

**HEARING SILENCED VOICES**  
**A LEARNING-CENTRED APPROACH TO**  
**SUSTAINABLE LAND REHABILITATION AND**  
**NATURAL RESOURCE MANAGEMENT**

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## ABSTRACT

South Africa is a semi-arid country with dysfunctional water management. The National Water Act encourages integrated water resource management and public participation in contributing to strategies for managing water within delineated areas. Various challenges hamper progress of integrated water resource management and meaningful participation by residents in catchments across the country. One of the challenges is the lack of knowledge about their role in water resource management.

By viewing catchments as complex social-ecological systems, this case study investigates how to establish a learning-centred approach to catchment management forum (CMF) formation.

The study addressed three sub-questions:

- What activity systems need to be prioritised for community participation in CMF formation?
- What existing learning can be identified within the activity systems?
- What are the sources for expansive social learning in and between the activity systems?

The study draws on social learning theory, and on cultural historical activity theory as it offers a methodological approach to identifying a learning-centred approach to learning in a catchment context. Drawing on this theoretical framework, for research question 1, I identified five activity systems that are present in the study area, are partly representative of the people who live in the area, and are linked to land and water governance either through their positions as government employees within the sector, or the NLEIP in ways that influence communities' lives and livelihoods. To address question 2, I ran learning-centred workshops and interviewed people who lived in the study area. Careful, respectful listening and participants' use of home language created the safe space in which residents revealed that they know which water resources are important to protect and where breakdowns in communication happen. For question 3, I analysed the data from the workshops and interviews using a cultural historical activity theory framework to identify discursive manifestations of contradictions within and between activity systems which illuminate the potential for expansive social learning.

This study recommends developing an understanding of the complex social-ecological context and prioritising co-learning and community participation in a learning-centred approach to catchment management forum formation. For this, there is need to develop in-depth insight into activity systems associated with water governance in local contexts. In this study I identified five of these activity systems, but the study points to a further range of activity systems that need to be considered for a learning-centred approach to be fully established. The study also found that communities are learning via engaging in the rehabilitation work, through engagements in workshops and within the municipal structures. Additionally, the study identified a number of contradictions that can provide sources of learning for taking an expansive learning approach further in CMF formation. Such an approach may provide the space to build bridges of trust between diverse knowledge systems, and has the potential to encourage sustainable co-operation in natural resource management.

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## LIST OF ACRONYMS

CHAT	Cultural historical activity theory
CMA	Catchment management agency
CMF	Catchment management forum
CMS	Catchment management strategy
COGTA	Cooperative Governance and Traditional Affairs
CSES	Complex social-ecological systems
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEA: NRM	Department of Environmental Affairs: Natural Resource Management
DFA	Development Facilitation Act
DHS	Department of Human Settlements
DM	District municipality
DRDAR	Department of Rural Development and Agrarian Reform
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
GIS	Geographic information system
IDP	Integrated Development Plan
IWRM	Integrated water resource management
LM	Local municipality
MEC	Member of the Executive Council
MM	Municipal Manager
NLEIP	Ntabelanga Laleni Ecological Infrastructure Project
NRM	Natural Resource Management
NWA	National Water Act
SAM	Strategic Adaptive Management
SPLUMA	Spatial Planning and Land Use Management Act
UCPP	Umzimvubu Catchment Partnership Programme
WSA	Water Services Act

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## **CHAPTER 1 INTRODUCTION**

### **1.1 Motivation for the study – the Ntabelanga Dam and the Department of Environmental Affairs**

On 11 April 2014, South Africa's previous President, Jacob Zuma, officially launched the Mzimvubu Water Project at a sod-turning ceremony held at the site of the proposed Ntabelanga Dam. In his address to residents and representatives from government, the President outlined the planned rehabilitation work that would take place and the job opportunities this work would provide (Presidential speech, 2014). The Mzimvubu River is one of the largest un-impounded (free-flowing) rivers in South Africa, in one of the poorest and most underdeveloped regions of the country (Westaway, 2012). The Mzimvubu Water Project forms part of the National Government's Strategic Integrated Projects (SIP3 – South-Eastern node and corridor development, Presidential Infrastructure Coordinating Commission, 2012) and involves the construction of two multi-purpose dams in the Mzimvubu catchment: the Ntabelanga and Laleni Dams, to be constructed on the Tsitsa River, one of four primary tributaries to the Mzimvubu River (van Tol et al., 2014). The dams are expected to provide new water capacity for domestic and industrial use, to generate hydroelectric power, and to develop irrigation (Department of Water Affairs (DWA), 2013). The Mzimvubu Water Project will spread over three of the poorest district municipalities in the Eastern Cape Province: Joe Gqabi, OR Tambo, and Alfred Nzo.

The site of the Ntabelanga Dam is in quaternary catchment T35E (quaternary catchment: the principle water management unit in South Africa) (Figure 1-1) where the dispersive soils are prone to erosion, driving high sediment run-off into the streams, tributaries, and the main stem of the Tsitsa River. The highly eroded, and erodible areas upstream of the Ntabelanga Dam, and the impact of potentially high sediment loads in the rivers, may shorten storage capacity and the lifespan of the Ntabelanga Dam, and add to water treatment costs in future (CSIR, 2010). In an attempt to deal with these concerns, the Department of Environmental Affairs: Natural Resource Management (DEA: NRM) is investing in programmes to assist in the rehabilitation and stabilisation of the upstream ecological infrastructure – the Ntabelanga Laleni Ecological Infrastructure Project (NLEIP). This case study forms part of a suite of research projects being undertaken by researchers and students from various research

facilities and higher education institutions across South Africa (Figure 1-2). This study uses proto-catchment management forum (proto-CMF) workshops, run as a precursor to the envisaged establishment of a CMF as participatory governance institutions (DWAF, 2001), to explore the establishment of a learning-centred approach to CMF formation.

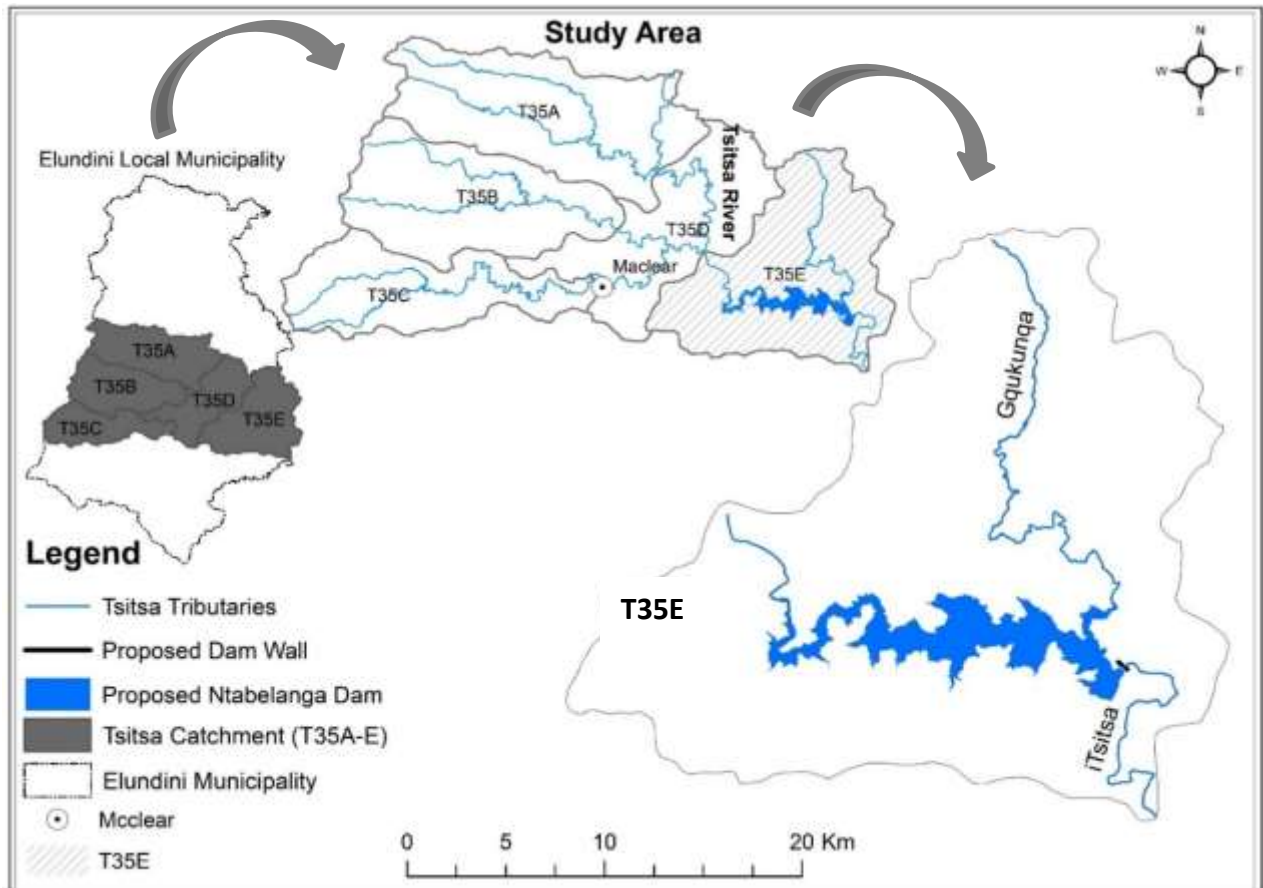


Figure 1-1: Study area – quaternary catchment T35E within the Elundini Local Municipality (map by S.Mazibuko).

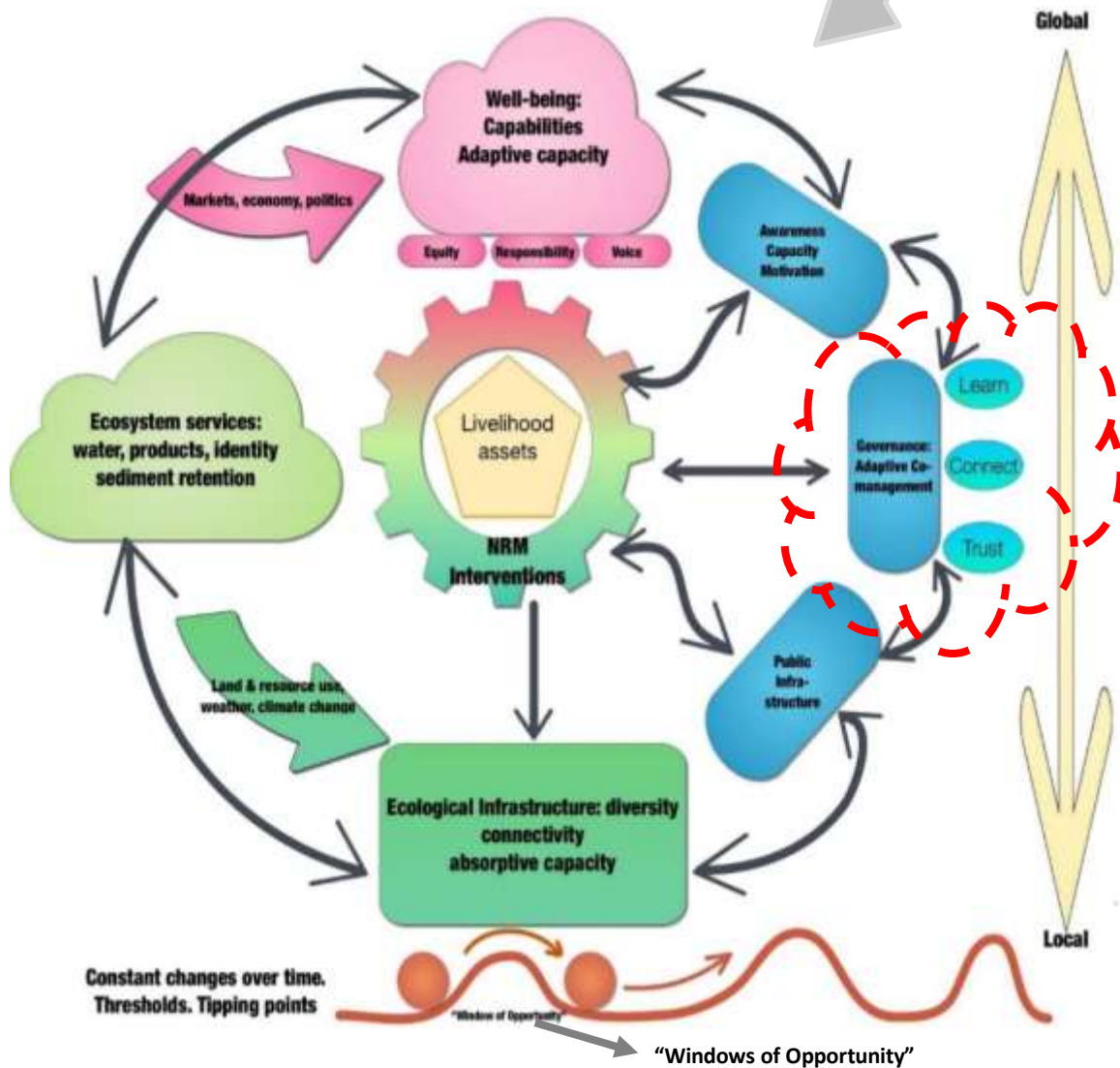
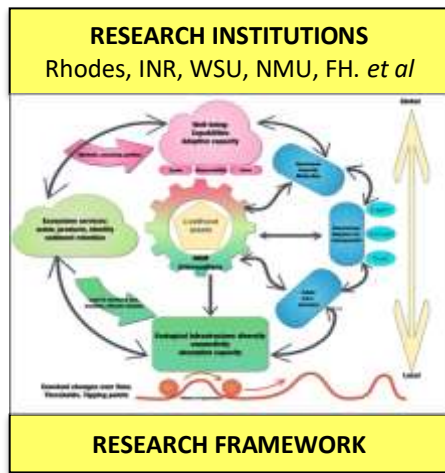


Figure 1-2: Research institutes involved in the Ntabelanga Laleni Ecological Infrastructure Project (top). Enlarged image shows the Natural Resource Management (NRM) interventions and feedbacks and connections between well-being, ecosystem services, ecological infrastructure, public infrastructure, governance and awareness, capacity and motivation. Red outlined area indicates Governance: Adaptive Co-management (Learn-Connect-Trust) and is the area in which this case study falls as part of the research programme (Fabricius *et al.*, 2016).

Water governance in South Africa has changed considerably since 1998. Prior to the apartheid regime, water resource management in rural parts of the country fell to the traditional leaders (Kapfudzaruwa & Sowman, 2009; Meissner et al., 2016). With the introduction of homelands (1970s) and forced removals (1960 to 1983), the traditional ways of land and water governance and resource management dissolved as these processes became the mandate of central government. The Water Act No. 54 of 1956 (Union of South Africa, 1956) gave control of water to central government with a particular focus on industrial and groundwater (Tewari, 2009). The National Water Act (Act No. 36 of 1998) (NWA) (Republic of South Africa (RSA), 1998b) focusses on decentralisation of water resources management in contrast to the previous Water Act (Meissner et al., 2013) and includes the concept of integrated water resources management.

Mackay et al. (2014) and Sershen et al. (2016) suggest that the concept of the new practice of integrated water resources management within the NWA is hampered by lack of trust and co-operation. Mistrust, silo approaches to solving problems, and lack of communication have been cited (Dent, 2012; McAlpine et al., 2015; Pollard & du Toit, 2011) as creating barriers to changes in the way that water is managed, and to changes that are essential to fulfil the requirements of the National Water Act.

