Understanding a collaborative approach to catchment-based water quality management in the UK: A study of the Lower River Wear Pilot

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In order to test a new catchment-based approach to water management, the UK's Department of Environment, Food and Rural Affairs (DEFRA) commissioned pilot studies in 25 river catchments across England and Wales between 2011 and 2012. A key component of the approach was to encourage stakeholders to work collaboratively at the local level to find effective ways to protect resources and help meet EU Water Framework Directive (WFD) targets. The collaborative approach to water management has been little studied in the UK and as a result the pilot schemes provide a unique opportunity to begin to characterise and evaluate their impact and role. This study explores the collaborative approach taken in the Lower River Wear Pilot in the NE of England and, using in depth interviews with participants, aims to provide a comprehensive picture of a collaborative environmental management approach by studying the processes, impacts and influences of one pilot scheme.

Data from interviews with 13 participants, which included environmental practitioners from the Environment Agency, environmental NGOs, local authorities and private companies, were supplemented with details from meeting minute documents. Analysis through coding gave an insight into the perspectives and understandings of those directly involved in the project.

Key findings reveal evidence for the presence of a collaborative approach with characteristics similar to those highlighted in previous studies. The presence of a facilitator, regular meetings, interactive forms of communication and established processes of problem and direction setting, were balanced against evidence for the underlying principles of participation, inclusion and co-production of knowledge. Overall impressions of the approach from participants were distinctly positive, based in the presence of strong working relationships, and an open and inclusive environment. Success of the approach is shown to be influenced by confident and personable leadership as well as the intermediary roles of participants in the creation of dynamic social institutions that are reactive to the environmental and social context of the project.

The significance of the research relates to its value as a case study taken from the participants' perspective and aims to contribute valuable insights into the characteristics of collaborative approaches to environmental management in the UK and the hidden mechanisms that might influence their success.

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Statement of Copyright

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Chapter 1

Introduction

1.1 Piloting a new approach to water quality management

Under the European Commission's Water Framework Directive (WFD) the UK is aiming to improve the ecological classification status of all water bodies, including rivers, ground waters, lakes, estuaries and coastal waters, to 'good' by 2015 (European Commission, 2012). This is a significant undertaking, involving complex policy decisions and high levels of innovation, particularly in areas where water quality is poor. Although much has been achieved already since the introduction of the WFD, through the production of River Basin Management (RBM) Plans for ten river basin areas across England and Wales, particularly in terms of tackling point sources of pollution, continuing sustainable environmental improvement requires more to be done. In recognition of the need for further action on issues such as diffuse pollution and the integration of social and environmental concerns, and as part of the second round of the RBM planning cycle within the WFD policy, pilot schemes in 25 catchments across England and Wales (Figure 1.1.) were initiated between April 2011 and January 2012 by the government Department of Environment, Food and Rural Affairs (DEFRA), in order to trial a new way of tackling water quality issues.

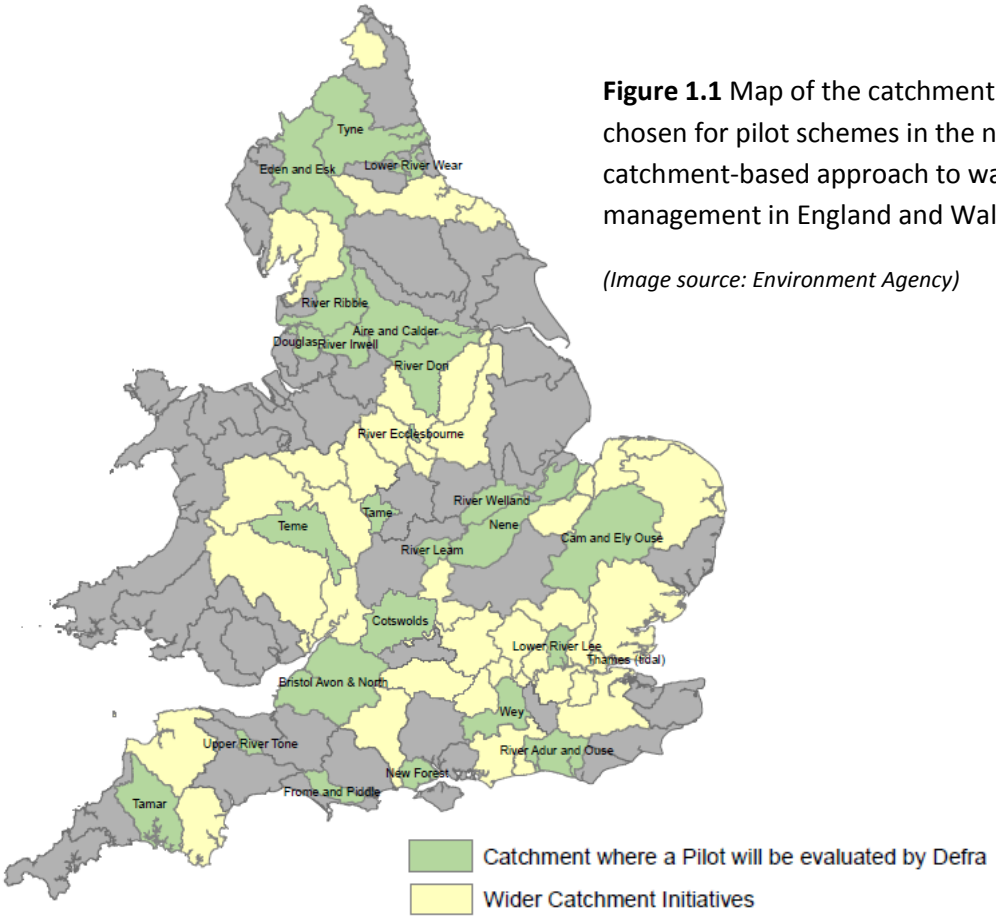

Figure 1.1 Map of the catchment areas chosen for pilot schemes in the new catchment-based approach to water quality management in England and Wales.

(Image source: Environment Agency)

The pilots emphasise a catchment-based approach, which aims to localise environmental improvement actions and bring a smaller, community based focus to the management of natural resources. The approach had not previously been prioritised in UK policy and focused on involving a wide range of stakeholders in decision making processes within each catchment and encouraged them to work collaboratively to identify issues, outcomes and actions that will lead to healthier and more accessible water environments (Environment Agency, 2012b). On World Water Day in 2011, Richard Benyon, the Minister for Natural Environment and Fisheries stated that the pilots should:

"Provide a clear understanding of the issues in the catchment, involve local communities in decision-making by sharing evidence, listening to their ideas, working out priorities for action and seeking to deliver integrated actions that address local issues in a cost effective way and protect local resources." (Richard Benyon, 2011)

Working collaboratively is a key part of the new catchment approach and has often been hailed as the way in which environmental policy can be more closely embedded in societal conditions by building trust and ownership (Bonnell and Koontz, 2007), and thus sustainability (Cortner and Moote, 1999; Margerum and Whitall, 2004). However, problems such as institutional context, power struggles and lack of available resources can limit the degree to which collaboration is effective in achieving environmental improvements (Ostrom *et al.,* 1999; Pahl-Wostl *et al.,* 2012).

Within the UK's RBM planning process little emphasis has previously been put on the specific role of collaborative approaches, particularly with regard to implementing the WFD at the catchment-scale. Such emphasis on collaborative governance has been seen as a paradigm shift for environmental management (Margerum, 2008) and as an alternative to centralised control of natural resources. It is consequently argued to be the more sustainable governance option (Sabatier *et al*., 2005). The current pilot schemes offer an opportunity to study this approach, as they specifically aim to improve the integration of ideas and evidence by equalising decision making power in order to find mutual priorities for action within each catchment: this requires working collectively. The experimental nature of the pilot schemes provides an excellent context for investigation into the effectiveness and impact of the approaches taken.

Since the pilots began, DEFRA has undertaken an evaluation of the broad effectiveness of the pilot schemes through standardised surveys and interviews. The outcomes of the evaluation will form a basis for the next stage of resource planning across 75 other catchments throughout the UK. While DEFRA's evaluation is aimed at providing details on the practical and

financial implication of the catchment-based approach in general, it has not yet provided any in depth analysis of whole individual pilot processes. This research aims to fill that gap and supplement the more practical research with in depth academic analysis of an individual pilot process, detailing how a collaborative approach is characterised in a specific context and how it is implemented and perceived by the participants themselves. The research will give a deeper understanding of collaboration in water quality management, and how it can thrive. Such an understanding will reveal if and how collaborative approaches to water quality management at the catchment scale can be effective in facilitating sustainable environmental improvement and if they are worth investing in for future water quality management policy and practice. A better understanding of the features of and factors contributing to a collaborative environmental management process will lead to a better ability to make progress towards the achievement of WFD targets in the UK and may lead to an improvement in socio-environmental conditions.

1.2 Research aims and questions

The purpose of this research is to provide a comprehensive picture of a collaborative environmental management approach by studying the processes, impacts and influences of one pilot scheme that focuses on improving water quality in a catchment context in the NE of England; the Lower River Wear Pilot (LRWP). Through the study of the LRWP this research intends to explore the significance of collaborative approaches to the management of water quality issues; the attitude of participants to the process of collaborative catchment management; the potential challenges of implementing a collaborative approach; and the factors affecting the success of collaborative approaches. Ultimately, the research provides a case study that can be used as a reference for the patterns and impacts of a collaborative approach and contribute to understand its application and potential as a part of the future policy for water resource management in the UK.

Thus the overarching aims of the project are:

a. To explore the impacts, influences and challenges of collaborative processes of water quality management.
b. To comment on the significance of collaborative catchment-based approaches, similar to those potentially present in the LRWP, for providing a sustainable new approach to water resource management policy and practice in the UK.

The aims of the project will be fulfilled by exploring the following research questions:

i. What evidence is there of a collaborative approach in the LRWP?
ii. What impact have patterns of collaboration had on the participants and the pilot process?
iii. What factors are influencing the success or failure of aspects of the collaborative approach in the LRWP?

The questions aim to allow a progression of understanding about the process of collaboration. The first question explores the features of the approach taken in the LRWP and how and if they constitute collaborative processes that have been defined previously in the literature. Many studies have identified best practice criteria and by comparing features and characteristics with those already identified, the image of collaboration in a water management context can be revealed. The second question addresses the influence of the features identified in question i. on both the participants themselves, in terms of interactions, relationships, understandings and practices, and on the process organisation, such as the production of plans or actions as well as ways of working. This question aims to reveal the significance of the approach and the changes that it could bring about. Additionally, the second question involves an exploration of the challenges of implementing a collaborative approach and the negative impacts that it may have. The question will also explore how the challenges are met and dealt with. The third question looks at the factors that affect the practice of, and opinions about, the collaborative process in the LRWP context, which might include wider political or environmental agendas or the influence of scale. The questions will allow an overall impression of a collaborative approach to be built and thus used to assess the overall significance of the approach to water management.

1.3 Thesis outline

Chapter 2 – Literature review: This chapter outlines the current understanding and research on environmental management and details the development of ideas from top down management to a more holistic collaborative and participative socio-environmental approach. This section introduces key ideas about collaborative environmental management, including critiques and examples of previous projects involving collaborative approaches. A description of the LRWP case study, including location and context is also included in this chapter.

Chapter 3 - Methodology: This chapter details the methods adopted in the research, including how methods were chosen, how data was collected and limitations overcome.

Chapter 4 - The Lower River Wear Pilot structure and process: This chapter is the beginning of the results section and includes a description of the structure of the LRWP using details from meeting minutes documents and supplemented by interview data, including elements such as stakeholder involvement, the governance structure of the scheme and details about the content of the main outcome of the LRWP, the catchment action plan.

Chapter 5 - Evidence of a collaborative approach in the Lower River Wear Pilot: This chapter addresses issues and ideas from the first research question. Using data from interviews and meeting minutes documents this chapter explores the characteristics of the approach taken in the LRWP and establishes their resemblance to characteristics of collaborative approaches in the literature.

Chapter 6 - Impacts and influence of the collaborative approach: This chapter address research question ii. and through analysis of participants' opinions and understandings, explores the impacts of the characteristics of the collaborative approach identified in the previous chapter on tangible elements, such as on-the-ground actions as well as intangible elements, such as social relations. This chapter also reveals the influence of collaborative approaches on established environmental governance structures.

Chapter 7 – Challenges of the collaborative approach: This chapter explores the negative or challenging aspects of the approach and reveals how they have been addressed or overcome in the LRWP.

Chapter 8 - Factors contributing to 'successful' collaborative systems in the Lower River Wear Pilot: This chapter is the final part in the discussion section (including chapters 5 – 8), and reveals some of the potential reasons behind the identified impact of the LRWP. It identifies both overarching contextual factors as well as small scale elements unique to this study.

Chapter 9 – Key findings and conclusions: This chapter aims to draw together the findings from the previous 5 chapters and provides an overview of the significance of the collaborative approach. It provides recommendations for the uptake of collaborative approaches to catchment-based water quality management as well as identifying limitations to this research and opportunities for further research.

Chapter 2

Literature Review

This section synthesises relevant literature in order to present a background understanding of the development of water management approaches and the importance and relevance of the collaborative approach. This section covers changing approaches to environmental management, including the move away from top-down technocratic management of water resources to more participatory and adaptive socio-environmental approaches. It also covers the development of the Water Framework Directive as part of that change. Ideas of integrated water resource management in the form of river basin management are explored and critiqued in order to establish the position of collaborative management. Collaboration is introduced as a concept in environmental management and its origins and the key principles of participation, co-production of knowledge and social capital and social learning are presented. Finally, this section provides details of previous studies into collaborative approaches to water resource management and identifies the research gap for studies on collaborative water quality management in the UK.

2.1 A push for change: Shifting approaches to environmental management

Water management has always been central to society, driven by the intimate reliance of civilization on hydrological resources for development, agriculture and consumption (Pretty and Ward, 2001). Due to their universal use, water resources are often seen as examples of common-pool-resources (Ostrom, 1990) or resources that are managed as public property (Wagner, 2012). The commonality of water resources has often led to 'tragedy of the commons' situations (Hardin, 1968) in which reduced water quality has been identified as an important consequence of exploitation and miss-use of water resources (Sarker *et al.,* 2008). The regulatory government, as an answer to degradation of common resources, has dominated environmental management in the past, where strong, government- imposed restrictions are seen to be the best way that resources can be protected. This technique manifests as 'command and control' management, in which hard technocratic methods are used to modify or contain a particular natural process. The goal was to stabilise the resource supply in order that it would conform to the needs of the decision makers in distinctly top-down approach (Holling and Meffe, 1996; Sabatier *et al.,* 2005).

Such approaches have been shown to result in undesirable consequences due to an attempt to control processes that are largely unknown in addition to the assumption of the controlling governments that they know best and consequently misunderstanding the needs of the societies and communities that access and use the resource (e.g. Lam*,* 1998; Ostrom *et al.*, 1999; Jackson and Sleigh, 2000). Ideas have emerged that the technocratic system is not responsive to the needs of society (McCulloch, 2009). Consequently, manifestations of a need

for a move away from the top-down technocratic agenda came in the 1970s and 80s when communities and grass roots groups in the USA began to realise and respond to the dominance of government top-down management through movements that promoted collective stewardship (Gottleib, 1989). Such opposition highlighted that the 'doctor knows best' effect can isolate those concerned (Cook *et al.,* 2012) and that involving stakeholders, those who affect or are affected by the policies, decisions, and actions of the system (Grimble *et al.* 1995), in environmental management is key to challenging the technocratic top-down approach (Newson, 2007). Increasingly apparent in water management, is the value of local people's technical and cultural knowledge in searching for solutions to local problems (Chambers, 1989; Thrupp *et al.,* (1994). Wider ideas of the value of stakeholders surfaced in the 1990s in political ideologies, where a stakeholder society was seen as an ideal social management method and as the 'third way' in politics (Giddens, 2000). Anthony Giddens pioneered the ideal of the 'third way', alongside the New Labour and New Democrat political parties in the UK and USA respectively. Emphasis began to be put on a society in which community, responsibility, accountability and equality were the underlying doctrines and one in which top-down socialism and traditional neoliberalism were rejected.

In the UK the technocratic approach had manifested itself as bureaucracy (Watson *et al.,* 2009). Ideas of hierarchy, continuity, expertise and impersonality were used to create organisational solutions to public sector problems, including environmental concerns (Beetham, 1996). However, it essentially relied on the certainty of particular environmental and social conditions (Laffin, 1998). Newer understandings of the environment and its relationship to society challenge the focus on stability. In recent years, complexity and uncertainty have been recognised as dominant features of environmental problems, leading them to be labelled as 'wicked' problems (Lackey, 2007). Water resource problems are seen to be the archetypical 'wicked' problem because of the inherent complexity of the flows and interactions between water and society. Khan *et al.,* (2010 pg.1) state that wicked problems in relation to water constitute 'social and technical issues that are difficult to solve due to contradictory, incomplete and changing socio-economic and environmental requirements'.

Rittel and Webber (1973) were among the first to describe 'wicked' problems and their descriptions are still highly applicable, they state that because of multiple changing variables, which Balint *et al.,* (2011) describe as being both scientific uncertainty and conflicting values from various groups about the environment, there are no true solutions but only ones that are better or worse in a socio-economic context. Equally, local tools and multiple stakeholders are needed to describe, visualise and manage them. Much current research is in agreement that

such complexity requires a changing understanding of the environment as an integrated socio-ecosystem in which both environmental and social processes intertwine at multiple spatial and temporal scales (Brondizio *et al.,* 2009). The changing understanding also requires both an appreciation of environmental complexity and uncertainty, and institutional arrangements that encourage coproduction and mediation of information and knowledge between stakeholders and across multiple levels (Cash *et al.,* 2006). Adaptive and iterative management practices that focus on deliberative, analytical and precautionary action through participation and the creation of a learning network amongst stakeholders (Balint *et al.,* 2011) are now advocated in environmental management discourse, in response to the increased understanding of complexity.

In a UK context, most people are in agreement that there has been a change in water policy over that last 10-20 years that has reflected the wider changes in attitude and approach to environmental management that emphasises a more adaptive, considered and inclusive approach in which governments become less dominant and more understanding of natural processes and social needs and consequences. Watson *et al.* (2009) argues that the changes signify a transference from government to 'governance', the latter of which recognises the limits of government and places government organisations in complex interdisciplinary, interdependent networks with relevant stakeholders (Bekkers *et al.,* 2007). Convergently, Swyngedouw *et al.,* (2002) observed that others believe that the changes simply aim to reduce the burden on governments and that they do not fundamentally change the power dynamics in which decisions and actions happen. Therefore, the uncertainties around the impact of the new way of thinking demand further attention.

2.2 The management context: The Water Framework Directive and water governance in the UK

Current UK water management reflects the move away from the top-down solutions to natural resource management present in the early-mid 20th Century (Bonnell and Koontz, 2007) and emphasises the importance of stakeholder and community involvement. At an international level the change in environmental management perspectives was manifested in the push for 'sustainable development' in the 1990s. The shift has been realised through a number of legislative systems and strategies in the past 20 years, arguably beginning with the Dublin Principles for sustainable water management that were presented at the World Summit in Rio de Janeiro in 1992, and which focussed on the true social value of water and the importance of users, planners and policy makers taking part in decisions about water resources at all levels (Global Water Partnership, 2006). The participatory approach to sustainable water

management was also legitimised more generally in the legislation that resulted from the European Aahrus Convention in 1998, where the public were given the right to participate in any environmental decision making process (European Commission, 2013).

But perhaps the most significant out-workings of the shift in environmental management approach in Europe is the European Commission's Water Framework Directive (WFD). The legislation was finalised on 30th June 2000 by the European Parliament's and Council's Conciliation Committee, after a 12 year process (Kallis and Butler, 2001). It represented a new phase in water policy, because prior to the conception of the WFD legislative emphasis had been on less holistic issues. For example in the 1970s and '80s the focus of legislation was on public health protection and limiting abstraction, with little coordination across Europe. In the 1980s and '90s the focus had been on controlling specific aspects through the Urban Waste Water Treatment Directive, Nitrates Directive and Drinking Water Directive. The WFD embodied a new framework that encompassed the successes of the past directives in a coherent way but focussed specifically on sustainable development and integrated management of water resources across whole river basin units (Kallis and Butler, 2001). Through an emphasis on living ecosystems the WFD had a distinct focus on the geophysical context in which water exists (Carter and Howe, 2006).

The revolutionary aspect of the WFD, was not only the unique emphasis on the holistic approach through a focus on the hydrological scale, a scale never used in European-wide legislation that entailed the crossing of administrative boundaries, but also the commitment to turning environmental governance on its head and giving citizens and stakeholders a voice in agenda setting and implementation of water management actions. Specifically, Article 14 of the WFD specifies that efforts should be made "to encourage the active involvement of all interested parties" in the River Basin Management Planning process, which is the key outworking of the legislation (European Commission, 2012; Petts, 2001; Carter and Howe, 2006). The Directive was a direct response to the significant concern of European citizens around the issue of water pollution and was itself developed through an open consultation with parties interested in water resource protection (European Commission, 2012 'Intro to the EU WFD').

The WFD is based on a grading system of ecological (chemical and biological) status of water bodies, deduced by local testing of water quality, which is matched against projected requirements of water quality for that specific water course expected in conditions of minimal anthropogenic impact (European Commission, 2012). The aim is to obtain a "good" status for

all water bodies in Europe by 2015 through a process of River Basin Management Planning. In England and Wales there are 10 river basins, which have currently gone through one planning cycle in the WFD. Key concerns in the UK with regard to water pollution include both point and diffuse sources. Concern over point source pollution, such as sewage and industry discharges, has been reduced significantly since 1990 through enforced discharge consents and more tightly focused pollution prevention in the UK (Environment Agency, 2002). Although there are still some concerns around point source pollution, it is diffuse pollution that is of continuing concern. It represents cumulative small inputs from the whole landscape and includes risk from nutrient and pesticide runoff, which is exacerbated by soil erosion from agricultural land (D'Arcy *et al.,* 1998); and urban diffuse pollution from roads, industry and domestic misconnections. The benefits that are hoped for through the WFD are better and safer recreational use of rivers; healthier and more diverse wetlands and habitats; and protection from damaging flooding (Mance *et al.,* 2002).

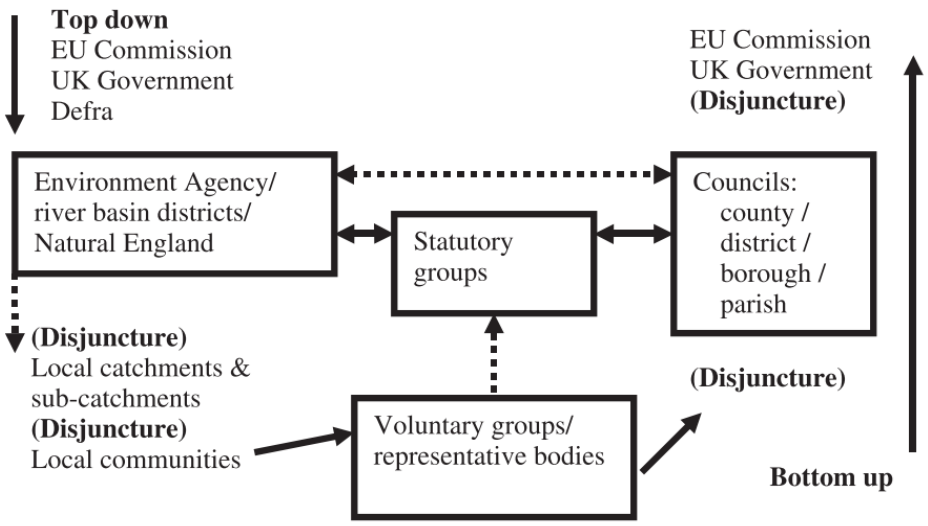

Figure 2.1 The current system of water management in the UK (from Cook *et al.* 2012).

The Environment Agency (EA), established in 1996, is the non-departmental government body responsible for the implementation of the WFD across England and Wales and has a large influence on the way in which it is realised (Foster *et al.,* 2001). The EA is responsible to the Department of Food and Rural Affairs (DEFRA), who in turn is influenced by the European Commission who developed the WFD. Figure 2.1 shows the process of water management in the UK and the relationships between the organisations and groups involved. The diagram was produced by Cook *et al.* (2012) and shows that current UK water management involves a balance of top-down and bottom-up processes that reflect the changing attitudes to environmental governance. Cook *et al*. however show that there are still a number of

disjunctures, particularly between local communities at the catchment scale and the higher level UK and international government, which suggests there is more to be done to improve those links in order to attain better environmental and social outcomes.

2.3 An (ambitious) philosophy: The Integrated Approach (IWRM)

The new approach to water management involves multiple disciplines, governance levels and environmental processes, which combine to create a complexity that is difficult to deal with under single focus management. Integrated Water Resource Management (IWRM) embraces the complexity of water's socio-environmental system (Pahl-Wostl *et al.,* 2012) and forms the philosophy on which legislation such as the WFD is based. IWRM is described as "the integrated and coordinated management of water and land allowing resource protection to be balanced whilst meeting social and ecological needs and promoting economic development" (Odendaal, 2002, quoted in Pahl-Wostl *et al.,* 2012 pg. 25). Integrated environmental management acknowledges the interconnections between human and physical systems (Moote *et al.,* 1994). Warner (2007) states that IWRM aims to integrate relations between surface, groundwater and land use, relations between water and stakeholder interests, and relations between institutions. This gives IWRM three dimensions: multi-functional, which relates to the consideration of all uses of water, multi-sectoral, which accounts for the coming together of different disciplines, and multi-scalar (Conca, 2006) which allows geographical units to be looked at and managed holistically (Margerum, 1999).

Integration is conceptually linked to the river basin unit (IRBM: Integrated River Basin Management), and from an ecosystem perspective it is the 'natural' scale at which water systems are connected, and can be argued as the optimal scale for solving water problems, although there are some who argue that the river basin is a de-politicised scale (Graefe, 2011). Integration can be achieved by looking at the whole river basin and gaining a better understanding of the interconnection of processes as well as the interconnections and feedbacks with social, economic and political processes (Hooper, 2005).

The river basin scale has been part of the understanding of water resources since the earliest civilisations (Tvedt, 2003) and includes an appreciation of the interconnectedness of the social, economic and political aspects of a river basin system alongside the vital understanding of the natural processes as the basis of the integrated approach to river basin management today.

Such complexity lends itself to the management of diffuse pollution, a particular focus of European and UK environmental management. The need to consider the interactions across

the whole river basin is important for improving the environment's sustainably (Mance *et al.,* 2002).The integrated approach interprets the call for inclusion of all interested parties in management processes because management is not confined to one issue or one geographic area, and by its very nature the integrated approach requires input from multiple disciplines and actors. However, practically, such initiatives are still at the early stages and matching the vertical and horizontal integrations against the traditional administrative scale of local government and agricultural practices requires cross-boundary, multi-agency practice and a collective consideration of the needs of multiple stakeholders, that are difficult to achieve successfully (Moote *et al*., 1994; Pahl-Wostl, 2012; Mayers and Thiel, 2012).

2.3.1 The catchment scale: Localising water management

Despite the focus on the river basin scale in European countries under the WFD for the past decade, critiques have begun to surface about the legitimacy of the scale. Cook *et al.,* (2012 pg. 49) criticise the UK water policy for having a 'lack of localism', which refers to the disjunctures detailed in Figure 2.1. between the local communities or groups operating at the catchment scale (a smaller geographic scale than river basin) and their influence on national level groups and environmental policy. Larger scales such as the river basin scale have been criticised as being difficult arenas in which to share information between actors because of the high number of stakeholders involved, which makes it difficult to truly integrate all systems and needs (Ostrom, 1992). An example of this is the management of the Lerma-Chapala River Bain in Mexico, which covers an area over 700,000 ha (Levine, 2007). Warner (2007) claims that working across the large area of the basin led to more conflicts than it did conflict resolution, thus showing the difficulty of practicing truly integrated management at larger scales. Equally, larger scales have also been argued to encompass a high degree of ecosystem variability and thus complexity that is difficult to reconcile due to a high level of uncertainty (Blumenthal and Jannink, 2000).

As a result of the arguments outlined above, the smaller catchment scale has become the more popular scale at which to operate integrated management and is currently the focus of WFD planning in the UK. The emphasis on localism is one that has emerged in the UK through political agendas and has filtered through into environmental policy and practice. The current coalition government has focussed on localism, which can be defined as "a positive disposition towards the decentralisation of political power" (Clarke and Cochrane, 2013), in the pursuit of a 'big society' model that aims to enact public sector reform and community empowerment (Department for Communities and Local Government, 2010). The catchment scale therefore encompasses the need for a smaller geographical scale to better cope with the complexity of

the environment as well as providing a more manageable and personable management-environment in which communities can more effectively integrate with organisations and industries.

2.4 Critiques of the integrated approach

There are numerous critiques of IWRM. Firstly, Greafe (2011) argues against the use of the river basin or catchment as the scale for water management, using the justification that they are simply not the scales at which water is used and managed in an age of interconnectedness. Graefe argues that river basins and catchments ignore the processes of water transfer, irrigation and damming that have been required in the past 100-200 years to cope with growing populations and increasing urbanisation, meaning that management can be much larger or more complex than single basin scales. He emphasises that the new 'water governance' is unnecessarily moving away from established political systems of management, and by focussing on a 'natural' unit the true problems, which may be political, are being ignored (Swyngedoew , 2009).

Watson (2007) argues that the IWRM approach is not the sea-change claimed by advocates or even some critics, such as Graefe, but that it is simply more of the same. For example, Schlager and Blomquist (2008) identify that "the definition of a watershed and the selection of boundaries are matters of choice" (pg.14) and that the river basin or catchment is essentially a political unit even if it is labelled as natural. Wester and Warner (2002) argue that without a consideration of politics, as some IWRM and IRBM systems are argued not to have, there is a fundamental misunderstanding of water management. Barham (2001 pg.190, cited in Wester and Warner, 2002) suggest that in focussing on new systems of governance there is a risk of undermining the current resources available, or equally, ignoring the complexity involved in trying to create new systems of governance 'on top of existing social and political boundaries'. Following on from this, Wester and Warner (2002) have argued that new governance that is inconsiderate of more complex politics and social systems might institutionalise inequalities resulting from difficulties in managing the diversity of stakeholders across the hydrological area. One of the key arguments against the integrated approach is the difficulty posed by attempting to cross established administrative boundaries and getting different government agencies and communities to accommodate one another in order to follow the hydrological boundary (Wester and Warner, 2002).

Furthermore, there are arguments against the integrated nature of environmental management and critiques of the idealism that integration proposes. For example Biswas

(2004) argues that although the concept of IWRM is attractive in itself it is not fundamentally implementable because it is vague and undefined. In concordance with Watson (2007), Biswas argues that people are simply continuing with old ways of managing resources under the new fashionable label of IWRM. Biswas also highlights the difficulty in knowing what integration means and argues that integration would actually require more centralisation and bureaucracy in order to bring authorities together. Further to this the concepts of participation and decentralisation are argued to promote separation rather than connectedness.

Such arguments highlight a call for a much more considered approach to water management, if integration is to be achieved. However, currently, there appears to be more practitioners in favour of the hydrological unit and an integrated approach to water management than there are critics and energy has been focused on creating sustainable and practical institutions in order to manage water within the hydrological scale. Pahl-Wostl *et al.* (2007) acknowledge the critiques of the integrated approach and put forward a counter argument that there is conversely a more dynamic management landscape in which integration *can* be achieved, through network governance and collaborative approaches to water management.

2.5 The Answer? – Collaborative Approaches in Environmental Management

The progression to improve IWRM has manifested in an emphasis on collaboration, fuelled by studies such as Pahl-Wostl *et al.,* (2007). Collaborative water partnerships have emerged in the past 10-15 years as a mode by which multiple complexities can be reconciled through encouraging all stakeholders to take equal part in decision making within a river basin or catchment area through collective coordination of ideas and values. Collaborative management has not emerged as an alternative to IWRM but as a proponent or variable perspective of it, and in itself as an alternative to the more traditional forms of environmental management involving top-down policies (Sabatier *et al.,* 2005). This section will explore the origins, components and applications of collaborative environmental management and identify how and why research is justified in this area.

2.5.1 What is collaboration?: Origins and key principles

One of the key writers on the general process of collaboration is Barbara Gray, who in her 1989 book on the topic states that collaborative approaches offer 'the opportunity for those with divergent view-points to explore their differences and search for solutions that go beyond their own limited vision' (pg. 5). The key component of collaboration is the inclusion of all stakeholders, working on the principle that by combining views a much more universal and

coherent definition of a problem can be built, thus aiding a better choice of collective action Steins and Edwards 1998, pg. 1).

Multi-stakeholder partnerships are the expression of collaborative working in many cases and are often referred to as watershed partnerships or catchment partnerships in the context of water management, particularly stemming from research in the USA and Australia. Watershed partnerships can be defined as groups of stakeholders who come together on a regular basis to discuss or deliberate the management of streams, rivers or watersheds (Leach and Pelkey, 2001). Despite the general similarities with other forms of participatory policymaking, collaborative stakeholder partnerships stand out as associated with broad, complex problems, involving multiple levels of government and other stakeholders, and having an indefinite duration (Leach *et al.,* 2002). Table 2.1, drawn from Leach *et al.* (2002), compares the features of collaborative stakeholder partnerships with other participatory policymaking methods. In addition, Table 2.2 from Bentrup (2001), compares the process of collaborative planning in natural resource management to participatory planning, again demonstrating the strengths of the collaborative partnership approach.

	Issues	Participants	Stages of the Policy Cycle
Stakeholder partnership	Multiple issues united by a common theme, addressed sequentially or simultaneously.	Interest groups, citizens, and multiple federal, state, and local agencies. Meetings typically open to the public.	Full cycle (problem definition, planning or decisionmaking, implementation, assessment). Indefinite duration.
Advisory committee	A specific project or program conducted by a public agency or private enterprise.	Interest groups, technical experts, and /or public agencies, Selected by the sponsor.	May address any or all stages, over an extended period of time, depending on the scope of the sponsor's project or program.
Public hearing	A specific project proposed by an agency or private developer .	The project proponent, interest groups, citizens, and one or more permit-issuing agencies. Meetings open to the public.	Planning stage only. Timing is often driven by statutory deadlines. Disbands after the plan is finalized.
Negotiated rule making	A specific proposed regulation.	Affected interest groups. Selected by the one,rule-making agency.	Rule-making stage only. Disbands after the rule is finalized.

Table 2.1 A comparison of collaborative stakeholder partnerships and other forms of participatory environmental management. Source: Leach *et al.* (2002).

Collaboration-based planning	Participatory planning
Interdisciplinary approach—cross-disciplinary integration	Multidisciplinary approach—compartmentalization of disciplines
Stakeholders educate each other	Education is believed only to be necessary for the public
Informal face to face dialogue among stakeholders	Overreliance on public hearings and other formal input methods
Continuous stakeholder participation throughout the planning process	Participation of stakeholders only requested at certain points in the planning process
Stakeholder participation encouraged to create a holistic plan	Stakeholder participation generally encouraged only to create support for a plan
Joint information search used to determine facts	Science used to buttress positions and refute other parties data
Generally, consensus is used to make decisions	Generally, voting is used to make decisions

Adapted from Gray (1989), Moote and others (1997), Urban Land Institute (1994).

Table 2.2 A comparison of characteristics of collaborative based planning and participatory planning. Source: Bentrup (2001).

Partnerships have originated in America, British Columbia and Australia (Margerum, 1999) and some of the earliest partnerships were documented in the 1960s (Toupal and Johnson, 1998), but most formed in the 1980s. The 'polder model' in the Netherlands has had a significant effect on the definition of a collaborative stakeholder partnership within water management. The model was derived within the decentralised political situation in the Netherlands, which provides favourable conditions for participation. The model focusses on getting stakeholders round a table under the auspices of government, to discuss contentious issues with an expectation that groups will be willing to compromise and collaborate in order to reach consensus (Jiggins and Roling, 2004; Enserink *et al.,* 2007).

The benefits of collaboration in systems such as stakeholder partnerships have been shown to be widespread, and include increased trust between stakeholders (Kenney, 1999; Pretty and Smith, 2004; Wagner and Fernandez-Gimenez, 2009), deeper participation of stakeholders in decision making (McCloskey, 1996; Innes and Booher, 1999) and a more holistic understanding of environmental problems and their most appropriate solutions (Margerum and Whitall, 2004). The potential benefits of the partnerships are generally seen to be greatest when addressing 'wicked' problems, and therefore favoured in situations such as water resource management, where problems are long term and complex. Lowndes and Squires (2012) claim that multi-sector partnerships help people share risk and resources and find better solutions to 'wicked' problems.

2.5.1.1 Participatory approaches

There are a number of underlying principles driving the collaborative approach to environmental management. Public or stakeholder participation in environmental management is now an expected feature, particularly with the advent of legislation such as the WFD. Participation has been claimed to focus on inclusion and empowerment, which can lead

to collective action (Demeritt, 2005). The origins of participatory theory lie in 'action research', developed in the 1940's, which focused on iterative interplay between researchers and participants (e.g. Lewin, 1946). Work by Paulo Freire (1972) followed with an emphasis on supporting poor and marginalised groups' participation in knowledge production in accordance with a general dissatisfaction with legacies of colonialism and development interventions (Kindon *et al*., 2007). Chambers (1997) refers to a dominance of uppers over lowers, which can be seen to draw on colonial concepts of 'the other', introduced by Edward Said (1978), in which certain people culturally receive separate or inferior treatment (Plumwood, 2003). In reference to environmental management, Adams and Mulligan (2003) argue that even in a neo-colonial world these types of relationships and concepts are echoed in the domination of Northern urban environmentalists. When considering 'the other' in environmental management and water resource management they refer to those such as residents or private businesses that have not historocally had any power in relation to policy decisions. The challenge, therefore, of participatory theory was to offer an alternative to the dominance of the upper and allow those conceptualised as weak and vulnerable to express their realities by including and prioritising them in the research process (Chambers, 1997; Mosse, 2001).

The participatory emphasis in water resource management has been central to the development of a new environmental governance. Carter and Howe (2006 pg. 219) claim the following benefits of participation of stakeholders in water management in the UK:

- 'Enhanced democratic legitimacy of competent authorities.
- Increased accountability during the preparation of RBMPs.
- Capacity buildingamongst stakeholders and competent authorities.
- The strengthening of decision-making procedures.
- Drawing on the knowledge and experience of stakeholders to generate new ideas.
- Consensus building amongst stakeholders and competent authorities.
- Resource savings.
- Awareness raising amongst stakeholders and decision-makers.
- Improvements in the quality of river resources.
- The advancement of goals associated with sustainable development.'

Despite such claims the application and interpretation of participatory approaches within the collaborative discourse should be taken in consideration of the wide range of critiques they have received. Cooke and Kothari (2001) have been influential in opposing the ideal of traditional participatory theory by arguing that actions often include just as much domination and authority as top-down approaches, because they still involve outside agencies defining

boundaries and levels of inclusion (Kothari, 2001; Kesby, 1999 referenced in Kesby 2007). Consequently, participation of people in activities will not always relate to the inclusion of their knowledge or opinions (Sanderson and Kindon, 2004). Michel Foucault expresses that systems of power and authority aid the formation and accumulation of knowledge (Gordon *et al.,* 1980). Kowledge, therefore, is socially, culturally and politically produced and reformed in different situations depending on the power balance and the potential levels of subjugation of knowledges (Kothari, 2001). Critiques have also emerged around 'local' knowledge, often focused on in participatory approaches, and the implication that it is different or normally perceived as inferior to 'expert' knowledge outside of participatory methods (Mosse, 2001). It is argued that participatory approaches emphasise the dichotomy of uppers and lowers, rather than turn them upside down (Kothari, 2001). The tone of such critiques can be seen to be pessimistic, however Kesby (2007) and Cameron and Gibson (2005) have argued that there are ways in which power and empowerment can be reconciled. Iterative approaches in which participants dictate the flow of the decisions have been shown to be more successful (Sanderson and Kindon, 2004).

Participatory Action Research (PAR) is an approach that has emerged out of the participatory discourse and has focused on engaging participants from the very beginning of the research or policy process (Pain and Francis, 2003). PAR involves defining problems from the participants' perspective, rather than the institutions', and aims to achieve mutually agreed aims using democratic processes of self-reflection and learning (Kindon *et al.,* 2007). It is one which is currently favoured in policy as it specifically focuses on critically improving the lives of the people it directly affects (Kitchen and Hubbard, 1999). It is foundational to collaboration as it is representative, involves working together and pooling skills and knowledge (Pain *et al.,* 2012). Its benefits have been the focus of recent studies into water pollution management on the River Lune, Lancashire (Pain *et al.,* 2012), and demonstrate the growing emphasis on participation in natural resource management discourse.

2.5.1.2 Participation and co-production of knowledge

Campbell (2006) states that knowledge is one of the three pillars of sustainable management of natural resources, along with capacity and commitment. Moreover it is now widely appreciated that justice and fairness play a large part (Johnson *et al.,* 2007). Emphasis on participatory approaches can break down barriers and prevent expertise becoming a power that privileges those who hold it (Turner, 2006).

Callon (1999) wrote an influential paper outlining how the approach to participation and understanding of the combination of knowledges in a scientific or environmental context has

evolved in three stages. The first stage is the 'Public Education Model' in which the gap between scientific knowledge and stakeholder knowledge can only be bridged by educating from the expert perspective. This model echoes Chambers (1997) theory on imposing of realities from uppers to lowers. The second stage is the 'Public Debate Model', in which the imposing body increasingly appreciates the value of knowledge from sources other than their own (Collins and Evans, 2002; Lane *et al.,* 2011). The problem with this approach is that it can be criticised as tokenistic (Harrison and Mort, 1998), for example when consultations take place after decisions have already been made. In response, Wilsdon and Willis (2004) argue that the process of engagement should be moved 'upstream' and become part of the problem definition. This is fulfilled in the final stage of Callon's model, labelled a 'co-production of knowledge', which can be argued to refer to theories proposed by Foucault, that knowledge is contextual and by changing the social power dynamic in which it is produced, all actors can experience empowerment. Callon (1999) describes this final approach as collective learning in which no one knowledge has special privilege. Irwin's 1995 book on 'Citizen Science' also draws on the 'co –production of knowledge' concept and outlines the importance of empowering the public in order that they have influence in decision making and research regarding issues that affect them.

In a study of community flood risk modelling in Pickering, Yorkshire Lane *et al.* (2011) demonstrate the value of balancing power between scientists, local residents and organisations in order to co-produce knowledge and create an innovative solution to flooding. The ability of the experts to disassociate themselves from their institutional context (Landstrom *et al.,* 2011), and create a fluid boundary around expertise (Bell and Sheail, 2005), led to the successful design and implementation of a bunding system within the town. The success of Lane *et al*.'s approach, although in a modelling context, is promising in terms of transferring the collaborative style of problem solving, which includes key aspects of participation and co-production of knowledge, to water quality management.

2.5.1.3 Social capital and social learning

Through its emphasis on participation and equality of knowledge, collaboration has a value as a catalyst for the development of social capital (Brondizio *et al.,* 2009), which can be defined as a framework that facilitates the creation of strong, dynamic social networks through trust, reciprocity, exchange of knowledge and connectedness, which consequently lead to successful collective action (Allen, 2012; Pretty, 2003).

The origins of social capital lie with Pierre Bourdieu in the 1970s when he first used the term in relation to the benefits that people acquired as a result of being associated with certain social networks and groups. Coleman (1988) was the first to define social capital as the bonds and normative values that facilitate cooperation and Putnam (1993) showed that they are important for managing depleting resources. Pretty (2003) describes the main benefits of social capital as: trust that others will behave in an expected manor; reciprocity and ready exchange of knowledge and goods; changes in behaviours that give people the confidence to invest in the common good; and connectedness between local and distant groups. Social capital is both portrayed as a set of benefits and as a set of conditions that lead to those benefits, but Portes (1996) emphasises that it is the conditions that should be referred to as social capital because a group may have the conditions but not gain the benefits due to economic or political contexts. Pretty and Ward, (2001) suggest that building social capital is a pre-requisite for improving natural capital (natures goods and services (Constanza *et al.,* 1997) because it sustains partnerships and groups that are strong, resilient and adaptive to the needs of the environment now and in the future.

Perhaps one of the most significant aspects of social capital is the process of learning that is encouraged through the building of relationships and trust. The learning process is often described as social learning, which is the exchange of behaviours within a group involved in policy change (Greener, 2001), and is associated with participation, polycentric governance (decision making power shared amongst stakeholders and government authorities), common-pool resource management and collaborative co-management of natural resources (e.g. Pretty and Ward, 2001; Pahl-Wostl, 2002; Schusler *et al.,* 2003; SLIM Project, 2004; Mostert *et al.,* 2007). Pahl-Wostl *et al.,* (2007 pg. 2) states that within the context of water quantity and quality management social learning can be 'analyzed as a means of developing and sustaining the capacity of different authorities, experts, interest groups, and the general public to manage their river basins effectively'.

A significant study into collaborative river basin management and the role of social learning in that process is the European HamoniCOP project (Harmonising Collaborative Planning), which with the support of the European Commission, researched the implementation of river basin management techniques in 10 river basins across Europe between 2002 and 2005. The case studies have been used in a number of ways, but research has principally focussed on aspects of social learning (e.g. Craps, 2003; Ridder *et al.,* 2005; Tippet *et al.,* 2005; Mostert *et al.,* 2007; Pahl-Wostl *et al.,* 2007; Borowski *et al.,* 2008). In reference to case studies in France and Germany, Borowski *et al.,* (2008) demonstrated the dependence of successful collaborative

processes on the opportunity for social learning to take place. Such studies have highlighted the importance of social learning, linked to the creation and accessibility of social capital, in collaborative environmental management.

2.5.1.4. A collaborative approach

Although a 'collaborative approach' is difficult to define, it includes key aspects, such as participation, balancing of power and social learning, that give way to core values, such as empowerment, openness, reciprocity and holistic understanding of the environment, which in turn inspire particular features that can be recognised across case studies. Using observations from 25 academic texts referring to collaboration or aspects of collaborative environmental management, a conceptualization of some of the most common features, values and underlying principles of a collaborative approach has been created in order to act as a reference for this research (Figure 2.2).

