic motivations for the adoption of these practices. The dominance of these perspectives has been argued to be commensurate with conventional modes of water and wastewater management; a reflection of a legacy of techno-rational approaches and dominance of regulatory frameworks. The failure of this study to provide evidence reflective of practitioners across the water sector in England and Wales constrains the generalisability of these findings with potential for

them to reflect organisation-specific challenges. But, their alignment to similar observations of dominance of instrumental motivations in comparable hierarchical settings and planning contexts provides some support for their veracity.

8.1.2 Research Question 1b conclusions

This study has provided evidence to support the dominance of instrumental motivations as a clear driver of organisational practices. It has isolated the hierarchical nature of the organisation and strong regulatory influences as promoting the dominance of this perspective. It has also generated insight to suggest that the regulatory mechanisms have constrained the breadth of achievement of Ofwat's ambitions due to a lack of structure and incentive relative to the achievement of normative and substantive rationales, and instead driving a focus on validation and expert-driven processes. The findings also provide evidence for a legacy of regulator dependence constraining independent action. The research tentatively suggests that, capitalising on regulatory dependence, provisioning greater structure within regulatory mechanisms for the provision of Ofwat's substantive and normative motivations to be realised may be necessary. Furthermore, reflecting practitioner views on the basis of Ofwat's pre-qualification assessments, it is recommended that they explore the motivational clarity of their own practices with respect to customer engagement.

8.1.3 Research Question 2 conclusions

This research question was addressed in Study A and B. These studies presented mixed findings with respect to the influence of participatory mechanisms in generating the expressed views of customers for water and wastewater services. Study A provides a comparative evaluation of elicitation mechanisms and showed high variation of preferences when bill impact was a feature of mechanism design. Yet, further exploration of this finding in Study B

generated findings that did not support this conclusion. Whilst the studies did not provide conclusive evidence to support the influence of mechanism design on expressed preferences, both studies generated insight to suggest the importance of features of mechanism design in exploring customer preferences for water and wastewater services. In particular, the preference formation vehicle as a feature of mechanism design was recommended to be an important consideration in mechanism selection, particularly where multiple mechanisms are to be used in the same planning and decision context or where the mechanisms selected exhibit little internal structure thus privileging practitioner's relative freedom in their design. Furthermore, it provided evidence to support the need for adequate resources and time in exploring customer preferences whilst also providing insight into the importance of attribute sequencing and presentation where service failure and bill impact are used as a mode of exploring relative customer preferences across a range of water and wastewater attributes.

8.1.4 Research Question 3a

Study C generated insight into knowledge management practices in the sponsoring organisations participative planning and decision-making at PR14. The findings suggest that the stages of the process are largely commensurate with a broad model presented in the literature but that practitioner and organisational characteristics and behaviours within this process, in addition to external influence, constrained the extent to which knowledge exchange practices, as a recommended practice for participative planning and decision-making contexts were observed. The adoption of a practitioner-centred approach to this study revealed a lack of evaluative practices and opportunities for reflection as practitioner and organisational norms constraining potential for double-loop learning, which is key to developing the organisational capacity required to effectively manage knowledge generated from participative approaches. The failure to capture the views of practitioners across the sector

as part of this study constrains the findings as relevant to the sponsoring organisation.

8.1.5 Research Question 3b conclusions

Study C demonstrated the relevance of factors promoting or constraining effective knowledge management practices to the context of the sponsoring organisations participative planning and decision-making; an example of a large-scale organisation and a ‘live’ planning process. It generated insight into factors promoting and constraining effective knowledge management at each stage of the process. Factors identified as representing significant influence included: the embedment of practitioner routines, organisational norms, and the external influence of regulators and stakeholders. Furthermore, the dominance of technical skill sets of practitioner involved in the process and the grouping of these skill sets within the organisational structure were significant barriers to effective collaboration. The failure to capture the views of practitioners across the sector as part of this study constrains the findings as relevant to the sponsoring organisation. Reflecting findings back to the effectiveness criteria literature, this study has generated additional criteria for consideration in public participation practices.

8.2 Summary of primary contributions

The primary contributions drawn from this study are outlined in Table 8-1

Table 8-1 Summary of contributions

Description	Research objectives / questions	Chapter
The research provides a novel contribution to the current field of public participation by examining these practices in the context of water utility water and wastewater service delivery	1a, 1b, 2a, 3a, and 3b	4 ,5, 6
This research corroborated existing studies in the literature demonstrating the dominance of instrumental and legalistic rationales for public participation	1a	6

amongst practitioners responsible for the plan delivery		
The research provides unique contribution into the motivations of a single water utility's practitioners for the use of public participation in planning and decision-making	1a	6
This research confirms the influence of hierarchical frameworks and top-down management influences as key factors fostering instrumental and legalistic rationales for public participation	1b	6
This research has generated an indicative insight into inter and intra mechanism reliability of elicitation mechanisms in the context of domestic customer preferences for water and wastewater service delivery	2a	4
This research has tested the findings generated through inter-mechanism analysis to identify whether this findings was observed in a comparable context	2	5
This research has provided a novel contribution into the rationales used by domestic customers for determining the acceptability of water and wastewater service attributes in water utility planning in England and Wales	2	5
The research has generated recommendations for the future design of activities exploring domestic customer preferences for water and wastewater service delivery	2, 2a	4, 5
This research has provided a novel water utility focused contribution to the existing scholarship on practitioner-led insights into organisational barriers for public participation	3a, 3b	6
This research has identified knowledge management processes in operation in a single water utility PR14 planning and decision-making process and, in doing so, corroborated the relevance of factors expressed as promoting and constraining knowledge management practise to organisational settings	3a	6
This research has generated a set of evaluative criteria reflecting factors that have been identified as fostering or constraining knowledge management in participative planning and decision-making in water utilities applicable to practitioners within the sector and more broadly	3b	6

8.3 A review of research quality

A full review of the strategies employed within this research to ensure the reliability and the validity of both the research process, and the findings generated has been provided in Section 3.5 and Appendix B. It has also acknowledged, where applicable, limitations of practices with respect to both

reliability and validity. Chapters 3, 4, 5, and 6 are demonstrative of the lengths the author has gone to, to ensure clearly defined research methodologies are available for review. A common thread throughout this thesis has been the strong collaboration with the sponsoring organisation of this research and the interconnected nature of this research and their live planning and decision-making process. Studies A and B in particular were constrained to some degree by this interconnection, constraining the authors freedom with respect to the academic content explored. Similarly, as has been recognised throughout Chapters 4 and 5, the use of Market Research Professionals for the recruitment and data collection phases of these studies required sensitive research design to mitigate any biases and quality issues this introduced.

Whilst external reliability of this research has been considered in Section 3.5, the generalisability of these research findings warrants a brief discussion. The sample population for each study has been extensively reported and carefully constructed. It should be reiterated that this study was concerned only with the contributions of domestic customers from the sponsoring organisation. Whilst SME customers formed part of the Study A pilot study, the results made it clear that for clarity throughout the research the contributions of domestic customers would form the primary focus. Secondly, whilst attempts were made to set two of the research questions posed in this thesis in the wider water sector of England and Wales, the recruitment of participants from this sample was unsuccessful (for reasons outlined in Section 6.4.1). The findings generated from this research are therefore very much rooted within the context of the sponsoring organisation. Whilst, no claims are made as to the generalisability of this research in reflecting the views of their customers or practitioners operating in other water utilities in England and Wales, this research does provide a set of findings which can be transferred / translated to this broader context in which to explore further their reliability.

8.4 An agenda for future research

Through exploring practices that hold potential to influence the effective institutionalisation of public participation in the water sector in England and Wales, this thesis endeavoured to provide new insight to the field of public participation to assist in the future development of improved practices and thus contributing to the development of more effective policies and strategies for the delivery of water and wastewater services.

Focusing initially on the agenda for future research within the water sector, the thesis aimed to provide a sector-scale contribution to the understanding of practitioner motivations for public participation in water utility planning and decision-making and similarly to gain insight into sector-wide knowledge management practices. However, as has been explained in Section 6.4.1 only an organisational-scale perspective has been achieved. So, whilst this has provided a useful starting point into developing a greater understanding of issues relating to the institutionalisation of public participation in water utilities, it represents only the views of one organisation. Understandably then, the first recommendation for further research is that this research should be scaled up to include practitioners from across the sector. This will provision insight into the reliability and validity of the results presented within this thesis at a sector scale. Secondly, this thesis recommends the assessment of evaluation approaches adopted by stakeholders and regulators in determining the effectiveness of participative planning and decision-making efforts of water utilities in England and Wales. This would provide a complementary perspective to the insights generated in this thesis in addition to generating additional insight into effectiveness criteria within the context of participative water utility planning and decision-making. Thirdly, further comparative examination of a wider-range of participatory mechanisms than has been provisioned in this thesis, the exploration of these in more depth and the development of new experimental procedures to ensure objective testing will allow practitioners to have greater confidence in the tools they are using and better understand their function in mixed methods approaches. Finally, whilst this research has made some comments on the adequacy of Ofwat's approach to customer engagement on

the basis of the findings developed in this research. However, this is an important area for broader consideration and attention noting the contributions made by this study.

In outlining the theoretical and empirical foundations of this research insights from across variant disciplines and sectors were sought including: natural resources management, environmental management, community planning, ecological economics, public service delivery and utility sectors. It is prudent then to suggest that the findings of this work be considered in future research in these disciplines and sectors concerning the effective institutionalisation and / or deployment of participatory approaches to planning and decision-making. A specific recommendation considered to warrant particular attention is further developing the initial insights developed in Study C around the management of knowledge generated through participative processes. Whilst this research has provided a useful contribution from a water services perspective, the findings from this study have demonstrated that this particular field of research warrants much greater consideration and attention both within natural resources management disciplines but also more broadly.

9 REFERENCES

Abelson, J. et al., 2007. Examining the role of context in the implementation of a deliberative public participation experiment: Results from a Canadian comparative study. *Social Science & Medicine*, 64, pp.2115-28.

Abelson, J. et al., 2003. Deliberations about the deliberative methods: issues in the design and evaluation of public participation processes. *Social Science & Medicine*, 57, pp.239-51.

Abelson, J. & Gauvin, F., 2006. *Assessing the Impacts of Public Participation: Concepts, Evidence, and Policy Implications*. Ottawa: Canadian Policy Research Networks Inc.

Affinity Water Customer Challenge Group, 2013. *Customer Challenge Group*. [Online] Available at: <https://stakeholder.affinitywater.co.uk/ccg.aspx> [Accessed November 2013].

Aitken, V., Bell, S., Hills, S. & Rees, L., 2014. Public acceptability of indirect potable water reuse in the south-east of England. *Water Science & Technology: Water Supply*, 14(5), pp.875-85.

Aldred, J. & Jacobs, M., 2000. Citizens and wetlands: evaluating the Ely citizens' jury. *Ecological Economics*, 34, pp.217-32.

Al-Ghuraiza, Y. & Enshassib, A., 2006. Customers' satisfaction with water supply service in the Gaza strip. *Built Environment*, 41, pp.1243-50.

Alvarez-Farizo, B. & Hanley, N., 2006. Improving the Process of Valuing Non-Market Benefits: Combining Citizens Juries with Choice Modelling. *Land Economics*, 82(3), pp.465-78.

Amerasinghe, M. et al., 2008. *Enabling Environmental Justice: Assessment of Participatory Tools*. Cambridge, MA: Massachusetts Institute of Technology.

- Anderson, J., 2003. The environmental benefits of water recycling and reuse. *Water Science and Technology: Water Supply*, 31(4), pp.1-10.
- Anderson, I.-E. & Jaeger, B., 1999. Danish participatory models. Scenario workshops and consensus conferences: towards more democratic decision-making. *Science and Public Policy*, 26(5), pp.331-40.
- Anglian Water Customer Engagement Forum, 2013. *Customer Engagement Forum - Minutes and reports*. [Online] Available at: http://www.anglianwater.co.uk/assets/media/CEF_Report_Final.pdf [Accessed Nov 2013].
- Arksey, H. & Knight, P., 1999. *Interviewing for Social Scientists*. London: Sage.
- Arnstien, S.R., 1969. A Ladder Of Citizen Participation. *Journal of the Americal Planning Association*, 35(4), pp.216-24.
- Arthur, S., Crow, H. & Karik, N., 2009. Including public perception data in the evaluation of the consequences of sewerage derived urban flooding as. *Water Science and Technology*, 60(1).
- Arthur, S. & Nazroo, J., 2003. Designing Fieldwork Strategies and Materials. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice*. London: SAGE. pp.109-37.
- Association for Project Management, 2006. *APM Body of Knowledge*. High Wycombe: APM Association for Project Management.
- Association of California Water Agencies, 2015. *Status of response to 2014 drought*. [Online] Available at: www.acwa.com/content/drought-map [Accessed 26 August 2015].
- Baggett, S., Jeffrey, P. & Jefferson, B., 2006. Risk perception in participatory planning for water reuse. *Desalination*, 187, pp.149-58.
- Baldwin, R., Cave, M. & Lodge, M., 2012. *Understanding Regulation*. 2nd ed. New York: Oxford University Press.

- Barbosa, A.E., Fernandes, J.N. & David, L.M., 2012. Key issues for sustainable urban stormwater management. *Water Research*, 46, pp.6787-98.
- Bastien, N.R.P., Arthur, S. & McLoughlin, M.J., 2012. Valuing amenity: public perceptions of sustainable drainage systems ponds. *Water and Environment Journal*, 26, pp.19-29.
- Bayley, C. & French, S., 2008. Designing a Participatory Process for Stakeholder Involvement in a Societal Decision. *Group Decision and Negotiation*, 17(3), pp.195-210.
- BBC, 2012. *Hosepipe bans brough in for drought-hit areas*. [Online] Available at: www.bbc.com/news/UK/17615364 [Accessed 26 August 2015].
- Bebbington, J., Brown, J. & Frame, B., 2007. Accounting technologies and sustainability assessment models. *Ecological Economics*, 61, pp.224-36.
- Beierle, C., 1999. Using social goals to evaluate public participation in environmental decisions. *Policy Studies Reviews*, 16(3/4), pp.75-103.
- Beierle, T.C., 2002. The Quality of Stakeholder-Based Decisions. *Risk Analysis*, 22(4), pp.739-49.
- Beierle, T.C. & Konisky, D.M., 1999. *Public Participation in Environmental Planning in the Great Lakes Region*. Discussion Paper 99-50. Washington DC: Resources For The Future Resources For The Future.
- Beierle, T.C. & Konisky, D.M., 2000. Values, Conflict, and Trust in Participatory Environmental Planning. *Journal of Policy Analysis and Management*, 19(4), pp.587-602.
- Bell, S., 2009. The driest continent and the greediest water company: newspaper reporting of drought in Sydney and London. *International Journal of Environmental Studies*, 66(5), pp.581-89.
- Bell, S., 2015. Renegotiating urban water. *Progress in Planning*, 96, pp.1-28.
- Bell, S. & Aitken, V., 2008. The socio-technology of indirect potable water reuse. *Water Science & Technology: Water supply*, 8(4), pp.441-48.

- Benson, D., Fritsch, O., Cook, H. & Schmid, M., 2014. Evaluating participation in WFD river basin management in England and Wales: Processes, communities, outputs and outcomes. *Land Use Policy*, 38, pp.213-22.
- Bergold, J. & Thomas, S., 2012. Participatory Research Methods: A methodological approach in motion. *Qualitative Social Research*, 13(1), p.30.
- Bherer, L. & Breux, S., 2012. The diversity of public participation tools: Complementing or competing with one another? *Canadian Journal of Political Science*, 45(2), pp.379-403.
- Bickerstaff, K. & Walker, G., 2001. Participatory local governance and transport planning. *Environment and Planning A*, 33, pp.431-51.
- Bickerstaff, K. & Walker, G., 2005. Shared Vision, Unholy Alliances: Power, Governance and Deliberative Processes in Local Transport Planning. *Urban Studies*, 42(12), pp.2123-44.
- Biggs, S., 1989. *Resource-Poor Farmer Participation in Research: A synthesis Of Experiences From Nine Agricultural Research Systems*. OFCOR Comparative Study Paper Vol. 3. The Hague: International Service for Agricultural Research.
- Blackmore, C., 2007. What kinds of knowledge, knowing and learning are required for addressing resource dilemmas?: a theoretical overview. *Environmental Science & Policy*, 10, pp.512-25.
- Blackstock, K.L., Kelly, G.J. & Horsey, B.L., 2007. Developing and applying a framework to evaluate participatory research for sustainability. *Ecological Economics*, 60, pp.726-42.
- Blackstock, K.L. & Richards, C., 2007. Evaluating stakeholder involvement in river basin planning: a Scottish case study. *Water Policy*, 9, pp.493-512.
- Bogner, A., 2012. The Paradox of Participation Experiments. *Science Technology and Human Values*, 37(5), pp.506-27.

Bournemouth Water Customer Engagement Planning Forum, 2013. [Online] Available at: http://www.bournemouthwater.co.uk/Uploads/Docs/economic%20regulation-competition/PR14_SBW-CEPF-Report_to_Ofwat%20Final.pdf [Accessed Nov 2013].

Boyer, T.H., Overdeest, C., Christiansen, L. & Ishii, S.K.L., 2012. Expert stakeholder attitudes and support for alternative water sources in a groundwater depleted region. *Science of the Total Environment*, 437, pp.245-54.

Bristol Water Local Engagement Forum, 2013. *Local Engagement Forum Report*. [Online] Available at: www.bristolwater.co.uk/about-us/strategic-objectives/business-plan-2015-2020/lef/ [Accessed Nov 2013].

Brown, J., 2009. Democracy, sustainability and dialogic accounting technologies: Taking pluralism seriously. *Critical Perspectives on Accounting*, 20, pp.313-42.

Brown, R., Farrelly, M. & Keath, N., 2009. Practitioner perceptions of social and institutional barriers to advancing a diverse water source approach in Australia. *International Journal of Water Resources Development*, 25(1), pp.15-28.

Brugnach, M., Dewulf, A., Pahl-Wostl, C. & Taillieu, T., 2008. Toward a relational concept of uncertainty: about knowing too little, knowing too differently, and accepting not to know. *Ecology and Society*, 13(2).

Carnes, S.A. et al., 1998. Measuring the success of public participation on environment restoration and waste management activities in the U.S. Department of Energy. *Technology In Society*, 20, pp.385-406.

Carr, G., Blöschl, G. & Loucks, D.P., 2012. Evaluating participation in water resource management: A review. *Water Resources Research*, 48(11), p.W11401.

Carr, D.S. & Halvorsen, K., 2001. An Evaluation of Three Democratic, Community-Based Approaches to Citizen Participation: Surveys, Conversations

- With Community Groups, and Community Dinners. *Society & Natural Resources: An International Journal*, 14(2), pp.107-26.
- Cashman, A., 2006. Water regulation and the sustainability 1997-2001: Adoption or adaptation? *Geoforum*, 37, pp.488-504.
- Cass, N., 2006. *Participatory-Deliberative Engagement: a literature review*. Working Paper 1.2. Manchester: School of Environment and Development, Manchester University.
- Chenoweth, J. et al., 2010. Comparison of Consumer Attitudes Between Cyprus and Latvia: An Evaluation of Effect of Setting on Consumer Preferences in the Water Industry. *Water Resources Management*, 24, pp.4339-58.
- Chess, C., 2000. Evaluating Environmental Public Participation: Methodological Questions. *Journal of Environmental Planning and Management*, 43(6), pp.769-84.
- Chess, C., 2001. Organisational Theory and the Stages of Risk Communication. *Risk Analysis*, 21, pp.179-88.
- Chess, C. & Johnson, B.B., 2006. Organizational Learning about Public Participation: "Tiggers" and "Eeyores". *Human Ecology Review*, 13(2), pp.182-92.
- Chess, C. & Purcell, K., 1999. Public Participation and the Environment: Do we know what works? *Environmental science and technology*, 33(16), pp.2685-92.
- Chilvers, J., 2008. Deliberating Competence. Theoretical and practitioner perspectives on effective participatory appraisal. *Science, Technology & Human Values*, 33(2), pp.155-85.
- Clarke, B., 2008. Seeking the Grail: Evaluating Whether Australia's Coastcare Program Achieved "Meaningful" Community Participation. *Society & Natural Resources: An International Journal*, 21(10), pp.891-907.

- Collins, K.B. & Ison, R.L., 2010. Trusting Emergence: Some Experiences of Learning about Integrated Catchment Science with the Environment Agency of England and Wales. *Water Resources Management*, 24, pp.669-88.
- Conklin, A., Slote-Morris, Z. & Nolte, E., 2010. *Involving the public in healthcare policy An update of the research evidence and proposed evaluation framework*. [Online] Available at: http://www.rand.org/pubs/technical_reports/TR850.html [Accessed 22 February 2015].
- Conley, A. & Moote, M.A., 2003. Evaluating Collaborative Natural Resource Management. *Society and Natural Resources: An international Journal*, 16(5), pp.371-86.
- Conrad, E., Cassar, L.F., Christie, M. & Fazey, I., 2011. Hearing but not listening? A participatory assessment of public participation in planning. *Environment and Planning C: Government and Policy*, 29, pp.761-82.
- Consumer Council for Water, 2008. *Deliberative Research concerning Consumers' Priorities for PR09 for the Water Industry Stakeholder Steering Group*. Birmingham: Consumer Council for Water.
- Consumer Council for Water, 2014. *Water Matters: Household customers' views on their water and sewerage services 2013*. [Online] Available at: <http://www.ccwater.org.uk/wp-content/uploads/2014/05/Water-Matters-household-customers-views-on-their-water-and-sewerage-services-2013.pdf> [Accessed 27 July 2015].
- Cotton, M. & Devine-Wright, P., 2012. Making electricity networks "visible": Industry actor representations of "publics" and public engagement in infrastructure planning. *Public Understanding of Science*, 21(1), pp.17-35.
- Creswell, J.W., 2013. *Qualitative inquiry and research design: choosing among five approaches*. 3rd ed. Thousand Oaks, CA: SAGE Publications.
- Curry, N., 2012. Community Participation in Spatial Planning: Exploring Relationships between Professional and Lay Stakeholders. *Local Government Studies*, 38(3), pp.345-66.

Dalcanale, F., Fontane, D. & Csapo, J., 2011. A General Framework for a Collaborative Water Quality Knowledge and Information Network. *Environmental Management*, 47, pp.443-55.

De Marchi, B., Funtowicz, S.O., Lo Cascio, S. & Munda, G., 2000. Combining participative and institutional approaches with multicriteria evaluation. An empirical study for water issues in Troina, Sicily. *Ecological Economics*, 34, pp.267-82.

Deadman, C., 2010. *Strategic Asset Management: the quest for utility excellence*. Leicester: Matador.

Dee Valley Water Customer Challenge Forum, 2013. *Customer Challenge Panel Report*. [Online] Available at: http://www.deevalleywater.co.uk/article_files/186/english/dvw_ccp_report_issue_d_2-12-13.pdf [Accessed Dec 2013].

Defra, 2008. *Future Water - The government's water strategy for England*. London: HM Government.

Defra, 2011. *Water for Life*. White Paper. London: HM Government Department for Environment, Food and Rural Affairs.

Dervin, B., 1998. Sense-making theory and practice: an overview of user interests in knowledge seeking and use. *Journal of Knowledge Management*, 2(2), pp.36-46.

Dex, S., 1995. The reliability of recall data: a literature review. *Bulletin de methodologie Sociologique*, 49, pp.58-89.

Dolnicar, S., Hurlimann, A. & Grün, B., 2011. What affects public acceptance of recycled and desalinated water? *Water research*, 45, pp.933-43.

Dolnicar, S. & Schäfer, A.I., 2009. Desalinated versus recycled water: public perceptions and profiles of the accepters. *Journal of Environmental Management*, 90(2), pp.888-900.

Doron, U., Teh, T.-H., Haklay, M. & Bell, S., 2011. Public Engagement with water conservation in London. *Water and Environment Journal*, 25, pp.555-62.

Drinking Water Inspectorate, 2012. *Price Review Process*. [Online] Available at: <http://dwi.defra.gov.uk/stakeholders/price-review-process/index.htm> [Accessed 20 February 2015].

Drinking Water Inspectorate, 2014. *About Us*. [Online] Available at: <http://dwi.defra.gov.uk/about/> [Accessed 20 February 2015].

Duram, L.A. & Brown, K.G., 1999. Insights and Applications Assessing Public Participation in U.S. Watershed Planning Initiatives. *Society & Natural Resources*, 12(5), pp.455-67.

Dwr Cymru Water Customer Challenge Group, 2013. *Customer Challenge Group*. [Online] Available at: <http://www.dwrcymru.com/en/Customer-Service/Your-Company-Your-Say/CCG.aspx> [Accessed Dec 2013].

Easterby-Smith, M., Thorpe, R. & Lowe, A., 2002. *Management Research: An Introduction*. 2nd ed. London: Sage.

Elton, K. & Wolfe, S.E., 2012. Water Efficiency and the Professional Plumbing Sector: How Capacity and Capability Influence Knowledge Acquisition and Innovation. *Water Resources Management*, 26, pp.595-608.

Environment Agency and Natural Resources Wales, 2013. *Water stressed areas - final classification*. Bristol: Environment Agency.

Environment Agency, 2013. *National Environment Programme (NEP) for PR09*. [Online] Available at: <http://webarchive.nationalarchives.gov.uk/20140328084622/http://www.environment-agency.gov.uk/business/sectors/33071.aspx> [Accessed 27 July 2015].

Environment Agency, 2014. *Corporate plan 2014 - 2016*. [Online] Available at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/4012873/Environment_Agency_Corporate_Plan_2014-2016.pdf [Accessed 27 July 2015].

EPA, 2015. *Public Participation Guide: Introduction to Public Participation*. [Online] Available at: <http://www2.epa.gov/international-cooperation/public-participation-guide-introduction-publi-participation> [Accessed 27 July 2015].

European Union, 2000. *Directive 2000/60/EC of the European parliament and of the council establishing a framework for the community action in the field of water policy*. [Online] Available at: http://ec.europa.eu/environment/water/water-framework/index_en.html [Accessed 19 May 2013].

Falahee, M. & MacRae, A.W., 1995. Consumer appraisal of drinking water: multidimensional scaling analysis. *Food Qual Prefer*, 6, pp.327–32.

Fazey, I. et al., 2012. Knowledge exchange: a review and research agenda for environmental management. *Environmental Conservation*, 40(1), pp.19-36.

Fazey, I., Fazey, J. & Fazey, D.M.A., 2005. Learning More Effectively from Experience. *Ecology and Society*, 10(2).

Fazey, I. et al., 2006. Eliciting the Implicit Knowledge and Perceptions of On-Ground Conservation Managers of the Macquarie Marshes. *Ecology and Society*, 11(1).

Fielding, K.S., Gardner, J., Leviston, Z. & Price, J., 2015. Comparing public perceptions of alternative water sources for potable use: The case of rainwater, stormwater, desalinated water, and recycled water. *Water Resources Management*, 29, pp.4501-18.

Fielding, K.S. & Roiko, A.H., 2014. Providing information promotes greater public support for potable recycled water. *Water Research*, 61, pp.86-96.

Finch, H. & Lewis, J., 2003. Focus Groups. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice*. London: Sage. pp.170-98.

Fiorino, D.j., 1990. Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms. *Science Technology Human Values*, 15, pp.226-43.

Fish, R. et al., 2011. *Participatory and Deliberative Techniques to embed an Ecosystems Approach into Decision Making: an introductory Guide*. Defra Project Code: NR0124.

Forestry Commission, 2012. *Toolbox*. [Online] Available at: www.forestry.gov.uk/toolbox [Accessed August 2012].

Frame, B. & Brown, J., 2008. Developing post-normal technologies for sustainability. *Ecological Economics*, 65, pp.225-41.

Frame, B. & O'Connor, M., 2011. Integrating valuation and deliberation: the purposes of sustainability assessment. *Environmental Science & Policy*, 14, pp.1-10.

Frewer, L., Rowe, G., Marsh, R. & Reynolds, C., 2000. *Public Participation Methods: Evolving and Operationalising and Evaluation Framework*. Norwich: UK Department of Health.

Friedler, E., Lahav, O., Juzhaki, H. & Lahav, T., 2006. Study of urban population attitudes towards various wastewater reuse options: Israel as a case study. *Journal of Environmental Management*, 81, pp.360-70.

Friend, H.D. & Coutts, S.S., 2006. Achieving sustainable recycled water initiatives through public participation. *Desalination*, 187, pp.159-66.

Fritsch, O. & Newig, J., 2012. Participatory governance and sustainability: Findings of a meta-analysis of stakeholder involvement in environmental decision-making. In Brousseau, E., Dedeurwaerdere, T. & Siebenhuner, B. *Reflexive governance for global public goods*. Cambridge, Mass: The MIT Press. pp.181-204.

Funtowicz, S.O. & Ravetz, J.R., 1994. The worth of a songbird: ecological economics as a post-normal science. *Ecological Economics*, 10, pp.197-207.

Gardner, E.A., 2003. Some examples of water recycling in Australia urban environments: a step towards environmental sustainability. *Water Science and Technology: Water Supply*, 3(4), pp.21-31.

- Gearey, M. & Jeffrey, P., 2006. Concepts of legitimacy within the context of adaptive water management strategies. *Ecological Economics*, 60, pp.129-37.
- Genuis, S.K., 2012. Constructing "Sense" From Evolving Health Information: A Qualitative Investigation of Information Seeking and Sense Making Across Sources. *Journal of the American Society for Information Science and Technology*, 63(8), pp.1553-66.
- Gilbertson, M., Hurlimann, A. & Dolnicar, S., 2011. Does water context influence behaviour and attitudes to water conservation? *Australasian Journal of Environmental Management*, 18(1), pp.47-60.
- Gill, J. & Johnson, P., 2002. *Research Methods for Managers*. 3rd ed. London: Sage.
- Giodano, R., Passarella, G., Uricchio, V.F. & Vurro, M., 2005. Fuzzy cognitive maps for issue identification in a water resources conflict resolution system. *Physics and Chemistry of the Earth*, 30, pp.463-69.
- Glaser, B.G. & Strauss, A.L., 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine Publishing Company.
- Glass, J.J., 1979. Citizen Participation in Planning: The Relationship Between Objectives and Techniques. *Journal of the American Planning Association*, 45(2), pp.180-89.
- Gleick, P.H., 2000. A Look at Twenty-first Century Water Resources Development. *Water International*, 25(1), pp.127-38.
- Glenk, K. & Fischer, A., 2010. Insurance, prevention or just wait and see? Public preferences for water management strategies in the context of climate change. *Ecological Economics*, 69, pp.2279-91.
- Glicken, J., 2000. Getting stakeholder participation 'right': a discussion of participatory processes and possible pitfalls. *Environmental Science & Policy*, 3, pp.305-10.

- Goetz, A. & Gaventa, J., 2001. *Bringing citizen voice and client focus into service delivery*. IDS Working Paper 138. Brighton: Institute of Development Studies Institute of Development Studies.
- Golafshani, N., 2003. Understanding reliability and validity in qualitative research. *The Qualitative report*, 8(4), pp.597-607.
- Green, C.H., 2007. *Mapping the field: the landscape of governance*. Enfield: Flood Hazard Research Centre Middlesex University.
- Green, C., 2010. Unit 4: What is Governance? In F.H.R.C.- University, ed. *Flood Management: Governance, planning and project appraisal*. Flood Hazard Research Centre - Middlesex University. Lecture materials distributed at CEG8510 Flood Management and Governance module at Newcastle University.
- Grey, D.E., 2009. *Doing Research in the Real World*. 2nd ed. London: Sage.
- Hajkowicz, S. & Collins, K., 2007. A Review of Multiple Criteria Analysis for Water Resource Planning and Management. *Water Resources Management*, 21, pp.1553-66.
- Hall, J.W., Henriques, J.J., Hickford, A.J. & Nicholls, R.J., 2012. *A Fast Track Analysis of strategies for infrastructure provision in Great Britain: Technical Report*. Oxford: University of Oxford Environmental Change Institute.
- Halvorsen, K.E., 2001. Assessing Public Participation Techniques for Comfort, Convenience, Satisfaction, and Deliberation. *Environmental Management*, 28(2), pp.179-86.
- Hammersley, M., 1992. *What's wrong with Ethnography?* London: Routledge.
- Hammersley, M. & Atkinson, P., 1995. *Ethnography: Principles in Practice*. 2nd ed. London: Routledge.
- Hanley, N. & Spash, C.L., 1993. Introduction. In N. Hanley & C.L. Spash, eds. *Cost-Benefit Analysis and the Environment*. 4th ed. Cheltenham: Edward Elgar Publishing Limited.

Harding, A. & Anadu, E., 2000. Consumer Response to Public Notification. *Journal of the American Water Works Association*, 92(8), pp.32-41.

Hatzilacou, D. et al., 2007. Scenario workshops: A useful method for participatory water resources planning? *Water Resources Research*, 43, p.W06414.

Hensher, D., Shore, N. & Train, K., 2005. Households' Willingness to Pay for Water Service Attributes. *Environmental & Resource Economics*, 32, pp.509-31.

Hermanowicz, S.W., Sanchez Diaz, E. & Coe, J., 2001. Prospects, problems and pitfalls of urban water reuse: a case study. *Water Science and Technology*, 43(10), pp.9-16.

Hermans, C. et al., 2007. Collaborative environmental planning in river management: An application of multicriteria decision analysis in the White River Watershed in Vermont. *Journal of Environmental Management*, 84, pp.534-46.

Hills, S., Smith, A., Hardy, P. & Birks, R., 2001. Water recycling at the Millenium Dome. *Water Science and Technology*, 43(10), pp.287-94.

Holmes, A.G.D., 2014. *Researcher positionality – a consideration of its influence and place in research*. [Online] Available at:

<https://www.researchgate.net/publication/260421552> Researcher positionality - a consideration of its [Accessed 28 Feb 2016]

Holmes, T. & Scoones, I., 2000. *Participatory Environmental Policy Processes: Experiences From North and South*. IDS Working Paper 113. Institute of Development Studies.

Horlick-Jones, T., Rowe, G. & Walls, J., 2007. Citizen engagement processes as information systems: the role of knowledge and the concept of translation quality. *Public Understanding of Science*, 16, pp.259-78.

Howarth, D. & Butler, S., 2004. Communicating water conservation: how can the public be engaged? *Water Science and Technology: Water Supply*, 4(3), pp.33-44.

Huitema, D. et al., 2009. Adaptive Water Governance: Assessing the Institutional Prescriptions of Adaptive (Co-)Management from a Governance Perspective and Defining a Research Agenda. *Ecology and Society*, 14(1).

Hurlimann, A. & Dolnicar, S., 2010. Acceptance of water alternatives in Australia - 2009. *Water Science & Technology*, 61(8), pp.2137-42.

Hurlimann, A. & Dolnicar, S., 2010. When public opposition defeats alternative water projects - The case of Toowoomba Australia. *Water Research*, 44, pp.287-97.

Hurlimann, A. & Dolnicar, S., 2012. Newspaper coverage of water issues in Australia. *Water Research*, 46, pp.6497-507.

Hurlimann, A. & McKay, J., 2004. Attitudes to reclaimed water for domestic use: Part 2. Trust. *Water, Journal of the Australian Water Association*, 31(5), pp.40-45.

IAP2, 2015. *Code of ethics*. [Online] Available at: www.iap2.org.au/about-us/about/code-of-ethics [Accessed 27 July 2015].

International Association for Public Participation 2, 2006. *IAP2's Public Participation Toolbox*. [Online] Available at: http://c.ymcdn.com/sites/www.iap.org/resources/resmgr/imported/06Dec_Toolbox.pdf [Accessed 8 Nov 2014].

Involve, 2005. *People & Participation How to put citizens at the heart of decision-making*. London: Involve.

Involve, 2015. *Methods*. [Online] Available at: <http://participationcompass.org/article/index/method> [Accessed 20 July 2015].

Ison, R., Röling, N. & Watson, D., 2007. Challenges to science and society in the sustainable management and use of water: investigating the role of social learning. *Environmental Science & Policy*, 10, pp.499-511.

Jansky, L., Sklarew, D.M. & Uitto, J.I., 2005. Enhancing public participation and governance in water resources management. In L. Jansky & J.I. Uitto, eds.

Enhancing Participation and Governance in Water Resources Management: Conventional Approaches and Information Technology. 1st ed. New York: United Nations University Press. p.3.

Jinnings, J., van Slobbe, E. & Röling, N., 2007. The organisation of social learning in response to perceptions of crisis in the water sector of The Netherlands. *Environmental Science & Policy*, 10, pp.526-36.

Johnson, B.B. & Chess, C., 2006. From the Inside Out: Environmental Agency Views about Communications with the Public. *Risk Analysis*, 26(5), pp.1395-407.

Jolibert, C. & Wesselink, A., 2012. Research impacts and impact on research in biodiversity conservation: The influence of stakeholder engagement. *Environmental Science & Policy*, 22, pp.100-11.