Currently water resource governance in South Africa rests with the national Department of Water and Sanitation (DWS) with regional offices across its nine provinces. The National Water Act (Act No. 36 of 1998) (NWA) heralded a new era in water governance in South Africa. It was hailed as a profoundly impressive governing Act and a real opportunity for the injustices of the past in South Africa to be overturned. The NWA incorporated various new water management institutions (Meissner et al., 2013) including CMAs, water-user associations (WUAs), CMFs, and international water management bodies (IWMBs). The NWA intended to redress the inequalities (Brown, 2011) driven by the previous 1956 Water Act, doing away with riparian water rights (Brown, 2011), and introducing the subsidiarity principle from the South African constitution (Meissner et al., 2013). This principle implies that the central government only performs those tasks that cannot be performed at a more local government level (Funke et al., 2007; Meissner et al., 2013). In the historical context of water in South

Africa, riparian rights allowed the owner of land alongside a river to exclusive and in-perpetuity (Rowlston, 2011) use of the water without recognition of the needs of others downstream of their land. In rural South Africa, the riparian rights within the previous Water Act often meant that white commercial farmers had access to water, while black communities had neither rights nor access to water.

The NWA provides a firm commitment to promoting transparent and effective participation and empowering stakeholders, particularly those from previously marginalised or disadvantaged communities. In addition, it emphasises the relationship between socio-economic development and IWRM. The NWA provided the framing legislation for improved equity, but the first democratic government grappled with a multitude of challenges, including making water distribution more fair and equitable (Schreiner, 2013). People working within the water sector rapidly realised that the task they set themselves through the NWA was enormously challenging.

The aim of the NWA is essentially transformation through participation, but the reality in many rural areas of South Africa is lack of education, transport, roads, communication, and infrastructure, which therefore excludes participation of communities in water and landscape management (Förster et al., 2017; Kemerink et al., 2013).

Schreiner (2013) outlined some of the key aspects where implementation of the NWA has been inadequate, including provision for institutional arrangements and licensing water use. She points out that neither the transformation of the irrigation boards nor the establishment of CMAs has been achieved efficiently or effectively, and suggests a number of drivers for the lack of implementation, including the practicality of implementation, leadership, decision making, and accountability. In the context of this research, the slow pace of establishing the CMAs and the slow licensing for water use has had a knock-on effect on those most impacted by inadequate water service delivery. On account of the non-establishment of the CMAs, other institutions that fall under the control of the CMA have, in many instances, not come into being. The need to enable participation from ground level up has largely been omitted as the CMAs are provided for by the NWA, but are not active in the institutional landscape.



As the years have passed since the promulgation of the NWA, fewer people understand the significance and importance of the NWA and the three principles of equity, sustainability and efficiency required by the Act. The task of establishing CMFs, with no functioning CMA and little support from the DWS, has become increasingly problematic – it is difficult to persuade individuals and organisations to take part in something that is not clearly and obviously beneficial.

South Africa continues to face water and food security issues (Altman et al., 2009; Kilian, 2016) with 2016 and 2017 seeing South Africa in the grip of one of the worst droughts in recorded history (Turton, 2016). The necessity for government – national, provincial and local – and all stakeholders to work together in an integrated way towards effective and efficient management of land and water is increasing. The establishment of functional CMAs across the water management areas with increased engagement between all levels of government and all stakeholders, might enable more responsive and efficient decision making for land and water.

The decentralisation of water and the introduction of cooperative governance in post-apartheid South Africa ushered in a new era of optimism for the inclusion of all voices in the way in which resources, including water, are allocated, managed, and used across the country. There are challenges in changing the way in which natural resources are managed and implementation of many of the required institutions within the NWA have been slow or non-existent (Department of Water Affairs and Forestry (DWAF), 1997). Writing on CMFs and water governance in South Africa tends to focus on urban and peri-urban (Barnes, 2013; Munnik et al., 2016) areas. Expectations and use of water resources in rural areas are different – ecosystem-based services and stable water and natural resources are vitally important. Rural populations are often unable to voice their concerns or give input into decisions made regarding the natural resources they are highly dependent on. Policy makers and researchers could benefit from insights in the ways that rural communities participate in water governance and what the barriers and bridges are to that participation. For the residents living within the Tsitsa River catchment, the water supplied by the river is critical to their livelihoods and survival. The prospect of a dam, for those upstream of the proposed dam,

does not mean that their opportunities for piped water increase. The construction of a dam simply means that there is the chance that communities will lose their most fertile grazing and arable land, and that their water source may become silted in a shorter space of time than anticipated, threatening not only their access to drinking water but also their livelihoods.

## **1.2 A learning-centred process – bridging the gap between different ways of knowing**

As noted in the previous section, South Africa is divided into nine water management areas. These areas (under the NWA) should be managed by a catchment management agency (CMA) (gazetted by the Department of Water and Sanitation). The CMA is required to write a catchment management strategy with input from stakeholders within the water management area (Rogers & Luton, 2011). Catchment management forums (CMFs) are non-statutory, and were envisaged as local, flexible institutions in which relationship and capacity building, and co-operation among stakeholders could be encouraged. Catchment management forums were expected to contribute to water resource management by engaging with other stakeholders, lobbying, and making recommendations to the CMA, and helping promote integrated planning and cooperative resource management between the CMA and other government departments (Department of Water Affairs and Forestry (DWAF), 2001). The CMFs would allow a more bottom-up approach to water resource management with input from local people. However, historical impacts on the way in which people interact across South Africa, differing levels of education, different languages, and a lack of political will have made engaging with people a challenging task, and created barriers to participation.

Takayanagi (2016) suggests that in many parts of the world, and particularly in Africa, ways of engaging with previously marginalised and rural communities need to be carefully considered and introduced. In an African context people may work together in ways that benefit the community and not just the individual (Takayanagi, 2016). Armitage et al. (2008) point out that because individuals learn and organisations do not, it is important to focus on the social context in which the individual learns. Building relationships within and between communities with differing values and understandings is important in increasing the chances of sustainable land and water management (Ison et al., 2007; Wals, 2007).

One way of building relationships and bridging knowledge gaps is by learning together. Understanding the ways in which adults interact and learn is important for building bridges in tackling problems facing society (Roux et al., 2006). Teacher-centred approaches (viewed as authoritarian and hierarchical) (Prince & Felder, 2006) to teaching and learning have been replaced with a more learner-centred focus, where learners are more engaged in the process and are likely to learn from each other and build on the knowledge others learners have. Individual and social (group) learning is necessary and the integration (in rural settings) of traditional knowledge is important (Takayanagi, 2016).

In this study, learning-centred engagement acknowledges that all participants in the study (including the researchers) are learners and teachers, and each person has the potential to share their knowledge in the engagement process. By understanding and learning together about the challenges and possible solutions to these challenges faced by the residents of the Tsitsa River catchment, this study explores how a learning-centred approach to CMF formation could be constituted. The CMF, albeit a non-statutory institution, may offers one institutional structure in which relationships and trust could be built.

### **1.3 Our world is filled with complex social-ecological systems**

A complication in involving communities in water management is that water management areas are complex (Pollard et al., 2014): they are home to a diversity of people, plants and animals. In an ever-changing world, and as increasing pressure is put on earth (particularly to supply fresh water and food), many researchers acknowledge that social (people) and ecological (plants and animals) systems are inextricably linked (Biggs & Rogers, 2003; Folke, 2006; Pollard & du Toit, 2011). Part of the challenge in this changing world is how to achieve outcomes that are sustainable for this linked system. A social-ecological systems approach explicitly acknowledges feedbacks and links between the two systems (Leslie et al., 2015). These feedbacks result in relationships that are non-linear and are important to acknowledge and be aware of in untangling and working towards understanding the interactions between the systems. Researchers (Audouin et al., 2013; Biggs et al., 2008; Holling, 2001; Palmer et al., 2015; Rogers et al., 2013) suggest these social-ecological systems be viewed as complex and that a wide range of disciplinary (Roux et al., 2010) and management (Rogers et al., 2013)

perspectives are needed to work in an integrated and systemic way towards possible solutions.

Traditional, linear ways of managing complex social-ecological systems do not work; complexity thinking and transdisciplinary approaches to managing systems need to be adopted (Rogers et al., 2013). The social elements of these systems comprise people of all knowledge types who play critical roles. Beginning to understand these roles requires time and effort. Engaging with people and learning together (both the researcher and the participants in the research process), building understanding and sharing values may be viewed as a learning-centred process.

#### **1.4 Complex social-ecological systems and learning**

It is impossible to bound a complex system (Cilliers, 2000). It is, however, important to acknowledge the boundaries that a researcher draws in order to study a particular aspect of a complex system and the researcher acknowledges that there are impacts outside the system they are analysing. Of the several research theories and analytical frameworks available, Cultural Historical Activity Theory (CHAT) (Y. Engeström, 1987) provides this researcher with the tools to study human activity in the context of culture and history within a particular, loosely bounded system. In order to gain a deeper understanding of the relationships between the subject (individual or group of people) within an activity system and the way in which each subject reaches a desired outcome using mediating tools (physical objects and systems of symbols (e.g. language)), the culture and history, as drivers in the context, must also be understood.

Everyone is influenced by the culture and history of the place in which they live and Engström's (1987) analytical framework provides a tool to describe the activity system in the context of culture and history by considering the rules, division of labour, and community in which the subject resides. One of the many advantages of the analytical framework and CHAT is that it enables the researcher to observe interactions with people and, on analysing the data gathered, surface the contradictions in the particular system. In CHAT terminology, these contradictions, tensions or ruptures, may be viewed as the 'illuminative hinges' (Foot, 2014)

at which learning and change can possibly take place. Illuminative hinges allow new views of understanding and act as the connection (hinge) between the 'fixed', historically formed activity system, and the possibilities of expansion to a new, future activity system. The contradictions should not be viewed as stumbling blocks, but rather as bridges across which people within activity systems can move together towards better understanding and connection.

Glasser (2010) points out that people engage in the process of learning in different ways, ways that include observation, conversation, and mentoring. He maintains that all these ways of learning involve interaction with living beings. Acknowledging this and using the analytical framework provided by CHAT, enables the interactions and learning within diverse groups to be analysed.

### **1.5 Social learning – listening, sharing, building relationships, trust, and respect**

Social learning can play an important role in the way in which people in complex social-ecological systems learn and work together towards a common goal. This study uses social learning in its broadest sense and the definition offered by Wals (2007):

*[social learning] takes place when divergent interests, norms, values and constructions of reality meet in an environment that is conducive to learning. This learning can take place at multiple levels, i.e. at the level of the individual, at the level of a group or organisation or at the level of networks of actors and stakeholders.*  
(p.18).

Learning together and allowing relationships to build and strengthen through a learning-centred process in which all knowledge is shared, may lead to concerted action by the stakeholders participating in the process (Jiggins et al., 2007; SLIM, 2004). It is important to remember that social learning contexts are specific (Jiggins et al., 2007) and that the interactions between the people that live in the place, and their relationships with the environment, will be specific to that place. Learning and outcomes from one context cannot simply be upscaled or transferred to another context.

Learning-centred processes in which knowledge is shared offer the opportunity to build relationships between research and community, and within the community itself (McAlpine et al., 2015). Changes in understanding and sharing concerns about water and landscape management that impact directly on the lives and livelihoods of community members may create a shift in values and resultant actions that are more likely to be shared (Ison et al., 2007; Wals, 2007).

However, Fabinyi et al. (2014) caution that people in a complex social-ecological system do not necessarily work together for the benefit of the community and that it is important to keep in mind that people come from different backgrounds with different interests. Glasser (2010) also notes that awareness of a problem, and even concern for a problem, does not necessarily lead to action. The learning-centred process to facilitating the establishment of a CMF encourages a sharing of collective and individual values. Those shared values are the basis of respect and trust (McAlpine et al., 2015) within the group, and through the learning-centred process, responsible, ethical behaviour regarding the social and ecological elements of the system may emerge.

In order to include people in rural and marginalised communities in a learning-centred process, the power relationships and traditions of those communities must be considered. Trust and openness about different ways of knowing need to be developed in the ways people engage. The processes involved in building those relationships can be long and tiring, a fact that many recognise, but do not necessarily incorporate in their planning processes (Agnew, 2011; Dare & Daniell, 2017). The South African Government continues to struggle with the decentralisation of water management, and the voices of the marginalised remain unheard. Instead, top-down, hierarchical, linear management approaches to complex problems continue in the natural resources management arena (Angelstam et al., 2017). Often implementation of natural resource management (for example alien vegetation clearing, water pollution control) ends up being done by people who live in the places where programmes take place, but who are not regarded as people who truly participate in the decisions made regarding their resources (Mackay et al., 2014).

Dare and Daniell (2017), in speaking about localism (*“devolution of power from central control to more local structures and institutions within an agreed framework”* (Evans et al., 2013)) point out that water governance is *“institutionally complex, and politically charged”* and this is true of water governance in South Africa. They and Mollinga (2008) argue that well-supported local approaches to water governance and learning through these approaches need to be considered in order to build the trust necessary for shared learning to happen.

The study undertaken here suggests that changing the way in which engagement happens may build bridges to longer-term, more sustainable relationships by sharing knowledge and experience, and so support sustainability in water and landscape management.

### **1.6 Research objective and questions**

The primary objective of this study is to consider how a learning-centred approach towards CMF formation could be constituted. Five activity systems were identified that should, at least, be included in the establishment of a CMF. The five activity systems were: Water Governance; Rehabilitation work (Team); Rehabilitation work (Manager); local governance (Local Government); and local governance (Traditional Council). Each of these activity systems has their own object, but because of the NLEIP, the NWA and the guiding question of the study, a shared common object (water governance and sustainable livelihoods) emerged. The five activity systems contribute in different ways to the shared common object.

The Water Governance activity system, as the rule producing activity system, primarily influences water governance of the shared common object. The Rehabilitation Team activity system focuses firstly on their personal livelihoods, but the work they are undertaking could contribute to the community’s sustainable livelihoods and in future, possibly, water governance. The local governance (municipal and traditional) activity systems are both concerned with water governance and sustainable livelihoods and influence the shared object to varying degrees at various times. Participants in the activity systems are linked to land and water governance in their positions as employees of either government departments or the NLEIP in ways that influence communities’ lives and livelihoods.

The choice to separate the Rehabilitation Manager and the Rehabilitation Team into two different activity systems was based on an assumption that the data gathered would give different perspectives as the manager deals with different tools and rules from the teams that work on the landscape.

Within the context of the rural Eastern Cape, consideration must be given to both local government and traditional leadership as the power relations, traditional cultural and impacts from various levels of government are different, therefore local and traditional activity systems were analysed.

The researcher hypothesised that learning-centred workshops towards the establishment of a CMF in the Tsitsa River catchment could give insight to the way in which a learning-centred approach to CMF formation could be constituted.

Therefore, the research question is:

How could a learning-centred approach be constituted towards CMF formation?

Three sub-questions guide the research:

1. What activity systems need to be prioritised for community participation in CMF formation?
2. What existing learning can be identified within the activity systems?
3. What are the sources for expansive social learning in and between the activity systems?

## **1.7 Overview of the chapters**

Chapter 1 has introduced the study, and details the research questions of the study. Chapter 2 presents the context for the study. The conceptual and theoretical framework for the research is presented in Chapter 3. Chapter 4 explains the research design, the research methods used, data gathering and analysis, and ends with a discussion of data validity and ethics. Chapter 5 presents the findings in the context of the study. This is followed by the discussion and recommendations in Chapter 6.



## **CHAPTER 2 CONTEXT**

### **2.1 Introduction**

This chapter amplifies the broad introduction given in Chapter 1 and provides information about the study area. The National Water Act (Act No. 36 of 1998) (NWA) with its three core aims of equity, efficiency and sustainability guides the study to explore relationships between people, land and water within the structure of a CMF within a CMA. The chapter briefly explores the history of CMA development and initiation in South Africa and the role of a CMF within the structures of the NWA.