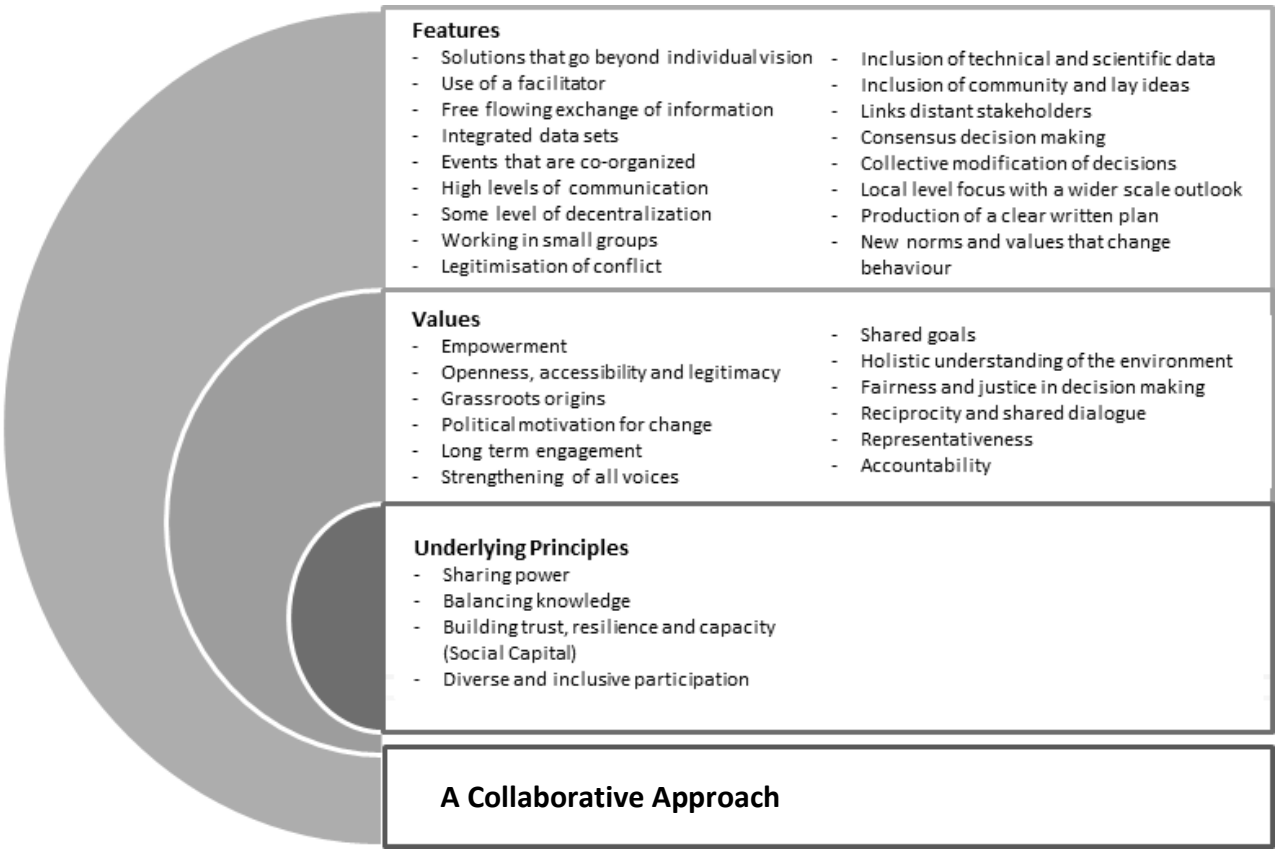

Figure 2.2 A conceptual summary of the features, values and underlying principles that make up the collaborative approach. Each of the elements identified in Figure 2.2have been mentioned within at least two of 25 academic texts analysed, either as part of a case study or critical analysis of a collaborative or engaging decision making process. The categorisation was based partly on the frequency of the mention of the elements between the texts and partly on inference from wider themes within the literatures.

2.6 Critiques of the collaborative approach

Despite the focus on and praise for collaboration as a theoretical ideal, the reality of practice is argued to be considerably contrasting (Conley and Moote, 2003). Watson (2004) argues that collaboration should not be seen as the panacea or 'silver bullet' for IRBM. Due to their complexity, collaborative efforts can take large time and resource commitments (Kenney, 1999) and incur steep start-up costs (Margerum and Witall, 2004). Cortner and Moote (1999) argue that the process can often be implemented ineffectually, causing problems around lack of representation where a high diversity of stakeholder are sought (Coggins, 1999), based in the unrealistic expectations of the theoretical ideal of collaboration.

Rudeen *et al.* (2012) state that even when collaboration is implemented fully, the process itself can have negative effects. For example as collaborative groups increasingly focus on smaller areas, particularly in reference to the catchment scale, the process can privilege local voices and break the links between local and distant stakeholders. McCloskey (1999) exemplifies this through the critique of the National Forest management in the USA, whereby in one project only those who were local to the area had a say in the management, excluding those who dwelt in nearby cities who rely on resources from the forest and travel to the area for recreation and who also have a legitimate stake.

Collaboration has also been described as undermining systems of democracy (McCloskey, 1999: Brunner 2002; McCarthy 2005; Moote 2008), particularly where consensus is favoured. For example small minority groups have the power to veto ideas and policies when the goal in a collaborative group is that everyone must agree. This, disempowers local majorities (McCloskey, 1999) and means that 'lowest common denominator' solutions are implemented (McCloskey, 1996), weakening the potential impact of the policies, making them simply agreeable, rather than the optimal policy (Coglianese, 1999).

Critiques surrounding collaborative processes highlight key difficulties that are faced when adopting a collaborative approach and encourage further investigation into the roll that collaboration can play in the management of natural resources.

2.7 Characterising collaborative approaches

There are a great many ways in which the collaborative approach is manifested and analysed and, consequently, there is little consensus on how it should be evaluated or characterised (Rowe and Frewer, 2004).

The literature on collaborative approaches to environmental management have used case study analysis to produce typologies of collaborative groups, and particularly theories on the stages through which collaborative groups go, which have been accepted as representing parts of collaborative approaches. These models and typologies can be used to more easily identify as well as compare collaborative efforts in new contexts.

2.7.1 Stages of collaboratives

It is broadly agreed that there are a number of stages that collaborative groups follow during their life cycle. Selin and Chavez (1995) were the first to detail the stages of collaborative groups in reference to natural resource management and took inspiration from the behavioural science field and from studies such as McCann, (1983) and Gray, (1985). They propose that collaboration begins from an environmental context and follows stages that define the problem, organise actions and define roles within the group, then lead to implementation and particular sets of outcomes. Figure 2.3 shows the different stages of collaborative natural resource management groups as defined from studies by Selin and Chavez (1995); Bentrup (2001); Watson (2004); and Margerum (2008). The stages may not be fulfilled in every collaborative effort but a number of similar elements do usually exist. It is also acknowledged that the process of collaboration is iterative and adaptive and that the stages run in cycles rather than in a linear process (Watson, 2004). This model has been used to test whether there are universal processes in collaboration in different contexts and challenge the criticisms against the overall process of collaboration (Conley and Moote, 2003).

2.7.2 Types of collaboratives

There is heterogeneity between collaborative groups that define them as contextual. Such heterogeneity has been associated with a number of common categories or typologies. The typology of a collaborative group can be based on its actions and membership and has been found to influence the impact the group has in the wider social and environmental context. Table 2.2 details six typologies identified by two authors. The examples of each of the typologies given are located in the USA, which reflects the higher level of research on collaborative watershed groups carried out there as opposed to other areas, although studies in Europe and Australia are increasing.

The typologies detailed in Table 2.3 demonstrate that there is an interest in the structure and development of collaborative groups and an interest in the potential of collaboration to enact

change based on groups' structure, aims and membership. Such concepts are important to explore if collaboration is argued to represent a change in environmental management practice for the better. The inevitable potential for further understanding of the influence of different types of collaborative groups on the ability to solve water problems is clear (Moore and Koontz, 2003).

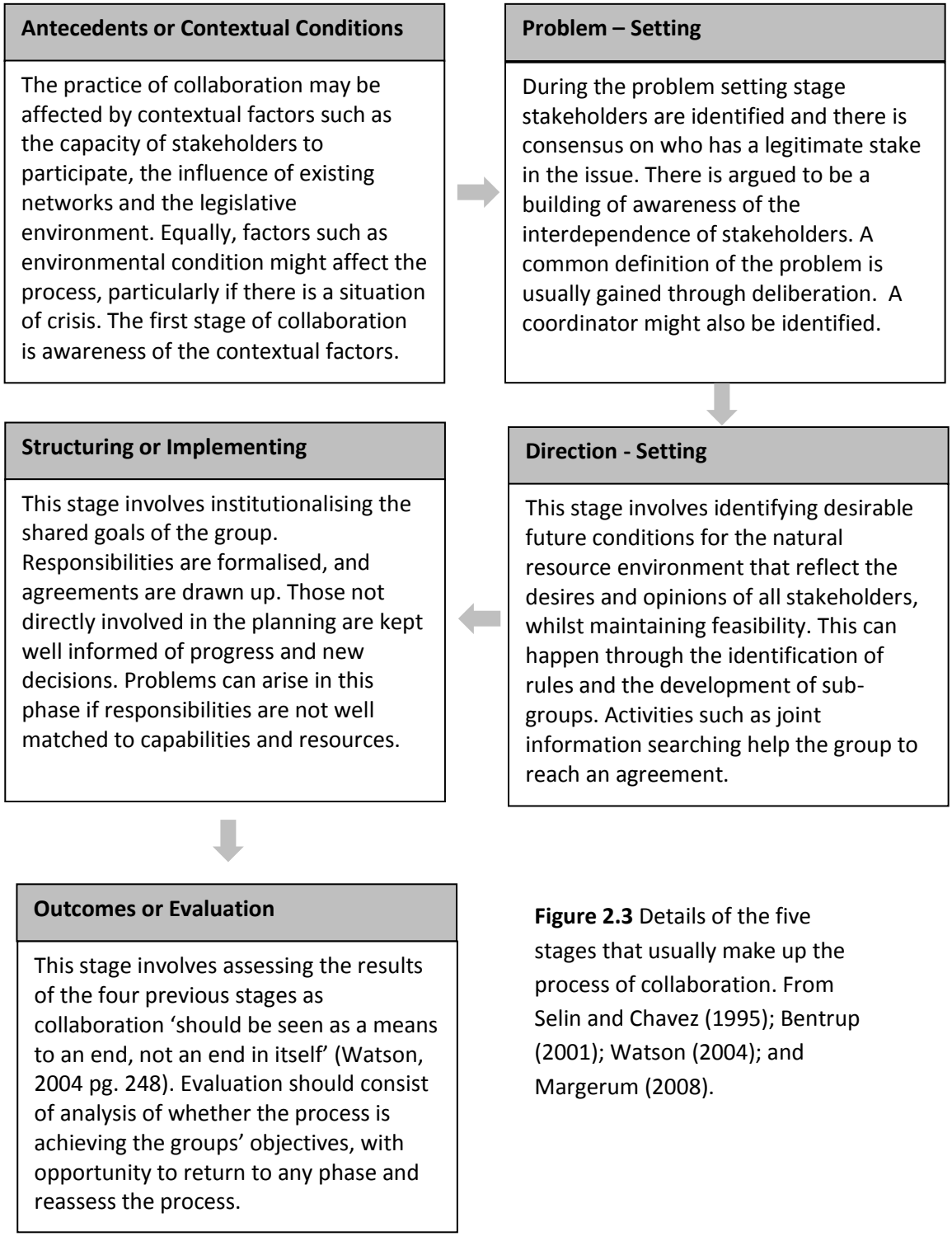

Figure 2.3 Details of the five stages that usually make up the process of collaboration. From Selin and Chavez (1995); Bentrup (2001); Watson (2004); and Margerum (2008).

Typology	Details	Reference/Example
Action	Focus on direct action or ''on the ground'' activities, such as monitoring, education, and restoration.	Margerum (2008) Long Tom Watershed Council in Oregon is a community collaborative group established to improve local water quality. It focuses on working with landowners to restore habitat, riparian corridors and wetlands.
Organisational	Focus on policies of organisations such as government agencies as well as NGOs. Their deliberation is focussed at a higher level, on policies rather than resulting actions.	Margerum (2008) Lake Winnebago in Wisconsin collaborative group mainly focused on the policies and programs of the Wisconsin Department of Natural Resources and the local governments bordering the lake system.
Policy	Focus on government legislation, policies, and rules, which in turn affect the organisation's policies and the on-the-ground actions.	Margerum (2008) San Francisco Estuary in California project included a number of stakeholder groups from government and non-government groups and developed an estuary management plan that focussed on developing new water quality standards for the estuary.
Citizen-based	Consist primarily of citizens stakeholder membership	Moore and Koontz (2003) Raccoon Creek Improvement Committee in Ohio
Agency-based	Consists of mostly public, government agency based representatives.	Moore and Koontz (2003) Animas River Stakeholder Group, Colarado (Steelman and Carmin, 2002)
Mixed	Consist of large partnerships of diverse stakeholders representing government, industry, environmentalist, farmer, and general public interests	Moore and Koontz (2003) Friends of the Cheat River in West Virginia.

Table 2.3 Typologies of collaborative groups.

2.8 The research gap: Collaborative environmental management in the UK

The emphasis on collaboration as a process representing the new wave of environmental management, particularly in the field of water resource management, has clearly been a priority in research over the past 10-15 years. However, there is a bias towards studies from the USA and increasingly Australia and Europe. Research in the UK has focused on understanding participatory and stakeholder river basin and catchment management schemes, as well as on other innovative and integrated solutions to water quality issues, but so far there has been little focus on collaborative approaches. This is necessary as the current WFD policy

in the UK has a specific focus on collaborative catchment-scale management of water quality problems.

2.8.1 Lessons in collaborative water resource management

In the USA, on the Rogue River Basin, Oregon, Margerum and Whitall (2004) used a collaborative approach to solve problems of diminishing environmental conditions including water quality, fish habitats, diversity and forest health. The study showed that the picture of a collaborative approach is complex and although there were some successful parts, challenges emerged around communication between technicians and managers, participation of wider groups, which was limited by funding constraints; and data sharing, which was affected by the wide variety of mismatched criteria and formats. The study highlighted the importance of a highly developed regional structure, which allowed collaboration at all scales.

In the Applegate watershed within the Rogue Basin, the state of health of both the ecosystems and communities were used in order to create a partnership driven watershed plan (Preister and Kent, 1997). The partnership was community based and aimed to promote ecosystem health and diversity. Early success in breaking down barriers between opposing groups and an emphasis on building trust and maintaining contact between stakeholders meant it was one of the key references for a successful collaborative approach. In the Massachusetts Watershed, in which a coalition of groups was formed in order to monitor and manage the water quality of water bodies in the area, the balance of funding, amount of external support for the effort, organisational processes and the definition of problems were shown to be key to the success of the collaborative approach (Michaels, 2001). Success in the Massachusetts Watershed was considered to be emanated in the commitment of members, the balance of scientific and lay knowledge, and the ability of people to collectively mobilise resources.

Important limitations on collaborative approaches were highlighted in the Little Miami River basin, Ohio (Bonnell and Koontz, 2007) and the CALFED program in Bay-Delta, California, where multiple government agencies, groups and publics came together in response to water crises (Huffman, 2009). Although there were many successes in each project, the constant striving for universally accepted solutions in the CALFED program led to too much time spent deliberating issues and an eventual impasse when certain groups would not agree to draft management plans (Huffman, 2009). Similarly limiting situations were reached in the Little Miami River Basin, where a fear of conflict within the collaborative partnership hindered the ability of the group to seek to improve participation and therefore could not deliver successful

environmental actions beyond the planning stage (Bonnel and Koontz, 2007). These and many other studies from the USA have highlighted the characteristics of successful collaborative approaches but also highlight that there are continuing limits and limitations of the approach that have yet to be resolved.

In reference to the European application of water management approaches in the form of the WFD, there is less emphasis on the explicit role of collaboration, but many of its key principles have been extensively explored, including stakeholder engagement, integration and participation. For example Mayer and Thiel (2012) studied cooperative approaches (similar to collaborative approaches) in the River Elbe in Germany and the River Dordogne in France, and demonstrated that outcomes of similar projects were affected by the balance of formal and informal institutional change and differences in the participants' mental models of the problems and issues at hand. They concluded that good cooperation could be facilitated through accessible information and networking. Other key studies include the HarmoniCOP projects mentioned previously, looking at social learning within the application of the WFD in European river basins (Craps, 2003; Ridder *et al.,* 2005; Tippet *et al.,* 2005; Mostert *et al.,* 2007; Pahl-Wostl *et al.,* 2007; Borowski *et al.,* 2008). Case studies in France and Germany, particularly demonstrate that successful collaboration is affected by the level of opportunity for social learning to take place (Borowski *et al.,* 2008). The HarmoniCOP projects revealed important lessons about the implementation of the WFD and the possible successful effects of key principles such as cooperation and social learning, but also invited the concepts to be explored further.

2.8.2 Research in the UK

Studies into collaborative water resource management efforts in the UK are few compared to those in the USA. UK research mainly focusses on the technical aspects of tackling pollution problems and the effectiveness of public participation in water resource management. There is extensive research into water pollution solutions focusing on the more technical methods of reducing diffuse pollution, for example in DEFRA's three Demonstration Test Catchments (the River Eden in Cumbria, River Avon in Hampshire and River Wensum in East Anglia) where the focus has been on promoting new and innovative farming practices to reduce agricultural diffuse pollution (National Demonstration Test Catchment Project, 2012). Such projects have helped to highlight the importance and complexity of water quality issues facing the UK currently.

Perhaps the key study area with regard to water resource management in the UK has been in regard to public participation and stakeholder inclusion. The HarmoniCOP project in the UK involved a pilot scheme run in the River Ribble, Merseyside (Carter and Howe, 2006; Davis and Rees, 2004) and focussed on testing methods of engagement, rather than studying the whole process of collaboration. The project achieved a positive result and stated that there was an increased understanding, both from the Environment Agency, who were involved in implementing the project, and the public that the public were vital to decision making and that practices such as giving feedback and allowing more time for discussions in meetings to encourage stronger relationships between stakeholders were key to success. Stakeholder participation has also been the focus of studies in the River Tame in Birmingham (Petts, 2007) and on catchments in Scotland including the River Dee (Mostert *et al.,* 2007) and the Argyll, Clyde and Tweed (Blackstock *et al.,* 2012). Such studies have been vital to understanding the role of new types of environmental management around water and have revealed that there is a place for stakeholders in policy decision making and that there are areas where such inclusion can thrive.

Cook *et al.* (2012) studied the current state of the catchment management groups in England and Wales and demonstrated the level at which the UK is currently engaged in certain types of catchment management (snapshot from 2009). They conclude that the groups can be broken down into regulatory, statutory and voluntary, which are sometimes combining but at other times struggling to reconcile their juxtaposed views and practices. Positives of the changing environmental governance were reported as the increasing recognition of the need for collaboration across levels and the increase in success of engagement efforts and local networks. Problems that still appear to be present in UK water governance were stated as long term active participation and community engagement and the longer term survival of partnerships. Cook *et al*.'s research highlights that in the UK collaborative water management is increasing, but the practicalities are not yet clear, practiced or well researched. The research gap therefore lies between the studies on participatory management and the potential for the UK institutional situation to facilitate collaborative approaches to water management. The advent of an increased focus on collaborative, localised catchment management of water quality through the push from DEFRA since 2011 has therefore offered the ideal opportunity to fill the gap in UK research, with regard to both the lack of collaborative practice in the sector and the consequent lack of research in the area. The combination of the two elements offers a unique chance to study the practices and impacts of new environmental governance in the UK.

2.9 The Lower River Wear case study context

2.9.1 The Lower River Wear: location and pollution history

Through the DEFRA pilot scheme, a variety of contrasting catchment areas have been chosen to carry out the catchment-based approach. England and Wales are divided into 10 River Basin Districts and 100 catchment areas and 25 of those catchment areas have been allocated pilot schemes. Of the 25 schemes 10 are led by the Environment Agency (EA), and the other 15 catchments are led by NGO groups.

The LRWP is one of the 10 schemes led by the EA and is located within the River Wear Catchment in the Northumbrian River Basin District in the North East of England (Figure 2.4). The River Wear has its headwaters in the East Pennines and flows east/south east through Weardale, then runs north east, along a meandering path through the urban areas of Bishop Auckland, Durham and Chester-le-Street, until it reaches the North Sea at Wearmouth in Sunderland. For the purposes of the WFD the EA has divided the River Wear catchment into 68 management units (water bodies). The LRW area includes the lower reaches of the River Wear towards the East of the catchment and contains 25 water bodies that run through urban, agricultural and former mining areas. Significantly, 23 out of the 25 water bodies are currently failing to reach 'good' ecological status under the WFD (Figure 2.5) and are predicted to continue to fall short by 2015 if action is not taken. The lower level of water quality in the area was one of the driving forces behind the choice of the LRW catchment for the catchment pilot schemes alongside the lack of history of working in partnerships in the area. The catchment area is one of the smallest of the 25 catchments, at 489km^2, compared to, for example, the Tidal Thames which covers an area of over 5000km^2. The River Wear as a whole catchment is 1311km^2.

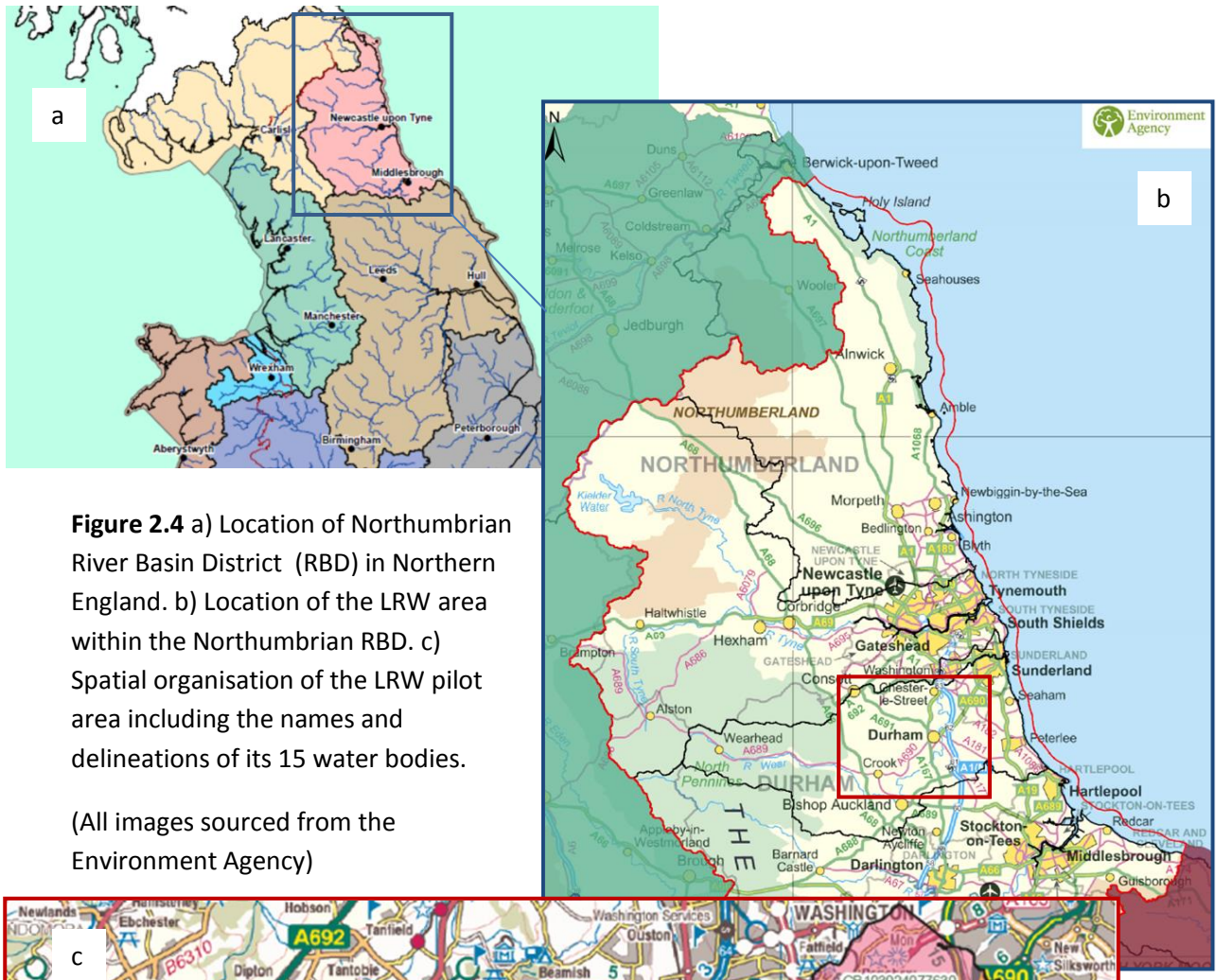

Figure 2.4 a) Location of Northumbrian River Basin District (RBD) in Northern England. b) Location of the LRW area within the Northumbrian RBD. c) Spatial organisation of the LRW pilot area including the names and delineations of its 15 water bodies.

(All images sourced from the Environment Agency)

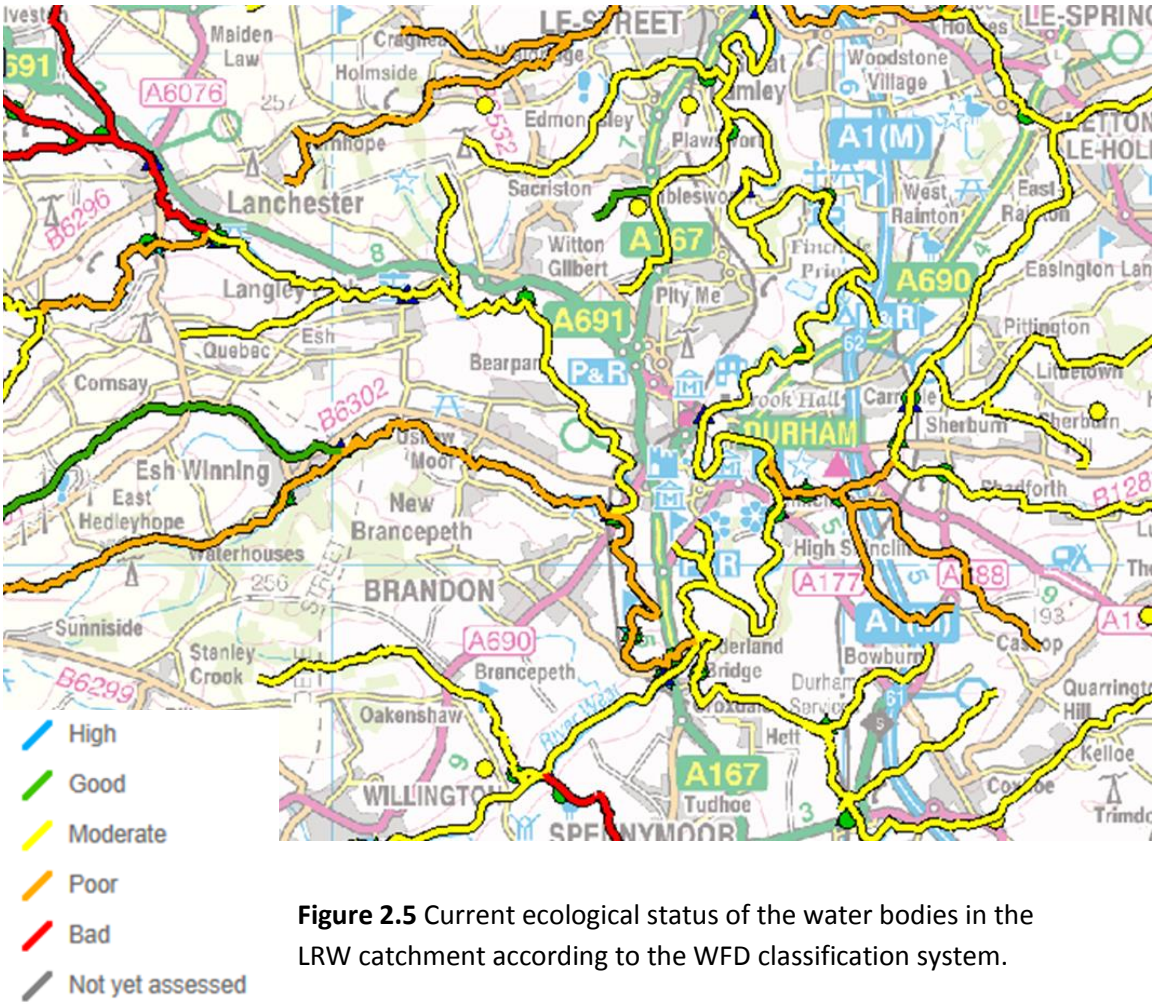

Figure 2.5 Current ecological status of the water bodies in the LRW catchment according to the WFD classification system.

The LRW area has a rich industrial heritage in mining due to the presence of extensive coal fields in the Carboniferous limestone, millstone grit, coal measure shales and mudstones that make up the geology of the area, as well as heavy metal mineralisation (North Pennine lead-zinc orefiled). As a result the area has historically been subject to diffuse acidic heavy metal pollution from minewater discharge (Neal *et al.,* 2000).

Since the cessation of mining in the North East pollution levels have decreased. Schemes have been implemented to help reduce pollution, including small scale passive treatments such as reed beds as well as larger scale mine water pumping stations that extract and treat contaminated discharges from disused mines to prevent them contaminating surface water and groundwater (for example the Horden Active Treatment Plant run by the Coal Authority (Johnston *et al,* 2008)). Minewater pollution has been significantly reduced in the past 40 years (Neal *et al.,* 2000) and the River Wear has been celebrated as shaking off the negative

influence of its industrial past and is now one of the best sea trout fisheries in the country (LRW Catchment Action Plan, 2012).

However, the threat of contamination is on-going because of contaminated land and the continual need for pumping. Moreover, there are other sources of diffuse pollution such agricultural land as well as urban diffuse pollution, an area that is growing in influence as populations continue to grow. It has been reported that there are a number of issues around the LRW catchment with litter causing contamination in the water bodies (IHRR, 2013) as well as posing flood risks. Point source pollution is also a significant influence on the failure of many of the LRW water bodies against the WFD criteria, and is mainly sourced from sewage discharge. Recent improvements in the sewage treatment works have positively affected water quality but a number of larger plants still have a negative influence (LRW Catchment Action Plan, 2012).

The LRW Catchment Action Plan (2012) states that there are a number of significant pressures identifiable as contributing towards the water quality in a number of water bodies across the LRW catchment (Figure 2.6).

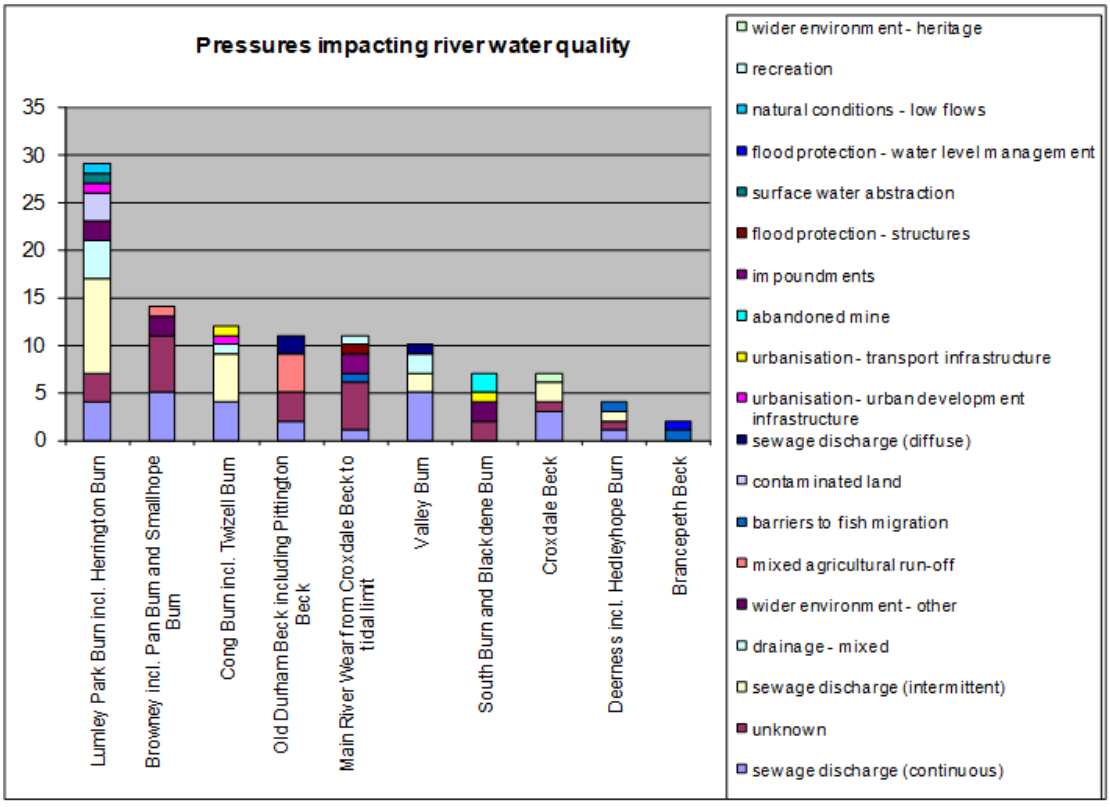

Figure 2.6 Pressures impacting river water quality of water courses in the LRW catchment. (Unknown X axis scale – assumed to be estimated percentage contribution to water quality).

The influences are variable and place-dependent, with no consistent influence across the catchment. The only exception is point source sewage discharge, which is likely to play a role in most water courses. Unknown pressures also feature in most water courses and indicate the high level of uncertainty surrounding the causes of water pollution in the area. It is reported that the EA are undertaking 'investigations' to better understand the problems and possible causes (LRW Catchment Action Plan, 2012). It is this uncertainty over the causes of failure that has driven the need for organisations and communities to work more closely in partnership across the area, to share information in order to determine actions needed to best improve the water quality in the immediate future as well as long term.

2.9.2 Previous and on-going research in the LRW area

Due to its extensive mining history the River Wear has been subject to many studies on water quality, such as Green *et al.* (1999), Neal *et al.* (2000) and Shephard *et al.* (2009) . Such studies indicate that there are high levels of anthropogenic pollution within the area but some forms of pollution, such as particulate concentration from lead-zinc mining, are relatively low compared to other industrial-dominated rivers in the UK. Other studies have looked at biological aspects of the river including macrophytes, diatoms and phytoplankton (e.g. Birch *et al.,* 1988; Whitton *et al.,* 1998).

Few, if any, academic studies in the past have concentrated on the social impacts or effects of water quality in the specific area and it is something that is largely unknown. As part of the LRW pilot process an academic study was commissioned by the EA looking at the way in which the public understand and value the River Wear. The study, carried out by Durham University, is on-going but has already revealed significant information about values put on the environment, such as its historical importance, its value as a place of relaxation and recreation, and the aesthetic value that the public place on good water quality. The study so far highlights the importance of understanding water quality from multiple perspectives.

As part of the pilot schemes programme DEFRA has commissioned a study of the effectiveness of the new catchment based approach through the EA and a commercial consulting company. The evaluation is national scale and involves pilots being assessed against standardised criteria in an evaluation framework set out by a central catchment pilot project steering group. Information for the evaluation process was gathered through interviews with the catchment coordinators (leaders of each catchment pilot), questionnaires sent to participants quarterly and an independent analysis of the catchment plans (a significant end-point for all the

catchment pilots). Results for the questionnaires were published in May, July and August 2012, and detailed information about categories such as 'roles and responsibilities', 'timescales', 'learning', 'benefits' and 'cost and value for money'. The published reports did not generally break down information geographically but took an overall evaluation of the participants' answers. The purpose of this research is to supplement the research carried out by the EA by providing an in depth case study evaluation of one approach, where through interviews, the participants have a freedom to evaluate the project from their own perspective, giving a new and supplementary insight into the process of collaborative catchment management.

2.10 Summary

- In this chapter literature has been identified and explored to provide a background on changing environmental management practices. Details have also been presented of the LRW study site.
- Approaches to environmental management have moved away from a top-down, command and control structure due to their adverse effects on both the environment and societies. More holistic, adaptive and participatory methods are now favoured as environmental problems have come to be understood as 'wicked' or inherently complex. The WFD has represented the new integrated approach in water policy and specifically advocates the inclusion of stakeholders in environmental decision making and focuses on the hydrological scale for planning and management.
- Critiques of the integrated approach propose that the hydrological scale ignores current political and administrative systems and that integration is an ambitious target.
- Collaboration encourages multiple stakeholders to work together to find solutions to commonly defined problems, and often involves addressing multiple issues from planning to evaluation. Collaboration has been shown to be characterised by elements such as participation, in which all stakeholders are valued and included; co-production of knowledge, where collective learning means that all knowledge is valued as equal; and social capital and social learning, which are proponents of a system in which trust, and reciprocity build and strengthen relationships and thus collective action towards the common goal of environmental improvement.
- Critiques of the collaborative approach state that it may be an unrealistic theoretical ideal and is often time and resource demanding. It can be argued to disempower majorities and lead to a weakening of policies and ideas, particularly where consensus is the goal. Such critiques demanded further investigation of the approach.

- Extensive studies have been carried out in US watersheds, demonstrating the value of collaboration and some of the pitfalls of the approach. There have been few studies in the UK on collaborative water management and there is thus a research gap in terms of understanding collaborative approaches to water management and understanding a new policy agenda in the UK.
- The LRWP, located in the NE of England in the Northumbria River Basin District was chosen as a case study due to its poor water quality as well as the ease of access to its management processes. With the exception of one current public perception research project, neither social impacts nor management processes have been explored previously, highlighting an important opportunity to carry out new research in the area.

Chapter 3

Methodology

3.1 Introduction

3.1.1 Case study research

Given the level of detail and complexity of environmental management and policy, a single case study approach has been chosen in order to allow a significant level of detail to be investigated, which would not have been possible within the timeframe if more than one case was chosen. Yin (1993) states that when a phenomenon under study is not distinguishable from its context a case study approach is distinctly justified in order to gain a level of detail sufficient enough to understand the complex processes and connections involved. In this project the formation and sustenance of an environmental management partnership is not separable from its political, economic, social and geographic context. This feeds into a statement by Rubin and Rubin (1995) that "if you cannot understand something in the specific first, you cannot understand it in the general later" (pg.39). Consequently, Yin argues that the study of interorganisational partnerships warrants the use of case study research in order to look closely enough at a phenomenon so as to discover, map and analyse the complexities apparent in the system before any aspects can be scaled up to apply to other contexts. This research has taken on a case study approach and this chapter details the methods used to explore the research questions in the case study context.

3.2 Methods Used

In order to gather evidence for this research project, layers of data were built up, each subsequently creating a richer picture of the LRWP and the role of collaboration. The main method for the collection of data was semi-structured interviews, which give an insight into the opinions and experiences of the participants in the LRWP process. Additional data was gathered from documents detailing the minutes of meetings of the LRWP wider stakeholder group and the higher level development group, and from personal attendance of some of the meetings themselves. The attendance of meetings and analysis of documents provided the background information in which the interview data was set.

3.2.1 Documents and written information

Documents were used as supplementary information to create an in depth picture of the processes and actions in the LRWP and have formed part of the triangulation of data to reduce possible bias of opinion, influenced by there being only a single researcher on this project (Miles and Huberman, 1984). The main documents that were consulted were meeting minutes from stakeholder workshops and development group meetings, however there have also been a number of supplementary documents including written reports from a national evaluation of

the 10 catchment pilots by the environmental consulting company Cascade Consulting; information, presentations and evaluation documents from the Environment Agency associated directly with the LRWP; and documents from participants in the project.

By consulting written documents Silverman (2001) claims that a richness of data can be revealed alongside subtle information about how the world relevant to the subject in hand is interpreted and represented. Meeting minutes provide an insight into who was and was not present at the meetings. In addition, by analysing aspects such as why the documents were produced, by whom and for whom (Hammersley and Atkinson, 1983), a picture of the type and level of communication and strategic processes can be deduced. Aitkin (2005) suggests that when analysing texts it is important to consider that they are embedded in social relations and require a critical reflection about the world the reader experiences through the text (pg. 249).

In this research six meeting minute documents gained from stakeholder workshops held in November 2011, May 2012 and October 2012 and development group meetings in December 2011, January 2012 and June 2012 were collected from two sources, which include the Catchment Change Network (www.catchmentchange.net) and through email correspondence with the LRWP group. The public availability of some of the meeting minute documents suggests that there is an open element to the process and a desire for those outside the immediate group to have an understanding of on-going deliberation. The two main aims of consulting the meeting minute documents were to use the information to create a timeline of processes throughout the first year of the LRWP and to analyse the participants' attendance and contributions to the process.

Documents from the Cascade Consulting evaluation process detailed quarterly reviews from May and August 2012, which consisted of evaluation data about the progress of the pilots gained from questionnaires and interviews with coordinators of each pilot. A document detailing the results of a participant survey from May 2012 was also collected, which detailed information about progress from the pilots in general, based on questionnaire results from participants in the catchment pilots across the UK. Finally, a baseline document, produced in July 2012, was also consulted, which included contextual details about each of the catchments and comparisons of progress and processes so far. These documents were used as a validation or comparison to the interview data and served to set the opinions in context of the wider opinions across all other pilots. The purpose of this research was to undertake a more in depth study of opinions and by using semi-structured interviews and attending some of the meetings, the analysis would be significantly more experiential and led by the participants opinions rather than as part of a fixed-question survey.

3.2.2 'Participating and observing'

The central aim of 'participant observation' as a methodology is to understand peoples' everyday lived experiences from an inside point of view. This is achieved by becoming both immersed in the day to day rhythms and events of the target research population as a participant, as well as observing their behaviour in an independent sense as it happens (Cook, 2005). Whilst this research project has not used participant observation in its truest methodological sense, the principles of both 'participating' and 'observing' have been adapted and used. This is because the key attractions of both aspects are their combined ability to provide rich detail on the minutiae of processes and activities and relationships and subtle interactions that may be significant to research studies, but that participants might not mention in an interview because they might believe them to be mundane or obvious (Valentine, 2001).

Having the support of the Environment Agency for this research project has meant that it has been easy to maintain a high degree of integration in the LRWP in terms of personal inclusion in email correspondence and invitation to events and meetings, which would have been difficult to negotiate had the research been unsupported at the outset. Inclusion in email correspondence has meant that there has been access to documents, drafts of documents, dates of meetings and events, and the ability to witness who has been contacted and how often.

3.2.2.1 Personal reflections

I attended three meetings during the course of my research, which included a wider stakeholder meeting in October 2012, and development group meetings in February and April 2013. During the stakeholder group meeting I became much more of a 'participant' as there were group activities which I felt I should contribute to and as such gained a significant understanding of the type and style of activities that took place and equally the level of contribution, inclusion and discussion between the attendees. In the subsequent meetings I took on the role of 'observer' as these meetings involved in depth round-table discussions which I felt I was not qualified to contribute to. These meetings presented an opportunity to observe the process that discussions went through, the facilitation of the meetings and the style of relationships that were being formed. In all three situations I felt accepted as part of the LRWP and subsequently felt that I was experiencing the 'lived experience' of the meetings, which could then further inform the analysis of data from individual conversations I would have with the people at the meetings during interviews.

The only limitation to this particular method was the lack of constant involvement in correspondence, as I would only be invited to certain meetings and would only be included in certain email rounds. This meant that I would either have to chase up correspondence from other members of the group or miss certain aspects of the pilot process. The observations and knowledge gained from attending the meetings has been used in a contextual sense to analyse the more in depth and focused interview data, rather than be the subject of analysis itself. This means that the experience of taking part in the activities enriches the analysis but does not cloud or distort it in any way.

3.2.3 Interviews

The main method of data collection used in this research project was semi-structured interviews. 13 in depth interviews were conducted between March and April 2013. The interviews collected information on the personal experiences and opinions of those directly involved in the LRWP stakeholder workshops and development group meetings. Participants were asked to comment on the process, its outcomes and limitations from the beginning of the project in June 2011 to the formulation of a draft catchment plan in December 2012.

3.2.3.1 Justification

Interviews are a form of interaction that let the researched express their views and opinions with reference to their world in relation to a research question. Perhaps the most common approach to interviews as a qualitative method is the semi-structured interview (Kitchen and Tate, 2000), which has a degree of predetermined order, but a freedom to let the participant guide the interaction and the way in which issues are addressed (Dunn, 2005). McCracken (1988) claims of the semi-structured interview that for certain analytical and descriptive purposes 'no instrument of enquiry is more revealing' (pg. 9) and Gillham (2005) states that it could be the most important way of conducting an interview due to its flexibility and balanced structure giving way to high quality data. In this project, therefore, semi structured interviews were used to initiate talk and interaction between the researcher and environmental professionals involved in the LRWP.

The aim of the interview as a research tool is, again, to focus on the lived experiences of participants but aims to discover how they see and understand the world (Kvale, 1996;McCracken, 1988). This happens through the process of a conversation (Rubin and Rubin, 1995) or as Eyles (1988) refers to it, "a conversation with a purpose". The interview aims to reveal the thoughts, feelings, beliefs, assumptions and values of research participants that will ultimately help to better understand human actions (Marshall and Rossman, 1999). Marshall

and Rossman (1999) argue that consequently using interviews as a data collection tool will lead to better quality data that will produce more practical results, compared to a set of numbers from quantitative data collection methods, and would be significantly more successful in terms of influencing policy and ultimately creating policy based on research results (Marshall and Rossman, 1999). It is justified, therefore, that interviews should be used in a project such as this, which hopes to contribute to the evaluation of a new approach (collaborative catchment scale water quality management) that will eventually feed into environmental policy.

Interviews provide an advantage over other types of data collection due to their 'complexity capturing ability' (McCracken, 1988 pg, 16), which is gained through the opportunity for the interviewer to explore interesting themes as they emerge throughout the interview, particularly unanticipated issues (Valentine, 2001). This is in comparison to surveys, where data is only defined in predetermined categories set by the researcher, giving no scope for the respondent to define the focus of the research (Rubin and Rubin, 1995). Equally, the interviewer can explore ideas on a deeper level with the ability to follow up answers, which may inform analysis in such a way as to lead to the discovery of new hypotheses (Singleton and Straits, 1999).