Kallis, G. et al., 2009. Beyond the manual: Practicing deliberative visioning in a Greek island. *Ecological Economics*, 68, pp.979-89.

Kallis, G. et al., 2006. Participatory methods for water resources planning. *Environment and Planning C: Government and Policy*, 24, pp.215-34.

Kelay, T. et al., 2008. *TECHNEAU WA 6 Report: Stakeholder Interviews*. TECHNEAU.

Ker Rault, P.A. & Jeffrey, P.J., 2008. Deconstructing public participation in the Water Framework Directive: implementation and compliance with the letter or with the spirit of the law? *Water and Environment Journal*, 22, pp.241-49.

Kiisel, M., 2013. Local Community Participation in the Planning Process: A Case of Bounded Communicative Rationality. *European Planning Studies*, 21(2), pp.232-50.

Kinnersley, D., 1998. Privatized water services in England and Wales: a mixed verdict after nearly a decade. *Water Policy*, 1, pp.67-71.

- Klenk, N.L. & Hickey, G.M., 2011. A virtual and anonymous, deliberative and analytic participation process for planning and evaluation: The Concept Mapping Policy Delphi. *International Journal of Forecasting*, 27, pp.152-65.
- Koontz, T.M., 2005. We finished the plan, so now what? Impacts of collaborative stakeholder participation on land use policy. *The Policy Studies Journal*, 33, pp.459-81.
- Kracman, B., Martin, R. & Sztajn bok, P., 2001. The Virginia Pipeline: Australia's largest water recycling project. *Water Science and Technology*, 43(10), pp.35-42.
- Kreuger, R.A. & Casey, M.A., 2000. *Focus groups: A practical Guide for Applied Research*. 3rd ed. Thousand Oaks, CA: SAGE.
- Lach, D., Rayner, S. & Ingram, H., 2005. Taming the waters: strategies to domesticate the wicked problems of water resource management. *International Journal of Water*, 3(1), pp.1-17.
- Lamers, M., Ottow, B., Francois, G. & von Korff, Y., 2010. Beyond Dry Feet? Experiences from a Participatory Water-Management Planning Case in The Netherlands. *Ecology and Society*, 15(1).
- Laurian, L. & Shaw, M.M., 2009. Evaluation of Public Participation: The Practices of Certified Planners. *Journal of Planning Education and Research*, 28, pp.293-309.
- Law, I.B., 1996. Rouse Hill - Australia's first full scale domestic non-potable reuse application. *Water Science and Technology*, 33(10-11), pp.71-78.
- Lawrence, A., 2006. No personal motive? volunteers, biodiversity and the false dichotomies of participation. *Ethics, Place and Environment*, 9, pp.279-98.
- Leach, W.D., 2006. Collaborative Public Management and Democracy: Evidence from Western Watershed Partnerships. *Public Administration Review*, pp.100-10.

- Leach, S. & Wingfield, M., 1999. Public Participation and the democratic renewal agenda: Prioritisation or marginalisation? *Local Government Studies*, 25, pp.46-59.
- Legard, R., Keegan, J. & Ward, K., 2003. In-depth Interviews. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice*. London: Sage. pp.138-69.
- Leist, A. & Holland, A., 2000. *Conceptualising Sustainability*. Policy Brief 5. Cambridge Research for the Environment.
- Lennox, J., Proctor, W. & Russel, S., 2011. Structuring stakeholder participation in New Zealand's water resource governance. *Ecological economics*, 70, pp.1381-94.
- Lewis, J., 2003. Design Issues. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice*. London: Sage. pp.47-76.
- Lewis, J. & Ritchie, J., 2003. Generalising from Qualitative Research. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice: A guide for social science students and researchers*. London: SAGE. pp.263-86.
- Lincoln, Y.S. & Guba, E.G., 1994. *Naturalistic Inquiry*. 2nd ed. Newbury Park, CA: SAGE.
- Littlechild, S., 2010. *A customer consultation process for the water and sewerage sectors A paper for OFWAT*. [Online] Available at: http://www.ofwat.gov.uk/publications/commissioned/rpt_com_1010fplconsult.pdf [Accessed 20 February 2015].
- Littlechild, S., 2011. *Regulation, customer protection and customer engagement*. [Online] Available at: <https://www.repository.cam.ac.uk/handle/1810/242038> [Accessed 20 February 2015].
- Lynam, T. et al., 2007. A Review of Tools for Incorporating Community Knowledge, Preferences, and Values into Decision Making in Natural Resources Management. *Ecology and Society*, 12(1).

- Mackenzie, J., Tan, P., Hoverman, S. & Baldwin, C., 2012. The value and limitations of Participatory Action Research methodology. *Journal of Hydrology*, 474, pp.11-21.
- Maiello, A., Viegas, C.V., Frey, M. & Ribeiro, J.D., 2013. Public managers as catalysts of knowledge co-production? Investigating knowledge dynamics in local environmental policy. *Environmental Science & Policy*, 27, pp.141-50.
- Makropoulos, C.K. & Butler, D., 2010. Distributed Water Infrastructure for Sustainable Communities. *Water Resources Management*, 24, pp.2795-816.
- Mason, J., 2002. *Qualitative Researching*. 2nd ed. London: Sage.
- Maxwell, J.A., 1996. *Qualitative Research Design: An Interactive Approach*. Thousand Oaks: Sage.
- Maxwell, J.A., 2012. *A realist approach for qualitative research*. Thousand Oak, CA, USA: Sage Publications.
- McIntosh, B.S. & Taylor, A., 2013. Developing T-shaped water professionals: reflections on a framework for building capacity for innovation through collaboration, learning and leadership. *Water Policy*, 15, pp.42-60.
- Michener, V., 1998. The participatory approach: contradiction and co-operation in Burkina Faso. *World Development*, 26, pp.2105-18.
- Millward, L., 2012. Focus Groups. In G.M. Breakwell, J.A. Smith & D.B. Wright, eds. *Research Methods in Psychology*. London: Sage. pp.411-39.
- Mostert, E. et al., 2010. Social Learning in European River-Basin Management: Barriers and Fostering Mechanisms from 10 River Basins. *Ecology and Society*, 12(1).
- Munda, G., 2000. *Conceptualising and responding to complexity*. Policy Brief 2. Cambridge Research for the Environment.
- Munda, G., 2004. Social multi-criteria evaluation: Methodological foundations and operational consequences. *European Journal of Operational Research*, 158, pp.662-77.

New Economics Foundation, 1998. *Participation Works*. [Online] Available at: <http://www.neweconomics.org/publications/entry/participation-works> [Accessed 22 February 2015].

New Economics Foundation, 1998. *Participation works! 21 techniques of community participation for the 21st century*. New Economics Foundation.

New Economics Foundation, 2010. *Crowdwise: Turning differences into effective decisions*. New Economics Foundation.

Newig, J. et al., 2008. The Role of Formalisation, Participation and Context in the Success of Public Involvement Mechanisms in Resource Management. *Systemic Practice and Action Research*, 21(6), pp.423-41.

Newig, J., Haberl, H., Pahl-Wostl, C. & Rothman, D.S., 2008. Formalised and Non-Formalised Methods in Resource Management - Knowledge and Social Learning in Participatory Processes: An Introduction. *Systemic Practice and Action Research*, 21, pp.381-87.

Niemeyer, S. & Spash, C.L., 2001. Environmental valuation analysis, public deliberation, and their pragmatic syntheses: a critical appraisal. *Environmental and Planning C: Government and Policy*, 19, pp.567-85.

North West Customer Challenge Group, 2013. *Customer Challenge Group*. [Online] Available at: <http://corporate.unitedutilities.com/CCG.aspx> [Accessed Dec 2013].

Northumbrian Water Forum, 2013. *Review of Customer Engagement*. [Online] Available at: https://www.nwl.co.uk/assets/documents/review_of_customer_engagement_final.pdf [Accessed Dec 2013].

Novick, G., 2008. Is There a Bias Against Telephone Interviews In Qualitative Research? *Research in Nursing & Health*, 31(4), pp.391-98.

Ofwat & Defra, 2006. *The Development of the Water Industry in England and Wales*. Birmingham: Ofwat Ofwat.

Ofwat, 2008. *Setting Price Limits for 2010-2015: Framework and approach*. [Online] Birmingham: Ofwat Available at: https://www.ofwat.gov.uk/pricereview/pap_pos_pr09method080327.pdf

[Accessed 27 July 2015].

Ofwat, 2010. *Lessons from our approach to setting price limits (PR09)*. [Online] Available at: https://www.ofwat.gov.uk/pricereview/pr09phase4/pap_pos_20101217pr09lessons.pdf

[Accessed July 2015 2015].

Ofwat, 2011. *Involving customers in price setting - Ofwats customer engagement policy statement*. Birmingham: Ofwat Ofwat.

Ofwat, 2011. *Ofwat's climate change adaptation report*. Birmingham: Ofwat Ofwat.

Ofwat, 2013. *Setting price controls for 2015-20 - final methodology and expectations for companies' business plans*. [Online] Available at: http://www.ofwat.gov.uk/pricereview/pr14/pap_tec140404pr14internalmeth.pdf.

Ofwat, 2014. *2014 price review risk-based review - internal methodology*. [Online] Available at: http://www.ofwat.gov.uk/pricereview/pr14/pap_tec140404pr14internalmeth.pdf

[Accessed 27 July 2015].

Ofwat, 2014. *Our duties*. [Online] Available at: www.ofwat.gov.uk/aboutofwat/duties [Accessed 27 July 2015].

Ofwat, 2014. *Setting price controls for 2015-20 - pre-qualification decisions*. Pre-qualification decisions. Birmingham: Ofwat Ofwat.

Ofwat, 2015. *Water companies*. [Online] Available at: <https://www.ofwat.gov.uk/industryoverview/today/watercompanies> [Accessed 27 July 2015].

Ogoshi, M., Suzuki, Y. & Asano, T., 2001. Water reuse in Japan. *Water Science and Technology*, 43(10), pp.17-23.

- Okali, C., Sumberg, J. & Farrington, J., 1994. *Farmer Participatory Research: Rhetoric and Reality*. 1st ed. London: Overseas Development Institute.
- O'Neill, J., 2002. Socialist Calculation and Environmental Valuation: Money, Markets and Ecology. *Science & Society*, 66(1), pp.137-51.
- O'Neill, J. & Spash, C.L., 2000. Appendix: Policy Research Brief Conceptions of Value in Environmental Decision-making. *Environmental Values*, 9, pp.521-36.
- Oppenheim, A.N., 1992. *Questionnaire Design, Interviewing and Attitude Measurement*. 2nd ed. London: Pinter.
- Oxley-Green, A. & Hunton-Clarke, L., 2003. A Typology of Stakeholder Participation for Company Environmental Decision-Making. *Business Strategy and the Environment*, 12, pp.292-99.
- Ozerol, G. & Newig, J., 2008. Evaluating the success of public participation in water resources management: five key constituents. *Water Policy*, 10, pp.639-55.
- Page, B. & Bakker, K., 2005. Water governance and water users in a privatised water industry: participation in policy-making and in water services provision: a case study of England and Wales. *International Journal of Water*, 3(1), pp.38-60.
- Pahl-Wostl, C., 2009. A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Global Environmental Change*, 19, pp.354-65.
- Pahl-Wostl, C. et al., 2007. Social Learning and Water Resources Management. *Ecology and Society*, 12(2).
- Pahl-Wostl, C., Jeffrey, P., Isendahl, N. & Brugnach, M., 2011. Maturing the New Water Management Paradigm: Progressing from Aspiration to Practice. *Water Resources Management*, 25, pp.837-56.

- Pahl-Wostl, C. et al., 2003. Investigating consumer attitudes towards the new technology of urine separation. *Water Science and Technology*, 48(1), pp.57-65.
- Partidario, M.R. & Sheate, W.R., 2013. Knowledge brokerage - potential for increased capacities and shared power in impact assessment. *Environmental Impact Assessment Review*, 39, pp.26-36.
- Patton, M.Q., 1990. *Qualitative evaluation and research methods*. 2nd ed. Beverley Hills, CA: SAGE.
- Patton, M.Q., 2002. *Qualitative Research and Evaluation Methods*. 3rd ed. Thousand Oaks, CA: Sage.
- Pennell, K.G. et al., 2013. Bridging Research and Environmental Regulatory Processes: The Role of Knowledge Brokers. *Environmental Science & Technology*, 47, pp.11985-92.
- Petts, J., 2001. Evaluating the Effectiveness of Deliberative Processes: Waste Management Case-studies. *Journal of Environmental Planning and Management*, 44(2), pp.207-26.
- Petts, J., 2005. Enhancing Environmental Equity through Decision-Making: Learning from Waste Management. *Local Environment*, 10(4), pp.397-409.
- Petts, J., Homan, J. & Pollard, S., 2003. *Involving lay audiences in environmental decisions on risk: Literature review and stakeholder interviews*. R&D Technical Report. Bristol: Environment Agency Centre for Environmental Research and Training, Univeristy of Birmingham.
- Petts, J. & Leach, B., 2000. *Evaluating Methods for Public Participation: Literature Review*. Bristol: Environment Agency.
- Phillipson, J., Lowe, P., Proctor, A. & Ruto, E., 2012. Stakeholder engagement and knowledge exchange in environmental research. *Journal of Environmental Mangement*, 95, pp.56-65.

- Pidgeon, N. & Rodgers-Hayden, T., 2007. Moving engagement 'upstream'? Nanotechnologies and the royal society and royal academy of engineering's inquiry. *Public Understanding of Science*, 16(3), pp.345-64.
- Po, M. et al., 2005. *Predicting Community Behaviour in Relation to Wastewater Reuse: What Drives Decisions to Accept or Reject?* Perth: CSIRO CSIRO.
- Portsmouth Water Customer Challenge Group, 2013. *Business Plan CCG Archived Documents*. [Online] Available at: <https://www.portsmouthwater.co.uk/wp-content/uploads/2015/02/73E8B143-2E5C-4646-9868-CC05782BFE7C.pdf> [Accessed Dec 2013].
- Radcliffe, J.C., 2010. Evolution of water recycling in Australian cities since 2003. *Water Science & Technology*, 62(4), pp.792-802.
- Rauschmayer, F. & Wittmer, H., 2006. Evaluating deliberative and analytical methods for the resolution of environmental conflicts. *Land Use Policy*, 23, pp.108-22.
- Ravetz, J., 2005. The post-normal sciences of precaution. *Water Science & Technology*, 52(6), pp.11-17.
- Raymond, C.M. et al., 2010. Integrating local and scientific knowledge for environmental management. *Journal of Environmental Management*, 91, pp.1766-77.
- Raymond, C.M. & Robinson, G.M., 2013. Factors affecting rural landholders' adaptation to climate change: Insights from formal institutions and communities of practice. *Global Environmental Change*, 23, pp.103-14.
- Reed, M.S., 2008. Stakeholder participation for environmental management: A literature review. *Biological Conservation*, 141, pp.2417-31.
- Reed, M.S. et al., 2013. Knowledge Management for Land Degradation Monitoring and Assessment: An Analysis of Contemporary Thinking. *Land Degradation & Development*, 24, pp.307-22.

- Renn, O. et al., 1993. Public participation in decision-making: A three step procedure. *Policy Sciences*, 26, pp.189-214.
- Richards, C., Blackstock, K. & Carter, C., 2004. *Practical Approaches to Participation*. Policy Research Brief 1. Macaulay Institute.
- Ritchie, J., 2003. The Applications of Qualitative Methods to Social Research. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice*. London: Sage. pp.24-46.
- Ritchie, J., Lewis, J. & Elam, G., 2003. Designing and Selecting Samples. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice*. London: Sage. pp.77-108.
- Ritchie, J., Spencer, L. & O'Connor, W., 2003. Carrying out Qualitative Analysis. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice*. London: SAGE. pp.219-62.
- Rittel, H. & Webber, M., 1973. Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), pp.155-69.
- Robinson, K.G., Robinson, C.H. & Hawkins, S.A., 2005. Assessment of public perception regarding wastewater reuse. *Water Science and Technology: Water Supply*, 5(1), pp.59-65.
- Robson, C., 2002. *Real World Research*. 2nd ed. Oxford: Blackwell.
- Roux, D.J. et al., 2006. Bridging the Science-Management Divide: Moving from unidirectional knowledge transfer to knowledge interfacing and sharing. *Ecology and Society*, 11(1).
- Rowe, G. & Frewer, L.J., 2000. Public Participation Methods: A Framework for Evaluation. *Science, Technology, & Human Values*, 25(1), pp.3-29.
- Rowe, G. & Frewer, L.J., 2004. Evaluating Public-Participation Exercises: A Research Agenda. *Science, Technology, & Human Values*, 29(4), pp.512-56.
- Rowe, G. & Frewer, L.J., 2005. A Typology of Public Engagement Mechanisms. *Science, Technology, & Human Values*, 30(2), pp.251-90.

- Rowe, G., Marsh, R. & Frewer, L.J., 2004. Evaluation of a Deliberative Conference. *Science Technology Human Values*, 29, pp.88-121.
- Rubin, H.J. & Rubin, I.S., 1995. *Qualitative Interviewing: The Art of Hearing Data*. Thousand Oaks, CA: Sage.
- Russell, S. & Lux, C., 2009. Getting over yuck: moving from psychological to cultural and sociotechnical analyses of responses to water recycling. *Water Policy*, 11, pp.21-35.
- Söderholm, P., 2001. The Deliberative Approach in Environmental Valuation. *Journal of Economic Issues*, 35(2), pp.487-95.
- Saengsupavanich, C., Gallardo, W.G., Sajor, E. & Murray, W.W., 2012. Constraints influencing stakeholder participation in collective environmental management. *Environmental Earth Sciences*, 66(7), pp.1817-29.
- Sagoff, M., 1998. Aggregation and deliberation in valuing environmental public goods: a look beyond contingent pricing. *Ecological Economics*, 24, pp.213-30.
- Santos, S.L. & Chess, C., 2003. Evaluating Citizen Advisory Boards: The Importance of Theory and Participant-Based Criteria and Practical Implications. *Risk Analysis*, 23(2), pp.269-79.
- Savin-Baden, M. & Howell – Major, C., 2013. *Qualitative Research: The essential guide to theory and practice*. Abingdon, UK: Routledge.
- Seale, C., 1999. *The Quality of Qualitative Research*. London: Sage.
- Severn Trent Water Forum, 2013. *Water Forum*. [Online] Available at: <https://www.stwater.co.uk/waterforum> [Accessed Dec 2013].
- Sheikheldin, G., Krantzberg, G. & Schaefer, K., 2010. Science-Seeking Behaviour of Conservation Authorities in Ontario. *Environmental Management*, 45, pp.912-21.
- Shelaf, G. & Asov, Y., 1996. The coming era of intensive wastewater reuse in the Mediterranean region. *Water Science and Technology*, 33(10-11), pp.115-25.

- Skeffington Report, 1969. *Report of the Committee on Public Participation in Planning: People and Planning*. London: HMSO.
- Skellett, C., 1995. Understanding and meeting the needs of our customers. *Managing Service Quality*, 5(4), pp.22-24.
- Smith, J.A. & Osborn, M., 2008. Interpretative phenomenological analysis. In J.A. Smith, ed. *Qualitative Psychology*. 2nd ed. London: SAGE. pp.53-80.
- Smith, H.M., Rutter, P. & Jeffrey, P., 2015. Public perceptions of recycled water: a survey of visitors to the London 2012 Olympic Park. *Journal of Water Reuse and Desalination*, 5(2), pp.189-95.
- Snape, D. & Spencer, L., 2003. The Foundations of Qualitative Research. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice*. London: Sage. pp.1-23.
- Soderholm, P., 2001. The Deliberative Approach in Environmental Valuation. *Journal of Economic Issues*, 35(2), pp.487-95.
- South Staffs Water PLC Customer Challenge Group , 2013. *Customer Challenge Group*. [Online] Available at: https://www.south-staffs-water.co.uk/about_us/meetings.asp [Accessed Dec 2013].
- Southern Water Customer Challenge Group, 2013. *Report to Ofwat*. Southern Water Customer Challenge Group.
- Southern Water, 2009. *PR09 Final Business Plan*. [Online] Available at: https://www.southernwater.co.uk/media/default/PDFs/FBPSectionCPub_Sec1.pdf [Accessed 26 July 2015].
- Spash, C., 2001. Editorial: Broadening democracy in environmental policy process. *Environmental and Planning C: Government and Policy*, 19, pp.475-81.
- Spash, C.L., 2007. Deliberative monetary valuation (DMV): Issues in combining economic and political processes to value environmental change. *Ecological Economics*, 63, pp.690-99.

- Spash, C.L., 2008. Deliberative Monetary Valuation and the Evidence for a New Value Theory. *Land Economics*, 83(3), pp.469-88.
- Spash, C.L., 2011. Social Ecological Economics: Understanding the Past to See the Future. *American Journal of Economics and Sociology*, 70(2), pp.340-75.
- Spash, C.L., Stagl, S. & Getzner, M., 2005. Exploring alternatives for environmental valuation. In C.L. Spash & S. Stagl, eds. *Environmental Valuation*. London: Routledge. pp.1-27.
- Spencer, L., Ritchie, J. & O'Connor, W., 2003. Analysis: Practices, Principles and Processes. In J. Ritchie & J. Lewis, eds. *Qualitative Research Practice*. London: SAGE. pp.199-218.
- Spiller, M., McIntosh, B.S., Seaton, R.A.F. & Jeffrey, P.J., 2012. An organisational innovation perspective on change in water and wastewater systems - the implementation of the Water Framework Directive in England and Wales. *Urban Water Journal*, 9(2), pp.113-28.
- Stagl, 2007. *SDRN Rapid Research and Evidence Review on Emerging Methods for Sustainability Valuation and Appraisal*. [Online] Available at: https://www.pik-potsdam.de/news/public-events/archiv/alter-net/former-ss/2007/11-09.2007/stagl/literature/stagl_2007.pdf [Accessed 26 July 2015].
- Stirling, A., 2006. Analysis, participation and power: justification and closure in participatory multi-criteria analysis. *Land Use Policy*, 23, pp.95-107.
- Stirling, A., 2008. "Opening Up" and "Closing Down" Power, Participation, and Pluralism in the Social Appraisal of Technology. *Science, Technology, & Human Values*, 33(2), pp.262-94.
- Strauss, A. & Corbin, J., 1998. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. 2nd ed. Thousand Oaks, CA: SAGE.

- Sturges, J.E. & Hanrahan, K.J., 2004. Comparing telephone and face-to-face qualitative interviewing: A research note. *Qualitative Research*, 4(1), pp.107-18.
- Sultana, F., 2007. Reflexivity, positionality and participatory ethics; negotiation fieldwork dilemmas in international research. *ACME: An international E-Journal for Critical Geographies*, 6(3), pp.374-85.
- Sutton and East Surrey Water Customer Challenge Group, 2013. *Customer Challenge Group*. [Online] Available at: http://www.waterplc.com/userfiles/file/CCG_Business_Plan_Report.pdf [Accessed Dec 2013].
- Tewdwr-Jones, M. & Allmendinger, P., 1998. Deconstructing communicative rationality: a critique of Habermasian collaborative planning. *Environment and Planning A*, 30, pp.1975-89.
- Thames Water Customer Challenge Group, 2013. *Customer Challenge Group*. [Online] Available at: <http://www.thameswater.co.uk/haveyoursay/16997.htm> [Accessed Dec 2013].
- Thomas, D.R., 2006. A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American Journal of Evaluation*, 27(2), pp.237-46.
- Tonkiss, F., 2000. Analysing Discourse. In C. Seale, ed. *Researching Society and Culture*. London: SAGE.
- Tuler, S. & Webler, T., 1999. Voices from the Forest: What Participants Expect of a Public Participation Process. *Society & Natural Resources*, 12, pp.437-53.
- UNDP, 1997. *Empowering people - A guide to participation*. [Online] Available at: <http://portals.wi.wur.nl/files/docs/ppme/UNDPCSOPP-EmpoweringPeople-GuidetoParticipation.pdf> [Accessed 17 July 2015].
- United Nations, 1992. *The Rio Declaration on Environment and Development*. Rio de Janeiro: United Nations Conference on Environment and Development United Nations Conference on Environment and Development.

United Utilities, 2009. *PR09 Final Business Plan*. [Online] Available at: http://corporate.unitedutilities.com/documents/C1_consumers_views.pdf [Accessed 26 July 2015].

US EPA, 1972. *Summary of the Clean Water Act*. [Online] Available at: <http://www2.epa.gov/laws-regulations/summary-clean-water-act> [Accessed 13 May 2013].

Van Wyk, E., Roux, D.J., Drackner, M. & McCool, S.F., 2008. The Impact of Scientific Information on Ecosystem Management Making Sense of the Contextual Gap Between Information Providers and Decision Makers. *Environmental Management*, 41, pp.779-91.

Väntänen, A. & Marttunen, M., 2005. Public involvement in multi-objective water level regulation development projects- evaluating the applicability of public involvement methods. *Environmental Impact Assessment Review*, 25, pp.281-304.

Von Korff, Y. et al., 2012. Implementing Participatory Water Management: Recent Advances in Theory, Practice, and Evaluation. *Ecology and Society*, 17(1).

Walker, G.B. & Daniels, S.E., 2001. Natural Resource Policy and the Paradox of Public Involvement. *Journal of Sustainable Forestry*, 13(1-2), pp.253-69.

Water Act, 1973.

Water Act, 2003. London: Her Majesty's stationary office.

Water Industry Act, 1991. London: Her Majesty's stationary office.

WaterFuture Customer Panel, 2013. *Business Plan 2020*. [Online] Available at: <http://waterfuture.southwestwater.co.uk/wfcp-report> [Accessed Dec 2013].

Webler, T., 1995. "Right" Discourse in Citizen Participation: An evaluative yardstick. In Renn, O., Webler, T. & Wiedelmann, P. *Fairness and Competence in Citizen Participation: Evaluating Models for Environmental Discourse*. Boston, MA: Kluwer Academic Press. pp.35-86.

- Webler, T. & Tuler, S., 2000. Fairness and Competence in Citizen Participation: Theoretical Reflections from a Case Study. *Administration & Society*, 32, pp.566-95.
- Webler, T. & Tuler, S., 2001. Public Participation in the Watershed Management Planning: Views on Process from People in the Field. *Research in Human Ecology*, 8(2), pp.29-39.
- Webler, T. & Tuler, S., 2010. How preferences for public participation are linked to perceptions of the context of preferences for outcomes and individual characteristics. *Environmental management*, 46, pp.254-67.
- Weick, K., 1995. *Sensemaking in organization*. Thousand Oaks, California, USA: Sage Publications.
- Wenger, E., 1998. *Communities of practice: learning, meaning and identity*. Cambridge, UK: Cambridge University Press.
- Wesselink, A., Paavola, J., Fritsch, O. & Renn, O., 2011. Rationales for public participation in environmental policy and governance: practitioners' perspectives. *Environment and Planning*, 43(11), pp.2688-704.
- Wessex Water Customer Scrutiny Group, 2013. *Report to Ofwat on Wessex Water's 2015-2020 Business Plan*. [Online] Available at: http://wessexwater.co.uk/uploadedFiles/Corporate_Site/CSG%20Report%20to%20Ofwat.pdf [Accessed Dec 2013].
- Wilcox, D., 1994. *The Guide to Effective Participation*. [Online] Available at: www.partnerships.org.uk/guide/index.htm [Accessed 20 February 2015].
- Willis, K.G., Scarpa, R. & Acutt, M., 2005. Assessing water company preferences and willingness to pay for service improvements: a stated choice analysis. *Water Resources Research*, 41.
- Wilson, M.A. & Howarth, R.B., 2002. Discourse based valuation of ecosystems services: establishing fair outcomes through group deliberation. *Ecological economics*, 41, pp.431-43.

Yorkshire Water Customer Forum, 2103. *Yorkshire water Customer Forum Report*. [Online] Available at: <https://www.yorkshirewater.com/sites/default/files/Customer%20Forum%20Report.pdf> [Accessed Dec 2013].

APPENDICES

Appendix A Literature review – supporting tables

A1 Participatory mechanisms

Table A1-1 A review of participatory mechanism

1:1 stakeholder sessions ^{18,20,22,23,25}	Consultative panel ⁸	Human-scale development initiative ⁸	Participatory appraisal ^{2,3,4,6,8}	Social multicriteria evaluation ⁷
21 st century town meeting ⁶	Conversation café's ⁶	Imagine! ^{4,8}	Participatory budgeting ^{2,6}	Samoan circles ¹
Act Create Experience (ACE) ^{4,8}	Country shows ¹⁰	In-depth interviews ^{10,12,13,18,20,21,25}	Participatory GIS ^{2,6}	Speaker engagements ^{19,21,22,25}
Action learning ⁶	Crowdwise ^{5,6}	Informal meetings ²	Participatory strategic planning ^{3,4,6,8}	Staffed displays ²
Action planning ^{4,6,8}	Customer jury day ¹¹	Information kiosk ¹	Participatory theatre ^{4,8}	Stakeholder analysis ^{2,7}
Advertisements ²	Customer workshop ¹⁰	Initiatives ⁸	Participatory video ⁶	Stakeholder conference ²⁵
Advisory groups ^{1,2}	Deliberative dialogues ¹	Internet survey ^{1,2}	Planning balance sheet ⁸	stakeholder day ¹⁴
Appreciative inquiry ^{1,3,6}	Deliberative forum ^{9,21}	Interviews ^{1,2}	Planning cell ⁸	Stakeholder forum ^{21,23}
Arbitration ⁸	Deliberative groups ²⁵	Issues, aims, expectations, challenges and dialogues in a day ⁸	Planning for real ^{2,3,4,6,8}	Stakeholder workshops ^{9,17,20,22}
Area forums ⁶	Deliberative mapping ^{3,6,7}	Kitchen table meetings ¹	Policy capturing ⁸	Structured interviews ²²
Briefings ^{1,2}	Deliberative monetary valuation ⁷	Leaflets ^{1,2,8}	Policy Delphi ⁸	Study circles ^{1,8}
Broad-based organising ⁸	Deliberative opinion poll ⁸	Learning service team ⁸	Poster ¹⁸	Surgeries ²
Budget simulator	Deliberative polling ^{1,3,6}	Letters ^{18,21,25}	Presentations ²	Surveys ^{2,8}

online tool ¹⁰				
Charettes ^{1, 2, 6, 8}	Deliberative workshops ^{6, 9, 10, 15}	Libraries ¹	Priority search ⁸	Symposia ¹
Choices method ^{4, 8}	Delphi process ^{1, 2, 6}	Live online panel ²¹	Priority setting committee	Talkworks ^{4, 8}
Citizen advisory group ^{6, 8}	Democs ^{3, 6}	Local sustainability model ^{4, 8}	Public hearings ^{1, 2, 8}	Task force ^{1, 2, 8}
Citizen advocacy ⁸	Design-in ⁸	Magazine ¹⁹	Public information programs ⁸	Team syntegrity ^{4, 8}
Citizen dinner ⁸	Dialogue ^{1, 6}	Mailed surveys ¹	Public meetings ^{1, 2, 8}	Tele-polling ⁸
Citizen employment ⁸	Displays ²	Media ^{1, 2}	Published article ¹⁹	Tele-voting ⁸
Citizen Honoraria ⁸	Drop in sessions ^{9, 21}	Media pack ²²	Qualitative online survey ^{20, 22}	Telephone survey ^{1, 2}
Citizen Juries ^{1, 2, 3, 4, 8}	Drop-in centre ⁸	Media-based issue balloting ⁸	Qualitative telephone interview ^{12, 21, 22, 23, 25}	Television ⁸
Citizen panel ^{3, 6, 8}	E-shot communication ²²	Mediation ⁶	Quantitative survey ^{10, 17, 26, 18, 19, 21}	Three-stage multicriteria analysis ⁷
Co-option ⁸	Electronic democracy ²	Meeting community sponsored ⁸	Quantitative survey - cognitive testing ^{9, 11, 19, 20, 21, 24}	Time dollars ⁸
Co-ordinator catalyst ⁸	Electronic processes ³	Meetings with existing groups ¹	Quantitative survey - face-to-face interview ^{9, 10, 12, 13, 14, 15, 11, 20, 21, 22, 24, 25}	Tours and field trips ¹
Co-production ⁶	Emails and websites ^{1, 2, 8, 18, 19, 22}	Menu-driven valuation ²⁶	Quantitative survey - online ^{9, 10, 14, 11, 17, 20, 21, 22, 23, 25}	Town meetings ^{1, 8}
Co-View ²	Empowerment networks ³	Microsite ²⁵	Quantitative survey - paper ^{11, 19, 23}	Trade-off analysis ²
Comment forms ¹	Enspirited envisioning ^{4, 8}	Multicriteria mapping ⁷	Quantitative survey - telephone	User management services ⁸

			interview ^{9,12,13,14,11,19,20,16,21,23,25}	
Community appraisals ^{4, 6,8}	Environment forum ⁹	Negotiated rule making	Question and answer session ⁸	User panels ^{3, 6}
Community events ^{18,20,}	Ethnography ¹⁰	Neighbourhood meeting ⁸	Questionnaires ²	Value analysis ⁸
Community facilitators ¹	Exhibitions ^{8,21,23}	Neighbourhood planning council ⁸	Radio advertisements ^{9,18,19,20,21,22,23,}	Video ²⁵
Community forum ⁸	Expert panels ¹	Newsletters ^{8,18}	Random selected participation groups ⁸	Vision to action ⁸
Community group meetings ^{21,}	Extended focus groups ²⁵	Nominal group technique ²	Real time strategic change ⁸	Visioning ^{2, 8}
Community indicators ^{4, 8}	Fairs and events ^{1, 2}	Ombudsman ⁸	Reconvened focus groups ^{14,26,20,25}	Water summit ¹⁰
Community intelligence ²¹	Feedback registers ¹	One to one survey ¹	Referendum ⁸	Web consultation and feedback ^{9,10,12,14,15,17,18,19,16,21,22,23,24}
Community issue groups ²	Field centres ¹	Online customer engagement tool ¹⁹	Reports ¹	Web-based meetings ¹
Community management plans ⁸	Finding-home ⁸	Online forum ^{17,22}	Response cards ²	Website forum ¹⁰
Community networks ²³	Fishbowl processes ^{1, 8}	Online interview ²²	Revealed preference ^{10,17,19,21}	Whole system analysis Value analysis ⁸
Community plans ⁸	Focus groups ^{1, 2, 6, 8,9,10,12,13,14,15,17,26,18,19,20,16,22,23,21,24,25}	Online panel survey ^{9,10,19,18,16,21,24}	Road show ^{17,19,21,23}	WTP - CAPI ^{9,12,13,14,21,22,23,25}
Community strategic plans ⁸	Focused conversations ¹	Online polling ¹	Round-table discussions ¹⁷	WTP - CATI ^{9,13,16,25}
Community	Forums ^{2, 6}	Online qualboard ²⁵	Round-table workshops ^{4, 8}	WTP - cognitive

workshops ²¹				testing ^{9,12,17,19,20,16,21,22,}
Complaints / suggestion schemes ⁸	Freephone ²¹	Open door policy ⁸	Scenario building ²	WTP - focus groups ^{9,14,17,16,21,22,25}
Computer assisted meetings ¹	Future search ^{1,3,4,8}	Open houses ^{1,2,8}	School group talks ²⁰	WTP - online ^{9,21,22}
Computer based techniques ⁸	Game simulation ⁸	Open space ^{1,2,3,4,6,8}	Semi-structured interviews ²²	WTP ^{10,11,17,26,18,19,20,21}
Consensus building ^{2,3,8}	Graphic recording ⁶	Opinion polling ^{6,8}	Shared decision-making ²	Working groups ²
Consensus conference ^{3,6,8}	Group discussions ^{11,12}	Panel meeting ¹⁰	Site visits ²	Workshops ^{1,2,17,20,16,21,22}
Consensus voting ⁶	Guided visualisation ^{4,8}	Panels ¹	Social audit ^{4,8}	World café's ^{1,6}
Consultation ^{8,9,10,17,18,19,16,21,22}	Hotlines ^{1,8}	Parish maps ^{4,8}	Social media ^{14,18,19,21,23}	Youth empowerment initiatives ³