### **2.2 Integrated Water Resource Management (IWRM)**

Research and writing about IWRM in South Africa and internationally (Dent, 2012; Mehta et al., 2014; Schreiner, 2013) is substantial. It is a system that is recognised as necessary if true cooperative governance around water is to exist and yet it is increasingly acknowledged that the implementation of IWRM is challenging, time consuming and, in many instances, governments (national and local) do not have the resources (financial or human) to implement this style of management effectively or efficiently (Schreiner, 2013).

Integrated water resource management can be viewed as a guide to action (Merrey, 2008) for managing water for the good of livelihoods, the environment, and sustainable development. In order to achieve these goals, the political nature of water, and cooperative governance between all departments that deal with water and land need to be taken into account. Integrated water resources management must acknowledge various mechanisms that should be in place in order for such management to be put into practice: the sustainability of water and the environment for natural and human well-being; recognition that water is an economic good; participatory approaches; and co-ordinated management of water.

Successful implementation of IWRM in various countries in the global North (for instance Europe and North America) saw the concept taken up by big international funding agencies (Merrey, 2008). There was a drive for implementation of IWRM in the global South (for instance South America and southern Africa) with different climates, governance structures

and many still emerging, new democracies. In an African context, the panacea of IWRM has not brought about the socio-economic or ecological results anticipated, partly because of the complexity and size of catchments.

One of the challenges in a complex society such as South Africa, and in the context of the Tsitsa River catchment, is the tension and sometimes contradiction between 'rules-in-form' (formalised policy and expected functioning of institutions) and 'rules-in-use' (informal rules and rules that are adapted in practice) (Cleaver, 2012; Clifford-Holmes et al., 2016). Because the NWA exists (rules-in-form) the challenge lies in enabling people to participate in meaningful ways within the participatory institutions (for example, CMFs). Enabling meaningful participation may require that people do not go about business as usual, but rather look for ways of understanding what type of participation is required and when. The dual and often competing formal and informal rules, and customary systems in place (Mehta et al., 2014) may not comply with the ways in which people are actually managing water in their villages or towns.

The DWS has its own challenges in implementing the NWA, and therefore IWRM. Many of the offices are understaffed and overworked (Funke et al., 2007; Clifford-Holmes, 2015), the management structures do not enable IWRM, and in some cases, managers are not aware of IWRM or how to begin implementing it without support from senior management (Funke et al., 2007; Clifford-Holmes, 2015). On the whole, the structures within the DWS still function with a top-down management approach.

Those working at the 'coal face' (including middle management within local and provincial government) do not have the voice or power to make the necessary changes to enable more efficient functioning of the DWS (Förster et al., 2017). Clifford-Holmes et al. (2016) refer to managers working in the 'muddled middle' which is the point at which the most learning, knowledge sharing and problem solving could and should take place. It is in the 'muddled middle' where out-of-the-box solutions to context-specific problems can be found, and it is here that the CMF has an important role to play.

### **2.3 Catchment Management Agencies (CMAs)**

As an institution in which all stakeholders are engaged and connected, CMAs can be deeply democratic (Dent, 2012), but the scale and complexity of water management areas means that effective participation is difficult (Brown, 2011). Each water management area covers different landscapes with a variety of rainfall patterns, vegetation types, municipal boundaries (local and district), traditional councils, and water quality and quantity challenges. The Act requires that each of the water management areas is run by a CMA. The water management areas run along catchment boundaries which are different from the provincial, municipal and traditional council boundaries (Meissner et al., 2013). An already complex sector (water management) has become increasingly complex (Heila Lotz-Sisitka & Burt, 2006; Meissner et al., 2013).

Under the NWA, statutory institutions perform various functions. Each CMA, as the responsible IWRM authority, is expected to develop, plan, write and implement a CMS to manage water resources in the water management area (Brown, 2011). The CMA should be responsive to all water users in the water management area through a participatory process (Brown, 2011). Writing a CMS requires extensive participation, consultation and involvement with stakeholders and role-players (DWAF, 2001). Role-players are those that influence decisions, and stakeholders are those directly affected by the decisions and outcomes (Department of Water Affairs and Forestry (DWAF), 2007). It is acknowledged that CMFs play a central role in the process of developing the CMS (DWAF, 2001). Unlike other institutions set up under the NWA, a CMF is a non-statutory water management institution which can assist in supporting statutory water institutions such as catchment management committees (Boakye & Akpor, 2012) though no such committees exist or have been set up in South Africa to date.

A brief history of the implementation of the NWA since 1998 reveals some of the problems. Initially South Africa was divided into 19 water management areas. In 2013, water management areas were combined to reduce the number of water management areas to nine (Meissner et al., 2013; NWRS2, 2013). The prohibitively high administration costs of 19

water management areas led, in part, to the reduction in number of the water management areas (Figure 2-1 showing the current water management areas).



Figure 2-1: Nine water management areas of South Africa (modified from Bailey and Pitman, 2016)

Figure 2-2 shows water management area 7 (Mzimvubu-Tsitsikamma) which covers almost the entire Eastern Cape and a portion of the Western Cape.

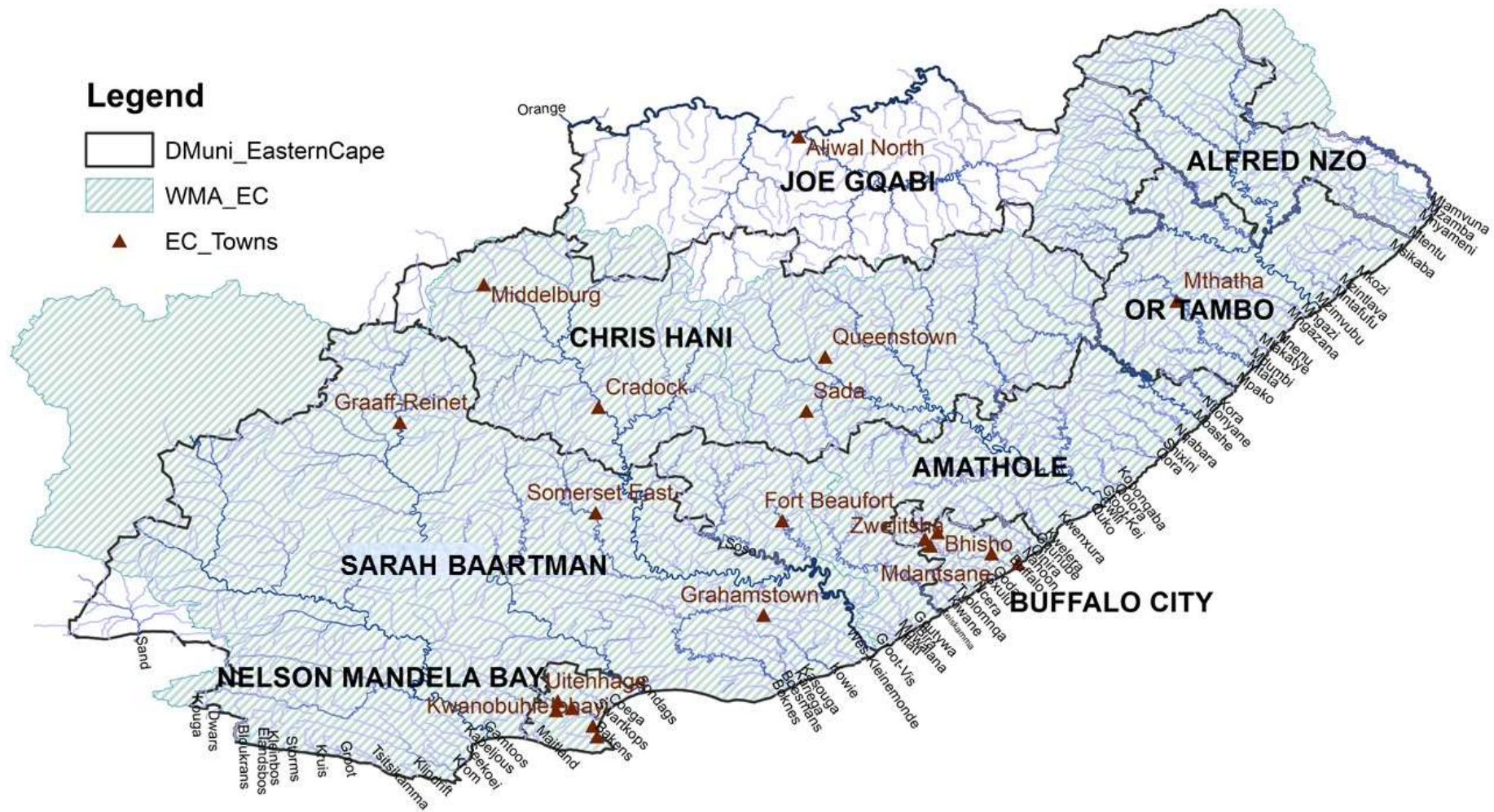


Figure 2-2: Water Management Area 7 - covering the Eastern Cape and a portion of the Western Cape (map by S. Mantel)

One of the exacerbating effects of the slow pace of CMA development is the lack of real understanding of a CMS and the role that the public should play in developing the strategy. On-the-ground knowledge of the right to be involved in land and catchment management is lacking in many parts of the country and in the context of the Tsitsa River catchment there is little understanding, not only of the NWA, but also of the Water Services Act (Act 108 of 1997) (WSA). In smaller municipalities the roles of water service provider and water service authority may coincide (Clifford-Holmes, 2015). In the Tsitsa River catchment, water service provision responsibilities and functions now rest with the district municipality situated 138 kms away, creating problems within the Elundini Local Municipality when there are water issues within, particularly, the town of Maclear (Elundini Municipality, 2016).

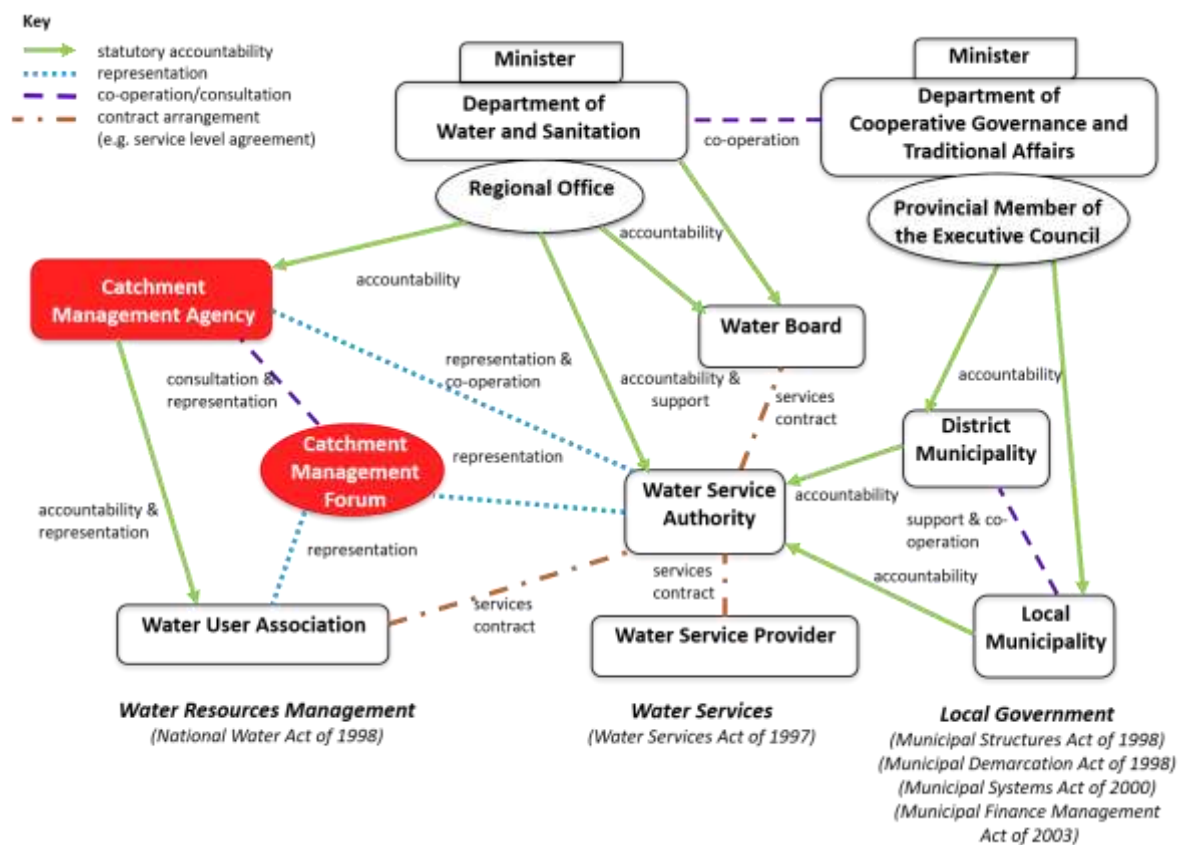


Figure 2-3: Primary institutional arrangements between water sector institutions. The direction of the 'statutory accountability' arrows is from superior to subordinate organisations (Adapted from Pegram and Mazibuko, 2003).

## **2.4 Catchment Management Forums – the bridge**

Catchment management forums provide a space where relationship-building and trust can begin through a common understanding of the role the CMF can play in a particular context and space. It is a space where the concerns and possible actions that the community itself can take, can be raised. It is a way in which individuals and organisations, such as water users, can make their voices heard and work together for the long-term benefit of the community in which they live. The CMF provides the opportunity for learning and relationship-building between various individuals, groups of water users, government agencies, non-government organisations (NGOs) and associations to take place. In order to develop strategies for their own catchment, individuals and groups will need to work together to prioritise areas which they need to influence. One of the ways in which this learning and development of strategies may be possible is through participation in a CMF, if that CMF can call in knowledge-sharing resources.

Since 2015 there has been a renewed energy and focus on the revival and start-up of CMFs in South Africa (Mahasha, 2014). The DWS has acknowledged that their implementation of CMAs has been slow (Förster et al., 2017; Schreiner, 2013) and that in order to gazette and legitimise the remaining CMAs with meaningful CMSs, the CMFs need establishment, support and functionality. That energy has shown itself in the Eastern Cape in the proto-Mzimvubu-Tsitsikamma CMA being established. The proto-Mzimvubu-Tsitsikamma CMA will be established in terms of section 78(1) of the NWA and become the Mzimvubu-Tsitsikamma CMA, and will be responsible for facilitating the establishment and support of CMFs in the water management area.

Munnik et al. (2016) demonstrate that there are various inhibiting factors to establishing CMFs (such as language, transport costs, and capacity building (enabling stakeholders to participate)) but their report suggests possible solutions to these factors. The willingness of the DWS to engage, once again, with stakeholders suggests that there is an opportunity for the establishment of a CMF in the Tsitsa River catchment with linkages to other emerging forums within the larger Mzimvubu catchment. The Umzimvubu Catchment Partnership Programme (based in Matatiele to the north of the study site) has been in existence (officially)

for four years and works closely with government departments, NGOs and community members on awareness campaigns and water and land management. To the south of the study site at the mouth of the Mzimvubu River (Port St John's), community engaged work is underway building understanding and capacity for rural community members to form a CMF.

Even though there is willingness on the part of DWS to engage with stakeholders, communities in rural areas of the country do not automatically have access to transport, email or telephones, and do not necessarily speak English. Additionally, because of the inequalities of the past, not everyone in a rural community is literate. The technicalities of the NWA are not explained at meetings or workshops in a way that promotes understanding (Funke et al., 2007; Schreiner, 2013). Research shows that there is a lack of knowledge of the NWA and its institutional structures (Mehta et al., 2014). This lack of knowledge is a challenge which is exacerbated by insufficient trust, communication and capacity building among stakeholders (Funke et al., 2007; Meissner et al., 2013).

Communication is fundamental in building trust and capacity, and different lines of communication have been described in business organisation literature, ideas which are developed and used in this study.