Interviews also have the advantage of a better response rate than surveys; Singleton and Straights (1999) claim that there can be a 60-80% response rate. Although it is not entirely clear how this response rate is defined, it demonstrates that interview practice has proved successful in terms of effort against the resulting data output. This is perhaps due to the personal nature of interviews and the fact that when participants are singled out as important and valued enough to be wanted as participants it encourages a feeling of privilege that persuades people to become involved (*ibid.).* It is believed that to attain such high response rates the targeting of potential participants should be exact in order for them to agree to take part. This research is slightly different in terms of targeting the pool of potential interviewees, as they are already identified, having taken part in the LRWP meetings and workshops.

Focus groups were another qualitative method that could have been used to gather opinion about the LRWP meetings and activities within this study, but were not chosen. This is for a number of reasons. Firstly it was clear that the majority of people involved in the LRWP were professionals and therefore they would not be able to give up time from their working days to take part in a focus group session, which was likely to be longer than an interview. In addition, a focus group may be perceived as less rewarding for the participants as some people involved may be silent for parts of the discussions when they feel they are unable to comment and this

might mean that those participants feel that their presence is unnecessary and therefore has been a waste of time. In contrast, in an interview the interviewer is able to give full attention to the participant and is able to move the conversation on if the participant cannot comment on a certain issue in order to make the most of the time, which consequently makes the participant feel useful and valued. Equally, although the nature or this project was not significantly sensitive, there were occasions where the names of other organisations were needed or the nature of working with other people in the project was discussed. It would not have been ethical or fruitful to discuss this sort of information in a focus group format where participant may feel uncomfortable and the opinions stated would be affected by the need to appease other people. Finally, interviews can be justified because there is a distinct use of interviews as one of the key methods of data collection in other studies of collaborative environmental partnerships (e.g. Cook *et al.* 2012; Margerum, 2008; Watson, 2004 etc.). For example in a study of public participation in environmental policy across Europe Wesselink *et al.* (2011) used open–ended interviews to gauge the opinion of environmental professionals and justified the use of interviews by the nonstandard question format allowing experiences of the professionals to be explored on a much deeper level compared to using other, quantitative techniques. Equally, Marshall *et al.* (2010) used interviews as part of a mixed method approach to understanding good practice in integrated catchment management in the UK. They state that interviews enable perceptions of the environmental professionals to be analysed in depth and in context and, similarly to the opinion of Singleton and Straights (1999), allow new themes to emerge.

3.2.3.2 Limitations

Firstly, the opinions generated in an interview are created in a very particular context and Denzin (1970) states that there is an inherent difficulty in trying to reach the private worlds of people's experience and it very much depends on the situation in which the interview is set and the relationships involved; people may provide answers that they think befit their role and situation following the rules of normal social interaction, such as adhering to their professional status rather than giving personal opinions (Singleton and Straits, 1999). Denzin (1970) also highlights that the fleeting relationship between the interviewer and interviewee may heighten selectivity of opinions given in an interview. There is therefore a degree of self-construction within the interview. It is not only restricted to interviewees as the interviewer too will be selective about how they are represented. This is not necessarily a negative point (Gillham, 2005) but supports the fact that the interview should be recognised as a very specific context in which there is a degree in inter-subjectivity between the participants.

Interviews are also a limited resource as they only provide information in the form of verbal narratives about peoples' actions, not an unbiased report on what actions physically took place (Valentine, 2001). Moreover, when talking about past events in an interview the response is reliant on the ability of the participant to remember certain situations, which could prove to be a source of inaccuracy (Singleton and Straights, 1999). The aspect of difficulty that may occur from only gaining vague opinions of a detailed process can be overcome through the method of triangulation, in which multiple methods are pulled together to counteract bias (Miles and Huberman, 1984).

3.2.3.3 Interviewing approach

Table 3.1 outlines three approaches to research that have been detailed in Silverman (2001) among others. The positivist approach is the one that is most critiqued and will not be adopted in this research. This is because by assuming that there is an objective reality that can and will be discovered through rigorous techniques, the subtleties of language and context and subjectivity is ignored. Kvale (1996) describes the better researcher as one who is a 'traveller', where knowledge is sought out as if on a journey through a new world, where it is the researchers words that construct the description of the journey when he gets home, as opposed to a 'miner', where knowledge is like buried metal to the researcher waiting to be discovered.

The constructivist approach will not be taken in this project as although ideas around the construction of meaning in the interview context are valuable, the degree to which construction is done and the devices used to do it are not of great relevance to this research topic. Equally, a constructivist approach focuses too much on the specific context and assumes that information is not relevant or applicable outside of the constructed interview context. Information from interviews was incredibly valuable and applicable to outside situations and therefore constructivism can be seen to be too extreme a view.

Emotionalism is a more appropriate approach within the context of this research due to its acknowledgement of the constructed context of the interview setting and the need to understand that the views stated are representations of an external reality (Silverman, 2001) and may differ from person to person. Within the context of the emotionalist approach realism will also influence the interpretation taken in this research. In contrast to positivism, realism acknowledges that although there is a reality out there, much of it is beyond objective discovery and even perception because context, meaning and inner workings of systems and beings create images of that reality when we observe it (Cloke *et al.,* 1991). Bhaskar (1975)

argues that positivism wrongly merges three distinct ideas about the way the world works. The ideas include: 1) real unobservable mechanisms; 2) actual observable events; and 3) empirical experiences of events. Bhaskar claims that real mechanisms may not be represented by actual events and those actual events are not necessarily well represented by people's experiences. Therefore the realist approach, which recognised the difference between these three ideas, is a better way of conceptualising understandings than positivism, which does not make any distinction.

	Positivism	**Emotionalism**	**Constructivism**
Key ideas	* Data collection methods such as interviews give key facts about the world that are valid and reliable *Truth can be measured with statistical precision and is independent of people's perceptions of them *Data is independent of the interviewee and the interview context *Interview technique is the only way in which factual closeness of the answer might be affected * Interviews must be standardised *Language is seen as a way to communicate facts	*Interviewees are seen as a subject who actively constructs their social world *The interviewer creates the interview context *based on a deep understanding between the interviewer and interviewee * Interviews are normally unstructured *Accounts are simply representations of the world	*Both interviewer and interviewee are involved in constructing meaning *The respondent takes facts and transforms them into a subjective creation * Errors are part of normal interpersonal relations and do not denote unreliability *A good interview requires skills from both sides * The accounts that the respondent gives are part of the world that they describe *Concerned with how knowledge is constructed in the research situation
Limitations/ critique	Each person uses language in such a different way that it cannot possibly always convey facts Not everything that is important can be measured with precision. Positivist thought fails to capture complexity. Objects and events are understood by different people differently.	By having a very open ended interview process it can be argued that it is actually leaning towards the positivist rhetoric or reducing bias	Denies the fact that interview data might have some meaning outside of the constructed interview situation. It also only concentrates in conversation rather than what is said.

Table 3.1 Approaches to the interviewing process. Adapted from ideas presented in Silverman (2001).

Therefore within this project it is assumed that there is a reality 'out there' but that there are aspects of it that will never be understood. Interviews provide a description of empirical experiences where knowledge is constructed in context and can help to increase understanding about the way in which the unobservable reality is interpreted.

3.2.3.4 Sampling and responses

The potential pool of respondents with whom interviews could be conducted was collated with reference to meeting minute documents, utilising lists of names under the attendees and apologies sections. The result was a comprehensive picture of those that had attended meetings and those who had been invited to meetings and would potentially be willing to comment on their experiences.

The list in total comprised 57 names from 19 organisations, which corresponded to 47 contacts from 18 organisations available to get in touch with, after some contact data could not be found and after those that were related to research at Durham University and the outside facilitator had been disregarded. From the 47 contacts those first chosen to approach were those already known to the researcher in order to capitalise on existing relationships. Thereafter, it was systematic contacting of all those on the list, beginning with the members of the development group, who by their more constant contact with the project were predicted to be more responsive and willing to contribute to the research. The primary method of contact was email. The focus of the email sent was to explain a little about the project, outline who was being asked to take part, justify why each individual was chosen and give them the option to arrange a date and time suitable for them. Additional information about the research and the participants' rights was attached.

In total, 39 people were contacted about the project and were invited to be interviewed. The remaining 8 people included multiple members of the same organisation, most of which belonged to the EA and were not contacted due to their low level of involvement (for example having the status of visitor or invited guest on the meeting minutes) and therefore the likelihood that they were observing rather than participating in the LRWP. 15 people replied to the initial email, including the catchment co-ordinator, spanning 9 organisations (38% response rate), all of which agreed to be involved with the exception of one person who replied to say they did not have the time to participate. Table 3.2 details the organisations that agreed to be involved and their level of involvement in the pilot.

Organisation (and number of interviewees)	Description	Level of involvement
Durham University (1)	Educational institution. Specific representation from the physical environmental disciplines.	Regular development group attendee
Environment Agency (4)	Executive non-departmental public body responsible for environmental control in the UK. Specific expertise in water quality and catchment management.	Variable from catchment –coordinator to those that have attended in a supportive role
Durham Wildlife Trust (1)	Non-governmental organisation (NGO). Membership funded charity that protects wildlife and promotes conservation through projects and volunteer events. Own land in the Lower Wear catchment. Specific contributions on waterways conservation.	Regular development group attendee
Groundwork North East (1)	NGO. Independent charity that works with communities through project work to improve the environment, health, well being and green skills in local areas.	Regular development group attendee
Northumbrian Water (1)	Private utility company. Responsible for water treatment and supply in the NE of England. Have a number of initiatives to combat water pollution.	Regular development group attendee
Limestone Landscapes (1)	Lottery funded project associated with Durham County Council. Focus on restoring limestone landscapes in specific areas of County Durham. Work in partnership with other organisations and community groups.	Development group attendee
Durham County Council (1)	Local government authority. Specific skills in environmental management and governance ranging from wildlife to landscapes, to flooding.	Regular attendee of stakeholder group workshops
Wear Rivers Trust (2)	NGO. Independent charitable trust concerned with the protection and promotion of the River Wear. Heavily involved in all aspects including research, education, leisure and maintenance.	Variable from regular to occasional development group attendance
Anonymous (2, from two separate organisations)	-	Variable from singular to occasional attendance of stakeholder group workshops.

Table 3.2 Organisations that agreed to be involved in the research process and their levels of involvement in the LRWP to date.

The response rate does not correlate with the 60-80% response rate expected by Singleton and Straights (1999), perhaps due to the constraints on time of professionals limiting the amount of time they are able to give. The participation in the interview process may also be a reflection of the participation in the LRWP, because of those agreeing to take part 10 people had attended development group (DG) meetings (excluding the catchment coordinator) out of

a possible 17 contacted (59% response), whereas just 3 had attended only stakeholder workshops out of a possible 22 (14% response). This result may be to be expected because, as detailed above, those involved in the development group have chosen to invest time and effort in the pilot and would therefore feel they could give the time to help evaluate the process and may feel that they would gain more personally from being involved in the research. Although it was disappointing that more participants from the stakeholder group did not respond, the lack of representative response is validated with Valentine (2005)'s observation that the purpose of interview data is not to be representative to but understand how individual people experience and make sense of a certain situation. Despite this perspective, an additional disappointment was that the catchment coordinator was not interviewed directly, as was originally planned, due to logistical and timing issues on both sides. Informal comments and conversations with the coordinator have, however, formed an important part of the analysis.

No new contacts were made after 39 people had been contacted as it was believed that the information gained in the further interviews would be similar to that gathered already, as this had begun to happen in the interviews, particularly between those working for the same organisation. It was only those from other organisations that were assumed to have given different responses. Glaser and Strauss (1967) state that when nothing new is discovered in each interview, then that is the point at which to stop gaining new respondents.

3.2.3.5 Writing the interview questions

The questions asked were derived from principles explored in the literature and those that had arisen through experience of the process. Table 3.3 details the type of areas covered. The areas mentioned in the table are general, as for each interview some of the questions were tailored and other themes were brought in depending on the responses of the interviewee as prescribed by Longhurst (2010).

3.2.3.6 The interview process

Once the respondents had been contacted and positive responses received, the interviews were arranged based on the availability of the respondent. The interviews all took place during working hours at or near the place of work of each respondent. The professional setting of the interviews was a very important part of construction of the interview context and affected the way in which the questions were asked and the answers were given, derived from the

respondent's need to represent their organisation in a positive light or the inability to make negative comments due to the perceived risk that it might affect their future reputation in the LRWP.

The interviews lasted between 20 and 50 minutes. 11 interviews were conducted face to face and took place in a variety of spaces ranging from a busy café to private meeting room, and 2 were conducted over the phone. Most interviews were allowed sufficient time to run their course but some had to be cut short due to time constraints of the interviewees. It was a considered decision to aim for each interview to be around 30-40 minutes in order that the respondents knew the amount of time they were expected to give. All interviews were recorded using a dictaphone, where permission was given (in all cases), and transcribed within a week of recording to aid with the interpretation of the answers.

The approach taken in the interview situation was one in which the interviewee was free to express their views with little interruption or challenge. No strong agreement or opposition was expressed. This is an approach advocated by McCracken (1988, pg 38) in which he states that the interviewer should appear agreeable in order that there is no sign of a critical or sardonic attitude. This is opposed to Kvale, (1996) who advocates an approach in which the interviewer challenges beliefs and opinions in order to test them. It was felt that this would not be an appropriate technique as it might jeopardise the relationship between the respondent and researcher and as the style of responses was feedback on a process rather than deep personal beliefs an interrogation of the strength of beliefs was not needed.

3.2.3.7 Positionality

When approaching research that involves studying the ideas and opinions of others through interactions, it is vital to assess the position of the researcher in the research process and in relation to the people involved in the study (Robinson, 1998). Valentine (2005) describes positionality as a researcher reflecting on how their own identity, not only as a researcher but as an individual (defined by gender, class, race, nationality, politics, history and experiences (Schoenberger, 1992)), shapes the type and form of research they are doing and the interactions they will have with participants. Schoenberger (1992) argues that knowing the position of a researcher leads to significant discoveries about the nature of research and the research process.

Table 3.3 Question topics included in the interviews in this project and justification for the inclusion of each.

Area explored	Justification
Background information	
Details of job role	Relaxes the respondent by presenting questions that they might feel confident talking about. This information also contributes towards classification of participants.
Taken part in any similar projects?	
Familiarity with the Lower Wear area	
Involvement in the pilot	
Responsibilities as a member of the DG/ stakeholder group	Aims to discover participants perceptions about the purpose of the group and whether there is motivation to contribute without immediate personal gratification or if organisations are involved only for their own benefit. It also reflects on the status of the group as to whether there is a sense of collective purpose.
Process of involvement	Relates to themes of inclusion and participation as well as engagement. Aims to discover if there is a relationship between the ways in which people became involved and their continued engagement in the process. Also aims to discover if all mechanisms of involvement were the same for all participants in order to reflect on equality of inclusion.
Working together	
Productivity of meetings	Reflects on progress of the pilot leading to how ideas and themes have progressed. Also reflects on the type and styles of facilitation that were used in the pilot and how well they have worked. Equally there is also an insight into the respondents views of productivity and their expectations for progress.
Shared priorities and disagreements	Brings up themes of conflict and conflict management. Good conflict management leading to agreement on decisions has been identified as an indicator of good working relationships and therefore collaboration.
Representation of ideas in the catchment plan	Touches on ideas of inclusion and balancing of knowledges – were people listened to? Deliberative policy decision making has been criticised as sometimes favouring those with the loudest voices , where the ideal is that participation of all voices is encouraged, particularly in a holistic catchment context.
Working relationship with the EA	Gives an insight into aspects of leadership, power and governance. The purpose of the new collaborative approach is for the EA to work in partnership with organisations and for decisions to be collaborative, equal and agreed by all, not imposed. How has this worked and has the role of the EA changed?
Pilot processes and outcomes	
Significant achievements	Investigates whether the predicted effects of a collaborative approach have been realised and gives an insight into the priorities of the participants
Problems and restrictions	Shows which problematic factors are the most important or obvious for the participants. There are many factors that might affect the progress or success of the pilot including financial restriction, time limits, disagreements, lack of engagement.
Spinoff activities	Reveals the actions that have happened on the ground and demonstrates the level of agency in the partnership. Shows the wider impact of the project beyond the boundaries of the meetings and required actions. The level of spinoff activities might demonstrate the self –maintaining capacity of a group, if they are able to sustain partnerships outside of official projects.
Catchment scale	The catchment scale is the main focus of the DEFRA initiative and as it is a new approach at the policy level there is a certain amount of unknown when it comes to how practical such a scale will be. This questions aims to show the opinions about how the catchment scale has worked and whether is has been an appropriate scale for water quality management.

Inclusion and sharing information	
Were the right people included?	Shows how people perceive inclusion and who is defined as a key stakeholder. This might be used to inform who is engaged in future projects and more specifically in the future of the LRWP.
Limitations to participation	By identifying limiting factors to participation, the most important factors to organisations when considering whether to invest time and effort into an environmental project can also be identified.
Public participation	Evaluates the level of public participation in the LRWP and identifies where organisations who work regularly with the public believe that it could be improved at the strategic level. Explores themes of inclusion and co-production of knowledge within the collaborative approach.
Sharing information	Indicates the levels of communication that are present within the partnership and the success of the methods used. Openness in partnership groups is seen as a part of best practice in collaborative environmental management.
Future of the pilot	
Influence of partnership	Identifies the strength of the agency the partnership is believed to have and how and if it can make real impacts in the future. It will also signify the strength and potential longevity of the partnership.
Personal future involvement	Reveal who is committed to being involved in the future and again reflect on the longevity of the group and the willingness of organisations to invest in a long term project.

Table 3.3. continued.

By enacting constant, self-conscious scrutiny of the self as researcher (England, 1994) aspects of positionality can be explored. For example within this research my previous experience in a similar field and deep interest in the topic was partly to my advantage. Valentine (2005) states that it is often an advantage to share a frame of reference or experience with your informants in order to strengthen the rapport during interviews or throughout the research process. I found that previous voluntary work with one of the organisations involved in the LRWP, when mentioned, gave me a little bit more 'weight' in terms of talking to people, particularly informally. Equally my status as a 'geographer' also appeared to appeal to certain people because of its links as a discipline to environmental concerns, and I would receive comments such as 'you will understand this' or 'you can probably sympathise with that'. I feel that this may have influenced the language that some of the interviewees used and the topics that they chose to focus on.

Often, I was interviewing professionals who had a lot of experience within the field, in some cases over several decades, and this created an asymmetrical relationship; defined by Dowling (2000) as a relationship where those who are being researched hold positions of influence delineated by their access to cultural and financial resources compared to the researcher. I do not believe that this asymmetry caused problems within the data collection process, but being aware of the relationship meant that I modified my behaviour accordingly to acknowledge the

difference. In some circumstances I believe that the difference meant that it was perhaps more socially acceptable to be asking questions in ignorance and expecting to be informed. This may engage with England (1994)'s argument that outsider status (which the contrast of informed professional versus the ignorant researcher emphasises) means that people make more effort to articulate events and feelings in a much clearer way for the benefit of the researcher. This is an important reflection on the way in which both interviewee and interviewer are responsible for creating the interview environment and that it is always set within the context of normal societal relations (Robinson, 1998).

Further, my position as a young female interviewing predominantly male participants (just under 72% of the interviewees were male of varying ages) could have had a significant effect on the research process, as gender is a factor that can influence data collection (Dowling, 2000). However, it did not appear to affect the way in which the interview was conducted in terms of the way the questions needed to be framed or the quality of the answers given. I believe that the professional context of the interviews meant that gender had no particular discernible effect on the interview situation as well as the fact that the topic in discussion has no particular bias towards one gender or the other. The only effect of gender that I experienced was that, in general, conversations appeared to be easier with the female participants. This may be related to the equality of the relationship, as detailed above, which may have done something to counteract the asymmetry of the professional difference and created a more balanced interview situation.

3.2.3.8 Ethical considerations

There is a general acknowledgement that social research has an impact on society (Dowling, 2000) and that that impact should be monitored through ethical practice representing "the conduct of researchers and their responsibilities and obligations to those involved in the research" (O'Connell Davidson and Layder, 1994). There are clear principles underpinning general conduct, including justice, beneficence and respect that guide good and ethical research. The principles refer respectively to fairness in the distribution of benefits and burdens; minimization of physical, emotional, economic and environmental harm; and having consideration for the welfare, beliefs, rights, heritage and customs of people involved in the research (Hay, 2010). In this research the most significant ethical concern was associated with the methodological approach of interviewing and minimizing the possible negative impacts of people revealing information about the project and about themselves and their organisations.

The first ethical issue to be tackled was therefore confidentiality and anonymity. (Babbie, 2004) states that there is an important distinction between the two principles; anonymity

refers to situations where the researcher themselves cannot identify a given response with a given respondent (which would refer to anonymous questionnaires or research carried out by field assistants where personal details were not passed on), whereas confidentiality refers to situations where the researcher knows which respondent is associated with which response but promises not to reveal this information publically (pg 65-66). As the interviews were conducted by the researcher alone and the respondents were known, only confidentiality could be assured in this research. As part of the interview process each respondent was sent an information sheet detailing that information would be kept confidential throughout the research process by not discussing data with others and by storing it securely in password protected workspaces. In the interview itself the respondents were then given an informed consent form in which they could choose to be referred to anonymously within the thesis document (see appendix 2). However, most people taking part in the study gave permission to be identified with the exception of two, who wished to be referred to anonymously. In order to focus on the content of the research, in this thesis only the names of the organisations involved are listed and the quotes have been kept anonymous.

Informed consent was carried out in this project in order that the participants knew exactly what it was they were consenting to (Dowling, 2000). The Economic and Social Research Council advise that information given to the participants about the project should include the purpose of the research, the methods and intended possible uses of the research, what the participation in the research entails and what risks may occur (ESRC, 2012). An information sheet, which was emailed to the participants, included the topics suggested by ESRC as well as the rights of the participants to withdraw at any time and a reminder that the participation in the research was voluntary which aimed to allow a respect for the autonomy of individual participants (Hay, 2010).

Ethical considerations around researcher-participation in meetings were also considered in this study. There was no reason that the presence of an interested party (in the form of a researcher) should affect the activities within the LRWP meetings and therefore no deception was practiced. Introductions were made and discussions were had among the participants about the research topic, which meant that a number of the participants in the interview part of the research were already aware of the purpose of the project and the level of independence, which meant they could make an even more informed choice about taking part.

3.3 Coding and analysis of interview data

The process of analysing the data began by transcribing the interview conversations. The virtue of transcription is reported by Sacks (1992) as allowing the researcher to go over and over the data in order to find patterns that might not be presented on first hearing the data, as well as increasing the researcher's familiarity with the data (Atkins and Heritage, 1984).

The process of transforming information from interviewees is complex and there are many opportunities for practical inaccuracies to occur. For example when translating spoken language into written language there is a distinct level of subjectivity in portraying emphasis or tone, which could be vital to meaning. This can be overcome by being as accurate as possible when transcribing and taking into account the possible loss of linguistic nuances in the written transcripts for analysis. Within this research any errors in transcription were counteracted through listening back to the transcripts throughout the analysis process and being aware of the possible difference of interpretation.

The second stage of the analysis was coding the transcribed data. Coding can be understood as 'representing the operations by which data are broken down, conceptualised, and put back together in new ways and is the central process by which theories are built from data' (Strauss and Corbin, 1990, pg 57). In order to break down the data and begin the process of abstraction (Flick, 1998) this research undertook a thematic analysis rather than a grounded theory approach, aiming to analyse themes and compare between circumstances and cases rather than try to narrow down coding to one main theme or theory.

Strauss (1987) categorised coding of interview data into stages. The first being open coding, which most commentators on qualitative research methods advocate as an agreed first step in coding data. It involves working through one case (interview) on a line by line basis and picking out themes that seem to fit the data (Flick, 1998). Working on such a small scale at first is argued to help to create an analysis that is deeply connected to the data by allowing the researcher to detach from any of their own preconceptions about themes that should be appearing and about the interviewee and their expected answers (Charmaz, 1995). Open coding was done within this research in order to reveal the initial patterns in the data and was carried out on a paragraph or line scale rather than a word by word analysis (Flick, 1998).

The second stage of analysis should involve 'aixel coding' and 'selective coding' (Strauss, 1987), which involves observing repeated themes in categories and relating them to higher ideas. Within this research project Strauss's approach was used as a basis for analysis, but Jackson's (2001) methodological example was followed by combining, open and aixel coding and creating thematic codes that seemed to appear at the line or paragraph scale repeatedly

throughout the data. This initial coding exercise gave 32 codes ranging from “inclusion and participation” to “restrictions on progress”. This coding was done through repetitive reading of the transcripts until no new themes emerged (Esterberg, 2002). Figure 5.1 shows the top 10 codes that emerged from this stage of analysis, ranked by number of references, which include the number of sentences or paragraphs designated to each code. Sources refer to the number of interview transcripts in which the references appear. Therefore there are multiple references for each source on the same code.

Name	Sources	References
Inclusion - participation	12	43
Drivers, progress and process	11	37
Relationships and collaboration	13	34
Limitations on public involvement and suggestions for improvement	11	29
Faclitation and leadership	9	27
Catchment approach	13	26
Significant achievements of pilot so far	11	26
Reasons for involvement	11	25
Future direction	10	25
Spinoff projects and personal benefits	10	23

Figure 3.1 Top 10 codes that resulted from an analysis of interview transcripts in NVivo.

The next stage of analysis moved away from Strauss’s selective coding to ‘focussed coding’ (Coffey and Atkinson, 1996): a more in depth analysis of the themes and a breaking down of themes into more targeted and understandable explanations. For example through focussed coding the code “inclusion and participation” was broken down into 6 sub categories which included ‘missing participants’, ‘listening to ideas’, ‘positives’, ‘local knowledge’, ‘inclusion from the beginning’ and ‘expert knowledge’.

Most codes were analysed in this way through the qualitative data management software NVivo, which was chosen for its ability to group quotes into themes and to link quotes back to the original textual context giving the ability to analyse whole themes at once as well as whole transcripts. In order to reduce distorted interpretation by isolating comments, Jackson (2001) suggests that as a precaution the researcher should go back over the transcripts to examine the original context of the quote and assess the flow of conversation. Computer aided coding, and NVivo in particular, allow this to be done easily by providing an immediate hyperlink through to the original transcript from each separated quote. On balance the manipulability of the quotes and themes in the software and the time saving aspect meant that it was the best option.

3.4 Summary

- A case study approach was taken to the research in order to gain a sufficient level of detail to analyse complex processes and interactions inherent in environmental management studies.
- A combination of methods was used to collect data about the activities happening within the pilot and the experiences of the participants, including consultation of meeting minute documents; participation and observation in wider stakeholder and development group meetings; semi-structured interviewing of participants.
- The response rate to interview requests was low (37%), perhaps due to the professional status of many of the potential participants. It was, however, reflective of level of involvement in the LRWP itself with the majority of respondents being heavily involved with the process. 13 participants were interviewed including 10 who had taken part in development group meetings and 3 who had participated in wider stakeholder group meetings only.
- Interview questions were aimed at gaining an insight into the way in which the participants viewed the LRWP process and questions covered broad range of topics.
- Coding of interview data followed methods of open and focussed coding resulting in a number of themes which were used as a basis for subsequent in depth analysis of the interview content, alongside the data from documents and meeting.

Chapter 4

The Lower River Wear Pilot structure and process

4.1 Introduction

The following section uses data from the analysis to present the processes that took place when forming the partnership and creating a catchment plan for the LRW area. The purpose of this section is to outline the context of the collaborative approach and forms the foundation for further analysis of interview data and contributes towards establishing evidence for and impact of a collaborative approach in the LRWP.

4.2 Establishing stakeholder participation

Following the commission for the LRW to become one of the catchment pilots a catchment co-ordinator (CC) was appointed and took responsibility for contacting key stakeholders, organising meetings and facilitating discussions in the first stages of the pilot. Responses from participants' interviews reveal that the CC approached organisations and individuals before the process of official meetings began in order to consult with them, explain the project and gauge ideas and interest. The majority of interviewees (8) mentioned that the CC contacted them and directly invited or discussed with them the possibility of being involved in the LRWP. It is not known how the other organisations became involved in the group, but it is likely that they were either directly invited into the process or knew about the scheme through established contact with organisations already involved.

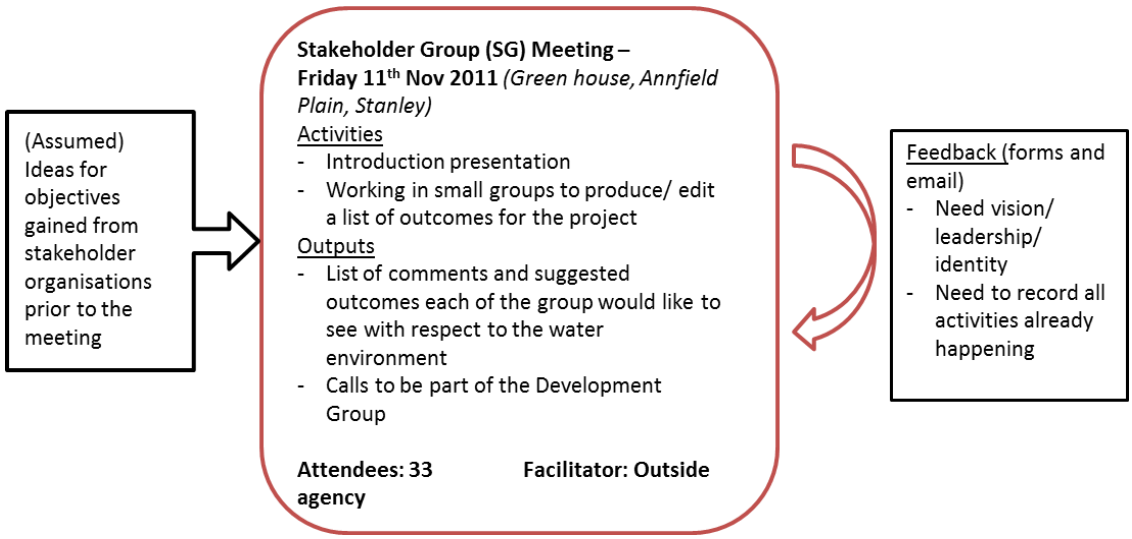

Figure 4.1 Summary of details collected from meeting minutes documents about the first stakeholder workshop in the LRWP process.

4.3 First stakeholder workshop

The organisations contacted by the CC were invited to attend a 'stakeholder workshop' in November 2011. Figure 4.1 is a summary of the details of the meeting collected from the minutes document. Initial discussions mentioned by a number of interviewees were fed into the creation of a draft list of ideas and intended outcomes of the LRWP, which were then edited and added to during the workshop itself. This initially shows that the process was aiming to be significantly driven by the needs and opinions of the people involved from the very beginning. It is perhaps initially suggesting that there is an ideal of equality in defining the problem. This is strengthened by a number of interviewees commenting that the CC had not simply invited them to be part of an already established project but had consulted with them in reference to their individual expertise and knowledge about aspects of the process including how to run stakeholder workshops.

The first meeting was attended by 33 participants. This is the largest number of participants of any of the following stakeholder workshops and is significant in terms of demonstrating the level of interest in the issues surrounding water quality in the LRW area. Results detailed in the meeting minutes revealed that 46% of those that gave feedback would be interested in being involved in the LRWP as a partner or as a member of a potential steering group. With the level of detail given in the meeting minutes it is difficult to distinguish the balance between the influence of the processes of engagement, and the normative drive of environmental organisations to be involved in environmental improvement schemes anyway. However, the fact that almost half of the group showed interest in being more closely involved demonstrates that the engagement method of stakeholders and the actions within the meetings may have been one of the contributing factors in encouraging further engagement.

An additional factor which defines the first stakeholder workshop is the location. The workshop was situated at Green House, Annfield Plain, which is located to the north western edge of the LRW catchment near Stanley. Whilst meaning that travel costs and time were evenly distributed amongst stakeholders, it could also be argued that the decision could represent an effort to instil a sense of place. Despite the location being on the edge of the LRW catchment it was described by one respondent (LRWP4) as being "*slap bang in the middle of the catchment*" (referring to the whole of the Wear catchment not just the lower area). This perhaps meant that the participants would subtly associate the action of decision making about the catchment with being in centre of the physical catchment itself, rather than feeling as though they were making detached decisions from outside the catchment.

The location was also the consequence of interaction with stakeholders before the meeting took place. Interview data revealed that the building in which the meeting was held belongs to Groundwork North East, an environmental NGO who have become one of the key players in the LRWP, and was offered for use for free during the first meeting. This decision meant that the building in which the first meeting took place belonged to a stakeholder and not to the EA and was essentially neutral territory, which may have helped pave the way to an equal partnership in which the EA did not take a dominating role.

The neutrality of the meeting was seen to be further enhanced through the use of an outside facilitator. The facilitator was from a private company often commissioned to advise the EA. The company had also previously produced and run a training scheme for the EA called 'Working with Others'. This was mentioned during the interviews as a scheme for EA staff involved in community engagement and partnership working and emphasised skills for creating a sense of equality and power sharing during meetings with partners, including language, decision making and facilitation skills (Environment Agency, 2011b). There is some evidence to show that the guidance given through the 'Working with Others ' programme has been implemented and emphasised by the EA members of the group, particularly as two of the EA interviewees mentioned that their behaviours within the pilot had been influenced by their training. Further analysis throughout this thesis will reveal the extent to which certain types of behaviours such as those advocated by the 'Working with Others' guidance have a significant effect on the collaborative approach and the way in which it is perceived and understood by participants.

4.4 Forming a development group

During the first stakeholder workshop there was an open invitation to interested individuals and organisations to become part of the LRWP development group and to be more closely involved in decision making and producing a catchment plan for the area. The minutes for the first stakeholder meeting report that 12 people from 7 organisations were interested (corresponding to the 46% of respondents to the feedback mentioned in section 4.2.2). Figure 4.2 shows details from the minutes of the first development group meeting, in December 2011, and demonstrates that although only 8 people attended there was representation from 7 organisations. It is not possible to know whether it is the same people who responded to the evaluation in the first stakeholder workshop, but it gives the impression of a level of consistency from one meeting to the next.

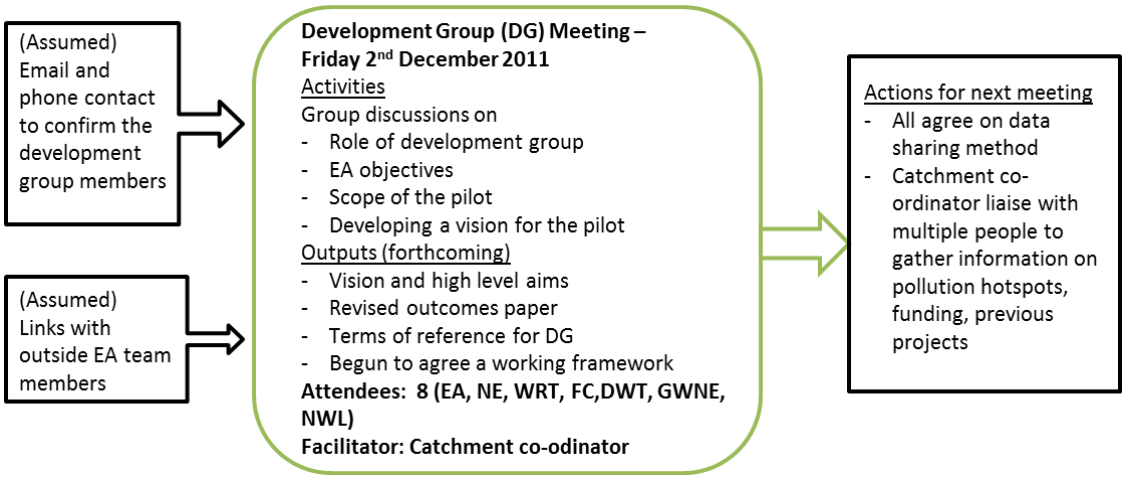

Figure 4.2 Summary of details collected from meeting minutes documents about the first development group meeting in the LRWP process. (EA – Environment Agency, NE – Natural England, WRT – Wear Rivers Trust, FC – Forestry Commission, DWT – Durham Wildlife Trust, GWNE – Ground Work North East, NWL – Northumbrilan Water Ltd.

With the formation of the development group the governance structure of the LRWP was formed. The participants described the development group as influencing the direction and purpose of the project and of the catchment plan in particular:

"In terms of what the development group did they … worked through the catchment plan process, they helped shape the aims and objectives, what the catchment plan was focused on" (LRWP6)

The development group's role in comparison to those referred to as the stakeholder group (those who had chosen not to get involved in the development group but would contribute by attending wider workshops) is demonstrated by the following quote from a participant who was part of the development group:

"I mean ultimately we had a development group of about 8-9 organisation and a wider stakeholder group who were continually there to go back to [to] check what we were doing and to check that we were along the right lines" (LRWP11)

The feedback between the stakeholder group and the development group is apparent in the meeting minutes of the other four meetings which took place throughout the pilot year. Figure 4.3 shows the development and timeline of those meetings. It is clear, particularly within the four meetings between December 2011 and June 2012, that the opinions, ideas and documents generated from each of the meetings is fed into the next. There is a significant amount of emphasis on incorporating the results of the stakeholder workshops into the

decisions made by the development group and to clearly portray all the ideas of the development group to the stakeholder group for "checking" (referring to the term stated in the quote above).

In terms of facilitation, apart from the very first meeting, the CC has been the main organiser of meetings and the main chair, and took on a significant part of the organising, particularly the writing up of aims and themes discussed during each of the meetings. The EA offices in Newcastle have been the location of choice for development group meetings and seem to be a popular and easy location for all the members of the development group to reach due to their central city location. The same principle appears to have been used in the location of the second stakeholder meeting in Durham Town Hall. Durham is located at the centre of the LRW catchment area and therefore is likely to be an easy location for those working around the LRW area.

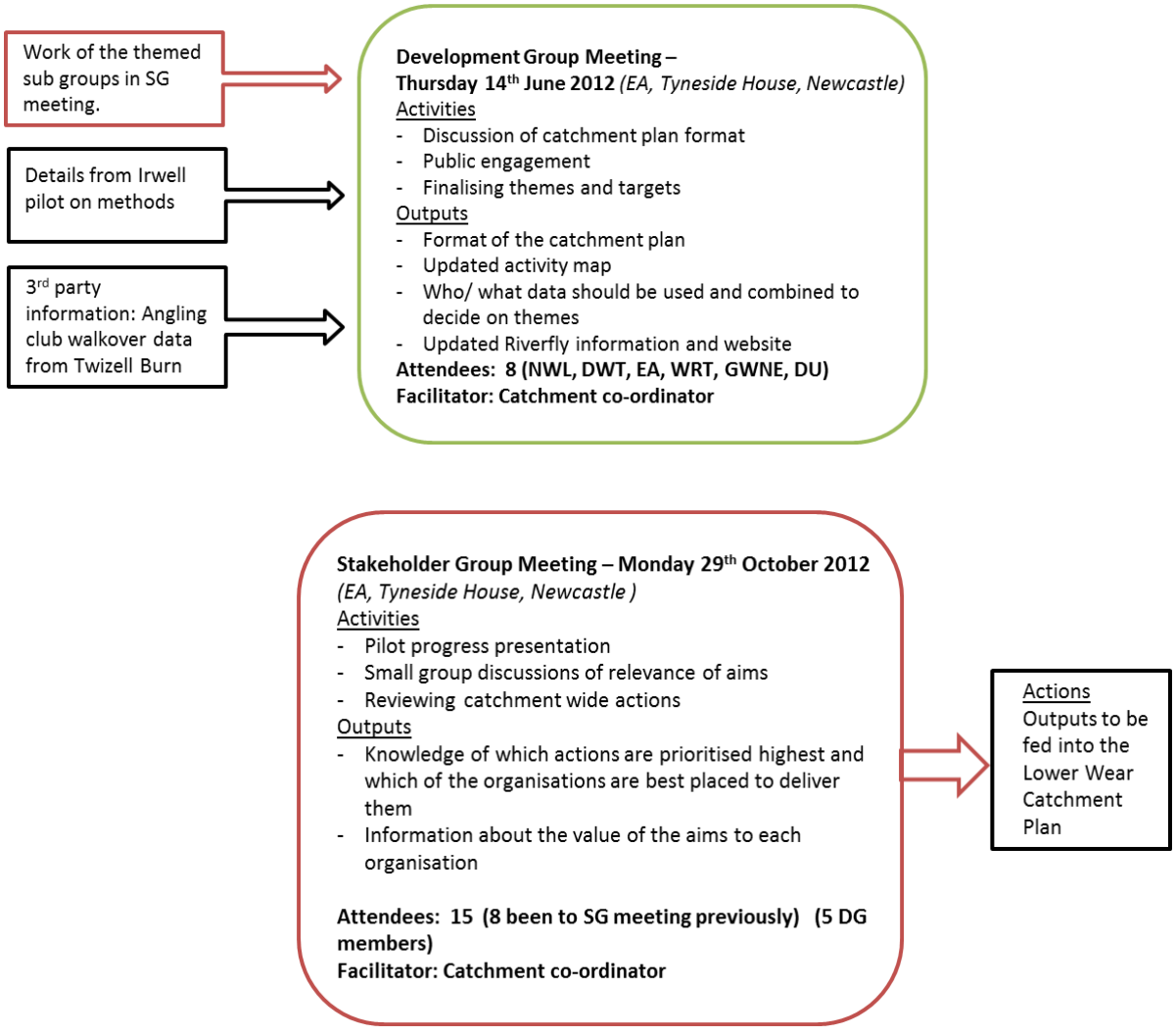

Figure 4.3 Summary of details collected from meeting minutes documents for timeline of stakeholder workshops and development group meetings within the LRWP process.

Additional aspects to the LRWP process are the newsletters which have been produced as a public facing output. The newsletters have added a wider informative aspect in which on-the-ground projects are highlighted and progress of the pilot is reported. The leaflets are likely to have reached an audience much wider than the stakeholder group including environmental professionals, business owners and volunteers who were not directly involved in the project. This type of outreach and positive progress reporting means that the LRWP was outward looking.

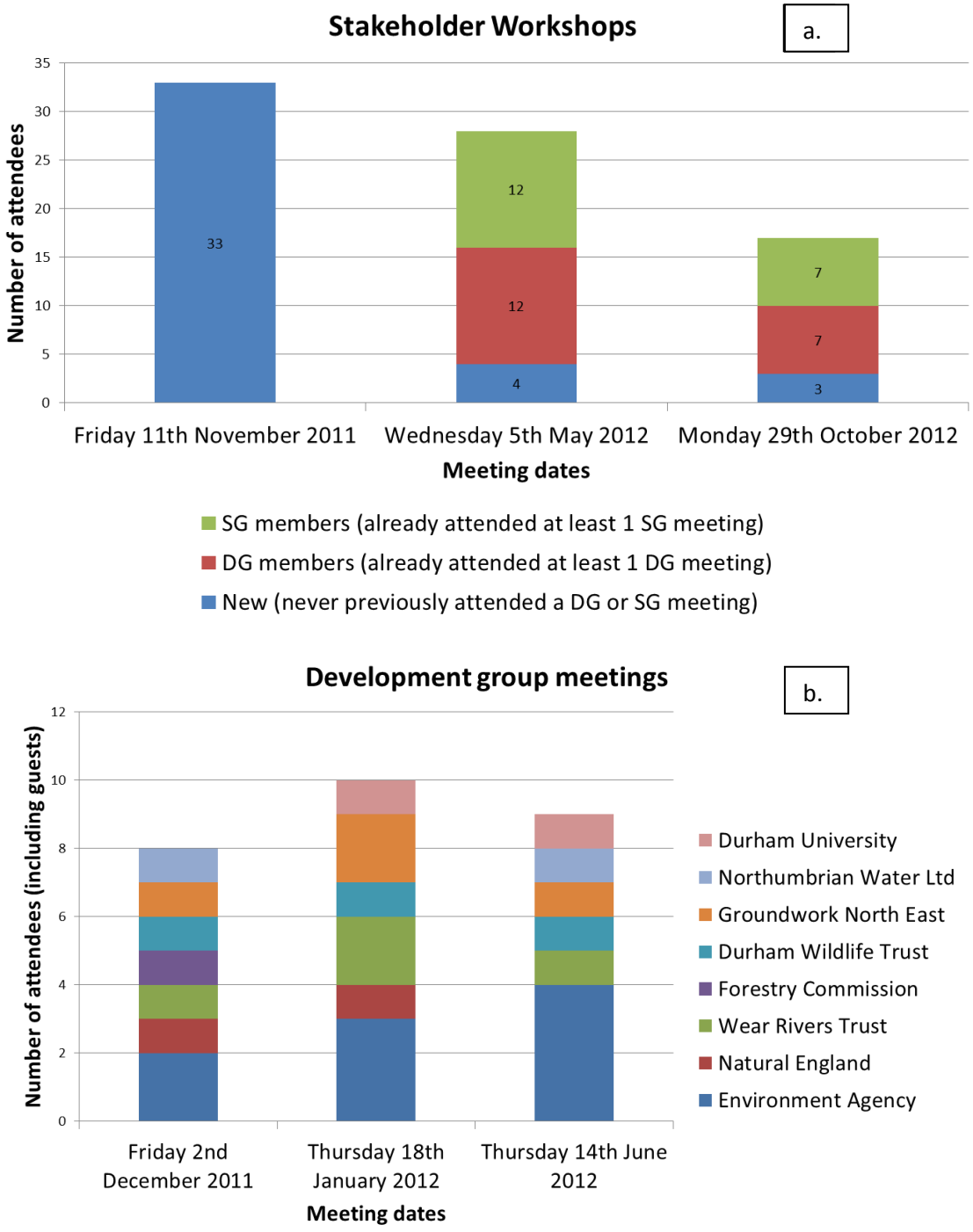

Figure 4.4 Numbers of participants in attendance at (a) stakeholder workshops and (b) development group meetings. Created using meeting minute data.

4.5 Participant numbers

Numbers taken from the attendees section of the meeting minutes for the 6 meetings detailed previously show that there are a fairly equal number of organisations contributing to each tier of the governance structure of the LRWP, which equate to the stakeholder group and development group. It also shows that there is a range of type of organisations, with the environmental non-governmental organisation (NGO)/ charity being the most common (8 organisations) and the private sector being the lowest (1 organisation).