¹ (International Association for Public Participation 2, 2006); ² (Forestry Commission, 2012)³ (Involve, 2005); ⁴ (New Economics Foundation, 1998); ⁵ (New Economics Foundation, 2010); ⁶ (Involve, 2015); ⁷ (Stagl, 2007); ⁸ (Rowe & Frewer, 2004); ⁹ (Affinity Water Customer Challenge Group, 2013); ¹⁰ (Anglian Water Customer Engagement Forum, 2013); ¹¹ (Bournemouth Water Customer Engagement Planning Forum, 2013); ¹² (Bristol Water Local Engagement Forum, 2013); ¹³ (Dee Valley Water Customer Challenge Forum, 2013); ¹⁴ (Northumbrian Water Forum, 2013); ¹⁵ (Portsmouth Water Customer Challenge Group, 2013); ¹⁶ (Sutton and East Surrey Water Customer Challenge Group, 2013); ¹⁷ (Severn Trent Water Forum, 2013); ¹⁸ (South Staffs Water PLC Customer Challenge Group, 2013); ¹⁹ (WaterFuture Customer Panel, 2013); ²⁰ (Southern Water Customer Challenge Group, 2013); ²¹ (Thames Water Customer Challenge Group, 2013); ²² (North West Customer Challenge Group, 2013); ²³ (Dwr Cymru Water Customer Challenge Group, 2013); ²⁴ (Wessex Water Customer Scrutiny Group, 2013); ²⁵ (Yorkshire Water Customer Forum, 2103)

A2 Participatory mechanisms – water utilities

Table A2-1 A comparison of participative mechanisms employed by water utilities in England and Wales at PR09 and PR14

	Atmity water (incl. Veolia South East, Veolia Central and Veolia water East at PR09)		Anglian (incl. Hartlepool Water)		Bristol Water		Dee Valley Water		Northumbrian (incl. Essex and Suffolk Water)		Portsmouth Water		SembCorp Bournemouth		Severn Trent Water		South East Water		South Staffs Water (incl. prev Cambridge Water)		South West Water		Southern Water		Sutton and East Surrey Water		Thames Water		United Utilities		Welsh Water		Wessex Water		Yorkshire Water					
	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14	PR09	PR14						
1:1 Stakeholder sessions																			X								X										X			
Analysis of existing customer contact data		X		X																		X																		
Analysis of existing customer research		X								X						X											X													
Budget simulator online tool				X																																				
Community events																			X																					
Community group meetings																											X													
Community intelligence (training of local people to collect																											X													

Quantitative survey - face-to-face interviews		X		X		X		X		X		X					X			X		X		X		X		X
Quantitative survey - paper										X						X							X					
Quantitative survey - online		X		X					X		X	X					X		X	X		X						X
Quantitative survey - telephone interview	X	X			X	X		X	X	X		X	X	X		X	X	X		X	X	X						X
Radio and Newspaper advertisements		X												X	X	X			X	X	X							
Re-convened focus groups								X					X				X		X									X
Revealed preference				X							X				X				X									
Road show											X				X				X				X					
Roundtable discussions											X																	
Semi-structured interviews																												X
Social media									X						X	X						X	X					
Speaker engagements															X							X	X					X

WTP - qualitative focus groups		X								X					X						X	X	X										X
WTP - qualitative telephone interviews										X																							
WTP - Stated preference survey	X			X	X	X		X				X	X	X	X	X	X	X	X	X	X	X	X			X			X	X	X		
WTP - Stated preference survey (CAPI)		X				X		X	X	X						X						X		X	X		X				X	X	
WTP - Stated preference survey (CATI)		X					X																X	X						X		X	
Workshops												X									X			X	X	X							
Written consultation and feedback		X			X							X				X	X				X		X	X	X								

A3 **Factors fostering and constraining knowledge management**

Table A3-1 A review of factors reported in the literature as fostering and constraining knowledge management

Factors identified to influence knowledge management	Description	Source in the literature
Expertise	<p>The level of expertise held by practitioners has the potential to impact what information is noticed and its organisation, representation and interpretation in planning and decision-making processes.</p> <p>(Fazey et al., 2005), identifies benefits associated with high levels of expertise which include: the recognition of features and patterns that are not noticed by novices; organisation of content knowledge around central ideas, which guide their thinking about certain situations; their ability to retrieve knowledge effortlessly with little demand on conscious attention. However, there are potential difficulties associated with high levels of expertise. In particular, issues may arise in helping others learn and their ability to adapt to deal with new situations. With participative outputs offering potentially new forms of knowledge this may pose challenges for practitioners with highly differentiated specialisations in the process of their use in planning and decision-making.</p>	(Fazey et al., 2005; Newig et al., 2008; Chess & Johnson, 2006; Johnson & Chess, 2006; Roux et al., 2006)
Sense making strategies	<p>Sensemaking is defined as the process by which people engage in various forms of information behaviours to bridge gaps in their understanding to achieve an end product that is comprehended explicitly comprised on knowledge, opinion, intuition and evaluation which serves as a springboard into action (Weick, 1995); (Genuis, 2012). Sense making is best facilitated in an interactive environment. Practitioner sense making models provide the context for the selection and/or rejection of information (Newig et al., 2008). A study by (Genuis, 2012) identified two modes of sense making: analytical or experiential.</p>	(Genuis, 2012; Dervin, 1998; Weick, 1995; Newig et al., 2008)
Quality / accuracy of	The quality and accuracy of raw information provided to practitioners	(Horlick-Jones et al., 2007)

raw information provided (translational quality)	effects their utilisation. In particular, (Horlick-Jones et al., 2007) states that it is an important determinant of translational quality i.e. the way in which conclusions are drawn from one stage of the process and become a source for subsequent stages	
Resource management	Participatory processes consume resources that may include: time, finances and staff. The (Association for Project Management, 2006) define resource management as “resources that have to be available at the right time, in the right quantities and of the right quality”. Resource management is commonly reported as a barrier to effective knowledge management.	(Horlick-Jones et al., 2007; Johnson & Chess, 2006; Mostert et al., 2010; Roux et al., 2006; Sheikheldin et al., 2010)
External politics	The political context that operates outside the sphere of the organisation / institution. This political context has been identified as placing considerable influence on shaping organisational responses to participative outputs.	(Johnson & Chess, 2006)
Perceptions of lay-knowledge	The introduction of lay-knowledge through the use of participative mechanisms has the potential to attract resistance as it challenges the legitimacy of existing knowledge and potentially undermines incumbent knowledge communities. Furthermore, a study by (Cotton & Devine-Wright, 2012) has found that practitioners often have negative perceptions of the quality of lay-knowledge with practitioners, which realigns the focus of knowledge to that of the experts and incumbent knowledge communities. Whilst these views may be a reflection of personal ideologies and attitudes, an organisational focus through top down influence has been suggested to address this issue.	(Johnson & Chess, 2006; Cotton & Devine-Wright, 2012)
Managerial influence	The influence of managers in organisations can play a major role in promoting or constraining knowledge management. Specific influences are identified as: being role models for sub-ordinate practitioners, defining the goals of the organisation and ensuring that practitioners fully embrace these through communicating organisational norms and values	(Mostert et al., 2010; Fazey et al., 2005)

	and promoting effective working relationships. Furthermore, their influence should extend to leading and structuring of work and the co-ordination of processes to facilitate knowledge management.	
Managerial support	The commitment and support of management within an organisation has been shown to influence effective knowledge management practices. It has been identified as a barrier to effective knowledge management within organisations and also as an important factor in promoting social learning.	(Johnson & Chess, 2006; Fazey et al., 2005)
Internal politics	The political context that operates within the sphere of the organisation / institution. This political context has been identified as placing considerable influence on shaping organisational responses to participative outputs.	(Johnson & Chess, 2006)
Skills	The skills held by practitioners, similar to expertise, affects knowledge seeking and knowledge processing behaviours. Skills that allow practitioners to effectively filter data are described as 'overlooked' by (Roux et al., 2006) and are particularly rare among managers, which has implications for knowledge management and its use in planning and decision-making.	(Johnson & Chess, 2006; Roux et al., 2006; Sheikheldin et al., 2010; Newig et al., 2008)
Culture differences	Cultural differences between communities of practitioners or organisational functions are reported to be an internal barrier to effective knowledge management practices. This is attributed to the potential for misalignment between information needs.	(Van Wyk et al., 2008; Johnson & Chess, 2006)
Personal attitudes, ideologies and past experiences	Personal attitudes, ideologies, past experiences and intuition have been reported to shape knowledge management practices. Specific influences include how practitioners approach the selection and rejection of information and the heuristics and mental models engaged in this process of selection. Past experiences also influence perceptions of	(Fazey et al., 2005; Mostert et al., 2010; Raymond et al., 2010; Pahl-Wostl et al., 2011)

	different knowledge types and the practitioner's contribution to social learning.	
Formalisation of participatory mechanisms employed	The formalisation of participatory mechanisms describes "the extent to which information is channelled in a certain way, leaving more or less scope for open communication" (Newig et al., 2008). This high level of formalisation present outputs that are constrained to a particular form whilst excluding others. The level of mechanism formalisation as a result, therefore, impacts on the level of filtering and processing required of them. Mechanism formalisation can also affect practitioner perceptions of the outputs generated. For example, if the mechanism employed is extremely complex in nature then it can alienate practitioners and decrease the acceptance of the outputs.	(Newig et al., 2008; Newig et al., 2008)
Divergence of information provided	The divergence of information refers to the simplicity, or not, of the information presented to practitioners to use. The more divergent the information provided to participants the more attention it will require.	(Van Wyk et al., 2008; Newig et al., 2008; Genuis, 2012)
Awareness and receptiveness to other views	A practitioner's awareness and understanding of their views of others has been reported to enhance the flow of knowledge. It is also a key contributing factor for achieving successful social learning.	(Pahl-Wostl et al., 2011; Horlick-Jones et al., 2007; Mostert et al., 2010; Van Wyk et al., 2008)
Shared problem identification	Shared problem development refers to the collaborative approach to defining and understanding issues. This is considered to be particularly important in contexts where non-science (i.e. values) is introduced into planning and decision-making arenas where a move away from knowledge transfer to knowledge exchange practices where the development of shared meanings is required.	(Pahl-Wostl et al., 2011; Mostert et al., 2010; Van Wyk et al., 2008)
Collaborative working	Collaborative learning between producers and users of knowledge is proposed as a more suitable approach to build knowledge management systems capable of responding to NRM issues in a sustainable way (Roux et al., 2006). The literature emphasises the importance of	(Pahl-Wostl et al., 2011; Roux et al., 2006' Fazey et al., 2012; Reed et al., 2013; Mostert et al., 2010; Partidario & Sheate, 2013)

	organisations developing practices to facilitate co-generation of knowledge and collaborative knowledge management with the aim of fostering greater utilisation of knowledge in planning and decision-making (Partidario & Sheate, 2013). Collaborative working practices require close practitioner interaction, which promotes social learning processes.	
Trust	Trust between practitioners promotes effective relationships, co-ordination and co-operation to mutual benefit. Effective leadership is identified as playing a key role in generating trust amongst practitioners.	(Pahl-Wostl et al., 2007)
Learning culture / organisational capacity to learn	The learning capacity of an organisation is reflected in the behavioural norms at both a practitioner and organisation level. Effective leadership plays a key role in fostering a learning culture by coding organisational norms into practitioner routines. To maximise learning opportunities for frequent reflection and feedback should be coded into routines allowing practitioners to learn from their own experiences thus fostering improvements in their future practice. The capturing of practitioner feedback also provides useful intelligence at an organisational level as this is reported to provide a more important reflection of events. A learning organisation has the potential to better adapt to changing circumstances, which is important when new knowledge, or new contexts are introduced.	(Johnson & Chess, 2006)
Practitioner routines	The introduction of new forms of knowledge may require practitioner to adapt their habits and work routines in response. However, the literature identifies that practitioners often exhibit an aversion to changing their practices, which may impact on the effectiveness of knowledge management. The introduction of uncertain information or knowledge into practitioner's planning and decision-making routines has been isolated as a particular issues as their routines are not commonly structured to be able to accommodate this.	(Johnson & Chess, 2006; Maiello et al., 2013)
Opportunities for	Opportunities for informal learning are considered to be more important	(Johnson & Chess, 2006)

informal learning	than formal learning opportunities as they are more timely and experiential. This offers greater potential for effective knowledge management as it often more tailored to the challenges or issues facing practitioners and offers a more direct response, which promotes more effective practices.	
Clarity of rationales for adoption of approach	As has been outlined in Section 2.3, motivational clarity i.e. the purpose of adopting an approach drives decisions made throughout the entire planning and decision-making process including the management of knowledge as part of the institutional response. In particular in the embedment of appropriate processes, behaviours and in the promotion of effective social learning.	(Wesselink et al., 2011; Bickerstaff & Walker, 2001; Cotton & Devine-Wright, 2012; Mostert et al., 2010)
Communities of practice	A 'Community of Practice' is describes as " informal structures brought together through the social construction of knowledge.... exists when: members share a similar set of interest, expertise, roles and goals; opportunities exist for members to interact with one another through formal and informal spaces; and groups share a common practice or set of practices" (Raymond & Robinson, 2013)). Communities of Practice are promoted on the basis of their ability to foster the exchange of tacit and intrinsic information and higher levels of learning. The literature recognises, however, the difficulty of achieving Communities of Practice especially in organisations or institutions where there is a legacy of separate knowledge production and application.	(Wenger, 1998; Raymond & Robinson, 2013; Roux et al., 2006; Horlick-Jones et al., 2007; Mostert et al., 2010; Pahl-Wostl et al., 2011)
Opportunities for reflection and feedback	Opportunities for reflection and reflexivity have been identified as important processes for effective learning an important component in adapting to new or changing areas of focus or ways of working. (Fazey et al., 2005; Lamers et al., 2010). Furthermore, for organisations and institutions responsible for developing policies in a changing environment or exposed to new forms of information, opportunities for reflection are seminal to promoting effective thinking with regards to their goals, the way issues are framed and how their goals may be achieved. This concept is also referred to as double-loop learning (Pahl-Wostl, 2009).	(Fazey et al., 2005; Fazey et al., 2012; Lamers et al., 2010; Mostert et al., 2010; Pahl-Wostl, 2009)
Knowledge Brokers	Knowledge brokers are individuals who absorb complex messages from	(Reed et al., 2013; Raymond & Robinson,

	<p>diverse sources and translate these into customised, meaningful knowledge whilst acknowledging that their own experiences and interactions will influence the meaning they place on certain information. They can play a useful role in diffusing knowledge throughout organisations and institutions and co-ordinating multiple practitioners and facilitating effective knowledge exchange and an open learning environment by bringing people interested in an issue together to co-develop a solution. However, the role of knowledge broker needs to be carefully facilitated with regards to power dynamics and knowledge access and the knowledge selection, rejection and transformative processes that they apply to avoid presenting a distorted or incomplete view of issues.</p>	<p>2013; Pennell et al., 2013; Partidario & Sheate, 2013; Sheikheldin et al., 2010; Huitema et al., 2009; Fazey et al., 2012)</p>
<p>Alignment of knowledge</p>	<p>Alignment of knowledge is important both in terms of the alignment of knowledge between producers and users of knowledge (i.e. the alignment of knowledge to need) and also to facilitate unobstructed knowledge flow / exchange between different spheres of knowledge. The achievement of this in practice is, however, reported to be difficult (Fazey et al., 2012). One potential cause of this is that knowledge producers often assume homogenous audiences and thus fail to tailor outputs to the specific needs of the users and consider how the knowledge they provide will be embedded.</p>	<p>(Roux et al., 2006; Van Wyk et al., 2008; Fazey et al., 2012)</p>
<p>Ownership of issue</p>	<p>Ownership of an issue or of outputs can influence the value that users place on it or the relevance they associate with it, both factors that hold the potential to affect how outputs are used. This is particularly an issue where there is limited engagement between knowledge producers and users.</p>	<p>(Roux et al., 2006)</p>
<p>Credibility of knowledge supplier</p>	<p>The credibility of the knowledge supplier by those knowledge users has been identified as playing a crucial role in successful knowledge flow. (Roux et al., 2006) identifies two main components of this, which include: competence and safety. Competence refers to the degree to which the supplier of knowledge is perceived to be an expert in their</p>	<p>(Roux et al., 2006; Van Wyk et al., 2008)</p>

	field. Safety refers to the degree to which the user relates to the knowledge supplier i.e. they do not feel intimidated.	
Information packaging (including language used)	Information needs to be packaged in a way that is unambiguous, pitched at the right level of complexity, and is compatible with the needs of the user and/or the planning and decision-making processes in which it is being used. The language used needs to be carefully moderated to ensure this is not a barrier to the use of the information by the users. Effective information packaging can have a positive impact on the uptake of knowledge. This is especially the case where it is crossing knowledge domains.	(Roux et al., 2006; Mostert et al., 2010; Van Wyk et al., 2008)
Ease of need identification	Practitioners need to be able to identify and articulate their information needs effectively to ensure that the knowledge produce aligns with their needs and thus promotes uptake. (Roux et al., 2006) identifies that this can be complex particularly if there are uncertainties around future challenges or with respect to future practices.	(Roux et al., 2006)
Extent of knowledge gap	The extent of the differences in knowledge possessed by different practitioners influences the potential for knowledge exchange. (Roux et al., 2006) states that the larger the gap or difference in knowledge, the more potential for knowledge exchange but synonymously the greater obstacles that must be overcome.	(Roux et al., 2006)
Information scheduling	Information scheduling refers to the frequency and timeliness of information delivery. The literature identifies several factors related to this that have the potential to foster or constrain effective use, of particular concern was information overload which was reported to impact practitioner's ability to effectively analyse the content and assess the associated risks with its use resulting in it being ignored or not used to its full potential. Furthermore, the scarcity or abundance of information during planning and decision-making processes has been associated with the level of meaningfulness practitioners apply to that information. Similarly, the timely delivery of information is necessary as it can lose	(Van Wyk et al., 2008; Collins & Ison, 2010)

	value as time passes.	
Preference / receptiveness for knowledge types	Practitioner perceptions with respect to the nature of knowledge has the potential to influence the perceptions of the benefits that that form of knowledge can provide and therefore, as a result, its application. Furthermore, it has been reported that users of knowledge do not associate equally the same level of trust with different forms of knowledge.	(Reed et al., 2013; Mostert et al., 2010; Van Wyk et al., 2008)
Perceived importance	The perceived importance of an issue promotes or demotes the importance of that knowledge	(Mostert et al., 2010)
Right people involved and continuity of involvement	Ensuring the right match of practitioners involved in knowledge management processes, in particular with regards to authority and skills, has been identified as a key factor in promoting effective practices and outcomes.	(Mostert et al., 2010); Raymond & Robinson, 2013; Partidario & Sheate, 2013)
Opportunities for knowledge storage	Knowledge storage refers to the nature by which this is held. Reed identifies three ways including: in practitioner memory; through mimicry from practitioner to practitioner or through explicit documentation in a document on the web. This is an important factor with respect to the sustainability and maintenance of knowledge management through preventing erosion and loss of knowledge.	(Reed et al., 2013)

Appendix B Methodology – supporting documents

B1 Review of research quality strategies identified in the literature

Table B1-1 A review of research validity and reliability strategies identified in the literature Adapted from (Grey, 2009; Lewis & Ritchie, 2003))

	Primary concern	Strategies / Checks suggested in the literature
External Reliability	<i>Would the collective nature of the phenomena generated by the study participants and the meanings attached to them be expected to be repeated outside of the study population using the same (or similar methods) OR The ability to transfer findings to be tested in other cases or situations is promoted as an alternative perspective on external reliability</i>	Robust presentation of the procedure adopted within the research to enable replication
		Sample design and selection is reflective the broader sample population including all known features and constituencies, including those potentially promoting non-response
		Fieldwork methods have been deployed consistently using topic guides and methodological protocol as standard practice
		The design and deployment of the research provisioned sufficient opportunity for all perspectives to be identified (including time available in each data collection session and overall across the fieldwork deployment)
		Acknowledgement of any potential features that may lead / or did lead to missing coverage within the design or deployment phases of the research
		Where appropriate, the use of data triangulation with respect to persons, space and time
		Where appropriate, the use of multiple methods from either within qualitative tradition or across qualitative and quantitative traditions.
Internal reliability	<i>Have the constructions placed on the data by the researcher been consistently and rigorously derived?</i>	The use of internal checks by researcher on the quality of the data to ensure accuracy of interpretation
		Systematic and comprehensive analysis
		Peer review (inter-rater) to confirm reliability of constructions
		Interpretation supported by evidence (used verbatim)
Internal validity	<i>Is the researcher investigating what has been claimed to be investigated?</i>	The study accurately represents those features of the phenomena intended to be described, explained or theorised
		Interpretations made on the data collected are viable
		The sample has used criteria that were known or thought to be of importance and potential

		biases were recognised and mitigated
		The research setting and expertise of the researcher were sufficiently effective to allow the participants to fully present and explore their views
		The characterisations and labels that have been assigned by the researcher are rooted in the meaning of those presented by the study participants
		The research findings and the process by which they were derived are clearly documented and remain true to the original data enabling reviewers to assess their validity
		The researcher undertakes constant comparison (or checking of fit) in data analysis
		Deviant case analysis (identification of outliers) was used to form the research findings and explain variation and difference
		Verbatim data used throughout research process to ensure integrity
External validity	Are the findings applicable to other groups within the sample population?	Triangulation of data across a range of different sources of information helping to confirm and improve clarity or precision of research findings
		Where appropriate, data generated from multiple methods / sources from either within qualitative tradition or across qualitative and quantitative traditions were used in generating research findings
		The research process has used multiple analysts to check data collection and interpretation
		A range of theoretical perspectives have been used to generate research findings
		Verbatim transcripts presented back to research participants for verification and / or research findings confirmed with respect to interpretation applied.

B2 **Review of strategies employed within this research
to ensure research quality and rigour**

Table B2-1 A review of strategies and checks employed in this research to ensure validity and reliability of the research findings

		Strategies / checks adopted within this research		
	Primary concern	Strategy / Check employed	Study / research phase in which applied	Acknowledged limitations
External Reliability	<i>Would the collective nature of the phenomena generated by the study participants and the meanings attached to them be expected to be repeated outside of the study population using the same (or similar methods)</i>	Provision of sufficient opportunity for all perspectives to be identified		
		Noting limitations of the research methodology - where participant discussion as part this activity was on-going, every effort was made to be flexible to this within the overall design of the session.	Study A – research instrument design	The nature of this inquiry being nested within a broader group discussion session limited the full extent of time available for in-depth discussion. These limitations have been acknowledged in the discussion of findings.
		Research instrument developed provided two hours in which participants were able to debate and reflect on multiple investment scenarios	Study B – research instrument design	Duration of fieldwork was short to comply with sponsoring organisation time-line. This was not thought to affect the reliability of the data.
		Research instrument developed was designed to collect data in one hour which was within the time frame recommended within the literature (recognised in section 6.3) Study C fieldwork was timed to ensure practitioners could contribute in the most effective way post-PR14 whereby could reflect on whole process	Study C – research instrument design and fieldwork planning	One participant noted that whilst the interviews took place over three months post PR14 (which could have promoted recall bias) it would have proved difficult to secure participation any earlier
		Sample design and selection is reflective the broader sample population including all known features and constituencies, including those potentially promoting non-response		

		Purposive sampling approaches adopted using known features of domestic customer sample population	Study A	Limitations to the achievement of expected sample constituencies (due to a range of factors) have been acknowledged as preventing accurate replication of participant characteristics across groups of different elicitation mechanisms
		Purposive sampling approaches adopted using known features of domestic customer sample population	Study B	
		<p>Purposive sample approach was adopted which included multiple practitioners across the water sector and incorporated the isolation of key factors that were perceived to hold potential to generate variation and thus needed to be included in sample population</p> <p>Multiple sampling strategies adopted in order to attempt to secure sample. This included direct recruitment within the organisation and the use of a max- variation sampling strategy in sector-wide water utility with the use of stratified purposive sampling to identify specific water utilities</p> <p>The stratified purposive sample was developed using document analysis to fully appraise extent of water utility exposure to methods and range of topics where participative mechanisms were used</p> <p>Study C proposed the use of snowball sampling to identify sector-wide participants</p>	Study C	<p>It was acknowledged that the documents used to generate the stratified purposive sample may not report the entire extent of customer engagement activities but was considered to be the best source available at the time</p> <p>Use of snowball sampling approach had the potential to introduce sample bias by using a single organisational contact to derive suitable participants within their own organisation – This issue was acknowledged in Section 6.3 and a justification for approach provided. To mitigate bias as much as possible, a set of criteria for consideration by the contact was provided</p> <p>Despite efforts to obtain the participation of sector-wide</p>

				practitioner, Section 6.4 acknowledges the difficulties faced and potential cases on non-participation
	Fieldwork methods have been deployed consistently using topic guides and methodological protocol as standard practice			
	<p>The researcher designed (or was involved in the design) of research protocols (i.e. topic guides and additional information resources to be applied by Market Research Professionals</p> <p>The author (or briefed practitioner from sponsoring organisation or sponsoring organisation regulators (CCW / EA)) observed each session to ensure protocol was consistently applied</p>	Study A and B – Research design phases	The use of variant Market Research Professionals (a feature of their availability) was recognised as a limitation of reliability in this case.	
	Topic guide was designed by author and deployed by author in semi-structured interviews	Study C – research instrument design and deployment	Semi-structured interviews by their nature are responsive to emergent themes; it was not replicated entirely in each interview - dependent on discussion	
	Robust presentation of the procedure adopted within the research to enable replication			
	Each study has been reported alongside a full methodological statement with respect to sample, research instrument, fieldwork protocols, research relationships and data analysis methodologies. Excerpts were provided in related Appendices to illustrate techniques used	Studies A, B and C – all research stages		
	Where appropriate, the use of data triangulation with respect to persons, space and time			
	Study C reflects data triangulation ambitions across different sites, functions, managerial levels	Study C – sample	The study acknowledges issues of role-type commensurability	

		and roles	generation	across in known organisations so instead sought variation
		Where appropriate, the use of multiple methods from either within qualitative tradition or across qualitative and quantitative traditions.		
		Used a quantitative analysis of variation on ranked lists generated in qualitative research setting to address the research question posed by this research inquiry	Study A	Section 4 acknowledges that this represents a cautious insight into the influence of mechanism variation on expressed preferences – no existing empirical / theoretical protocol to follow
Internal reliability	<i>Have the constructions placed on the data by the researcher been consistently and rigorously derived?</i>	The use of internal checks by researcher on the quality of the data to ensure accuracy of interpretation		
		In Study C, verbatim transcript generation was subject to data cleaning and checking compared to the audio recordings to ensure reliability of transcripts generated Constant checking of fit of constructions was conducted as part of the Thematic Framework Analysis method used in Study B and C to ensure the reliability of the classifications adopted	Study B and C – data analysis	Study B audio recordings were not made available to the author – as a result only basic checks could be conducted on the verbatim transcripts generated for Study B group discussion sessions
		In study B, assumptions applied during quantitative analysis were derived from qualitative generated findings to ensure their reliability and suitability to this inquiry	Study A – data analysis	Section 4 acknowledges that this represents a cautious insight into the influence of mechanism variation on expressed preferences – no existing empirical / theoretical protocol to follow
		Systematic and comprehensive analysis		
		Study C employed an inductively derived thematic framework, which was applied across the full	Study B and C	

		<p>sample. This data analysis was conducted using the stages of Thematic Framework Analysis. Examples of the thematic framework and charts are provided in Appendix E.</p> <p>Study B used a simple thematic framework driven by the need to establish level of acceptability in each group's discussions about investment scenarios. Examples of the thematic chart utilised are provided in Appendix D.</p>		
		<p>Assumptions relating to data transformations, which were employed in Study A, were explicitly outlined. Excerpts from the data analysis have been provided in Appendix C.</p>		
Peer review (inter-rater) to confirm reliability of constructions				
		<p>The protocols associated with data analysis were confirmed as suitable by both academic and sponsoring organisation supervisors</p>	<p>Study A, B and C</p>	<p>The reliability of researcher's application of this protocol has not been formally confirmed by direct peer-review. Informal discussions with fellow-observers in studies A and B, provided some confidence but was not a formal feature of the research design.</p> <p>Market Research Professionals responsible for the facilitation of study A and B could have been used. However, the formal nature of their involvement, dictated through project contracts, did not extend to the extending their support to the authors interpretation without additional</p>

				expenditure.
		The findings from the Study A pilot studies were presented to those regulators who observed each session (CCW and EA) to establish the reliability of the authors interpretations and to confirm with them the recommendations to the format of the research instrument.		
		Interpretation supported by evidence (used verbatim)		
		Study B and C used verbatim transcripts to form the basis of the data analysis and construction of research findings. This preserved the traceability of data interpretation to ensure ease of data checking.	Study B and C – data analysis and presentation	In the case of study B, audio recordings were not provided to the author – only transcripts. This limited the extent to which the validity of the this as a representation of verbatim discussion could be assured
		Study A data findings were reported to the researcher in a processed (i.e. transcribed directly into Excel) by Market Research Professionals. The data analysis protocol involved some data transformation to enable comparison between elicitation mechanisms. The limitations of this approach have been acknowledged.	Study A – data analysis and presentation	The assumptions made in data transformation have been acknowledged but checked against raw data to ensure relevance.
Internal validity	<i>Is the researcher investigating what they have claimed to be investigated?</i>	The study accurately represents those features of the phenomena intended to be described, explained or theorised		
		Study A was re-designed post pilot study to ensure that the data being captured were commensurate with comparison across the sample by introducing a set range of attributes included in each group session.	Study B – main research instrument design	
		Interpretations made on the data collected are viable		

		The research findings of Study A were further explored in Study B to ensure the validity of the interpretations placed upon the data.	Study A and Study B – data analysis	The author acknowledges that there is no standard approach to conduct the type of analysis undertaken in Study A. The application of assumptions and the removal of the data from the direct context in which it was stated potentially impacts on its validity but these assumptions were checked relative to the qualitative data generated to ensure suitability.
		The assumptions used in Study A data analysis were presented to both academic and industrial sponsors to test the viability of the interpretation	Study A- data analysis	
		Study B and C findings were generated through thematic content analysis which has ensured that the interpretations made on the data are directly relatable to the verbatim data generated	Study B and C – data analysis	
		The sample has used criteria that were known or thought to be of importance and potential biases were recognised and mitigated		
		In Studies A & B purposive sampling approach reflecting common known themes in domestic water utility populations and commonly used in water and wastewater utility customer research	Study A and B – sample generation	
			Study C	Study C research design has acknowledged that the proposed use (should it be requested by participant) of non-face-to-face interviewing with wider water sector practitioners may present power imbalances particularly where more senior participants

				are sought. The author proposed to mitigate this by attempting to build rapport early in the process in the recruitment phase
		Section 6.3 has described the implications of new Ofwat data during the recruitment phase which offered a relevant and more targeted recruitment opportunity based on published and data. The author responded to the use of this data to recalibrate the wider-sector practitioner recruitment strategy.	Study C – sample generation	
		The main research instrument and sample strategy for study A was re-designed on the basis of the pilot research to more accurately responded to issues with respect to the different phenomena being observed between domestic and business customers	Study A – main fieldwork activity research instrument	
		The research setting and expertise of the researcher were sufficiently effective to allow the participants to fully present and explore their views		
			Study A – research instrument design	The use of elicitation mechanisms as part of larger group discussion session limited the full extent of time available for more detailed in-depth discussion. This prevented the capture of richer data in relation to how participants were forming and reasoning their prioritisations – where discussion was flowing tried to be flexible to needs of participants within constraints of the overall session

		<p>In studies A and B, the author (acting both to ensure quality of research design deployment and to respond to technical questions by research participants) and in some cases a practitioner from the sponsoring organisation were present at each session to provide technical / 'expert' insight if requested by participants as part of their discussion.</p>	<p>Study B - fieldwork</p>	<p>Recognise potential for bias –a single observer (i.e. the author) was present at as many of the sessions as possible. To ensure continuity across 'observer' intervention, a resources pack and a set of guidelines were developed to promote consistency of responses.</p>
		<p>Study B was responsive to the need to provide participants with the time to fully explore issue and thus enhancing the validity of the research data generated.</p>	<p>Study B – Fieldwork / research instrument</p>	<p>A pilot study was not conducted for study B due to tight time constraints. However, the commensurability of the content and structure of the study with a concurrent quantitative study, which had undergone extensive pilot and hall testing (i.e. for wording / understanding issues) and, so the author was confident in its suitability. The first two sessions of the study were monitored for its efficacy.</p>
		<p>Semi-structured interviews used in Study C to ensure emergent practitioner issues were identified</p> <p>Reflecting on the original scope of the study, interviewing skills were intended to be honed in sponsoring organisation where the author was more familiar prior to use in external organisations. This was proposed to both ensure improved quality and familiarity with topics whereby the unfamiliarity with participants may</p>	<p>Study C – research instrument / fieldwork</p>	

	take up more cognitive effort by researcher		
	Semi-structured interviews conducted by the author in Study C used audio recording to ensure researcher remained focused and preserve the accuracy of data collected. Furthermore, it ensured that any signals of interest that would have been displayed by the author using a note taking approach were avoided.	Study c - fieldwork	
	The characterisations and labels that have been assigned by the researcher are rooted in the meaning of those presented by the study participants		
	Verbatim quotes presented to support research	Study B and C – data analysis and presentation	
	Care has been taken in Studies B and C to ensure that labelling of themes were not forced and where clarity could not be achieved this was recognised (i.e. deviant case analysis)	Study B and C – data analysis	
	The research findings and the process by which they were derived are clearly documented and remain true to the original data enabling reviewers to assess their validity / The researcher undertakes constant comparison (or checking of fit) in data analysis as well as deviant case analysis		
	Assumptions applied to the data have been reported to ensure readers can understand how the interpretations have been constructed.	Study A – data analysis	
	In studies B and C, the use of a Thematic Framework approach for data analysis facilitated rigorous and transparent data management from initial verbatim transcript through to the development of explanations. It has preserved traceability of interpretation through to verbatim transcripts to ensure reliability and ease of checking - findings have been portrayed in a way	Study B and C – data analysis	

		that remains true to the original data and allows others to see the analytical constructions that have occurred and		
		The premise of study B was based on a outlier in the findings generated from Study A	Study B	
		Verbatim data used throughout research process to ensure integrity		
		Verbatim transcripts requested were requested by the author and developed by market research professionals. In study A these were used to support interpretation. In study B, they formed the basis of the data set on which Thematic Framework analysis was based.	Study A and B – data collection / analysis	
		Verbatim transcripts used throughout Study C as the basis for interpretation.	Study C	
External validity	Are the findings applicable to other groups within the sample population?	Triangulation of data across a range of different sources of information helping to confirm and improve clarity or precision of research findings		
		Following a pilot study for Study A, the research instrument was amended to use a fixed set of attributes to promote more structured comparison between mechanisms improving the validity of the research findings with respect to mechanism influence but also to promote greater external validity of customer preference outputs for use by water utilities.	Study A – research instrument	
		Study B was a group discussion session generating verbatim transcripts as the primary data source. However, participants also conducted an activity to rate the importance of different service areas. Using both sets of data within the data analysis improved the clarity of the research findings.	Study B – research instrument	
		Section 6.3 has described the implications of new	Study C –	

	Ofwat data during the recruitment phase which offered a relevant and more targeted recruitment opportunity based on published and data. The author responded to the use of this data to recalibrate the wider-sector practitioner recruitment strategy.	sample generation	
Where appropriate, data generated from multiple methods / sources from either within qualitative tradition or across qualitative and quantitative traditions were used in generating research findings			
	The generation of responses to address RQ 2 were generated from Studies A and B. (i.e. the validity of the findings from Study A was further explored in Study B) - this improved the clarity and precision of the findings generated by this inquiry.	Study A and B	
	A brief questionnaire was used in Study A to generate participant feedback from pilots studies group sessions to understand their perceptions on the design of the session and identify potential changes	Study A	
The research process has used multiple analysts to check data collection and interpretation			
	Study outputs from A, B and C were extensively presented within the sponsoring organisation and to their stakeholders as is demonstrated by the list of presentations and reports presented at the start of this thesis.	Study A, B and C	
	Results from Study A pilot studies were reported to those observers to seek their confirmation of the results i.e. CCW and EA and findings were used to modify research instrument	Study A	
	Strategy managers in UU were provided with verbatim transcripts from pilot study A to	Study A	

		understand their views on the validity of method and relevance to their needs		
		Study B incorporated both author observation and observation by other water utility practitioner's observation to check quality of the research implementation and the findings of the study shared with them for feedback.	Study B	
		Verbatim transcripts presented back to research participants for verification and / or research findings confirmed with respect to interpretation applied.		
		The nature of Study A and B precluded the sharing of verbatim transcripts with participants. Those generated through Study C were shared with research participants as set out in the consent form of the study but generated no responses.	Study C	

Appendix C STUDY A – Supporting documentation

C1 Recruitment questionnaire

**DJS Research Ltd, 21 Botany Business Park, Macclesfield Road, Whaley Bridge,
High Peak, SK23 7DQ Tel: +44 (0)1663 732721**

I declare that this interview was carried out according to instructions, within the MRS Code of Conduct and that the respondent was not previously known to me.

Name:..... Signature.....
Date:..... Actual Interview Duration:.....minutes

**United Utilities
PR14 Participative Customer (JN 767)
Recruitment Questionnaire – Domestic Panel**

Name (Mr/Mrs/Miss/Ms):

Occupation:

Address:

.....