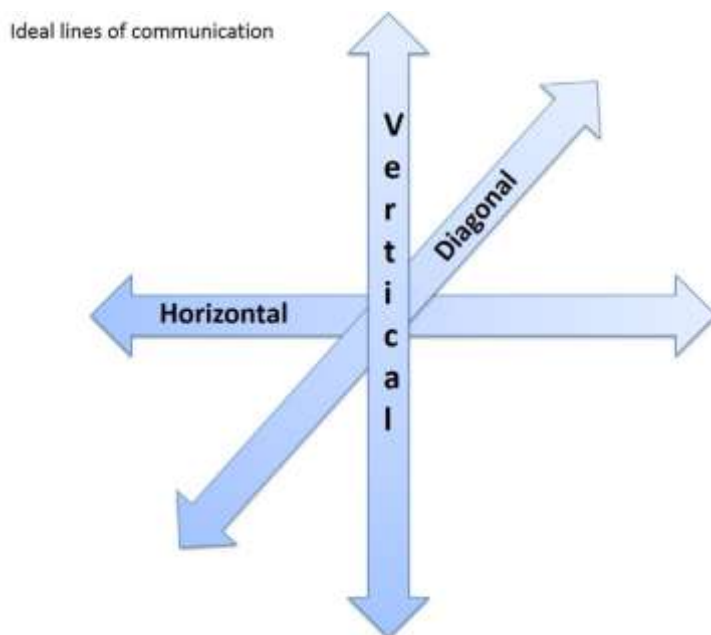


Figure 2-4: Ideal lines of communication

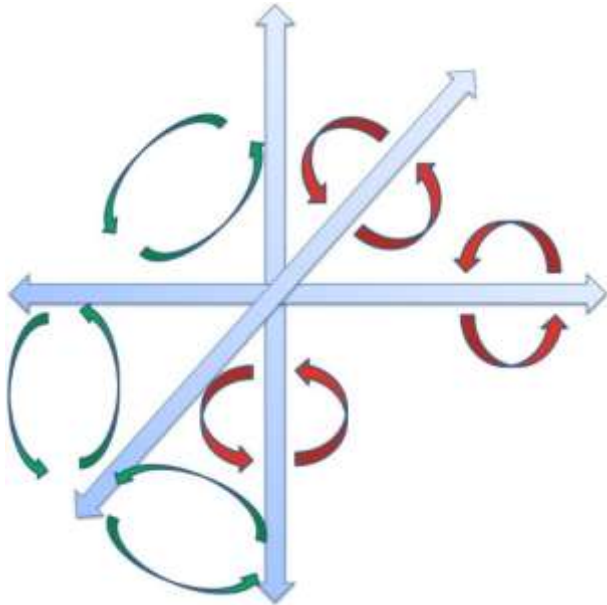


Vertical communication (Figure 2-4) usually occurs downward from senior management to supervisors and from there to workers within different departments (Larkin & Larkin, 1994). In an organisation (and many government departments) this style of communication is regarded as most effective. Upward communication from workers to management, although encouraged in some organisations to get feedback, is often not effective as employees may fear to speak their minds, or that their ideas are altered as they are transmitted to management. The pressure to perform on the job can create a sense that giving feedback upwards is a waste of time for both employers and employees (Gibson & Hodgetts, 1991; McClelland, 1988).

Horizontal communication occurs between people who work at a similar level within an organisation. There is not necessarily a hierarchical structure to the nature of this communication. Among teams that may work in the same organisation but in different geographical locations, the need to learn from each other through best practice and sharing of experiences is regarded as important for organisations to improve their functioning (Frank, 1984).

Diagonal communication may happen between managers and employees at different functional levels (Wilson, 1992) within an organisation or government department. In many ways this style of communication is more suited to adaptive management as information needs to flow relatively quickly between and across different levels of organisations.

Building the connectedness of stakeholders, particularly among disadvantaged communities, should be viewed as an opportunity to engage and nurture relationships and trust among these stakeholders and so build capacity (Gueze, 2007; Funke et al., 2007). However, funding for CMAs and capacity building in order to involve stakeholders more meaningfully has been patchy and there has been little evidence of commitment from DWS for funding capacity building (Merrey, 2008). If participatory processes are to succeed, attention must be given to capacity building so that people can attend meetings and contribute to strategies and decisions about water management.



**Figure 2-5: Communication loops between and within horizontal, vertical and diagonal lines of communication (red arrows indicate communication loops within lines of communication, green arrows indicate communication loops between lines of communication).**

Research into CMFs in South Africa has shown CMFs are not institutions in which previously marginalised people feel comfortable (Boakye & Akpor, 2012; Goldin, 2010). Boakye and Akpor (2012) point out that access to information and the ability to understand the information discussed in CMF meetings is critical for people if they are to be meaningfully engaged in discussions. Goldin (2010), reflecting on capabilities of communities in water management in a South African context, refers to self-respect as critical in measuring the achievement of IWRM. When a person from a previously disadvantaged background is selected to represent their community on a CMF, where they may not understand the CMF institutional discourse (most often brought in by consultants or Department of Water Affairs (DWA) officials), or cannot meaningfully engage in the meetings due to linguistic or other concerns, their self-respect is diminished (Goldin, 2013).

Munnik et al. (2016) suggest a hope that CMFs within CMAs will become agents of transformation and empowerment. As possible vehicles for transformation, empowering stakeholders in the catchment areas is vital in order to take up the challenges and vision of the NWA. One possible way to empower stakeholders in this context is to adopt a learning-centred approach to CMF formation in the hopes that this process will, in the long term, support sustainability in water and landscape management.

Catchment management forums may comprise a range of stakeholders and role-players (whether local water users or not) who are interested in the management of a catchment area. In the early stages of the proto-CMA, contributing to the CMS might motivate the formation of a CMF. However, to contribute to the writing of a CMS, members of a CMF must be able to participate in discussions in a meaningful way. Meaningful participation requires capacity- and capability-building, and skills development, all of which have been lacking in the attempts to establish CMFs in the past (Boakye & Akpor, 2012; Heila Lotz-Sisitka & Burt, 2006; Munnik et al., 2016). Critically, capacity and capability development should be incorporated into the activities of the CMF (DWAF, 2001).

Before any meaningful intervention, participation, or institutions can be set up, Cleaver (2005) suggests that the social and cultural structures within communities must be examined. In the context of this study, understanding these structures is crucial. In order to begin building trust and understanding, it is necessary to understand the historical culture of the community. Cleaver (2005) proposes it is naïve to imagine that trust will magically appear through repeated consultation, rather than through meaningful learning and relationship-building.

Institutions play an important role in people's ability to achieve their capabilities and there is a mistaken assumption that individual agency will lead to collective action, and that collective action will aid the natural resources management drive for the benefit of all (Cleaver, 2007). Cleaver (2007) suggests that, in the case of water resource management, the participation of previously marginalised people is expected in order to meet equity goals, but she argues that individual agency is influenced by a number of factors, among them cultural and hierarchical positions. The history and culture of the study site influences the way in which people interact, engage with, and learn from each other.

In 2006, following a national and international review of participation in CMA establishment, Lotz-Sisitka & Burt (2006) indicated that the lack of involvement by stakeholders may be due to the inadequate attention given to the learning and agency of people who are meant to operate within the new legislative structures and frameworks. Catchment management

forums could provide the space for learning and agency for individuals and organisations. Barnes (2013) noted that precisely because of the differences in socialisation factors (different levels of education and knowledge systems, access to information) within the CMF they have the potential to nurture learning and agency.

## **2.5 Ecological infrastructure and the need for rehabilitation**

Ecological infrastructure refers to naturally functioning ecosystems that deliver valuable services to people (SANBI, 2014). Investing in ecological infrastructure involves finance, time, effort, and knowledge to make decisions that restore degraded ecological infrastructure, and maintain existing ecological infrastructure (SANBI, 2014). The Department of Environmental Affairs: Natural Resource Management (DEA: NRM) rehabilitation programmes contribute to poverty alleviation through job creation and encourage rural development (SANBI, 2014). In order to mitigate the potential sedimentation of the dam (due to highly dispersive soils), the DEA, through its NRM 'Working for' suite of programmes (Angelstam et al., 2017), invests in rehabilitation projects in the Tsitsa River quaternary catchment T35A-E. These interventions provide local residents with participatory opportunities: (i) the programmes themselves enable local participation and short-term job creation through involvement in the rehabilitation of the area to restore and maintain the landscape; and (ii) the opportunity to become involved in the formation of a CMF. Such participation could support sustained resident engagement in the land and water management of the catchment upstream of the Ntabelanga Dam.

Development and construction of the Ntabelanga Dam will impact on local ecological infrastructure. It will flood arable land and property. The construction of new roads will add to the land degradation, causing further soil run-off into the watercourses that fill the Ntabelanga Dam (van Tol et al., 2014). Those living in the area upstream of the Ntabelanga Dam will not benefit directly from the Mzimvubu Water Project as the planned potable water and irrigation schemes are intended for downstream users. The upstream residents could benefit by participating in the landscape rehabilitation interventions to improve grazing for livestock; clearing alien vegetation to reduce transpirational water loss from trees, and introducing silt traps to slow the rate of water run-off to the tributaries that flow into the

Tsitsa River. Investment in such ecological infrastructure rehabilitation and landscape integrity needs to benefit upstream residents in order to encourage stewardship of the upper catchment.

## **2.6 Dams – pros and cons**

Worldwide, dams are pivotal development infrastructure (van Tol et al., 2014), meeting the needs of society, creating skilled and semi-skilled employment opportunities (albeit relatively short term for the lifespan of the dam construction), and providing irrigation and hydroelectric power. Although there may be local employment opportunities, labour can be 'brought in'. Dams are used for storing water during high flow and then releasing the water during times when the natural flows are low (Altinbilek, 2002). As the human population continues to grow, the need for electricity and increased, consistent water and food supply drive the need for more dam construction, particularly in arid and semi-arid developing countries across the world (Altinbilek, 2002). South Africa is a semi-arid country (497 mm Average Annual Rainfall (Schulze, 1997)), with a history of droughts, and an increased likelihood of drought severity in a climate-change future (Edossa et al., 2014), and it faces increasing pressures on its water resources. Dam construction is limited by site availability, and the decision to build two dams on one of the last free-flowing rivers in the country was taken to create further capacity for growth and development in the impoverished Eastern Cape Province (Department of Water Affairs (DWA), 2013).

However, the negative impacts of large dam construction are also felt long after construction of the dam (De Wet, 2008; King & Eoin, 2014; McDonald-Wilmsen & Webber, 2010). For instance, the inundation of arable land and the degradation of the landscape caused by built infrastructure related to dam construction (roads and power lines) (Biswas, 2004); the dislocation of people from their homes; the impact on subsistence farmers, the uprooting of people from areas they lived in for generations can create enormous psychological trauma (Devitt & Hitchcock, 2010; Malkki, 1992). Social structures are affected and can take a long time to rebuild (Downing, 2002; Downing & Scudder, 2008). In many cases the social and environmental impacts are not sufficiently taken into account (Mathur, 2006). Planning information-sharing workshops for communities in the areas affected by dam construction is

critical to inform communities of the implications of the development (van Tol et al., 2014), and even more so if the people who will be moved will not benefit directly from water supply from the proposed dams. Information-sharing workshops present some of the earliest opportunities for sharing knowledge, building relationships and trust and, critically, enabling the voices of the community to be heard in the management of natural resources (Mitchell et al., 2006). Sound resettlement plans (where these are required), and rehabilitation programmes for the landscape are crucial to consider in the planning phase of any dam construction project, and should involve the people whose lives are impacted (Devitt & Hitchcock, 2010).

In the context of this study, the DEA: NRM interventions create an opportunity for upstream residents to develop the capacity to use institutional arrangements, such as the non-statutory CMF, to participate meaningfully in the sustainable, equitable and efficient management of water and land. The DEA: NRM interventions will not only bring short-term job opportunities to the communities, but will allow engagement with stakeholders and role-players at a crucial time in the management of water and land in the area. It is a time in which the ambitions of the NWA and the goals of public participation in writing a CMS for the area could be realised.

## **2.7 The study site – Eastern Cape**

The study site falls within the Joe Gqabi District Municipality and the Elundini Local Municipality (Figure 2-6) in the Eastern Cape, South Africa. The Eastern Cape (Figure 2-6, top left) was declared in 1994 with the dawn of the new South Africa (Westaway, 2012). It remains one of the poorest provinces in the country (second only to Limpopo) with unemployment levels for the province at 32.2% (Statistics South Africa, 2012). Table 2-1 provides poverty and income statistics for the Eastern Cape Province as per Census 2011 (Statistics South Africa, 2012).

The Eastern Cape Provincial government faces a number of challenges in terms of the Mzimvubu Water Project financial arrangements. The Provincial government is required to budget for the roads network, agriculture, and tourism aspects of the project (Elundini Local Municipality Integrated Development Plan (IDP) 2016/17), putting strain on an already

financially stressed province. The local municipalities are expected to provide resources for distributing water to households from the proposed Ntabelanga Dam (Elundini Municipality, 2016). For many people in the villages and the town of Maclear, the Mzimvubu Water Project will not provide potable water upstream of the Ntabelanga Dam. The Ntabelanga Dam will flood arable land, raising concerns, frustration, and sometimes anger over the lack of communication between the DWS and the community that will be most impacted by the construction of the dam. However, the DEA: NRM investment and the Mzimvubu Water Project create the opportunity for a learning-centred engagement with community members in the catchment to build relationships, understanding, and trust, and the potential for meaningful contributions by residents to water and landscape management in the Tsitsa River catchment.

**Table 2-1: Data showing general poverty and income statistics for the Eastern Cape Province (Census 2011)**

<b>General poverty</b>	Average monthly income of Eastern Cape R2200
<b>Below food poverty line</b>	40.5%
<b>Rural/urban split living below poverty line</b>	Rural – 43.1%, Urban – 27.1%
<b>Annual household income</b>	R14 600 (half of national SA average of R29 400)

Sources of income are scarce and income from social grants comprises 22% (Statistics South Africa, 2012) of total income. Contributions to households from migrant workers has dwindled over the past ten years, putting more strain on the rural household (Westaway, 2012). The gap between urban and rural continues to widen. Most income is spent on food, and levels of food insecurity are rising (Westaway, 2012). Income from crop and livestock production has declined to less than 10% as the former Ciskei and Transkei have been de-agricultured over the last 60 years (Elundini Municipality, 2016; Westaway, 2012). Education levels in the Eastern Cape remain low (54.7% completed Grade 9 and higher, 27.7% completed Grade 12 and higher – two-thirds of the rate of South Africa, Census 2011).

The Elundini Local Municipality covers an area of 5064 km<sup>2</sup>, has three towns (Ugie, Maclear and Mount Fletcher), 17 municipal wards and a population of 138 141 (Census 2011, Statistics South Africa). Table 2-2 shows water access for people living within the Elundini Local

Municipality (drawn from Elundini Local Municipality IDP 2016/17). The municipality includes water provision, waste water treatment and storm water concerns in its IDP.

**Table 2-2: Access to water in the Elundini Local Municipality (Census 2011)**

<b>Access to Water (2011)</b>		
	<b>Number of houses</b>	<b>%</b>
No access to piped water	17 763	46,9%
Piped water inside the dwelling	3918	10%
Piped water inside the yard	2730	7%
Piped water in the community stand	13 000	34%
<b>Access to Water as per Sources (2011)</b>		
<b>Source</b>	<b>Number of houses</b>	<b>%</b>
Municipal water	11 194	29.06%
Borehole	5909	15.60%
Spring water	4857	12.08%
Rainwater tank	1582	4.18%
Dams	2456	6.49%
River or stream	7071	18.07%
Water vendors	836	2.21%
Water tanks	3044	8.04%

(Although the figures do not total 100%, they are drawn from Census 2011 and give an indication of water access).