Figure 4.4a shows that there is a declining number of participants in the stakeholder workshops throughout the pilot. There is a 55% drop in the number of attendees between November 2011 and October 2012. This could be seen as a sign that there is a declining engagement in the project. However, the counter arguments are two fold; firstly the drop in numbers only happens significantly at the final meeting. There are still 28 attendees at the second stakeholder workshop, 23 of which attended the first stakeholder workshop and of which 12 are engaged at a higher level in the development group activities. This continuation of engagement six months into the year-long pilot gives the impression of successful medium term engagement. Secondly, although the numbers at the final stakeholder meeting dropped, it might not indicate a drop in interest in the pilot or the environmental issues. Meeting attendance can be affected by a number of factors of which interest in the project is only one. For example the location or date of the meeting might not have been suitable. In addition, the nature of the project is one of dynamic contributions over a fairly long period of time therefore the invited participants may have felt that they were able to contribute in other ways at later dates to the process. Thus demonstrating the limitation of analysing meeting minute documents, which do not record the informal or one-to-one meetings that contribute to the creation of a partnership group.

An alternative explanation is that this is expected and a result of a honing down of skills and interest. Where organisations may have brought multiple representatives along to the first stakeholder meeting, throughout the processes of the pilot they may have developed a better understanding of the purpose and direction of the pilot and have been able to make informed decisions about who within their organisation is best to represent their interests. Similarly, it may have been that when attending the first meeting some organisations realised that there were other similar organisations more able to put in the time to represent similar interest to their own and therefore felt that they would no longer participate. The issue of engagement and the patterns and methods of participation will be explored further later in the thesis in relation to the nature of long term engagement in environmental projects.

Figure 4.4b shows a greater consistency in the number of attendees at development group meetings within the pilot period. This demonstrates that there may have been higher levels of both motivation and ability to commit to the pilot project within the development group participants, which is to be expected as the development group is made up of organisations who volunteered to be involved. There is a similar distribution of representation at each of the meetings and the majority of organisations have attended at least two meetings, again showing a consistency in the engagement. The largest representation (including permanent members and guests) is from the EA, particularly at the third meeting (4 attendees). This is again to be expected as the EA are the largest organisation involved in the pilot, with the largest pool of people with relevant interest, expertise and ability to contribute, where other organisations were smaller and may have only one representative with a relevant interest.

In general the attendee numbers reveal a pattern of consistent engagement of stakeholders throughout the processes in a face to face capacity, particularly within the development group. Reductions in attendance at the stakeholder meetings may be due to a focussing down of engagement and may reveal the most committed participants who are willing to express their views and positively influence the process of the LRWP.

4.6 The Lower River Wear Catchment Action Plan

Figure 2.2 demonstrated the production of written documents and plans is a significant outcome of the collaborative approach. The purpose of the pilot schemes across the UK was to produce catchment management plans that would pave the way for future collaborative management of the river environments. Specifically, when the Lower Wear pilot was launched the Environment Agency issued an information sheet about the area and the pilot, which stated that: *"Through working together in this way we hope to develop a catchment plan for improving the Lower Wear. We would like this plan to reflect the aspirations of the local people and organisations in the area and the planned and on-going activities we are all doing to improve it."* (Environment Agency, An Introduction to the Lower Wear Pilot Information Sheet,

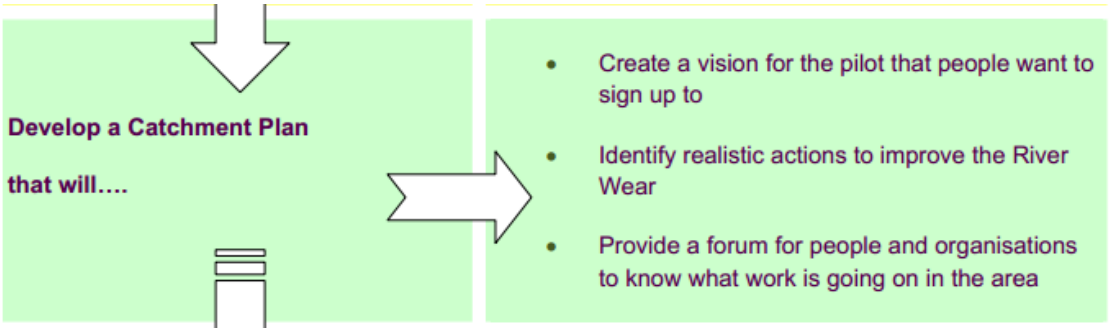

Figure 4.5 Details of the aims of a catchment plan within the LRWP (LRW Catchment Action Plan pg. 2)

pg 2). The aspirations for the catchment plan were further detailed on the information sheet as follows (Figure 4.5):

Personal experience of receiving correspondence and of attending meetings towards the end of the pilot phase revealed that a catchment plan was produced by the LRWP group and therefore the aim originally set out in the plans for the pilot had been achieved, which is perhaps one of the significant signs that the group have worked effectively together to produce the document. The draft plan was produced in January 2013 and finalised by April 2013. Again from experience and meeting attendance, it was revealed that processes of producing the plan were shared throughout the groups, for example each draft was circulated for review and comment to the development group and wider stakeholder group.

The document itself, entitled Lower River Wear Catchment Action Plan, is a 63 page text detailing the history of the local area, the problems and issues facing the LRW, the aims and targets for the LRW and a list of planned and on-going actions to tackle the problems and issues and to meet the aims. The main vision for the catchment which was detailed as being produced in the early development group meetings (from meeting minute data) is as follows (Figure 4.6):

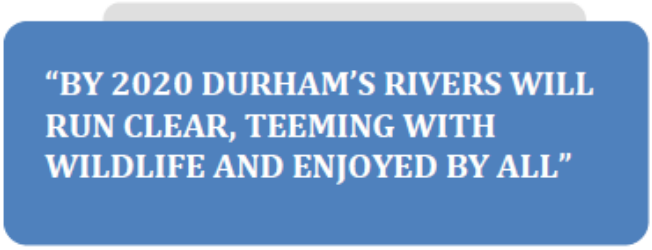

Figure 4.6 Vision or the LRW (Lower River Wear Catchment Action Plan (pg. 3)).

Through the process of deliberation in the development group and through asking small groups of wider stakeholder participants to work together to add and amend suggested aims and sub groups, a series of themes with individual aims was produced to focus on dealing with some of the key pressures and issues that are facing the LRW catchment (Figure 4.7).

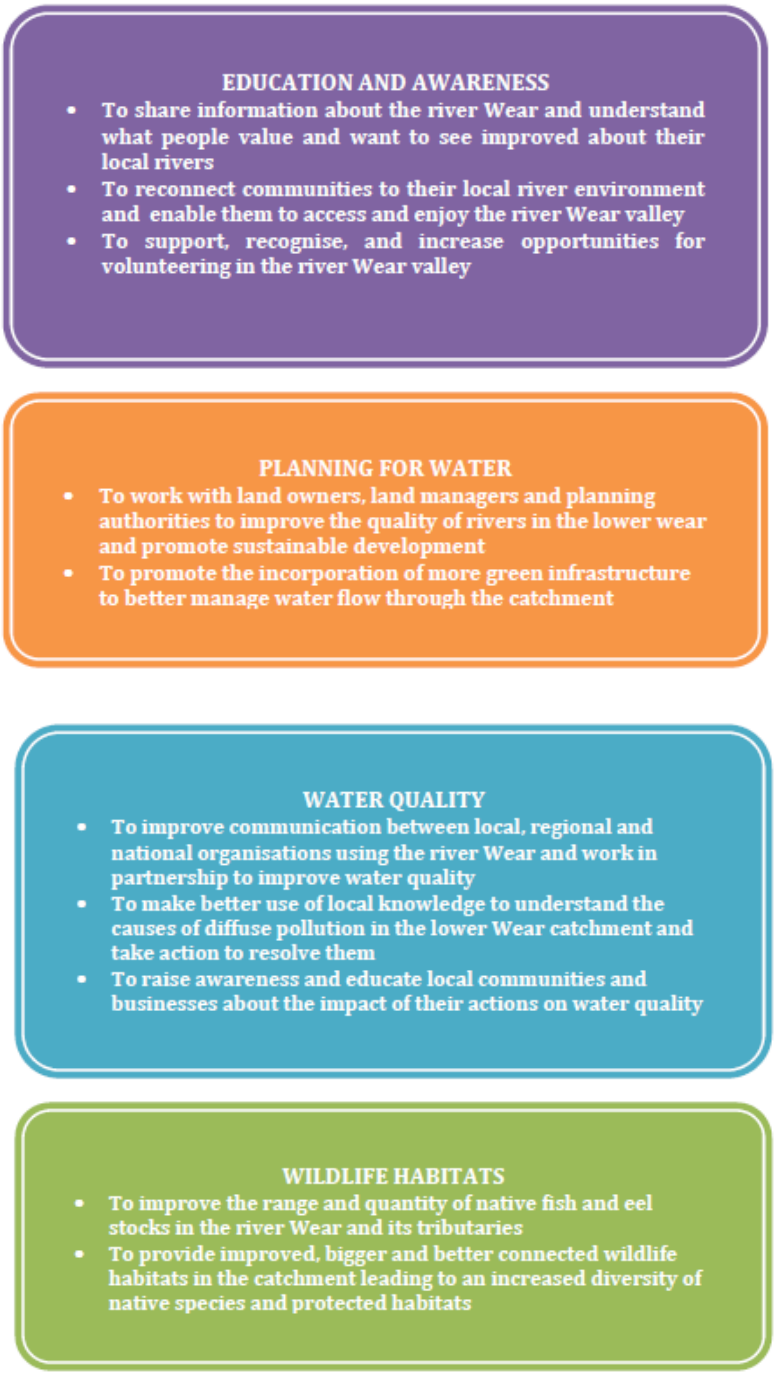

Figure 4.7 Themes and aims detailed within the LRW Catchment Action Plan (pg. 12).

Finally, the largest section of the catchment plan contains details of 106 actions in three categories: on-going, planned and new, that could and are happening throughout the catchment. Meeting minutes and personal experience reveal that the actions listed in the catchment plan have gone through a process of deliberation within the pilot groups and all organisations and stakeholder have had a chance to contribute the actions that they are currently undertaking, the actions they would like to see happen, how willing they would be to lead any particular action and where funding might be likely to come from for each planned action. Some of the actions relate to catchment wide activities and other relate to specific

issues on specific watercourses, each stating how it will help reduce an identified pollution problem and meet the aims set out at the beginning of the plan. An example of the types of actions listed is detailed in Figure 4.8.

No.	Issue	Action	Potential partners (Lead/others)	Supporting aims and targets	Status	Cost (£K)	Time frame	Comments	Education & Awareness	Water Quality	Planning for water	Wildlife Habitats
1	rural diffuse pollution (phosphates, nitrates & pesticides)	Set up Wear Farming Partnership to address agricultural and rural diffuse pollution across the catchment. Identify particular rivers or tributaries where there is evidence of problems (e.g. Lumley Park Burn & Old Durham Beck). Look to address sources of agricultural derived phosphorus, nitrates, and pesticides and identify a series of measures through landowner engagement and mapping of pathways.	**Wear Rivers Trust**; Wear Development Group; landowners, Woodland Trust; angling clubs	**2a; 5a; 5b; 5d**	On-going	Low	S	Majority of consultees identified this as a high priority. Look at involving NGOs and universities to deploy water quality monitoring equipment (sondes) and to analyse data. Engagement with relevant landowners and identification of sites for mitigation should be outcome. Ownership and priority for this action includes CLA/NFU; local estates; and anglers. Link to Drinking Water Protected areas work.	x	x		x

Figure 4.8 Example of the type of actions listed in the LRW Catchment Action Plan (pg. 25)

The language used in the document does not make it clear who the catchment plan is aimed at, but the level of background information and detail in explaining the pressure indicates that it is probably aimed at interested but generally uninformed parties which could range from the general public to organisations and businesses that have not worked with the river before. The level of detail in the actions at the end of the document, however, indicates that there are likely to be multiple levels of use to the document including for those groups, individuals or organisations that have resources or motivation to get involved in some of the actions and help plan and deliver them. The plan is likely to be both a way of raising awareness of issues around the LRW and to engage those who might not otherwise be aware of what is happening in terms of improving the environment around the river.

The catchment plan is a comprehensive document and there is a clear pattern that can be followed through from the meetings in which the organisations that have been involved in the pilot have had a chance to comment, correct, add to and contest ideas and priorities that have been presented. Producing this document which includes the priorities of the stakeholders suggests the LWP is on the path to be sustainably embedded within the local organisations and communities. The value that has been added by having such a process in creating the document is within the actions; each of the 106 actions has been carefully considered in terms of funding and potential lead organisations, which has come from discussions with the organisations themselves. This means that there appears to be a momentum to the catchment plan than can feed easily into an implementation stage.

4.7 Summary

- Data from meeting minute documents has been analysed to reveal the process and structure of the LRWP. Stakeholder participation was established through direct invitation from the CC and knowledge through established connections.

- A development group of individuals willing to be more closely involved in decision making was formed through interested organisations responding voluntarily to an open invitation. The development group was seen to continually consult and feedback to the wider stakeholder group.
- Participants at stakeholder workshops were seen to be constant for the first 6 months of the project but fell during the third meeting, reflecting a streamlining of representation or the dynamic nature of contribution to the project. Attendance at the development group meetings was more constant, reflecting the more committed nature of the participants.
- The catchment pilot action plan was a key output of the LRWP process and through the process of its planning and creation demonstrated values of equality through inclusion of multiple themes; processes of consensus in the production of a universal aim; small scale detail and practical information in the list of planned actions.

Chapter 5

Evidence of a collaborative approach in the Lower River Wear Pilot

5.1 Introduction

The first stage of understanding the collaborative approach to water quality management is to identify the actions and behaviours that might indicate collaborative practice. The only way in which this can be done is to compare the results of this research with previously defined criteria and evidence for successful collaboration in previous studies.

There is little consensus on how the collaborative approach should be evaluated (Rowe and Frewer, 2004). Most studies focus on the formation, process and outputs of partnership groups rather than outcomes that would include effects on the environment and society and can be seen as the ultimate analysis of the success of the approach. Leach *et al.* (2002) state that few studies can collect the relevant data over a long enough time period to be effective in assessing the 'before' and 'after' effects. Consequently, perceptions of success have been used as the indicator of accomplishments, and whether through surveys of participants' opinions or through independent academic judgement, the assessment becomes incredibly subjective (Benson *et al.,* 2013b). It is reliant upon who is setting the criteria, for example Blackstock *et al.,* (2012) state that there is a difference between the criteria used in the literature and criteria used by participants themselves (external and internal criteria respectively). They conclude that both are relevant, because despite many themes overlapping, such as aspects of building partnerships crossing over with capacity building and shared understanding, there are also significant differences in factors covered, such as aspects of process detailed in external criteria that are not picked up in internal criteria, to make both internal and external assessments relevant.

In the analysis in this, and the subsequent, chapter both aspects of criteria will be addressed. This chapter explores the extent to which they are manifested in the LRWP, both through observation and through the conversations with participants. This is effectively leading with the external criteria from the literature but assessing how well the participants' views fit in with that. The subsequent chapter (chapter 6) includes analysis of internal criteria such as the participants' descriptions of the benefits (manifestations of success) of the collaborative approach.

It is very difficult to precisely synthesise the long lists of criteria set out in the literature around collaborating in natural resource management because each is set within their own context. The concepts that have been chosen to be assessed in this chapter include stakeholder inclusion, aspects of process, participation, information and data sharing, and shared interests, and were derived from the overlap between key themes in the interview data and the aspects of good practice criteria that are mentioned as foundations to successful collaborative efforts

in the literature. They are mainly based on operational elements (Margerum, 1999), which refer to the transfer of the concept of the collaborative approach into the applied practice of water quality management.

An important aspect to note at the beginning of this chapter is that much of the literature on watershed partnerships and collaborative water resource management groups has come out of the USA, in the most part. Therefore much of the external criteria are based on a particular geographic and political context. Benson *et al.* (2013a) recognise this and highlight the importance of the avoidance of concept stretching (Sartori, 1970), which constitutes the overgeneralisation of results across geographic and political boundaries without taking into consideration the specific context in which the results were obtained. The implication of Benson *et al.*'s work for this study is that it allows criteria from US studies to be applied to a UK context, but that caution should be exercised when making conclusions about the success of the collaborative approach.

5.2 Stakeholder inclusion

In the previous section (4.2.4) meeting minute data has shown there to be a seemingly high number of organisations involved in the LRWP, particularly in the first and second stakeholder meetings. Organisations represent a number of different 'stakes' including wildlife interests, landowner interests, recreation interests, community interests and water industry interests, among others. As engagement of multiple parties has become increasingly popular in environmental management, the terminology 'stakeholder inclusion' has come to reflect a more involved participation in decision making (Beierle, 2002). The general reaction from participants to the number and range of stakeholders involved in the LRWP was positive:

"I do think the project was really quite inclusive, they had a really good range of people and community groups there" (LRWP5)

"So I think we had a lot of people involved and engaged in the process representing a whole host of different organisations as well. So that's really good." (LRWP11)

The general consensus around the inclusiveness of the LRWP and the variety of type of participants present indicates that the project is 'balanced', in reference to Abels and Bora (2004)'s models of stakeholder participation. In this model when a wide variety of groups including lay people, interest groups, experts and policy makers come together and share equal procedural rights there is a distinct advantage in terms of improving recommendations and increasing social learning (covered in more depth in Chapter 6).

There were two respondents (both stakeholder group attendees) who made comments about the familiarity of the people with whom they were working, one mentioned that it was "*all the familiar faces*" (LRWP9) and the other mentioned that it was the "*usual suspects*" (LRWP7) that were involved in the LRWP. This could potentially be a negative reaction and show that they believe that there was nothing new about the group that was formed. However, each of the respondents went on to mention the positive aspects of including people who were used to attending meetings about the local environment:

"…which should have its advantages because it's those that are the interested parties that are able to take the time out where it's always a challenge" (LRWP10)

This justification highlights the importance of stakeholder agency and action in the creation of an inclusive collaborative group. Jiggins and Roling (2004) note that in order for a person or organisation who has a stake in the issue concerned to become a stake 'holder' and therefore to have an opportunity to be included in the process, they have to demonstrate an active interest and willingness to take part in the debate, negotiation and dialogue. The quote above suggests that inclusion is a two way process in which the lead organisation, in this case the EA, creates the opportunity for involvement through an invitation and the invited organisation becomes involved through showing interest and ability to commit. The quote below, referring to the composition of the development group, is also justification that stakeholder agency has a large role to play in who is included:

"As far as the environmental NGOs are concerned, the ones who have come forward are the ones who wanted to come forward, so they are the right ones obviously." (LRWP8)

Equally, there is real evidence that the group was very open to allowing each stakeholder to choose their own level of involvement dependent on their own interest, which demonstrates the ability of the LRWP to acknowledge and understand that there are a variety of stakeholder interest levels to be accommodated. For example Boak *et al.* (2004) categorise stakeholders into three levels: core, interested, and other, where the first refers to those who will gain the most from being involved and the last refers to those who may have less interest and may wish to be only occasionally involved. The freedom of involvement is verbalised by the following quote:

"[…] you could get involved, as involved as you wanted to be" (LRWP5)

The combination of freedom given by the project structure to become involved and the drive and commitment from the stakeholders to get involved is significant in terms of the evidence for collaborative efforts because collaboration is idealised to lead to more sustainable environmental management systems. Campbell (2006) states that commitment ('a want to do it' pg 4.) is one of the key ingredients of sustainable natural resource management, therefore openness and commitment may lead to a more effective collaborative process in terms of resulting in environmental sustainability.

The open nature of the inclusion process in the LRWP whereby organisations could volunteer to be more involved based on their own levels of interest and commitment, is a positive sign of the independent nature of inclusion in the LRWP. Margerum (1999) gives examples of case studies in New South Wales, Australia where elected ministers, who were part of watershed management groups, actively excluded certain groups or weighted committees in favour of certain political views. In the case of the LRWP the evidence from the participants is that there was a fair inclusion policy that did not appear to favour one ideal over another, which can be argued to have stemmed from the project's basis in the WFD, which is very clear in its push for wide and open inclusion of all stakeholder voices.

Open inclusion, however, can have its downfalls. When there are too many people involved it is very difficult to reconcile the differences in one forum. For example, one participant mentioned the difficulties in reconciling all the views of the participants in the wider stakeholder group:

"*it's a challenge to represent their opinion […], it's difficult to get to the level of detail in the time available with a wide range of organisations[…]. I don't have a magic bullet as to how to be more successful at that" (LRWP8)*

Gray (1989) suggests that there may be an optimum size for a group and in particular a group that works collaboratively. In the LRWP a number of people mentioned that the development group (consisting of 8-10 members) was a size conducive to working together and that any more would have been too many:

"the group only had to be a certain size and I think if the group had been much bigger it would have taken even longer to have sorted out […]. I would have thought it was probably about right" (LRWP13)

"I think the development group […] worked well, there is a smaller number of people, it's controllable and you can get on with things" (LRWP4)

The difficulty that is then raised is how can a group be continually inclusive yet maintain the optimum number in which people feel comfortable working? There is evidence that the LRWP group was continually inclusive and maintained an 'open door' policy, as meeting minute documents show that new people were attending both development group meetings and stakeholder workshops each time. Margerum (1999) note that in case studies in America and Australia groups often used subcommittees to balance inclusiveness against workability. Although the LRWP did not develop specific working groups in the first year of the pilot, there were mechanisms for creating a smaller group atmosphere. The first includes the tiered system between the development group and stakeholder group; forming the development group as a smaller more intense decision making space allowed the participants to work much more efficiently, or believe they could, whilst still maintaining the open door inclusion policy with the whole of the LRWP group. Equally, in the stakeholder workshops activities included working in small groups around tables (evidenced through personal experience) where, again, levels of efficiency and personal relationships with other participants could be maintained whilst allowing a large number of stakeholders to take part.

The degree to which an engagement process is truly open is questioned by Cook *et al.* (2012), who conclude from a study of UK collaborative groups that "truly effective local stakeholder engagement is serendipitous, rather than formulated" (pg 51). It can be argued that this is a fairly sceptical view and that in the LRWP there is evidence that the stakeholder groups were engaged both through some formulation and some serendipity, and given the positive assessment of stakeholder representation it can be evaluated as on its way to being effective. For example, the interviewees were asked directly about how they became involved in the LRWP process. Three participants mentioned that they were directly invited to take part in the LRWP and an additional three were passed on the responsibility by the directors of their organisation, who themselves had been directly invited. The invitations were a result of calculated and planned contacting of relevant stakeholders by the EA prior to the beginning of the process (roughly late summer 2011). These contacts can be classed as 'formulated' because although the EA may not have known which member of staff would represent each organisation, the stakeholders were directly sought out. Equally, however, there were 7 participants who became involved through personal relationships rather than direct invitations. It is not known if there is significant cross over between organisations directly

invited and the organisations that ended up being represented through the individuals that became involved anyway through relationships, but there is likely to be some overlap. Examples of the ways in which participants became involved include knowing the catchment co-ordinator personally or by second order contacts, working on similar projects previously and having working links with the EA. These could be classed as serendipitous ways of becoming involved as some were perhaps not planned to be involved when contact lists were drawn up. For example, one participant became involved when they were working on a community water project in which the catchment co-ordinator was also involved, resulting in a relationship forming, which led to an invitation to be part of the LRWP. There appears to be a good balance in terms of formulation and happenstance in the LRWP, which shows that serendipity might not be the only mechanism for effective engagement of local stakeholders.

The value of multiple methods of engagement is that it appears to lead to a fairly diverse stakeholder group. Moore and Koontz (2003) note that the levels and type of stakeholders included in a collaborative group can reveal a number of details about the group. They derived a classification system based on the composition of members in order to compare different collaborative efforts. Their scale includes three typologies; agency-based, citizen-based and mixed. Where there is a 'thinness of community around the issues at hand' (pg, 453) Moore and Koontz state that the group is more likely to be of an agency-based typology. In the LRWP there is little significant long standing history of citizen engagement in water quality issues. However, from the composition of the stakeholders there are a number of community, grassroots based organisations involved, although there are no direct members of the public involved. Alongside this there are a number of representatives from local government authorities and, obviously, the EA, which is ultimately government directed, meaning the LRWP cannot be classified as a citizen-based group. Conversely, neither can it be classed as an agency-based group because that is defined as agencies making decisions on behalf of the group, which is not the case. The LRWP therefore can be classified as a mixed collaborative group, which has been advocated by some watershed planning authorities as the 'best' type (Moore and Koontz, 2003, pg 454).

The significance of revealing the type of partnership group that is indicated by matching the pattern of inclusion in the LRWP, is that it reveals something about the potential impact that the group might have. Moore and Koontz (2003) suggested that groups classified as mixed (compared to citizen based) were more likely to have a more subtle effect on policy because of their access to diverse perspectives (Korfmacher, 1998). Citizen based groups tend to have an effect through lobbying, whereas agency based groups influence through legislation. Although

there is no mechanism for understanding the eventual impact of the LRWP on the policy environment through a study of its first year in existence, the classification of the patterns revealed by similarly composed partnerships might help uncover the subtle significance of the group. The diversity and inclusiveness of the group may also have an impact if the group can influence behaviours of all of those within their sphere of influence in a positive way, therefore there is potential for the LRWP to have a very wide and effective influence as a collaborative group.

In summary, within the LRWP the level of stakeholder inclusion has been looked on favourably by the participants, inclusion has remained open throughout the process in order that there can be room to react to changing needs and new information. Flexibility in both the methods of engagement and the levels of commitment offered has shown the approach to accommodate the needs of varying stakeholders and allow a significant variety of stakeholders to be offered opportunities to participate, yet also providing an environment where more committed stakeholders have the opportunity form stronger relationships within the development group. The diversity of participants may also reflect on the effectiveness of the group in changing and making successful policy decisions.

5.3 Participation and knowledge

Inclusion of stakeholders is only the first step to creating a collaborative group, and getting the relevant stakeholders together does not necessarily equate to their deeper participation in the process. In terms of criteria in the literature that refer to participation in collaborative or integrative resource management, terms used include 'appropriate involvement strategies' (Marshall *et al.,* 2010), 'engaging', 'representing relevant interests' (Connick and Innes, 2003) and 'balance of power' (Blumenthal and Jannink, 2000). The question, therefore, is how have these criteria been manifested in the responses of participants in the LRWP and can the mechanisms and activities that have been observed and commented on be seen to constitute deeper participation?

5.3.1 Levels of participation

Firstly, it is conducive to examine the activities that have taken place within the LRWP that are associated with participation. For example the stakeholder workshops that have been run for the wider stakeholder group during the LRWP phase, detailed in section 4 of this thesis, are a favoured activity in terms of giving an opportunity for genuine interaction and dialogue (Creighton, 2005). One participant noted that during the workshops "*there was always something that's very active that you do*" (LRWP1), which led on to comments about the type

of activities that were done including "*commenting*" and "*suggesting what was important" (LRWP1)* through writing things down and visualising ideas. This is significant as it demonstrates an attempt to get everyone present at the workshops taking an active role and therefore focusing on inclusion. The focus on getting everyone to contribute in a written sense also allows those who do not normally have a voice, due to opportunity or even personality, to contribute (Lane *et al.,* 2011). Such levels of participation echo the key themes of participation referred to by Chambers (1997) by reversing the historical dominance of 'uppers' over 'lowers' and allowing everyone in the group an equal contribution. Giving participants who might not normally participate in management decisions a sense of empowerment, can lead to collective action, which consequently is an important goal of collaboration (Demeritt, 2005).

One of the main criticisms of participatory methods, however, is that there is not truly a reverse of dominance as the 'uppers' (which in this case would refer to the EA) still define the activities that happen and chose who should be invited to be included (Kothari, 2001; Kesby, 1999 referenced in Kesby 2007). As such Sanderson and Kindon (2004) argue that participation of people in activities will not always relate to the inclusion of their knowledge or opinions. In the LRWP, the evidence from the participants suggests that this is not true in this case, as in response to a question about whether they felt that their ideas and views and those of their organisation were well represented generally and in the catchment plan, the response was distinctly positive. For example:

"*I was pleased that everyone was being listened to and that it was being done as fairly as you possibly can. I think if you were able to put your thoughts and ideas [across] and the reasoning behind it, you were contributing to a project and it was going to be taken account of […] and treated as valued" (LRWP5)* (stakeholder workshop member).

And a specific example:

"Yes certainly [I can see my ideas coming through]. I think some of the ideas that have come through for the rivers where I have been involved, for example where we've looked to improve wetland connectivity and trying to naturalise sections of the river in places, my inputs have definitely been fed into that" (LRWP3) (development group member).

Inclusion of ideas is also a theme that arose in Blackstock *et al*. (2012)'s study of stakeholder engagement in the Scottish RBMP process. The majority of people surveyed by Blackstock *et al.* (70-90%) thought that they could see their ideas and input in the national and local area action plans for the water resources. Sabatier *et al.* (2005) states that people are more likely act cooperatively and collaboratively, if their ideas are included fairly. Callon (1999)'s model,

specifically the Public Debate model, of participatory approaches is complementary of processes in which the imposing body increasingly appreciates the value of knowledge from sources other than their own (Collins and Evans, 2002; Lane *et al.,* 2011). From the participants' view this appears to be happening. The valuation of participants' ideas in the LRWP is therefore indicative of a deeper participatory approach.

In terms of the effects on participants inclusion of ideas may be acting to empower them, as advocated by Demeritt (2005). It is difficult to definitively label any comments as relating to empowerment, however one participant mentioned a possible effect:

"*I always thought that I had been represented alright and I can see where some of my ideas come through, and I feel I can comfortably add to them and champion them and probably deliver them" (LRWP1)*

The above comment may be indicative of a personal drive to act upon the ideas that have been included in the LRWP, however it may also be a result of the conditions of participation that allow the participant to feel as though they can act positively. Kothari (2001) discusses the role of everyday powers in participants in terms of being a focus of deeper participation, and the way in which ideas have been included in the LRWP could be argued to have some aspects of recognition of participants' everyday power in the way that they can champion and deliver ideas through their own everyday practices. This is shown by a comment from one of the participants revealing that the project "*was looking to map on to ways in which people work and day to day practices*" (LRWP1). The project has pulled out the ability (including ideas and capacity) that each participant has and emphasised and encouraged those positive inputs. Valuing ideas and the ability to deliver them can be argued to further strengthen a sense of empowerment.

Although there is an overall positivity about the way in which ideas were included, there were, a couple of comments from participants that mentioned that they would have liked to have seen their ideas coming through further and that not all their priorities had been taken on board. However, the comments were made in understanding that there needed to be consideration of other projects and equally that the process was long term and that there would be time for increased input throughout the process.

One criticism of Callon (1999)'s model of Public Debate is that the inclusion of ideas from participants can be tokenistic (Harrison and Mort, 1998), where management decisions already made by authorities are simply confirmed by participants' input. As a result of the scheme being in its early stages, only one participant referred to the policy impact, and commented

generally on the pilot process across the UK, stating that in their opinion the future process of RBM policy under the WFD was already planned by DEFRA and that it was unclear whether any ideas from pilots, particularly where third sectors were leading pilots, would positively influence the policy direction:

"But it's disappointing in terms of the process because it would have been nice to think that actually the accumulation and the consideration of what was produced then informed the process, but actually the process had already started" (LRWP6)

This could be seen to highlight tokenistic participation of third sectors in pilot schemes, by simply acting to confound a process that had already been started. As this is one comment made before the pilot phase was complete, it is unclear whether this will be the case, and it is beyond the scope of this study to verify that. However, the comment does highlight that in order for an effort to be truly participatory, particularly when including professionals with a considerable understanding and awareness of policy implications, efforts should consider the wider implications of actions and inclusions.

5.3.2 Knowledge

As a counteraction to critiques such as Harison and Mort (1998), Callon (1999) proposed that the ultimate way in which participation can be truly beneficial is through the co-production of knowledge. This involves collective learning in which no one knowledge has special privilege (Callon, 1999). The model advocates that stakeholders (or publics) should be involved in knowledge creation, breaking down the barriers between traditional 'expert' knowledge and 'local' knowledge. In the LRWP there was little reference to the expert and lay dichotomy by participants. However, two people mentioned the inclusion of local knowledge and one mentioned how that reflected positively on the way in which knowledge was drawn upon in the LRWP:

"when they are developing the project it's [about including] that local knowledge as well" (LRWP10)

"I'm thinking of the anglers and their knowledge of the river […] I've found that it is the people that live and work and play that know it better. And they have so much information, especially if they are real locals, they have lived there and their parents have lived there and they have got all that knowledge. That local knowledge, you can't beat it. I felt the project was actually tapping into that" (LRWP5)

In reference to this comment, it was observed throughout the LRWP process that knowledge appeared to be tied up with data and a significant report by an angling club based on evidence from a walkover (on–the-ground survey), served to reveal information about water pollution sources including sewage overflow and fly tipping (Figure 5.1), which then informed much of the decision making around suitable actions to be carried out around that watercourse. This is a significant sign that stakeholders were involved in the creation of knowledge about the nature of the water pollution problems in the LRWP based on their on-the-ground experience and the ability to bring that forward in the pilot arena.

Figure 5.1 Pictures taken from angling club report that have raised awareness of pollution that prompted investigation by the suspected polluters (source EA, 2012a).

Another way in which knowledge begins to be co-produced is if participation of stakeholders' ideas is advocated from the beginning of the process. Wilsdon and Willis (2004) call this moving participation upstream to become part of the problem definition. Lane *et al.* (2011 pg. 27) found that in an experimental flood risk management project involving scientists and local residents, the combined group replaced an initial academic framing of the project with their own, which paved the way for them to co- produce outcomes as well as a model that would help them sustain the outcomes. A couple of participants from the EA in the LRWP both mentioned the importance of bringing in stakeholders from the beginning and this is evidenced through, for example the joint development of the aims and objectives, which were mentioned by a couple of respondents as being a focus of many of the very early meetings.

The link to a collaborative approach is the reference to moving participation upstream and co-producing objectives. Gray (1989) discovered a definitive process through which all collaborative groups should go, which includes a distinct 'problem setting' phase. By comparing the features of problem setting with activities in the LRWP it can be seen that it appears to be following, at least in part, the defined collaborative process. For example a good variety of stakeholders have been identified and verified by participants; the convenor (the EA)

has exercised their role in creating the space for participation; participants have shown willingness to be involved through comments and through a continued commitment to attend meetings. The additional factor is that a common definition of the problem was agreed, through the co-production of objectives and aims by listening to stakeholders' perspectives from the beginning.

5.3.3 Missing representation

As one participant in the LRWP pointed out, there will always be people who are missing. Whilst most participants thought that representation was good and thus struggled to identify people who they thought were missing when asked directly, there were a number of groups that were mentioned in response to the question 'do you think anybody was missing from the meetings?', although there was little consensus on the groups that were mentioned.

- Businesses were mentioned by a couple of participants as being missing and were defined vaguely as agriculture and other industries and were mentioned a number of times in meetings as a target group for the future. One of the NGO participants, Groundwork NE (GWNE) work closely with local businesses and advise them on how to have a better environmental outlook. This trickle-down connection and consequently a mechanism of feedback through GWNE representatives in the LRWP was mentioned in one of the meetings as a good way to continue to connect with businesses as part of the pilot, and may even be preferable in some cases to including them directly, as the relationship with GWNE is established and trusted.

- Local authorities were the most significant group mentioned by the LRWP participants as being not as involved as they could be. There were multiple ways in which they were mentioned including that there could have been better consideration of the tourism and planning aspects within Durham County Council (DCC) representation and getting parish councillors involved, rather than just the officers for certain specialisms. In terms of council involvement as the interview process for this research project was taking place, DCC were becoming much more involved with the LRWP, particularly in terms of local planning and development representation. The closer involvement was something that had come up in development group meetings as desirable and the resulting change in inclusion therefore demonstrates the influence of the group's opinion on inclusion and an ability and willingness to be flexible in reaction to the needs of the project.

- The regional water authority was also a target for more in depth inclusion and although the commitment of the current participants was commended, a couple of people mentioned that they would have liked to have seen more senior representatives from the water company involved in the project. Through interview data it was revealed that there was a complex funding structure in place at the water company, which had restricted their ability to give more staff time to the project. Plans to increase funding and bring in dedicated catchment representatives for local water courses by 2015 were discussed, both in the interviews and within the LRWP, which indicate again a reaction to the needs of the catchment.

- Farmers and landowners were mentioned by a couple of participants as being important stakeholders that they would have liked to have seen better represented. However, it was stated by one participant that it would be difficult to encourage landowners to be involved because the focus of the pilot was more urban pollution problems due to land use of the catchment, therefore agricultural interests were better focussed in other catchments or when the Wear catchment was extended to include the more rural upper Wear area.

Most of the areas where participants in the LRWP though there could be better representation were echoed by the other participants in pilot projects across the UK as reported in the EA External Final Evaluation Report (2013), where land owners and local authorities featured highly among those thought missing. This shows that there are perhaps no particular problems with the LRWP specifically in terms of missing representation as the patterns were seen throughout the country and therefore may be a result of deeper societal and institutional factors.

5.3.4 Public participation

In the EA External Final Evaluation Report (2013) it was reported that participants thought that community groups and local residents were also missing from key representation in the pilot processes. The definition of 'public' is not universal but in this research it is referred to as 'non-state actors, members of the public', which refers to those that are not 'organised stakeholders' (Wesselink *et al.,* 2011). And in consideration of this definition within the LRWP, there was also a feeling portrayed by participants that members of the public could ideally have been more directly involved. Almost all the respondents acknowledged that inclusion of the public is something that should be sought after, which may be influenced by the general rhetoric in environmental management today.

In terms of analysis of the significance of public participation, it is difficult to compare the LRWP to a number of studies within the literature as 'public' and 'stakeholder' are interchangeable terms (Luyet *et al.,* 2012), whereas in this study the public are seen as one of a number of types of stakeholder. However, Wesselink *et al.* (2011) examine the rationales for public participation in environmental management through clearly defined terms and state that there is often a disparagement between the normative and substantive rationales advocated by academia and the more instrumental and political reasons stated by participants and practitioners. Comments from participants in the LRWP have been split roughly into the categories that Wesselink *et al.* propose in an attempt to discover how LRWP participants rationalise the need for public participation.

Firstly, it is clear that there is some coherence with a normative rationale for participation of the public, which is based on including all views throughout the whole process.

For example:

"maybe the public input that was missing was those who don't really have any specific agenda, who maybe live close to a river and don't see it as a wildlife issue or a fishing issue, they just see it as 'this is my river and I want it to look nice because it's where I live', maybe those voices were missing" (LRWP3)

"yeah they are missing out a huge voice and I don't really think they have an understanding about what that voice can bring" (LRWP1)

The above comments refer to the public as simply having a voice that should be heard no matter what, which resonates with the normative approach.

Secondly, there is also evidence of a substantive rationale, which refers to including the public because they bring extra knowledge and information.

For example:

"[now we have to get] opinion from the public in terms of giving us information about the river and suggesting projects and becoming involved" (LRWP2)

Wesselink *et al.* (2011) found that, in a study of environmental professionals involved in participation in environmental management schemes across Europe, that there was very little evidence of substantive rationale. Similarly, in the LRWP there were few times when the knowledge of the public was directly mentioned. However, in addition, some participants mentioned local knowledge, which can be associated with communities and the public. Thirdly,

as concluded by Wesselink *et al.* there was the most evidence for an instrumental rationale, which meant the public were rationalised to be included in order to aid better implementation, encourage ownership, gain support, and improve decision making. The comments below also refer to aspects of policy rationale, which include where policy requirements (such as WFD Article 14) mean that participation is rationalised.

For example:

"I mean a lot of the issues in the catchment the EA can't tackle by themselves" (LRWP11)

"we need other people to feel like they have ownership over the problems and solutions as well" (LRWP11)

"absolutely I think it's a good idea, I think the public have an important part to play, obviously they can have a significant effect on water quality in urban area" (LRWP11)

"I mean in order to reduce diffuse pollution you have to make sure that people aren't throwing rubbish in the river and are treating the environment with more respect. It can't be worked out without the wider public." (LRWP2)

"ultimately if we are going to be successful it's about inspiring as much of the general public as we can to get actively involved in the river" (LRWP8)

"because if you mobilise the people you get things done." (LRWP8)

"I think that the initiatives that fall out of the catchment plan are going to have to involve members of the public to be successful" (LRWP11)

"when it comes to actually implementing some of the actions on the ground at a very local level, that is the time to get more public involvement, to make them sustainable" (LRWP2)

In academic writing, instrumental rationalisation of participation is considered inferior to more normative rationales, however Wesselink *et al.* argue that the instrumental is the normative rationale for the participants and practitioners. The comments from the LRWP demonstrate that there is an understanding that the project needs public participation for practical and strategic reasons in terms of implementation, but that they are also intertwined with a deeper understanding that everyone should be able to have a say in the decision process. The participants' attitudes towards public participation, although mostly instrumental, were not negative and can be argued to represent a transition between the normative, deeper

participation advocated by theoretic academia that is beginning to become apparent in the consciousness of environmental practice and the practicalities of actually doing environmental management.

Further to the acknowledgement of a normative, substantive rationale, and the further coherence of academic and practical participation activities, there has been significant activity in the LRWP to gain the true opinions of the public and feed them into the decision making process. A Durham University research project to gather public opinion about the River Wear was commissioned by the EA in 2012, mainly focussing on how people value the river amenity, and the main findings were used as an important influence on the catchment plan content. A number of participants (mainly those more closely involved with the research itself) mentioned the importance and significance of the study:

"but undoubtedly the work that [name of researcher] has been doing to try and get views of the wider public is paramount for me" (LRWP2)

"[broadly the EA and other pilot participants] are getting there, they are. I think they are being educated [about public opinion and how to include it] by [the research] (LRWP1)."

Through these comments it is clear that there is an understanding that public opinion is important and that this pilot scheme is part of the learning process for how to do it better.

The inclusion of the report also furthers the theme of inclusion of knowledge and the commission of the report can be seen as 'knowledge brokering', which Campbell and Schofield (2006), describe as a processes used in mediating between sources of knowledge and users of knowledge. In this case between the public and the LRWP group. Durham University acted as an intermediary in integrating the public knowledge into the environmental management system developed in the LRWP groups. Brokering is a way in which multiple, complex knowledges can be brought together and as such bring an integration that leads to more adaptive and sustainable solutions to environmental problems (Petit *et al.,* 2011). In this case, by brokering the public knowledge and including their ideas, the LRWP has strengthened links to that knowledge and also strengthened practical links with the university within a collaborative activity.

Although the research was acknowledged by a couple of people as being a valuable way to bring in public opinion, there was still an impression from most participants that the LRWP did not have enough direct participation from the general public as would have been ideal. There was also a rhetoric that the inclusion of the public would be something that would follow after the initial pilot phase was over, for example participants suggested that a wider audience or

public be involved during '*implementation*' or '*once you have identified the issues and projects' (LRWP9)*, which again plays into the instrumental rational, however the participants mentioned that there should then be open discussions as to the direction of the activities, therefore implying a much more flexible and fluid process compared to perhaps the types of fixed policy processes alluded to in some participatory literature relating to instrumental inclusion.

Secondly, participants suggested that the LRWP had succeeded in representing the public in some way already through the inclusion of organisations that themselves had strong links to public groups, for example:

"the organisations that were involved, should have really been, to an extent, the voice of a lot of public opinion, Wildlife Trusts represent Wildlife Trust members, who have a Wildlife Trust agenda, the Rivers Trust represent their trustees and members, and members of the angling clubs represent the angling clubs" (LRWP3)

"[the public business owners] rely on our organisation to represent them at these types of events" (LRWP10)

This is a similar procedure to other participatory projects in water resource management. For example Kampa *et al.* (2003) reports that in the Rhine Basin projects to improve the river water quality included regional level participation from associations representing the views of the wider public including water users, agriculture and industries and nature conservationists. Equally, stakeholders in Australian integrated environmental management projects stated that they were representatives of their community, which constituted public involvement (Margerum, 1999). However Margerum (1999) implies that this was a confused opinion and that their involvement should *not* be associated with public involvement because throughout the process of participation the views of the participants changed, influenced by the effect of mutual learning, and they eventually no longer felt that they were adequately representing the views of their public. Although the LRWP participants believe that the public is being represented through a trickle down/up system of feedback, there may be future influences on their behaviours that cannot be predicted and therefore it may be a criticism if the only public representation throughout the whole of the LRWP was through the current stakeholders.

However, as this section has demonstrated, the LRWP participants also hold the ideal of closer public involvement, which will, according to their comments, form part of the actions in the future of the partnership, signifying that the project is less likely to become detached from public input. Such comments also support Kindon *et al.* (2007), as they advocate that different

levels of participation might be required for different stages of a project. One LRWP participant was adamant that the public should not be included in the deliberation stages of a project because they are less likely to have an appreciation of the long term impacts of actions and therefore may introduce expectations that cannot be delivered sustainably. This was a significantly strong opinion compared to the general opinion of others in the LRWP, however it highlights a similar undertone that there is a time and place for each level of engagement and participation to suit the problem and tasks required at each stage. Such attitudes also follows Collins and Evans (2002)'s theory of a 'third wave' in science and technology studies in which, after a 'second wave' that legitimised public critique of scientific and technical knowledge via high levels of public participation in decision making, there is a recognition that there can be too much public participation and that not everyone can or should participate in all aspects of technical deliberation, labelled a 'third wave' (Jassanoff, 2003). Therefore the ideal of public participation advocated by some of the LRWP participants may be based in the 'second wave' attitude, but the reality and how it has appeared to play out in practice of the LRWP is moving towards a recognition that there is a 'third wave'. For example there may not be any evidence of inclusion of the '*people that are uninterested*' (LRWP1) during the pilot stage of the process, it is something that is clearly heavily considered, researched and deliberated in order that it can be a significant part of the long term programme for the Lower Wear area.

In summary, public participation has not been a significant feature of the LRWP but is heavily advocated by participants both normatively and instrumentally. The pilot process appears to have been a time of reflection in terms of considering strategies and planning for public participation in the future, demonstrated by the participants' understanding of the issue in terms of where the representation stands at the moment (time of study) and the recognition of the importance of the commissioned research project about public opinion and how the public can play a significant role in the later stages of the project. In terms of evidencing a collaborative approach it can be argued that participants' views have reflected a desire (if not all the practical steps yet) to 'balance power' (Blumenthal and Jannink, 2000) and 'represent relevant interests' (Connick and Innes, 2003) through participative activities, which lay significant foundations for creating the conditions in which stakeholders can work effectively and sustainably together.