Postcode:

Telephone Number (inc STD Code)

QUOTAS

Gender – see group quotas

Male 1 RECRUIT 5
Female 2 RECRUIT 5

Age – see group quotas

18-34 1
35-49 2 SEE QUOTAS
50-64 3
65+ 4

SEG

AB 1
C1/C2 2 SEE QUOTAS
DE 3

INTRODUCTION

YOU NEED TO SPEAK TO THE PERSON RESPONSIBLE FOR PAYING THE WATER BILLS

Good morning/afternoon. My name is and I work for DJS Research, an independent market research agency.

We are doing some research on behalf of United Utilities. They are interested in finding out what level of service customers in your area expect from their water and sewerage company.

I'd just like to check a few things with you, in order that we can analyse our information by different types of customer. This information will not be linked to you personally, but added together for all the people we interview.

S1 Can I just check you are the person responsible for paying your household water bill?

Yes	<input type="checkbox"/> 1	CONTINUE
No	<input type="checkbox"/> 2	ASK FOR RELEVANT PERSON

S2 Do you or your close family work in any of the following occupations?

Journalism	<input type="checkbox"/> 1	
Advertising	<input type="checkbox"/> 2	
Market Research	<input type="checkbox"/> 3	
Public Relations	<input type="checkbox"/> 4	
Utilities	<input type="checkbox"/> 5	THANK & CLOSE
None of the above	<input type="checkbox"/> 6	CONTINUE

S3A Have you attended a group discussion in the last 6 months?

Yes	<input type="checkbox"/> 1	GO TO S3B
No	<input type="checkbox"/> 2	GO TO S

S3B What was the subject under discussion?

Water	<input type="checkbox"/> 1	THANK & CLOSE
Other (non-related)	<input type="checkbox"/> 2	GO TO S3C

S3C How many group discussions and depth interviews have you attended in the last 3 years?

- | | | |
|-----------|----------------------------|------------------------|
| 1-6 | <input type="checkbox"/> 1 | CONTINUE |
| 7 or more | <input type="checkbox"/> 2 | THANK AND CLOSE |
-

S4 Does your property have a water meter?

- | | | |
|-----|----------------------------|-------------------|
| Yes | <input type="checkbox"/> 1 | SEE QUOTAS |
| No | <input type="checkbox"/> 2 | SEE QUOTAS |
-

S5 Have you had to contact United Utilities in the last 12 months?

- | | |
|-----|----------------------------|
| Yes | <input type="checkbox"/> 1 |
| No | <input type="checkbox"/> 2 |
-

ASK IF YES AT S5

S6 Why did you contact them?
DO NOT READ OUT. MULTICODE

- | | |
|---|-----------------------------|
| To make a complaint | <input type="checkbox"/> 1 |
| To make an enquiry relating to drought/water shortage | <input type="checkbox"/> 2 |
| To make an enquiry relating to flooding | <input type="checkbox"/> 3 |
| To make an enquiry about sewers and drains (transfer) | <input type="checkbox"/> 4 |
| Billing enquiry | <input type="checkbox"/> 5 |
| No supply/supply issue | <input type="checkbox"/> 6 |
| To report a leak | <input type="checkbox"/> 7 |
| To change to/ask for a water meter | <input type="checkbox"/> 8 |
| Water quality | <input type="checkbox"/> 9 |
| Water pressure | <input type="checkbox"/> 10 |
| Sewerage problem | <input type="checkbox"/> 80 |
| Other (please specify) | <input type="checkbox"/> 85 |
| Don't know | |

BASE: ALL RESPONDENTS

S7 What type of property do you live in? **PROMPT IF NECESSARY.**

- Detached 1
- Semi-detached 2
- Terraced/town house 3
- Purpose built flat 4
- Other flat, e.g. house converted into flat,
or flat in an old building 5
- Other (PLEASE SPECIFY) 6

S8 How many people live permanently in your household?

S9 Do you own or rent your property?

- Own 1
- Rent 2

S10 How do you pay your water bill?

- Direct Debit 1
- Online with debit/credit card 2
- Automated payments line with debit/credit card 3
- Payzone 4
- At a bank 5
- At the Post Office 6
- By post 7

IF RESPONDENT IS IN QUOTA, RECRUIT FOR GROUP

Thank you. We are looking to invite people to a group discussion that we are conducting on Monday December 12th at [LOCATION] at 6.15pm. We would very much like you to attend and gain your opinions on the level of service you expect from United Utilities. The discussion will take approximately two hours. As a 'thank you' for taking part you will receive a £40 cash incentive.

S11 Would you be interested in attending?

- Yes 1 **CONTINUE**
- No 2 **THANK AND CLOSE**

The group will be audio and video recorded for analysis purposes and might be viewed by members of the United Utilities project team. Are you still happy to attend?

S12 Are you still interested in attending?

Yes	<input type="checkbox"/> 1	CONFIRM GROUP DETAILS
No	<input type="checkbox"/> 2	THANK AND CLOSE

IF RECRUITED, CONFIRM DETAILS AND SAY: Thank you. We will send you a letter/email confirming the time, date and location.

SAY TO ALL

Thank you for your help. Can I just remind you that this interview is part of a market research survey being carried out by DJS Research Ltd who adhere to the Market Research Society Code of Conduct. If you want to verify that we are a bona fide agency, I can give you the Freephone number of the Market Research Society to ring.
GIVE NUMBER IF REQUIRED (+44 (0) 500 396 999).

Customer priorities research

Dear Customer,

We are carrying out some research to understand what is important to you as a United Utilities customer receiving water and wastewater services. Over the next few months we will be talking to customers from all across the North West to gather their views. The event you have agreed to attend will allow us to understand the views of customers in your area. By doing this, we will be able to ensure that we target our investment in service areas that are most important to our customers.

The event you will be attending will involve a mix of general discussion and group activities.

At the end of the event we will also be asking you to fill in a short questionnaire. This will provide you with the opportunity to tell us what you thought about the focus group. This will help us to understand whether improvements could be made to enable our customers to get their views across in the best way for them.

In this envelope you will find a document outlining what United Utilities do. It would be very useful if you could familiarise yourself with this material before attending the focus group.

We look forward to hearing what is important to you as a United Utilities customer and thank you again for agreeing to take part.

Do you really need to print me?
Really? Think of the trees!
unitedutilities.com



What we do...

|

Introduction

United Utilities provides water and wastewater services to nearly seven million people in the North West of England supplying 3.2 million households and over 400,000 business premises.

We manage the land around our reservoirs to safeguard the quality of the raw water we collect and store. We then treat the water and deliver it to our customer's taps - nearly 2,000 million litres a day.

We also collect wastewater (used or dirty water and sewage) from our customers and surface water from roads and highways, treat it at our wastewater treatment works before returning it back safely to the environment.

Below you can see an overview of how United Utilities works together with the natural water cycle and technology to deliver your water and wastewater services.



This can also be viewed interactively at <http://www.unitedutilities.com/Whereyourmoneygoes.aspx>

Do you really need to print me?
Really? Think of the trees!
unitedutilities.com



Our water services

Working around the clock, we use technology and the natural water cycle to ensure that homes and businesses receive clean, safe drinking water on tap. Water, falling as rain, is collected and stored in around 200 reservoirs in the North West. Over two thirds of our water comes from reservoirs in the Lake District, the Pennines and north Wales. A quarter is taken from rivers, such as the Dee, and the rest from boreholes.



The raw water is treated at one of our 140 treatment works. This water is treated to comply with standards set by the Drinking Water Inspectorate who ensure that the drinking water we provide is safe to drink.



Once the water is cleaned, it is stored in a covered reservoir until it is needed by our customers. At this time clean water is then pumped into our pipe network to homes and businesses across the North West. This pipe network is crucial in ensuring that our customers have water whenever they need it.

Our wastewater services

We own and operate the wastewater network in North West England. We work around the clock to take away and treat our customers' wastewater. We maintain a network of 43,000 kilometres of sewers and 562 treatment works to collect and treat wastewater from homes and businesses. After treatment we return the cleaned water before safely to rivers and the sea whilst working to maintain environmental quality.



Wastewater is collected from homes and businesses into the sewerage network. The maintenance of this network is crucial to prevent blockages and flooding. The wastewater is taken to a wastewater treatment works where it is cleaned.



The water is cleaned to a standard that meets requirements set by the Environment Agency. They ensure that water entering rivers and the sea will not physically or chemically harm the environment or any of the species that inhabit it. They also ensure that, where necessary, the water is safe to bathe in.

Our customer services

Our charges cover the cost of supplying drinking water to homes and businesses and also taking away and cleaning used water.

If domestic properties have a water meter, bills are based upon the amount of water that is used (plus a standing charge which covers the cost of sending bills and dealing with enquiries). The bill consists of two main elements - how much water has been used in your home and how much wastewater we have taken away to clean and return safely to rivers and seas.

If domestic properties do not have a water meter then bills are based upon the rateable value of the property. A set amount is charged for each £ of the rateable value. A charge is also set for the collection and disposal of the property's wastewater.

The bills for businesses work in a similar way.

Customer priorities research

1 Introduction

The following document sets out the proposed topic guide that will be used for the 9 focus groups that will potentially take place as part of the first stage of UU's customer engagement research.

As part of this research, four different methodologies will be used:

- Individual prioritisation
- Group prioritisation
- Budgeting

These methods vary in terms of the activities included or the presentation of materials. However, the aim is to capture the view and opinions of customers across a common range of themes. Some elements of the topic guide will be replaced with supplementary material depending on the methodology used.

	Related stimulus material #	Group prioritisation	Individual prioritisation	Budgeting
Introductions		X	X	X
Exploring UU services	1	X	X	X
Prioritisation 1 (Individual)	2	X	X	X
Service failure vignettes	3	X	X	X
Prioritisation 2 (Individual)	4		X	
Prioritisation 2 (Group)	N/a	X		
Prioritisation 2 (Budgeting exercise)	5			X
Satisfaction	5	X	X	
Exploring future challenges	6	X	X	X
Future vignettes	7	X	X	X
Renewable energy and green tariff	N/a	X	X	X
R&D	N/a	X	X	X
Communications	N/a	X	X	X

2 Proposed topic guide

INTRODUCTION – 5 MINUTES

- Purpose of research and who we are – independent Market Research research company based in NW, working on behalf of United Utilities
- MRS code of conduct, confidentiality
- That the group will be tape recorded for analysis purposes/viewed
- Length of group: About one and a half hours – 2 hours
- Honest opinions, no right or wrong answers, all ideas welcome
- That as well as wanting to find out their views (the primary purpose) we also want to test the way we run the group. We are carrying out 9 groups in the region and we're going to trial 3 different ways of running them to see which works best for you, for us and for UU. So, at the end we'll be asking you to complete a questionnaire about your experience tonight
- Incentive
- Purpose of the research
- Ask the participants to introduce themselves:
 - Name
 - Where they are from
 - Family – partner, children
 - Whether ever contacted UU and, if so, what about

NB: Do not ask for occupations

2.1 Delivery of water and wastewater services now

SERVICES UU PROVIDES - 10 MINUTES

Explain that they are now going to explore the services that UU provide.

Ask them to **shout out** what services do they think UU provide (Write on a flipchart)

Show stimulus material 1 (list of services) to participants

- Explore what their initial thoughts are:
 - o *Are there any surprises?*
 - o *Do they understand what they all mean? (UU 'expert' to provide further explanation using briefing materials if requested or if correction is required)*
 - o *Do they think there is anything that is not on the list that UU should be doing?*

PRIORITISATION - 10 MINUTES

Explain that now they are familiar with the types of service UU provide they will now rate how important each service is to them now.

Hand out stimulus material 2 (prioritisation questionnaire using a high / medium/ low rating scale) to each participant

- Explore how they reached a decision about how important the service was to them.
 - Probe for:
 - o *Who they were thinking of e.g. themselves, family and friends, society*
 - o *Did it relate to their belief / value system e.g. are they environmentally conscious*
- ~~Ask 2~~ *Ask 2* 3 participants to provide some examples of what they rated as important / not important and why

SERVICE FAILURES - 20 MINUTES

Explain that they are now going to be provided with some examples of service failures that could occur in providing services

Present Stimulus material 3 (Vignettes) to the participants. Read out each one. Then get them to classify these as a group under headings of very serious, serious, minor or acceptable. Once sorted into these groups ask them to rank from most to least serious in each grouping.

RE-PRIORITISATION - 10-15 MINUTES GROUP, 5 MINUTES INDIVIDUAL

Remind the group of the prioritisation questionnaire they filled out individually earlier in the session.

Present the group (or individual) with stimulus material 4 (Second prioritisation exercise)

– If in the group session, an aggregated view of the individual responses to the 1st prioritisation exercise is presented. Briefly ask:

- What are their initial thoughts?
- Are they happy with the prioritisation?
- Is there anything they disagree with?
- Would they like to make any changes? (Allow them to make any changes as necessary with UU expert to help if required)
- What reasons do they provide for making any changes?
- Do all participants agree to the change?

– If in the individual session then they will be asked to make any changes they like to their original presentation sheet. Briefly ask:

- Did they make any changes?
- What reasons do they give for making these changes?

SATISFACTION – 5-10 MINUTES

Explain to them that they are now going to look at how satisfied they are with each service. **Hand out stimulus material #5**

Point out that they will now rate their satisfaction of their service on the scale below:

1	2	3	4
improvement	improvement	Satisfied	Don't know

2.2 Delivery of water and wastewater services in the future

FUTURE CHALLENGES – 15 MINUTES

Explain that so far they have been looking at the service they currently get from UU. Now they will move to think about how that service might be affected in the future.

- Ask them if they can think of any challenges that UU might face in the future in providing water and wastewater services

Stimulus material #6 – Brief intro into the impact of future challenges on service delivery by 'expert'

- Ask them what their thoughts are
- Do they have any concerns?

What approaches do they think are available to UU to tackle these future challenges?

- Prompt for things they think UU can do but also things that they think they could do

FUTURE SCENARIOS – 10-15 MINUTES

Present stimulus material #7 vignettes. Split into two groups and give each two vignettes. Ask a spokesperson for each group to tell the whole group for each of the vignettes:

- o *The option that they would take*
 - o *Reasons why they would take them*
-

RENEWABLE ENERGY & GREEN TARIFF – 5 MINUTES

The impact of climate change on our activities is a key challenge for UU. The processes used to treat water and wastewater use a lot of electricity. By reducing the reliance on electricity from non-renewable sources water companies can help to reduce the amount of greenhouse gases which are known to be a cause of climate change. Where possible UU has begun to generate energy from sources such as combined heat and power using waste gases from its wastewater treatment works and also hydroelectricity schemes. It could investigate developing wind power, solar power and ground source heat schemes to reduce its reliance on electricity from the grid.

What are the participants views? Do they think UU should consider developing renewable sources of energy?
Do they think UU should provide customers with the option of a green tariff?

RESEARCH & DEVELOPMENT – 5 MINUTES

Explain that investment into research and development helps to generate new technologies or processes. These new technologies and processes help to make the delivery of UU's activities more efficient.

Do you think that improving efficiency through R&D is important? Why?

Do you think this will become more important in addressing future challenges?

COMMUNICATIONS – 5 MINUTES

Explain that technology has also advanced in the ways that UU could communicate with its customers.

- How much communication do they want to have with United Utilities?
- Should UU be looking to use new communication technology with its customers such as twitter / facebook etc

THANK AND CLOSE

C4 Data analysis excerpt

C.4.1 Intra-method variation analysis

Individual prioritisation elicitation mechanism

	Group 1	Group 2	Group 12	Diff between rank			Diff squared			
	A	B	C	A-B	A-C	B-C	A-B	A-C	B-C	
Providing water that is safe to drink	1	1	1	0	0	0	0	0	0	
Providing water that tastes and smells good and is not discoloured	6	4	2	2	4	2	4	16	4	
Ensuring satisfactory water pressure at the tap	8	8	6	0	2	2	0	4	4	
Reduce the need for hosepipe bans in a drought	9	9	9	0	0	0	0	0	0	
Reducing bursts which interrupt supply of water	5	5	3	0	2	2	0	4	4	
Preventing homes from being affected by sewer flooding	2	2	4	0	-2	-2	0	4	4	
Preventing gardens and local areas from being affected by sewer flooding	3	6	7	-3	-4	-1	9	16	1	
Managing the level of nuisance (e.g. odour) generated from wastewater treatment works	7	7	8	0	-1	-1	0	1	1	
Preventing accidental pollution from wastewater treatment works	4	3	5	1	-1	-2	1	1	4	
							SUM	14	46	22
							N	9		
							6*SUM	84	276	132
							N(N ² -1)	720		
				$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$						
							p	0.88	0.62	0.82
							P@95% for n- 9	0.683		
							P@98% for n-9	0.783		
							P@99% for n-9	0.833		
							Significance?	significant	not significant	not significant
									Mean	0.772

Group prioritisation elicitation mechanism

	Group 6	Group 10	Group 11	Diff between ranks			Diff squared				
	A	B	C	A-B	A-C	B-C	A-B	A-C	B-C		
	Providing water that is safe to drink	1	1	1	0	0	0	0	0		0
Providing water that tastes and smells good and is not discoloured	2	4	2	-2	0	2	4	0	4		
Ensuring satisfactory water pressure at the tap	8	6	7	2	1	-1	4	1	1		
Reduce the need for hosepipe bans in a drought	9	9	8	0	1	1	0	1	1		
Reducing bursts which interrupt supply of water	4	2	3	2	1	-1	4	1	1		
Preventing homes from being affected by sewer flooding	6	5	4	1	2	1	1	4	1		
Preventing gardens and local areas from being affected by sewer flooding	5	7	6	-2	-1	1	4	1	1		
Managing the level of nuisance (e.g. odour) generated from wastewater treatment works	7	8	9	-1	-2	-1	1	4	1		
Preventing accidental pollution from wastewater treatment works	3	3	5	0	-2	-2	0	4	4		
							SUM	18	16	14	
							N	9			
							6*SUM	108	96	84	
							N(N*2-1)	720			
							p	0.85	0.87	0.88	0.87
							P@95% for n-9	0.683			
							P@98% for n-9	0.783			
							P@99% for n-9	0.833			
							Significance?	Significant	Significant	Significant	

Budgeting elicitation mechanism

	Group 5	Group 3	Group 4	Diff between ranks			diff ^2				
	A	B	C	A-B	A-C	B-C	A-B	A-C	B-C		
	Providing water that is safe to drink	8	7	7	1	1	0	1	1		0
Providing water that tastes and smells good and is not discoloured	3	4	2	-1	1	2	1	1	4		
Ensuring satisfactory water pressure at the tap	1	2	1	-1	0	1	1	0	1		
Reduce the need for hosepipe bans in a drought	9	8	8	1	1	0	1	1	0		
Reducing bursts which interrupt supply of water	6	9	9	-3	-3	0	9	9	0		
Preventing homes from being affected by sewer flooding	7	6	5	1	2	1	1	4	1		
Preventing gardens and local areas from being affected by sewer flooding	5	5	4	0	1	1	0	1	1		
Managing the level of nuisance (e.g. odour) generated from wastewater treatment works	2	3	6	-1	-4	-3	1	16	9		
Preventing accidental pollution from wastewater treatment works	4	1	3	3	1	-2	9	1	4		
							SUM	24	34	20	
							N	9			
							6*SUM	144	204	120	
							N(N*2-1)	720			
							p	0.80	0.72	0.83	0.783
							P@95% for n-9	0.683			
							P@98% for n-9	0.783			
							P@99% for n-9	0.833			
							Significance?	not signifi	not signifi	significant	

C.4.2 Inter-mechanism variation analysis


	Rank indiv 2 B	Rank group C	Rank budgeting D	Diff between ranks			Diff between ranks squared			
				B - C	B - D	C - D	B - C	B - D	C - D	
Providing water that is safe to drink	1	1	8	0	-7	-7	0	49	49	
Providing water that tastes and smells good and is not discoloured	5	2	4	3	1	-2	9	1	4	
Ensuring satisfactory water pressure at the tap	8	7	2	1	6	5	1	36	25	
Reduce the need for hosepipe bans in a drought	9	9	9	0	0	0	0	0	0	
Reducing bursts which interrupt supply of water	4	3	7	1	-3	-4	1	9	16	
Preventing homes from being affected by sewer flooding	2	5	5	-3	-3	0	9	9	0	
Preventing gardens and local areas from being affected by sewer flooding	6	6	3	0	3	3	0	9	9	
Managing the level of nuisance (e.g. odour) generated from wastewater treatment works	7	8	6	-1	1	2	1	1	4	
Preventing accidental pollution from wastewater treatment works	3	4	1	-1	2	3	1	4	9	
significance of p for small samples taken from wikipedia										
							SUM	22	118	116
							n			
							6*sum	132	708	696
							p	0.82	0.02	0.03
							P @95% for n-9			
							P @98% for n-9			
							P @99% for n-9			
							Significant?	Not significant	Not significant	Not significant
							Significant = occur by chance less than once in a hundred times			
							Not significant = may occur by chance			

Appendix D Study B – supporting documentation

D1 Presentation of investment scenarios used in Study B


Setting the scene

Setting the Scene
United Utilities 1436



Showcard A

United Utilities' region



Showcard B

Water companies are responsible for the following:

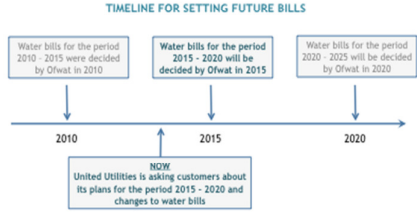
- ✓ Providing drinking water that is safe and pleasant to drink
- ✓ Providing a reliable and continuous supply of water from the tap
- ✓ Removing and treating wastewater from properties
- ✓ Maintaining the system of water pipes and sewers and water and wastewater treatment works
- ✓ Managing and protecting the water environment - including rivers, lakes, and coastal waters - by taking water for drinking supplies and returning treated wastewater in a sustainable way
- ✓ Preventing pollution to rivers from sewers
- ✓ Preventing flooding of properties, gardens and roads from sewers
- ✓ Drainage of rainfall from roads and other surface areas

Water companies are NOT responsible for :

- ✗ Preventing pollution of rivers from agriculture and manufacturing
- ✗ Removing litter from rivers, lakes, ponds and canals
- ✗ Managing canals
- ✗ Preventing flooding from rivers and the sea

Showcard C

TIMELINE FOR SETTING FUTURE BILLS



Water bills for the period 2010 - 2015 were decided by Ofwat in 2010

Water bills for the period 2015 - 2020 will be decided by Ofwat in 2015

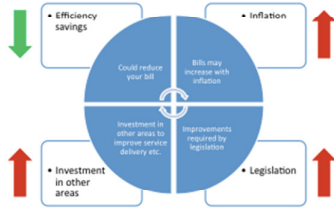
Water bills for the period 2020 - 2025 will be decided by Ofwat in 2020

NOW
United Utilities is asking customers about its plans for the period 2015 - 2020 and changes to water bills

- As part of the process for setting bills for the period 2015-2020, all water companies are developing 'business plans' that set out investments needed to maintain and improve water and wastewater services
- Today, we will be focusing on the investments, service levels and changes to customer bills that United Utilities is considering
- United Utilities wants to hear your views on the individual service areas and the overall plan

Showcard D

HOW MIGHT CUSTOMER BILLS BE IMPACTED?



Showcard E

HOW ARE CUSTOMER BILLS CALCULATED?

Metered households pay:

- A charge for supplying water to your home, based on the meter reading. The measurement used is cubic metres
- A charge for taking away your used water, cleaning and returning it to the environment, based on your meter reading
- A charge for taking away rainwater from your home*
- A contribution towards the removal and treatment of water that runs off public roads
- A standing charge for maintaining the meter, reading it, sending bills and dealing with enquiries

Unmetered households pay:

- A charge for supplying water to your home, based on the rateable value of your property
- A charge for the removal and treatment of used water from your home
- A charge for taking away rainwater from your home*
- A contribution towards the removal and treatment of water that runs off public roads
- A standing charge which covers costs such as sending bills and dealing with enquiries and an amount which helps to make bills fairer. Without it, consumers with very low rateable values would tend to pay too little in relation to their likely use of water, and high rated properties would tend to be charged too much.

*unless the rainwater from your home does not drain to the public sewer

Main investment scenarios

<p>Proposed service area investment For use in Section 5 in group discussions United Utilities 1436</p> 	<p>Legal</p>
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Efficiency savings and legal requirements

Maintaining the water system
Investment by United Utilities to maintain water pipes and treatment works against wear and tear, climate change (such as preventing flooding of water treatment facilities and adjusting to lower volumes of rainfall due to drier summers), and factoring in higher energy prices.

The impact of this service on an average yearly water bill will be a reduction of £12.31

Efficiency savings and legal requirements

Maintaining the wastewater system
Investment by United Utilities to maintain sewers and wastewater treatment works against wear and tear, climate change (such as preventing flooding of treatment works in periods of heavy rainfall through improving drainage), and factoring in higher energy prices.

The impact of this service on an average yearly water bill will be a reduction of £20.46

Efficiency savings and legal requirements

Drinking water standards and growth
United Utilities needs to meet changes to legal obligations for drinking water quality, to ensure new properties are connected to the water network, and to ensure that there are sufficient supplies of drinking water to meet the growing population.

The impact of this service on an average yearly water bill will be an increase of £3.28

Efficiency savings and legal requirements

Wastewater standards and growth
United Utilities needs to meet changes to legal obligations for the treatment and disposal of wastewater, to ensure new properties are connected to sewers, and to ensure that there is sufficient capacity to deal with the growing population.

The impact of this service on an average yearly water bill will be an increase of £15.70

Efficiency savings and legal requirements

Replace water supplies from Ennerdale Water

The water supply network in the North West is integrated ('joined-up') across most of the region. This means that water can be easily shared between different parts of the region. However the supply network in West Cumbria is separate from the rest of the region and relies on a small number of water sources, including Ennerdale Water.

As water cannot be shared with West Cumbria there is a higher risk of short periods of drought, for example, following periods of below average rainfall. This investment will develop alternative sources of water to supply the West Cumbria region. It will also help conserve an internationally protected species of freshwater mussels that is found in the Ennerdale Water area.

The impact of this service on an average yearly water bill will be an increase of £1.10

Efficiency savings and legal requirements

Ensuring Bathing Waters meet minimum standards

Bathing waters are beaches that are classified for use by bathers and swimmers. Bathing waters are measured against European Union standards as either 'Poor', 'Sufficient', 'Good' or 'Excellent'. From 2015 all bathing waters must meet the 'Sufficient' standard. This is the minimum legal standard for human health for swimming and other activities that involve contact with the water.

Twenty bathing waters in the North West (including Blackpool and Southport) do not meet the minimum standard. Discharges from sewers and wastewater treatment works can contribute to bathing waters being classified as 'Poor'. Investment by United Utilities will help ensure that these bathing waters meet the 'Sufficient' standard.

The impact of this service on an average yearly water bill will be an increase of £12.31

Water Services

Water services

Unexpected interruptions to supply



- Unexpected interruptions to water supplies may happen without warning because of burst pipes or other emergency works.
- Affected properties can be without water for between 12 - 24 hours.
- Investment by United Utilities can reduce the risk of this occurring, for example by replacing ageing pipes sooner, adding new mains supply pipes, and using improved technology to manage the network.

Currently 330 properties are affected each year (this is the same as less than 1 in every 10,000 properties).

The proposed investment by United Utilities will reduce this by 150 properties.

The impact of this service on an average yearly water bill will be an increase of £0.67

Water services

Taste and smell of tap water



- Some customers experience incidents of an unpleasant taste and/or smell from their tap water. This can be caused by algae in reservoirs in summer months or chemicals used to treat the water to make it safe to drink (e.g. chlorine).
- Properties can be affected over a period of time (e.g. a week). Running the tap does not remove the taste or smell.
- Investment by United Utilities can reduce the number of incidents, by adding additional treatment at water treatment works.

Currently around 75,000 properties are affected each year (this is the same as around 250 in every 10,000 properties) and there are around 4,000 complaints.

The proposed investment by United Utilities will reduce this by 80 complaints.

The impact of this service on an average yearly water bill will be an increase of £0.02

Water services

Discoloured tap water



- Some customers temporarily experience discoloured tap water due to disturbance of deposits that accumulate in supply pipes, which can be caused by burst pipes or work on the network.
- When this happens the tap water is usually brown in colour. Running the tap for several minutes does not remove the discoloration.
- Discoloured water is normally safe, but customers who experience this often prefer not to use their tap water whilst experiencing the problem.
- Investment by United Utilities can reduce the number of customers affected by removing deposits or preventing them from accumulating in pipes.

Currently 200,000 properties are affected each year (this is the same as 667 in every 10,000 properties) and there are around 11,000 complaints from affected properties.

The proposed investment by United Utilities will reduce this by 5,000 complaints.

The impact of this service on an average yearly water bill will be an increase of £1.47

Water services

Leakage from water pipes



- 'Leakage' is treated water that is lost from water pipes. It includes water lost from United Utilities' distribution network (85% of leakage) and water lost from customers' supply pipes (15% of leakage).
- Some leaks in water pipes are unavoidable as water can seep from joints and pipes can be damaged by ground movement caused by freezing weather or the weight of traffic on a road above.
- United Utilities can reduce leakage from water pipes, by repairing pipes, replacing old iron pipes with modern plastic pipes, and improving management of the water supply network.

Currently 140 litres of water is lost through leakage per property per day. This is equivalent to two baths per household per day.

The proposed investment by United Utilities will maintain this.

This service will not change the average yearly water bill

Water services

Unexpected low pressure



- Short term unexpected drops in the pressure of water supply to a property may happen without warning because of exceptional demand peaks, burst pipes or other emergency works.
- Affected properties will typically have very little water flow through their taps for 1 to 12 hours, but sometimes this can last for more than 12 hours.
- Low pressure can affect the use of appliances (e.g. washing machines) and ground floor showers and toilets. There may be no water in upstairs bathrooms and showers.
- Investment by United Utilities can reduce the risk of this occurring by replacing ageing pipes, increasing the amount of water that can be stored and supplied through existing assets and pipes, and using improved technology to manage the network.

Currently around 20,000 properties complain each year about very low pressure (this is the same as 70 in every 10,000 properties).

The proposed investment by United Utilities will reduce this by 5,000 properties.

The impact of this service on an average yearly water bill will be an increase of £0.54

Wastewater services

Wastewater services and the environment

Internal sewer flooding



- Blocked or overloaded sewers can very occasionally flood the inside of properties with wastewater (e.g. from drains and toilets). This can be caused by failures in the sewer system (e.g. a collapsed sewer) or heavy rainfall.
- Affected properties typically experience this type of flooding once every 10 years. Impacts include foul smells, floors and walls that need to be cleaned, carpets that need to be replaced, and damage to other possessions.
- Investment by United Utilities can reduce the risk of internal sewer flooding occurring by replacing old sewers or adding storage to cope with heavy rain.

Currently 1,100 properties are affected each year (this is the same as 4 in every 10,000 properties).
The proposed investment by United Utilities will reduce this by 355 properties.

The impact of this service on an average yearly water bill will be an increase of £4.45

Wastewater services and the environment

External sewer flooding



- Blocked or overloaded sewers can very occasionally flood gardens or other areas outside of properties with wastewater (e.g. from drains). This can be caused by failures in the sewer system (e.g. a collapsed sewer) or heavy rainfall.
- Roads, pavements and parks may also be affected.
- Affected areas typically experience this type of flooding once every 10 years. Impacts include damage to plants and grass lawns may need re-turfing.
- Investment by United Utilities can reduce the risk of external sewer flooding occurring by replacing old sewers or adding storage to cope with heavy rain.

Currently 5,200 areas are affected each year.
The proposed investment by United Utilities will reduce this by 870 areas.

The impact of this service on an average yearly water bill will be an increase of £0.09

Wastewater services and the environment

Improving rivers



- By 2027 all rivers in Europe are required to meet 'Good' or better environmental standards that have been set by the European Union.
- Rivers that meet the 'Good' standard support a wide range of wildlife. Lower standards in the rivers can be due to discharges from sewers or wastewater treatment works, or due to taking water from rivers for water supply (abstraction) which reduces river levels and flow.
- Currently 30% of the total length of rivers in the North West region meets the 'Good' standard or better. Investment by United Utilities is needed to ensure that all rivers meet the 'Good' standard by 2027.

This is new requirement. The proposed investment by United Utilities will deliver 9% of the improvements in rivers by 2020. It will also improve river flow and levels in 330 miles of river in the region (9% of total river length).

The impact of this service on an average yearly water bill will be an increase of £8.10

Wastewater services and the environment

Wastewater pollution incidents



- Pollution incidents can be caused by failures or blockages in the sewer system, and also by periods of heavy rain which overload sewers. This can result in the discharge of untreated wastewater to rivers or the wider environment.
- In most cases the impacts are temporary and will last only a few days. Impacts are mostly visual (e.g. visible litter) and wildlife is not significantly affected.
- Investment by United Utilities in the monitoring and operation of the wastewater network can reduce the number of pollution incidents that happen.

Currently there are 275 incidents each year.

This is not currently being considered by UU for investment and so there would be no impact on your bill

Group overview

Legal

Legal – service areas	Impact on customers' bill
Maintaining the water system	Reduction of £12.31
Maintaining the wastewater system	Reduction of £20.46
Drinking water standards and growth	Increase of £3.28
Wastewater standards and growth	Increase of £15.70
Replace supplies from Ennerdale Water	Increase of £1.10
Ensuring bathing water meet minimum standards	Increase of £12.31
TOTAL	Reduction of £0.38

Water services

Water service – service areas	Impact on customers' bill
Unexpected interruptions to supply	Increase of £0.67
Taste and smell of tap water	Increase of £0.02
Discoloured tap water	Increase of £1.27
Leakage from water pipes	Increase of £0.00
Unexpected low pressure	Increase of £0.54
TOTAL	Increase of £2.50

Wastewater services

Wastewater service – service areas	Impact on customers' bill
Internal sewer flooding	Increase of £4.45
External sewer flooding	Increase of £0.09
Improving rivers	Increase of £8.10
Water pollution incidents	No investment planned
TOTAL	Increase of £12.64

Overview overall

Service areas	Impact on customers' bill
Maintaining the water system	Reduction of £12.31
Maintaining the wastewater system	Reduction of £20.46
Drinking water standards and growth	Increase of £3.28
Wastewater standards and growth	Increase of £15.70
Replace supplies from Ennerdale Water	Increase of £1.10
Ensuring bathing water meet minimum standards	Increase of £12.31
TOTAL from Legal	Reduction of £0.38
Unexpected interruptions to supply	Increase of £0.67
Taste and smell of tap water	Increase of £0.02
Discoloured tap water	Increase of £1.27
Leakage from water pipes	Increase of £0.00
Unexpected low pressure	Increase of £0.54
TOTAL from Water Services	Increase of £2.50
Internal sewer flooding	Increase of £4.45
External sewer flooding	Increase of £0.09
Improving rivers	Increase of £8.10
Water pollution incidents	No investment
TOTAL from Wastewater Services	Increase of £12.64
TOTAL PLAN	Increase of £14.77

Appendix

Plan summary - "What is this" Definitions

Inflation

Inflation is the general rise in prices and wages over time. The future bill amount shown applies in 2020 and **does not** include inflation. However your bill will rise each year from 2016 - 2020 at the same rate as inflation. Present forecasts* are for inflation to be 2.0% to 4.0% a year. This means that a bill of £300 will increase by £6-12 each year due to inflation.

**Forecasts for the UK economy are provided by the HM Treasury based on a comparison of independent forecasts (April 2013).*

D2 Topic guide

United Utilities 1436 – Qualitative Acceptability Testing
Topic guide v2

United Utilities - JOB 1436

Qualitative Acceptability Testing

TOPIC GUIDE (V2)– FOCUS GROUPS

1. Introduction (3 Minutes)

Briefly explain:

- Who we are – an independent market research agency conducting research on behalf of United Utilities
- Introduce UU representative – there to answer any questions participants may have during the course of the session (not there to freely engage in the discussion)
- Purpose of the research – United Utilities would like to hear how customers feel about where investment should be focussed in future and how customers feel about the impact on their bills
- The discussion will be audio recorded for analysis purposes and may be observed by our client, United Utilities (in the back room / here in the room)
- Length of discussion: 1 hour and 30 minutes
- Please speak clearly and one at a time – try not to talk over each other
- Honest opinions, no right or wrong answers, all ideas welcome
- Incentive: £40 cash

2. Warm up (5 Minutes)

Section objective: to encourage the respondents to relax, participate and to ensure that we understand the individual context of each respondent

I'd like us to begin by going around the room and each of you introducing yourselves...

- Name
- Number of people in the household
- Approximate annual or monthly water bill
- Metered or unmetered
 - If metered, how long have they been metered
 - Did they choose to be metered?

3. Services provided (30 Minutes – 1-2 mins per service area)

Section objective: to explore customers' reactions to the areas of services provided by United Utilities

United Utilities would like to understand how you feel about the level of water and wastewater services that they provide to you. Let's discuss each of them ...