The topography of the area influences the type of land use activities that occur (currently, forestry and livestock production are the predominant land uses). In accordance with the spatial development planning (Spatial Planning and Land Use Management Act (SPLUMA), Act 16 of 2013), areas of critical biodiversity should be conserved and the types of settlement and agricultural activities that can take place must be factored in. On account of the topography and the soil suitability for agriculture, there are limited pockets of land in the more central, eastern and southern portions of the municipality that are suitable for both agriculture and residential use. The study area receives approximately 600-800 mm of rainfall per annum, but there are indications of the effects of climate change with increasing severity of thunderstorms, which damage houses and electricity supply, and affect the rural villages in particular. The Elundini Local Municipality IDP indicates that of the three municipalities that fall under the Joe Gqabi District Municipality, Elundini Municipality has the more suitable soils for cultivation, with 42.9% suitability. The communal lands within the municipality are highly degraded. A study (Palmer & Bennett, 2013) indicates that degradation is primarily due to overstocking of livestock and inappropriate grazing methods. Together with the Eastern Cape Department of Rural Development and Agrarian Reform (DRDAR), the Joe Gqabi District



Municipality and Elundini Local Municipality are working on a programme to provide infrastructure to control grazing, giving priority to those areas with the highest degradation.

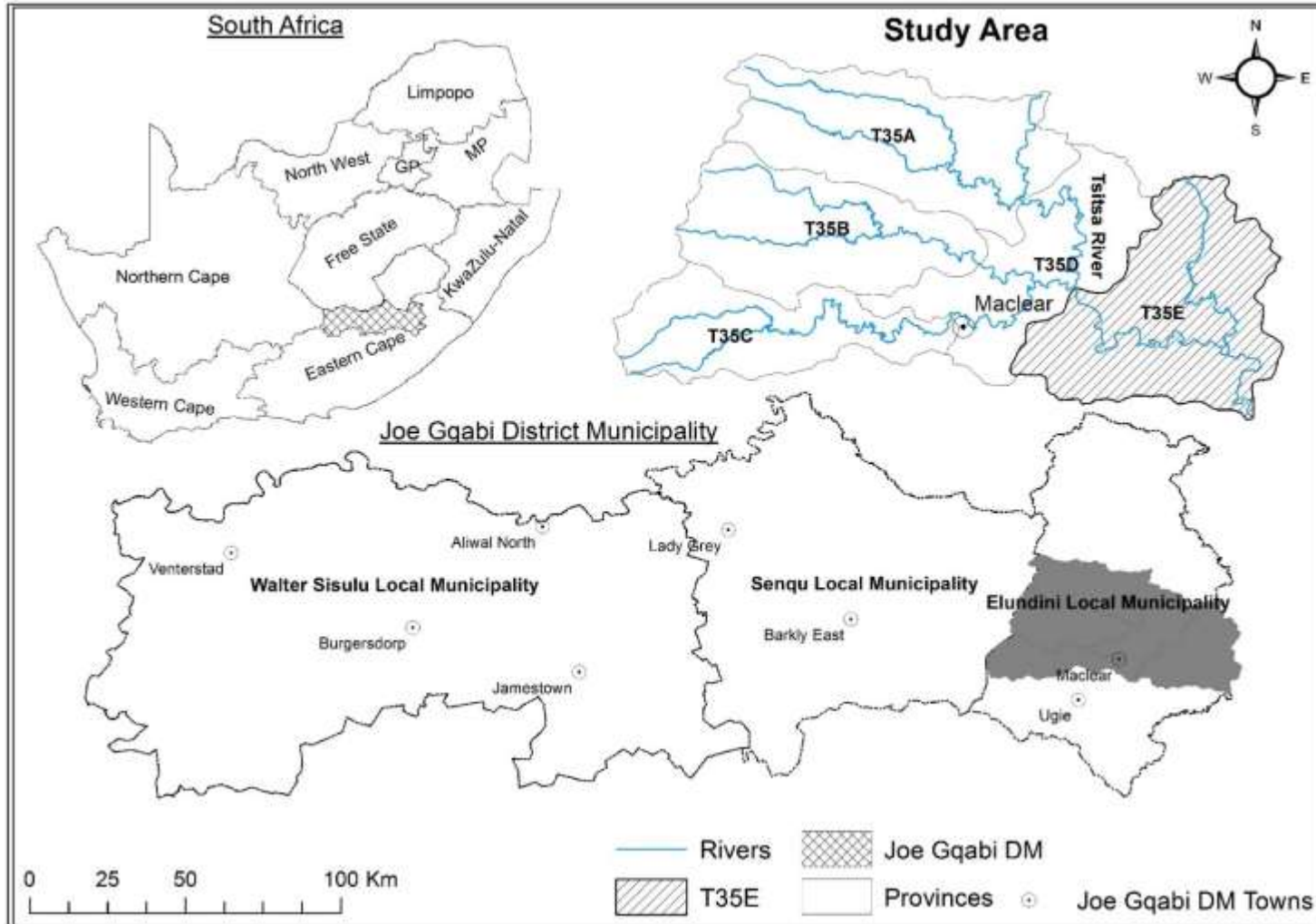


Figure 2-6: Map showing South Africa, the Joe Gqabi District Municipality and the study area (T35E) within the Elundini Local Municipality (GP=Gauteng Province, MP=Mpumalanga, DM=District Municipality). The grey area indicates quaternary catchments T35A-E within the Elundini Local Municipality (map by S.Mazibuko).

## **2.8 Conclusion – catchment management forums: bridges to participation?**

The water sector in South Africa, and globally, is complex and multi-layered. There are multiple drivers that influence various scales and often small changes at one scale can have profound effects on the whole water governance system. The complex social-ecological system of water, as the driver for all life on earth, and the institutional arrangements that evolve to govern water use, require careful analysis and understanding to effect sustainability. Understanding the natural resource management needs in South Africa in order to participate meaningfully in this management, in terms of the NWA, requires all stakeholders and role-players to learn from each other. Implementation of IWRM supports the South African goals of healthy ecological infrastructure (SANBI, 2014) and the DWS transformation goals of achieving equity, sustainability and efficiency in water management strategies (DWAF, 2007).

While it appears that the enlightened concept of IWRM may be too challenging to take on (Molle, 2008), the aspirations of IWRM are worth striving towards, as IWRM should be acknowledged as potentially the most inclusive system for the long-term management and sustainability of water. It should be possible to accept that IWRM takes time (van der Zaag, 2005); is difficult and requires practice (Dent, 2012), and often involves many issues outside of the water sector (Lenton & Muller, 2009). The tensions within the concept and practice of IWRM reflect the multiplicity of the demands on water resources, along with the many perspectives on how water should be managed and governed. A learning approach understands mistakes and challenges at the implementation level as useful feedback is one that provides opportunities for learning (Cilliers et al., 2013; Clifford-Holmes et al., 2016). Learning processes could be more beneficial than ‘final solutions’ to problems. Since the 1990s, the concept of the ‘learning organisation’ (Clifford-Holmes, 2015; Senge, 1990; Senge & Sterman, 1992) has grown, and in natural resource management, learning is now acknowledged and encouraged within various institutions and structures, for example, the recently published South African Integrated Water Quality Management Strategy (Department of Water and Sanitation (DWS), 2017). Working with stakeholders (including community members, government departments, and farmers) is an opportunity to create learning between each other. Although CMFs form part of the water governance structure in

South Africa, a learning-centred approach to CMF formation may lead to better communication and build the relationships of trust and understanding that could lead to the sustainable management of natural resources in a more integrated way.

In South Africa, the turbulent history and diverse cultures in the country create contradictions within the engagement spaces, but these contradictions can be viewed as 'illuminative hinges' (Foot, 2014) where learning and working together may lead to change, understanding, trust, and the strengthening of agency.

Chapter 2 has provided details of the challenges faced by the government and stakeholders in effectively implementing the NWA in the complex South African landscape. The roles of various institutions within the NWA and the difficulties for an emerging democracy with limits to capacity, finances and political will to establish the ground-breaking NWA were discussed. A contextual overview of the study was provided. Chapter 3 discusses the conceptual and theoretical framework of the study.

## **CHAPTER 3 CONCEPTUAL AND THEORETICAL FRAMEWORK**

### **3.1 Introduction**

This chapter outlines the conceptual and theoretical framework for this study including complexity, learning and cultural historical activity theory (CHAT). The chapter explores the emergence of social learning in the natural resource management context and outlines the use of CHAT in this study.

### **3.2 Complexity and integrated water resource management (IWRM)**

There is a growing trend to view people living in catchments (urban or rural) within the framing of complex social-ecological systems (CSES) (Pollard et al., 2014). The term 'social-ecological system' emerged from writing by Berkes and Folke in 1998 in which they acknowledged that the division between social and ecological systems was artificial and that humans are an integral part of the natural system (Berkes & Folke, 1998).

Complex systems may be defined as having multiple interdependencies (Roux et al., 2010); they cannot be easily defined and are socially and intellectually complex (Brown et al., 2010; Clifford-Holmes et al., 2016; Rittel & Webber, 1973) and complexity thinking may be used to attempt to untangle wicked problems (Copteros, 2016; Lach et al., 2005). Wicked problems therefore require different approaches toward solutions, which in turn, require people across disciplines and ways of knowing to work together, to reflect, integrate knowledge, and bridge the knowledge divides (Angelstam et al., 2017).

Following Cilliers (2000), the key characteristics of complex systems are summarised as:

- comprising many interacting components
- with non-linear processes
- with memory distributed throughout the system (there is a history which is fundamental to the behaviour of the system)
- with feedbacks between components and processes
- which are influenced by scale (temporal and spatial), and
- where small changes can lead to large effects (and vice versa).

(Cilliers, 2000)

Acknowledging that social-ecological systems are complex and that, for a sustainable future, the management of these systems will require adaptive rather than linear styles of management, Cilliers' characteristics enable a different approach to ways of thinking and analysing these systems (Palmer & Munnik, 2018 ).

A review of research in water management conducted and published in 2013 (Meissner et al., 2013) indicates a strong influence of scientifically based research in water resource management. Meissner et al. (2013) suggest that a transdisciplinary approach to the challenges of complex social-ecological systems offers alternative empirical results and new insights into advancing the process of IWRM.

Complexity thinking is increasingly being embraced by a wide range of scholars and practitioners as imperative for dealing with today's pressing social-ecological challenges (Rogers et al., 2013) because it allows researchers and educators to consider the systems' functionality at the interface of the catchment and the people.

Complexity thinking is a useful approach to untangling issues in social-ecological systems (Audouin et al., 2013; Cilliers, 2000) because it requires a shift in thinking from a reductionist view (which assumes linearity in relating interactions between independent entities) to a complexity frame of reference in which variability, interacting components, and uncertainty are given (Rogers et al., 2013; Swilling & Annecke, 2012). Researchers working within the complex social-ecological system conceptual tradition argue that it is necessary to 'live' complexity thinking in order to truly take part in action research and reflexive learning (Rogers et al., 2013; Swilling & Annecke, 2012). Participatory action research involves sequences of planning, acting, and reflecting and, through a participatory orientation, seeks to facilitate personal and institutional change by participants, and may catalyse the emergence of trust among participants (Reason & Bradbury, 2006).

In order to build collaborative relationships, trust in government needs to be restored and trust between participants built (Goldin, 2010; Sershen et al., 2016). Turner et al. (2016) point out that trust in different sources of information may influence stakeholders' decision-making

processes (Gilmour et al., 2015). In complex social-ecological systems, and with marginalised communities, there is a continuous need for commitment and interaction to build relationships (Angelstam et al., 2017; Armitage et al., 2008).

Although this study is not a transdisciplinary one, the transdisciplinary action research principles suggested by Palmer et al. (2007) provided a point of reflection and reference as I undertook the study. Palmer et al. (2007) suggest that a set of principles for engagement in transdisciplinary research prove more adaptive and flexible than a set of rules:

- *Tolerate and even welcome discomfort and unresolved tensions; they are often gateways to knowledge and trust (and learning – my addition).*
- *Be sensitive to ‘aha’ moments or insights, and note that irritation and conflict often signal moments of insight and a learning opportunity.*
- *Engage with balanced generosity; listen and share.*
- *Practice tolerance, build integrity and mutual trust.*
- *Be sensitive to ‘arrivals’ of both people and ideas.*
- *Create and use reflective opportunities.*
- *Be conscious that everyone involved in the process is a whole, multi-dimensional person, with the potential to engage with their whole self and many ways of knowing.*

### **3.3 Learning and agency**

Learning that takes place in spaces outside of the traditional lecture venue or classroom has been called social learning. Reed et al. (2010) suggest there are elements of social learning that may be necessary in order to encourage participation and solution development within a CMF:

*a change in understanding that goes beyond the individual to become situated within wider social units or communities of practice through social interactions between actors within social networks. (Reed et al., 2010, p.6).*

This definition highlights two key characteristics of social learning – societal learning and change (Cundill et al., 2014). The learning space of a CMF could be developed in such a way to encourage social learning and change.

Wals (2007) suggests that social learning:

*takes place when divergent interests, norms, values and constructions of reality meet in an environment that is conducive to learning. This learning can take place at multiple levels, i.e. at the level of the individual, at the level of a group or organisation or at the level of networks of actors and stakeholders. (p.18).*

The key phrases in Wals' (2007) definition are "*in an environment that is conducive to learning*" and "*multiple levels*". The CMF could provide the space for this depth of learning and participation to take place. Keen et al. (2005) in their definition of social learning refer to "*collective action and reflection*" in individuals and groups as "*they work to improve the management of human and environmental interrelations*" (p. 4).

The literature on social learning is vast (Lindley, 2014) and social learning has become a focus in natural resource management (Cundill & Rodela, 2012). Social learning has emerged from different disciplines including psychology, education, environmental management and sociology (D. Lindley, 2014). Due to the diversity of disciplines, there are contrasting outcomes anticipated in social learning, particularly in the natural resource management arena, depending on the interpretation of social learning (Cundill & Rodela, 2012) and sometimes conflicting viewpoints emerge (Lindley, 2014). As noted by Lotz-Sisitka et al. (2012) the vast literature and confusion can cause social learning to be used as a tool to achieve a desired outcome, rather than focussing on the learning process "*with a socially critical orientation where the outcomes are not predetermined*". Wals and Van der Leij (2007) strongly emphasise that the crux of social learning is not what people should know, but rather how people learn, what they want to learn, and how they may (in future) be able to challenge societal norms (Lindley, 2014).

Natural resource management learning is increasingly articulated in the form of social learning (e.g. Cundill et al., 2012; Reed et al., 2010). Research on social learning in the water sector specifically has usually focused on the catchment (e.g. Burt et al., 2006; Collins et al., 2009; Ison, 2010; Ison et al., 2007; Pollard et al., 2014; Pollard & Cousins, 2008; Pollard & du Toit, 2011; SLIM, 2004) and at the regional or transboundary scale (Pahl-Wostl, 2006). The



context of this research project is on the much smaller scale of municipal and traditional boundaries within five quaternary catchments of the Tsitsa River catchment (Figure 1-1).

In natural resource management social learning literature particularly, Reed et al. (2010) refer to the confusion between seeing social learning as people learning from each other, and seeing social learning as the outcome of the interactions. In my study I gathered data that indicated prior knowledge (during workshops and interviews) and analysed the data for emergent social learning from the workshop process. I acknowledge that my focus was primarily on the learning outcome through the social engagement process of the workshops and a sharing of values and understanding in the process.