5.4 Collaborative process

From Selin and Chavez (1995)'s model of a collaborative process, it is clear that the LRWP has moved through problem setting (as in the previous section). There is also evidence for direction setting processes whereby goals are established, a common purpose is worked out

and information sharing is key (Selin and Chavez, 1995). Throughout the creation of a catchment plan a vision was established (Figure 4.6) which demonstrates that a common purpose was established. Goals were established in the form of actions included in the catchment plan, these were formulated through joint fact-finding in both development group meetings and stakeholder workshops when multiple activities were mapped and collected. There is little evidence that structuring, the next stage of the collaborative model, was apparent in the pilot phase of the project. Structuring refers to organisation in terms of implementation strategy and therefore would happen after the catchment plan had been finalised. This stage is on-going and, at the time of writing, the LRW group were at the stage of discussing how to strategically approach tackling particular targeted problems and actions laid out in the catchment plan.

5.4.2 Progress and time

Whilst the participants in this research project did not acknowledge formally the stages of collaboration, there were significant comments on the progress of the LRWP, evaluation of meetings, and aspirations about next stages that can reveal the way in which the collaborative process seemed to play out from the participants' perspectives.

Firstly, based on participants' perspectives the first stage of the LRWP process, which could be likened to the problem-setting phase, appears to have been successful:

"I think at the beginning of the pilot the meetings were very productive, I think they quickly managed to get a picture of what we knew about the Wear and its tributaries and what we didn't know and I think we got a clear idea of what the various organisations […] [knew]. We all had different experiences and knowledge of the river" (LRWP2)

"I think some of the earlier meetings I went to, I felt were quite productive, where we were still at the stage of deciding how the pilot would work and how the catchment plan was going to be formulated" (LRWP4)

"So it was very well run, very professional, captured and awful lot of information" (LRWP5)

The positive impressions come in the form of an opinion of productivity, which seems to be based on the high level of new information that was gathered. The first comment above demonstrates the importance of the productivity of the first meetings in making participants aware of the variety of perspectives and knowledges of other organisations, which might lead to an increased understanding of the strengths of other participants. Selin and Chavez (1995)

state that part of the problem setting phase of collaboration is that groups begin to recognise the resources that other participants can offer and thus the interdependence that exists. Another participant mentioned the amount and variety of resources (in the form of '*help*') that were available within the LRWP and mentioned that it was important that that be mobilised throughout the pilot. This is another form of recognition of interdependence and therefore can be seen as evidence for the conditions that lead to a collaborative approach. Further evidence of the benefits of this stage in gaining a mutual understanding and appreciation is demonstrated by the following comment:

"some of the meetings were challenging, but it was really good at the end of the process to see everyone's kind of awareness about what we were trying to do, all roughly at the same level and they were all involved and engaged, so I think it was a good process to go through." (LRWP11)

Despite a positive impression of the problem setting phase, a number of participants then mentioned that there were problems and restrictions on progress as the process began to move past the initial stages:

"I do feel that it maybe then started to stall a little bit and I think that maybe there was a slow transition from getting the information we had on the table at the meeting down into something that was mapped and registered [and deciding] […] where we need to focus our efforts[…] but I think that's natural when you have so many different organisations involved." (LRWP3)

"Some of the group members felt that it wasn't really progressing for the first 6 months or so, because it didn't seem to get any definite shape and that 6-8 month period it seemed that it came together […] it took a lot of conceptual discussion that I think several people struggled a bit with, you know, felt it wasn't very practical, but I think it was a necessary stage to where we have got now." (LRWP8)

It is to be expected that the first stages of a pilot scheme should be slow and that little clear progress is made after initial data gathering due to the complexity of balancing the needs of all stakeholders. Perhaps the visibility of the new information in the very first meetings and the ease at which information gathering can seem to happen, meant that there was a clearer impression of success. Whereas with the later stages when decisions had to begin to be made, involving compromises and discussion, progress seemed slower and there were fewer tangible outcomes. However, with the benefit of hindsight the participants in the quotes above

recognise that it was necessary and natural to have struggles in terms of decision making, particularly at the crucial transition stage from mass information to focussed actions.

The possible reasons for the slowing of progress at the beginning of what might be called the direction setting phase were mentioned by a number of participants. One participant mentioned that it was simply down to the fact that it was a pilot process and "*you have got to go into more depth" (LRWP13)* thus slowing down the process. The desire for more action within the catchment was clearly expressed by a number of participants, stating that the balance needed to be found over deliberating wording of written documents and actually getting action on the ground. Bonnel and Koontz (2007) found that the participants of the Little Miami River Partnership in Ohio in the mid-1990s also expressed a desire for more action, which they defined as physical activities such as river clean ups or writing grants and holding public meetings. In the LRWP it is more likely that the participants were referring to the former action. Bonnel and Koontz report that although participants expressed concerns in interviews the problem of action was not brought up during meetings, whereas there was an understanding in the LRWP meetings that action needed to happen, therefore catchment walkovers (water quality surveys involving teams of volunteers led by individual organisations) were organised within the pilot phase in order to try and balance the levels of discussion and action and contribute to the definition of the problem in the local area.

Another possible reason that was mentioned for the slow progress was that "*certain individuals wanted their voices to be heard loudest*" (LRWP3) which was thought to push development group meetings off agenda topics and prevent progress. Dominance of one voice over others might act to create a power imbalance and marginalise others during decision making, where an environment such as a collaborative meeting should act to equalise the power balance between stakeholders (Reed, 2008). The concern for reducing the influence of dominant voices is well accommodated in stakeholder meetings in the LRWP, as evidenced previously, where there are multiple written and verbal activities that are utilised to allow everyone a chance to contribute. In the development group meetings there did not appear to be the same variety of activities, and verbal deliberation appeared to be the main form of interaction, which seemed suited to the professional background of all of the participants. However, the comment above does raise the issue that even in smaller group meetings where all members are from a similar professional level, dominance of more confident personalities can act to exclude others or potentially affect the progress of the process. This is significant as Gray (1982) states that the collaborative effort is more likely to fail if timing for the phases of collaborative process is affected compared to expectations. Blackstock *et al.* (2012) demonstrate that dominance of voices in meetings can also lead to the dominance of agendas,

for example in a study of RBMP in Scotland some stakeholders believed that because of the dominance of individuals in some meetings, riparian and agricultural issues became too prevalent. In the LRWP there does not appear to have been a dominant agenda, but the comments do highlight the need to consider the effect of dominant voices in decision making.

In terms of making continued progress the participants were generally very forward looking and appeared keen to push the project into the next stage, for example:

"I suppose, the prioritisation has not come into it yet, we've got a load of actions but I don't think we have said we are going to do this, this and this first, so that's where we need to get to next I guess" (LRWP4)

This would constitute part of the structuring stage, which usually follows the direction setting phase in collaborative approaches, in which ground rules are laid out for implementation and responsibilities are allocated, creating a 'negotiated order' (Gray , 1985).

One participant, recognised that the group were not yet at this phase and that there was a significant time before any true effect would be seen:

"you know there is a whole swathe of delivery potential there […] that's not yet been captured, so there's a long way to go before it really makes a difference on the ground or in the river" (LRWP8)

This comment demonstrates that the ultimate goal of the pilot project can be seen to be '*making a difference on the ground or in the river*' not just simply gaining an understanding or awareness of strengths of other participants, which perhaps demonstrates the dichotomy between the internal and external criteria for success mentioned at the beginning of the chapter. The comment also fits with Connick and Innes (2003)'s observation that collaboration should not be seen as an end in itself but as a means to an end (which constitutes better environmental quality). Thus demonstrating that although the process and the struggles that come along with it are important, they are not the be all and end all of a collaborative approach.

5.4.3 Information sharing, data and knowledge

Margerum *et al.* (1999) found that two of the key factors relating to the operation of integrated environmental management, in which collaboration has a foothold, are developing clear and effective processes for communication and basing management decisions on sound understanding, which may come in the form of creating a common understanding of a

problem (Ostrom, 1999), or joint fact finding and information searching (Brentrup, 2001), which are key aspects of direction setting.

In the LRWP information and data were used significantly to build a picture of the resource and the perspectives of the participants. One of the EA members of the pilot stated that there was lots of learning involved in the pilot, as well as learning from other pilots, about "*how to portray things in a way that was more understandable" (LRWP6)* and thus contributing to making the complexity of the natural resource easier to understand which is an important step towards successful collaborative (Blumenthal and Jannink, 2000). Other participants pointed out that information in the form of maps, based on wildlife, ecology and water quality of the LRW area, were supplied by the EA at the beginning of the process. Equally, at the stakeholder workshops there were activities based on mapping that were used to collate information from stakeholders about the current activities happening in each of the sub-catchments in the LRW area. One participant described that during the stakeholder workshops a significant amount of data was shared:

"*there was an awful lot of knowledge and information in the room in those workshops. You could have gone on forever pulling so much more information, and what was captured was excellent anyway" (LRWP5)*

A number of participants described the information presented as useful and wide ranging. But the significance of the data in terms of how it was taken beyond the meetings was described by one participant:

"*but it then has to be mapped on to your experiential learning and your experience of how your organisation works and the type of things you do" (LRWP1)*

There is evidence that participants were reflexive in terms of analysis of the data, in taking away aspects that matched the skills and experiences that they had in order to conceptualise how they could contribute to the project. The process, however, inevitably meant that some of the data presented may become lost as the project progresses if no participants have the expertise to deal with or utilise the data. The following comment demonstrates this process:

"*there was lots of technical data that I had not come across before and didn't know about. [There was] a lot of information that was really interesting, but don't ask me to tell you about it now […], so fascinating from that point of view and frightening in some respects, but again being focused on flooding, anything that I could pick up on that would be of prime interest" (LRWP5)*

The descriptions of data as both fascinating and frightening also highlight the value of the data not only as relevant to particular interests in part, but as a whole, acting to engage participants on a more emotional level by highlighting the severity of a problem (frightening), the importance of contributing factors and on-going work (fascinating) and the need to find solutions.

Extensive data sharing at this stage of the pilot has also been mentioned as valuable for relationship building, which is a key foundation for the development of a collaborative group:

"*I think certainly before the EA pilot was introduced […] if we wanted to get a GIS layer it would take maybe a month to go through internal EA costing and permissions to come through our liaison officer with the EA. It was a very awkward process and one thing that they really did stress at the beginning of the pilot was that if we were working in partnership we want information to be more freely available. Obviously there are still the permissions that are required but the organisations that were working on the Wear pilot were obviously seen as a priority to develop what we were researching. Those things were made more freely available and it's kind of improved our access to data that was really required in order to improve, […] and I think the Lower Wear pilot was a great way of improving that relationship" (LRWP3)*

The way in which an open mechanism for data sharing can build stronger relationships is important in opening up channels for understanding a sense of interdependence that is characteristic of direction setting phases of collaboration. During the interviews, respondents mentioned that data was shared well between participants, particularly over email where information was freely circulated throughout the groups whenever an individual found something that might be of interest. The benefit being that individuals feel that they have an equal ability and right to contribute information and all participants have equal access to that data through the "*central hub*" (LRWP4) of emails. However, many participants stated that important emails were often in danger of being ignored or missed in the high quantity of emails. It was clear, however, that sharing information by email was critical in keeping vital communication channels open when the group was not meeting face to face and thus maintained a sense of belonging and connection that may have contributed to better relationships in meetings and a better, smoother collaborative process.

Data and knowledge are closely interlinked and this section knowledge has referred to the empirical objective facts that in natural sciences often constitute knowledge, whereas Pahl-Wostl *et al.* (2007) also recognise that there is another type of knowledge, tacit knowledge, which is more experiential and situated, that is important in collaboration. Pahl-Wostl *et al.* state that tacit knowledge can only be shared by common practice. Common practice in the

LRWP can be seen as the participants sharing data from multiple sources and each being able to then bring their tacit knowledges to the analysis and deliberation of the data alongside their empirical knowledges based in their area of expertise.

A positive example of the presence and use of both tacit and empirical knowledge in the collaborative environment of the LRWP is the development of a consistent monitoring system of water quality in the LRW water courses, involving a standardised form and teams of local volunteers, that responded to expressions from participants that there was not enough water quality data to understand processes and that the data that there already was did not map together well due to inconsistencies. The resultant system was developed out of not only empirical data but experiential knowledges about environmental problem solving. Nonaka and Tacheuchi (1995) state that tacit knowledge can lead to innovation, and in the LRWP development group that came about through the common practice of gathering data to define the environmental problem in the area.

5.5 Summary

- Actions and opinions of participants in the LRWP were compared to criteria in the literature associated with building the conditions conducive to collaboration. The criteria were not taken as a measure of success but as a basis for contextualising the opinions and views of participants in order to build a picture of if and how a collaborative process can be seen in the LRWP.
- Stakeholder inclusion was seen to be a significant indication of a collaborative process and positive opinions of participants as to the level of inclusion indicated an open and encouraging environment. The diverse representation within the LRWP led to the project being able to be labelled as a 'mixed' collaborative group after Moore and Koontz (2003).
- Successful inclusion of participants' ideas and opinions showed evidence for deeper participatory processes in the LRWP and indicated the possible empowerment of participants through their ability to champion and deliver ideas. Concerns were raised about the long term impact of participation on water quality management policy but were not widespread enough to be definitive at this stage.
- Local knowledge was seen to be valued, and evidence of co-production of knowledge was given through the inclusion of information from stakeholders in defining water quality problems and creating joint aims and objectives for the catchment.
- Businesses, local authorities, water authorities and farmers and landowners were mentioned by participants as those who they would have liked to have seen more

engaged in the project, which was found to match those mentioned across the other UK catchment pilots as reported by the EA External Final Evaluation Report.

- Public participation, although not a significant part of the LRWP to date, was sought after and considered important in the stages to come. High emphasis was placed on an instrumental rationale for public participation in the project, where the public were seen to be important for implementing successful environmental improvement measures. Highlighting the importance of deliberation with the public during the implementation stages showed a more open and flexible aspect to the instrumental rationale.
- Features of problem setting and direction setting stages of a collaborative process were identified in the LRWP. Participants identified that the initial stages of the collaborative process were successful but that factors such as lower prioritisation of actions and dominance of individual voices were stated as possible causes of slower progress into the direction setting stage.
- Data and information were seen as key to defining the environmental problems and the level and quality of data received positive comments. Significance was placed on the use of the data and the importance of individual participants placing data within the context of their own experiential, tacit, knowledge whilst engaging in common activities in order to create innovative solutions together.

Chapter 6

Impacts and influence of the collaborative approach

6.1 Introduction

This chapter builds on Chapter 5 to discover the impacts and influences of the collaborative approach on the participants and the wider environment of the LRW catchment and context. It is hoped that by understanding the impacts and direct effects a clearer understanding of the success of the collaborative approach can be gained. This might influence the way in which collaborative approaches are used in water quality management and helps contribute towards an understanding of how the collaborative approach in the LRWP fits into expected patterns of influence.

This chapter also builds on Innes and Booher (1999)'s idea of tangible and intangible products as a consequence of effective consensus building or collaborative planning. Tangible products are ones that can be identified directly and often manifested as actions. These are outputs that might be more obvious to participants. Direct products could include management plans. Innes and Booher also refer to second and third order tangible products such as spinoff partnerships and projects, for example two county agencies who were involved in a collaborative effort to solve transportation problems in San Fransisco Bay developed a partnership in order to plan a controversial seismic retrofit of a bridge that linked their two counties, and although it was not part of the main collaborative effort it represented a result of the willingness of the organisations to enter into a partnership to solve a local problem.

Innes and Booher also mention intangible products that result as a consequence of consensus building or collaborative planning. These are referred to as social, intellectual and political capital (Gruber, 1994, pg5). In this chapter the value of learning, networks and trust will be explored in relation to the creation of social capital. Equally, the value of tangible actions and activities in terms of the value that the participants place on them and the benefits they can bring, in order to reveal the importance of the collaborative approach.

6.2 Tangible impacts: Actions and plans

6.2.1 Actions, activities and benefits

One of the aims of the interviews with participants was to find out the activities and actions that were happening in the catchment, both associated directly with the LRWP and any spinoff activities happening as an indirect result. The way in which the question was posed varied significantly between participants, as comments about benefits and personal gains seemed to surface naturally in a number of interviews and also in relation to the question surrounding significant achievements of the pilot so far.

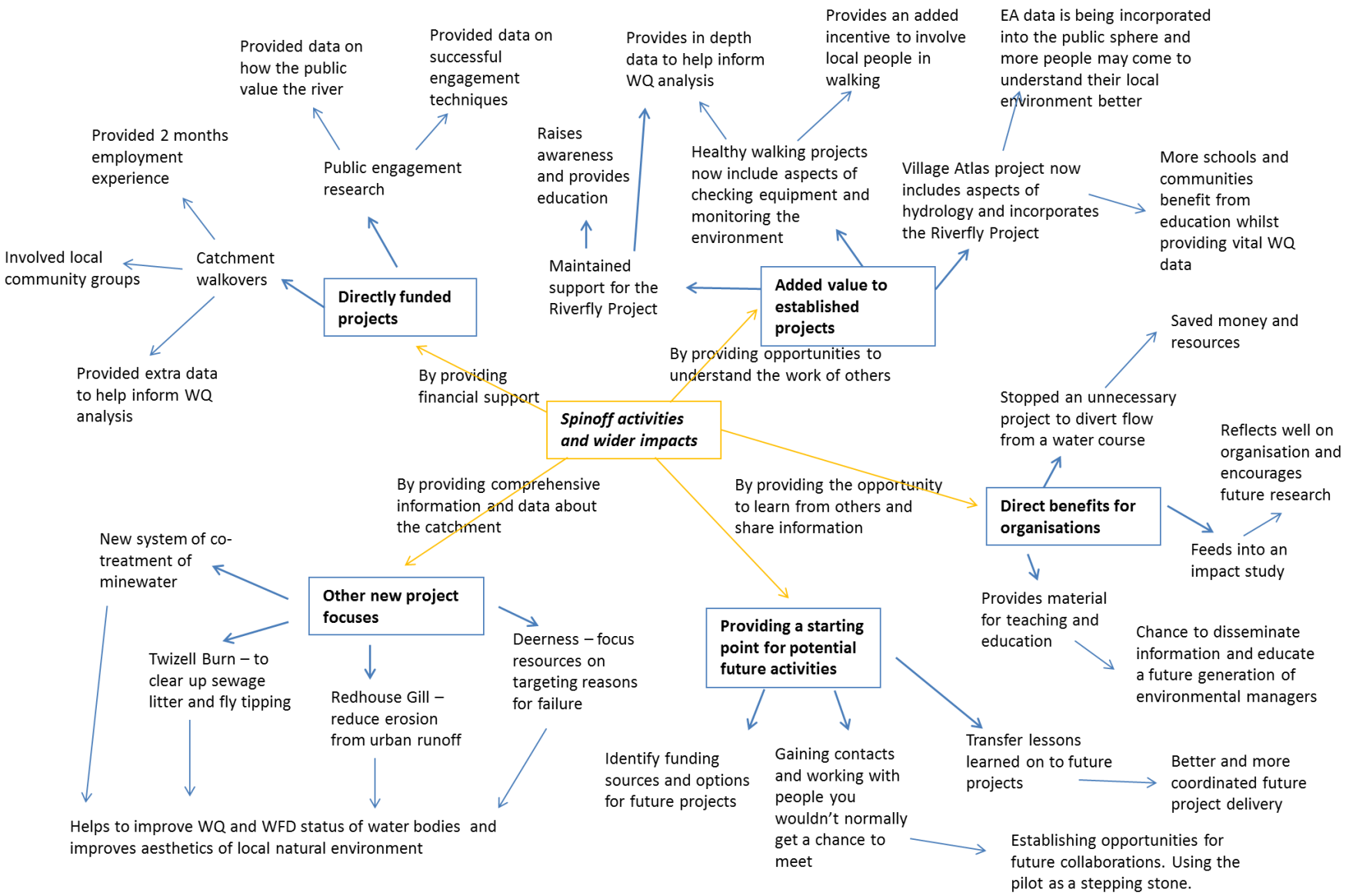

Figure 6.1 Diagram showing spinoff activities and wider impacts given by the LRWP participants. All first tier and some second tier impacts were mentioned by the participants and have been rephrased, and some second tier effects have been added by the researcher and, although not directly mentioned, logically follow participants' ideas.

The participants' comments relating to benefits and spinoff activities can be split into five distinct categories: directly funded projects; new project focuses; added value to established projects; direct organisational benefits; and starting points for potential future activities (Figure 6.1). Most participants interpreted the question as relating to the mechanisms through which the pilot had benefited themselves or their own organisation in terms of activities and tangible effects that they could see, although not explicitly. In research into waterside rejuvenation in the Mersey Basin, Kim (2001) found that in order to assess benefits, stakeholders had to perceive fulfilment of the stakes that they believe to be important. Consequently, it can be argued that many of the participants perceived the 'spinoff' benefits in the LRWP to be relating to the fulfilment of their interests as stakeholders.

1) Firstly, directly funded projects were mentioned by participants as being a positive output and related to two main activities; catchment walkovers and public engagement research. The public engagement research refers to a project funded directly by the EA and is advantageous due to its ability to bring in public opinion and potentially help towards better public engagement in the future.

Catchment walkovers were also mentioned and one of the participants described the conditions in which catchment walkovers emerged: *"the catchment coordinator managed to get a small funding body together, I think it was about £8000 split between four different organisations, to pilot a catchment walkover project, basically […] to involve local community groups in doing river walkovers" (LRWP3)*

Another participant (from one of the four organisations involved) described the activities within their organisation:

"we started doing something called catchment walkovers, where we worked with other organisations and community groups to get the volunteers to monitor water quality measurements from the sondes [water quality monitoring equipment] and get communities more involved" (LRWP6)

The specific benefits of the catchment walkovers that were mentioned were in relation to the engagement of community groups, local employment and significant water quality data:

"I have managed to get an officer in place for two months, helping them to have experience that will help them get employment in the future, but also we have managed to get fairly significant data on three of our rivers in the Wear catchment and on top of that we have managed to involve 6-7 community groups that weren't involved in the project without that stimulus, so that's been fantastic and certainly it's the best thing to have come out of the catchment plan so far, from my own perspective." (LRWP3)

The projects were directly funded and were jointly planned within the LRWP development group, although the projects were implemented separately, guided by the judgement, values and skills of each individual organisation. The positivity of the above comment shows that the impact of the catchment walkovers is significant in terms of knock-on effects, particularly in reference to the impact on community groups. In the previous section it was discussed that members of the public and communities were largely missing from the engagement process of the LRWP, but that there was some level of involvement through the NGOs who already had established links with communities. The catchment walkovers are examples of where the link is evident and is positively employed. It also demonstrates the normative-instrumental value that participants placed on communities and publics, in wanting them to be engaged during implementation of actions. Furthermore, it is an activity that allows the community and public to become involved in collecting data that contributes towards problem definition in the catchment. Such activities echo the ideas of Irwin (1995) around bringing citizens and science together in order to enhance environmental citizenship and the significance of science.

2) Beneficial activities have also come in the form of <u>new project focuses</u>. One participant mentioned the benefit of the chance to pull three specific target projects for their organisation out of the big schemes that the LRWP groups came up with:

"There's three main projects that have come out already from the Lower Wear […] one is on surface water erosion on a beck [draining] surface water from the Arnison Centre[…] car parks that's actually causing erosion of the [inaudible] systems, which is Red House Gill, so that's one project. The second project is Twizell Burn where we have had problems with sewage litter and CSO [combined sewer overflow] operation, but also general litter from the public, fly tipping etc. […] And the third one is a potential scheme at the moment, but it's looking at […] co-treatment of minewater and sewage, which is a win-win situation" (LRWP4)

No specific links to the LRWP group were mentioned as influencing the choice of the projects, other than the fact that the projects had 'come out' of the Lower Wear project. However, as

mentioned in the previous chapter, there had been sharing of data between participants about the Twizell Burn, which contributed to the awareness of sewage litter and CSO problems in that area. Although the details are unknown, it could be assumed that the awareness of the problems, prompting the formulation and backing of the other two projects, similarly came from the joint fact-finding and problem setting phase of the LRWP groups. Again demonstrating the on –the-ground impact of the collaborative effort.

The second example also demonstrates the value of the problem setting discussions and collation of data that informs management decisions:

"it's given me a lot, I'm clear, it's given the trust the beginnings of a structure with which we can get visibility in the catchment and […] more effectively prioritise what we go for, and the fact that it is based around the individual sub-catchments, it allows me to take tactical decisions as to where and what I prioritise. So for example, in the Deerness, on paper it's quite close to achieving good ecological status, it's only got a couple of reasons for failure, whereas the Lumley Park Burn has got a whole screed of reasons for failure, so not underestimating the depth of the Deerness reasons for failure[…], it is in principle quite close, so we are throwing quite a lot of resource and time at Deerness with the view to make progress with that." (LRWP8)

Such impacts rely on the openness of the relationship between participants in the LRWP and the EA, which have been mentioned as vital to facilitating data sharing about the catchment that would help move environmental management forward, in this case EA data on reasons for failure of water bodies that are failing to meet the WFD EU ecological status of 'good'. The above example demonstrates that there is a distinct value placed on information sharing, in terms of giving each organisation a better chance to play their part in improving the natural resource at risk, which, for environmental organisations is a big part of the 'stake' (Kim, 2001) that they aim to fulfil.

3) The LRWP has also been claimed to add value to established projects. For example, one participant mentioned that the catchment walkovers had become part of a walking scheme already set up for public participants, and another mentioned that hydrological data and the 'Riverfly Project' (a projects supported by the LRWP) were now part of a historical mapping project:

"So it was part of a healthy walk that people were doing. In Stanley, for example, they would go and check the monitoring equipment and take the readings, so it's a kind of added value" (LRWP6)

"To a lot of extent we have already got our set projects, but we hadn't got an awful lot of hydrology in and we have been able to pop hydrology into some of our projects now, which are the Village Atlas project, looking at specific settlements, where they came from and why they are there, but also how the environment around them works, and we have been able to bring in ideas around the Riverfly project for school kids and adults and pull in a lot of EA type data associated with the catchments [...] So I've probably taken more out than I have put in." (LRWP9).

Both of the above comments are positive, particularly in demonstrating the outreach benefits of the pilot activities in the form of community engagement in walks and involvement of children and adults in education. The incorporation of the LRWP efforts into already established projects can be argued to support an integrated approach, which is very much the basis of river basin and catchment management currently. Ruiz- Ballesteros and Gaul (2012) state that one of the key challenges in creating multi-level governance of common resources is the integration of activities into the already established system of institutional interplay (pg. 848). Bringing people together in the LRWP context has allowed the institutional interplay to be accessed and enhanced, in order that joint activities and ideas coming out of the collaborative effort be incorporated in the everyday and established practices of the individual organisations. Integration is also defined as focusing on interactions that are important to specific catchments (Watson, 2004) and those that bring water and land uses closer together (Buller, 1996). Throughout the collaborative process both a lack of coherent data about the LRW area's problems and the role of public river users have been priorities within the discussions; the comments above demonstrate the specific incorporation of these two elements through gathering extra data from sondes and Riverfly data, and involving communities in projects. The activities act to integrate the established uses of the land in a cultural, recreational sense, with the water environment by increasing awareness of the resource and its condition. The evidence for an integrated approach is therefore a positive tangible impact.

4) In addition to the more outward looking benefits, the LRWP has also been mentioned to have <u>direct benefits for the organisations</u> involved. These include the ability to understand the work of others through the LRWP group and therefore bring direct benefits, for example one

participant described how being part of the development group allowed them to realise that their plan to change the flow patterns of a watercourse would have been damaging to the ecological value of the stream and as such cancelled the scheme and mentioned that "*a lot of wasted money and resources" (LRWP4)* could be (and were) saved in the process of talking to one and other. Therefore the financial benefit for their company was significant.

Additionally, another participant mentioned the benefits of being able to formulate new projects as contributing to better knowledge about the local environment that would have practical implications in the long term for improving water quality, as well as social interactions, and that would reflect well on their organisation in an impact study:

"we now have this big impact agenda […], we've got to show how our research is making a difference outside of academia so I think there is a potential impact study coming from that […] which I think would be really good. " (LRWP1)

This comment suggests that the participant believes that the project has the potential to 'make a difference', which is a significant impact of the approach in itself alongside the impact that that success might have on the appraisal of the organisation. It is also an indication that there are aspects of the collaborative process and its effects that are encouraging the participants to think positively about their involvement and continue to become involved.

5) Finally, the collaborative process has also been mentioned to provide a starting point for potential future activities. As has already been discussed, the pilot process has been short and the ability to see tangible environmental impacts as well as attribute them to planned action is impossible. Therefore, it is much more likely that potential to deliver future tangible actions is valued as an output of the process so far. One participant mentioned that the pilot was seen as a "*stepping stone" (LRWP10)* to other work. Others referred to the ability of the group to produce funding bids to help future projects "*deliver across boundaries*" *(LRWP9)* and vitally that the LRWP gave "*the opportunity to get in contact with the relevant people" (LRWP10)* in order to prepare for future projects through "*contact with stakeholders that [you] wouldn't normally get if you were sitting in an office" (LRWP2).* The implications of the participants' recognition of the resource that is available through the LRWP for future projects is another positive indication of the recognition of the benefits of the process of bringing organisations together and building relationships that will lead to future action.

In summary, the recognition from the participants that there are significant tangible actions

that have come out of the pilot process so far, which they can see as being beneficial on the ground and within their organisation as well as for future projects, demonstrates the potential for the collaborative process to be seen as having positive impacts over and above the activities that would normally happen in the LRW area.

6.2.2 The catchment plan

One significant output that is mentioned in multiple studies as being key to the process of environmental governance is the production of a written plan (e.g. Blackstock *et al.,* 2012; McCool and Guthrie, 2010).

In relation to the catchment plan's function as part of the collaborative process in bringing together details from the problem setting phase and establishing them as guidance, one participant commented that the plan represented the "*culmination of the pilot" (LRWP11),* which relates to the fact that the production of a catchment plan was set out at the beginning of the process as the goal of the phase. Additionally, there is evidence that the pilot at its end point transitions between problem setting and direction setting, and a written plan is a feature of that point. The following participant picks up on the way that the catchment plan influences the next stages of the process:

"I think it's actually bringing out the level of detail in relation to the issues around each of the different water bodies, being able to present that sort of information is really important because it has enabled people then to say, right, well, what are our priorities in terms of getting the solutions together, it's going to help driving PR14 [Price Review 2014] in terms of Northumbrian Water's planned investment in the area, it should, once it is fleshed out to the entire catchment, act as a strategic prioritisation document for the whole catchment in relationship to hydrological issues" (LRWP9)

Equally, there were a number of positive comments about the plan, including the way in which it incorporated the ideas of the participants, evidencing the inclusive nature of the process, and the effort involved in producing the document in such a short timescale:

"I think they reflect what people wanted quite well and they have categorised things quite effectively together, there has been good debate about them, so I think the catchment plan is quite nice. It draws in what people want, it draws in some of the day to day practices and it draws in some of the data."(LRWP1)

"So [the catchment plan] is a good piece of work for the time scale it was done in and how it was done, it could have been a lot more inclusive if you had 5 times the length of time to do the piece of work and a lot more resource to do it. But I think for the timescale and the resource that was available, it was done very well." (LRWP9)

The second comment picks up on the recurring theme that time is a significant limitation on participation. However, the overall impression of these two comments is that the catchment plan has been very well executed, which, if the catchment plan is to be understood to represent the culmination of the pilot, reflects well on the whole process.

Despite the positive comments there are a number of points about the way the catchment plan should be used and referred to in the future that demonstrate that the participants believe that producing a comprehensive, representative catchment plan is not the end point but that the future of the plan is also to be considered. For example, there were concerns surrounding the accessibility and audience of the document. A number of participants expressed that they did not wish for the plan to simply "*sit on a shelf" (LRWP4 and LRWP6)* and "*gather dust" (LRWP13).* The length of the document was commented on as being a negative influence on the type of people that would view the document, however this was counteracted by a couple of people who commented that the document had to be in enough detail to show that the group was actively engaged in the catchment and that there was significant technical detail for the organisations to justify particular activities. One participant stated that the plan needed to be "*punchier*" and "*snappier*" *(LRWP13*) if those not already engaged in the LRWP were to read and benefit from the document. Another suggested putting the plan on the internet and simplifying the structure in the form of web pages so that "*more people can get access to it"(LRWP4).*

Digitising the catchment plan was also suggested in order that the plan becomes a flexible, adaptable document:

"*I hope we can get this on the web so that it can be changed much easier as things progress and it becomes more fluid, so things will drop off and new things will come on and it will be a working document that keeps changing all the time as new projects come in." (LRWP4)*

Two other participants highlighted the need for the plan to be a flexible document that could be constantly updated, in order to reflect the activities that all organisations and groups were

doing in the catchment to maintain the level of coordination over and above that that is facilitated by face to face meetings, and, importantly, to "*mirror the changes in the river*" (LRWP3), including seasonal changes in habitat and flow regime, and ensure that the plans relate directly back to the problem.

Blackstock *et al.* (2012) report that most participants in the survey of those involved in projects to implement the WFD in Scotland thought that criteria for the success of a partnership should include an analysis of whether the plan produced was practical, flexible and legitimate (pg 116). From the above comments it is clear that the LRWP participants agree that flexibility is a key criteria for success. It can be argued that the attitude of the participants at the time of research is positive, as it reflects a desire to maintain flexibility of the plan, which could be hoped to be reflected in their future behaviours.

Legitimacy of the plan was mentioned in reference to the ability of the plan to carry any significant weight in future management decisions. Two participants mentioned that they thought that the catchment plan at the moment had little impact because of a lack of "*statutory power*" (LRWP6) or regulatory power:

"I think probably professionals and the institutions and other organisations are probably ok but as soon as you try and communicate that out to communities and the wider public, I don't know where that sits, because this isn't a regulatory thing, this is about what the organisations want to see in their river but it has the intention to meet WFD targets, so it's not a stick necessarily that we are going to be beaten with yet, but where does this sit on the catchment management plans that the EA have to produce as part of the WFD? I have to say I haven't got that quite right in my head" (LRWP1)

It is not clear whether these comments refer explicitly to the legitimacy of the catchment plan or simply the uncertainty as to the regulatory framework that will surround actions that come out of the pilots in the future, however it does highlight the need for a degree of 'power' within the document for participants to view it as truly able to have an impact, both socially and environmentally.

In summary the tangible outputs from the LRWP are generally viewed in a positive light by the participants, which reflect well on the collaborative mechanisms that may have led to their fruition. Concerns about the level of impact of the activities and, in particular, the catchment plan stem from the fact that the project is in its early stages and the full force of future impact

cannot yet be felt nor imagined. The concern that participants show for the need to maintain standards of flexibility and ensure legitimacy demonstrate the possible positive path of influence in the future of the project beyond the pilot stages.

6.3 Intangible impacts: Social learning and social capital

In the LRWP it was clear that the participants regularly mentioned improved relationships, chances to meet others and better communication as vital and positive aspects of the collaborative process. By exploring the extent to which the collaborative actions highlighted in Chapter 5 have influenced the opinion of the participants about each other, the environment and how to work together, a better understanding of the impact of a collaborative approach on management of water quality can be gained.

Social learning is recommended as a mechanism adopted in environmental management to facilitate the close involvement of stakeholders, allow them to enter into long term relationships and to eventually encourage the development of new knowledge and skills to deal with new situations and uncertainties (Mostert *et al.,* 2007). Key processes are named as trust, working together to define problems, joint fact finding, joint decision making and planning for implementation (Ridder *et al.,* 2005). Social learning is a process that leads to the creation and building of social capital (Eames, 2005), which is important for maintaining relationships that facilitate collective action and is often claimed as a pre-requisite for natural capital improvements (Pretty and Ward, 2001). This section will explore the ways in which the processes included in the collaborative approach identified in the LRWP relate to aspects of social learning and how the participants in the LRWP understand, describe and evaluate the importance and influence of these processes.

6.3.1 Reasons for involvement and group value

One of the key indications of social learning relates to the realisation from stakeholders that participation in a project is more valuable than working alone (Mostert *et al.,* 2007).Watson (2004) argues that motivation to participate in a project may be capacity-driven, relating to the need to make better connections in order to survive, or commitment-driven, where participants genuinely want to address problems together for the greater good (Weiss, 1987). By understanding the motivations behind involvement in a collaborative group it is possible to discern the way in which the group is viewed by participants and the value that is placed on the group. Pretty and Ward (2001) describe that the way group value is perceived relates to

the level of social capital transformation and the level of maturity of a group. By examining the reasons for involvement in the LRWP it will be possible to analyse the development of social capital and the role of social learning.

Within the LRWP analysis of participants' motivations is based on comments that arose naturally in conversation and have been selected subjectively with a certain amount of judgement, based on leading phrases such as 'involvement' and 'taking part'. Figure 6.2 indicates the variety of reasons that were gathered for involvement of participants and indicates categories that have been derived from the participants' comments.

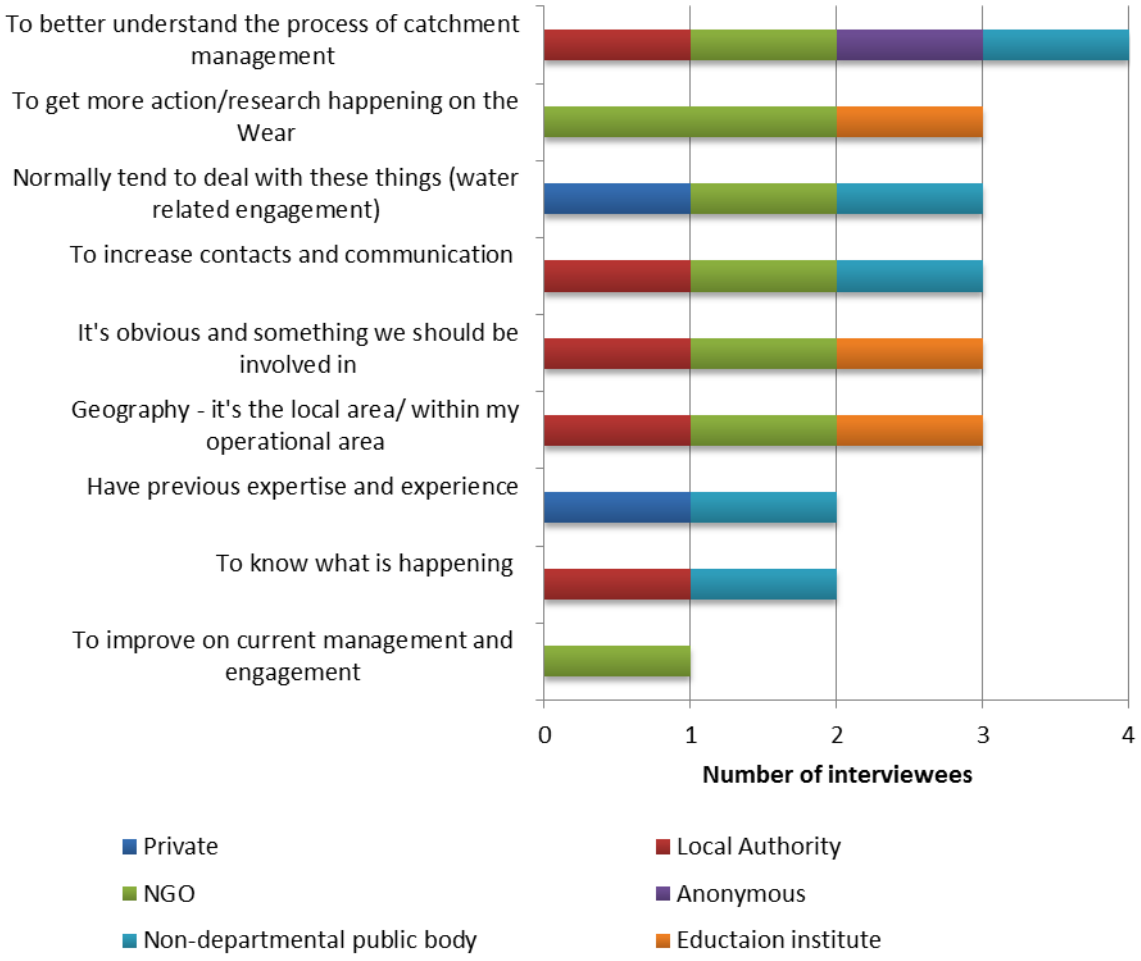

Figure 6.2 Bar chart depicting LRWP 'reasons for involvement' in the project based on comments from interviews.

The range is broad and there is no strong consensus as to one reason for being involved. The most repeated reason is to better understand the process of catchment management. This represents, for example, interest in seeing "*what a catchment management plan would look*

like" (LRWP8) and looking at "*where one works together action plans for different geographies*" (LRWP9). This is significant in terms of participants seeing the group as a place to learn and to develop their skills to manage the environment better in the future.

In general the reasons for involvement can be split into three areas:

- People feel like they can gain something from being involved including learning about a process, gaining contact details and understanding what is happening.
- People feel they have a claim on being involved, which either cannot be articulated or that is associated with their job or their expertise or their area. For example one participant stated "*it's a no-brainer that we should be involved in this, it would have been an anomaly if we weren't" (LRWP8*). Additionally, another participant mentioned the importance of involvement at the local level: "*for me there is a very moral and personal [justification for involvement] and I think I should be contributing to research and engagement around the local river" (LRWP1).* It is highlighting that the pilot is tackling issues that participants have a claim on or stake in because it is happening in their area under their watch.
- People have a vision for the catchment that they believe can be fulfilled through the catchment pilot process for example to increase action on the Wear: "*we are very keen to get more things happening on the Wear*" *(LRWP13)* or to change the management process: "*I got much more involved because I could see that [current management] wasn't particularly participatory and conducive to getting people on a journey with* you" (LRWP6). This is significant as those people may believe that there is a function of the LRWP, and they have faith, at this stage, that the pilot will be able to enact their visions with their input. By two people stating that they were involved because they had previous experience in the area, it shows that they believe that they have something to contribute to the group and as such are valued.

These reasons show that there is a mixture of capacity and commitment drive to be involved and the fact that a number of participants mentioned both reasons is a positive sign that there is a balance of 'give and take' in the project that acts as encouragement for continued involvement.

Leach *et al*. found that 23% of people in their studies thought that meeting interesting and important people was an 'important' or 'very important' motive for participation. Interestingly, there were also 23% of the respondents in the LRWP who were motivated by the ability to meet new people. The exact similarity in numbers is highly likely to be coincidental, however it

does indicate that creating contacts and meeting new people are perhaps constant reasons for participation in such groups that transcend scale, context and location. Leach *et al.* also found that 61% of stakeholders wanted to educate themselves about watershed issues, which is similar in topic to the responses pertaining to learning about the catchment management process in the LRWP, as both include a level of knowledge acquisition about the management context.

The participants' opinions about involvement reflect their valuation of the collaborative group as a whole, which in turn can be associated with the maturity of the group and the level to which social capital has developed. For example Pretty and Ward (2001) suggest that recognition of group value is one of the 15 key criteria by which to assess the level of maturity of a group, such as a watershed partnership. From the answers given by the LRWP about their reasons for involvement in the group, there is evidence for all three levels of maturity (assumed to be partly associated with temporal aspects) described by Pretty and Ward. Some of the comments will naturally relate to more recent ideas and opinions of participants that have been shaped by the collaborative process and others will relate to thoughts at the beginning of the process. For example, Pretty and Ward's first level, reactive dependence, requires some recognition that the group can achieve something new. This relates to the comments in the LRWP about visions such as more activity on the Wear, and the faith in the ability of the group to achieve the visions that the participants may have had close to the beginning of the process. The second stage, realisation-independence, recognises that members will be willing to invest in the group itself, which could relate to those in the LRWP who mentioned that they had expertise to contribute. This is also strengthened by answers to questions in the interviews about roles and responsibilities within the collaborative group, which indicated that many of the participants believed that their role was to actively invest expertise, resources and advice in the project (Figure 6.3).

Figure 6.3 shows that the majority of participants are willing to invest advice, information and unique perspectives into the group, but most significantly are the three participants who mention that they believe their role is to mobilise resources such as people or funding, which can be seen as tangible investments in the group and its function.

The third and final stage of maturity labelled by Pretty and Ward is awareness-interdependence, and includes recognition that participants will express the social value of the group. Only one aspect from the reasons for involvement can be attributed to this, as one participant mentioned that they wanted the group to enact more participatory management,

which would consequently have a social value for those involved through the participatory processes. Further support for this stage of maturity in the LRWP came from answers in response to questions about the future of the group, where many participants expressed their view that the group and the collaborative effort would be influential.

Pretty and Ward suggest that groups that reach the final level of maturity possess social capital enough to be resilient and dynamic in the face of challenges and change, but that positive feedback mechanisms might also be present, in that the more mature a group becomes the more social capital it can develop. In the case of the LRWP there is evidence in one respect, group value, that it has reached the mature stage of high social capital, however there are many other aspects to consider and it is likely that there is a fluctuation between the stages relating to each individual aspect. The consequences are that there appear to be processes happening within the LRWP collaborative approach that are conducive to producing a high level of social capital both during the pilot stage itself and into the future of the project, which is a significant influence on the participants and the process as a whole.