**MODERATOR SHOW EACH SERVICE AREA ONE AT A TIME ON SCREEN
RANDOMISE ORDER WITHIN LEGAL, WATER AND WASTEWATER GROUPS
READ OUT EACH SERVICE AREA AND LEAVE ON SCREEN WHILST DISCUSSING WITH THE GROUP**

- **EXPLORE SPONTANEOUS REACTION**
- How do you feel about the level of service you currently receive in these areas? Why is that?

REPEAT FOR EACH SERVICE AREA

Before we discuss the service areas any further, I'd now like you to rate each of the service areas as to how important they are to you personally. I know this may be difficult for you as you do not know the level of service each may be provided at and the impact each may have on your bill in the future. Nevertheless, we would like to know your first reaction and then we will discuss the impact of the cost on your bill and the level of service United Utilities provides...

HAND OUT SELF-COMPLETION FORMS, EXPLAIN HOW TO COMPLETE THE FORM AND ASK RESPONDENTS TO RATE EACH OF THE SERVICE AREAS

I'd now like to discuss the importance of the service areas briefly as a group...

- Which service areas do you feel are the most important? Why is that?
- Are there any service areas that you feel are not important? Why is that?
- Are there any service areas you think United Utilities should be responsible for that are missing from the list?

4. Setting the scene (10 Minutes)

Section objective: set the scene to talk about why bills may increase in future and the types of service areas that may impact on the bill increases

I'd now like to show you some information to give you a bit more background about this evening....

MODERATOR TO INTRODUCE BACKGROUND SLIDES TO EDUCATE/INFORM RESPONDENTS ABOUT UNITED UTILITIES' BUSINESS PLAN AND CUSTOMERS' BILLS

Key points to explain when introducing the background slides:

- Efficiency savings may reduce your bill
- Bills may increase with inflation
- The delivery of improvements required by new legislation
- UU may choose to invest in other service areas e.g. to reduce interruptions to your supply which may impact your bill

ALLOW FOR Q&A SESSION

EXPLORE:

- Initial thoughts
- Any concerns

5. Level of service and impact on the bill (50-60 Minutes – 2-3 mins per service area)

Section objective: to explore acceptability of the 'medium' scenario and whether customers would accept a higher or lower level of service provision in return for an increased or reduced bill

I'm now going to show you some areas UU are considering investing in and the corresponding impact it may have on your bill. I'd like us to discuss how you feel about each of these in turn...

**MODERATOR SHOW EACH SERVICE AREA ONE AT A TIME ON SCREEN
RANDOMISE ORDER WITHIN NEW LEGAL REQUIREMENTS, WATER AND WASTERWATER
GROUPS
READ OUT EACH SERVICE AREA AND LEAVE ON SCREEN WHILST DISCUSSING WITH THE
GROUP**

NB: non-discretionary areas (new legal requirements) do not vary per scenario

NB: DO NOT use the terms 'high' 'medium' or 'low' scenarios with respondents – talk about an 'alternative package'

- **EXPLORE INITIAL REACTION**
- Is this level of service and the corresponding impact on your bill acceptable? Why / why not? **(FULLY EXPLORE ALL REACTIONS)**
- Would you be prepared to pay more for a higher level of service? Why? What would you be prepared to pay?
 - **IF RESPONDENT IS PREPARED TO PAY MORE SHOW HIGH SCENARIO AND EXPLORE REACTION**
- Would you be prepared to accept a lower level of service in return for a lower impact on your bill? Why? What would you accept?
 - **IF RESPONDENT IS PREPARED TO ACCEPT A LOWER LEVEL OF SERVICE SHOW LOW SCENARIO AND EXPLORE REACTION**

REPEAT FOR EACH SERVICE AREA

Now I'd like you to consider these same service areas in three groups; new legal requirements, water and wastewater ...

MODERATOR SHOW EACH GROUP OF SERVICES AREAS FOR THE MEDIUM SCENARIO (LEGAL, WATER AND WASTEWATER – ROTATE ORDER OF SHOWING)

- How do you feel about the total impact of the service areas? Why is that?
- Do you feel the same as you did before about which service areas are acceptable and unacceptable, when you saw them individually? Why is that?
- What, if anything, would you change?
 - Would you be prepared to pay more for any service areas at a higher level of service, now that we are looking at them all together? Why?
 - And are there any that you would be prepared to accept a lower level of service on in return for a lower impact on your bill? Why?
 - If you would like to keep the level of service the same, why is that?

REPEAT FOR EACH GROUP

Finally, considering the whole plan together...

MODERATOR SHOW COMPLETE MEDIUM SCENARIO (ALL THREE GROUPS (NEW LEGAL REQUIREMENT, WATER AND WASTEWATER) TOGETHER WITH BILL IMPACT)

- How do you feel about the whole proposed plan for water and wastewater services? Why is that?
- Is it acceptable? Why is that? **(FULLY EXPLORE ALL REACTIONS)**
- Does it represent good value for money? Why / why not? **(FULLY EXPLORE ALL REACTIONS)**
- Would you want UU to do more or less than is set out in this plan?
- Do you feel the same as you did before about which service areas are acceptable and unacceptable, as when you saw them individually? Why is that?
- What, if anything, would you change?

6. Close (2 Minutes)

We're now nearly at the end of the discussion.

- Are there any other comments that you would like to add? Is there anything further that you would like my client to know about what we have been talking about today?

THANK AND CLOSE

SELF-COMPLETION FORM

Please rate how important each of the service areas are on a scale from 1 to 5 where 1 is not very important and 5 is very important:

	Not very important 1	2	Neither important or unimportant 3	4	Very Important 5	Don't know
Unexpected interruptions to supply						
Taste and smell of tap water						
Discoloured tap water						
Unexpected low pressure						
Leakage from water pipes						
Improving rivers						
Replaces water supplies from <u>Ennerdale Water</u>						
Maintaining the water system						
Drinking water standards growth						
Internal sewer flooding						
External sewer flooding						
Wastewater pollution incidents						
Maintaining the wastewater system						
Ensuring bathing waters meet minimum standards						
Wastewater standards for growth						

D3 Excerpt of thematic chart for investment to mitigate internal sewer flooding

Corporate behaviour	Compensation	Question re. what action UU would take	Group 9	ISF
investment - Benefit	Negative - No personal benefit	No experience - feel that paying for nothing	Group 9	ISF
investment - Benefit	Positive - insurance	Would pay due to concern about rising insurance premiums should a se	Group 9	ISF
investment - bill impact	Total bill concern	Acceptable bill increase but want to see overall bill before agreeing	Group 9	ISF
investment - scope	Should be included in existing Lo	Should be included in existing service	Group 9	ISF
investment - scope and bill	Don't know	Cannot decide on acceptability	Group 9	ISF
investment - scope and bill	Insurance	Compare to insurance	Group 9	ISF
Corporate behaviour	Profits	Profits	Group 5	ISF
investment - Benefit	Positive - avoid negative impact	Would not want it to happen	Group 5	ISF
investment - Benefit	Positive - avoid negative impact	It might happen so would be happy to pay to prevent it occurring	Group 5	ISF
investment - scope and bill	Unacceptable	Don't want to pay for something that may not happen	Group 5	ISF
investment - scope and bill	Unacceptable	Expensive if may not happen	Group 5	ISF
investment - Benefit	Positive - avoid negative impact	Would not want to experience multiple failures	Group 6	ISF
investment - scope and bill	Acceptable	Personal experience therefore agree	Group 6	ISF
investment - scope and bill	Insurance	Compare to insurance	Group 6	ISF
Visunderstanding		Confusion with fluvial flooding	Group 6	ISF
Other	Industry governance - stakeholder	Question re. responsibilities of parties	Group 6	ISF
Other	Legislation	Question re. scope relative to new properties	Group 6	ISF
Other	Service failure -impact	Sympathetic	Group 6	ISF
investment - bill impact	Unacceptable	Expensive	Group 10	ISF
investment - scope	Hard to relate to	not affected therefore cannot comment	Group 10	ISF
investment - scope	Priority	Family has experience	Group 10	ISF
investment - scope	Priority	Should be done but funded by UU not customers	Group 10	ISF
investment - scope	Should be included in existing Lo	Shouldn't happen	Group 10	ISF
investment - scope and bill	Acceptable	Don't want to pay any more than necessary	Group 10	ISF
investment - Benefit	Positive - affects house	Impact the house	Group 1	ISF
investment - Benefit	Positive - affects house	House is where you are comfortable	Group 1	ISF
investment - bill impact	Other	Q re. difference in cost between internal and external sewer flooding	Group 1	ISF
investment - bill impact	Unacceptable	Expensive	Group 1	ISF
investment - scope	Hard to relate to	What will be the outcome when the incidents are unplanned	Group 1	ISF
investment - scope and bill	Acceptable	Acceptable	Group 1	ISF
investment - scope and bill	Insurance	link to insurance	Group 1	ISF
investment - scope and bill	Unacceptable	Why should pay for others when I'm not affected	Group 1	ISF
investment - scope and bill	Unacceptable	big bill impact for a small scope	Group 1	ISF
Other	Need more information	Need more information	Group 1	ISF
investment - scope and bill	Acceptable	Expensive but prepared to pay as impact is devastating	Group 2	ISF
investment - scope and bill	Acceptable	OK	Group 2	ISF
investment - scope and bill	Acceptable	Got to be done	Group 2	ISF
investment - bill impact	Acceptable	Should pay	Group 4	ISF
investment - scope	Hard to relate to	Don't understand risk	Group 4	ISF
investment - scope and bill	Acceptable	Rely on victorian infrastructure so at some point needs replacing - unaw	Group 4	ISF
investment - scope and bill	Acceptable	Good thing	Group 4	ISF
investment - scope and bill	Insurance	Reference to insurance	Group 4	ISF
investment - scope and bill	Other	Confusion with how risk is factored into bills	Group 4	ISF
investment - scope and bill	Unacceptable	Would pay if affected	Group 4	ISF
investment - scope and bill	Unacceptable	Not affected therefore don't want to pay	Group 4	ISF
Corporate behaviour	Inaction	Expect more from a water company	Group 3	ISF
Corporate behaviour	Stakeholder input	Should be joint investment from council	Group 3	ISF
investment - Benefit	Negative - localised issue	Localised issue	Group 3	ISF
investment - scope	Scope insufficient	Not acceptable - scope too small	Group 3	ISF
investment - scope and bill	Acceptable	Top priority	Group 3	ISF
investment - scope and bill	Unacceptable	Cost should mean that all issues solved	Group 3	ISF
investment - scope and bill	Unacceptable	Cost :scope ration is too high	Group 3	ISF
investment - bill impact	Acceptable	Acceptable cost per month	Group 8	ISF
investment - bill impact	Acceptable	Would pay £5	Group 8	ISF
investment - scope	Frequency	Frequency of impact over the affected area	Group 8	ISF
investment - scope	Scope insufficient	Small scope	Group 8	ISF
investment - scope	Scope insufficient	Unfair - scope too low	Group 8	ISF
investment - scope	Scope insufficient	Negligible improvement	Group 8	ISF
investment - scope	Should be included in existing Lo	Should be sorted by maintenance	Group 8	ISF
investment - scope and bill	Insurance	Insurance impact	Group 8	ISF
investment - scope and bill	Unacceptable	Would pay if personally or family affected	Group 8	ISF
investment - scope and bill	Unacceptable	Not proportionate to increase in scope	Group 8	ISF
investment - bill impact	Acceptable	Pay it because have to	Group 7	ISF
investment - bill impact	Acceptable	Risk is too great not to pay it	Group 7	ISF
investment - bill impact	Misunderstanding	Pay it on insurance	Group 7	ISF
investment - scope	Should be included in existing Lo	Should be done anyway	Group 7	ISF
investment - scope and bill	No choice	Obligation	Group 7	ISF

Appendix E Study C

E1 Participant recruitment emails

E.1.1 Sector wide recruitment phase – initial contact email: a request for potential participant identification

Dear

I understand that you are a [insert role] at [insert water utility name] and have been involved in customer engagement research for the Price Review.

I am a doctoral researcher from the STREAM industrial doctorate centre based at Cranfield University. My research is focused on customer contributions to business planning in the UK water sector. It is sponsored by the EPSRC and United Utilities and supervised by Professor Paul Jeffrey.

As customer engagement has been a much greater focus in the development of water utility business plans at this Price Review, I am embarking on a study to explore the ways in which the outputs of customer engagement research have been used, and their level of influence in strategic planning and decision-making. It is hoped that the findings of this study will contribute to an improved understanding of how this data is being used across the sector and help to improve the design and deployment of customer engagement research in the future.

To explore these issues, I am looking to recruit volunteers from within your organisation to take part in a single face-to-face interview; the total time commitment for each participant is not anticipated to be longer than 1 hour. I am hoping that you would be able to offer your assistance in identifying suitable candidates to participate in this study. This would involve providing the names and contact details for candidates that you feel meet the criteria detailed below. These candidates will be then contacted directly to seek their consent to participate in this study.

Selection criteria

- Candidates must have used the outputs of customer engagement activities in planning or decision-making or have been involved in the design and deployment of these activities
- Candidates could be in a role relating to planning and decision-making in **any** of the following business areas:
 - o Customer / stakeholder engagement
 - o Economic regulation
 - o Water Resources Planning
 - o Water (infrastructure & non-infrastructure)
 - o Wastewater (infrastructure & non-infrastructure)
 - o Environment
- Candidates can be of a range of levels of responsibility (i.e. graduate through to senior manager and higher)
- Candidates can have a range of experience in the water sector
- Candidates can be of either gender

Your organisations participation in this study is, of course, voluntary and you can choose to withdraw from this study at any time. With permission, interviews will be audio-recorded, however, responses will not be identified with the organisation or candidate and will not be named in the thesis resulting from this research, or in any report or publication resulting from this study. The results of the overall study will be made available to all participants through the circulation of a paper at the end of the study. If you have any questions about the study, please contact me by email: Rebecca.sayles@stream-dc.net

Thankyou in advance for your consideration of this request. Please indicate by email your willingness to assist in the recruitment of participants to for this study and, if possible, a list of potential candidates.

Yours sincerely,

Rebecca Sayles
Research Engineer – STREAM industrial doctorate centre

E.1.2 Sector wide and sponsoring organisation sample - participant recruitment email

Recruitment letter

Dear

I understand that you have been involved in using the outputs of customer engagement research in your strategic planning and decision-making. You may be a suitable candidate to take part in a study to explore the use and influence of customer engagement outputs in planning and decision-making across the sector.

The study is part of my doctoral ~~research which~~ focuses more broadly on customer contributions to corporate planning in the UK water sector. This research is being conducted through the STREAM industrial doctorate centre at Cranfield University and is supervised by Professor Paul Jeffrey.

As customer engagement has been a much greater focus in the development of water utility business plans at this Price Review this study aims to better understand the ways in which the outputs of customer engagement research have been used, and their level of influence, in strategic planning and decision-making. It is hoped that the findings of this study will contribute to an improved understanding of how this data is being used across the sector and help to improve the design and deployment of customer engagement research in the future.

To investigate these issues, I ask for your assistance by providing your consent to take part in this study. Your participation would involve taking part in a single qualitative face-to-face interview; the total time commitment is not anticipated to be longer than 1 hour.

As participation is voluntary, you can choose to not participate in this study, to withdraw from this study at any time or to refrain from answering any questions you feel you do not wish to answer. If you choose to participate, the interview will be audio-recorded. However, your responses will not be identified with you personally and you will not be named in the thesis resulting from this research, or in any report or publication resulting from this study. The results of the overall study will be made available to all participants through a short paper at the end of the study.

If you have any questions about the study, please contact me by email: Rebecca.sayles@stream-idc.net

~~Thank you in advance for your consideration of this request.~~ Please indicate by return email your willingness to participate in this study.

Yours sincerely,

Rebecca Sayles
Research Engineer – STREAM industrial doctorate centre

E.1.3 Consent form used to secure participant involvement

CONSENT FORM

Seeking practitioner views: understanding the use and influence of customer contributions to planning and decision-making

- 1) I have read the information provided in the accompanying letter
- 2) I agree / do not agree for this interview to be used as part of this research
- 3) I agree / do not agree for this interview to be digitally recorded and transcribed

I understand that:

- 4) I am free to withdraw from the project at any time and am free to decline to answer particular questions
- 5) I will be provided with a copy of the transcript to approve prior to it being used as part of this research
- 6) While the information gained in this study will be published, I will not be identified, individual information will remain confidential and names of organisations will be anonymous.

Participants name: (Please print)

Participants signature:

Date:

Please return this form by email to: Rebecca.sayles@stream-idc.net

We advise you retain a copy of the information letter and consent form for your own records

Seeking practitioner views: understanding the use and influence of customer contributions in planning and decision-making in the UK water sector

OBJECTIVES:

- 1) To explore the business processes where customer contributions have been sought in the UK water sector and why
- 2) To explore the purpose of seeking customer contributions to planning and decision-making
- 3) To explore the process by which water utilities have designed and deployed customer engagement activities
- 4) To explore how customer contributions have been used in planning and decision-making in UK water utilities
- 5) To understand the extent to which customer contributions have been influential in planning and decision-making in UK water utilities

1 INTRODUCTION

AIM: Introduce self, explain the purpose of the interview, discuss confidentiality arrangements and interview practicalities as well as allowing the respondent to adjust to the interview situation

- Introduction between researcher and respondent
- Explain the purpose of the interview
 - Coverage of topic of interest
 - Brief description of objectives
 - Describe how the data collected in the interview will be used
- Seek permission to record interview
- Address confidentiality of interview
 - Anonymity in reporting
 - Destruction of recordings and transcripts post-project
 - Provision of researcher contact details
- Explain the format and expected duration of the interview
- Provide opportunity for respondent to clarify any doubts they may have

2 FRAMING CONTEXT OF PARTICIPANTS RESPONSES

AIM: Provide important contextual information about the respondents background

- How many years have they been employed in the water sector
- What is their current role and main duties

- How long have they been in their current role

3 ATTITUDES TO SEEKING AND USING CUSTOMER CONTRIBUTIONS

AIM: to understand the attitudes towards seeking and using customer contributions to water sector planning and decision-making

- What do they consider to be the purpose of seeking and using customer contributions to planning and decision-making
 - Probe **ALL** reasons
- How much importance does their organisation attach to seeking and using customer contributions to planning and decision-making
 - Probe **ALL** reasons
- How does this compare to ~~their own~~ personal views?
 - Probe **ALL** reasons
- Are their characteristics of planning or decision-making contexts that make it more or less important to seek and use customer contributions?
 - Probe **ALL** reasons

4 AWARENESS OF, AND INVOLVEMENT IN, EFFORTS TO SEEK CUSTOMER CONTRIBUTIONS TO PLANNING AND DECISION-MAKING

AIM: to explore the awareness and involvement of the respondent in efforts to seek customer contributions to planning and decision-making

- Can you tell me about how customer engagement activities were designed and deployed within your organisation?
 - Experience of Involvement / lack of involvement in the design and deployment of customer engagement activities - Probe **ALL** reasons
 - How involved?
 - Why involved / not involved?
 - Benefits / challenges of being involved / not involved
 - Communication events providing details about design and deployment of customer engagement activities?
 - Modes of communication
 - Timing and frequency of communication
 - Level of detail
- Would they suggest any changes to this approach in the future?
 - What difference would this make?

- Can you tell me about the methods and techniques that were used to seek customer contributions

Probe for:

- Qual vs Quant
 - Types of engagement
 - Techniques used
 - Use of consultants
 - Use of testing
- What influenced the choice of these methods and techniques

TYPES OF CUSTOMER ENGAGEMENT OUTPUT -

- Can you tell me about the format and presentation of customer engagement outputs that were made available

Probe for:

- Type i.e. Raw / processed / transformed **etc.**
 - Format i.e. Qual / Quant / Statistical / Descriptive
 - Presentation i.e. Report / model / presentation
 - Access i.e. Central / local / controlled / open
 - How did this work for you? - Probe **ALL** reasons
 - Implications of the format and presentation of customer engagement outputs that were made available on the use and incorporation in their planning and decision-making
- Would you change anything about this arrangement? - Probe **ALL** reasons
 - What difference would this make?

PLANNING AND DECISION-MAKING CONTEXTS

- Can they tell you me about the types of planning and decision-making issues you face in your role?

- Where were customer engagement outputs used
 - What factors influenced this choice - Probe **ALL** reasons

Probe for:

- o Guidance and support
 - What did the use of customer engagement outputs offer – Probe **ALL** reasons
- Where were customer engagement outputs not used
 - What factors influenced this choice - Probe **ALL** reasons

Probe for:

- guidance and support
- What did the use of customer engagement outputs not offer - Probe **ALL** reasons

PROCESS OF USING CUSTOMER CONTRIBUTIONS

- Can you tell me about the process you went through to incorporate the customer engagement outputs in your planning and decision-making? – Probe **ALL** reasons
 - Use of tools / techniques – Probe for **WHY** adopted
 - Translation / transformation – Probe for **WHY / HOW**
 - Consistency of approaches
 - How different / same
 - Reasons
 - How did this work for you?
 - Would you change anything about how you did this in the future? – Probe **ALL** reasons
 - What difference would this make?

8 INFLUENCE OF CUSTOMER ENGAGEMENTS IN PLANNING AND DECISION-MAKING CONTEXT

- How much priority was given to customer engagement outputs in planning and decision-making contexts – Probe **ALL** reasons
 - Consistency – Probe reasons **FOR** and/or **LACK OF**
- What have customer contributions influenced in terms of the planning and decision-making outputs / outcomes

Probe for:

- Proposal type
 - Proposal scope
 - Options appraisal
 - Solutions proposed
 - Magnitude of investment
 - Location of investment
 - Continuation / abandonment of proposal / investment
 - Pace of investment
 - Confidence in proposals
 - Cost-effectiveness of proposals
- To what extent do they think the outputs of planning and decision-making would be different without the use and incorporation of customer contributions - Probe **ALL** reasons
 - What factors determine the level of influence of customer contributions and decision-making outputs - Probe **ALL** reasons
 - What influence have customer contributions had on planning and decision-making processes

- Would the planning and decision-making processes be different without it

Probe for:

- Work approach / practices
- Skills used
- Complexity
- Time
- Resources

9 Benefits and limitations

- You stated at the beginning of this interview that you thought the purpose of seeking and using customer contributions in your planning and decision-making was [insert here]
 - Has the experience of using and incorporating customer engagement outputs in their planning and decision-making achieved this purpose? – Probe **ALL** reasons
 - Were there any additional benefits that were gained by using customer engagement outputs – Probe **ALL** reasons
- What limitations and challenges have you faced using and incorporating customer engagement outputs – Probe **ALL** reasons
 - How would you address these challenges
 - what difference would this make

10 CLOSE INTERVIEW

- How successful do they think they have been in using and incorporating customer contributions into their planning and decision-making
- What factors influenced their success

Probe for:

- Factors that hindered success
- Factors that facilitated success

THANK AND CLOSE

E3 Example transcript

813_0020 18/03/2014

Okay so I will now just start recording. So how many years have you worked in the water sector?

I joined the company when it was North West Water, just after privatisation. That was then 1990, so I think this is my 24th year. So quite a long time, but I am quite new to this area if that makes sense.

So what did you do before that what kind of roles have you had?

I joined the company as a microbiologist at Dawson house, which is now demolished. And then I was the first person here on site in the Central laboratory when we merged all of the labs across the region into here. And then I've come in to a series of roles so for example auditing but worked in the field, I came back into the customer, and then back into strategy. I might be a little bit biased but I think that gives me a broad understanding of the business, so I do have a bit of that linking with customers and I've listened to a lot of calls and spoken to a few. So, yes.

And what is your main role and duties now?

My role at the moment is water process strategy development manager. So again, when I started this role the strategy had just been written. So I sort of inherited a strategy and my first job was to update this at Christmas in 2012. That was a good way of owning it and developing it. Then of course you are straight into the price review. So feels like I have inherited a strategy and done quite a lot of work on and then went off to write a business plan and are now back to the strategy. Which isn't quite how it should work. So I guess now I am looking at that what we said in a plan actually happens in getting that embedded in the business through methodologies. It's quite a broad role. It is interesting, but it is massive and there's lots going on at the moment as well, lots of strategic initiatives and I've tried to get involved with them but it takes a lot of time.

Yes I guess you have to talk to a lot of people... So what do you consider to be the purpose of engaging with customers as part of planning and decision-making?

In all the time that I've been in customer we have done lots of customer research so we have done it as business as usual if you like. We used to do an online survey on the phones and asked customers ringing them to get their feedback, and obviously there is in the Ofwat survey, which is now the same survey, and I've been there for many years. But if you're talking about in this context...?

I am, yeah, I guess. If there is a distinction between retail and wholesale engagement...

Yes I guess that is my previous experience. And then I have come in to the price review and it feels like, and I might be being a bit unfair, but it feels like you just every five years for the price review. Which I'm sure isn't what we should do and I know there is a huge amounts of work with the customers and everything, which is maybe why I would like to think, going forward, that would be built into the processes and similar things that we have done about customers such as algae in taste and odour in the strategy and I would like to do it, but I don't know how to go about it, customers and say this is what we've done. And this is what was delivered and thought of close that loop. I think this is good but when I last read about it because PR09 and now here we are again five years later.

So what kind of purpose has that served?

Again, I don't know that much from my background. I guess the cynical head-on it just looks like we have done it because we've had to do as part of the planning process this time. I'm sure that's not the only point but I think that's probably what some of my colleagues would say. It is sort of pitched around that, we've got some massive information that we can use from other means as well but very much to support what we are trying to stand or what we are trying to plan to spend

1

in the next five years.

So do you think it's just done to support and validate what they were going to do or do think is really trying to shape the planning?

That's a very good question. I guess I do think it is because these are all of the traditional things, I mean you read them, taste and odour, discolouration, nuisance, its nothing radical. You can ask them about innovation or competition or of those things, which are impacting programmes of work. So I'd say we have... I know we have to keep it simple because I had proposed some questions but I got the feedback was that customers wouldn't understand pesticides and they wouldn't... I would say largely we have these data sets, but I hope that we have got some sort of qualitative information from customers. I have seen them, you know some of the speech bubbles, which is good other information that has come out of it as well.

But that's perhaps... You talk about that like it had performed a different role?

Now you asked the question I'm thinking oh yes I did see that but quite what was done with it? I think we always need to, now we've done the business plan, although it's not quite done if you know I mean, it would be good to go back and see what we can get out of there I think.

How much importance do think that [name of sponsoring organisation] has placed on using customer research and planning and decision-making?

Yes I would say a lot. Certainly in my area, so discolouration and taste and odour was certainly used to value what was trying to do and if they were going to deliver these benefits and this is what is going to cost. So I have I would say is used those two, but that is only a very small amount of what we do which is largely just maintaining and we haven't got customer, other than broad, you know they want to maintain the assets, so we have used that but I think it is only limited. But we have used it religiously haven't we in terms of how we have calculated the amount to the penny and used it in optimus. So we have used it largely from my perspective on those two things so the aesthetics.

So do you think the importance of being more on the quantitative research... You've mentioned that it is more valuation driven but you also mentioned that there was qualitative information quotations do you think there's been a difference there?

Yes I think we have focused, maybe because of time, maybe because it does back up our business case for spend in those areas on the financial and quantitative. I mean I read the effect document but it is massive and I mean this is page 58 [referring to printed out document]. It would be really good now not to waste it and go back, I think you were in the presentation when Annie, I think, I only ever went to one and it was an hour and a half and it was a bit frantic and it was a bad timing, it would have had more time and more involvement, I mean I would mean I would have loved to have gone to some of the sessions because I've done it in the past and it helps you really understand... Because all I've really seen really is the pictures that we showed and asked and you can't really get a feel for it. So yes, immediately I think we have used the numbers but there are lots of other stuff in there that we could use.

Do you think there are characteristics of the types of planning and decision-making context they deal with in your role?

Sorry say that again

Sorry, I'm probably talking really quietly but in my head I sound really loud...

No it just sounded like a complicated question... But you are talking quietly

Are these characteristics of the types of planning and decision-making contexts that you face in your role that make it more or less important to use customer research?

I might have to think about that one and come back to that one. I suppose as we move forward looking forward to AMP7, 8,9 10 and beyond will probably need to look at this and think could we do something. I do think you've got all the answers and here, that we could certainly do something along these lines again. But for the vast majority of what we do it's regulatory driven and we have to do it. So whether customers say that they want to do it or not, we are committed to those regulatory engagements and is only a small amount likes the aesthetics that are regulatory. So, perhaps in water treatment, we are confined to what we could do. I think as a result of your interview I'll probably go away and do a lot of thinking because they are good questions. I think what the customer has put into perspective is the scale. I think originally we were thinking of reducing by 20 contacts per year 0.4p per customer and were like why are you even asking us? Because it's such a tiny amount of this spend of huge programme. So I don't know how you ask them about mention them and do you spend time this or do you spend. Have I answered the question?

Yeah that's fine

I think I'm sort of thinking as you're asking the questions

Yes it's just one of those things I guess as the business plans been shelved for a little bit...

I think it was a foregone conclusion that customers wouldn't want their bills to go up. Had anybody asked me, I would say I want better service for the same money. So, in a way, and I mean they are never going to say we will pay an extra 20% if you do I guess this, this and this. So I suppose you are limited in what were going to get out of it weren't we?

Just about the nature of what we asked them?

I mean it would have been interesting if the household and business if maybe we had got a bit more, maybe it is in similar and even if we got a bit of context around business customers especially as they go to competition maybe a bit about what they said. Because there is a difference on some things, not so much on others.

So do you think there is been a greater focus on domestic customers?

Yes definitely because that's the way the regulatory process forces it to be isn't it. And they are the majority of our customers I suppose, and maybe the majority of our income... I will, but I suppose there are some larger business customers, but I suppose some smaller domestic customers. I think we've done in proportion, I'm just reading it through quickly... 0.2 million properties for business. Good question, why have we done more households? I suppose business customers are less concerned about taste and odour and more about a constant supply of water and a cost and taking away trade effluent is that they are different groups aren't they.

So just different issues?

I'm arguing with myself here I think. Yes interesting yes.

So, from your perspective, can you tell me a little bit about the customer research activities you are aware of having been conducted as part of planning and decision-making?

In terms of this piece of work?

So probably in terms of everything that happens with regards to the planning process

so, if I stick to my current role because I've got all of that previous stuff in my head...

Yes if you stick your current role as strategy manager

I suppose when I adopted and inherited the strategy, it talked about the PR09 willingness to pay and us all of the data in there, but I wasn't involved in that of course. And then, my understanding is that we act in a similar process again, but for some reason they changed some of the questions, which I never quite understood because then you can't compare. So pollution I think is one where last time we specifically asked, and we asked a different question to this time, you can't say will last time they said this and this time they said that. I've gone off piste a bit... Just remind me what the question was?

So what activities are aware of having been conducted...?

So the vast majority I know about was the willingness to pay where we got the initial values and where they said yes they are they aren't willing to pay. And it took me a while to understand the losses and the gains because I don't think anybody really, I mean it sounds dead obvious now, but I'm not sure I really understood that until later on until somebody said that that is to avoid deterioration and that is to. And then we did all of the acceptability testing which was the impact on bills, which I can't even begin to understand how it all works. I know that we went with different scenarios and said, do you want to pay this and we sort of told them the impact of the environmental, which is a big part of the programme. So that's the big in the main bits.

were there any other bits... I mean you mentioned before about the qualitative work?

Yes. I've seen it I think it was a spin-off from this. That's my understanding.

So it was just a part of this overall piece of work?

Thinking back on this now, we didn't really get enough detail. We just pulled at the bits that we wanted for the plan. Sure there's loads more stuff now that we can use. Because I know that there are things in specific bits done so something and THMs that [Name of colleague] has forwarded about the valuation of disinfection byproducts. So I'm not sure where that came from. So there are definitely some pieces of work that we can now use. The biggest ones I'm aware of is the financial stuff so the willingness to pay and the acceptability.

You talked of it about there you could have maybe been more aware of the different processes?

Yes and I don't think that is because I am new, I think all of my colleagues, really, we just dipped in and out we just got told about bits of information. I remember those slide packs which was really interesting but in an hour we just flew through all the slides and it was just... I mean these are the only pages that I got, pages 57 and 58. And I like that one because it shows what the customers actually have seen and I think it would have been useful to have had a longer session, both beforehand planning it which was before I joined the team. I think so that the strategy people felt like that they owned some of the questions. I think there are a lot of questions that got asked that people don't know why they have been asked so why did we arrive at just these? Because I don't think that there are any surprises in there, we could have almost have said that they would have said yes to that so, I think I was always just trying to keep on top stuff as it came out and understand it because as we were writing a business plan at the same time. It was just timing I guess. The timing.

Were you involved at all, were you consulted at all within the business? You said you

weren't there for the willingness to pay but what about for the acceptability testing?

[Name of colleague] pulled it all together and with him I fed to him my little bit. I didn't really get that involved in it again it all seemed a little bit frantic and last-minute trying to put numbers together. And it's not as simple as a pound of the pound is it? Finances isn't my area so I have a little bit of an understanding of it so I have a little bit of an understanding of the acceptability and I've been involved in it since it was done but not in the lead up to it. That might be because I wasn't here I don't know if any of my colleagues were involved in it.

If you have been more involved in it, which you said is something that you would have liked, what difference you think that would have made in terms of how you've used and incorporated the data?

I suppose it would have helped the understanding of the, because it looks dead simple now that I'm talking about it, but it was a it is a black art when I first saw the numbers and what they meant and how they equated. Because these are like property affected and not per customer there was all of that will hardly converts back to back. So, whether it would have made any difference to the questions or not I don't know because I do understand that customers couldn't possibly say could you want is to maintain some really basic... So what difference would have made? I don't know. I'm sure I mean my manager was involved to some extent but it would have been good to have had somebody from strategy more involved in it. I'm not quite sure what, maybe there would have been more taken away and fed back into strategies than there has been now.

What communication events were done within [name of sponsoring organisation] to facilitate you receiving these kinds of outputs? I know you've mentioned presentations?

I think a new one was that session, I think it was an hour and a half, in that meeting room that wasn't enough and I think we got thrown out of one meeting room. I'm sure you with there? It was in the wind in a meeting room and had come back over to here and find another meeting room?

No, I don't think was that I that I was at that one...

Well it was all a bit last minute but it was really interesting stuff and we asked lots of questions that there wasn't enough time. So we definitely should have had a series of, I guess, everybody that was working on it was very frantic.

So a lot more internal engagement about the design?

I think other people across the business don't need to know this level of detail and don't even know what willingness to pay is. There is definitely a little bit of high-level communication needed about what it was all about.

So if there weren't presentations was everything done by... were there any other ways?

I think yeah we just got the document now and I think that was because I needed it for quality assurance in times of my strategy. It was a weighty tome to read and there were lots of statistical stuff it wasn't necessarily some think that a layperson could read. I think those people that have asked me just got these two pages.

So how would you change it if you had to redesign and deploy these kinds of activities?

I think maybe to know what was going to happen at the outset. So, if we take a step back, I did I think when I just started I got to have a little bit of a review with this and sent backs in comments about what we are actually saying to customers. But it is very much like quick here's here's a few comments. So maybe a bit more involvement in the design of this. It would have been really good for somebody to have gone along and sat in on the sessions definitely and heard the sort of

interactions. If we knew what was going to come we could have been more prepared for it and really a bit more of a bespoke sessions because I really only want to know about my two things specifically.

So more one-on-one tailored...

Perhaps, yes. The really wasn't much time spent on briefing it out. It's a shame really because there is probably more, we probably got what we needed out for the business plan, but there is probably a lot more in there that we could make use of. Bearing in mind that, it is an interesting one, because we are all customers as well and I know what my mom and my family and I would say about it.

They touched on this a bit, but what was the main format and presentation of the outputs?

It was a PowerPoint packed with lots and lots of detail on it and I do think it had different scenarios so you were looking at Rows and columns. If we had gone through a slow way we would have had more time. I think that was the only... She sent out after and I think we followed it up I went to see only a few times and she was really helpful. It's no reflection on her she always came back with an answer and sent me more documents and these because these were invaluable in order to refer to. And I have seen those wanted the comments on it but I can't for the life of me think where it is. We probably should have had a sit down session but as they were writing a business plan is evolving and it was a period of constant change last year. We probably need to now, I know you are doing this for your research, but you should really give it to the lessons learned. I mean somebody talk to me this morning about AMP7 and we are saying all of this now and we said all of this at PR09 and in five years time will be like in my business is got to do it all over again. So, yes maybe something for me to start to think about what we do next time. And do we ask the same questions plus some new ones but then changing and also that you've got no... Next time ask in a different unit in a different way and then you can't say I've said this last time and now they have said this. I don't think it was a simple things that we tried to do was it asking customers what they wanted to pay for. I mean it's good that we actually got something meaningful out of it I suppose.

Some participants have said that there's been a customer research library on the SharePoint did you make that use out of that?

No because I had trouble terrible problems getting onto that. But yes I did know that it was there because we used it, what was the guy was named the one that worked with [name of colleague]?