However, even though the focus of my research was on the learning outcome and discussions among workshop attendees, if there is to be a shift in the ways in which natural resources are managed (and in this study, particularly water), the shift in values, beliefs and ideologies may require participative social learning. Wals and Heymann (2004) suggest that when people with a variety of views, values, beliefs and assumptions are provided a safe, facilitated space in which to engage and discuss these views, the potential conflicts that emerge should be viewed as an opportunity for learning. They call for a *“re-conceptualization of the role of conflict in transformative learning processes”* (Wals and Heymann, 2001:129). In the context of South Africa’s NWA and the ideal of IWRM, the idea of re-conceptualising the role of conflict towards a transformative learning process is important. South Africa’s marginalisation of millions of people during the Apartheid period has left many people, even 20 plus years into the new democracy, voiceless due to historical power relations (Lindley, 2014).

The workshops undertaken in this study were not strictly interventionist workshops, but rather presented the opportunity for a mixed group of people to engage in deliberations and discussions in a safe, facilitated (learning-centred) space. Many of the discussions which emerged in these workshops, and previous workshops run by the Institute for Water Research dealing with CMFs and the NWA, are guided by the model of deliberative democracy. Benhabib (1996) describes deliberative democracy as allowing the public to *“freely deliberate matters of mutual interest and concern, and where the agenda is open and not narrowly*

*restricted*” (Lindley, 2015: 57). Conflict is viewed as a starting point from which deliberative democracy proceeds (Benhabib, 1996; Lindley, 2015). Conflict, disagreements, or problems may be indicative (manifestations) of underlying contradictions which are the focus of expansive learning (Engeström & Sannino, 2011).

Devolution of power over water management from central government to the CMA requires political will (Mehta et al., 2014) and may be fraught with conflict and disagreement. The will of the government for stakeholders to truly take part in participatory governance is critical if IWRM is to work into the future.

Stakeholder participation requires agency which is a distinguishing feature of being human and has been defined by Cleaver (2007: 226) as:

*the capability or power to be the originator of act...[Agency] does not exist in a vacuum but is exercised in a social world in which structure shapes the opportunities and resources available to individuals, in which appropriate ways of being and behaving are not simply a matter of individual choice.*

In order for stakeholders to exercise agency (“*to be the originator of acts*” (Cleaver, 2007)), within the CMF context in the rural Eastern Cape it is necessary for learning and participation to take place. Studies show that in the CMF context in South Africa, people feel embarrassed to speak up in meetings as they do not feel that they have the necessary knowledge about the topic, or understand the language that is being spoken in the context (Goldin, 2013). They do not feel able to participate and their voices are not heard (Förster et al., 2017). The requirement of stakeholder participation in writing a CMS suggests that far more societal learning and change needs to happen.

Particularly in the early phases of setting up a CMF, a facilitator may help to ensure that all voices are heard as suggested by Wals and Heymann (2004), and clarity is given on any points of uncertainty. The facilitator would need to be able to guide and encourage relationship-building and trust as the learning and sharing of knowledge unfolds. Although there are guidelines for setting up CMFs (DWAF, 2001; Palmer & Munnik, 2018), care must be taken to

ensure that the voices of all the participants are heard. Being aware of the difficulties in access to information that previously disadvantaged communities may have regarding water systems, and governance institutions and their roles and functions, is critical (Förster et al., 2017).

Key to the sustainable effectiveness of a CMF is the involvement of a champion or driver (Kapfudzaruwa & Sowman, 2009; Munnik et al., 2016), the accessibility of venues for meeting, and some support for transport costs. Active participation requires that stakeholders and role-players fully understand the functions of the CMF, and are able to contribute to discussions meaningfully and with confidence (Goldin, 2010).

The Tsitsa River catchment upstream of the Ntabelanga Dam is a small part of the extensive proto-Mzimvubu-Tsitsikamma CMA area of responsibility – Water Management Area 7 (NWRS2, 2013). Currently the proto-Mzimvubu-Tsitsikamma CMA has a programme to develop CMFs across its water management area. One role of CMFs can be to contribute to the writing of a CMS. The development of a CMF ‘network’ may provide opportunity for learning exchanges and knowledge sharing across the predominantly rural Mzimvubu catchment.

### **3.4 Cultural Historical Activity Theory (CHAT)**

Cultural Historical Activity Theory (CHAT) provides a theory and methodology for analysing complex relationships in the activities people undertake and the mediating tools that they use in achieving an object of activity (Cole, 2016; Yamagata-Lynch, 2003). The theory can be used to analyse learning and development in both the individual and social interactions simultaneously (Kuutti, 1995). It is a framework that allows analysis of complex practices and reflexive research (Yliruka & Karvinen-Niinikoski, 2013) and explains the relationship between mind (consciousness), activity (what people do) and tools (physical objects and systems of symbols) (Kaptelinin, 1996; Mwanza, 2001). Learning takes place through collective activities (Mukute & Lotz-Sisitka, 2012). Activity theory can be broadly defined as

*a philosophical and cross-disciplinary framework for studying different forms of human practices as developmental processes, with both individual and social levels interlinked at the same time (Kuutti, 1995).*

Wilson (2014) suggests that CHAT offers the opportunity for reflection on our own and others' assumptions of activities taking place within an activity system, and that using CHAT as an analytical tool provides a possible description of real-life, complex activity. Jonassen and Rohrer-Murphy (1999) suggest that researchers analysing activities are mindful of analysing who is engaging in the activity, what their intentions and goals are, what the rules and norms are, the community in which the activity takes place, and what objects result from the activity.

The elements of the activity system are described as follows:

- The subject: the individual or group of actors who engage in the activity and act upon the object.
- The object: the physical or mental product that the subject is trying to achieve. The nature of the object will influence the way in which the subject acts upon it. The object can be shared for manipulation and transformation by the subject or participants of the activity to reach a particular outcome (Kuutti, 1995).
- The tools (mediating artefacts): refer to anything that influences the way people think and act, and can be physical objects, cultural beliefs or mental models. Tools can alter the activity and can, in turn, be altered by the activity.

First-generation activity theory (Vygotsky's (1978) mediation model, Figure 3-1) described the relationship between human activity (object), people (subject) and the tools used towards a common goal (Engeström, 2001).

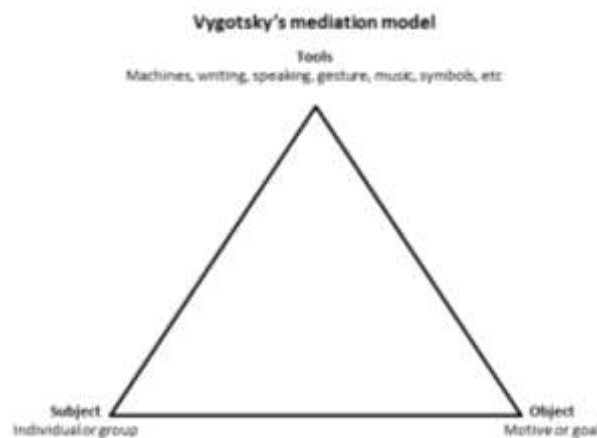


Figure 3-1: Mediation model (adapted from Vygotsky, 1978)

Vygotsky's mediation model focussed only on the individual or group (subject) and did not allow understanding of the relations between the subject and their environment (Kuutti, 1995). In order to gain deeper insight into the relationship between the subject and their environment, the cultural beliefs and history which shaped the environment in which the activity takes place, is necessary. Engeström (2001), building on the work of Vygotsky and A.N. Leontiev, developed the activity system model adding rules, community and division of labour to Vygotsky's mediation model (Figure 3-2). The activity system model is regarded as second-generation activity theory (Yamagata-Lynch, 2003).

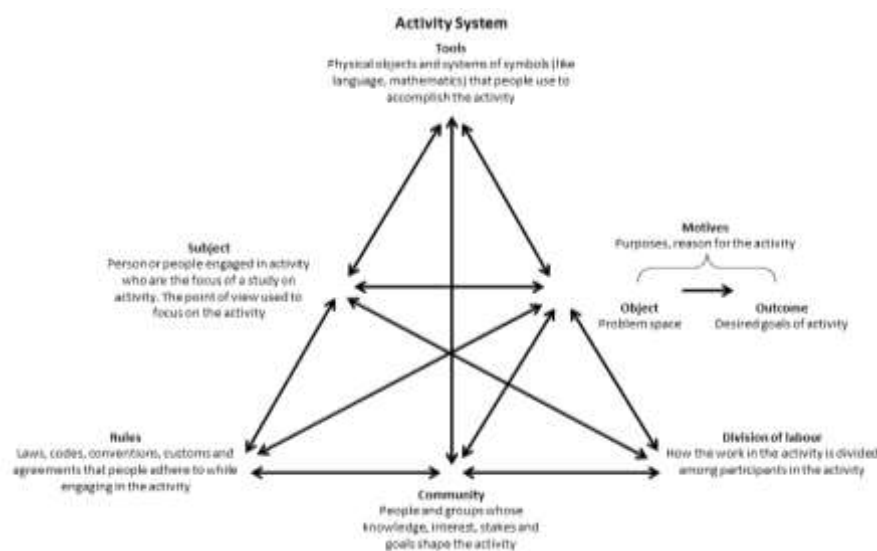


Figure 3-2: Second-generation CHAT (adapted from Engeström, 1987, p.78)

Jonassen and Rohrer-Murphy (1999) describe the additions (rules, community and division of labour) as follows:

- The rules are the explicit or implicit rules of behaviour so that the activities are acceptable to the community.
- The community is the broader social space within which the activity is taking place.
- The division of labour refers to how actions or tasks are divided between different subjects within the activity system.

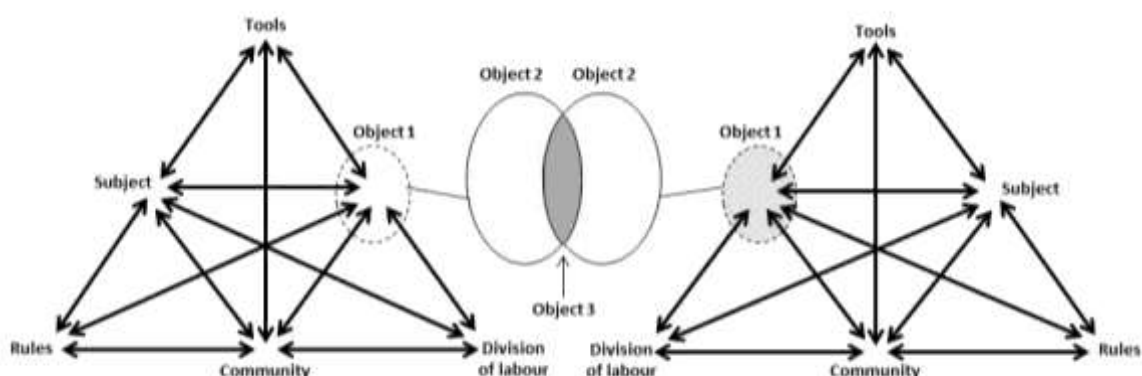
Engeström (1987:78) suggests ways in which relations are mediated between the various elements in the activity system model:

- The relations between individuals and the object of their activity are mediated by concepts and technologies,

- The relationships between the community and the overall object of its activity are mediated by its division of labour, and
- The relations between individuals and the communities, of which they are a part, are mediated by rules and procedures, which can be explicit or implicit.

The activity system model is a useful tool in understanding the relationships and tensions in complex systems because it allows the researcher to ‘map’ the contradictions (or illuminative hinges (Foot, 2014)) and reflect back the gathered information to members of the activity system. Illuminative hinges (Foot, 2014) are the opportunities for learning, development, innovation, and co-creation of solutions to the ruptures or breakdowns (Kuutti, 1995) within the system. These illuminative hinges link back to one of the guiding transdisciplinary principles suggested in Palmer et al. (2007): “*that irritation and conflict often signal moments of insight and a learning opportunity*”. Learning seldom takes place within ‘comfort zones’ and many times, as people move towards discomfort, opportunities for learning are more likely.

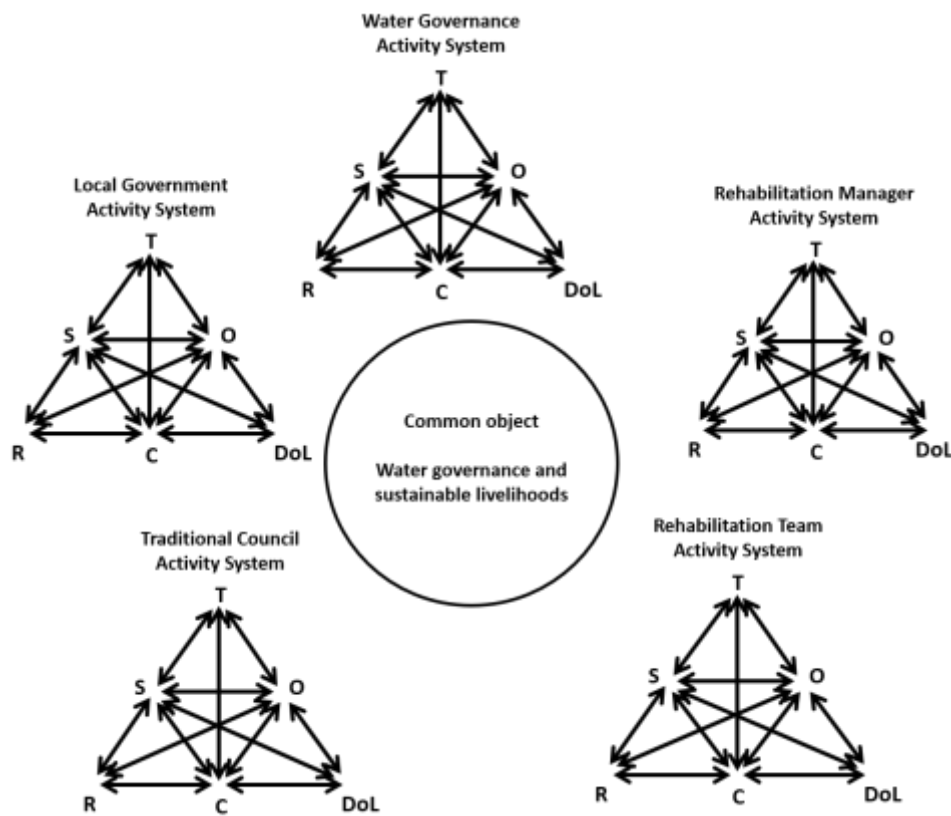
Third generation CHAT focusses on interaction between two or more second-generation activity systems (Engeström, 1999; Warmington, 2005). The analysis of the interactions within and between activity systems uncovers the complexities when boundaries between activity systems meet and cross (Engeström, 2008).



Adapted from: Engeström, 2001

Figure 3-3: Third generation activity theory: two activity systems with a partially shared objective (adapted from Engeström, 2008).

The research undertaken in this study focused on five activity systems each with their own object, but because of the NLEIP, the NWA and the guiding question of the study, a shared common object (water governance and sustainable livelihoods) emerged.



**Figure 3-4: Five activity systems in this study interacting around a shared object.**

The five activity systems contribute in different ways to the shared common object. The Water Governance activity system, as the rule producing activity system, primarily influences water governance of the shared common object. The Rehabilitation Team activity system focuses firstly on their personal livelihoods, but the work they are undertaking could contribute to the community's sustainable livelihoods and in future, possibly, water governance. The local governance (municipal and traditional) activity systems are both concerned with water governance and sustainable livelihoods and influence the shared object to varying degrees at various times.