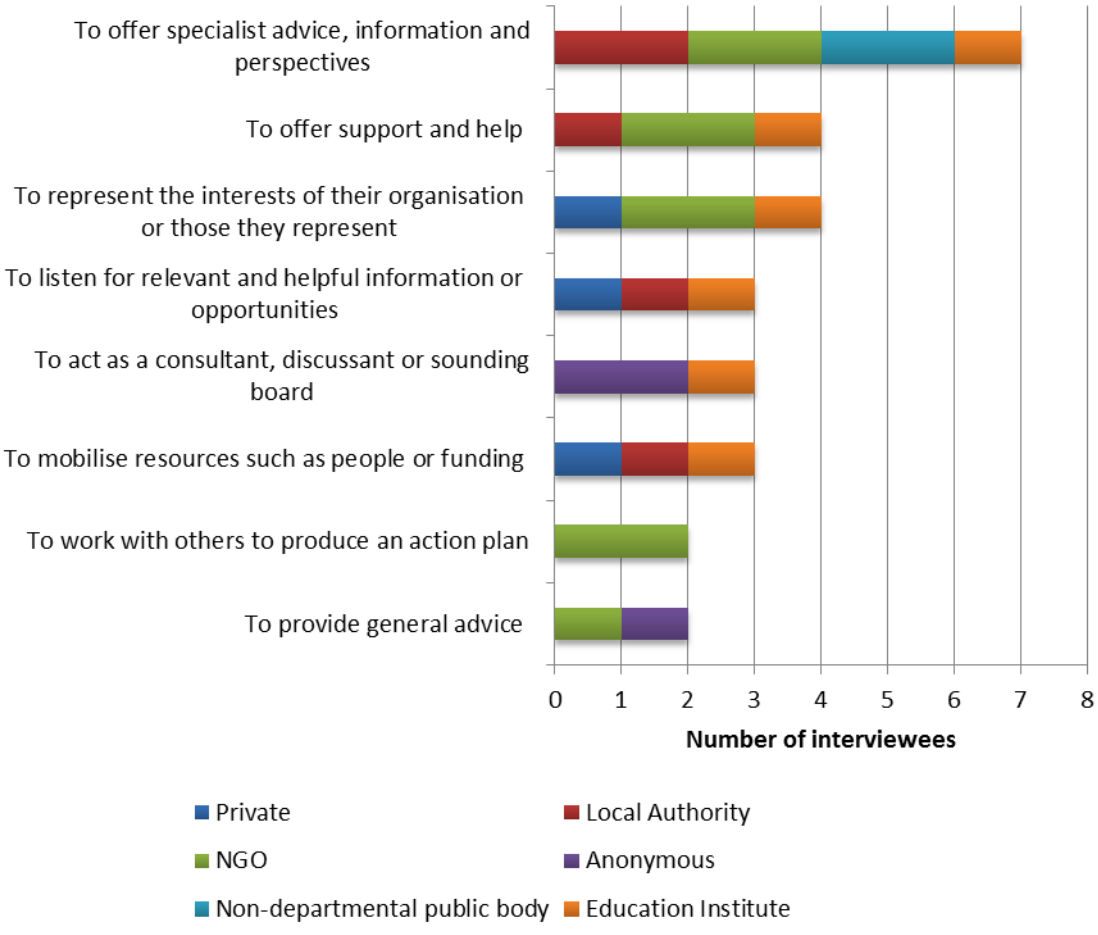

Figure 6.3 LRWP participants answers to the question 'what are your roles and responsibilities as a member of the pilot group?'.

6.3.2 Interaction and Relationships

Pahl-Wostl *et al.* (2007) state that social learning, as a process to build social capital, is assumed to occur on three levels: medium to short timescales between stakeholders; medium timescales relating to changes in networks as a result of outcome feedback processes; and over long timescales at the level of change in governance structure (pg. 5). When analysing European projects to implement the WFD, Pahl-Wostl *et al.* found that they were often examining social learning on the first and second level, relating to interactions between participants and networks, as changes at the third level cannot occur without distinct long term social change, which is not recognisable over short project time-scales. Equally, Borowski *et al.,* (2008), in a study of the European HarmoniCOP (Harmonising COllaborative Planning) project in France and Germany, theorised that interaction, particularly diversity of interaction between participants, is a key factor in social learning.

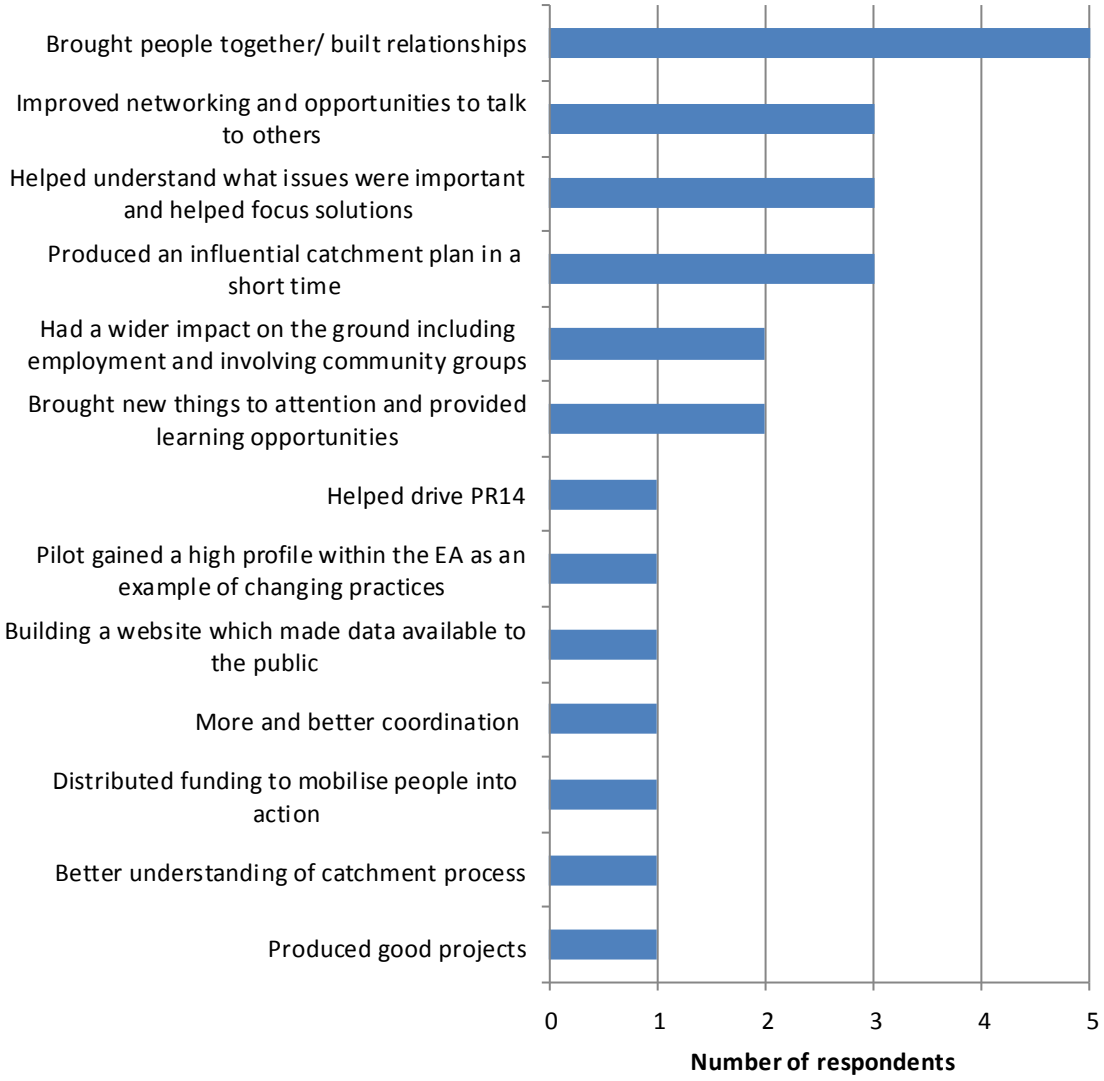

Figure 6.4 LRWP participant answers to the question 'what do you think are the most significant achievements of the pilot so far?', roughly grouped into themes derived from the answers given. Many participants mentioned more than one achievement. (PR14: Price Review 2014, a scheme run by Ofwat (Water services regulation body)).

During the interviews a question was directed at the LRWP participants asking their opinions on the most significant achievements of the pilot process so far (Figure 6.4). The wide range of responses represents the diversity of the impact of the LRWP. In terms of relationships, significantly, the most popular response related to the value of the LRWP in bringing people and organisations together and the opportunity that that offered to build relationships. Balckstock *et al.* (2012) found that 70% of respondents in Scottish RBMP projects thought that developing better professional networks was the most important benefit of being part of the project and attending the meetings. Although this does not relate exactly to the question asked of the LRWP participants, the sentiment is the same, as the LRWP participants recognised that the pilot provided space for people to come together and for networking.

Poncelet (2001) states that 'collaborative processes constitute fertile ground for participating actors to experience change to their subjective understandings of and relationships to each other', meaning that the collaborative group not only offers opportunity for new solutions to environmental problems but also new alliances (Simpungwe *et al.,* 2007). This is reflected in the importance placed on bringing people together in the LRWP, balanced with opportunities to focus solutions and better understand the catchment processes.

One participant in the LRWP mentioned their views on the ideal relationships that they believe could and should be built through the pilot process:

"I would say a strong relationship is where each organisation feels comfortable portraying their viewpoint, that they are all valid […]. They are all trying to do different good things and they have their own resources and their own limits and I think that everyone needs to be comfortable in talking about those openly and sharing those openly and coming to strong conclusions, […] they shouldn't feel like they are competing against each other for funding, they should feel like they are coordinating their strengths to each get their pockets and their specialties, they shouldn't feel that other organisations are purposefully demeaning them or not listening to them, or have more power than them, […]" (LRWP12)

This response shows that there is a significant understanding of the 'ideals' of relationships within the collaborative process and an understanding of many of the themes that have been brought up in this research including balancing power, inclusion, deliberation and valuation of stakeholders. The participant who made the above comment was from the EA and mentioned that they were hoping that the pilot would bring about strong relationships through

maintaining good engagement with other groups and mitigating against risks of the EA "*taking over violently*" in order to bring about "*good collaboration*" *(LRWP12)*. The comment shows that there were strong motivations from the lead organisation, the EA, to build and maintain such 'ideal' relationships. The participant did not make clear whether they believed that all the ideals had been fully achieved in the LRWP, but by acknowledging them there is a possibility that they will be followed through as the project progresses.

A number of other participants made positive comments about the way in which the pilot process had already allowed relationships to strengthen. For example:

"I think it definitely improved those relationships, but not only [between] the organisations and the EA, but with those organisations involved with each other" (LRWP3)

"I think [relationships] were cemented more, so particularly with the [organisation name] I think we had had a kind of loose arrangement in the past and we had crossed over on occasion and I think that there was much more understanding about what […]each organisation did and how we could work together and all that kind of thing." (LRWP6)

The second comment implies that there was, again, a degree of knowledge acquisition required in order to build the relationships as it was about understanding the work of others, and the comment thus acknowledges the importance of a learning process. In stating that there was more understanding about how organisations could work together resulting from the LRWP it implies that the value and impact of the collaborative approach, through providing learning opportunities, was to increase the capacity of organisations to work alongside each other and create more coordinated solutions to environmental problems.

Other participants highlighted the practical relevance of the LRWP in bringing people together:

"I for example had met with the [organisation name] a few times, maybe met one or two of their on the ground staff and we'd discussed a few things and we'd realised that our work was overlapping and […] once the DG or steering group was in place, those organisations were getting together on a regular basis, so not only could we help to develop a catchment plan, but we also used to spend 5-10 minutes at the end of the meetings discussing what we were doing and making sure that we were aware that we weren't overlapping on our work as well. It was an excellent way of getting organisations together." *(LRWP3)*

"so there is much more coordination, people are much more aware of what each other is doing, so I think to me that would underpin them continuing to do this into the future, rather than asking them to change the way that they work or to do something differently, I think because there is more sharing and understanding I think they can be more strategic" (LRWP1)

These comments represent one of the most significant impacts of the LRWP and show the value of collaborating in this context. The pilot schemes aimed to be about improving environments through enhanced integration and the coming together of different organisations within the LRWP that may not have interacted otherwise, which has allowed an understanding of others' values, aims and projects to develop thus allowing for better coordination and a chance to be 'strategic' (a word commonly used by many of the LRWP participants to describe the pilot efforts) in planning and delivery of environmental solutions. Moreover the chances to meet and talk have meant that the participants feel comfortable with one another as individuals, and a number of participants mentioned that they '*got on well*' with other members of the group (LRWP3 and LRWP8). The development of personal relationships therefore can be argued to show the role of the collaborative approach in providing space for the relationships to grow constructively and to consequently have a positive effect on the participants themselves, and can be speculated to have knock on impacts on the effectiveness of collective action in terms of environmental improvement in the future.

The first quote above highlights that participants put significant value on the more informal aspects of the pilot process to help create space to build good personal relationships. Another participant also highlighted the positive aspects of the informality of the meetings. For example:

"lunches provided an opportunity for networking, […] there were lots of other people to talk to and I think that was really another positive, as well as the plan and the project itself […]. People don't always understand or appreciate [that]." (LRWP5)

Borowski *et al.* (2008) state that diversity of interaction is an important factor in terms of social learning and that in particular informal activities, such as coffee breaks, are vital to allow interaction that is not solely focussed on outputs (Wenger, 1998). Borowski *et al*. (2008) found that the value of informal activities was enhanced in groups that were smaller and shared commonalities such as knowledge about and experience working in the local area. The LRWP is a very small area and the workshops during the pilot were often made up of less than 30

people, and due to the clear success and value of informal aspects in building up relationships between participants, it can be seen to echo Borowski's findings about the value of diverse interactions in building relationships. Equally, face to face interaction in the LRWP is therefore to legitimise the relationships and allow the participants to trust each other. More on the value of trust will be covered in the next section (Clarke and Reading, 1994).

The building of relationships may lead to the establishment of networks, and networks are important for maintaining connectedness between people in a collaborative group, which then constitutes social capital (Pretty and Ward, 2001). Most people in the LRWP commented that they knew some people in the group before they came to be part of the LRWP through having worked with them before, this may have contributed to the ease with which most people have developed stronger relationships. However, there were a couple of participants that mentioned that they didn't know anyone prior to being involved. This could have acted to exclude them from networks that were already established, however one participant noted that there was a very accepting atmosphere in the LRWP:

"You know, people are generally lovely and know each other or they might all reintroduce themselves at the outset of a meeting, even to remind each other who they are. So they are quite informal, they are quite welcoming" (LRWP1)

This comment suggests that it is the attitude and behaviours of the participants themselves that add to the atmosphere of acceptance and therefore the openness of the networks. Another participant mentioned that the CC also played a key role in opening up the network and preparing the way for the participants to build relationships easily.

"Yeah, [the CC] is […] a very good people person and he can adapt his style for different personalities, so I think he has been at the centre of catalysing the [relationships]" (LRWP2)

From this comment it is clear that the CC played a central role in building the LRWP network and from other details of the collaborative approach, including how many of the participants first got involved in the LRWP, it is the open and inclusive attitude of the CC that has meant that many of the participants feel that there is a positive influence of the collaborative approach on relationships and networks within the pilot process.

Through the establishments of the LRWP network by the strengthening of relationships, there is a growing integration of the new network within already established networks of which each

individual participant is already part. Interview data suggests that the dynamism of the network was maintained to some degree by meetings outside of the main LRWP stakeholder and development group meetings in order to expand contacts and begin processes of tapping into the wider networks. For example one participant, from the NGO group that has begun the process of joint-hosting of the LRWP with the EA, mentioned that they were meeting with the CC and a member of a Local Enterprise Partnership outside of the main meetings. This suggests that there is a very active attitude towards the expansion of the LRWP network and the use of established networks in order to keep the pilot process progressing and improving. This active, dynamic process means there is a constant opportunity to learn and build on ideas and values, which could be argued to keep the LRWP both forward looking and integrated with the established networks and practices.

6.3.3 Building trust

Social capital said to be made up of both relational capital, which is formed from norms, values and attitudes, and organisational capital, based in rules and procedural patterns (Westermann *et al.,* 2005). Krishna (2000) states that a balance of both is needed in order to strengthen collective action interventions. From previous analysis it is clear that the LRWP had distinct procedures and organisational patterns, which are manifested in the labelling of some actions as 'strategic' by participants, and demonstrate a level of organisational capital. Relational capital is built on trust and a willingness to work together (Krishna, 2000). It is therefore important to evaluate the levels trust present in the LRWP to assess the impact of the collaborative process on the ability to build social capital and building and maintaining collective action.

Leach and Sabatier (2005) have pointed to trust and social capital as being two of the most important precursors to partnership success (pg. 233). They state that trust is represented by keeping promises and agreements, making fair decisions that account for others' welfare and offering and returning favours. Trust was both directly mentioned by the LRWP participants and implied through matching other concepts to ideas of trust represented in the literature. For example agreements and consensus are shown to be a significant indication and influence on levels of trust because they show that participants are willing to compromise and negotiate in good faith (Leach and Sabatier, 2005). Within the LRWP there were significant signs that agreements had been reached, particularly around the catchment plan and the aims and objectives. For example, two participants answered the question 'what do you believe are the most significant achievements of the pilot so far?' with answers referring to the achievement of completing a catchment plan that was "*something agreed" (LRWP13)* and "*agreed by all"*

(LRWP8). The perception of agreement as a marker of success shows that there is a level of trust within the LRWP that is contributing towards the ability to come to agreement. Rudeen *et al.,* (2012) found in a study of an Intermountain Public Land Cooperative in the USA, that a lack of consensus meant increased mistrust among the stakeholders, which affected their willingness to contribute to future collaborative efforts. As high levels of agreement appear to be apparent in the LRWP there is an indication that this may lead to an increased desire for the stakeholders to continue to contribute to the collaborative group.

Some participants mentioned that trust was something that they saw as being present within the LRWP:

"I think that relationships are very open and honest and I think that we can come to each other with serious and straightforward questions outside of the meeting and listen to each other in private and aren't afraid of airing concerns […] because we all sort of have that trust and that honesty." (LRWP12)

This comment highlights that the processes within the pilot are allowing open and honest relationships to develop that are based on listening and sharing concerns, which are both a result of and contribute to the building of trust. However, one participant highlighted that trust is also built up over a long time period through multiple projects and a consistency of working together:

"I also think it is about an established relationship. So the North East [branch of 'organisation name'] and the EA have worked together over a number of years on different projects, so it's that kind of build-up of trust and respect between the two organisations and respecting what their strengths and weaknesses are but also having a willingness to overcome [problems] if things don't quite work out the way they were going to […]. In Cumbria it's a different situation and they just don't do that long term, long standing relationship and it's different."(LRWP6)

This quote shows the value of the processes of relationship building within the LRWP and the potential foundations for long term trust and respect between the organisations involved. It is a further indication that the impact of the collaborative process is positive and has the potential to influence long term success.

In terms of the role of trust, Leach and Sabatier (2005) bring a key question to the fore: 'do trust and social capital lead to success or does success lead to social capital and trust?' (pg 235). The evidence from the LRWP suggests that it is a cyclical process in which both of the aforementioned statements are true and follow from each other. The comment above suggests that there was likely to be a level of trust (and therefore social capital) present in the LRWP because of the presence of established relationships due to a history of many of the organisations having worked together in some capacity previously. This may have allowed a certain level of trust to be present, which then might lead to some level of agreements, which would further encourage new people and organisations to trust others and thus produce a positive feedback.

6.4 The influence of a new way of working

Tangible impacts in the form of actions and activities and the intangible impacts in the form of relationship building demonstrate ways in which participants have recognised the importance and effect of the collaborative approach, but there has also been evidence of participants recognising the effect of collaboration through changing ways of working. Themes of decentralisation and devolution of power (Kemper *et al.,* 2007; Plummer and Armitage, 2013) have emerged from participants' opinions on decision making; their relationship with the EA; and their opinion on how the overall pilot process is influenced by wider political conditions. Each of these topics will be covered in this section in reference to changing attitudes to and practices of environmental management.

6.4.1 Decision making

One of the ways that the collaborative approach aimed to change working practice and stand out from previous environmental management processes was to "balance power" and the previous chapter demonstrated how this was done through the process of engagement of stakeholders and inclusion and valuation of knowledge and ideas. Power can also be balanced through decision making mechanisms (Plummer and Armitage, 2013). Through this research, aspects of decision making were explored in order to establish how that process affected participants and whether it was a positive mechanism in terms of balancing power within the collaborative group that might have significant knock on effects, or a contentious factor that negatively affected the process. A direct question was asked of LRWP participants during the interviews about how decisions were made within the groups in reference to the content of the catchment plan.

In response to the question a couple of participants mentioned that the decision making was a democratic process:

"Yeah it was a very democratic approach, when we were trying to come up with visions for the catchment plan and aims and projects, it was all discussed very openly within the development group. […] It was definitely a group effort. ….] I think one of the best things about the way that the Wear Pilot was run was that the development group had the say, it was a very discussed processes, everyone fed into it" (LRWP3)

"The process, like the workshops doing that action planning, brilliant, because it wasn't just anybody in the office going, 'well we'll have that bit and we'll have that bit, and we want that bit, and we'll have that bit', it was properly, I hesitate to say democratic, but along those lines, without taking democratic in vain. A good group that took account of the catchment area, the people in it, the comments, priorities: excellent." (LRWP5)

It has been noted that democratic processes are assumed to help bring about more sustainable action (Hajer and Kesslering, 1999). However, as Kenney (2000 pg. 48) claims 'democracy means many things to many people', therefore it is not clear what the participants are referring to in terms of democracy. Leach (2006) claim that there are 7 democratic ideals as part of the collaborative process including inclusiveness, representativeness, impartiality, transparency, deliberativeness, lawfulness, and empowerment (pg. 100). If the LRWP participants are claiming that they can recognise some of these qualities in the decision making process, then it is a significantly positive view of the way in which decisions were made.

As part of the democratic process a number of participants mentioned the importance of having a leader in order to finalise decisions. For example:

"when you have got so many organisations, it does need someone to say right this is what we are going to go with now, because otherwise it will just keep going round and round." (LRWP3)

Many other participants commented on the role of the catchment co-ordinator (CC) as leader during decision making. For example the CC produced ideas initially for deliberation, for example by "*com[ing] up with different visions and we would then go down them and choose which one we thought would represent the Wear the best" (LRWP3).* The CC would then be

responsible for collating ideas after discussions, for example "*some people came up with what they wanted to see happen and then [the CC] sort of distilled that I suppose into the catchment plan*" (LRWP4). These comments and the tone and context in which they were made indicated that most people were happy with the leadership role of the CC in decision making because it was balanced by a level of inclusion and deliberation.

There are indications that the influence of the leader of the LRWP has been positive in terms of representing the group's ideas in final decisions. In a study of multi-stakeholder partnerships in France, Belgium and the Netherlands, Varhallen (2007) state that multi-stakeholder partnerships are mid-way between one authority making decisions and every stakeholder having a say. One participant from the LRWP commented that it would be impossible to gain the "*opinion of every single organisation that's interested in the LRW area on every single aspect [of the decision making process]" (LRWP3),* therefore it is clear that there is a balance maintained in the LRWP between domination of one power and the devolution of decision making power to every stakeholder, which indicates that it shares some characteristics with the multi-stakeholder partnerships in Europe.

Although most participants seemed happy for the CC to make final decisions once deliberation had taken place, one participant mentioned an aspect of decision making that appeared to cause tension. Transparency is a key theme of democracy mentioned by Leach (2006) and refers to a process that governs itself through clear and public rules. The participant described a situation at the beginning of the collaborative process that was not conducive to the level of transparency required for successful democratic influence. The situation regarded decisions made by the CC outside of the consultation of the main development group about allocation of funding:

"when he then said in a meeting that he was going to put £4000 into this [project] […] some people felt very uncomfortable that they thought […] 'we didn't have a say in this'. And I think that was because I don't think it was clear at that point what were the roles of the development group and what was their role versus [the CC's] role as running it and whether they should have a say in everything and what was down for then [the CC] to decide or not." (LRWP1)

Bradbury *et al.* (2003) find in a study of Department of Environment environmental management programs that in order for stakeholders to be able to see the impartiality of the collaborative effort, rules about decision making, participation and discussion should be clear from the beginning. In the case of the above comment the participant identifies that the problems arose because the rules were not made clear at the beginning. Margerum (1999)

state the importance of establishing a communication structure at the outset of collaborative processes. Consequently, it can be argued that it was the lack of clarity that caused a misunderstanding in the case of the LRWP. This is reiterated by another participant:

"I guess one of the criticisms I would make is defining what the role of the development group was very clearly, and just more transparency I think and that would be a lesson to learn I think. I personally joined this group thinking that we would act as an overarching group to steer the project, but actually that wasn't what it was about. So when I sit on the development group of other projects, I would be looking at resourcing, budget, time management, all that kind of stuff. That really wasn't what this group was about, this group was about supporting the EA and that wasn't very clear and that led to some quite difficult situations." (LRWP6)

The theme of transparency is picked up again in this comment and highlights that making the rules and function of a collaborative group clear is needed in order for the group to be perceived as successful. This therefore relates to ideas of power balancing and the disempowering aspect of being excluded. The absence of rules also relates to the absence of organisational capital, which is a key part of social capital (Westermann *et al.,* 2005), and there is therefore an indication that there was a low level of social capital at this point in the LRWP. However, there was evidence that the problem had been addressed after the event and that rules had been more clearly defined, thus creating a situation in which organisational capital was higher and there was an increase in the transparency and level of democracy and therefore social capital and the benefits of possessing that capital within the group were present. For example:

"*I think [the DG group] were ok with it when it was then explained to them that [the CC] actually said that I will be taking decisions outside of the development group as well as what the development group decides." (LRWP1)*

This clear allocation of responsibility and role of the CC may have acted to dispel some concerns, however it still led to the recommendation for future projects to be clearer in defining decision making boundaries. The effect therefore of the decision making process in the LRWP has been to create a democratic process in which both the chance to deliberate and contribute in an equal forum, and the presence of a strong, transparent and fair leader are equally valued.

6.4.2 Relationship with the EA

In light of the above comment from a participant in terms of the role of the development group as "*supporting the EA" (LRWP6),* it is interesting to analyse how the participants view the EA, again in terms of balancing power. As a lead organisation and a government body, the EA are in a position of power, however the agenda for the pilot projects was that it should be a joint management project. The way in which the participants perceive the role of the EA is therefore an important reflection on the extent to which the LRWP is working effectively as a collaborative project. A specific question was asked during the interview process about how the participants now view the EA and whether there has been a change in opinion since the project began.

Within the past decade there has been some criticism of the EA's approach to participatory projects, for example Bell and Gray (2002) report that the EA has been viewed as dealing with stakeholders in a tokenistic and defensive manor, and there was significant criticism of the EA in terms of its general working patterns in 2000 by House of Commons Select Committee on Environment, Transport and Regional Affairs (SCETRA) (Bell and Gray, 2002). There is now a desire of the current Coalition government to devolve power away from central government and onto organisations and local authorities: from 'big government' to 'big society' (Department for Communities and Local Government, 2010), thus allowing for those who traditionally have little say, to play a much more significant role and allowing a sense of ownership to become prevalent. Ideals of the 'big society' have been specifically mentioned by the EA in the way in which the catchment based approach is delivered (Environment Agency, 2011a). Participants in the LRWP did highlight that there was a difference in the way that the EA were relating to organisations as part of the catchment approach, therefore indicating that there is evidence of a change to a more decentralised 'big society' approach:

"the organisations that were working on the Wear pilot were obviously seen as a priority [by the EA]. […] The LRWP was a great way of improving that relationship, because they did really show more of a desire to work as a partnership with organisations, whereas I think before the catchment approach was introduced I think the EA were very much scared of giving too much to other organisations in case they used it for something that they didn't say they were going to use it for, so it's definitely improved those relationships" (LRWP3)

This comment demonstrates there may have been a distinct change in working within the EA in terms of this project, and evidence of the catchment based approach has influenced the participants' opinion of the EA. The comment suggests that there may be an improved level of trust between the EA and stakeholders, which acts to dispel the image of the EA as a closed

authority and opens up the project to stakeholders as equals, rather than considered under the title of consumer or 'customers' wanting to use the EA's services. The increased level of trust based in the changing ways of working is likely to indicate higher levels of relational and therefore social capital through a process of learning to improve interactions, which, as has been shown in the previous sections, is an important impact of the collaborative approach.

Many of the participants commented on the way that the LRWP had allowed the EA to be seen in a positive light and for previously negative aspects of bureaucracy and regulation to be overcome:

"Good introduction or continuing relationship with the EA and I think it showed a friendlier aspect of the EA rather than just an Agency that tells you what you can't do […] it's a different view point, oh they are trying to do things, it's more positive" (LRWP5)

"it's put a bit of a human face to the EA, which sometimes, I don't know what people's contact with us will have been, it might have been through regulatory angle or something along those lines, so hopefully this has been for engaging the people practically on this issue" (LRWP11)

"Previously, the agricultural side, I did a lot of work with DEFRA directly, and the EA is part of the DEFRA family, but DEFRA are a lot more rigid and a lot more bureaucratic. I find the EA comparatively open, effectively, which is a positive sign." (LRWP8)

The positivity with which the influence of the EA was perceived is a significant indication that the collaborative approach taken in LRWP represents a change in attitude and practice compared to previous efforts. It is an indication that by approaching the management of environmental issues through ideas of devolution of power and decentralisation, the approach of the lead organisation can have positive effects on the attitude and commitment of stakeholders within a collaborative group.

Although there is not enough evidence in a study such as this to assess the full extent to which devolution and decentralisation are apparent as an overall change in environmental governance, from the responses from the EA participants in the LRWP there is an indication that it is a goal that is widely accepted.

The EA participants also often described the importance of ownership of problems being given over to the stakeholders as well as their desire for the development group in particular to begin to devise, plan and implement projects to improve water quality on their own without as much influence from the EA and without *"having their hands held" (LRWP12),* which indicates that they believe this is what has been happening in the LRWP so far. Such comments could be

criticised for their inability to shake off an authoritarian rhetoric (hand holding relates strongly to a parent guiding a child), but the reality appears to be that the EA is still an authority and is recognised as such by the participants and is recognised as appropriate in certain situations. For example one LRWP interviewee mentioned that "*the EA were taking a strong lead on things and they are the right and proper body to go out and say this is what we have got in terms of our measurements, because they are the experts in that area, you wouldn't expect anyone else to do that" (LRWP9).* However the responses in this study show that when it is appropriate for the authority to be reduced and for other people to step in with a level of their own authority, for example in terms of democratic decision making, the EA in this case is willing and able to do that.

The significant indication that the collaborative approach has impacted upon participants in terms of devolving power is that there has been a progressive hand-over of leadership power from the EA CC leading the group, to a director of an environmental NGO, the Wear Rivers Trust (WRT) taking on joint responsibility. Participants from the EA and from the WRT mentioned during interviews that this was something that they were very keen to do and that they were hoping for very positive results in the future. The gradual transition of leadership to an NGO shows the desire and practice of devolution and the significant impact that has on localising the effort to improve the LRW area. It also resonates with ideas of a governance system in which diverse contributions are desired and sought (Pahl-Wostl *et al.,* 2007).

The LRWP participants also highlighted that in addition to an openness of the EA to move away from traditional management, the additional input from stakeholders acts to build an even stronger approach:

"I'm sure the EA would say the same themselves, they are very institutionalised and I think there are lots of really fantastic amazing people for the EA that are trying to change that, but I think their systems, they are set up in a particular way to do a particular thing and are very process driven, they are not particularly good at the kind of creativity, looking out of the box, looking at the wider picture and I think that's where the development group as a whole supported them" (LRWP6)

The increased equality of the relationships has therefore allowed for a creativity and wider perspective to become part of the approach and is seen as a positive influence. In particular the approach that has developed between the EA and stakeholders has been mentioned by participants as particularly strong in the LRWP. For example: *"Certainly talking to other [organisations] in the region, who haven't been involved in an EA led pilot, they are a bit more disgruntled with the EA than I currently am" (LRWP8)*. The uniqueness of the approach in the

LRWP suggests that the change in attitude to environmental management might not be as widespread as advocated by the national scale of the catchment pilots and that the evidence of the positive impact of the EA in the LRWP might indicate that the success of the approach in this particular case is due to particular circumstances and particular individuals coming together.

6.5 Participants' evaluation

Further evidence for the validity of a collaborative approach is the overall impressions formed by the participants. A number of participants made comments about their personal experiences of the pilot, which indicate an overall positive outlook:

"*I would say it's been a very enjoyable experience and that, whilst sometimes I seem to be putting a huge amount of effort into it and time to it, I think it's been quite worthwhile. […] I think I have got a lot out of it personally but also in terms of foundations for future work" (LRWP1)*

"I enjoyed being part of the process, it was a good group to work on and, you know, I genuinely do think it will make a difference on the ground" (LRWP6)

Both comments show that there were aspects of enjoyment in the LRWP process, which appear to have balanced out the seemingly negative aspects of a large time and effort commitment. This relates to Mostert *et al.* (2007)'s concept of involvement, which becomes positive when the participant perceives that the benefits outweigh the costs of participating. There is therefore a positivity about the impact of the collaborative project so far, and the level of enjoyment may mean that these participants are likely to continue to commit to the project and therefore carry that enthusiasm into the implementation stage and add to the longevity and eventual impact of the project.

Further to this, another participant commented on the process as a whole, highlighting the positivity and the ability of a similar approach to be rolled out across the UK:

"Fantastic project, I hope they get the plan[ned] actions, I hope it's all singing, all dancing. I hope it extends into the national sphere, I think it's an excellent way to run a project […] to get the priorities of everybody concerned give them a good stir and come out with a plan that is going to be the best match to fit what everybody wants. So good pilot, good projects, hopefully leading on to the action plan being taken forward and rolling out nationally. I don't know how it's worked in other areas I felt this one worked supremely well." (LRWP5)

This positive overall evaluation, again, suggests that the approach has made an impression that instils confidence in the participant that the approach could, or at least should, be influential and long living and therefore effective in improving environmental and societal conditions.

6.6 Summary

- Both tangible and intangible impacts of the LRWP process were explored with regard to participants' comments. A variety of impacts were revealed including directly funded projects; new project focuses; added value to established projects; direct organisational benefits; and starting points for potential future activities. Through these, a variety of wider impacts followed referring to the importance of community involvement, integration of the LRWP into day to day practices and projects, and the resource base created through the ability to know and understand the work of others in the LRWP.

- The catchment plan was found to have been a key output of the collaborative process and was seen as the culmination of the project. Participants' comments reflected values of adaptive management through the valuation of need for flexibility and fluidity in the future use of and referral to the details within the plan, in order to ensure that both changing social and environmental systems were accounted for.
- Intangible impacts were also explored, and referred to sources and creation of social capital in the form of organisational and relational capital, built through a process of social learning. The reasons given for involvement in the pilot revealed the importance of the approach as a learning process as well as indicating that a mature level of social capital creation was likely to have been reached in some areas of the process.
- Strong relationships were shown to be an important impact of the collaborative approach and the role of informal interactions was seen to play a key role in creating space for the building of relational capital based in shared norms and values.
- Evidence for a new way of working revealed themes of decentralisation and devolution of power away from the central EA. Labelling decision making as democratic within the LRWP indicated that the participants believed there was a level of inclusiveness and deliberativeness within the process. A lack of transparency had been caused by ambiguity of roles and rules within decision making processes near the beginning of the process, but was solved through better communication of rules.
- Relations with the EA were seen to change in the LRWP compared to previous interactions and the participants felt there was an openness and a willingness of the

EA to take support from the other organisations, demonstrating a move towards a 'big society' approach.

- Overall impressions from the LRWP participants were distinctly positive and reflected an enjoyment in the process alongside a uniqueness that represents the positivity of the LRWP approach against those taken in other pilot projects.
- The impacts of the collaborative approach taken within the LRWP revealed many and varied influences. The distinct characteristics meant that a strategic approach could be implemented with far reaching impacts on both the environment and local social and organisational systems, thus demonstrating the importance and value of this particular collaborative approach.

Chapter 7

Challenges of the collaborative approach

7.1 Introduction

Although there appears to have been a general positivity surrounding the LRWP process so far, there are also aspects that the participants were unsure about or that were mentioned that could have been improved. Many of the traditional challenges of collaborative working appear to have been overcome in the LRWP and it appears to carry the characteristics of a successful approach. The challenges explored in this chapter refer to those that have emerged from participants' comments and reflect concern around issues within the LRWP process such as longevity of impact, challenges of engagement and framing the problem.

7.2 Longevity and 'the collaborative difference'

A vital part of a more localised and integrated environmental management is sustainability. Although the definition of 'sustainability' is ambiguous, it can be roughly associated with systems that are self-sustaining, beneficial and accepted through processes of engagement, knowledge sharing and ultimately integration into wider governance practices (O'Riordan, 2004). Sustainability has long been part of catchment management and more so with the current focus on localising environmental improvement actions. The key questions with regard to the LRWP are therefore, do participants believe that they and their organisation will be involved in future efforts, and crucially, how influential do participants believe the collaborative efforts will be in the future. Both questions were asked directly in the interviews with LRWP participants.

In the LRWP all 13 interviewees expressed some desire for themselves or members of their organisations (if they themselves had left) to be involved in the future of the pilot. In a study of an inactive collaborative group, Rudeen *et al.* (2012) demonstrate that the value of assessing the desire for stakeholders to continue to take part in collaborative efforts is a reflection on the quality of the collaborative processes and the longevity and ultimately sustainability of a project.. The commitment of the LRWP participants in itself is a positive sign (Wright and Fritsch, 2011) and indicates that the LRWP has an immediate future. However, many participants expressed concern about the longer term impacts of the process. For example, when talking about the future of the LRWP and the level to which they were willing to invest in the project in the future, a couple of participants highlighted the importance of the ability of the effort to make a difference:

"*the proof of the pudding is going to be what happens next, will it make a difference?" (LRWP5)*

"It's a question of how far that goes so […] what are the policies that come out of it to make a difference?"(LRWP13)

These comments indicate that the participants are perhaps unsure if there would be the expected 'collaborative difference', a factor encompassing the benefits of collaboration. Firstly, participants were concerned about the impact that the actions and policies, which were decided through the collaborative process and represented within the catchment plan, would have within the local environment. One participant highlights that "*it's very early to say what the long term sustainability of some of these proposals will be" (LRWP10).* This indicates that the participants were aware that there would be no indication of success of the proposals at this stage and therefore the reasons for their commitment seem to have been based in a 'hope' that there would be a positive effect.

Another participant picked up on how to tackle the problem of assessing the proposals through a need to provide "*on-going monitoring*" because it "*is a key part of the plan to make sure that where actions are taken the effectiveness of them is monitored and if that's not working you have to have the group together [to say] 'what else can we do?'*" (LRWP9). This comment relates directly to core ideas of adaptive management, which is defined as an experimental view on policy, where the results of one effort inform improvements to the next (Holling, 1978; Walters, 1986). Despite the uncertainty around the impact of the proposals, the participant is confident that there will be a role for the collaborative group, as a source of collective ideas with an implementation power, in maintaining the adaptability of the effort and therefore the sustainability. They see the collaborative context as being the strength of the approach and future uncertainty the challenge.

Secondly, others were concerned about the collaborative context itself:

"I think they have got to maintain this integration of knowledge and practice […] I don't know how they maintain that transfer of knowledge and that flow of information […].But whether in time it comes back down to it being the EA and the WRT and occasional input from GWNE, […] because that's who's now turning up to the implementation phase of it. So whether that's better than they were before they started I don't know. […] But it does seem that they seem better coordinated than they would have done before the start of the Wear Pilot." (LRWP1)

"The pilot has gained quite a high profile both within the Environment Agency and within DEFRA and I think there is a lot of interest in the way, specifically this pilot, has been run and this kind of focus on this sort of more participative and collaborative way of working. It remains to be seen whether that's something that the government takes forward and it's probably outside the comfort zone of a lot of people within the EA because […] it's a huge organisation so inevitably it's very self-focused in lots of ways, so I think the jury's out […]. I hope it does, […] because I think there has been some really good work done in lots of ways, but time will tell." (LRWP2)

Both of these comments highlight that the participants believe that there have been positive outcomes so far from the pilot in terms of increased co-ordination and good work, however both participants doubt, or are unsure, if the momentum can be maintained beyond the pilot phase. The reasons given include a lack of personal experience of the group about how to maintain levels of engagement and therefore knowledge transfer, and an inability of the EA to change its ways of working at the national level (the level at which policy decisions are made). Both concerns may be a result of the opinions being stated at the early stages of the project. This means that the distinct change in behaviour that is understood to be required for the continuation of the collaborative effort may not be apparent yet, as the learning process is on-going. Such comments also highlight the importance of the learning of new behaviours of engagement and knowledge transfer in the early stages of collaborative efforts in order to maintain momentum into later phases.

The problems of political decision making enforce ideas discussed earlier in this research about transfer of power. Although within the LRWP process itself it appears that there are strong patterns of transfer of power through democratic decision making, policy-orientated decision making, as opposed to action-orientated, is still very much centralised. Such findings echo those of Benson *et al.* (2013b) who show that despite much more emphasis on collaboration through the WFD (which plays a large part in the LRWP process), there is still a centralisation of decisions back through national and international scale governance, through agencies like the EA.

Since the time of the interviews in this research, there has been progress on the impact of the pilot schemes nationally and DEFRA has produced a document detailing how the collaborative catchment based approach will be implemented across the UK, taking into account lessons learned from the pilot projects such as the LRWP (DEFRA, 2013). This will perhaps address the concerns of LRWP participants and show that there is some influence of the small scale practices on larger scale decisions, however as a reflection on the collaborative process, the

uncertainty of the power of the group to influence wider policy in the face of a centralised large-scale-policy decision making is a significant challenge.

7.3 Stakeholder engagement

Through examining evidence of a collaborative approach, this research has already established that the LRWP was inclusive and that the balance of organisations present was generally thought to be good, however participants were also asked about the factors that might have stopped more people getting involved, which reveal some of the limitations on enacting a more successful collaborative process.

<table>
<tr><th>1) Limitations on engaging organisations</th><th>2) Limitations on getting interested communities and wider groups more involved</th><th>3) Limitations on getting unengaged public and groups involved</th></tr>
<tr><td>Timescales are too short for organisations to prepare resources and staff to contribute</td><td colspan="2">Its along process and takes time for a level of trust to build up and in a one year pilot there may not be sufficient time</td></tr>
<tr><td colspan="2">Too many uncertainties - difficulty in not knowing exactly were the projects will end up or see how it will fit in with other legislation or priorities or how much time commitment will be needed</td><td>You don’t want to waste their time if they are not interested, there is a lot of time involved</td></tr>
<tr><td colspan="3">Some organisations or community groups may feel uncertain due to the statutory aspect of the EA and it’s reputation as an enforcer – creating a them and us attitude</td></tr>
<tr><td>Unable to put in the time due to other larger priorities such as meeting their own agendas with regard to funding or governing bodies</td><td colspan="2">There is no clear way in to engaging the community groups and would have to involve incredibly labour intensive processes whereas engaging the organisations is much easier</td></tr>
<tr><td>Reward was not as great as the time or resource commitment needed</td><td colspan="2">Wider groups don’t have in depth knowledge about certain aspects, particularly technical details, and to engage them efforts would have to involve very well prepared and explained aspects</td></tr>
<tr><td>If it is a large organisation it might not be clear from the outset which specific person would be best to get involved</td><td>Groups that might get involved are likely to have a very specific agenda that might bias or complicate decision making and create a slower process</td><td>People will usually only become engaged when there is a specific , usually politicised, agenda or issue</td></tr>
<tr><td>The target area doesn’t fall directly within an organisation’s jurisdiction or they may only be involved in small pockets</td><td colspan="2">Incredibly tricky to manage the needs of all the people who might be affected within one forum , it would be impossible to square all the interests</td></tr>
<tr><td>Felt they couldn’t achieve their intended outcome such as a specific agenda on a watercourse or specific amount of funding due to lack of support</td><td></td><td>People don’t generally care about the chemical quality of the water they just care about aesthetics – therefore involving the public would involve changing the framing of the problem</td></tr>
</table>

Table 7.1 Limitations on organisation and community engagement based on comments from LRWP participants.

Table 7.1 lists the general difficulties mentioned by some of the LRWP participants when asked directly about what might limit people from becoming more involved. Some answers were hypothetical and others referred to their own limitations or those of organisations and people that they knew about.

7.3.1 Stakeholder capacity

Firstly, one of the key aspects that came out of the comments about limitations on organisations getting more involved (Table 7.1) was the degree to which funding controlled the ability of individuals to fully commit to being more involved in the pilot. For example, participants were very aware that they had their own agendas to fulfil, driven by the funding they received, which would control the amount of professional time they could afford to spend attending meetings:

"Again it's the time and where you have to focus, because obviously I am funded through the [funding body], so I have to meet my project outcomes, which have changed, but you are pulled from what you would like to do , you have to aim at certain things...tick boxes." (LRWP5)

This comment reveals that there are pressures on some professional stakeholders to meet internal organisational goals that are pulling them away from giving a stronger commitment to the LRWP. The pressure of organisational goals is a factor mentioned by Clark (2002) as affecting river managers in general.

Another factor that was mentioned was the geographical area that the LRW catchment covered and the difficulty in organisations justifying time spent on the project when their operational area was much bigger than or only slightly overlapping with the LRW area:

"*Well it's how much time you have got to put in. If you are going to have some of the paid staff going, then it is a big commitment for a limited area, if you are covering the whole of the NE, how much time are you going to spend on the Wear, you are more likely to go to a meeting if it is covering a bigger area.*" *(LRWP13)*

"I mean a lot of the Lower Wear, […] if you look at it, it's in Sunderland anyway so it wouldn't fall within my jurisdiction" (LRWP7)

Such comments relate to the level of integration of administrative systems, an aspect that is expected when an environmental scale is used as the boundary for management. In a study of the implementation of the WFD in Germany, Meyers and Thiel (2011), in line with Louka (2008) find that if a management procedure is to be adopted there needs to be a degree of 'fit'

between the new management and the established institutional structure. The challenge comes in engaging organisations if they believe that there is little 'fit' between their operational area and the issues and new management procedures proposed by groups such as the LRWP.

In a study of catchment management across Britain, Marshall *et al.* (2010) cite that 'willingness and capacity of stakeholders' is an external factor to the success of the collaborative process and may impact positively or negatively. Equally, Shusler *et al.* (2003) find, in a study of co-management in New York's Eastern Lake Ontario Basin, capacity of stakeholders was found to be a vital additional factor to collaborative natural resource management alongside processes of social learning. There appears to be few suggestions for solutions to problems of the influence of outside agendas and the mismatch of scales on participation of stakeholders. However, so far, despite some areas of concern, the LRWP appears to have coped with the challenge of restricted stakeholder capacity by recognising that it may be a circumstance outside of the control of the group and adapted the style of collaboration in order to accommodate the situation through the tiered system of inclusion. For example, those stakeholders who are not overly constrained by organisational or geographical demands and therefore have a higher capacity, have been given the option to be part of the development group, which represents a more time and resource intensive collaborative effort. Whereas those who have multiple priorities and thus limits on their working time could still take part in the project, but with a less intensive time and resource commitment, by attending stakeholder workshops. Such an adaption acknowledged the challenge of variable capacity of stakeholders and accommodated that.