[Name of colleague]?

Oh yes, [name of colleague]. He pointed me to it and I couldn't get access to it so I did eventually get access look at all the customer documents that yes you are right there around themes. The I found those quiet... You see this, it is absolute in terms of what customers don't want this and they want to do that but this is more about themes and groups of stakeholders wasn't it. I had completely forgotten about that. I did quite from that but again a safe clean drinking water which was the area that I was leading on was pretty much a given in the people were going around saying that they weren't bothered about that whereas hosepipe bans some people won't particularly bothered and they didn't see it, because they don't really have many of them do we. Maybe it was my area specifically, in that our public health is reliable, and safe and clean drinking water is so ~~big~~. I don't think any of the stakeholders said anything other than yes. But yes I was aware of it and I did refer to it on occasions subject a few technical difficulties. I think that only became apparent later run so again perhaps we could have...

So it wasn't communicated about widely that that resource was there?

No. [name of colleagues] did a really great presentation at one point all about the groups and the

stakeholders I don't know if you went to it? That they did it, the double whammy, and then they went to a work team meeting and did it again. And I thought okay yes it was good to hear it twice and then I went to something else and they did exactly the same presentation at which point I was like... Too much of the other.

So did you find that useful. You said you picked up a little bit here and there that you didn't necessarily find anything that you didn't already know?

Yes. We wanted things specific to what we were doing in the plan say it was trying to pin something down to spend for example £25 million here and it was all very high level and it is very hard to say, and it was most of our, or how much is most. It is 75% is it 40% is a 51%?

Did engage with you about the design of those qualitative things?

No I don't know anything about the stakeholder bit. Now I know that my manager [name of colleague] and some of the other strategy managers did go along to the stakeholder so they were involved in it. But no I didn't really.

They didn't really find information particularly useful?

Not specifically for my area but I think that those areas around the environment there were some really good, I think is a safe clean I think it's probably because it is the area that it is if the customers don't want it and therefore we won't spend any money on it... it was never going to be an option.

If you think about how you do things differently if you have to think to PR 19 what do you think would be the data streams that you'd want coming into yourself?

Yes. Probably need to build up into the next strategy refresh really saying what we need to do next time although Ofwat will probably change the rules by next time won't they. It will be a whole new. But yes, definitely if I'm still around in this role and in five years time or four years time, I'll know the process. The problem with this businesses, and we had a meeting this morning where nobody roundtable was involved in 2010, which is only three years ago, so I suspect that come next price review it will be all new people doing things and you don't get that continuity. Its almost like capturing the now really, like doing something that you're doing and I hope that you're going to share that with the business and capturing lessons learned now and then feeding that into the business. That certainly findings around now that what we could do so is definitely been a good learning experience. This moment in time I can't tell you exactly what I would but there will definitely be some maybe different ways of doing it or decent scenario type planning.

Some people have said that they would like more bespoke research on specific areas instead of, for example the willingness to pay and the accessibility research looks at values across a broad range of investment areas. Do you think that would have been...?

Because you've got that issue haven't you where you show the pictures discolouration, and I've never had discoloured water, so is the last thing that I would want to pay for it doesn't interest me. But if I constantly had water coming out of my tap, I know they had to ask a random group of people who may or may not have been affected now when you ask a group that has and who hasn't to get that difference but then that's not a valid statistical. I mean, if people didn't know what's Algae in water, I might be getting too carried away. I think we had age and demographics and a some other characteristics but I suppose it's the areas that they live in the water that a drinks and certainly for the aesthetics which is what I'm focusing on, I can't really say about the others, and even the bathing waters so people who live in Blackpool and frequent in Southport, again bathing waters for me, I don't really go swimming off the coast of the north-west, but if I lived there then I would. So, yes I think some think a bit more bespoke but I don't think that was the nature of what Ofwat wanted us to do. They wanted us to ask the cross-section didn't they.

We could impact on the other stuff for our benefit perhaps couldn't really so ask some affected people.

So you target them...

Maybe to target them but not for the Price Review. It's getting some more qualitative information about what we could have done differently. You know, we had a big incident on algae, if we had would have contacted customers first would they have been happier? There is something in there, but not as a workaround willingness to pay they think. I should have read the whole document preparation really shouldn't it? Its all sorts of coming back to me it seems a long time ago that we did it.

I know, I did try to do it earlier because of that...

I don't think you would have got the time with people

Yes that was the problem. I've managed to capture a little lull in people's work.

These are probably the questions and the lessons learned tight things that we should have done regardless of whether you are doing it anyway to say what could we do differently. Were not very good at lessons learned really in this company. We say we are but were not really I don't think.

Is it that you just don't really capture the right people?

See we always do it on projects, and I don't know, and it just gets put some, some repository. We don't really bring it to life really. We should be able to get this right next time considering it had two goes at it.

So where did you use the customer engagement outputs in your planning?

Sorry where did I...

So where did you use the customer engagement outputs in your planning you might have covered some of this already?

Yeah I probably very much followed the Ofwat steps really and is used it religiously. So how they said. So it was in value for money and then the cost benefit analysis where we factored in what customers wanted to pay so we only planned to improve where we had customer support for improvement they taste and odour and discolouration. Which is a great shame, because there are some areas where we could an improvement in that but because customers said they don't want to pay for it was very hard to substantiate it. So we were limited, and I know [name of colleague], who is on maternity leave at the moment, [name of colleague], she was really quite adamant about her area. They were planning lots of improvements and loads of good stuff that they were going to do in the network and we were told we're not going to do any of it's just because customers don't want to improve. And she was like ahhh... But I can sort of see both sides of it really.

So what was her main issues with it?

They had done all this pressure optimisation and modelling the network and I think they've set really stretching targets and then we said probably can't put that in our business plan because, I'm telling you what she thought now, but I shared the pain really saying that we can't improvement because customers don't support it. And they had to have customer support the plan. Now I don't know whether there is a way that we could have got round that and we said I ~~would~~ be going to do that ourselves at no cost. But we generally went back to just doing maintain and only doing it where customers were, so I think we were perhaps a bit unambitious and I think

that is reflected in what Ofwat's decisions that has come back.

Do you think there is a difference between ambition and innovation in terms of how we deal with it? One of Ofwat ambitions on the introduction a greater customer focus was to supposedly drive innovation in that sense, so do you think has been a bit of a disconnect that?

I think it all got quite political and I can't even begin to understand the politics. But I just remember one big decision making things where it was said no, we are having flat targets and as we don't have the customer support and everyone went well well... And it was said; no we are having flat, final decision. That was sort of the high-level top-down. Whereas I thought we could have got improvements like and this point by doing some really cost-effective in-house improvements, by simply didn't want to do declare an improvement that we would then get measured against whereas they might actually over perform now if that makes sense. I think we have followed it literally to the latter instead of saying, we've probably paid it safe really haven't we thanks to a last price review where we got shortfalls and we didn't want to take the risk. I wasn't really round last time so I can't really say that that's what it felt like. It is feeling like we're being a little bit unambitious but then when you look at this and that's what customers said so.

Did you manage to escalate your arguments?

In my area, where we are performing at 99.95%, you never can really get to hundred really arguably. So I wasn't really to concerned it was more on the network side in terms of the things that we were going to improve. But I know I don't think it did get to, I think it was just that this decision and that's final and economic regulation and the powers that be decreed.

So it really sounds like wasn't very much internal engagement... Was there a reticence there?

I can sort of see what they were saying to in that why would be spend the money if the customers have said that they don't want to stay. It was just a bit disappointing, but I guess that's, why improve your house if you're... It's hard to articulate really. I think I understood it but I was to be disappointed about it anyway.

Did you get much guidance and support in using the outputs of the research?

I think that would have to be a no. I think I had to work it out for myself. By looking at all of the numbers and looking at the aggregates and looking at the gains. I think the problem is when you're really close to something, because I have had this feedback when I was in customer before, it just makes sense doesn't it. This makes sense to me now but there were lots of people didn't understand. I think some people thought it was very simple to understand. But I asked if I needed anything but I think it probably could have been made some explanatory notes on it.

But you knew who to ask if you had a question?

I think after it had the session the briefing I did yes.

Where did you not to use the customer research outputs?

I'm thinking about pollution. I run the pollution strategy for the water assets and we have a very small number of pollution incidents each year in the water. They tend to be more serious, because you've got chemicals into watercourse. So we have a pollution measure of success and we reviewed the valuations, they are massive valuations, in here. But actually, it's a different terminology from PR9 and it assessed pollution incidents from sewers. So if you take it literally there will think of brown stuff coming out is... But they will think of it as a chemical spill. So it was very hard to try and articulate that and it went into the business plan and this eventually got lost

as a measure of success. Wastewater kept it and we took it out. Again, a long, long story, it seems a shame to me that we don't have a measure of success on pollution because it means that we might take our eye off the ball a bit. I suppose because of that will still do stuff, but the question didn't help in that it said specifically from sewers instead of just pollution incidents. I don't know where that came from. Other than that, we've made use to some extent, reviews than a lot of our rewards and penalties so it is definitely made more use of the valuations than anything else really. Which is probably a great shame, because I'm sure there is with loads of good stuff in their. I'm going to go back and to get out and read it.

So what influenced your choice about what you used and where and what you didn't use and where?

But I think the methodologies drove down the numbers because Ofwat worked examples used the willingness to pay data to calculate your, so I don't think that was an option really we had to use those. I guess there was a bit of picking and choosing really if there was something analysis is quite. I just thought of SEMD actually we didn't do so, as a bit of an aside, we did do some research with our Security and emergency measures question asking people around map. So did use a quote from somebody about that I think [name of colleague] sent out what we're going to do to a few people in that specific area. So that was really useful as they understood, so not like asking customers questions about sewers as they don't really know what you're talking about, these people did. So that was quite powerful to use. But maybe I was just cherry picking bits... But surely that's what it was for really to support the business case.

So in that you mean the qualitative stuff?

I think that was very different that was just another one-off, so are SEMD spend, I think, I don't really know what the history of it I just know that I got a succession of emails that contain one of them said exactly I think we've got the balance right, just right, perfect balance of risk and measures, that maintain as assets. So I think we used the numbers and we used a few snippets. The business plan started off quite big and it started off as water treatment and then it got totally slimmed down so I think things about along the way. So I think we started off using a little bit more and it got slimmed down to however many pages at the end.

So for the quotes and things like that, it was just picking bits that supported the arguments and the quantitative stuff, if I've understood it from what you said, that really drove the targets...

Yes the cost benefit analysis for why we are going to do an improvement and also the penalties and incentives to these two areas. So, yes. I guess, had somebody said while there is something else that you can use but...

The difficulty in trying to navigate...

I mean, I don't know what else is in this 58 page document, whether it is just all the methodology. I think you're probably right about that SharePoint site I think there's probably a lot of useful information on there's not been greatly used. At least in terms of the appointed plan. Because I mean there is the appointed it is a plan and then our own individual outcomes. I'm only really involved and the outcomes ones. So mean there is more general customer stuff in there.

Was there any particular reason that he should identify why the other stuff wasn't used?

I think had we had a single minute to stop and take stock along the way, that I think it was a constant up against deadlines. And you would put stuff in and then somebody would edit it and would have senior managers saying this and then saying that you so some of it just got lost in translation really. And I think a lot of it comes down to time and the sheer volume of information so some it just got lost. I do think we have it intended to use it in its entirety, I mean I don't know, I

did what the aim was the start. It probably would have helped if we don't know exactly what we're doing if we'd had a roadmap for what we doing. But I think of it a lot of it comes down to timing and the complexity of the tool.

I mean you mentioned that you cherry picked certain information did you transform or translate the data anyway?

I can't remember now. I think we did do some sort of high-level summary about what people said so I think we did, I don't really know what you mean by transform, that we were very, very careful everything that an audit trail back. We probably did extract a few key pieces and pull into our customers and stakeholders that. So, yes perhaps.

Did you adopt the same approach for each of the areas that you covered, so each of the different service areas?

Yes. I suppose I am only looking at the one outcome with two specific lines. But yes I did use the same approach for both.

Do you think there was a difference in approach adopted by different strategy managers?

I'm absolutely sure there was, and in wastewater as well. I think wastewater had got much more, they've got one of the internal and external sewer flooding and nuisance. So they got more information. So yes everybody did. There was no, this is how you use it as kind of methodology. I think [name of colleague] and I because we worked quite closely together used a similar approach. But I'm not sure about every other area. I mean retail, as well I'm not sure what they did. Yes, interesting.

Do you think it would have been beneficial to have an overarching or was it nice to have the flexibility?

From my perspective it was nice to be able to do it my own way, from an organisational perspectives... Everything was rigorously quality assured and checked by external people so I'm sure if there was any, I think it was all standardised. It was interesting, I really enjoyed it once I got my head round it, it was a lot of interesting information in there. It's just finding the documents afterwards for now we'll see I've written down the SharePoint reference number because I can never find it again. Because people move things on SharePoint and it's just that the audit trail back to the document because I lost it wants and then [name of colleague] have to send at me again because somebody had gotten rid of it.

Would you suggest using something different next time?

I don't know. I don't know if you can lock things down on SharePoint and if you can that make them read-only. But I don't know there was just so much and so complex in terms of all the data pulling in from different areas not sure we could have done anything different. It's maybe back to all linking to the customer area, which is made where it all was anyway, but you can't find things. I suppose it would have been good to have had a paper copy, shocking that I should say this, this actual copy of the whole final report because you can't actually beat sometimes actually just having it. And I probably would have read it cover to cover them instead of printing full 58 pages. I am going to go away and read it.

How much priority do think was given to the customer research outputs in the context of planning and decision-making?

I think when we started we were in the old world of water treatments, processes and technologies. But I think as they went along and it evolved it became apparent that it was all about the customers this time. So I think it did get an increasing amount of, and I did eventually

get it that if customers are willing to pay them we can have an improvement. I think it did figure quite highly in the plan definitely.

And again do you think that is consistent across business?

I think eventually.

Where certain areas faster or slower to pick that up?

I don't know, I don't know why said that. I think it was just a learning curve it's long and I think we did help each other out. But I think the environmental one is a different outcome because you've got external pressures and a huge amount to spend for pearl mussels and I don't really know enough about it really. Quite a lot of that was quite challenging because you've got to spend a massive amount of spend for relatively small amount of benefit so maybe they use it differently to our area. They wanted to spend the money to improve. Now I think it was generally a standard approach. Yes.

But where there other stakeholder drivers attached to get priority?

I think there is a lot about environmental stuff stakeholder groups. Moving away from this page. But I wasn't really that greatly involved in it but I think they did have people in and they did have people she felt like that it was a bit of not in my backyard sort of thing so up in Cumbria everybody wanted to spend money on the pearl mussels but then when you go down into Cheshire who cares about the mussels in the river you know. That was interesting from that perspective, I mean not my area, but I think that was used in a different way to say customers don't want to spend the money and it helped to put together the different scenarios for the acceptability.

So was it a difficulty when it was different conflicting views across the region?

You know it's a so, yes, I'm sure you'll probably this talking to somebody in that area, but yes.

Who would that be? Is it [name of colleague]?

Funnily enough it started off with [name of colleague] who wrote the first draft and then it went across to [name of colleague] and then [name of colleague], the graduate, whose second name I've forgotten now. And then [name of colleague]. It's been a long day today sorry. The environmental one had a succession of people but I am glad to not quoting me on who was writing it. They were trying to pick up after the next one. So I'm not sure ~~who~~ you would speak to probably [name of colleague]. Yes I think it is [name of colleague], but don't tell that I didn't know her name. She'd been on the graduate scheme and in a fantastic job, coming in new to the business and picking up writing business plans section. So she might have some useful insights. But yes [name of colleague] is the experts on the mussels but I'm not sure she would have done too much about interpreting the numbers. I might be wrong.

So where you have actually used the customer research outputs what actual change did that affect?

I think it changed a target for what we are going to do and discolouration taste and odour. So initially, in the strategy originally we were going to go from 10,000 to 5000 to 2500 and then to some silly amount. We then looked at what they are willing to pay for and we could realistically do with that money so it is very much influenced the target down to an absolute hammer drill going to spend more going to deliver. So there is a direct link on that one. ~~yay~~. But it's explaining that to other people now I think.

When you say what we were going to deliver, what do you mean by that?

I suppose when the strategy was written we didn't really have the solutions to 3. But now we've not got any solutions for like manganese removal for discolouration so we could do it at all 86 works because do it at a number. So we've chosen the work for the maximum benefit for money that customers are willing to pay for. So it has really refined plan

So change the type of proposals?

Maybe not the type that the number that we do. Yes.

And did it change the process, so the solution that you're going to put in place or was that always going to be?

No I don't think it did.

And you said its change the magnitude of the investment?

Yes we've got it down to all going to spend this much here and deliver this there. I think there is a real link now with the plan just to those two specific areas.

How about the pace of investment did it change that?

Yes and I mean because if customer contacts and they want to deliver it early with both it forward early to deliver early. I was then say early start it is not only starting it's just earlier in the program so yes it has sped things up because that's what customers want.

To what extent do you think your programmes of work in the outputs of your work would have been different without having done the customer research?

Trying to think. He might have gone full circle among you could actually afford as a company and come back to the same planned. But they think would focus so much on the customer benefits we'd have just spent it on maintenance and things that we would have. Yes, I do think we would have focused so much on doing things around algae and chlorine and discolouration. So maybe we've done more customer focused work then we would have done.

And of those things that...

This is where it gets really complicated because the measure of success for safe clean drinking water, the big measure is an index. It's an index of indices it's the most complicated measure. That customer contacts is one aspect of that measure the others are all regulatory measures. Because of the valuations which are high, it gives our customer contacts a huge big influence on that measure of success than any of the regulatory stuff which you can say is that bonkers. However, that's what customers have said you have to do the others anyway because otherwise we would get prosecuted by the DWI. So have forced us down, doing as much as we possibly can. It is forced us to look for operational solutions as well and some of the things I've been doing is actually working with people who take the calls from the customers and understanding what they want. So it's driven different behaviours in that there is now a real focus on the customer. ~~If that makes sense?~~

What influence has having to use the customer research had on the process that has gone through in determining the plan?

Have we gone through that already? I'm starting to like saying the same things.

Oh are you, okay. We probably have covered a bit of that.

I could just go back to the customer contact. So the taste and odour is made up of some algae, earthy musty and chlorine. In terms of volumes we have 1500 a year out of 7 million customers. So really I'm getting all excited about doing this doing that, but if you put it into context there are just a lot more important things to do than 1500 customers. That's a handful of week. I do think if we have is that customers really have one and a half thousand contact a year then I would probably say well I suppose it depends whether you're not even affected. So now I've gone full circle, and starting to say myself I will maybe we're focusing on some think that is actually something really low. Actually quite good at the league table in terms of companies so we just above the middle now.

With that question I was thinking more about the practical things such as has it had to change the resources that you've used the skill sets that you've used?

Because there's not a lot we can do around, I mean were always going to chlorinated water because that's what we do and we can't not do that when this public health at risk. I think we are trying to do something that a bit more different. ~~To bring down the numbers.~~ So the discolouration are things that we can do because we know that we cause it by putting the stuff in the first place and then staring it all up. Better taste and odour a little bit different. So we are trying to look round and be proactive can we contact customers can we do campaign where was done a solution now and how we started off. So I think we are looking at, and if we look at standardising chlorine and it more so some days it is higher and on some days it is lower. So we are looking differently I think that it because there isn't one big solution that we can do.

What benefits have you gained more generally in using customer research outputs in your planning and decision-making, not specific to the decisions but just more generally?

I think coming from customer [function] I perhaps have a different view to a lot of people working in strategy. I did a presentation when I first started about them, about customers, and just the basic things that people don't think, and they don't think customer they think about technology and innovation and slip lining in all this kind of stuff I think there are some really simple. I think, from my perspective, I'm the wrong person to ask because I like to did think that a championed the customer anyway. But sometimes it's not about fixing the problem is it, it's about how you deal with them more so than explaining to them that we have had to increase their chlorine because of whatever. What benefits that I had personally or?

yes, just your general thoughts...

Yes I think is a strategy team I think they're thinking a lot more about the customer now and what the customer wants to pay for. I think I'm running out of steam now apologies have had all days in meetings and it's the wrong time of day. I suppose it's learning from this is the go forward. Heaven forbid I'm involved in PR 19 but there are definitely learning points and getting involved and you definitely need somebody, the practitioner, involved in it whether to somebody and strategy or an asset manager or production manager or somebody out there involved.

Involved in the design?

In the whole end to end process really. I suppose from engagement point of view as well this just kind of landed on Earth, where as if you'd been involved would have been a bit more potent. I suppose it has helped to do business case in the plan which is what it was intended for, so it served its purpose.

So this is the last question,

Phew...

If you have to think of performance indicators for what is successful customer

engagement activity and then the use of that in the business plan, what performance indicators would you use?

Can I just sort of ramble on this one and see if answer the question. I think our measures for safe clean drinking water are just customer contacts and that's our measure. And really, that's customers that are unhappy, isn't it, that had to ring up. We've not really got to measure how happy the people that don't contact us are so we need to almost turn that on its head and ask some of these questions. While we need to do, maybe, while we didn't do it for SIM week? We only ever contact customers who have contacted us we somehow, and I don't how we do it, we somehow need to get in touch with the people that haven't contacted us. Maybe when we go to fit meters maybe they could ask then. There are loads of different ways... We only really see the bad stuff and sometimes it can be quite depressing it is great to hear, I don't know whether you heard [name of colleague] radio dial in, it was a bit of a long show, but some people round in and said I just want to tell you how fantastic our water is. And they were joking that it was [name of colleague] cousin. But some people generally round up to say, and are generally made me feel excited because sometimes you think all these people that ring up, but actually there are people out there that think the Rivers are much cleaner, and I think it's great because you pay so much day and she gets so much of this.

So is hearing the other side of it?

So our main drivers and benefits that we are counting are round less customers contacting us, which is a bit of a sort of negatives. We haven't really got a leading indicator. And I was also thinking that reduced the CCG process, and I went to a conference in London and somebody couldn't make it so I volunteered to go to it and it was a really good day. I sat next to somebody that has been on the Southeast CCG and he was keen that they kept involved in going forward which I think is a really good; I think this an opportunity there in terms of how we use those people and those contacts. There would really love to have gotten involved in the CCG process. I haven't really mentioned that that I don't think that counts as customer research. It is good insight from stakeholders and regulators

Do you think that would have helped in developing the plan?

Yes they got very little back from the CCG every month for whenever we did loads of work doing presentations and slides and wearer to the numbers but there was never anything coming back that said this is what came out of it. There was like the end results that was never any sort of qualitative feedback. Yes I think we had quite a tough CCG didn't play. That answer the question?

Yes no that was great thank you.

You've made me think about all sorts of things now it's been really useful. I think we have the mentality in that we think that's done and that's it now we don't really have time to think about it and take stock.

I'm glad it's been useful thanks very much for taking part.

[END]

E4 Thematic analytical framework

1	PERSONAL DETAILS
1.1	Years in sector
1.2	Experience
1.3	Current role
1.4	Other
2	ATTITUDES TO CUSTOMER ENGAGEMENT
2.1	Purpose
2.2	Importance
2.3	Perception of value
2.4	Other
3	SEEKING VIEWS
3.1	Roles
3.2	Practitioner characteristics
3.3	Practitioner behaviours
3.4	Organisational behaviour
3.5	External influence
3.6	Information management
3.7	Mechanism selection
3.8	Mechanism content
3.9	Interactions
3.10	Other
4	USING CUSTOMER CONTRIBUTIONS
4.1	Roles
4.2	Practitioner characteristics
4.3	Practitioner behaviours
4.4	Organisational behaviours
4.5	External influence
4.6	Information management
4.7	Actual use
4.8	Interactions
4.9	Other
5	INFLUENCE OF CUSTOMER CONTRIBUTIONS
5.1	Roles

5.2	Practitioner characteristics
5.3	Practitioner behaviour
5.4	Organisational behaviour
5.5	External influences
5.6	Information management
5.7	Actual influence
5.8	Interactions
5.9	Other
6	SUCCESS INDICATORS
6.1	Outcome
6.2	Process

E5 Excerpt from thematic chart for theme 4.7 of thematic framework

Ref	Data	Primary category	Class I	Class II	Summary [Incl. those in class II]
813_014_U_11	CE outputs of AT provided an affordability check/ challenge for DM (p9)	Role	Affordability check		Provides an affordability check
813_013_U_12	Ofwat wanted light touch not detail - stuff was put in an appendix (p8)	Role	Constraints		Extent of role determined by Ofwats preference for layout Type of incentive determines type (qual / quant) of CE used Non-discretionary scheme delivery regardless of CE Role limited by feasibility of proposed schemes Not used at project level as not defined
813_013_U_13	Ambition i.e. financial or reputational incentives influenced whether numbers of "fluffy" stuff was used (p9)	Role	Constraints		
813_021_U_8	Have to deliver Q schemes whether or not CE supports it or not (p3)	Role	Constraints		
813_022_U_19	Outputs from focus groups weren't used because as a result of the outputs proposed schemes were decided not to go ahead (p9)	Role	Constraints		
813_016_U_9	Didn't use CE at project level - they aren't defined yet but instead as they go through the AMP (p6)	Role	Constraints	Programming	
813_022_U_7	Like to use qual quotes in presentations about strategy (p5)	Role	Dissemination		Use qual quotes in presentations
813_022_U_14	Like to show customer perspectives re. leakage in presentations (p5 / p6)	Role	Dissemination		
813_012_U_4	Used CC to be able to tell the CCG how it aligns or doesn't align with plans and why (p4)	Role	Influence stakeholders		Explain how CE does / doesn't align with plans Provides info to challenge

813_012_U_5	Where CC doesn't align with legislation it provides feedback to regs in CCG re. customer views to challenge their designations (p4)	Role	Influence stakeholders	stakeholder designations Balanced presentation of CE to CCG
813_015_U_13	IN comms with CCG both positive and negative elements were presented (p7)	Role	Influence stakeholders	
813_011_U_11	Use where need a more nuanced understanding where you can't be rational - go on feelings and best estimates	Role	Inform	
813_014_U_7	CRL used if Chapter writers had an issue they needed to understand and provide insight for (p4)	Role	Inform	Structure / develop BP
813_017_U_5	WR team thinking about how can use benefits in their DM (p9)	Role	Inform	
813_019_U_5	Used in CR reports in materiality matrix's which show what is important to customers and stakeholders (p8)	Role	Inform	Provides business with a more nuanced understanding of issues Used in chapters where needed for information
813_019_U_6	Make the business aware of issues and encourage the business to respond to it (p8)	Role	Inform	Informs team thinking / mindset Informs materiality matrix Informs perceptions of own assumptions
813_022_U_10	Provides you with information that helps think about what might do with the costs (p8)	Role	Inform	
813_022_U_12	Reactive responses to consultation responses where issues flagged (p14)	Role	Inform	
813_023_U_1	Prior to PR09 was ranking SF schemes based on own assumptions about customer views. At Pr09 asked customers to value it (p1)	Role	Inform	
813_012_U_3	CP work used to ensure right questions for WTP - balanced with bus priorities (p3)	Role	Inform research design	Informed subsequent CE research design

813_019_U_4	Comms used CE outputs to drive a comms piece on Value for Money (p6)	Role	Inform research design	Drives themes of comms work Informs future WSD research Informs need for future comms campaigns
813_022_U_11	Use CE to optimise install to not install ratios in water saving devices to provide more robust figures in estimations (p9)	Role	Inform research design	
813_019_U_3	Used outputs in terms of subjective rankings of service areas to understand where to target additional comms activities i.e. TV show (p6)	Role	Inform research design	
813_013_U_4	Worked to try to justify programmes using CC (p2)	Role	Justification of approach	Used to justify approaches adopted in programming Used to justify approaches to CCG Used to justify approaches in BP Used to justify approaches in Drought Plan
813_013_U_5	Perception that it has been used quite a lot, used to justify approaches with the CCG (p2)	Role	Justification of approach	
813_014_U_8	Themes were then formed into narratives and then fed into chapters to support / justify approach (p4)	Role	Justification of approach	
813_014_U_10	Helped to strengthen work around particular options (p9)	Role	Justification of approach	
813_022_U_6	Justification of drought plans (p4)	Role	Justification of approach	
813_017_U_7	Tried to show both sides of the coin - no point trying to hide anything as it will come across as evasive - use this to explain why we have done what we have done (p7)*	Role	Justification of approach	
813_013_U_9	CE has also been used for programming (p7	Role	Programming	
813_015_U_6	been used to reign back water programme to accommodate more expensive statutory expenditure in WW (p8)	Role	Programming	
813_016_U_6	Predom high level trends especially for Q	Role	Programming	

	programme (p3)				Used to prevent unsustainable business direction
813_016_U_7	Facts stated that X % of customers didn't want you to go over stat req then this would be built into the plan (p4)	Role	Programming		Used at key decision-points to decide asset level course of action
813_016_U_10	Used at programme level (p6)	Role	Programming		Used to value proposals for improving targets
813_017_U_4	Doesn't feel that the CE data has been used in a way that has made company direction unsustainable in terms of maintenance - balance has been struck (p9)	Role	Programming		Used to scale incentives and penalties associated with performance against targets
813_017_U_6	WTP valuations are being used at key decision-points to choose between maintenance; replacement; abandonment and then only agree to abandon it if it can be justified on a customer ground (p9)	Role	Programming		Used to determine magnitude of programme and then schemes within that would be revised throughout amp
813_020_U_8	CE used to value proposals i.e. costs and benefits (p2)	Role	Programming		Constrained overall price cap of investment
813_021_U_5	Used it to value of improving from poor to good or poor to moderate (p4)	Role	Programming		Valued solutions were ranked and selected until met overall price cap determined by AT
813_021_U_6	Main influence was in target setting - whether want to improve or stay stable and then looking at error bounds so if over performed by x% or underperformed by x% determined size of penalty or reward (p4)	Role	Programming		
813_023_U_2	PR09 WTP values were used to determine size of prog and which schemes were included in prog and revising this through the AMP (p2 / p8)	Role	Programming		
813_023_U_3	AT constrained the size of the programme as this was related to bill increases. set a price cap (p4 / p5)	Role	Programming		

813_023_U_4	CBA used to prioritise projects up to the price cap set by AT (p5)	role	Programming	
813_023_U_5	Use WTPS2 to determining projects in Amp6 prioritisation - just not in BP due to timing issues (p5)	role	Programming	
813_023_U_6	ID problem areas, solutions developed, solutions costed, solutions into OPTIMUS, WTP + other benefits into OPTIMUS, solutions ranked, solutions selected until ran out of money (p6)	role	Programming	
813_017_U_12	Ww face different challenges i.e. more env work - CE in ww changed pace and affordability but in w It was about changing the overall direction or the endpoint as to where we were going to go (p8)	Role	Programming	
813_014_U_1	Customer Promises work important as provided the strategic bones which the plan was drafted around (p3)	Role	Structure / develop BP	
813_015_U_5	AT2 results used in write up of BP (p5)	Role	Structure / develop BP	
813_016_U_3	Supported bP write up (p2)	Role	Structure / develop BP	
813_016_U_4	CE data supported section on stakeholders in BP (p3)	Role	Structure / develop BP	
813_016_U_5	Presented what customers considered to be priorities, whether they wanted to pay more or less to maintain a stable service or a greater service. (p3)	Role	Structure / develop BP	
813_016_U_11	Wasn't used in their part of the BP that they were responsible for but pointed to supplementary chapters were it may have	Role	Structure / develop BP	Customer promises structured Business Plan AT supported BP content Presented customer priorities and their bill and target preferences In some cases only used in supplementary chapters not main sections Provided balanced view of customer research findings

	been used (p4)			
813_017_U_3	Started chapters with what the customer and stakeholders wanted showing both sides of the coin including where there was conflict - i.e. so qual work was being used to set context in chapters before moving on to the MoS and how these was done (p7)	Role	Structure / develop BP	
813_011_U_6	CE useful for the blurb i.e. supporting evidence in BP (p8)	Role	Supporting evidence	
813_013_U_18	Reputational incentives tended to be supported by 'fluffy stuff" (p9)	Role	Supporting evidence	Reputational incentives supported by qual
813_013_U_19	financial incentives were supported by a "real" statistical plan (p9)	Role	Supporting evidence	Financial incentives supported by quant
813_020_U_7	Not sure how qual outputs were used (p2)	Role	Unsure	Unsure how used
813_011_U_3	used CC to align on top of strategies that had already been developed	Role	Validation	
813_011_U_4	Regulator states have to use it to inform plans, wc already have plans that think is the best thing, in order to gain legitimacy we have to demonstrate it matches customer stuff (p7)	Role	Validation	CE aligned to predetermined strategies
813_011_U_5	You have an impression of what plan is going to be based on other external views and where the customer evidence supported that it was part of the mix (p8)	Role	Validation	Have to amend plans to match customer research to gain legitimacy Used where it supported plans
813_014_U_12	Still a sense that we will write the plan and then if CE supports it that is ok and if not we will still need to write the plan to meet ofwats needs (p8)	Role	Validation	

E6 Actor contributions to knowledge management practices

Table E6-1 Practitioner roles relative to expressed participative process

	Determination of regulatory reporting requirements	Activity scoping	Detailed design	Output generation	Transformation and packaging of outputs	Distribution and dissemination of outputs	Outcome delivery planning	Development of investment plan	Business plan documents authoring	Water Resources Management Plan
Executive Team										
Steering groups										
Economic Regulation										
Customer Research										
External communications										
Strategy Teams (Including: Water resources; Water non-infrastructure; Water infrastructure; Environment; Wastewater non-infrastructure; Wastewater infrastructure)										
Asset management, OPTIMUS and Investment planning teams										
PR14 Management Team										

Ofwat										
CCG										
Stakeholders										
Experts										
Fieldworkers										

E7 Customer engagement activities conducted

Table E7-1 Customer engagement activities conducted

Customer contribution identified	Description	Mechanism type adopted	Mechanism categorisation	Regulatory driver
Acceptability testing - 1	To gain an initial understanding of the acceptability of proposed levels of service and the associated bill impact across a range of attributes and the entire investment package	Survey Focus groups	Consultation Participation	Y
Acceptability testing - 2	To confirm the acceptability of proposed levels of service and the associated bill impact across a range of attributes and the entire investment package on the basis of amendments following acceptability testing 1	Survey	Consultation	Y
Supermarket stall	None provided	Supermarket stall	Communication	
Value for Money campaign	None provided	Social media Giveaways Radio adds	Communication	
Water saving devices supermarket stall	Promotion of water saving devices to increase customer uptake	Supermarket stall	Communication	
Showerhead demonstration in supermarkets	Promotion of water saving showerheads to increase customer uptake	Supermarket stall	Communication	
Water saving campaigns	Communication campaigns to promote water saving behaviours	Social media Giveaways Radio adds Bill boards YouTube videos	Communication	
Customer contacts / complaints	Information recorded from when customers have contacted the organisation i.e. to report a leak or an interruption to service	None	Communication	

Social tariff research	To gain an understanding as to how the organisation can provide payment structure for those who struggle to pay their bill	Deliberative groups	Participation	Y
Involvement of plumbers with water saving devices	To gain an understanding as to the interest of plumbers in promoting water saving devices on behalf of organisation	Focus groups	Participation	
Customer priorities	To gain an understanding as to the main issues for customers with respect to their water and wastewater services. This fed into the WTP research	Group discussions	Participation	
Customer promises	Identification of overarching service issues in order to provide the strategic bones for the business plan and assist in the articulation of outcomes	Survey Focus groups Online interview	Consultation / participation	Y
Social media	None provided	Social media	Communications	
Water use behaviours	To gain an understanding of demand management behaviours in West Cumbria	Social research Saturation surveys	Participation	
Leakage research	None provided	Survey	Consultation	
Water saving devices survey	An annual follow-up survey targeted at those customers who were offered water saving devices	Survey	Consultation	
Micro-component survey	To gain an understanding of the water consuming activities within residential households	Survey	Consultation	Y
Leaky-loo strips high consumption research	To gain an understanding of the effectiveness of 'leaky-loo' strips at identifying residential leaks	Survey	Consultation	
West Cumbria security of supply research	To gain an understanding of customer preferences for schemes to address security of supply issue in West Cumbria	Survey	Consultation	
Water Resources Management Plan consultation	A consultation on the proposed Water Resources Management Plan	Consultation	Consultation	Y
WTP stated preference survey – stage 1	To gain an understanding of the value customers place on improvements or deteriorations in levels of service across a range	Survey	Consultation	Y

	of attributes			
WTP stated preference survey – stage 2 Water Resources	To gain a greater clarity of understanding of the value customers place on improvements or deteriorations in levels of service across a range of water resources attributes	Survey	Consultation	
WTP stated preference survey – stage 2 Sewer flooding	To gain a greater clarity of understanding of the value customers place on improvements or deteriorations in levels of service across a range of sewer flooding attributes	Survey	Consultation	

E8 Factors perceived to have fostered and constrained knowledge acquisition practices