Engeström (2001, pp. 136–137) suggested the following five principles for CHAT:

1. The prime unit of analysis is a collective, artefact-mediated, and object-oriented activity system, which is seen in its network relation to other activity systems.
2. Activity systems are multi-voiced and are a nexus of many points of view, traditions, and interests. The multi-voicedness of the activity systems is a source of both tension and innovation.
3. Activity systems take shape and are developed over long periods. An activity system should be analysed in terms of its history, objectives, and outcomes, as well as in terms of the genealogy of conceptual tools that have shaped it over time. [Note: While this may be true of the Traditional Council, Local Government and Water Governance activity systems, the Rehabilitation Team and Rehabilitation Manager activity systems emerged from the work undertaken as part of the NLEIP]
4. Contradictions between and within activity systems are potential sources of change and development. Activity systems are also seen as open-ended learning systems that can adopt new elements from outside, which can create contradictions.
5. Activity systems have the potential for expansive transformations, which occur through relatively long cycles of qualitative transformation. Expansive transformations happen when the object and motive of an activity have been reconceptualised to embrace a much wider horizon of possibilities than originally imagined. [This expansive transformation may occur as the NLEIP continues to interact with residents in the catchment, moving towards the visions of the NLEIP with a focus on *supporting sustainable livelihoods for local people through integrated landscape management.*]

Engeström and Sannino (2011) noted that contradictions are sometimes confused with conflict or tension within an activity system. When using a CHAT lens, it is important to clarify that contradictions cannot be observed directly, but can be identified through their manifestations. The researcher should look for manifestations, identify what the manifestation indicates and then identify the contradiction. Engeström and Sannino (2011) suggest four discursive manifestations of contradictions: dilemmas; conflicts; critical conflicts;



and double binds. These discursive manifestations were used to uncover the contradictions in this study.

Dilemmas characterise our thinking and daily lives and are often linked to socially shared beliefs resulting in dilemmatic thinking rather than agonised mental states (Engeström & Sannino, 2011). In social psychology, dilemmas are studied as a way of understanding decision-making processes and moral reasoning. Linguistic expressions include hedges, i.e. “yes, but...” Often dilemmas are not resolved but keep repeating themselves.

Conflicts may manifest as disagreement, argument, and criticism. One definition offered by Tjosvold (1997:24) suggests “*people are in conflict when the actions of one person are interfering, obstructing or in some other way making another’s behaviour less effective*”. This manifestation could be seen from a more organisational point of view in the sometime conflict between the laws that govern water resource management and those that govern natural resource management (National Environmental Management Act, No. 107 of 1998, (Republic of South Africa (RSA), 1998)), and the impacts that this has on the activity systems described in this study. The most common linguistic indicator is a strong “no”, but indicators include “I disagree” and “this is not true” (Engeström & Sannino, 2011). There are five ways conflict might terminate, as identified by Vuchinich (1990): submission, dominant third-party intervention, compromise, stand-off, and withdrawal.

Critical conflicts are best described by Vasilyuk (1998:199) as “*a situation of impossibility or unintelligibility*”. Sannino (2008) points out that in social situations, feelings of being guilty, violated or silenced may indicate critical conflicts. In looking for linguistic indicators to critical conflict, the researcher should be aware of personal, emotional and morally charged narratives often with strong metaphors. Resolution of critical conflicts may occur through finding new personal sense and negotiating new meaning for the situation. This resolution can take the shape of personal liberation.

Double binds are described by Engeström and Sannino (2011) as “*processes in which actors repeatedly face pressing and equally unacceptable alternatives in their activity system, with*

*seemingly no way out*". It is important to note that these double bind situations cannot be resolved by an individual alone. Linguistic clues point to a feeling of helplessness expressed through rhetorical questions, for example "what can we do?". Often in the language there is a collective urgency – "we" rather than "I". Resolution of double binds requires collective action that goes beyond simply speaking about action to doing something, and linguistic markers include expressions like "we will make it".

**Table 3-1: Types of discursive manifestations of contradictions (adapted from Engeström and Sannino, 2011)**

Manifestation	Features	Linguistic cues
Dilemma	Expression or exchange of incompatible evaluations Resolution: denial, reformulation	"on the one hand [...] on the other hand", "yes, but" "I didn't mean that", "I actually meant"
Conflict	Arguing, criticising  Resolution: finding a compromise, submitting to authority or majority	"no", "I disagree", "this is not true" "yes", "this I can accept"
Critical conflict	Facing contradictory motives in social interaction, feeling violated or guilty. Resolution: finding new personal sense and negotiating a new meaning	Personal, emotional, moral accounts narrative structure, vivid metaphors  "I now realise that [...]"
Double bind	Facing pressing and equally unacceptable alternatives in an activity system	"we", "us", "we must", "we have to", pressing rhetorical questions, expressions of helplessness

Engeström (1987) identified four possible sources of contradictions in CHAT:

1. Primary contradictions: contradictions which appear **within components** of an activity system, such as within the rules;
2. Secondary contradictions: contradictions which occur when there is tension **between components** of an activity system, such as between the rules and the tools;
3. Tertiary contradictions: occur when an object of a more 'culturally advanced' (Y. Engeström, 1987) activity system is introduced into the system; and
4. Quaternary contradictions: those contradictions which occur between a **central activity system and its neighbours** (Foot, 2014).

By highlighting contradictions, ruptures and breakdowns, CHAT provides a useful analytical tool for social, institutional, and organisational change (Blackler, 1992; Foot, 2014) and harmonises with transdisciplinary characteristics including *“active contribution to a social process of resolving issues through social learning and participation”* (Pohl & Hirsch Hadorn, 2007). In my research, the ability to analyse the identified activity systems and highlight contradictions, as suggested by Engeström (1987), allows me to make recommendations for ways in which these contradictions can provide opportunities for learning and change within and between the activity systems.

All members of the activity system under analysis are also members of other activity systems (Jonassen & Rohrer-Murphy, 1999). By acknowledging that members belong to multiple activity systems, the researcher is able to identify an activity system within a complex social-ecological system and, within those artificial and permeable boundaries, analyse the contradictions within the system. Jonassen and Rohrer-Murphy (1999) note that activity *“cannot be understood or analysed outside the context in which it occurs”* (p.62). Understanding the context of the activity is therefore critical and, as a researcher, it is important to consider the culture, history and interactions (human and bio-physical) of the study area. Kaptelinin (1996, p.10) argues that all *“human experience is shaped by the tools and sign systems we use”*, reinforcing the notion that understanding what tools and signs are used by whom and when is important, particularly as an outsider researching interactions and potential learning in a particular context.

Foot (2014, p.5) notes, *“Activity systems are multi-voiced in that they model collective activity undertaken by actors with differing roles, positions, and perspectives. They are also multi-layered, that is, they are comprised of conscious actions as well as unconscious, routinized operations.”* In the context of this study, CHAT provided a lens with which to make sense of the complexity of the context, the culture and history of the area, and how culture and history impacts relationships and learning within and between the multi-voiced activity systems. Cultural Historical Activity Theory allowed me to analyse a particular set of data, acknowledging that the data represented a ‘snapshot’ of the context and that all interactions are influenced by culture and history.

By analysing the activity system, the researcher is able not only to come to a clearer understanding of the collective action within the system, but may also describe in depth the activity itself, the history of the activity, and the dynamism of that activity (Engeström, 1993, 2007b; Yamagata-Lynch, 2003). When the activity system is analysed, the researcher may also examine the relations within the activity system, and those between the individual and the community (Daniels, 2001) allowing for in-depth analysis of relationships.

### **3.5 Conclusion**

Chapter 3 provided an explanation for the conceptual and theoretical framework of the study. An understanding of complexity thinking and complex social-ecological systems allowed me to position my study within the complex social-ecological framework. Social learning and the requirement for individual agency in order to potentially bring about change, highlighted the importance of a learning-centred approach to CMF formation, while CHAT enabled me to analyse the identified activity systems and reveal contradictions as potential sources of learning. Chapter 4 presents the research design for the study.

## CHAPTER 4 RESEARCH DESIGN

### 4.1 Introduction

This chapter outlines the research design used for this study. As a researcher who is interested in how a learning-centred process to CMF formation can be constituted, I felt my study was best defined as an interpretive and qualitative case study. The analytical and descriptive tools of CHAT allowed data from workshops to shed light on the activity systems selected in the context of this research. The semi-structured interviews conducted with selected members of specific activity systems could then be analysed thematically to shed light on learning and discursive manifestations of contradictions, as identified by me as the researcher.

#### 4.1.1 Qualitative study

Rule and John (2011) state that “*qualitative research involves understanding behaviour and experiences from the point of view of the research participants*”. In this study, I sought not only to understand behaviour, for example, who spoke and when, in the presence of whom in workshops; but also to explore how participants made sense of information received and shared about the National Water Act (NWA) and CMFs and “*how their understanding influences their behaviour*” (Maxwell, 2009). A deep understanding of the research context is also critical, to assist the researcher’s understanding of participants’ lived experience (Burt et al., 2006) in their space, and to highlight the unique circumstances of the context.

Qualitative research is subjective and value-laden (Cavana et al., 2000; Creswell, 2003; O’Leary, 2004) and accepts that there are multiple realities. Qualitative research allows humans to study humans and consider the variances that come out of the research, and the biases that the researcher brings to the study. It is important to understand and acknowledge participant-observer biases so that the reader of the research has insight into the ways that the researcher influences the research. The researcher brings their own understanding of the way knowledge is created and shared into the study and must be aware of the influences that they have in the spaces that they are studying. As a white, English-speaking, South African female who does not live in the study area, I was aware that I would be regarded as an ‘outsider’ and that my story and the reason for this study would not necessarily resonate with the people I interviewed and those who attended the workshops. It was critical for me to be

clear about the study itself, and to be honest and open to questions about who I was, where I was from, and how my life influenced my behaviour and understanding of the context.

Qualitative research allows the non-linearity of situations to be studied and interpreted (Maxwell, 2009) and allows rich and “*thick descriptions*” (Geertz, 1973). By allowing the voices of those who are being researched to be heard through the researcher (acknowledging assumptions and bias), I am able to use the data gathered to answer the questions that motivated the study.

#### **4.2 Case study**

A case study has been described by Yin (2009) as “*an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*” (p.18) and O’Leary (2004) notes that “*emphasis is often placed on understanding the unity and wholes of the particular case*”. In the complex environment of my research, a case study (‘a bounded system’ (Creswell, 2007)) and the descriptive and analytical tools of CHAT allowed me to describe the context of the case in detail, surface the contradictions that are not clearly evident, and draw porous boundaries in order to analyse relationships within the space.

Creswell (2007, p.73) suggests that

*... case study research is a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information (e.g. observations, interviews, audio-visual material, and documents and reports).*

In this study, I used a case study approach to understand and explore participation in workshops aimed at increasing the understanding of water governance in South Africa. The activity systems selected and analysed would constitute the minimum required for community participation in a CMF. Garrick (1999) proposes that “*an interpretive approach seeks to explain how people attribute meaning to their circumstances, and how they develop and make use of rules that govern their behaviour.*” As with many research methodologies (Garrick, 1999), the interpretivist researcher acknowledges that observation is imperfect

(Henning et al., 2004) and encourages gathering data from multiple sources in order to validate the findings.

Yin (2009) notes that good case studies are difficult to do and that there are prejudices against the case study method. The first prejudice is “*lack of rigour*”. The responsibility rests with the researcher to ensure that her work is systematic and that she “*report(s) all evidence fairly*” to counter the aspersion that the research lacks rigour. The second prejudice is that case studies “*provide little basis for scientific generalisation*”. This may well be true of different populations in different contexts, but a case study can provide insight to theoretical propositions and principles. Case studies can generate principles and enable meaningful insights across contexts (Palmer & Munnik, 2018). In my research, the culture and history of the context has been researched, allowing me to develop some understanding of the area before I started field work. Although my prior knowledge may have influenced the way in which I conducted the research, I was aware of the general history and culture of the area, and therefore attempted to keep an open mind and be reflective. The translator who travelled with us is an isiXhosa speaker and enabled respectful, meaningful engagement with the traditional leaders in the area. She has also been involved with other researchers in the Tsitsa River catchment and is recognised by various members of the community.

#### **4.2.1 Interpretivist research**

Meaning is created through history, culture and interactions (Maxwell, 2009; O’Leary, 2004). In different circumstances, the ways in which people behave and interpret the information they receive is different. The way people interact in different settings can be interpreted in different ways and is influenced by numerous things (O’Leary, 2004). Van Rensburg and Smit (2004) state that

*knowledge systems are interrogated by the interpretive researcher who analyses texts to look for the way in which people make meaning in their lives, not just that they make meaning, and what meaning they make.*

Each researcher brings their own life experience to bear in the research that they undertake. It is therefore critical to be honest (as a researcher) with yourself, your research participants and your reader about your own “*taken-for-granted assumptions*” (Garrick, 1999). My

intellectual goal (Maxwell, 2009) is to explore the relationships and learning that takes place within a workshop and interview space to consider how a learning-centred approach to CMF formation could be constituted in the Tsitsa River catchment. I chose CHAT as a lens for interrogating and interpreting the relationships within the workshop space and the interviews I conducted. The theory and analytical framework allowed me to understand more deeply what people know and what they learnt from the workshop experience, and what contradictions create tensions and present opportunities for learning. However, I am aware, as argued by Scott and Usher (1996), Lather (1991) and Aronowitz and Giroux (1991) in Garrick (1999), *“no single method can completely filter out widespread social biases that are deeply inscribed in language and culture”*.

### **4.3 Data gathering**

The research site is approximately six hours' drive from Rhodes University in Grahamstown, making careful planning for data gathering imperative (Figure 4-1). In January and February 2016, the Institute for Water Research, Rhodes University, was contracted by the proto-Mzimvubu-Tsitsikamma CMA to run CMF workshops in five towns across the entire Eastern Cape Province. The structure of these workshops was used for the workshops held in the Tsitsa River catchment (Appendix 1). Each workshop involved an introduction (focussing on the National Water Act, catchments, CMAs, and CMFs), a group question-and-answer session for clarity, followed by a breakaway session during which participants were divided into equal groups, or groups of related catchment areas, to discuss their concerns and actions for their specific area. Both workshops held in the study site were by invitation. A stakeholder analysis undertaken by Sisitka et al. (2014) and the subsequent database created and expanded from the stakeholder analysis was used to compile the invitation list. Invitees included representatives from the district and local municipalities, the DEA, the DWS, chiefs and headmen, farmers' associations (commercial and emerging), and interested parties. In the initial phases of running the learning-centred workshops, I felt it was important to invite as broad a range of stakeholders to attend the workshops as possible. All semi-structured interviews and workshops were translated either in full or in part into isiXhosa or Afrikaans where the need arose. The data gathered were used to describe five activity systems that should, at least, be included in the establishment of a CMF (Water Governance; Rehabilitation



work (Team); Rehabilitation work (Manager); local governance (Local Government); and local governance (Traditional Council)). Table 4-1 gives a breakdown of the data index codes and data-gathering method used in this study.



Figure 4-1: Map showing Grahamstown, Maclear and Patensie (towns) and Port Elizabeth and East London (cities) in the Eastern Cape, South Africa (map created using Google Earth Pro).

Table 4-1: Data index codes used

Data index code	Data index code in full	Data-gathering method	Data source
Int1	Interview 1	Semi-structured (CHAT) interview (audio recording and transcript)	Three general workers and one sub-contractor to Gamtoos Irrigation Board
WS1	Workshop 1	Workshop (audio recordings, photographs, and transcripts)	Participants at the workshop
WS2	Workshop 2	Workshop (audio recordings, photographs, and transcripts)	Participants at the workshop
Int2	Interview 2	Semi-structured (CHAT) interview (audio recording and transcript)	One rehabilitation team manager employed by Gamtoos Irrigation Board
Int3	Interview 3	Semi-structured (CHAT) interview (audio recording and transcript)	Elundini Municipality town planner

The first workshop in the study area was held in May 2016 (WS1) with both the chief and headman of the traditional council close to the area where the rehabilitation work was taking place. I felt it was critical to explain to the chief the work that we were doing and the research that we would be conducting. I wanted the chief to approve the process that we were undertaking as we would be conducting another workshop with people from his community and did not want him to be unaware of what we would be sharing with the community members.