7.4 Reframing the problem

It is widely recognised that environmental problems are in some way socially constructed (Hannigan, 2006) through processes of interaction of social actors, different types of knowledge and power relations (Irwin, 2001 pg. 171). Each actor may look at a problem in a different way (Bouwen *et al.,* 1999) and may use different values, language and perspectives to think about and describe particular aspects (Craps *et al.,* 2003) and this may also change throughout the process. The challenge to collaborative processes is when there are competing frames of reference between actors.

In the LRWP it was clear that there were many different frames that fluctuated between actors and over time as interactions of knowledge and power took place. The participants were asked during the interviews whether they believed that the participants shared the same priorities for the catchment, which can be argued to reflect ideas around frames and reframing.

Eight of the participants mentioned in similar ways that they believed most of the participants "*had very different priorities and perspectives*" (LRWP6), which indicates that the LRWP represented a concentration of many different frames. Although most participants could not recall that there had ever been any arguments within the groups it was stated that when it came to smaller issues there were differences in frame. Lewicki *et al.,* (2003) describe such issues as gain and risk frames, in which different actors perceive the level of risk in, or the gains of, particular actions differently, or characterisation frames, in which positive or negative views of others are differentiated and often based in stereotypes. The following comments suggest divergence in frames between participants:

"*particularly around recreation users and anglers, those two aspirations don't fit very well" (LRWP11)*

"some hate each other like the anglers and canoeists, the river trusts are kind of neutral within that" (LRWP8)

"For example the WRT, their trustees tend to have, not solely, but tend to have quite an angling point of view, one of their main agendas were fish passes […], whereas with the Wildlife Trust we have a much more holistic approach of all wildlife, yes we'll think about fish, but if it's bad for water voles, no we'll think about the water vole and so on." (LRWP3)

These comments demonstrate that there was an acknowledgement of the differences in the frames that each of the participants brought to the group, and even an indication of significant tension between some of the groups. None of the angling or canoeist groups came forward to be interviewed so it is not clear how grounded the strength of the juxtaposition of their frames actually was, but judging from the dismissal of any occurrence of arguments, it may not have affected progress greatly. Doppelt (2000) describes that it is important to integrate opposing frames in order to move towards diagnosis and problem solving. The lack of argument therefore may be testament to the conflict management ability of the group in integrating the two frames, often referred to as reframing: connecting different frames (Putnam and Holmer, 1992), without outwardly aggravating either party.

Furthermore many of the participants suggested that when it came to 'whole story frames' (that summarise the value given to the whole situation (Liswicki *et al.,* 2002)), many were broadly similar:

"they were each kind of coming at it from their own interest but […] the underlying benefit that everyone wanted was to try and improve the water quality" (LRWP11)

"I think broadly people have signed up wanting good quality rivers running through that are healthy and have wildlife value" (LRWP6)

The second comment is in reference to the overall mission statement that the LRWP as a whole produced, and shows the ability of the collaborative approach to facilitate reframing, in order to allow people to pull together collectively. One participant described that their *"values have aligned" (LRWP2)* with other participants whilst being involved in the LRWP process, suggesting that the process itself has had an effect on the integration of frames and the creation of new and collective frames.

Another particular challenge that the LRWP has identified is through recognition that in order to both communicate ideas created in the pilot out to wider river users and to get information and suggestions from wider audiences, additional reframing of the smaller intricacies in the project is required. For example one participant comments that "*your average dog walker doesn't give a toss about phosphates and nitrates and benzo-whatever there is in the water, they just care that there's a shopping trolley in there and who's responsible for it." (LRWP).*The comment shows that there is a recognised difference in frames of the wider audience and some of the LRWP participants, constituting ecological value versus aesthetic value, which many of the participants understand. There are aspirations for the reframing of the problem to be facilitated through a website in which wider users can upload photos of the river and thus the LRWP can begin to integrate the aesthetic framing of the problem with the ecological and technical framing.

The challenge therefore of framing and reframing is to be able to accommodate multiple frames at multiple levels of the collaborative process. The LRWP recognises the need for different frames at different times for different purposes, as well as the need to integrate frames in order that participants feel as though they are aligned and are working in partnership towards shared goals.

7.5 Summary

- By examining the challenges of the collaborative approach through exploring concerns of the LRWP participants, the nature of the collaborative process has been revealed alongside the degree to which the LRWP process has been able to overcome challenges.
- Most LRWP participants mentioned that they were planning on taking part in the pilot in the future, which reflected positively on the short term continuation of the project. However, the sustainability of the project was seen to be uncertain as many

participants were unsure as to whether the project actions would make a difference on the ground.

- Restrictions on the sustainability of the collaborative group itself were raised in relation to concerns over the ability to maintain the engagement of multiple actors and a possible lack of motivation from the EA to continue to support the project was perceived by some participants.
- Stakeholder engagement was also seen as a challenge and many participants acknowledged that there were multiple limitations on; 1) engaging interested organisations, 2) getting interested communities and wider groups more involved and 3) getting unengaged public and groups involved. Contextual factors were seen to be taken into account through the tiered system of involvement, through the more intensive development group and the less intensive stakeholder workshops, giving participants the choice and thus integrating the collaborative approach more closely with the local context.
- Wider involvement of public and communities was seen to be a challenge, and was represented by a conception that wider involvement would have led to ambiguity and slowed the decision making process.
- To overcome such challenges the LRWP process was seen to accommodate the context in which it had been placed by focussing on creating strong professional relationships at a level that was well understood, creating a strong foundation by which more unfamiliar patterns of collaboration could be supported.
- By adapting to deal with the heterogeneity of the situation the LRWP has accepted that there will be challenges, but that they can be overcome through matching processes to current practice and understanding stakeholders' capacity.

Chapter 8

Factors contributing to 'successful' collaborative systems in the Lower River Wear Pilot

8.1 Introduction

So far, this thesis has shown that there may be evidence for features of a collaborative process within the LRWP. This section will explore possible mechanisms and effects of factors such as leadership and policy interpretation and the creation of a social institution, influenced by the individuals involved, as well as by contextual factors. The analysis will enable a better understanding of the collaborative approach and give an indication of the conditions under which it can create a positive influence.

8.2 Leadership and the role of the intermediary

8.2.1 Environmental champions

In contexts of complexity and uncertainty in environmental management there is an increased need for strong leadership to create successful projects (Conger, 1993; Jiggins and Roling, 2004). Leadership is seen by Taylor *et al.* (2012 pg. 84) as 'a process of influence that occurs between leaders and their followers and involves establishing direction (a shared vision), aligning resources, generating motivation and providing inspiration (Kotter, 1998; Rost, 1993). The participants in the LRWP have acknowledged the importance of leadership and have recognised the role that the CC played. Although the CC in the LRWP took on a leadership role as part of his job description (formal leadership (Horwell and Higgins, 1990)) it is likely that experiential knowledge and personality also affected the style and focus of leadership taken in the LRWP. Such individuals are often referred to as 'environmental champions' (Andersson and Bateman, 2000; Taylor, 2009), derivative of individuals that effect changes in their organisation or sector (Taylor *et al.,* 2012) and often play a significant role in group based processes of leadership (Brouwer *et al.,* 2009). This section will explore the idea of environmental champions and the role the LRWP CC may have played in contributing to the overall positivity of the collaborative approach.

Taylor (2008) defines 10 factors that are likely to contribute to effective champions and therefore successful outcomes like adoption of policies and changed practices. The first factor is personal characteristics, including personality, values, and knowledge. Some participants in the LRWP commented on the characteristics of the CC and reflect that he had traits that influenced the process in a positive way. The 'style of facilitation' was discussed and comments about the CC surfaced naturally throughout each of the conversations:

"*I always felt like I could phone [the CC] up anyway […] and chat with him if there was anything else that came up or about any queries."* (LRWP5)

"[the CC] is a very good people person and he can adapt his style for different personalities, so I think he has been at the centre of catalysing the [project]" (LRWP2)

These comments suggest that there was an openness about the CC's character that meant he was approachable to participants by encouraging contact outside of meetings and relating to each participant personably. By referring to the CC as being at the centre of catalysing the LRWP project, the above participant is suggesting the importance of the CC's role and confirming that it is likely to be a universal criterion for successful collective environmental management.

Knowledge about the issues in hand and about the industry in general are also seen as important characteristics in contributing to success and are often built on previous experience in the industry and propensities to seek new experiences and learn from them (Taylor, 2008). Participants in the LRWP referred indirectly to the knowledge that the CC had and the way in which he applied it throughout the process:

"*he had a very good understanding […] of different institutional knowledge I think*" *(LRWP1)*

"*My background is not in water quality so you know, when [the CC] is merrily talking about high flows and low flows and various water quality terms, I don't have a background in that [but he does have that knowledge]" (LRWP2)*

Possessing knowledge about the problems and issues in the area; the mechanisms and processes involved in the issue; and acknowledging the value of other forms of knowledge held by partner organisations are clearly important aspects (Margerum, 1999). The tone of the participants' comments suggest that they respect the CC for possessing these types of knowledge. There is no reference to expertise, and therefore power (Eden *et al.* 2006), which suggests that they do not believe that the holding of such knowledge gives the CC a more superior position, although it is acknowledged as a leadership position. For example LRWP2, after the above comment, goes on to say that the CC having different knowledge to themselves is "*good because I'm coming at it with a fresh pair of eyes, maybe asking the obvious but sometimes searching questions" (LRWP2).* The participant is suggesting that the type of knowledge held by individuals at a certain point in time does not denote value of the participant but influences the type of role that each person takes in the group. The possession of knowledge in an environmental champion, such as specialist in-field knowledge shown by the CC in the LRWP, is therefore important in defining their role as an informer and facilitator of investigation of deeper issues.

Taylor (2008) describe that the characteristics of an environmental champion are seen to be the foundation of the outcomes, and behaviours, such as motivation and leadership style, and play an important role in building up the ability to effect change. Behaviours of the CC in the LRWP were referred to by a couple of participants:

"I've always been impressed actually and I think that [the CC] is very good at getting the best out of people […], to give their views, sort of negotiate them to get the right kind of groups together, but also working out where what people do anyway comes together to fit into the LRWP. But also giving them some responsibility as well, so he has that sort of supportive role, but also getting them to contribute and getting them to take responsibility" (LRWP1)

"I think that [the CC] has a lot of skill in being very engaging, even in a big group, it feels like he knows the different individuals, he listens to them and draws them out" (LRWP12)

Such comments demonstrate that the CC possesses skills in facilitation that succeed in gathering views and opinions. This represents good inclusive practice, which, as has been shown previously in this research, is one of the distinct ways that collaboration happens. The personal characteristics and skills in interaction possessed by the CC, alongside good institutional knowledge, combined with supportive facilitation may have been factors contributing to the integration of ideas and practices within the collaborative group, which then led to the creation of new ideas and collective responsibility.

The CC demonstrates personal power through building and maintaining strategically developed social networks, such as those built with participants at the beginning of the process. It is also clear from meeting minutes that the CC knew and could access wide and varied networks of colleagues in and outside of the EA with access to data or information that he then used to help the project. Additionally, one of the LRWP participants mentioned the role of the CC in setting up meetings, outside of the main group meetings with new organisations or groups, in order to understand their position, encourage them to become involved and tap into their information, opinions and data, thus expanding his and the collaborative group's existing networks. Such evidence demonstrates that the CC had power in the form of access to the contacts, skills, expertise, capacity, ideas and resources of a range of groups. This behaviour is very similar to that of the leadership role detailed by Bracken and Oughton (2013) in a study of a freshwater pearl mussel conservation project in the North York Moors. The emergent leader of the project acted to build 'strategic network relationships' (pg. 13) that brought key actors with power and resources together. This is described as an intermediary role, which can also be argued to be a vital characteristic of leaders in

environmental management and represents the bridging mechanism between policy and practice.

Finally, one LRWP participant's comment reflects that the leadership in the LRWP was effective overall and implies that it may have been influenced by the emphasis on equality of power in the collaborative approach:

"[the CC has] an effective leadership role, soft leadership is you like, he's been an effective facilitator and has nudged the group along in an appropriate direction" (LRWP8)

This comment suggests that the leadership style has reflected that change to a more open and equal power balance, by allowing the leader to be an encourager and facilitator rather than a more dominant power driven by strict rules and regulations. The lack of dominance or bias is something that is picked up on by Cook *et al.* (2012) when, in a study of catchment management groups in England and Wales, they emphasise the value of an 'independent honest broker' (pg. 54) in building trust. In this case, brokering refers to the ability of individuals or groups to develop relationships across different interest groups. Therefore, the participant here is suggesting that there was importance in the lack of bias and lack of overt EA influence in building trusting relationships. Moreover, a 'soft' approach allows for equal relationships to be built and a sense of collective effort and ownership to be created between all participants and importantly is an approach that is praised and accepted by other participants. It is clear, therefore, that the abilities and personality of the leader in a collaborative environmental management approach is a vital to the 'success' of the approach.

8.2.2 Collective intermediary roles

Lipsky (1980) suggests that the people who act out policy have power to change the shape of the policy through their actions and interpretations. These individuals are labelled as intermediaries. The intermediary role of the CC has been mentioned as an important part of his role as leader, referring to his ability to take the presentation of different knowledges and evidence within the collaborative groups and undertake strategic vision and political manoeuvring in order to enact change and action in the catchment (Bracken and Oughton, 2013). We have seen, through an analysis of decision making, that the CC did take strategic decisions on how the pilot would progress, particularly taking initiative to apply for certain funding and push the pilot forward institutionally within the EA and DEFRA context. This shows that the CC acted to bridge the gap between evidence and action and played a key role in practicing the policy of collaborative catchment management, thus contributing to the positivity of the LRWP. Intermediation is not restricted to individuals in leadership positions but can also apply to organisations and groups of organisations (Moss, 2009).

Firstly, from interview data it is clear that some participants recognised their own intermediary role:

"I guess I felt personally that my role was kind of to bridge that gap between realism about communities and people and what helps on the ground, [and] what can sometimes be quite a removed approach from the Environment Agency." (LRWP6)

Bridging gaps between differing interests is a key characteristic of an intermediary and by acknowledging that that is their role, this participant is confirming their active part in the processes. Juntti and Potter (2002) suggest that such intermediaries can be labelled as 'street level bureaucrats' who, as Bracken and Oughton (2013) reinterpret it, 'can take the objectives of a policy and make them workable in a specific context' (pg. 13). It can be argued that each of the participants within the LRWP were taking the objectives of the collaborative group, and therefore the policy of catchment management, and applying them within the context of their own organisations in terms of geographical area and the types of people and social groups they deal with. Juntti and Potter (2002) describe that such interpretation is often based on tacit knowledge of individuals, resulting from personal experience. Previously in this research, tacit knowledge has been acknowledged as important.

The significant next step is to ask how the organisations in the LRWP acted as intermediaries. Medd and Marvin (2008) suggest that intermediaries do not simply bridge gaps by acting as neutral interpreters but have their own strategies and practices and have an ability to 'adapt their relationship to water into different sets of interests and contexts without necessarily integrating those interests' (pg. 296). As has been discussed in previous chapters, there is an ability of the LRWP participant organisations to take the ideas of the collaborative group and adapt them to the needs of their members, volunteers and users in the form of tailored practices, which both help achieve their aims, the wider aims of the collaborative group and the aims of their user groups. It is an insight into the process of integrated management that, in practice, is a very fluid process lead by the role of the intermediary organisations. It is significant therefore to note that through their role as intermediaries the members of the LRWP have fulfilled the requirements of holistic environmental management in an integrated context through strategic and active methods of policy interpretation. The perceived success of the LRWP effort could be affected by the skills of the participant organisations as intermediaries between the varying interests that are apparent in the catchment.

The role of an intermediary is powerful on its own, for example each of the organisations involved in the LRWP has skills in intermediation between larger environmental policy and practice on the ground, which results in changing attitudes and building trust (Moss, 2009).

However, Moss (2009) state that collectively intermediaries might be significantly more influential. As a demonstration of this, it has been argued that tacit knowledge is important in the role of an intermediary, and previously in this research it has been shown that tacit knowledge can be shared through collective action in the form of collaboration (Pahl Wostl *et al.,* 2012). The relationship between collaboration and intermediation is therefore two-fold: firstly, collaborative practices bring organisations together and allow them to carry out actions such as sharing tacit knowledge, which creates a better collective intermediary body because individuals can learn from one another, which then has the potential to be more influential through collective but targeted interpretation of wider policy initiatives that meet the aims and needs of the collaborative group, the mediating organisations and the target user groups. Secondly, the intermediation skills of the participants in the project contribute to the ability of the effort to make a difference, particularly where new policy, such as catchment-based water quality management, is being implemented in new contexts. The individual skills of the organisations in the LRWP as intermediaries may have contributed, both as a product and a medium of shifts in governance, to the heightened impression of positivity and therefore 'success' of the approach in this case.

8.3 Creation of a new social institution

Collaboration has been described as a process of deinstitutionalisation and reinstitutionalisation (Gray, 1989 pg. 236) and consequently opens up opportunities for new ways of working and new relationships that can be replicated and learned. The long term success of collaborative management has been argued to depend on the strength and success of the new social institutions (Blumenthal and Jannink, 2000).

'Social institution' has an ambiguous definition; the philosopher Jonathan Turner describes it as 'a complex of positions, roles, norms and values lodged in particular types of social structures and organising relatively stable patterns of human activity with respect to fundamental problems' (Turner, 1997, pg.6); whereas in relation to the management of natural resources it is simply referred to as the mode by which 'participants organise their interactions with one and other' and is acknowledged as taking multiple forms (Blumenthal and Jannink, 2000, pg. 3). Both definitions are valid, yet in the context of this research it will be recognised that whilst new forms of organisation, roles and positions can be created, the impact of the social institution is likely to be small scale compared to the 'schools' and 'monarchies' referred to as social institutions in wider social theory (Harre, 1979).

With the reference to scale in mind, there is evidence that new forms of social institution are emerging through the LRWP process. As has already been shown, participants in the LRWP feel

that they are interacting with each other differently compared to before the collaborative process; and that there are increased levels of trust and understanding about the work and resources of others. Although the project is still relatively young, there may be patterns of interactions emerging that may form the basis for future actions, particularly at the specific catchment scale. The processes of social learning and the building of social capital, that have been shown to be present in the LRWP, demonstrate the mechanism by which the new patterns of interactions are being embedded into a social system that then will become an new institution. It is the outcomes and impacts of these processes that have been highlighted as being part of the positive analysis of the LRWP.

In such process of new interactions, Ostrom (1990) stakes importance on the self-organising capacity of stakeholders, and argues that many studies have shown stakeholders' to have the ability to work together to allocate access to and management of resources (Ostrom, 1990), thus to create their own social institutions. This has been labelled as a rediscovery of civil society (Warner, 2007). In the LRWP the self-organising capacity of stakeholders has been recognised in the process of handing over leadership to an NGO group and through the confidence in the continued 'independence' of the LRWP collaborative group away from EA guidance in the future.

However, Huitema *et al.* (2009) argue that the aspect that is now seen to be more important in the creation of successful social institutions is the 'institutional diversity' (pg. 26). This represents a system better able to cope with change and uncertainty, through an ability to manage issues of variable geographical need at different scales and a high degree of overlap that means they are less vulnerable to failure and more open to experimentation. It can be argued that the LRWP has created a diverse institution through a high level of inclusiveness, meaning that there are representatives from variable scales of practice both geographically and socially. For example, a local angling club covering a few km of river bank referring to a few hundred local members, alongside a water company covering the whole of the North East and relating to tens of thousands of customers, employees, engineers and technicians. The strength of the relationships built in the collaborative environment between such diverse participants means that the institution is able to access that diversity in order to tailor its actions to the appropriate scale. The social networks that have been built also mean that there is a high level of flexibility in the institution and a wide number of people and resources available, which means it may be less vulnerable to failure.

Creation of such institutions could be referred to as evidence of a move towards a more polycentric governance system. Skelcher (2005, pg. 89) defines polycentric governance as 'political authority dispersed to separately constituted bodies with overlapping jurisdictions

that do not stand in hierarchical relationship to each other'. Pahl-Wostl *et al.* (2007 pg. 2) states that through the process of polycentricity 'different stakeholders collaborate in the formulation and implementation of public policy'. This is arguably what is happening in the LRWP as the previous section has shown that the participants, from multiple levels of society who are fairly included and listened to, act as intermediaries working collectively to interpret and implement policy decisions. It has also been shown that barriers representing a hierarchy, such as bureaucracy, have been broken down both in order to enact, and as a result of, the process of collaboration.

Fundamentally, collaboration in the LRWP is therefore a method of diffusion of authority (Hooge and Marks, 2003) and can be argued to facilitate the conditions in which the new social institution can be created. Hooge and Marks (2003) describe task-orientated multi-level governance as a system of diffusion of authority, and refers to efforts targeted to specific issues, where participation is very open and fluid. The LRWP has similarities to this governance because the social institution that has been created is very dynamic and is reactive to new challenges and changes and open to new members. The governance stated by Hooge and Marks is in reference to general political policy, but the principles are clearly echoed in the LRWP processes. By applying a governance style that diffuses authority through open and fluid practices the conditions conducive to 'successful' collaboration may have been present in the LRWP.

Bracken and Oughton (2013), in a study of conservation efforts in North Yorkshire, demonstrate that new approaches to environmental management can form ad hoc institutions, which suggests an informality and fluidity of social institution very similar to those facilitated by polycentric governance shifts. One LRWP participant made the following comment about the informality of the LRWP system:

> "*I would be in big trouble if I managed my projects like that, quite so ad hoc*" (LRWP6)

This comment suggests that the participant recognises that the informal feel of the management of the project is not usual practice and would not be accepted in a traditional management context, yet this participant also praises the overall LRWP effort. Although the participant is referring to the management style in critical terms, it does reveal the characteristics of the project and could be argued to reveal something about the character of the institution that has been created. The ad hoc description of the management of the project may demonstrate that the social practices and relationships that came out of the pilot were similarly informal and fluid. In reference to the literature, this observation reflects well on the collaborative processes at work in creating an institution facilitated by polycentricity that is

resilient and sustainable in the face of change because of its flexibility and dynamism. The context therefore and the ability of the approach to produce an informal institution reflects on the success of collaboration.

8.4 Summary

- By exploring the factors that could affect the positive impact of the collaborative approach some of the conditions under which collaboration thrives in this context have been revealed.
- Personal characteristics and behaviours of the CC in the LRWP have mirrored those of environmental champions, who are defined by the literature as contributing positively towards building relationships and progressing environmental action. Approachability, dedication to and knowledge about the field, personable engagement and the ability to build social networks have been shown to be defining characteristics of the project leader that may have contributed to the positive influence of the collaborative approach.
- The role of the individual members of the collaborative group as policy interpreters or intermediaries has also been shown to be important in fortifying the collaborative process.
- Through building relationships and systems of practice the LRWP has shown evidence of the creation of a new social institution. Flexibility and informality in the approach have added to the institutional diversity, a factor seen as vital for allowing social institutions to cope with change and uncertainty such as those that would occur in dynamic catchment contexts. Although the factors that have been explored in this section are not extensive and could extend to the influence of the geographical catchment scale and influences of wider political contexts if the study were to be expanded, they demonstrate that the people involved in collaborative efforts and their own personal skills and experience very much influence the process. Equally, the context in which the collaborative process is set and moreover the way in which the participants adapt and cope with aspects can heavily influence the perceived positivity of a collaborative process.

Chapter 9

Key findings and conclusions

9.1 Aims of the research

This research set out to provide a comprehensive picture of a collaborative environmental management approach in catchment based water quality management in the UK. Through the examination of data from in depth interviews with 13 participants in the Lower River Wear Pilot and examination of meeting minute documents, this research has explored the attitude of participants to the process of collaborative catchment management; the potential challenges of implementing a collaborative approach; and the factors affecting the success of collaborative approaches. The study has contributed to the knowledge about, and understanding of, a new approach in water management under the WFD and fills the gap in understanding about collaborative environmental governance in the UK, it also supplements commercial assessments of the approach by providing in depth analysis of participants opinions and a detailed presentation of one case study.

9.2 Key findings

9.2.1 Evidence for a collaborative approach

When compared to factors defined in the literature, characteristics of the LRWP approach showed that there was evidence for the presence of collaboration. Not only did the evidence from participants' comments show that there were features of collaboration such as the presence of a facilitator, regular meetings, interactive forms of communication and established processes of problem setting and direction setting, but that there was also evidence of the underlying principles and values belonging to collaborative processes, such as participation, inclusion and co-production of knowledge. Importantly, the level of stakeholder inclusion was seen by the participants as good, and the majority of interviewees revealed that they felt confident that their ideas were being listened to and included in the final outputs. Such levels of inclusion through listening and sharing of ideas and data, were seen as key to creating a non-hierarchical system of knowledge production. Many participants struggled to identify who they thought was missing from representation throughout the process. Opinions did reveal that businesses, local authorities, water authorities and farmers and landowners were those who they would have liked to have seen more engaged. The importance of public participation was highlighted by the valuation by participants of research within the LRWP on public perceptions of the River Wear. The public were seen as being instrumental to the implementation of management plans and although this could be argued to be a negative reflection on public value in planning stages, the importance placed on deliberation with the public demonstrated the dynamism of the process of collaboration that may offer a different method for public participation than traditional participatory management.

9.2.2 Influence and impacts of the collaborative approach

There were many and varied impacts of the characteristics of the collaborative approach in the LRWP. Firstly, tangible aspects were explored, including on the ground action such as catchment walkovers, which revealed significant knock on effects of collaborating on the wider community, participant organisations and the environment. Intangible impacts were also identified. These included high levels of social capital in certain aspects of the process, which were revealed when participants recognised the social value of the collaborative group and recognised the strength of their professional relationships. A process of social learning could be argued to be facilitated by informal interactions within the pilot and contributed to the building of trust between stakeholders.

Impacts of the collaborative approach on ways of working highlighted themes of decentralisation and devolution of power, through the willingness of the centralised EA to drop bureaucratic barriers in order to share data and responsibilities with stakeholders. These processes can be argued to reflect a move towards a 'big society' approach, mirroring current governmental policy.

The overall impact of the collaborative approach in the LRWP was positive from participants and appeared to be down to unique factors in the LRWP, such as personal contributions, as other pilots were not seen to be as effective.

9.2.3 Factors contributing to the 'success' of the collaborative approach

Leadership and the role of environmental champions were shown to be key in identifying how and why the LRWP approach had been viewed as positive. Approachability, dedication to and knowledge about the field, personable engagement and the ability to build social networks were characteristics and behaviours identified as being held by the catchment-coordinator in the LRWP and therefore important characteristics of a leader in collaborative efforts. Intermediary skills of participants in interpreting policy or group decisions in their own day to day contexts was also seen as vital to the success of collaboration, and seen to be representative of dynamic social institutions.

'Success' of collaborative approaches can be seen to be a combination of contextual factors and individual and collective skills of the participants, but within a cyclical system in which adaptability to contextual factors is key in order to become more closely embedded in a local context.

9.3 Conclusions

As much as the finding of this study might have revealed a number of elements that play an important role in a successful collaborative approach to catchment scale water quality management in the UK, it is beyond the scope of this study to attempt to create a toolkit or even 'identity card' for such an approach because the results are focussed on one very specific case study. What the study does reveal, however, is a deeper understanding of what a collaborative approach could look like and how specific interpretations of collaborative characteristics can have positive influences. The study has also revealed the value of in-depth interviewing of a number of key participants in such efforts, as it allows a much more developed insight into the characteristics and impact of collaborative efforts, in addition to more standardised or quantitative methods.

The significance of the approach in the LRWP is that it has been revealed as a positive experience for the stakeholders involved. In a study that bases its analysis on stakeholder opinion, such a result highlights significant information about the potential tractability of the approach in the future. One of the key questions in the relevance of this research outside of academia, particularly in reference to the probable uptake of collaborative approaches in water management under the WFD in the UK is: 'is the collaborative approach worth investing in?', which manifests itself as: 'can collaborative approaches provide solutions to 'wicked' environmental problems?'. Balint *et al.* (2011) state that the complex characteristics of 'wicked' problems means that there is never one best solution, but instead the solutions that are sought are those that are satisfactory, sufficient and that fit into the context of the local area. This study has shown that the collaborative approach can be both satisfactory and adaptable to the local context, whether the approach is sufficient is more difficult to assess, but the willingness of the current stakeholders to invest time and resources into the future of the approach suggest that they believe it is sufficient, and if it is not currently sufficient they believe that they have the power to adapt the process to meet their expectations in the future.

This study reveals that a satisfactory and adaptable collaborative approach might be influenced by a variety of contextual as well as mouldable factors. Contextual factors such as the willingness of the government to listen, respond and give responsibility and equal standing in decision making to other stakeholders, as well as the influence of smaller scale geographical frames of reference are matched against the central role of a personable, knowledgeable leader who has guided and motivated participants, as well as the skills of participants in interpreting policy ideas and integrating them into day to day practice, creating a cascade of influence out to wider stakeholders. These factors combined with the presence of key collaborative processes such as inclusion, data sharing, deliberation and dynamic

communication have acted to influence the positive opinions about the collaborative approach alongside positive impacts on social capital, on-the-ground action and inter-organisational relationships.

The consequences for wider environmental management practice are limited by the contextual nature this study and the small time scale of the pilot project, however this research is well placed to form part of a network of studies, both previously and in the future, that contribute towards a better understanding of how collaborative environmental management works practically, specifically in the UK context where it has been little applied or studied and specifically at the beginning of collaborative efforts. Collaboration has often been hailed as the 'solve all' solution to complex environmental management problems and particularly provided part of the hope for a better, more localised, sustainable and inclusive management of water problems in the UK. This study has revealed that the collaborative approach can work, and contrary to its criticisms, does not appear to delegitimise current governance systems but instead attempts to provide a balance between top down regulations such as the WFD standards and bottom-up needs, ideas and opinions of local stakeholders. It is the ability to combine the positive aspects of both, through sensitive and dynamic interaction, that shows that collaborative approaches can be a key part of future environmental management.

The challenge for UK environmental governance is to continue to encourage and grow collaborative approaches in other catchments and echo the positive aspects of pilots such as the LRWP and learn from the challenges revealed, particularly with regard to closer involvement of the public and wider communities. Hopefully this can be achieved through more directed processes away from the pilot environments.

9.4 Policy update: the current roll –out of the catchment based approach

Within the period of this research the catchment projects across the UK have come to the end of their pilot period (generally ending in Dec 2012) and DEFRA and the EA have now begun to roll-out the catchment-based policy across other catchments in England and Wales. The policy framework for the catchment based approach was launched on 3rd June 2013. As part of the policy there will be EA representatives in all of the catchments in England and Wales, and funding is also now available through the Catchment Partnership Fund for third party organisations to host catchment partnership groups in the catchments not involved in the pilot schemes. The partnerships are encouraged to be collaborative in the way that they plan and implement ideas and projects. The roll-out of the catchment based approach shows that the

government agencies have faith in the positive impact of the collaborative catchment approach, an example of which is shown in this research. The focus on third party or charity organisations to host the partnerships highlights the dedication to decentralising decision making power and distinctly shows that there is now a clear move away from advocacy of top-down management.

The Final Evaluation Report of the pilot schemes across England and Wales was published in June 2013 and its results have formed the justification for the continuation of the approach. The report claims that many lessons have been learned during the pilots, through experimentation with engagement techniques and collaborative approaches, which have not only improved the awareness of key features of collaborative working, but that ultimately, if collaboration was sought and implemented successfully, resulted in a number of benefits. These include the development of actions that deliver multiple benefits under the WFD, growth of a better evidence base, stronger relationships and increased numbers of stakeholders getting involved.

The report recognises that not all collaborative efforts will look the same, but does conclude with the development of a 'recipe' for successful collaborative catchment planning and delivery. Although in academia it is usual to be extremely wary of 'recipes', in this case there is a recognition that the factors apply in a UK context and can be variably interpreted in local contexts through the freedom given to individual groups. The significance of the recipe is that it identifies some similar factors to those identified in this study as being important parts of the collaborative approach. Figure 9.1 shows the recipe taken from the Final Evaluation Report.

Similarly to this study the recipe recognises the importance of the factor of having the 'right skills in the right place' which refres to having skilled catchment-coordinators that can adapt their approach to different situations in order to accommadate others' views, as well as the factors such as having a shared evidence base and effective communication.

The addition that this Masters study makes to the more commercial research results from the EA's Final Evaluation Report, is an in depth study of how 'recipes' for collaboration are transferred into the practical environment. This study identifies the participants' opinions about aspects similar to those listed in the recipe and the impacts that the targets listed in the recipe have on the process or participants if implemented in certain ways. This research has

also identified the underlying principles and processes that might work between the lines of a recipe to add to the experience and effectiveness of a collaborative approach.

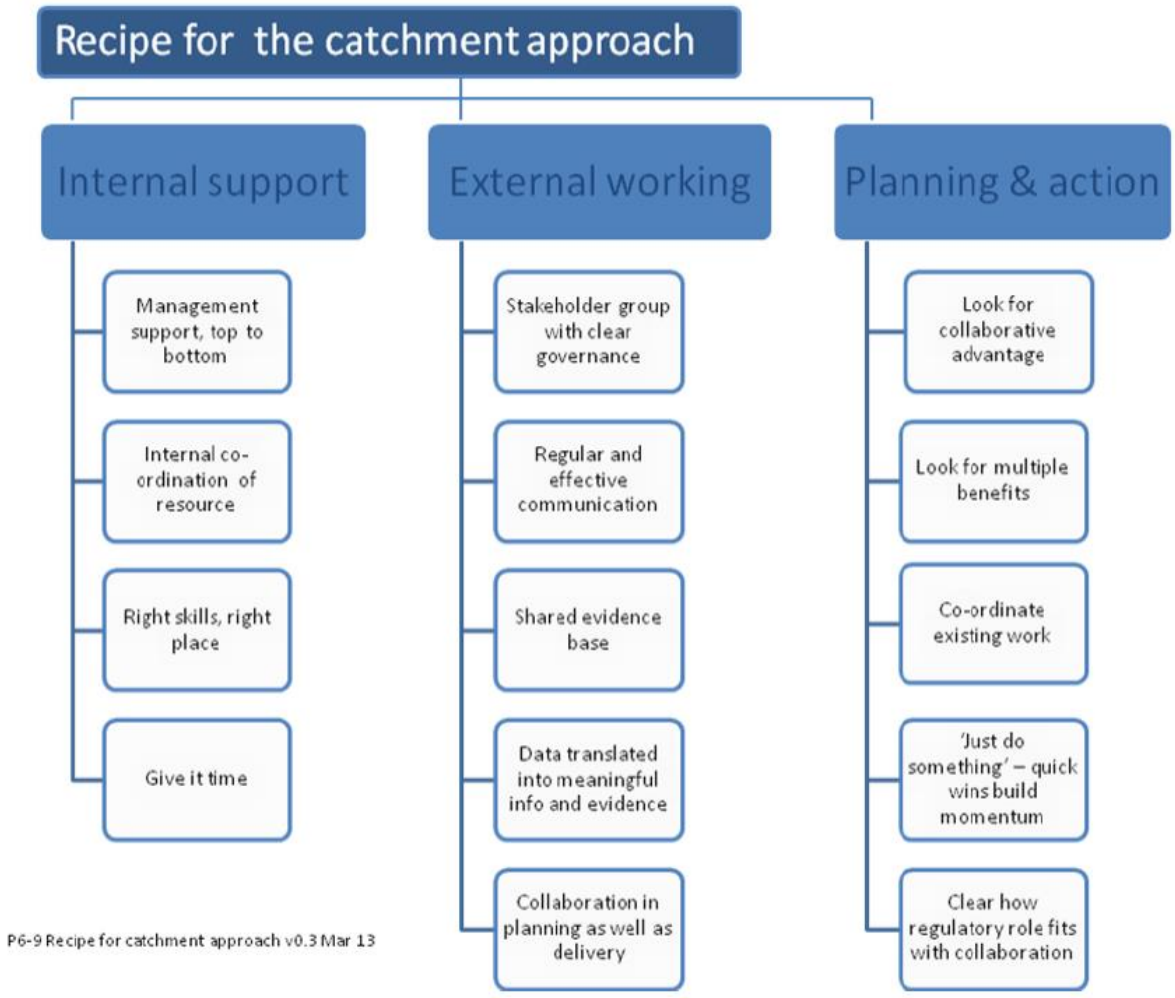

Figure 9.1 Recipe for the collaborative catchment approach. Source EA Final Evaluation Report (2013)

9.5 Recommendations

The following section provides a number of key lessons learned from this research.

- This study has shown that collaborative approaches to water management can have incredibly positive impacts and it is recommended that they should continue to be increasingly pursued and explored as a method of managing water quality in the UK at the catchment scale.
- Leadership is key. It is likely that leaders who are approachable, personable, knowledgeable and adaptable will provide a good central point for any collaborative group.

- Collaborative groups should look to provide flexibility in participation in order to accommodate and deal with limitations on organisational participation such as geographical jurisdiction and diverse organisational targets. Participation should therefore be tailored to individual local contexts.
- Practitioners should be aware of the value of informal social interactions in building strong professional relationships and providing opportunities for stakeholders to learn from one another and develop relations of trust, which constitute social capital.
- Evaluating participants' opinions about the collaborative process is a good method to gain a deeper understanding of the impact and efficiency of an approach. Interviewing participants periodically throughout the longer duration of a non-pilot collaborative effort may be an effective way of evaluating the process and making on-going improvement to practice in response to stakeholder needs.

9.6 Reflections

One of the key ideas of this study is that the positivity of the participant's comments revealed the 'success' of the collaborative approach, which is important because it is arguably the 'feeling' of collaborating that matters for its manifestation and continuation. A point for consideration is how closely that 'feeling' can ever be understood, and Coglianese (2002) argues that perceived effects, or 'feelings', may be artificially inflated by the participants in interview situations to sub-consciously or consciously protect their reputations as being part of the project. Ultimately this comment is a reminder that all views and evaluations of such processes are situated and partial and that a combination of methods and perspectives is needed. If the study were to be done again, the stakeholder opinions could have been balanced by those who were not involved but could observe the process from a distance, such as practitioners or stakeholders involved in neighbouring catchment projects. Each may reveal a different measure of 'success' of collaboration. A future consideration would then be if there could ever be definitive measurables that reveal the success of collaboration, if many different perspectives are considered.

Ideally within this research, with more time, more participants from the wider stakeholder group would have been sought and more representatives of community groups not yet involved could have been contacted to gain an understanding of how engagement could have been improved. Equally, if the study were to be done again the catchment coordinator would be directly interviewed. To extend the study and gain additional perspectives on the process other data collection methods could have been implemented, such as stakeholder diaries,

which would have complemented the interviews with more specific examples of processes and practices.

9.7 Future research

Although this research has provided an in depth exploration of a collaborative approach there are limitations when making conclusions about the wider applicability of findings. Therefore future research is needed in order to explore the way in which the approach in the LRWP compares to other similar approaches, particularly within the UK context, but also in the international context. A comparison study would allow a better understanding of the variability of factors in different contexts. This, alongside further studies using a mix of qualitative and quantitative methods would allow the research to be more impactful to practitioners and policy makers.

The research has also highlighted a number of tangent issues that could be explored in relation to collaborative environmental management. The first is the exploration of collaborative management over longer timescales. If the catchment-based approaches within the pilot catchments were analysed for a number of years then their impact on environmental conditions, namely water quality, which is the ultimate driving force for collaborative approaches in terms of the WFD, could be explored. Wider effects on communities could also be studied better. Longer term research would also allow better comparison to other international studies of collaboration, as groups are often studied over a number of years.

Secondly, this research has highlighted that there are certain groups that are consistently marginalised through time or resource constraints during planning processes, even if they are desired to be involved. It would be interesting to explore how and why certain groups are difficult to engage or even resist engagement and how those levels of engagement can be improved within the collaborative environment, or equally if participation and engagement is even needed or desired by those groups in the capacity it is expected from current policy and practice.

Finally, a very current issue highlighted, but not covered, in this study is the effect of financial austerity on environmental groups. It might be pertinent to explore this issue further in contrast to tightening expectations for rapid and ambitious environmental improvement coming from large international legislation such as the WFD and the role that collaborative processes could play in times of financial difficulty and environmental crisis.

References

Abels, G. & Bora, A. (2004). Demokratische Technikbewertung. Transcript, Bielefeld: Cited in Abels, G. (2006). *Forms and functions of participatory technology assessment – Or: Why should we be more sceptical about public participation?* In: Participatory approaches in science and technology conference, Edinburgh, June 4 - 7 2006.

Adams, W. and Mulligan, M. (2003) *Decolonising Nature: Strategies for conservations in a post-colonial era,* London, Earthscan Publications.

Aitken, S. (2005) 'Textual analysis: reading culture and context ' in Flowerdew, R. and Martin, D. , ed. *Methods in Human Geography: A guide for students doing a research project*, Harlow, Essex: Pearson Prentice Hall.

Allen, W. (2012) *Capacity building, social capital and empowerment*, Available online [http://learningforsustainability.net/social_learning/capacity.php].

Andersson, L. and Bateman, T. (2000) Individual environmental initiative: championing natural environmental issues in US business organizations, *Academy of Management Journal*, 43(4): 548 - 570.

Atkins, J. M. and Heritage, J.C. (1984) *Structures of social action,* Cambridge: Cambridge University Press.

Babbie, E. (2004) *The practice of social research,* 10th ed*.,* Belmont, California: Thomson Wadsworth.

Balint, P. J., Stewart, R.E., Desai, A. and Walters, L.C. (2011) *Wicked environmental problems: Managing uncertainty and conflict*, Washington: Island Press.

Barham, E. (2001) Ecological boundaries as community boundaries: The politics of watersheds, *Society and Natural Resources*, 14:181-191.

Beetham, D. (1996) *Bureaucracy*, Buckingham: Open University Press.

Beierle, T. C. (2002) 'The quality of stakeholder-based decisions', *Risk Analysis*, 22(4): 739 - 749.

Bekkers, V. D.G., Edwards, A. and Fenger, M. (2007) Governance and the democratic deficit: Introduction, in Bekkers, V. D. G., Edwards, A. and Fenger, M (eds) *Governance and the democratic deficit. Assessing the democratic legitimacy of governance practices*, Aldershot, Ashgate: 3 - 12.

Bell, D. and Gray, T. (2002). The ambiguous role of the Environment Agency in England and Wales. *Environmental Politics,* 2: 76-98.

Bell, M. and Sheail, J. (2005) Experts, publics and the environment in the UK: twentieth-century translations*, Journal of Historical Geography,* 31: 496 - 512.

Benson, D., Jordan., A., and Smith, L. (2013a) Is environmental management really more collaborative? A comparative analysis of putative 'paradigm shifts' in Europe, Australia, and the United States, *Environment and Planning* A, 45: 1695-1712.

Benson, D., Jordan., A., Cook, H. and Smith, L. (2013b). Collaborative environmental governance: Are watershed partnerships swimming or are they sinking?, *Land Use Policy,* 30: 748– 757.

Bentrup, G. (2001) 'Evaluation of a Collaborative Model: A case study analysis of watershed planning in the Intermountain West ', *Environmental Management*, 27(5): 739-748.

Bhaskar, R. (1975) *A realist theory of science,* Leeds: Leeds Books.

Birch, S. P., Kelly, M.G. and Whitton, B.A. (1988) Macrophytes of the River Wear 1966, 1976, 1986,England UK*, Botanical Society of Edinburgh Transactions*, 45 (3): 203-212.

Biswas, A. K. (2004) Integrated Water Resources Management: A Reassessment, *Water International*, 29 (2): 248-256.

Blackstock, K. L., Waylen, K.A., Dunglinson, J. and Marshall, K.M. (2012) 'Linking process to outcomes — Internal and external criteria for a stakeholder involvement in River Basin Management Planning'*, Ecological Economics*, 77: 113-122.

Blumenthal, D. and Jannink, J.L. (2000) 'A classification of collaboratibe management methods', *Conservation Ecology*, 4 (2).

Boak, R. C., H. Ioris, A. (2004) Development of a high level technical process and detailed participation strategy to support the implementation of water resources management strategies in Scotland & Northern Ireland.Seminar held on 14th October, 2004, ICID British section, London. Pg. 22-26. Available online [http://www.fwr.org/waterre/wfd33ph1.htm].

Bonnell, J. E. and Koontz, T.M. (2007) 'Stumbling Forward: The Organizational Challenges of Building and Sustaining Collaborative Watershed Management', *Society and Natural Resources*, 20 (2): 153–167.

Borowski, I., Le Bourhis, J.P., Pahl-Wostl, C. and Barrague, B. (2008) Spatial misfit in participatory river basin management: effects on social learning, a comparative analysis of German and French case studies, *Ecology and Society*, 13 (1).

Bouwen, R., Craps, M. and Santos, E. (1999) Multi-party Collaboration: Building Generative Knowledge and Developing Relationships among 'unequal' Partners in Local Community Projects in Ecuador. Concepts and Transformation, *International Journal of Action Research and Organizational Renewal,* 4(2): 133-151.

Bracken, L. J. and Oughton, E.A. (2013) Making sense of policy implementation: The construction and uses of expertise and evidence in managing freshwater environments, *Environmental Science and Policy*: SI :Environmental and Developmental Discourses: Technical knowledge, discursive spaces and politics, 30: 10-18.

Bradbury, J. A., Branch, K.M. and Malone, E.M. (2003). *An Evaluation of DOE-EM Public Participation Programs*, Richland, WA: Pacific Northwest National Laboratory.

Brondizio, E. S., Ostrom, E., and Young, O. R. (2009) Connectivity and the Governance of Multilevel Social–Ecological Systems: The Role of Social Capital, *Annual Review of Environmental Resources*, 34: 253–278.

Brouwer, S., Huitema, D. and Biermann, F. (2009) Towards adaptive management: the strategies of policy entrepreneurs to direct policy change, *Proceedings of the 2009 Amsterdam Conference on the Human Dimensions of Global Environmental Change*. Amsterdam, The Netherlands.