E.8.1 Factors perceived to have fostered and constrained knowledge acquisition practices

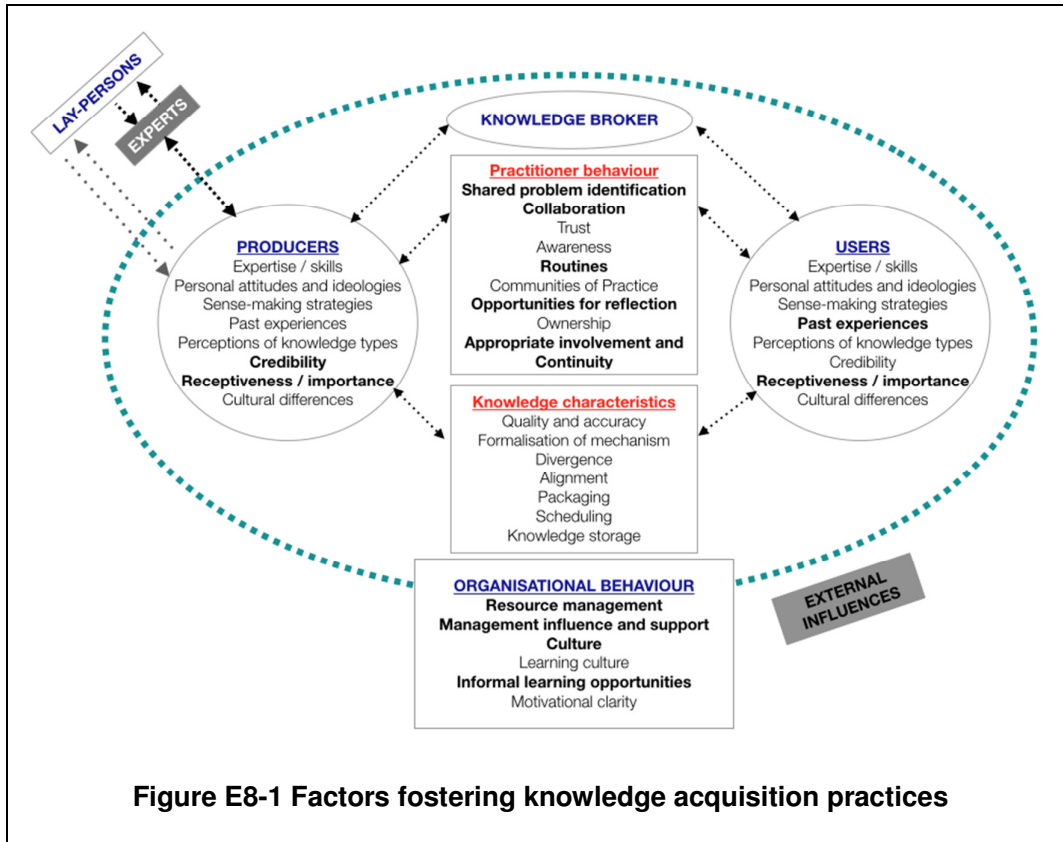


Figure E8-1 Factors fostering knowledge acquisition practices

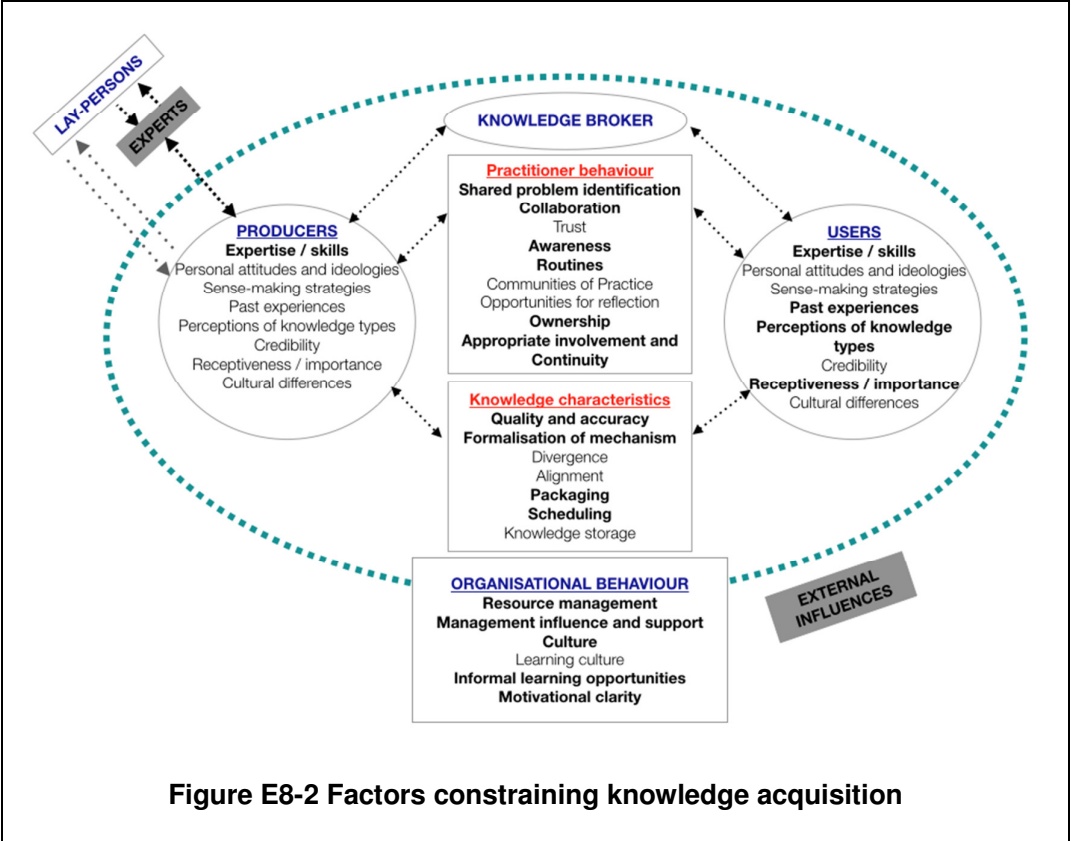


Figure E8-2 Factors constraining knowledge acquisition

Table E8-1 Factors fostering knowledge acquisition

Category	Factor	Description
Practitioner characteristics	Past Experiences	<ul style="list-style-type: none"> – Strategy Managers with prior Price Review experience were able to better engage in the knowledge acquisition activities, in particular WTP activities as they were able to better anticipate the output format and had pre-developed routines for its application – Strategy Managers that had prior experience in Retail functions of the organisation had a greater familiarity with the acquisition of Customer knowledge for planning and decision-making
	Credibility	<ul style="list-style-type: none"> – External credibility of the knowledge acquisition process was enhanced through the use of external experts – Internal credibility of the knowledge acquisition process was enhanced through academic peer review scrutiny
	Receptiveness/ importance	<ul style="list-style-type: none"> – Economic Regulation practitioners and Customer Research practitioners were committed to the acquisition of customer knowledge for use in the Price Review process – The receptiveness of Strategy Managers and PR14 team increased as the importance of customer knowledge acquisition process became increasing manifested within the organisation
Experts	Experts	<ul style="list-style-type: none"> – The commissioning of experts enabled the acquisition of customer knowledge through the deployment of Customer Engagement activities which could not have been achieved by practitioners within the organisation
Practitioner behaviours	Shared Problem Identification	<ul style="list-style-type: none"> – Shared problem identification practices were adopted in Customer Engagement Activities that aimed to generate highly specific outputs. Examples provided include: WTP Stage Two studies into Water Resources and Sewer flooding, and Acceptability Testing – Customer Engagement outputs appear to be perceived to be of greater quality as a result of Shared Problem Identification
	Collaboration	<ul style="list-style-type: none"> – Practitioner (Economic Regulation, Customer Research, Strategy Managers and the CCG) attendance at Customer Engagement activities provided valuable context around the acquisition of customer knowledge – Close collaboration between Experts and Economic Regulation practitioners facilitated the improvement of econometric research skills in
	Routines	<ul style="list-style-type: none"> – The development of routines for activities associated with the acquisition of customer knowledge (as a result of

		prior experience) enabled practitioners to better manage the demands placed on them
	Opportunities for reflection and feedback	<ul style="list-style-type: none"> – Opportunities for informal engagement with colleagues and the provision of updates on Customer Engagement Activities at PR14 briefing sessions enabled a broader level of awareness to be gained across the Strategy Teams
	Right people involved and continuity	<ul style="list-style-type: none"> – Water resources practitioners capitalised on engagement skills within the External communications team by collaborating with them on water saving devices engagement activities enabled more efficient use of resources
Organisational behaviour	Resource management	<ul style="list-style-type: none"> – The speed of the design and delivery of Customer Engagement activities was enhanced through the use of external consultants
	Managerial influence and support	<ul style="list-style-type: none"> – The acquisition of customer knowledge was highly supported by the Executive Team – The involvement of senior managers in the knowledge acquisition stages was highly regarded
	Culture	<ul style="list-style-type: none"> – The extent of impact on organisational culture associated with the increased expectations for customer knowledge acquisition was perceived by some Strategy Managers to be less than at PR09 – this contrasts with other practitioner views
	Opportunities for informal learning	<ul style="list-style-type: none"> – The improvement of econometric research skills in Economic Regulation team practitioners was associated with close collaboration with Experts
External influences	External influences	<ul style="list-style-type: none"> – Regulatory drivers for specific Customer Engagement activities strongly provided a way of focusing the organisations resources – A strong media and government low cost agenda for utility organisations strengthened the organisations rationale for the acquisition of customer knowledge – A perceived transitioning towards commercialising the delivery of water and wastewater sectors in England and Wales strengthened the organisations rationale for the acquisition of customer knowledge

Table E8-2 Factors constraining knowledge acquisition

Category	Factor	Description
Practitioner characteristics	Expertise	<ul style="list-style-type: none"> - A lack of Customer Engagement skills within the organisation renders the organisation dependant on external experts to drive the detailed design of Customer Engagement activities - The dominance of technical expertise of Strategy Managers (an little to no Customer Engagement skills) has constrained the extent to which Strategy Managers perceive their input into in the knowledge acquisition stage - The strong economic research expertise of Economic Regulation practitioners was perceived by Strategy Managers to have constrained their perceived need to engage with other practitioners on Econometric Customer Engagement activity design and content - Those practitioners in External communications, whilst being skilled in engagement, are perceived to lack technical knowledge. This is perceived to be an issue by Strategy Managers who have questioned their ability to effectively articulate complex concepts in their engagement activities - There is a large knowledge gap between customers, the CCG, experts and Strategy Managers which constrains easy knowledge exchange requiring all actors to adapt their behaviours to the needs of the situation
	Past experiences	<ul style="list-style-type: none"> - Few practitioners had prior Price Review experience this constrained the ease at which practitioners could acclimate to the addition of unfamiliar practices to their routine and added to their cognitive burden - Poor experiences at the previous Price Review limited some practitioners confidence in the organisations ability to execute an effective knowledge acquisition process
	Perceptions of lay knowledge	<ul style="list-style-type: none"> - Some Strategy Managers were unconvinced of the robustness of Customer Engagement activity recruitment mechanisms voicing concern about its ability to capture views of 'normal' customers - The efficacy of Customer Engagement activities was perceived to be affected by a low level of customer knowledge about water and wastewater services and how it interacts with their bill
	Receptiveness and perceived importance	<ul style="list-style-type: none"> - Strategy Managers were reported by some to be unengaged in the knowledge acquisition processes early in the PR14 process. This was attributed to a lack of support for the acquisition of customer knowledge for use in the PR14 planning and decision-making process. - The acquisition of customer knowledge was, in the early stages, not considered to be a key part of the PR14 process and thus received little attention from Strategy Managers - There is limited legacy of broad acquisition of customer knowledge for the PR14 planning and decision-making process which influence its receptiveness in the organisation

Experts	Experts	<ul style="list-style-type: none"> - The use of Experts from outside of the organisation increased the complexity of effective knowledge sharing - The use of Experts and fieldworkers from outside the organisation limited the extent of their organisation-specific and sector-specific knowledge raising concerns about their ability to articulate complex organisational issues accurately whilst being understandable for customers and inevitably the quality and alignment of the outputs generated
Practitioner behaviours	Shared problem identification	<ul style="list-style-type: none"> - A lack of Shared Problem Identification practices between practitioners responsible for the acquisition of customer knowledge and those who would be subsequently applying this knowledge had negative implications for the application of customer knowledge - A lack of Shared Problem Identification practices in the scoping phases of the knowledge acquisition phase constrained easy understanding and active engagement responding to Customer Engagement activity information requests and consultation as communications important lacked context. This is supported by the views of Economic Regulation practitioners who stated that Strategy Managers were slow to respond to information requests and reluctant to commit to providing data due to concerns about how it was to be used. - Poor Shared Problem Identification practices resulted in perceptions that Customer Engagement activity consultations (including data validation) were insufficiently robust with implications for the quality of outputs generated
	Collaboration	<ul style="list-style-type: none"> - Early collaborative efforts (a Customer Engagement working group) were disbanded - Collaboration with the CCG formed the major focus for knowledge producers at the detriment of receptiveness and users within the organisation
	Awareness and receptiveness to other views	<ul style="list-style-type: none"> - Economic Regulation practitioners found it difficult to express the implications of Ofwat's changing approach to PR14 due to the delays in their availability of their guidance - Poor receptiveness to the acquisition and use of Customer knowledge reported at the start of the PR14 planning and decision-making process constrained the progress of knowledge acquisition - Little consideration of raising awareness of the aims of customer knowledge acquisition resulted in poor understanding of the processes and the implications of decisions made within this phase - Economic regulation practitioners were reportedly unreceptive to suggested modifications of Customer Engagement Activity design suggested by Strategy Managers
	Routines	<ul style="list-style-type: none"> - Quinquennial nature of the Price Review constrained the extent to which practitioner developed and embedded these practices into their routines - Knowledge acquisition processes did not form a compelling component of Strategy Managers routines as they did not perceive it to be a key element of the PR14 process, instead a parallel work stream

		<ul style="list-style-type: none"> Information requests and consultation opportunities in the knowledge acquisition phase were described as rushed and frantic limiting the ability for practitioners to fully engage in this process
	Ownership	<ul style="list-style-type: none"> Limited ownership of the Customer Engagement activities by Strategy Managers had implications for their understanding of the objectives of these activities and their engagement in their design, the alignment of outputs to their needs as the main users and how the application practices they employed
	Right people involved and continuity of involvement	<ul style="list-style-type: none"> Commissioning of Experts external to the organisation limited the continuity of support and guidance for the practitioner within the organisation after the end of the project The management of Customer Engagement activities from Economic Regulation was perceived to have been a poor choice due to the limited exposure to customers this team. The lack of a central Customer Engagement function to manage and co-ordinate Knowledge Acquisition limited the strategic approach to its design and deployment with implications for its use
Knowledge characteristics	Quality and accuracy	<ul style="list-style-type: none"> Need to simplify complex themes in order for content to be understood by customers risks over-simplification of service issues and prevents the exploration of some themes with customers The need to explore both water and wastewater service issues in a single Customer Engagement introduces potential presentational asymmetries due to the nature of each service type Regional sample population limits the opportunities to explore specific location specific service issues limiting collection of valuable customer knowledge
	Formalisation of participatory mechanisms	<ul style="list-style-type: none"> Strategy Mangers reported being alienated by the use of econometric research methods, referring to them as 'black box' or a 'black arts', with implications for the ease of their understanding and engaging in consultation exercises
	Packaging	<ul style="list-style-type: none"> Poor packaging of WTP activity consultation resulted in confusion amongst practitioners Knowledge producers focused attention on the packaging of consultation material intended for the CCG at the detriment of the packaging of material intended for practitioner within the organisation
	Scheduling	<ul style="list-style-type: none"> Lack of strategic scheduling of Customer Engagement activities led to a lack of consistent approaches to sample population segmentation across individual projects Reactionary projects scheduled late in the process to account for poor coverage of themes in Customer Engagement activities Limited attention was given to the scheduling of Customer Engagement activities relative to concurrent Strategy development affecting the robustness of content provided by Strategy Managers as LoS options were not fully defined

		<ul style="list-style-type: none"> - Poor consideration was given to the design schedule of Customer Engagement activity development. The stress on the overall delivery timescales constrained the innovativeness of mechanisms chosen instead privileging those that enabled easy management and control - Early scheduling of Customer Engagement activities was constrained by the need to balance this with its continued relevance at submission - The unanticipated level of consultation required by the CCG was a big constraint on the management of delivery of Customer Engagement activities with implications of their routines in managing knowledge sharing at this stage
Organisational behaviour	Resource management	<ul style="list-style-type: none"> - The organisation lacked sophisticated corporate systems that enabled the organisation to extract value from existing knowledge regarding customers view (i.e. customer contact data) necessitating a focus on the acquisition of new knowledge
	Management influence and support	<ul style="list-style-type: none"> - Lack of managerial influence on ensuring alignment of Customer Engagement activities and concurrent strategy and business plan development at a tactical, functional and organisational level - PR14 management team were not receptive to the need to acquire new customer knowledge at PR14 which resulted in a slow start to this process and personnel changes within the team - The Service Incentive Mechanism (SIM), a critical corporate driver, caused some senior managers to be cautious about the acquisition of customer knowledge for fear it may attract SIM points
	Culture	<ul style="list-style-type: none"> - The organisation is considered to be undergoing a culture change from Utility provision to Service provision. Culture changes are perceived to be very difficult particularly where there is a limited legacy of acquiring new customer knowledge.
	Opportunities for informal learning	<ul style="list-style-type: none"> - Practitioner described the PR14 process as a learning experience due to the unfamiliarity of the process resulting in a lack of concerted action early on in the process and a late encoding of routines
	Motivational clarity	<ul style="list-style-type: none"> - The organisations reliance on Ofwat to provide direction on the reporting requirements for PR14 constrained the effectiveness of Customer Engagement activity scoping

External influences	External influences	<ul style="list-style-type: none"> - Delay in the delivery of Ofwat's methodology for PR14 constrained the development of a strategic approach to knowledge acquisition. This compounded the view that organisation was reliant on Ofwat to drive its approach to planning and decision-making despite Ofwat's attempts to adopt a hands off approach - The focus on Ofwat's PR14 methodology constrained the extent to which the organisation developed bespoke Customer Engagement activities - The consultation requirements of the CCG extended far beyond and at a greater depth than had been anticipated constraining independent management of the knowledge acquisition process - The choices made within the knowledge acquisition process were frequently compared to those of other water utilities within the water sector reflecting the legacy of comparative regulation - The frequency at which the PR methodology is changed was a considerable constraint on practitioners ability to embed the actions and responsibility required of them into routines
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E9 Factors that foster and constrain knowledge management in knowledge transformation, distribution and application

E.9.1 Factors that foster or constrain knowledge management in knowledge transformation, distribution and application

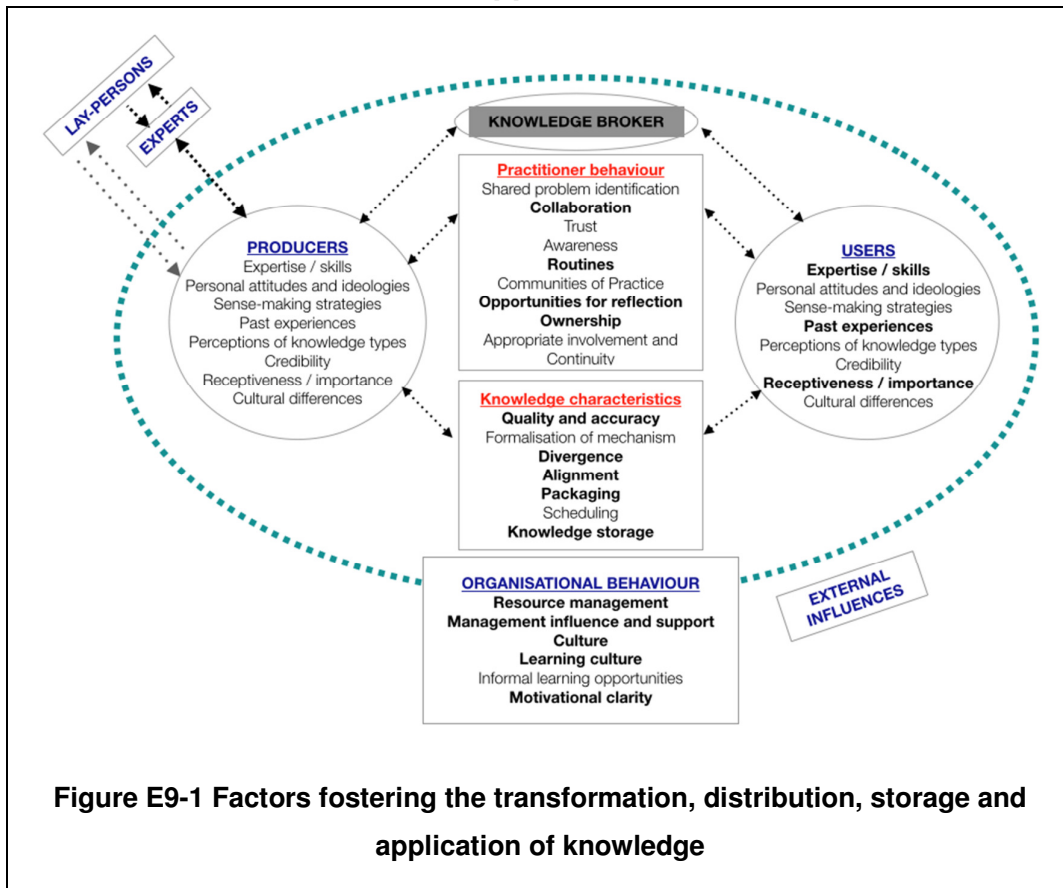


Figure E9-1 Factors fostering the transformation, distribution, storage and application of knowledge

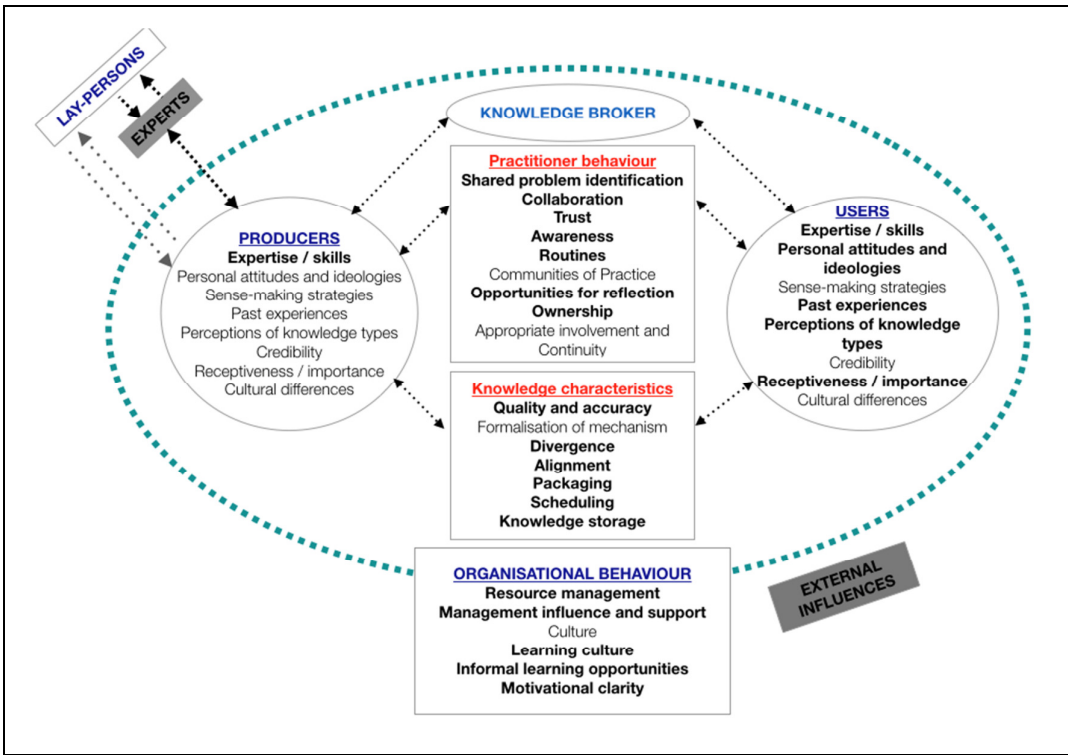


Figure E9-2 Factors constraining the transformation, distribution, storage and application of knowledge

Table E9-1 Factors fostering knowledge transformation, distribution, storage and application

Category	Factor	Description
Practitioner characteristics	Past experiences	Practitioners that had previous experience in the retail function of the organisation had embedded routines for the application of non-econometric Customer Engagement outputs Strategy managers that had previous experience of a Price Review process had embedded routines for the application of WTP outputs in planning and decision-making
	Expertise / Skills	OPTIMUS teams application of WTP benefit values fostered the embedded nature of outputs in Corporate systems
	Receptiveness / importance	The perceived importance of Customer knowledge and its contribution to the PR14 process grew as the planning process progressed Economic Regulation practitioners perceived there to be a pull for Customer Engagement outputs by Strategy Managers
Knowledge brokers	Knowledge brokers	Economic Regulation practitioners and Customer Research practitioners were responsible for the selection or rejection of knowledge intended for exchange within the broader organisation. The knowledge transformations facilitated by the Customer Research practitioner improved the clarity of findings from Qualitative Customer Engagement activities
Practitioner behaviours	Collaboration	Collaborative working between water infrastructure and water non-infrastructure strategy teams enabled knowledge sharing resulting in the innovative application of Customer Engagement Outputs Bespoke deliberative sessions for the dissemination of Acceptability Testing Stage One outputs reportedly facilitated increased receptiveness to the application of Customer Engagement outputs The organisation was successful in establishing positive collaborative relationships with the CCG provisioning an influential forum for deliberation regarding the application of Customer Engagement outputs
	Routines	Asset Managers, were not involved in the knowledge acquisition, transformation, distribution stages of the planning and decision-making stages but the embedded nature of WTP benefit values in corporate systems limited the impact on their routines A template was developed in order to generate broadly consistent Business Plan chapter presentation Strategy managers were able to adopt flexible practices with respect to the use of qualitative Customer Engagement outputs in the generation of Business Plan chapter reflecting the different investment challenges

		facing water and wastewater functions
	Opportunities for reflection and feedback	The opportunity for practitioners to observe Customer Engagement activities had a perceived positive effect on practitioner understanding of the context of Customer Engagement outputs Opportunities for immediate feedback at PR14 briefings assisted in maintaining / improving practitioner confidence in the role of customer knowledge in the PR14 planning and decision-making process
	Ownership	Greater Strategy Manager ownership of the application of qualitative customer engagement outputs was perceived to facilitate flexible application allowing them to reflect different investment challenges facing water and wastewater functions
Knowledge characteristics	Quality and accuracy	Credibility of Customer Engagement outputs was improved as a result of academic peer review
	Divergence	Low levels of divergent findings across multiple Customer Engagement outputs facilitated easier knowledge application
	Alignment	Alignment of findings of qualitative Customer Engagement activities and proposed investment strategies fostered greater application Econometric Customer Engagement outputs provided clear indication of customer preferences enabling greater alignment with Outcome Delivery planning and Investment Plan development Alignment of dissemination session to the specific needs of knowledge users was considered an effective management of resources in a resource constrained process
	Packaging	Packaging that aligned to practitioners level of expertise facilitated greater use Dissemination of Customer Engagement Outputs through the use of supporting presentation and briefings was well received Reports were described as an invaluable reference document that also performed the secondary function of providing demonstrable evidence of findings for scrutiny by regulators should this be necessary The development of the Customer Engagement Matrix provided clear key conclusions having rationalised 'noise' of qualitative Customer Engagement outputs The adoption of a strategic dissemination approach by Economic Regulation practitioners (the initial use of in-depth deliberative mechanisms for the Acceptability Stage One activity) enabled the use of less resource intensive approaches for Acceptability Testing Stage Two Considered approach to the packaging of Customer Engagement outputs for use by the CCG was credited with the maintenance of positive working relationships

	Knowledge storage	Storage of WTP benefit values in corporate Benefits Framework within OPTIMUS facilitated broad and consistent application whilst also having a low impact on practitioner routines
Organisational behaviour	Resource management	The allocation of Customer engagement transformation to Customer Research practitioner and Economic Regulation practitioners limited the impact on Strategy Team resources
	Managerial influence and support	The use of customer engagement steering groups at a senior level reportedly worked well enabling top-down decision-making influence, cutting through different messages to understand the implication of investment planning at an organisational level and then cascading down implications for functional levels Support and guidance was provided to Strategy Managers, OPTIMUS team, and Investment Planning teams to enable the robust application of Acceptability Testing outputs
	Culture	The adoption of a risk-averse approach to the affordability / financeability at the PR14 planning and decision-making process reflected poor experiences at PR09 where the organisations assessment of financeability wasn't undertaken till the end of the planning process leading to 'slash and burn' approach to investment plan optimisation
	Learning culture	The isolation of effective and poor behaviours through undertaking a 'Lessons Learned' exercise on the customer engagement in the Price Review process was considered to be a key future activity to be conducted by the organisation
	Motivational clarity	Motivations driving knowledge application were described as 'aligned on top of pre-developed strategies' or 'it was used where it backed up a pre-determined view' which was described as successful use The application of customer engagement outputs was not described as being tokenistic with practitioners strongly believing it to have affected their approach to investment planning

Table E9-2 Factors constraining knowledge transformation, distribution, storage and application

Category	Factor	Description
Practitioner characteristics	Expertise / Skills	<p>Practitioners involved in the application of customer knowledge in planning and decision-making have strong technical skills but limited Customer Engagement expertise constraining the effective application of customer knowledge in planning an decision-making</p> <p>Lack of Econometric research skills in Strategy Managers constrained the ease of understanding of outputs resulting in a significant need for time for reflection</p> <p>The expertise of Economic Regulation practitioners were not sufficient for the level of consultation and dissemination requirements of the CCG leading to the use of contracted experts for this purpose</p> <p>The Customer Research practitioner independently transformed customer knowledge outputs into new organisation specific outputs yet, whilst they had significant customer engagement expertise, they had limited water and wastewater knowledge which had the potential to constrain the effective selection and rejection of knowledge during the transformation stages</p> <p>High level of Economic research expertise of some Economic Regulation practitioners constrained their ability to effectively engage with those with less economic knowledge within the organisation</p> <p>Lack of econometric research expertise amongst knowledge users fostered a requirement for significant levels of guidance and support which was not deemed to be available</p>
	Past experiences	Few practitioners had prior Price Review experience this constrained the ease at which practitioners could acclimate to the addition of unfamiliar practices to their routine and added to their cognitive burden
	Preference for knowledge types	Where Customer engagement outputs demonstrated issues with Customer understanding practitioners stated this constrained the application of this knowledge in their planning and decision-making
	Personal attitudes and ideologies	Knowledge producers believe that knowledge users believe that the Business Plan to be 'the organisations plan' not a plan for customers.
	Receptiveness / importance	<p>Knowledge users were slow to support the acquisition and application of Customer Knowledge in planning and decision-making</p> <p>Ofwat's pre-qualification announcements make knowledge users extremely nervous about the extent to which Customer Knowledge has been, and should be, applied in PR14 planning and decision-making. The feedback from Ofwat to the organisation constrained the extent to which Customer knowledge was applied</p>

Experts	Experts	<p>Lack of water and wastewater knowledge of experts employed to design and deploy Customer Engagement activities has constrained the extent of application of Customer knowledge as the depth of exploration of specific service attributes was insufficient</p> <p>Use of experts led to a disconnect between the acquisition of Customer knowledge and application by knowledge users</p>
Knowledge brokers	Knowledge brokers	<p>Selection, rejection and transformation of Customer knowledge by Economic Regulation practitioners and Customer Research practitioners significantly constrains the extent of knowledge filtered to Knowledge users thus relying significantly on their validity and robustness of their choices in this stage of the process</p>
Practitioner behaviours	Shared problem identification	<p>Lack of shared problem identification in the knowledge acquisition phase resulted in Strategy Managers being required to use Customer Engagement outputs they were unfamiliar with requiring more time to reflect and digest the Customer Engagement outputs generated in the application phase</p> <p>Lack of shared problem identification constrained the extent to which knowledge users could prepare and anticipate its application in their planning and decision-making</p>
	Collaboration	<p>Lack of collaboration across the different knowledge management stages of the PR14 planning and decision-making process constrained knowledge sharing</p> <p>Little collaboration between Steering groups, the Executive Team and those responsible for the Outcome delivery planning and Investment plan development regarding their top-down decisions regarding the organisations investment strategy resulting in frustrated knowledge users</p> <p>The Executive Team and Steering groups privileged collaboration with the CCG over collaboration within the organisation</p> <p>Strong collaboration between Economic Regulation / Customer Research practitioners and Experts made them less aware of the knowledge gap between them and knowledge users</p>
	Trust	<p>Knowledge users had to place significant trust in the ability of the Customer Research practitioners ability to select, reject and transform Customer Engagement outputs for their use as, despite admitting this was a risk, they were unable to cross-check this with the complete set of findings generated by each Customer Engagement activity due to resource constraints</p>
	Awareness and receptiveness to other views	<p>Customer Engagement outputs and dissemination activities were not tailored to the knowledge levels of users due to Knowledge producers not being cognisant of the knowledge levels of their audience</p>

Knowledge characteristics	Routines	<p>Knowledge users were unable to sufficiently prepare their routines for the application of Customer knowledge due to their perceived lack of involvement in the Knowledge acquisition stage</p> <p>Frantic routines of knowledge users constrained extensive collaboration with respect to the application of Customer Engagement outputs</p> <p>Infrequent nature of Price Review planning and decision-making processes constrained the extent of embedded routines of knowledge users</p> <p>Water and wastewater functions were reported as adopting inconsistent routines for the application of Customer Engagement outputs in their planning and decision-making processes leading to a lack of consistent application</p> <p>Routines of knowledge producers was focused towards producing knowledge for use with the CCG resulting in comparatively less time and effort spent on distribution and dissemination of customer engagement outputs within the organisation</p>
	Opportunities for reflection and feedback	<p>The limited time available for reflection on the Customer Engagement outputs generated limited users to focus on the summaries that were produced with no consideration of fuller findings with users having to assume they were an accurate representation of Customer knowledge</p> <p>The limited time available for reflection of the Customer Engagement outputs constrained the extent to which 'what-if' scenarios were generated for Investment Planning and Outcome Delivery planning</p> <p>Reported under-use of Customer Engagement outputs due to the limited time available for reflection</p> <p>Steering groups and Executive Team failed to provide adequate feedback from the CCG with respect to the reception of material developed by knowledge users for use with the CCG</p> <p>The submission of the PR14 submission provides the opportunity for knowledge users to re-address Customer engagement in more detail to better understand its full potential</p> <p>Speed and quality of feedback cascading down through the organisation from Steering Groups and Executive Team led to confusion, mixed messages and delays in the effective dissemination and application of customer knowledge by Economic Regulation practitioners and Strategy managers</p>
	Ownership	<p>Insufficient drive of knowledge users to actively own or direct the Customer Engagement activity content that would impact the strategy area they were responsible for is responsible for the reported lack of alignment between outputs and Outcome delivery approaches</p>
	Quality and accuracy	<p>Strategy managers concerned about the robustness of the Customer engagement output transformation process</p> <p>Lack of coordination in the sample population definition for Customer Engagement activities limited the extent to</p>

		<p>which findings from across all activities could be 'brought to life' and the ability to tailor specific solutions</p> <p>Transformed Customer Engagement outputs (non-econometric and econometric) lacked context constraining the confidence of knowledge producers in its application</p> <p>Application of a WTP benefit value was constrained by errors made in the knowledge acquisition phase which presented current levels of service as more favourable than they were under-representing the potential for service improvements</p> <p>The act of attempting to apply Customer Knowledge in planning and decision-making process highlighted design and content issues that were not identified in the knowledge acquisition stage</p> <p>Application of qualitative customer engagement outputs in Outcome delivery planning and investment planning is limited as they don't provide statistically generated preferences and focused on themes that were too high level</p> <p>Application of Customer knowledge in the development of schemes / solutions constrained by Customer Engagement activity design choices resulting in assumptions being made</p> <p>Difficulties in the application of Acceptability Testing outputs as a result of the presentation of discretionary and non-discretionary service attributes in the design of the activity</p> <p>Application of WTP outputs to multiple MoS was constrained by poor wording choices and attribute performance units leading to the need to infer benefit values</p> <p>Failure to provide location-specific customer knowledge which would have facilitated more targeted knowledge application</p> <p>Social Research undertaken by the Water Resources Team failed to deliver the outputs promised severely constraining the application of the knowledge gained</p>
	Divergence	<p>The application of customer knowledge was constrained where it was perceived to go against practitioners views about what was the 'right' approach</p> <p>Divergence of messages within qualitative customer engagement outputs made it too difficult to use</p> <p>The organisations approach to balancing divergent customer and stakeholder needs privileged those of the stakeholders largely as a result of their ability to prosecute for non-delivery</p> <p>Difficulty in rationalising divergent interests of stakeholders (interested in long-term improvements) and customers (interested in short-term transactional and service benefits)</p> <p>Divergence in econometric outputs (i.e. between WTP outputs and Acceptability Testing outputs) caused issues with how expenditure was rationalised across investment areas</p>
	Alignment	<p>Failure to align WTP outputs to the needs of users due to a lack of transformation resulting in too much focus on methodology and not enough on the results</p>

Operational benefits		<p>Poor alignment between content of Customer Engagement activities and the strategic choices in Outcome Delivery and investment planning led to some MoS being disbanded, some benefits values having to be inferred through scaling and conversions from available WTP values constraining its robust application</p> <p>Dissemination activities were poorly tailored to the audience resulting in the frustration of knowledge users who had taken out valuable time in time pressured routines</p> <p>Application of Customer engagement outputs was constrained if the organisation did not consider the service attribute to be an issues with no investment needs identified</p>
	Packaging	<p>Reports were considered to have limited value, expensive and time consuming to develop and use</p> <p>Poor use of non-econometric outputs linked to low impact of Customer Research matrix</p>
	Scheduling	<p>Poor communications caused confusion around the delivery of outputs for use in planning and decision-making</p> <p>Application of customer knowledge was significantly constrained by late arrival (and thus subsequent transformation) of Customer Engagement outputs</p> <p>The delivery of too many Customer Engagement outputs to knowledge users at the same time constrained the extent to which each output could be examined.</p> <p>Treatment of CE as individual projects as opposed to a programme of work constrained the relative strategic scheduling of Customer Engagement output delivery</p> <p>Opportunities to explore emergent findings were limited as a result of poor scheduling of output delivery relative to planning and decision-making milestones</p> <p>Relative scheduling of Customer knowledge acquisition / application were not aligned to the schedules of Outcome delivery, investment and business planning constraining the extent of application of customer knowledge</p> <p>A lack of evidence to substantiate any changes to LoS was caused by delays in the WTP Stage two Water Resources outputs, a critical feature of the WRMP supply-demand balance, resulting in no outputs available in time for the WRMP submission</p>
	Knowledge storage	<p>Awareness of the Customer research Library was low amongst knowledge users and therefore constrained their access to a wealth of Customer Engagement outputs</p> <p>Technical issues and difficulties in navigation were associated with the Customer Research Library constraining practitioners desire to utilise this resource</p> <p>Lack of ability to 'lock' the editing facility of business plan chapters led to poor tracking of what content had been edited out with some of the applications of Customer Engagement outputs in Business Plan chapters being lost</p>
	Resource	<p>Lack of innovative analysis tools within the organisation limited the ability to use existing customer knowledge in</p>

management	the form of Customer Contacts and SIM data which could have been applied in a compelling way in planning and decision-making
Managerial influence and support	A lack of support in the interpretation of WTP and Acceptability Testing outputs caused users to express concern over the veracity of the conclusions they have drawn through its application Strong management influence was deemed to be positive but the speed of the communication of their decisions down through the organisation delayed their implementation
Learning culture	Failure to conduct lessons learned exercises for past processes has constrained the extent to which the organisation has learned from previous poor practices
Opportunities for informal learning	A 'learning as went along' approach to the management of Customer knowledge has constrained the success of its application in planning and decision-making
Motivational clarity	With a clear dependence on Ofwat to drive the organisations approach to planning and decision-making and the application of Customer knowledge at PR14, the delay in the arrival of their methodology constrained the extent to which a strategic approach to knowledge acquisition was adopted with implications then for its application The utilisation of Customer engagement outputs to their full extent was constrained by the organisations decision to use it to validate / justify pre-determined performance scenarios as opposed to using this insight to shape the development of performance scenarios Lack of a legacy of seeking and applying customer knowledge led to a lack of clarity regarding its role in the planning and decision-making process

External influences	External influences	<p>Acceptability Testing output application was constrained by Ofwat's delayed communication regarding what it considered to be an appropriate acceptability threshold</p> <p>Regulatory requirements constrain the extent to which Customer knowledge can be applied as they represent fixed pinning points leaving little flexibility to reflect customer needs – in particular in wastewater functions</p> <p>Word count on final Business Plan submission was a constraint on the extent to which qualitative customer engagement outputs were used in business plan chapters due to Ofwat's request for a 'light-touch' reporting approach</p> <p>Concern around the lack of comparability of Customer Engagement approaches across the sector as the issues faced by each organisation are diverse making evaluation difficult driving strong focus on non-discretionary customer engagement activities</p> <p>Strong organisational focus on customer engagement application at PR14 has neglected potential applications in other areas of organisational activity</p> <p>Release of Ofwat's pre-qualification announcement saw a considerable and unanticipated focus on financial justification for proposed investment and not on customer engagement requiring the organisation to make significant changes to their Outcome Delivery and investment planning to reflect Ofwat's comment severely constraining the application of customer knowledge</p>
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E10 Factors that foster or constrain the influence of knowledge in planning and decision-making

E.10.1 Factors that foster or constrain the influence of knowledge in planning and decision-making

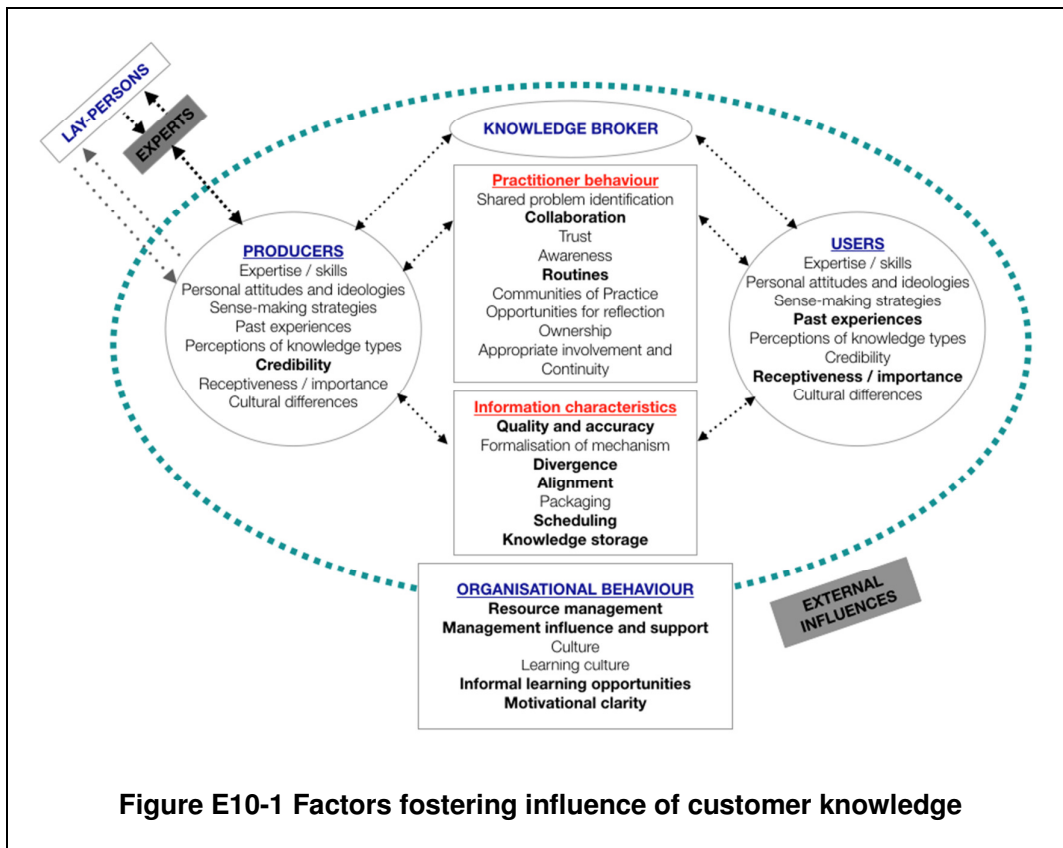


Figure E10-1 Factors fostering influence of customer knowledge

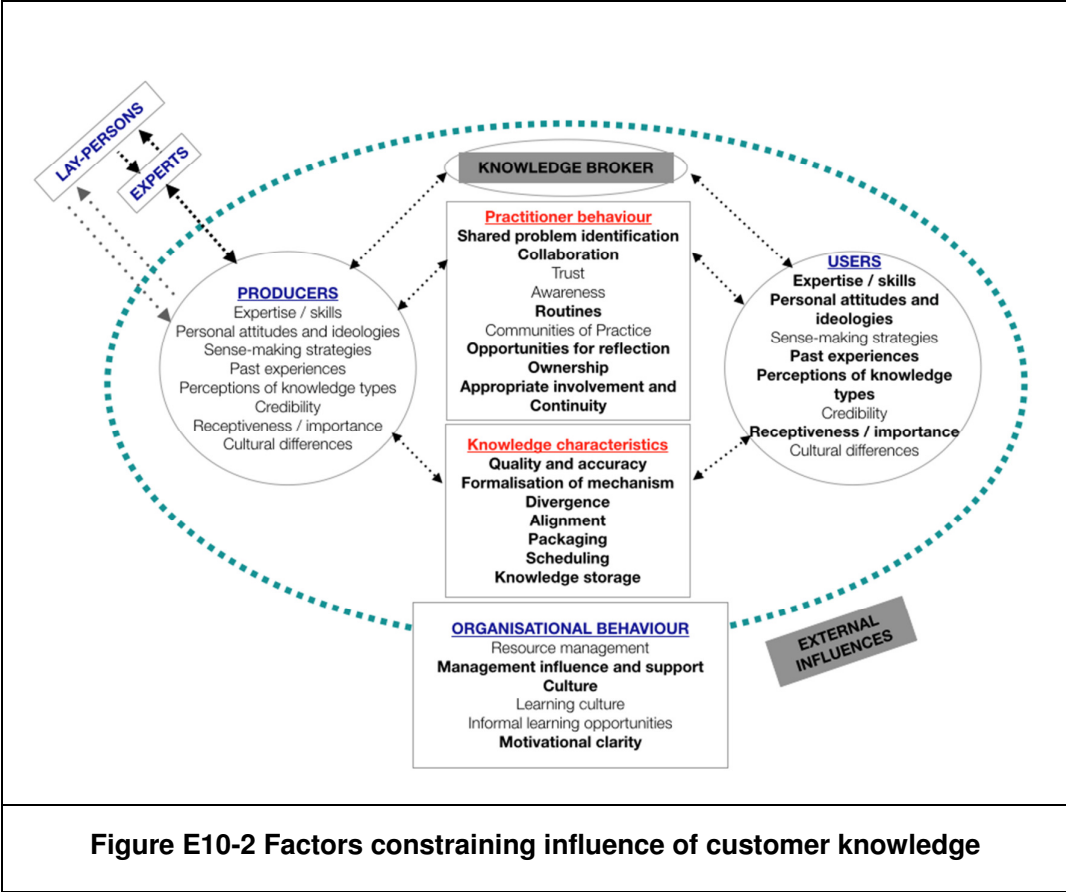


Figure E10-2 Factors constraining influence of customer knowledge

Table E10-1 Factors fostering influence of customer influence

Category	Factor	Description
Practitioner characteristics	Past experiences	Practitioners that had previous experience in the retail function of the organisation had embedded routines for the application of non-econometric Customer Engagement outputs enhancing the potential for greater influence Strategy managers that had previous experience of a Price Review process had embedded routines for the application of WTP outputs in planning and decision-making enhancing the potential for greater influence
	Credibility	External credibility of the customer knowledge acquired was enhanced through the use of external experts Internal credibility of the customer knowledge acquired was enhanced through academic peer review scrutiny
	Receptiveness / importance	The perceived importance of Customer knowledge and its contribution to the PR14 process grew as the planning process progressed fostering a greater influence of the outputs generated
Practitioner behaviours	Collaboration	Collaborative working between water infrastructure and water non-infrastructure teams facilitated the use of non-infrastructure (process) solutions (which were highly valued by customers) to also provide infrastructure (network) benefits (poorly valued by customers) to provide enhanced performance benefits for non-infrastructure investment
	Routines	Strategy managers have taken more time to justify water and wastewater investment and the associated bill impacts Routines strongly driven by the application of non-discretionary customer engagement outputs with users providing less clarity around their routines for the application of qualitative customer engagement outputs The different routines for the use of non-econometric outputs in both water and wastewater functions facilitates a bespoke approach to the application of outputs in different contexts privileging a greater influence
Knowledge characteristics	Quality and accuracy	The application of Acceptability Testing outputs had a significant influence on Outcomes Delivery and investment planning Customer engagement activities associated with the exploration of behaviours for water saving devices significantly influenced the robustness of installation rates in demand management planning for the Water Resources Management Plan
	Divergence	Lack of divergent messages fostered the influence of findings in planning and decision-making Unexpected results, such as in the WTP Stage Two outputs for Sewer Flooding which set out that customers did not have preferences for solution types, significantly influenced solution types as it challenged assumptions long

		held by the Strategy Manager Customer knowledge provided a counterbalance to the views of stakeholders in planning and decision-making
	Alignment	Specificity and alignment to service attributes, MoS and the issues being explored in their strategies enhances the influence of customer knowledge in Outcome delivery and investment planning whilst also provisioning coherent messaging in Business Plan chapters Customer engagement outputs that provided quantitative outputs (i.e. econometric) had a greater influence as they provisioned the justification of investment planning
	Scheduling	Customer engagement outputs were increasingly influential where their scheduling was appropriate relative to concurrent Outcome delivery planning, investment planning and Business Plan development
	Knowledge storage	Embedded nature of WTP and Acceptability Testing outputs within the Benefits Framework / OPTIMUS ensured broad and consistent influence across investment options
Organisational behaviour	Resource management	The employment of contractors and experts to account for a lack of skills within the organisation fostered a greater influence of customer knowledge
	Managerial influence and support	Strong top-down push for the demonstrable application of customer knowledge in the PR14 planning process facilitated a perceived greater influence than it may have done without managerial support. For example, some strategies, the result of years of work with the proposal of significant infrastructure innovation, were abandoned to better reflect customer acceptability testing outputs Those service areas that have significant media attention (such as leakage) are high profile service areas within the organisation and required extensive managerial support for proposed strategic investments in this area and vice versa (i.e. with sewer flooding due to low media and localised nature of issue) A top-down influence dominated approaches to the rationalisation of strategic investment using the Acceptability Testing outputs
	Opportunities for informal learning	Improved skills of Economic Regulation practitioners through extensive collaboration with experts Practitioner involvement in the acquisition, transformation, distribution and application of customer knowledge within the organisations planning and decision-making process has improved the strategy managers understanding of customer preferences and views and in some cases challenged long-held assumptions made by Strategy Managers in their strategies Practitioner involved in the development of Outcome Delivery planning and investment planning have become increasingly cognisant of customer bill impact not just TOTEX (CAPEX and OPEX)
	Motivational clarity	Customer knowledge had the most influence where it was able to justify and validate proposed investment

		approaches or where it provided a Price Cap (expenditure limit)
External influences	External influences	<p>A strong legacy of regulatory compliance and thus commitment of the organisation to addressing Ofwat's regulatory reporting requirements has seemingly increased the relative influence of customer knowledge (delivered through non-discretionary customer engagement activities) in the planning and decision-making process</p> <p>A sector wide drive to become more commercial in its delivery of water and wastewater services</p> <p>The CCGs role of ensuring the quality of the organisations approach to customer knowledge acquisition and its application in the planning and decision-making process provisioned a greater influence</p> <p>Flexibility in the pace of delivery on (Environmental) Quality Programme targets enabled customer knowledge to have a greater influence despite it being a Statutory driven investment programme</p> <p>Strong low-cost political agenda and media focus on 'utility bashing' privileged the influence of customer knowledge to limit potential for reputational impacts upon scrutiny</p>

Table E10-2 Factors constraining influence of customer knowledge

Category	Factor	Description
Practitioner characteristics	Expertise	Influence of customer knowledge is constrained by the predominant technical expertise of the users of customer knowledge who found the transition to the use of Customer Engagement outputs a challenge Insufficient regulatory knowledge amongst users impacted the influence privileged to customer knowledge in the early stages of the planning an decision-making process
	Attitudes and ideologies	Strategy managers exhibited significant frustration at the influence of customer knowledge on their strategies where it constrained their preferred approach and limited them to propose 'status quo' service performance suggested a reticence towards it's the level of influence it warranted A lack of focus by the organisation on changing practitioner attitudes to customer knowledge Attitudes were slow to change from asset-centric to customer-centric Some practitioners believe that customers do not care about their water and wastewater service
	Past experiences	The natural inclination of those with past Price Review experience is to use customer knowledge to support pre-developed strategies
	Preferences for knowledge types	Customer Engagement outputs are considered by some users to not be sufficiently robust (in terms of sample size) to influence the organisations planning and decision-making Users prefer to use technological knowledge to shape planning and decision-making Users perception of the level of customer understanding to be low and thus less robust
	Receptiveness / importance	The importance of the acquisition and application of customer knowledge in PR14 planning and decision-making was low early in the process
Practitioner behaviours	Shared problem identification	Lack of active Shared Problem Identification at the knowledge acquisition stage compromised the level of influence that the outputs generated could have in the planning and decision-making process
	Collaboration	Practitioner across the organisation did not work well together early on in the process with implications for the knowledge management practices in those early stages of the planning and decision-making process
	Routines	The application of customer knowledge is not fully embedded in the routines of users and thus constrains the extent to which customer knowledge is privileged in the planning and decision-making process

		<p>Quinquennial nature of the Price Review process limits the potential for embedding practices in practitioner routines</p> <p>Practitioner routines were described as constantly changing in the last year of the Price Review preparations with levels of influence of customer engagement outputs constantly changing to the fluid nature of the process during this time</p>
	Opportunities for reflection and feedback	<p>Limited time available for practitioners to reflect on and interrogate the findings of customer engagement activities limiting the extent to which it influenced planning and decision-making approaches</p> <p>Limited opportunities to use customer knowledge to develop 'what if scenarios' and therefore the use of customer knowledge to shape and not just justify plans</p> <p>Limited time available for interrogating customer engagement outputs meant that in some cases only the summary documents produced by the Customer Research practitioner were able to be used constraining the use of more detailed customer insight and trusting that the summaries provide an accurate reflection of the totality of the findings</p> <p>Too much Customer engagement outputs were provided in close succession limiting the opportunity to explore the findings in any depth</p>
	Ownership	<p>It was perceived that there was a lack of ownership and accountability for Customer Engagement at an organisational level, which constrained the potential influence it had within planning and decision-making.</p> <p>A lack of organisational ownership and accountability for Customer Engagement was augmented by the clear definition of the wholesale and retail arms of the organisation</p>
	Right people involved and continuity	<p>Poor staff continuity had led to a lack of consistent influence of customer knowledge in planning and decision-making</p> <p>The lack of a single dedicated point of contact for Customer engagement led to some confusion for users of customer knowledge with implications for the consistent influence of Customer Engagement outputs</p>
Knowledge Broker	Knowledge Broker	<p>The Economic Regulation practitioners and Customer Research practitioner responsible for the transformation of expert generated Customer Engagement outputs for use both within the organisation and with the CCG significantly influence the type, quality, usability, alignment and timing of customer knowledge entering the work streams of those responsible for the application of this knowledge. They therefore hold significant influence in the determination of the impact customer knowledge has within the planning and decision-making process</p>
Knowledge characteristics	Quality and accuracy	<p>Errors made in the knowledge acquisition phase impacted the extent of influence customer knowledge had in those impacted service areas</p> <p>Customer knowledge generated through Qualitative customer engagement mechanisms has had limited influence in planning and decision-making with its application largely limited to the generation of the text in the organisation Business Plan</p> <p>The regional spatial focus of Customer engagement mechanisms deployed at the knowledge acquisition phase</p>

	<p>constrained the influence of this data as it was not specific enough to support location specific schemes</p> <p>The acquisition of customer knowledge was associated with the Price Review process (and not classed as a Business as Usual) activity causing some concern over the validity of customer knowledge acquired over longer periods of time</p> <p>Lack of co-ordinated approach to customer segmentation across each Customer Engagement activity limited the ability of practitioner to be able to compare and contrast findings across each Customer Engagement activity</p> <p>The simplification of investment issues for customer engagement mechanisms constrained the complexity of the outputs received constraining the extent of influence it may have in planning and decision-making beyond high level themes</p>
Formalisation of participatory mechanisms	<p>Practitioners found it very difficult to understand outputs generated through the deployment of 'Black-box' type mechanisms limiting the confidence in which practitioners used this knowledge</p> <p>The lack of innovative analysis tools available to practitioner to analyse data limits the extent to which more innovative techniques can be employed</p>
Divergence	<p>Where customer knowledge was obvious it was not highly valued</p> <p>The organisations focus on the acquisition of customer knowledge resulted in additional need to rationalise the findings generated with stakeholder requirements</p> <p>The extent and type of influence of customer knowledge in planning and decision-making differs depending on the type of challenges and decisions facing each strategy team</p>
Alignment	<p>Poor alignment between the content of Customer Engagement activities and key likely strategic choices facing strategy managers limits the influence outputs can have</p> <p>Poor alignment of econometric outputs led to transformations and scaling being required in order for it to be used in the context required which constrains the robustness of the knowledge generated</p> <p>Lack of engagement with customers on schemed delivery options severely constrains the influence of customer knowledge generated in this context</p> <p>Poor alignment of customer engagement with the delivery of statutory schemes with more that could have been done to explore different investment scenarios around this</p>
Packaging	<p>The Customer Research practitioner stated that only the 'Key findings' pages / slides of expert generated outputs were used to develop the Customer Engagement summaries that users widely report having relied on in the planning and decision-making process. This severely constrains the extent of customer knowledge available to users and the extent of the role customer knowledge plays in the planning and decision-making process</p> <p>Complexity of customer engagement outputs constrains the attention paid to it by users particularly those with time constrained routines</p>

Organisational behaviour	Scheduling	<p>Poor scheduling of Customer Engagement relative to strategy development constrains the extent to which it can influence plans – for Customer Engagement to influence the direction of strategy then needs to be done in advance of strategy development not concurrently otherwise influence is limited to validation / justification</p> <p>Early scheduling of the WTP activity meant content was highly contingent on the content of early strategy drafts which was perceived to limit its relevance later in the process</p> <p>Non-delivery of some customer engagement outputs prior to the finalisation of the initial Business Plan proposal submission to Ofwat led to the customer knowledge generated having no influence on the Business Planning process</p>
	Knowledge Storage	<p>Poor awareness of the Customer Research Library limited the extent of practitioner access to customer knowledge and therefore the extent of influence it could play</p>
	Managerial influence and support	<p>Managerial input into the editing of Business Plan chapters resulted in some of the qualitative customer engagement outputs getting lost in translation limiting its influence within the text</p> <p>Executive Team and Steering Groups independently decided, with little negotiation with Strategy Managers, that they did not want to improve performance levels where there was no incentive associated which led to a range of cost-effective improvements being rejected</p> <p>Low level of managerial support in the PR14 management team at the start of the process limited the influence customer knowledge was privileged</p> <p>Poor managerial support of the process limited clarity of how customer knowledge was to function in the planning and decision-making process</p>
	Culture	<p>The ability of the organisation to accept that the solutions it proposes may not appropriately address the needs of customers and adapt their proposals accordingly</p> <p>Legacy culture within the organisation (and to some extent the sector) that perceives their customers as only people that pay bills and not people that may have an opinion on their water and wastewater service</p> <p>Many practitioners believed that the application and influence of customer knowledge in planning and decision-making may not be sustained outside of the regulatory planning process as it is still perceived to be a quinquennial activity</p> <p>Practitioners across the organisation found it difficult to adjust to how customers perceive the impact of service failures and not how the business perceives them for planning purposes</p>
	Motivational clarity	<p>Some practitioners believe the sector to be 'steady-state' providing limited drive for innovations in planning and decision-making approaches and thus are unclear as to the motivations for the changes made</p> <p>Knowledge producers stated that the role of customer engagement activities was not understood at a deeper level than as a regulatory requirement</p>

External influences	External influences	<p>Statutory drivers for investment had a big impact on the level of influence privileged to customer knowledge as the organisation was cautious about proposing service deterioration on the basis of customer preferences</p> <p>The introduction of an incentive system for the outperformance of performance targets for Outcomes leads some practitioners to believe that this risks too much focus being placed on those highly incentivised outcomes to the detriment of those less highly incentivised</p> <p>The continuity of Ofwat's focus on Customer Engagement will determine the extent of influence customer knowledge has in the organisations planning and decision-making process in the future</p> <p>Ofwat's Pre-qualification announcements were perceived to grant the organisations approach to the acquisition and application of customer knowledge low level of consideration relative to what the organisation had anticipated, instead focused on financeability of the Business Plan. This had considerably impacts on the influence of customer knowledge in subsequent planning activities. In particular:</p> <p>Resulted in Strategy managers and other users of customer knowledge being concerned (and frustrated) about the extent to which the organisation had privileged customer knowledge in the development of its Business Plan investment proposal</p> <p>Impacted the receptiveness and perceived value of customer knowledge that had been built up over the duration of the Price Review process. This would have significant implications for the commitment of practitioners to the application of customer knowledge in future planning and decision-making processes</p> <p>It was perceived that the amendments required to be made to the organisations Business Plan will not privilege customer knowledge devaluing the preceding acquisition and application efforts</p> <p>Resulted in strategy managers being concerned about the extent of investment in resources to acquire customer knowledge for it to be used less in subsequent business plan amendments</p> <p>Practitioners questioned the perspective from which the CCG had challenged the acquisition and application of customer knowledge in the organisations business plan proposal. It is perceived that the CCG focused on justification of customer bill impact as the primary challenge driver as opposed to serviceability which may have been what Ofwat expected</p>
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		<p>Practitioners had been able to comparatively evaluate those customer preferences for some service attributes received by the organisation compared to other water utilities within the sector. The extent to which they were different caused some concerns for practitioners who questioned whether different approaches to knowledge acquisition could provide an explanation</p> <p>The CCG provided significant challenge to the organisation in its application of customer knowledge in the planning and decision-making process influencing where it was and wasn't used and thus its influence</p> <p>Some Strategy Managers perceived the regulatory CCG members to have not sufficiently articulated and defended investment needs leaving Strategy Managers feeling unsupported and uncertain about how to rationalise differing steers</p> <p>The chair of the CCG was not considered to be balanced in reflecting the views of the broad membership of the CCG and was instead very driven towards representing the views of the organisation to which they were associated limiting the traction other members viewpoints gained with implications for the influence of customer knowledge</p> <p>Practitioners believe the CCG were privileged too much influence in guiding the organisations knowledge acquisition and application processes</p> <p>Some practitioners saw SIM and a focus on customer engagement as competing and conflicting approaches to developing a greater understanding of customer views and preferences</p>
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**E11 Rationalisation of public participation evaluative
criteria and factors identified to be fostering or
constraining effective knowledge management**

Table E11-1 Rationalisation of public participation evaluative criteria and factors identified to be fostering or constraining effective knowledge management

Factors known to foster or constrain knowledge management practices	Existing participatory evaluation criteria of effectiveness	References
Expertise / skills	Capacity of experts, organisers and officials	(Petts et al., 2003; Conrad et al., 2011)
Personal attitudes and ideologies	<i>None recommended</i>	
Sense-making strategies	<i>None recommended</i>	
Past experiences	Capacity of experts, organisers and officials	(Petts et al., 2003; Conrad et al., 2011)
	Capacity of sponsoring organisation to implement decision	(Laurian & Shaw, 2009)
	<i>Practitioners have prior experience of the planning and decision-making</i>	
	<i>Practitioners have prior experience of using lay-knowledge</i>	
Perceptions of knowledge types	<i>None recommended</i>	
Credibility [of knowledge or those providing it]	Capacity of experts, organisers and officials	(Petts et al., 2003; Conrad et al., 2011)
	<i>Recipients of lay-knowledge feel able to challenge the supplier of lay-knowledge</i>	
Receptiveness	Ambition to adopt decision outcomes by sponsoring organisation	(Benson et al., 2014)
	Commitment of sponsoring organisation	(Laurian & Shaw, 2009; Conrad et al., 2011)
	Adequate weighting given to public views in decision-making process	(Conrad et al., 2011)
	Decision responsiveness	(Petts et al., 2003; Laurian & Shaw, 2009)
	<i>Practitioners are receptive to the use of lay-knowledge in planning and decision-making</i>	

Cultural differences	Context	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Petts et al., 2003; Rauschmayer & Wittmer, 2006)
	<i>Functional differences of planning and decision-making contexts are acknowledged and managed</i>	
Knowledge broker	Transparency	(Bickerstaff & Walker, 2005; Bickerstaff & Walker, 2001; Blackstock et al., 2007; Chilvers, 2008; Conley & Moote, 2003; Conrad et al., 2011; Frewer et al., 2000; Laurian & Shaw, 2009; Leach, 2006; Petts & Leach, 2000; Petts, 2001; Petts et al., 2003; Rauschmayer & Wittmer, 2006; Rowe & Frewer, 2000; Rowe & Frewer, 2004)
	External communication i.e. those not directly involved	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Ozerol & Newig, 2008; Petts et al., 2003; Rowe & Frewer, 2005; Conrad et al., 2011)
	Consistent practices	(Conrad et al., 2011)
	<i>Framework for the selection, rejection and transformation of lay-knowledge for use within organisation is established through collaboration between the knowledge broker and knowledge users</i>	
Experts	Capacity of experts, organisers and officials	(Petts et al., 2003; Conrad et al., 2011)
	<i>Experts work collaboratively with sponsoring organisation including users of knowledge generated</i>	
	<i>Experts provide support in the application of lay-knowledge</i>	
Shared problem identification	Consideration given to potential integration with other activities	(Petts et al., 2003)
	Context	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Petts et al., 2003; Rauschmayer & Wittmer, 2006)
	Clear accountability for the process	(Blackstock et al., 2007; Conrad et al., 2011)

	<i>Shared problem identification between knowledge producers and knowledge users at scoping and design phases of participatory planning and decision-making process</i>	
Collaboration	Transparency	((Bickerstaff & Walker, 2005; Bickerstaff & Walker, 2001; Blackstock et al., 2007; Chilvers, 2008; Conley & Moote, 2003; Conrad et al., 2011; Frewer et al., 2000; Laurian & Shaw, 2009; Leach, 2006; Petts & Leach, 2000; Petts, 2001; Petts et al., 2003; Rauschmayer & Wittmer, 2006; Rowe & Frewer, 2000; Rowe & Frewer, 2004)
	External communication i.e. those not directly involved	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Ozerol & Newig, 2008; Petts et al., 2003; Rowe & Frewer, 2005; Conrad et al., 2011)
	Successful integration of different knowledge types in process	(Rauschmayer & Wittmer, 2006; Kallis et al., 2006)
	Coproduction of knowledge [Noting that in the evaluative literature this is presented as coproduction with experts and lay-knowledge directly]	(Kallis et al., 2006)
	<i>Organisation promotes collaborative knowledge generation and application as a behavioural norm</i>	
Trust	<i>Effective working relationships between practitioners built upon trust</i>	
Awareness	Transparency	(Bickerstaff & Walker, 2005; Bickerstaff & Walker, 2001; Blackstock et al., 2007; Chilvers, 2008; Conley & Moote, 2003; Conrad et al., 2011; Frewer et al., 2000; Laurian & Shaw, 2009; Leach, 2006; Petts & Leach, 2000; Petts, 2001; Petts et al., 2003; Rauschmayer & Wittmer, 2006; Rowe & Frewer, 2000; Rowe & Frewer, 2004)
	External communication i.e. those not directly involved	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Ozerol & Newig, 2008; Petts et al., 2003; Rowe & Frewer, 2005; Conrad et al., 2011)

	<i>Awareness raising activities are conducted throughout duration of planning and decision-making process</i>	
Routines	Consideration given to potential integration with other activities	(Petts et al., 2003)
	Context	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Petts et al., 2003; Rauschmayer & Wittmer, 2006)
	Consistent practices	(Conrad et al., 2011)
	<i>Acquisition and application of lay-knowledge form part of practitioner routines</i>	
Communities of Practice	<i>None recommended</i>	
Opportunities for reflection	<i>Sufficient opportunity has been provisioned for reflection by practitioners on participative outputs</i>	
Ownership	Outcome accountability	(Blackstock et al., 2007; Clarke, 2008; Conrad et al., 2011; Rauschmayer & Wittmer, 2006)
	Clear accountability for the process	(Blackstock et al., 2007; Conrad et al., 2011)
	<i>Practitioners ownership of lay-knowledge is promoted (both producers and users)</i>	
Appropriate involvement and continuity	Capacity of experts, organisers and officials	(Petts et al., 2003; Conrad et al., 2011)
	Leadership	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Blackstock et al., 2007)
	Consistent practices	(Conrad et al., 2011)
	<i>An appropriate mix (in terms of expertise and levels of managerial authority) of practitioners are involved in the process of acquiring and applying lay-knowledge</i>	
Quality and accuracy	Consistent practices	(Conrad et al., 2011)
	Generated a substantive output	(Kallis et al., 2006)

Formalisation of mechanism	Mechanism choice	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Bickerstaff & Walker, 2001; Benson et al., 2014; Conrad et al., 2011; Frewer et al., 2000; Petts et al., 2003; Rowe & Frewer, 2000; Rowe & Frewer, 2004; Tuler & Webler, 1999; Webler & Tuler, 2001)
Divergence	Successful integration of different knowledge types in process	(Rauschmayer & Wittmer, 2006; Kallis et al., 2006)
	<i>Appropriate strategies for managing knowledge divergence occurring in organisational processes have been established i.e. between lay-knowledge and expert-knowledge, between lay-knowledge and lay-knowledge and lay-knowledge and stakeholder knowledge</i>	
Alignment	Consideration given to potential integration with other activities	(Petts et al., 2003)
	<i>Alignment of knowledge between that which is acquired and its intended application</i>	
Packaging	<i>Packaging of lay-knowledge for use within the organisation reflects the needs and expertise level of the recipient</i>	
Scheduling	Adequate time within process	(Chilvers, 2008; Petts et al., 2003; Conrad et al., 2011)
	Consideration given to potential integration with other activities	(Petts et al., 2003)
Knowledge storage	<i>Storage of acquired knowledge is accessible and its availability is promoted across the organisation</i>	
	<i>Embedment of quantitative outputs in corporate systems</i>	
Resource management	Adequate access to information [noting association in literature to resource access by participants]	(Aldred & Jacobs, 2000; Beierle, 2002; Blackstock et al., 2007; Chilvers, 2008; Conrad et al., 2011; Frewer et al., 2000; Kallis et al., 2006; Laurian & Shaw, 2009; Petts & Leach, 2000; Petts, 2001; Petts et al., 2003;

		Rowe & Frewer, 2000; Rowe & Frewer, 2004; Tuler & Webler, 1999; Webler & Tuler, 2000; Webler & Tuler, 2001)
Management support and influence	Leadership	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Blackstock et al., 2007)
	Clear accountability for the process	(Blackstock et al., 2007; Conrad et al., 2011)
	Capacity of experts, organisers and officials	(Petts et al., 2003; Conrad et al., 2011)
Culture	Context	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Petts et al., 2003; Rauschmayer & Wittmer, 2006)
	Ambition to adopt decision outcomes by sponsoring organisation	(Benson et al., 2014)
	Commitment of sponsoring organisation	(Laurian & Shaw, 2009; Conrad et al., 2011)
	<i>Organisational culture promotes the value of lay-knowledge in its planning and decision-making</i>	
Learning culture	Social learning	(Beierle, 1999; Benson et al., 2014; Bickerstaff & Walker, 2001; Blackstock et al., 2007; Chilvers, 2008; Clarke, 2008; Conley & Moote, 2003; Kallis et al., 2006; Petts et al., 2003; Rauschmayer & Wittmer, 2006; Tuler & Webler, 1999; Webler & Tuler, 2000; Webler & Tuler, 2001)
	Agency is aware of public views, concerns, and preference	(Laurian & Shaw, 2009; Carnes et al., 1998)
	<i>Organisation frequently reflects on practices in a collaborative forum and mobilises the findings generated to promote good practices</i>	
Informal learning opportunities	<i>Promotion of collaboration to promote knowledge sharing</i>	
Motivational clarity	Commitment of sponsoring organisation	(Laurian & Shaw, 2009; Conrad et al., 2011)
	Clear, feasible goals	(Conley & Moote, 2003)
	Ambition to adopt decision outcomes by sponsoring organisation	(Benson et al., 2014)

	<i>Organisation holds a clear motivation for undertaking participatory planning and the benefits it hopes to achieve and uses this to structure its choices throughout the process</i>	
External influence	Context	(Beierle & Konisky, 1999; Beierle & Konisky, 2000; Petts et al., 2003; Rauschmayer & Wittmer, 2006)
	<i>Collaborative approach to managing external influences on planning and decision-making</i>	