Brunner, R. D. (2002). Problems of governance in Brunner, R. D., Colburn, C. H., Cromley, C. M., Klein, R. A., and Olson, E. A. (eds) *Finding common ground: Governance and natural resources in the American West*, New Haven, CT, Yale University Press: 1-47.

Buller, H. (1996). Towards sustainable water management: Catchment planning in France and Britain, *Land Use Policy,* 13 (4): 289-302.

Callon, M. (1999) The role of lay people in the production and dissemination of scientific knowledge, *Science, Technology and Society,* 4: 81 – 94.

Cameron, J. and Gibson, K. (2005) Participatory action research in a poststructuralist vein, *Geoforum*, 36 (3): 315 -331.

Campbell, A. (2006) The Australian natural resource management knowledge system, Canberra, Land and Water Australia.

Campbell, A. and Schofiled, N. (2006) *The getting of knowledge: a guide to funding and managing applied research*, Canberra, Australia: Land and Water Australia.

Carter, J. and Howe, J. (2006) Stakeholder participation and the Water Framework Directive: The case of the Ribble Pilot, *Local Environment,* 11(2): 217 - 231.

Cash, D. W., Adger, W.N., Berkes, F., Garden, P., Lebel, L. (2006) Scale and cross-scale dynamics; governance and information in a multilevel world, *Ecology and Society*, 11 (2).

Chambers, R. (1989) Farmer first: a practical paradigm for the third agriculture in Altieri, M. A. and Hecht, S. B. (eds) *Agroecology and small farm development*, Boca Raton, Florida, USA. CRC Press: 237-244.

Chambers, R. (1997) *Whose reality counts? Putting the last first*, London, Intermediate Technology Publications.

Charmaz, C. (1995) 'Grounded Theory' in Smith, L.A. and Harre, R., Langanhove, L.v.(eds). *Rethinking Methods in Psychology*, London: Sage: 27 - 49.

Clark, M. J. (2002) Dealing with uncertainty: adaptive approaches to sustainable river management, *Aquatic Conservation: Marine and Freshwater Ecosystems*, 12: 347-363.

Clark, T., and R. Reading (1994). A professional perspective: Improving problem solving, communication, and effectiveness, in Clark, T. W., Reading,R. P. and Clarke, A. C. (eds) *Endangered species recovery: Finding the lessons, improving the process*. Washington, DC: Island Press: 351-369.

Clarke, N. and Cochrane, A (2013) Geographies and politics of localism: The localism of the United Kingdom's coalition government, *Political Geography*, 34: 10-23.

Cloke, P. Philo, C. and Sadler, D. (1991) *Approaches in Human Geography: An introduction to contemporary theorestical debates,* New York: The Guilford Press.

Coffey, A. and Atkinson, P. (1996) *Making sense of qualitative data: Complementary research strategies,* Thousand Oaks, California: Sage.

Coggins, G. C. (1999) Regulating federal natural resources: a summary case against devolved collaboration, *Ecology Law Quarterly*, 25: 602-610.

Coglianese, C. (1999) The limits of consensus, *Environment,* 41: 28-33.

Coglianese, C. (2002) Is satisfaction success? Evaluating public participation in regulatory pilocy-making, in O'Leary, R. and Bingham R.L. (eds) *Evaluating environmental and public policy conflict resolution programs and policies*. Washington, DC: Resources for the Future.

Coleman, J. S. (1988) Social Capital in the Creation of Human Capital, *The American Journal of Sociology,* 94.

Collins, H. M. and Evans, R. (2002) 'The Third Wave of Science Studies: Studies of Expertise and Experience ', *Social Studies of Science*, 32(2): 235-296.

Conca, K. (2006) *Governing* water: Contentious transnational politics and global institution building, Cambridge, Massachusetts: MIT Press.

Conger, J. (1993) The brave new world of leadership training, *Organizational Dynamics*, 21(3): 46 - 57.

Conley, A. and Moote, M.A. (2003) Evaluating Collaborative Natural Resource Management, *Society and Natural Resource*s, 16: 371-386.

Connick, S. and Innes, J.E. (2003) 'Outcomes of collaborative water policy making: Applying complexity thinking to evaluation', *Journal of Environmental Planning and Management*, 46(2): 177-197.

Costanza, R., d'Arge, A., de-Groot, R., Farber, R. and Grasso, S. (1997) The value of the worlds' ecosystem services and natural capital, *Ecological Economics*, 25 (1): 3–15.

Cook, H., FCIWEM C. WEM, Benson, D., Inman, I., Jordan, A. and Smith, L. (2012) Catchment management groups in England and Wales: extent, roles and influences, *Water and Environment Journal*, 26: 47-55.

Cook, I. (2005) 'Participant observation' in Flowerdew, R. and Martin, D., ed. *Methods in Human Geography: A guide for students doing a research project*, Harlow, Essex: Pearson Prentice Hall.

Cooke, B. and Kothari, U. (2001) *Participation: the new tyranny?* London: Zed Books.

Cortner, H. J. and Moote, M.A. (1999). Collaborative Stewardship in Action: Building a civic society The Politics of Ecosystem Management Washington Island Press: 91-108.

Craps, M. (2003) *Social Learning in River Basin Management*, European Commission, HarmoniCOP WP2 Reference Document, available online [www.harmonicop.info].

Creighton, J. L. (2005) What water managers need to know about public participation: one US practitioner's perspective*, Water Policy*, *7: 269 - 278.*

D'Arcy, B. J., Usman, F., Griffiths, D. and Chatfield, P. (1998) Initiatives to tackles diffuse pollution, *Water Science Technology*, 38 (10): 131-138.

Davis, M. and Rees, Y. (2004) *Public Participation in the Ribble River Basin*, HarmoniCOP Project, European Commission.

DEFRA (2013) *Catchment Based Approach: Improving the quality of our water environment*, Available online: [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/204231/pb13934-water-environment-catchment-based-approach.pdf].

Demeritt, D. (2005) The promises of collaborative research, *Environment and Planning A*, 37(12): 2075 - 2082.

Denzin, N. (1970) *The Research Act in Society,* London: Butterworth.

Department for Communities and Local Government, (2010). *Decentralisation and the Localism Bill: an essential guide.* London: Department for Communities and Local Government.

Doppelt, B. (2000) *Emerging approaches to watershed governance: New approaches to guide sustainable ecological, economic, and organizational performance within the watershed context.* Working draft, 4/1/2000, available online [http://www.mekonginfo.org/assets/midocs/0001613-inland-waters-emerging-approaches-to-watershed-governance-new-approaches-to-guide-sustainable-ecological-economic-and-organizational-performance-within-the-wate.pdf].

Dowling, R. (2000) 'Power, subjectivity and ethics in qualitative research' in Hay, I., ed. *Qulitative research methods in Human Geography*, Melbourne, Australia: Oxford University Press.

Dunn, K. (2005) 'Interviewing' in Hay, I., ed. *Qualitative research methods in Human Geography*, Melbourne: Oxford University Press, 79-105.

Eames, R. (2005). Partnerships in civil society: Linking bridging and bonding social capital, in Keen, M., Brown, V.A. and Dyball, R. (eds) *Social Learning in Environmental Management: Towards a sustainable future*. Abingdon, UK: Earthscan.

Eden, S., Donaldson, A., and Walker, G. (2006) Green groups and grey areas: scientific boundary work, NGOs and the changing nature of environmental knowledge*, Environment and Planning A*, 38: 1061-1076.

England, K. V. L. (1994) 'Getting personal: reflexivity, positionality, and feminist research', *Professional Geographer,* 46: 80-89.

Enserink, B., Patel, M., Kranz, N. and Maestu, J. (2007) Cultural factors as co-determinants of participation in river basin management, *Ecology and Society*, 12 (2): 24.

Environment Agency (2002) *Rivers and Estuaries: A Decade of Improvement,* Bristol.

Environment Agency (2012a) *Catchment pilot lessons portfolio*. Online [http://www.environment-agency.gov.uk/static/documents/Research/LIT_7464_441f3e.pdf].

Environment Agency (2012b) Catchment pilots: An introduction to the Lower River Wear Pilot, available online at [http://www.environment-agency.gov.uk/static/documents/Research/Lower_Wear_Pilot_An_Introduction.pdf].

Environment Agency (2013) *Catchment Pilot Project - Final Evaluation Report*. Online [http://www.environment agency.gov.uk/static/documents/Research/Catchment_Pilot_Project_External_Final_Evaluation_Report_V1_8.doc_578fc8.pdf].

Environment Agency, (2011a) *Big Society*, Open Board Paper Meeting on 3rd Feb 2011.

Environment Agency (2011b) Working with Others: Pilot catchments collaborative working learning bulletin #1-3 Online [http://www.environment-agency.gov.uk/static/documents/Research/learning_bulletin1_catchment_pilots_Dec11.pdf].

(ESRC), Economic and Social Research Council (2012) ESRC Framework for Research Ethics (FRE), available online: [http://www.esrc.ac.uk/_images/Framework-for-Research-Ethics_tcm8-4586.pdf]

Esterberg, K. G. (2002) *Qualitative Methods in Social Research,* USA: McGraw Hill.

European Commission (2012) *Introduction to the new EU Water Framework Directive*. Available online from [http://ec.europa.eu/environment/water/water-framework/info/intro_en.htm.].

European Commission (2013) *What is the Aarhus Convention?* Available online [http://ec.europa.eu/environment/aarhus/].

Eyles, J. (1988) 'Interpreting the geographical world: Qualitative approaches in geographical research.' in Eyles, J. and Smith, D., ed. *Qualitative Methods in Human Geography* Cambridge: Polity Press, 1-16.

Flick, U. (1998) *An Introduction to Qualitative Research,* London: Sage

Foster, D., Wood, A., Griffiths M. (2001) The EC Water Framework Directive and its implications for the Environment Agency, *Freshwater Forum,* 16: 4-28.

Freire, P. (1972) *Pedagogy of the Oppressed*, Harmondsworth: Penguin.

Giddens, A. (1984) *The constitution of society: outline of the theory of structuration,* Berkley, California: University of California Press.

Giddens, A. (2000) *The third way and its critics,* Cambridge: Polity Press.

Gillham, B. (2005) *Research Interviewing: The range of techniques,* New York: Open University Press.

Glaser, B. and Strauss, A. (1967) *The discovery of grounded theory,* Chicago: Aldine.

Global Water Patnership. (2006) Dublin-Rio Principles available online from [http://www.gwp.org/The-Challenge/What-is-IWRM/Dublin-Rio-Principles/].

Gordon, C., Marshal, L., Mepham, J. and Sober, K. (1980) *Power/Knowledge: Selected Interviews & Other Writings 1972-1977*, New York: Pantheon Books.

Gottlieb, A. (1989) *The Wise Use Agenda: The Citizen's Policy Guide to Environmental Resource Issues*, Bellevue: The Free Enterprise Press.

Graefe, O. (2011), River basis as new environmental regions? The depolitization of water management, *Procedia Social and Behavioural Sciences,* 14: 24-27.

Gray, B. (1985) 'Conditions Facilitating Interorganisational Collaboration ', *Human Relations*, 10 (38): 912.

Gray, B. (1989) *Collaborating: Finding common ground for multiparty problems*, San Fransico: Jossey-Bass.

Green, R., Lord, R.A., Giusti, L. (1999) Hydrogeochemistry of Durham Coalfield minewater pumped to the River Wear, NE England, *Environmental Geochemistry and Health*, 21(4): 339-345.

Greener, I. (2001) Social learning and macroeconomic policy in Britain, *Journal of Public Policy,* 21: 133-152.

Grimble, R., Chan, M-K., Aglionby, J. and Quan, J. (1995) *Trees and trade-offs: a stakeholder approach to natural resource management*, London, Gatekeeper Series No. 52. International Institute for Environment and Development.

Gruber, J. (1994). *Coordinating growth management through consensus building: Incentives and the generation of social, intellectual, and political capital.* Working Paper No 617. University of California, Berkeley: Institute of Urban and Regional Development.

Hajer, M. and Kesslering, S. (1999). Democracy in the Risk Society? Learning from the new politics of mobility in Munich, *Environmental Politics,* 3: 1-23.

Hammersley, M. and Atkinson, P. (1983) *Ethnography Principle in Practice,* London: Tavistock.

Hannigan, J. (2006) *Environmental Sociology*, London, Routledge.

Hardin, G. (1968) The Tragedy of the Commons, *Science,* 162(1962): 1243-1248.

Harre, R. (1979) *Social Being*, Oxford: Blackwell.

Harrison, S. and Mort, M. (1998) 'Which champions, which people? Public and user involvement in health care as a technology of legitimation ', *Social Policy and Administration*, 32(1): 60 - 70.

Hay, I. (2010) 'Ethical practice in geographical research' in Clifford, N., French, S. and Valentine, G., ed. *Key Methods in Geography*, London: Sage.

Holling, C. S. (1978) *Adaptive environmental assessment and management,* New York: Wiley.

Holling, C. S. and Meffe, G.K. (1996) Command and control and the pathology of natural resource management, *Conservation Biology*, 10: 328-337.

Hooge, L. and Marks., G. (2003) *Unravelling the Central State, but How? Types of Multi-level Governance*, American Political Science Review, 97(2).

Hooper, B. (2005) *Integrated River Basin Governance Learning from International Experience*, London: IWA Publishing.

Huffman, J. L. (2009) Comprehensive River Basin Management: The Limits of Collaborative, Stakeholder-Based, Water Governance, *Natural Resources Journal,* 49(1): 117-149.

Huitema, D., E. Mostert, W. Egas, S. Moellenkamp, C. Pahl-Wostl, and R. Yalcin (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): 26.

Innes, J. E. (1992). Group processes and the social construction of growth management: Florida, Vermont and New Jersey. *Journal of the American Planning Association,* 58: 440-453.

Innes, J. E. Booher, D.E. (1999) 'Consensus building and complex adaptive systems: a framework for evaluating collaborative planning', *Journal of the American Planning Association*, 65(4): 412-423.

Institute of Hazard, Risk and Resilience (2013) *Littering as a source of urban diffuse pollution and what you can do about it*, available online from [http://ihrrblog.org/2013/06/24/littering-as-a-source-of-urban-diffuse-pollution-and-what-you-can-do-about-it/#more-5047].

Irwin, A. (1995) *Citizen Science,* Abingdon: Routledge.

Irwin, A. (2001) *Sociology and the Environment: a Critical Introduction to Society, Nature and Knowledge*, Cambridge: Polity Press.

Jackson, P. (2001) 'Making sense of qualitative data' in Limb, M. and Dwyer, C., ed. *Qualitative Methodologies for Geographers,* London: Oxford University Press, 199-214.

Jackson, S. and Sleigh, A. (2000) Resettlement for China's Three Gorges Dam: socio-economic impact and institutional tensions, *Communist and Post-Communist Studies*, 33: 223-241.

Jassanoff, S. (2003) 'Breaking the waves in science studies: Comment on H.M. Collins and Robert Evans, 'Third wave of science studies'', *Social Studies of Science*, 33(3): 389.

Jiggins, J. And Roling, N. (2004) *Key informant studies II: Water conservation project in North Brabant and Limburg.* Case Study Monograph 2b. (2nd Generation project), SLIM

(Social Learning for Integrated Management and Sustainable Use of Water at Catchment Scale).

Johnson, C., Penning-Rowsell, E. and Parker, D. (2007) Natural and imposed injustices: the challenges in implementing 'fair' flood risk management policy in England, *Geographical Journal*, 173(4): 374–390.

Johnston, D., Potter, H., Jones, C., Rolley, S., Watson, I. and Pritchard, J. (2008) *Abandoned mines and the water environment*, Science project, Bristol: Environment Agency.

Juntti, M. and Potter (2002) Interpreting and Reinterpreting Agri-Environmental Policy: Communication, Trust and Knowledge in the Implementation Process, *Sociologia Ruralis*, 42 (3).

Kallis, G. And Butler, D. (2001) The EU Water Framework Directive: measures and implications, *Water Policy*, 3 (2): 125-142.

Kampa, E., Kranz, N. and Hansen, W. (2003) *Public Participation in River Basin Management in Germany,* Ecologic, Institute for International European Environmental Policy.

Kemper, K. E., Blomquist, W. and Dinar, A. (2007). River basin management at the lowest appropriate level: When and why does it (not) work in practice?, in Kemper, K. E., Blomquist, W. and Dinar, A. (eds) *Integrated River Bain Management through Decentralization*, Berlin, Heidelberg: Springer.

Kenney, D. S. (2000). *Arguing about Consensus: Examining the Case against Western Watershed Initiatives and Other Collaborative Groups Active in Natural Resources Management*, Boulder: University of Colorado School of Law, Natural Resources Law Centre.

Kenney, D.S. (1999) Are community -based watershed groups really effective? Confronting the thorny issue of measuring success, in Brick, P., Snow, D. and Van de Wetering, S.,(eds.) *Accross the Great Divide: Explorations in collaborative conservation and the American West*, Washington, Island Press, 188-193.

Kesby, M. (1999) *Beyond the representational impasse? Retheorising power, empowerment and spatiality in PRA praxis*, University of St Andrews.

Kesby, M. (2007) 'Spatialising participatory approaches: geography's contribution to a mature debate', *Environment and Planning A*, 39(12): 2813-2831.

Khan, S., Savenjie, H., Demuth, S. and Hubert, P. (2010) Tools for analysing hydrocomplexity and soling wicked water problems: a synthesis. Khan, S., Savenjie, H., Demuth, S. and Hubert, P. (eds) *Hydrocomplexity: New tools for solving wicked water problems,* Wallingford, Oxfordshire: International Association of Hydrological Sciences.

Kim, J. S. (2001) *A Collaborative Partnership Approach to Integrated Waterside Revitalisation: The Experience of the Mersey Basin Campaign, the North West of England,* Doctor of Philosophy, University of Liverpool.

Kindon, S., Pain, R. and Kesby, M. (2007) 'Participatory Action Research: origins, approaches and methods' in Kindon, S., Pain, R. and Kesby, M. (ed.) *Participatory Action Research Approaches and Methods: Connecting people, participation and place*, Abingdon, Oxon: Routledge.

Kitchen, R. and Tate, N. (2000) *Conducting research in Human Geography,* Edinburgh Gate: Pearson.

Kitchen, R. M. and Hubbard, P.J. (1999) Research, action and 'critical' geographies, *Area*, 31 (3): 195- 198.

Korfmacher, K. S. (1998) 'Invisible successes, Visible failures: Paradoxes of ecosystem management in the Albermarle-Pamlico Estuarine Study.', *Coastal Zone Management*, 26(3): 191-212.

Kothari, U. (2001) 'Power, knowledge and social control in participatory development ' in Cooke, B. and Kothari, U., (ed.) *Participation: the new tyranny?,* London, Zed Books: 139-152.

Kotter, J. (1998) Winning at change, *Leader to Leader,* 10: 27-33.

Krishna, A. (2000). Creating and harnessing social capital. Dasgupta, P. and Serageldin, I. (eds) *Social capital a multifaceted perspective*, Washington, DC: The World Bank.

Kvale, S. (1996) *InterViews: An introduction to qualitative research interviewing,* Thousand Oaks, California: Sage Publications.

Lackey, R. (2007) Science, Scientists, and Policy Advocacy, *Conservation Biology*, 21: 12-17.

Laffin, M. (1998) The professions in the contemporary public sector in Laffin, M. (ed.) *Beyond bureaucracy? The professions in the contemporary public sector*, Aldershot: Ashgate: 1 -17.

Lam, W. F. (1998) *Governing Irrigation Systems in Nepal: Institutions, Infrastructure, and Collective Action*, Oakland, California: ICS Press.

Landstom, C., Whatmore, S.J., Lane, S.N., Odini, N.A., Ward, N. and Bradley, S. (2011) Coproducing flood risk knowledge: redistributing expertise in critical `participatory modelling', *Environment and Planning A*, 43: 1617 - 1633.

Lane, S. N., Odoni, N., Landstrom, C., Whatmore, S.A., Ward, N. and Bradley, S. (2011) Doing flood risk science differently: an experiment in radical scientific method, *Transactions of the Institute of British Geographers*, 36 (1): 15-36.

Leach, W.D., and Pelkey N.W. (2001) Making Watershed Partnerships Work: A Review of the Empirical Literature, *Journal of Water Resources Planning and Management*, 127(6): 378-385.

Leach, W.D., Pelkey, N.W. and Sabatier, P.A. (2002) 'Stakeholders partnerships as collaborative policy making: Evaluation criteria applied to watershed management in California and Washington', *Journal of Policy Analysis and Management*, 21(4): 645-670.

Leach, W. D. (2006) 'Collaborative public management and democracy: Evidence from Western watershed partnerships', *Public Administration Review*, 66(1): 100-110.

Leach, W. D. and Sabatier, P.A. (2005). Are trust and social capital the keys to success? Watershed partnerships in California and Washington, in Sabatier, P. A., Focht, W., Lubell, M., Trachenberg, Z., Vedlitz, A. and Matlock, M. (eds) *Swimming Upstream: Collaborative approaches to watershed management*, Cambridge, MA: Massachusetts Institute of Technology.

Levine, G. (2007) The Lerma-Chapala river basin: a case study of water transfer in a closed basin, *Paddy Water Environment*, 5: 247-251.

Lewicki, R. Gray., B. and Elliot, M. (Eds.) (2003) *Making sense of intractable environmental conflicts*, Washington/Covelo/London: Island Press.

Lewin, K. (1946) Action research and minority problems, *Journal of Social Issues*, 1(2): 34–36.

Lipsky, M. (1980) *Street Level Bureaucracy: Dilemmas of the Individual in Public Services*, New York: Russel Sage Foundation.

Longhurst, R. (2010) 'Semi-structured interviews and focus groups ' in Clifford, N., French, S. and Valentine, G. , ed. *Key Methods in Geography*, 2nd ed., London: Sage.

Louka, E. (2008) *Water Law and Policy, Governance Without Frontiers,* Oxford: Oxford University Press.

Lowndes, V. and Squires, S. (2012) Cuts, collaboration and creativity, *Public Money and Management*, 32(6): 401-408.

Luyet, V., Schlaepfer, R., Prlange, M.B. and Buttler, A. (2012) 'A framework to implement stakeholder participation in environmental projects', *Journal of Environmental Management*, 111: 213-219.

Mance, G., Raven, P.J., and Bramley, M.E. (2002) Integrated river basin management in England and Wales, *Aquatic Conservation: Marine and Freshwater Ecosystems*, 12(4): 339-346.

Margerum, R.D. and Whitall, D. (2004) The challenges and implications of collaborative management on a river basin scale, *Journal of Environmental Planning and Management*, 47(3): 409-429.

Margerum, R. D. (1999) 'Integrated Environmental Management: The Foundations for Successful Practice', *Environmental Management*, 24(2): 151-166.

Margerum, R. D. (2008) 'A Typology of Collaboration Efforts in Environmental Management', *Environmental Management,* 41: 487 - 500.

Marshall, C. and Rossman, G.B. (1999) *Designing qualitative research,* Thousand Oaks, California: Sage.

Marshall, K. Blackstock, K.L.; Dunglinson, J. (2010) 'A contextual framework for understanding good practice in integrated catchment management ', *Journal of Environmental Planning and Management*, 53 (1): 63-89.

McCann, J. (1983) Design Guidelines for Social Problem- Solving Interventions, *Journal of Applied Behavioural Science*, 19(2): 177-192.

McCarthy, J. (2005) Devolution in the woods: Community forestry as hybrid neoliberalism, *Environment and Planning A*, 37: 995-1014.

McCloskey, M. (1996) *The skeptic: Collaboration has its limits*, High Country News, 13th May, available online [http://www.hcn.org/issues/59/1839].

McClosky, M. (1999) Local communities and the management of public forests, *Ecological Law Quarterly*, 25(4): 624-629.

McCool, S. and Guthrie, K. (2001). Mapping the Dimensions of Successful Public Participation in Messy Natural Resources Management Situations, *Society and Natural Resources*, 14 (4): 309 - 323.

McCracken, G. (1988) *The long interview,* Newbury Park, California: Sage.

McCulloch, C. S. (2009) The Water Resources Board: England and Wales- Venture into National Water Resources Planning, 1964 to 1973, *Water Alternatives*, 2 (3): 461-475.

Medd, W. and Marvin, S. (2008) Making water work: intermediating between regional strategy and local practice, *Environment and Planning D: Society and Space*, 26(2): 280 - 299.

Meyer, C. and Thiel, A. (2012) Institutional change in water management collaboration: implementing the European Water Framework Directive in the German Odra river basin, *Water Policy,* 14(4): 625 - 646.

Michaels, S. (2001) Making Collaborative Watershed Management Work: The Confluence of State and Regional Initiatives, *Environmental Management*, 27 (1): 27-35.

Miles, M. B. and Huberman, A.M. (1984) *Qualitative Data Analysis: A sourcebook of new methods,* London: Sage.

Moore, E. A. a. Koontz, T.M. (2003) 'A Typology of Collaborative Watershed Groups: Citizen-Based, Agency-Based, and Mixed Partnerships', *Society & Natural Resources: An International Journal*, 16(5): 451-460.

Moote, M. A. (2008.) Collaborative forest management in Donoghue, E. M. and V. E. Sturtevant (eds) *Forest community connections: Implications for research, management, and governance,* Washington, DC, Resources for the Future: 243-260.

Moote, M. A., Burke, S., Cortner, H. J. and Wallace, M.G. (1994) *Principles of ecosystem management*, Tuscon: Water Resources Research Centre, University of Arizona.

Moss, T. (2009) Intermediaries and the governance of sociotechnical networks in transition, *Environment and Planning A*, 41: 1480-1495.

Mosse, D. (2001) People's knowledge, participation and patronage: operations and representations in Rural Development in Cooke, B. and Kothari, U. (eds) *Participation: the new tyranny?* London: Zed Books: 16-36.

Mostert, E., Pahl-Wostl, C., Rees, Y., Searle, B., Tàbara, D. and Tippett, J. (2007). Social Learning in European River-Basin Management: Barriers and Fostering Mechanisms from 10 River Basins, *Ecology and Society,* 12(1).

National Demonstration Test Catchment Network (2012) *Demonstration Test Catchments*, available online from [http://www.demonstratingcatchmentmanagement.net/].

Neal, C., Jarvie, H.P., Whitton, B.A. and Gemmell, J. (2000) The water quality of the River Wear, north-east England, *Science of The Total Environment*, 251-252: 153-172.

Newson, M. (2007) Contrasting UK experiences with participatory approaches to Integrated River Basin Management in Warner, J. (ed.) *Multi-stakeholder platforms for integrated water management*, Aldershot, Ashgate.

Nonaka, I., and H. Takeuchi. (1995) *The knowledge-creating company*, Oxford, UK: Oxford University Press.

O'Connell Davidson, J. and Layder, D. (1994) *Methods, Sex and Madness,* London: Routeledge.

Odendaal, P. E. (2002) *Integrated water resources management (IWRM) with special reference to sustainable urban water management,* CEMSA Conference, Johannesburg, South Africa.

O'Riordan, T. (2004) Environmental science, sustainability and politics, *Transactions of the Institute of British Geographers*, 29 (2): 234 - 247.

Ostrom, E. (1990) *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge: Cambridge University Press.

Ostrom, E. (1992) The rudiments of a theory of the origins, survival, and performance of common-property institutions in D. W. Bromley, D. Feeny, M. McKean, P. Peters, J. Gilles, R. Oakerson, C. F. Runge, and J. Thomson (eds) *Making the commons work: theory, practice, and policy*, Oakland, California: ICS Press: 293-318.

Ostrom, E. (1999) *Self-governance and forest resources*, Bogor, Indonesia, Centre for International Forestry Research.

Ostrom, E., Burger, J., Field, C., Norgaard, R.B. and Policansky, D. (1999) Revisiting the commons: Local lessons, global challenges, *Science*, 284: 278 - 282.

Pahl-Wostl, C. (2002) Participative and stakeholder- based policy design, evaluation and modelling processes, *Integrated Assessment*, (3): 3-14.

Pahl-Wostl, C., Lebel, L., Knieper, C. and Nikitina, E. (2012) From applying panaceas to mastering complexity: Toward adaptive water governance in river basins, *Environmental science and policy,* 23: 24-34.

Pahl-Wostl, C., M. Craps, A. Dewulf, E. Mostert, D. Tabara, and T. Taillieu (2007) 'Social learning and water resources management.', *Ecology and Society,* 12(2): 5.

Pain, R. and Francis, P. (2003) Reflections on participatory research, *Area*, 35(1): 46-54.

Pain, R., Whitman, G., Milledge, D. and Lune Rivers Trust (2012) Participatory Action Research Toolkit: In *Introduction to using PAR as an approach to learning, research and action*, Durham University.

Petit, C., S. E., B. Coffey , P. Geraghty , G. Hocking , N. Meyers , and Weston, S. B. M. (2011) *'Exploring the potential of knowledge brokering to enhance natural resource management: findings from the Catchment Knowledge Exchange project in Victoria'*, Australasian Journal of Environmental Management, 18(4): 233-247.

Petts, J. (2001) Evaluating the effectiveness of deliberative processes: waste management case studies, *Journal of Environmental Planning and Management*, 44: 207-226.

Petts, J. (2007) Learning about learning: lessons from public engagement and deliberation on urban river restoration, *Geographical Journal*, 173(4): 300-311.

Plummer, R. and Armitage, D.R. (2013). Adaptive co-mangement and its relationship to environmental governance, *Ecology and Society,* 18(1): 21.

Plumwood, V. (2003) Decolonizing relationships with nature in Adams, W. and Mulligan, M. (eds) Decolonising Nature: Strategies for conservations in a post-colonial era, London: Earthscan Publications.

Poncelet, E. (2001). *Personal transformation in multi-stakeholder environmental partnership,* University of North Carolina.

Portes, A. (1996) Unsolved Mysteries: The Tocqueville Files II: The Downside of Social Capital, *The American Prospect*, 7.

Preister, K. and Kent, J.A. (1997) Social Ecology: A new pathway to watershed restoration in Williams, J. E., Dombeck, M.P. and Wood, C.A. (eds) *Watershed Restoration: Principles and Practices*, Bethesda, Maryland, USA: The American Fisheries Society.

Pretty, J. (2003). Social Capital and the Collective Management of Resources, *Science*, 302: 1912 -1914.

Pretty, J. and Smith, D. (2004) Social Capital in Biodiversity Conservation and Management, *Conservation Biology*, 18 (3): 631-638.

Pretty, J. and Ward, H. (2001). Social capital and the environment, *World Development*, 29(2): 209 -227.

Putnam, L. and Holmer, M. (1992) Framing, reframing and issue development, in Putnam. L. and Rolof, M. (eds) *Communication and Negotiation,* London: Sage: 128-155.

Putnam, R. D. (1993) The prosperous community: social capital and public life, *American Prospect*, 4 (13).

Ridder, D., Mostert, E. and Wolters, H.A. (2005). *Learning together to manage together: Improving participation in water management,* Osnabrück, Germany: University of Osnabrück, Institute of Environmental Systems Research.

Rittel, H. and Webber, M. (1973) Dilemmas in a General Theory of Planning, *Policy Sciences*, 4: 155-169.

Rost, J. (1993) Leadership development in the new millennium, *The Journal of Leadership Studies*, 1(1): 92-110.

Rowe, G. a. Fewer, L.J., 2004. (2004) 'Evaluating public-participation exercises: A research agenda', *Science Technology & Human Values*, 29: 512–557.

Rubin, H.J. and Rubin, I.S. (1995) *Qualitative Interviewing: The art of hearing data,* Thousand Oaks, California: Sage.

Rudeen, A. K., Fernandez-Gimenzez, M.E., Thompson, J.L. and Meimen, P. (2012). Perceptions of success and the question of consensus in natural resource collaboration: Lessons from an inactive collaborative group, *Society and Natural Resources*, 25(10): 1012-1027.

Ruiz-Ballesteros, E. and Gual, M.A. (2012). The Emergence of New Commons: Community and Multi-Level Governance in the Ecuadorian Coast, *Human Ecology*, 40 (60): 847-862.

Sabatier, P. A., Focht, W., Lubell, M., Trachenberg, Z., Vedlitz, A. and Matlock, M. (2005) 'Collaborative approaches to watershed management ' in Sabatier, P. A., Focht, W., Lubell, M., Trachenberg, Z., Vedlitz, A. and Matlock, M. (ed.) *Swimming Upstream: Collaborative Approaches to Watershed Management*, Cambridge, Massachusetts: Massachusetts Institute of Technology.

Sacks, H. (1992) *Lectures on Conversation,* Oxford: Blackwell.

Said, E. (1978) *Orientalism,* New York: Pantheon.

Sanderson, E. and Kindon, S. (2004) 'Progress in participatory development: Opening up the possibility of knowledge through progressive participation ', *Progress in Development Studies*, 4(2): 114 - 126.

Sarker, A., Ross, A. and Shresth, K.K. (2008) A common-pool resource approach for water quality management: An Australian case study, *Ecological Economics*, 68 (1-2): 461-471.

Sartori, G. (1970) 'Concept misinformation in comparative politics.', *The American Political Science Review,* 64(4): 1033-1053.

Schlager, E. and Blomquist, W. (2008) *Embracing Watershed Politics*, Boulder, Colorado:, University Press of Colorado.

Schoenberger, E. (1992) 'Self-Criticism and Self-Awareness in Research: A Reply to Linda McDowell', *The Critical Geography,* 44(2): 215-218.

Schusler, T. M., Decker, D.J. and Pfeffer, M.J. (2003) Social Learning for Collaborative Natural Resource Management, *Society and Natural Resources: An International Journal,* 16(4): 309-326.

Selin, S. and Chavez, D. (1995) 'Developing a Collaborative Model for Environmental Planning and Management ', *Environmental Management*, 19(2): 189-195.

and Management ', *Environmental Management*, 19(2): 189-195.

Shepherd, T., Chenery, SRN, Pashley, V, Lord, RA, Ander, LE, Breward, N, Hobbs, SF, Horstwood, M, Klinck, BA and Worrall, F. (2009) Regional lead isotope study of a polluted river catchment: River Wear, Northern England, UK', *Science of The Total Environment*, 407 (17): 4882-4893.

Silverman, D. (2001) *Interpreting qualitative data: Methods for analysing talk, text and interaction,* Second ed.*,* London: Sage.

Simpungwe, E., Waalewijn, P. and Raven, B. (2007). Multi-stakeholder dissonance in the South African water arena, in Warner, J. (ed.) *Multi-stakeholder partnerships for Integrated Water Management*, Harlow: Ashgate.

Singleton, R. A. and Straights, B.C. (1999) 'Field Research' in Singleton, R. A. and Straights, B.C., ed. *Approaches to Social Research,* 3rd ed., New York: Oxford University Pres: 320-356.

Skelcher, C. (2005) Jurisdictional integrity, polycentrism, and the design of democratic governance, *Governance*, 18(1): 89-110.

SLIM Project (2004) *Social learning as a policy approach for sustainable use of water; a field-tested framework for observing, reflecting and enabling*, available online from [http://slim.open.ac.uk/objects/public/FrameworkSocalLearningJune04.pdf].

Steelman, T. A., and Carmin, J. (2002) Community based watershed remediation: Connecting organizational resources to social and substantive outcomes in Rahm, D. (ed) *Toxic Waste and Environmental Policy in the 21st Century United States*, Jefferson, NC, McFarland Publishers.

Steins, N. A. and Evans, V. M. (1998) *Platforms for Collective Action in Multiple-Use CPRs*, 7th annual conference of the International Association for the Study of Common Property, Vancouver, British Columbia, Canada.

Strauss, A. L. (1987) *Qualitative analysis for social scientists,* Cambridge Cambridge University Press.

Strauss, A. L. a.nd Corbin, J. (1990) *Basics of qualitative research,* London: Sage.

Swyngedouw, E. (2009) The Antinomies of the Postpolitical City: In Search of a Democratic Politics of Environmental Production, *International Journal of Urban and Regional Research*, 23(3): 601-620.

Swyngedouw, E. Page, B. and Kaika, M. (2002) Sustainability and policy innovation in a multi-level context: Crosscutting issues in the water sector in Heinelt, H. G., Kafkalis, G., Smith, R. and Swyngedouw, E. (eds) *Participatory governance in multi - level context*, Opladen, Germany, Leske and Budrich: 107 - 131.

Taylor, A. (2008) *Ten attributes of emergent leaders who promote sustainable urban water management in Australia*, 11th International Conference on Urban Drainage, Edinburgh, Scotland, UK.

Taylor, A. (2009) Sustainable urban water management: understanding and fostering champions of change, *Water Science and Technology*, 5(1): 883 - 889.

Taylor, A., Cocklin, C. and Brown, R. (2012) Fostering environmental champions: A process to build their capacity to drive change, *Journal of Environmental Management*, 98: 84-97.

The Wildlife Trusts (2013) *The Budget 2013: Value of nature lost on this Government*. Online [http://www.wildlifetrusts.org/news/2013/03/20/budget-2013-value-nature-lost-government].

Thrupp, L. A., Cabarle, B. and Zazueta, A. (1994) Participatory methods in planning and political processes: linking the grassroots and policies for sustainable development, *Agriculture and Human Values*, 11: 77-84.

Tippett, J., Searle, B., Pahl-Wostl, C. and Rees, Y. (2005) Social learning in public participation in river basin management - early findings from HarmoniCOP European case studies, *Environmental Science & Policy*, 8(3): 287-299.

Toupal, R. S. and Johnston., M.D. (1998) *Conservation partnerships; Indicators of success*, NRSC Social Sciences Institute, University of Arizona, Tuscon, US Department of Agriculture.

Turner, J. (1997) *The Institutional Order,* New York: Longman.

Turner, S. (2006) What is the problem with experts? In Selinger, E. and Crease, R.P (eds) *The Philosophy of Expertise*, New York: Columbia University Press.

Tvedt, T. (2003) *The river Nile in the age of the British*, London and New York: I. B.Tauris.

Valentine, G. (2001) 'At the drawing board: developing a research design ' in Limb, M. and Dwyer, C., ed. *Qualitative Methodologies for Geographers: Issues and Debates*, London: Arnold.

Valentine, G. (2005) 'Tell me about....: using interviews as a research methodology' in Flowerdew, R. and. Martin, D., ed. *Methods in Human Geography,* 2nd Edition ed., Harlow: Pearson Education Limited.

Varhallen, A. (2007) Arhus Convention in practice: Access to information and decision –making in a pilot planning process for a Flemish river basin in J. Warner (ed.) *Multi-stakeholder platforms for integrated water management*, Aldershot, Hampshire: Ashgate Publishing Limited.

Wagner, C. L. and Fernandez-Gimenez, M.E. (2009) Effects of community-based collaborative group characteristics on social capital, *Environmental Management*, 44 (4): 632-645.

Wagner, J. R. (2012) Water and the Commons Imaginary, *Current Anthropology*, 53 (5).

Walters, C. J. (1986) *Adaptive management of renewable resources,* New York: McMillan.

Warner, J. (2007) *Multi-Stakeholder Platforms for Integrated Water Management*, Aldershot, Hampshire: Ashgate Publishing Limited.

Watson, N. (2004) 'Integrated river basin management: A case for collaboration ', *International Journal of River Basin Management*, 2(4): 243-257.

Watson (2007) Collaborative Capital: A key to the successful practice of integrated water resources management in Warner, J. (2007) *Multi-Stakeholder Platforms for Integrated Water Management*, Aldershot, Hampshire: Ashgate Publishing Limited.

Watson, N., Deeming, H. and Treffny, R. (2009) Beyond bureaucracy? Assessing institutional change in the governance of water in England, *Water Alternatives*, 2 (3): 448-460.

Weiss, J. (1987). Pathways to Cooperation in Public Agencies, *Journal of Policy Analysis and Management*, 7(1): 94-117.

Wenger, E. (1998). *Communities of Practice: Learning, meaning, and identity,* Cambridge, UK: Cambridge University Press.

Wesselink, A., Paavola, J., Fritsch, O. and Renn, O. (2011) 'Rationals for public participation in environmental policy and governance: practitioners' perspectives ', *Environment and Planning A*, 43: 2688-2704.

Wester, P. and Warner, J. (2002) River basin management reconsidered, in Turton, A. and Henwood, R. (eds) *Hydro-politics in the developing world - A southern African perspective*, Pretoria, African Water Issues Research Unit.

Westermann, O., Ashby, J. and Pretty, J. (2005). Gender and Social Capital: The Importance of Gender Differences for the Maturity and Effectiveness of Natural Resource Management Group, *World Development*, 33(11): 1783-1799.

Whitton, B. A., Boulton, P.N.G. and Clegg, E.M. (1998) Long-term changes in macrophytes of British rivers: River Wear, *Science of The Total Environment*, 210(1-6): 411-426.

Wilsdon, J. and Willis, R. (2004) See Through Science: Why public engagement needs to move upstream available online from [http://changethis.com/manifesto/12.SeeThroughScience/pdf/12.SeeThroughScience.pdf].

Wright, S. A. L. and Fritch, O. (2011) Operationalising active involvement in the EU Water Framework Directive: Why, when and how?, *Ecological Economics*, 70: 2268-2274.

WWF (2001) *Elements of good practice in integrated river basin management 2001: a practical resource for implementing the EU WFD*, Brussles: WWF.

Appendices

Appendix 1

Table below shows the details of the groups who took part in the LRWP. The information was gathered from meeting minute documents and supplemented by web research.

Organisation	Type of organisation	Operational Area	Number of SG meetings attended	Number of DG meetings attended	Number of representatives
Canoe England	NGO Membership funded	National/ regional (run local recreational activities and clubs)	1		2
Chester-le-Street Angling Club	NGO membership funded	Local (Selected reaches of watercourses within LRW catchment)	1		1
Country , Land and Business Association	NGO membership funded	National/ regional (advise land owners)	1		1
Durham County Council	Local Authority	Local/ regional (Land owner and manager within the LRW catchment – statutory powers)	3		9
John Muir Award	Charity	National/ regional (provide outdoor opportunities)	1		1
Lanchester Parish Council	Local Authority	Local/ regional (local land owners and managers – some statutory powers)	1		1
Limestone Landscape Partnership	Heritage Lottery funded project	Local (manage land and run engagement activities)	3		1
National Farmers Union	NGO membership funded	National/regional (represent and advise land owners)	2		2
Sunderland City Council	Local Authority	Local/ regional (locally active but very little land ownership in LRW catchment)	2		1
Woodland Trust	NGO Charity	National/ regional (manage some forested land in LRW catchment)	3		2

Organisation	Type of organisation	Operational Area	Number of SG meetings attended	Number of DG meetings attended	Number of representatives
Durham University	Educational institution	Local/ regional (research projects in local environmental issues – advise on wider issues)	3	2	4
Durham Wildlife Trust	NGO Charity	Local/ regional (Land owner within the LRW catchment)	2	2	3
Environment Agency	Executive non-departmental public body	National/ regional/ local (statutory powers on environmental issues)	3	3	13
Forestry Commission	Non-ministerial public body	National/regional/ local (manage specific areas of forested land in LRW catchment)	1	1	1
Groundwork North East	NGO Charity	Regional/ local (community engagement activities)	3	3	6
Natural England	Executive non-departmental public body	National/regional (provide advice to land managers on environmental issues)	1	2	2
Northumbrian Water	Private	Regional/ local (specific land ownership and water management around LRW catchment watercourses)	3	2	2
Wear Rivers Trust	NGO – charity	Local (manage the riparian and aquatic environments of the Wear - public engagement activities)	3	3	4

Appendix 2

Informed consent form given to each of the interviewees.

Durham University

Research Project:
Collaboration in catchment-scale water quality management

Informed Consent Form

This form is to ensure that you have been given information about this project (see information sheet). It is to confirm that you know what the project is about and that you are happy to take part. Please tick the boxes below if you agree.

I know what the project is about and have read and understood the information sheet. Any questions I had have been answered satisfactorily.	☐
I know I have the right to refuse to answer questions during the interview	☐
I know that my participation is voluntary and that I have the right to withdraw at any time	☐
I agree that the interview can be recorded	☐
I understand what will happen to the data once it has been collected and I am aware of the possible use of my responses for word for word quotations.	☐

Anonymity

I would like to remain totally anonymous ☐
(referred to only as ' participant in the Lower Wear Catchment pilot scheme')

OR

I would like to be referred to by (tick all that apply)

- My status in the pilot scheme *(e.g. 'Development group member')* ☐
- The type of organisation I work for *(e.g. 'Environmental NGO'/ 'Local Authority'/ 'Third Sector Organisation')* ☐
- My job title *(e.g. 'Ecologist')* ☐
- The name of my organisation *(e.g.'participant from the Environment Agency')* ☐
- My full name *(e.g. 'Joe Bloggs')* ☐

I would like to take part Yes ☐ No ☐

Signed _____

Name _____ Date_____

Appendix 3

Examples of the type of questions that were covered in the interviews:

Self and background

Can you tell me a little bit about your role at [your organisation]?

Have you ever taken part in anything similar to the Lower Wear Pilot?

Did you know the catchment well before the pilot – which parts have you done work in before?

Involvement with the pilot

What are your main responsibilities as part of the DG? Is your role different from other people?

How did you first get involved with the pilot?

Have you enjoyed being part of the DG/SG?

Working together

Do you think that the meetings have been productive?

Did you enjoy certain styles of meeting or activities in the meetings more than others? What did you think of the facilitation styles?

Do you feel that everyone in the meetings, either the DG or the SG shared the same priorities for the catchment?

Did you feel your opinions and comments had an impact on the final catchment plan? Were you able to communicate the needs of your area and your project adequately?

Were there ever any disagreements about decisions?

Apart from those that worked at the EA, did you know any of the other members of the DG/SG before you were involved in the pilot?

Do think your working relationship with the EA has changed as a consequence of being part of the pilot?

Opinions on the pilot process and outcomes

What do you think have been the most significant achievements of the pilot project so far?

Do you feel there were any problems or restrictions to the process of developing a catchment plan?

Are there any spinoff activities you are currently working on in partnership with other organisations in the pilot??

What is your opinion about working at the catchment scale?

Inclusion and sharing information

Do you feel like all the right people were included in the meetings? Who else would you have liked to have been there?

What do you think limited some people from becoming more involved in the pilot process?

What is your opinion about bringing in public representation to the Wear Pilot?

How did you share information between the DG members?

Future of the pilot

How influential do you think the partnership can be?

Are you planning on being involved in the future stages of the group? How and why?

Is there anything else you would like to add?