The second workshop was held in November 2016 (WS2) in the town of Maclear and was attended by the chief, representatives of the local and district municipality, a DWS representative, and members of the community. The participants at this workshop were sufficiently representative of the five activity systems selected for this study. The purpose of this workshop was to share information with participants about water governance in South Africa, to explain the various institutions under the NWA, including a CMF, and allow participants to share their knowledge, concerns and actions with each other and the observer-researchers. Data gathered from both workshops was analysed for influences on the activity systems, for indications of social learning and discursive manifestations that may surface underlying contradictions.



Figure 4-2: Workshop participants during the introductory session of the workshop in Maclear (WS2)

#### **4.3.1 Workshops – observation and participation**

The workshops provided opportunities for knowledge sharing and a deeper contextual understanding of the lives of participants in the places where they live. The workshop format

was used consistently throughout the research period. Workshops drew on the concepts and workshop methodology of Strategic Adaptive Management (SAM) (Kingsford & Biggs, 2012; Rogers & Luton, 2011). The discussions that took place during the workshops were recorded for transcription and data analysis. At the end of the workshop held in Maclear (WS2), participants filled in a workshop feedback form (Appendix 5).

Participant observation allowed me to interact with the participants of the workshops, to observe not only what the participants said, but also what they did – the way they behaved and interacted with one another (Bloor & Wood, 2006). During the group sessions of the workshops particularly, it was thought-provoking and enlightening to observe what took place between the participants (Cohen et al., 2007) in the situation and setting of a workshop. Cohen et al. (2007) propose that observation can produce authentic data. I considered who was speaking to whom and noted the relationship dynamics within the groups; and considered whether or not who spoke made a difference to whose voice was heard during the discussions. My reflections of the group dynamics and the process of the workshop observation allowed a questioning of whether or not learning was taking place within the groups and, if so, how it was taking place.



**Figure 4-3: Participants share their concerns and possible solutions during the workshop in Maclear (WS2)**

Cohen et al. (2007) suggest that observations can range from “*responsive to pre-ordinate*” (p.397) or as O’Leary (2004) points out, from “*highly structured to unstructured*”. The unstructured observer will not necessarily know what is being observed whereas the structured observer will know what to look for at the beginning of the period of observation.

There are advantages and disadvantages to both methods of observation. As an unstructured observer, the researcher may be more open to all that is taking place within a workshop or interview and make interpretations of the observation with a more open mind. The structured observer will be on the lookout for particular interactions or conversations. By adopting a narrower, more focused observation process, the structured observer may miss interactions that might add value to the observation. My observations, as the research process unfolded, moved from unstructured to far more structured. My reflection on the process, at the time of writing, is that in future for observational research, it would be beneficial for the researcher to draw up a 'check list' of specific attributes to look out for during observation that relate to the objectives of the research. These might include, but not be limited to, who speaks when, how people introduce themselves, whether or not people appear comfortable in groups, and whether or not everyone has an opportunity to give their opinion.

There are often limitations to data-gathering techniques, such as length of time during which to gather data, and availability of people to attend workshops. The bias of the researcher to what is observed cannot be ignored as the researcher lives in a different world from the one that is being observed, or the process (workshop) that has been created (Cohen et al., 2007). The researcher may well observe through a lens of preconceived preferences (Lawrence, 2015). My experience as a white, female researcher in a 'foreign' (to me) environment meant that it was important for me to be aware of how I observed the workshop both as presenter and participant. I tried to keep the transdisciplinary principles (*Engage with balanced generosity; listen and share and be conscious that everyone involved in the process is a whole, multi-dimensional person, with the potential to engage with their whole self and many ways of knowing* (Palmer et al., 2007)) at the forefront of my mind. Even if the workshop was not proceeding according to my schedule, I allowed the process to unfold, as the data gathered could provide insights into the context that the planned agenda of the workshop may not have.

At the beginning of each workshop session, the research project (NLEIP and my research contribution to the project) was explained and verbal group consent was requested to record the workshop proceedings. Once group consent was received, the workshop commenced. All

participants at all workshops consented to the workshops being recorded and photographs being taken, and for the information to be used for research purposes. Those people that were interviewed individually or as a group gave consent for the data to be used as part of my research. Workshops were digitally recorded and the data produced during the workshops (concerns and actions written up by participants) were photographed.

The workshops were structured along similar lines to previous workshops run across the Eastern Cape by me and colleagues from the Institute for Water Research. The purpose of the workshop was to inform participants about water governance in South Africa and to allow participants to interact, voice their concerns, and list possible actions that could be undertaken by the participants within their communities, possibly through a CMF. After the purpose of the workshop and the research being undertaken was clarified, participants introduced themselves stating their name and the institution they came from, or the village in which they lived. The participants were invited from a database of stakeholders within the Tsitsa River catchment based on the stakeholder analysis undertaken by Sisitka et al. (2014). One of the challenges of attending the workshop was travel and this is often an issue in rural areas and must be considered by organisers of communication events be they workshops, meetings, or information-sharing sessions.

After the introductions, the National Water Act and IWRM were explained, including the various structures for participatory water governance. At the start of the workshops I asked if the participants would like translation of the workshop into isiXhosa (there was a translator and fellow researcher present). Participants at the first workshop held in a rural village, requested that the workshop be translated continuously, in other words, each phrase by the presenter was translated. Participants at the second workshop were happy for the workshops to be conducted in English with translations as required as long as I spoke slowly and clearly during my presentation. Participants were free at any time to interrupt explanations for clarity and spoke in either isiXhosa or English depending on which language was more comfortable for them. Concepts like 'catchments' which do not have a direct isiXhosa word needed to be explained. The participants understood the concept but did not have a word in their mother tongue for it.

Part of the goal of the workshop was to allow participants to work in groups to decide what the five top concerns or challenges are in their catchment. The participants were divided into groups simply by numbers so that people who knew each other or were from the same institution were not in the same group. This type of division of the group created better representation in the breakaway groups of the people attending the workshop and allowed richer discussion (as observed by me). The first task for the breakaway groups was to list (individually) their top five concerns and/or challenges in the catchment. They were then required to work together to select the group's agreed-upon top five, which required negotiation and agreement. Once this task was completed, the groups worked together on possible actions they felt they could take to work towards changing the situation, or suggested actions the potentially responsible institutions (i.e. local municipality, government) could take. After discussions among the group members was completed, each group gave feedback in plenary to the workshop participants.

#### **4.3.2 *Semi-structured interviews***

During the research design phase, I considered various data-gathering methods and decided that semi-structured interviews would elicit the experiences, beliefs and motivations of the interviewees selected (Gill et al., 2008) most appropriately. The interview would allow me to explore these experiences more deeply (Silverman, 2000) than workshop observation alone, and possibly enable development of a richer understanding of the lived experience of the people I interviewed. The semi-structured interview provided a more open environment in which interviewees could share more about their lives, and in so doing, add depth to the data gathered during the workshops.

O'Leary (2004) describes semi-structured interviews as pursuing a more "*conversational style*" in which there may be guiding questions, but the style of the interview allows the process to flow more naturally. The researcher and interviewee are not bound to a specific order of questions and the researcher has the option to explore "*interesting tangents*" (O'Leary, 2004). I used the analytical and descriptive tools from CHAT for this research and

designed a set of questions that would guide the interview, based on the second-generation activity system (Y. Engeström, 2000) (Appendix 2).

The skills that are required for conducting interviews include listening and showing an interest in what is being said (Cohen et al., 2007). O’Leary (2004) recommends talking less and listening more, as well as making your interviewee feel comfortable about answering questions. In order to encourage interviewees to feel more comfortable, I ensured that I explained the purpose of my research and the place of the research as part of the NLEIP project. The interview with the rehabilitation team was conducted in English and isiXhosa as the interviewees’ home language is isiXhosa. The translator for the interview was involved in other aspects of the NLEIP and understood the project. She was able to help explain concepts and questions that needed explanation. All interviews were digitally recorded and transcribed.

I did not interview anyone specifically relating to the Water Governance activity system, but used the National Water Act (NWA) (Act No. 36 of 1998) and other documents (*Guidelines for the Development of Catchment Management Strategies* (Department of Water Affairs and Forestry (DWAF), 2007) and the *National Water Resource Strategy Second Edition* (Department of Water Affairs (DWA), 2013) to describe the Water Governance activity system. I used data recorded during the workshops and interviews to deepen my understanding of the Water Governance activity system in this context.

The group I selected to interview were working as a rehabilitation team as part of the DEA: NRM NLEIP programme. The information gathered from the rehabilitation team was beneficial to the research to probe and surface learning that is currently taking place within the study area, and to highlight any contradictions that the group itself was not aware of but that I, as the observer-researcher, was able to gather from the interview. The data shared and gathered during the interview allowed me to describe the Rehabilitation activity system – Team. The rehabilitation team are all residents of the Tsitsa River catchment and their knowledge and contributions to a CMF would be beneficial for the integration between land and water management.

It was important to interview a member of the company that was contracted to do the rehabilitation work (Rehabilitation activity system – Manager) in the area as he was responsible for the rehabilitation work teams. The person interviewed described his job and the purpose of the work; he helped me understand the work that is required (on-the-ground rehabilitation work and office paperwork). In the process of analysing the data from the interview, I was able to identify contradictions that provide the “*illuminative hinges*” (Foot, 2014) for learning between the Rehabilitation Team activity system, the Rehabilitation Manager activity system and the activity systems that these interviewees are members of that are outside of the context of this study. The contradictions may highlight the point at which a learning-centred approach to CMF formation could begin to bridge the gaps in knowledge sharing and understanding, and provide opportunities for expansive social learning between different activity systems.

After the workshop that was held in Maclear (WS2, Table 4-1), I interviewed a member of the local municipality. His input to my research provided clarity on the various roles he plays as an individual and as part of a team in the Elundini Local Municipality in the landscape, and the challenges faced in the work that he participates in. The interview provided me the data to describe the local governance activity system.

All data gathered (recordings and transcripts) is available on CD (Appendix 7).

#### **4.4 Data analysis**

Maxwell (2009) suggests that data analysis should be conducted as soon as possible after the data are gathered. In my part-time research, data analysis could not be conducted soon after the data were gathered as there was not always time to transcribe the interviews or workshop recordings or to analyse the data. The analysis of the data took place months after the data gathering. All the data were transcribed within at least two months of the data gathering and parts of the interviews which were in isiXhosa were transcribed by a fluent isiXhosa speaker and sent to me to amalgamate with the full transcriptions of the interviews. In listening to and transcribing the data personally, I felt that I was reliving the experience of the interview process and felt confident that I would be able to analyse the data at a later stage.



I used abductive analysis (from the theory) (Danemark et al., 2002) to describe the activity systems. Once the abductive analysis was complete, I used thematic analysis (inductive analysis) to allow the data to 'speak' (Mukute & Lotz-Sisitka, 2012).

#### **4.4.1 Data Analysis steps**

##### **Step 1 – Group data – workshops and semi-structured interviews**

The first step involved sorting the data into the two sets – one a collection of workshop recordings, and the other the transcribed semi-structured interviews. From the semi-structured interviews, conducted using a CHAT framework of questions (Appendix 3), elements of the activity systems were sought (abductive analysis). The workshop data were transcribed to be thematically analysed, paying attention to knowledge sharing, learning, and discursive manifestations indicative of underlying contradictions which could be entry points for future expansive social learning. Data gathered from the workshops and from documents were incorporated into the semi-structured interview data, where appropriate, to add to the understanding of the relations within and between the activity systems.

##### **Step 2 – Content analysis – workshops and semi-structured interviews**

The next step was to highlight all the areas of data that appeared to be discursive manifestations of contradictions as defined by Engeström and Sannino (2011). Again, I simply highlighted data that appeared to indicate discursive manifestations of contradictions and therefore could be potential entry points for expansive social learning, and possibly change, within and between the activity systems.

Once the data had been sorted and the emerging elements of the CHAT analytical framework identified, the data were all re-read, being alert to knowledge-sharing within the data (for example, the rehabilitation teams learning from each other and teaching others in the community the skills they learnt while doing the rehabilitation work). All areas that related to learning were highlighted, without focusing on whether the highlighted area was within an activity system or not. At this stage, I was merely looking for data that indicated learning (inductive analysis).

All these initial processes were undertaken manually without a data management programme. Once the data had been analysed abductively and inductively, I extracted the data relating to activity systems, social learning and contradictions to address the study's three sub-questions. I repeated the inductive analysis process using the reduced data, allowing categories and codes to emerge from the data. The manual method of categorising and coding was time consuming but enabled me to re-live the workshop and interview process. I then used a data management programme, QDA Miner Lite, and imported the data into the programme. I was able to recognise clearer connections within the reduced data, between the activity systems and categories where learning and contradictions appeared to be taking place. The use of the computer programme to analyse qualitative data has sparked debate among researchers (Rodik & Primorac, 2015), and as Roberts and Wilson (2002) pointed out "*computers do not and cannot analyse qualitative data*". The programme allowed me to organise and manage the data more efficiently and to find connections within the data and re-organise the data much more simply than the manual system I began with. Data analysis is an iterative and reflexive process that requires the researcher to think, reflect, notice and gather connections (Bell & Friese, 2015) as they work with and through the data, and both manual and computer data analysis should be used.

### Step 3 – Categorising and coding – inductive analysis

Qualitative data can be used from many different sources and their interpretation depends largely on the questions that the researcher is asking (Cohen et al., 2007). Using the CHAT analytical framework, the first analysis of the data involved looking for pointers to the activity systems, discovering which activity systems emerged and what the connections within and between the activity systems were.

As I read through the data before using the data management programme, I was alert to various categories of data emerging (for example, water, management, government, and land). I used QDA Miner Lite to create categories and then codes in order to sort the data as I read through the material again. In this iterative process, I became aware of the need to reduce the number of categories and codes in order to interpret the data that were relevant to answering the research question. The reduction of the number of categories and codes

allowed me to focus on the data that dealt with water, government, land and knowledge. These categories and codes highlighted connections and breakdowns within and between the activity systems, knowledge gained and shared, and which activity systems should be included in the formation of a CMF to enhance community participation.

#### Step 4 – Interpreting the data and drawing conclusions

Qualitative researchers (Henning et al., 2004; Rule & John, 2011) suggest that it is necessary to interpret the data that are relevant to addressing the research questions. Although the data were a rich source of information about the frustrations and questions that people in the Tsitsa River catchment have regarding the Mzimvubu Water Project and the related future building of the Ntabelanga Dam, I needed to ensure that I was not distracted from answering the research question. Reading and re-reading the data and making connections within the data is critical (Maxwell, 2009). I identified the final categories and codes that I felt were relevant to answer the research question. (O’Leary, 2004; Maxwell, 2009).

#### **4.5 Ethics and validity**

According to Maxwell (2009), “*ethical concerns should be involved in every aspect of design*” (pg. 216). Before conducting any in-field data gathering, I requested permission from the chief of the traditional council and invited him to attend the first workshop (May 2016) that would be held to engage with the community. The chief attended both workshops (May and November 2016).

As Bassegy (1999) points out, there are ethical considerations in relation to “*respect for democracy; respect for truth; respect for persons (right to dignity and privacy)*” and acknowledgement and respect of the fact that as a researcher you are taking away data that the other person holds and then using it for your own purpose. The NLEIP was underway and it was necessary to be clear about my work and respectful of the communities that I would be working with, of both the people and the place in which they live and work.

Researchers are generally aware of the possible threats to the validity of the data gathered, and Maxwell (2009) suggests researcher bias as one of these threats. By researcher bias

Maxwell means that the data gathered may be distorted by the researcher's theory, values or assumptions. Being aware of this possible threat meant, during analysis, constantly guarding against how or why I might influence the data. Another possible threat to the validity of the data is reactivity. Here the effect of the researcher on the setting or individual may influence the data. I acknowledge that as a researcher the perceptions of the participants in the workshops and interviews may be skewed and I tried to analyse the data with this in mind.

Lincoln and Guba (1985) propose various measures to ensure credibility; measures which include sufficient involvement (getting to know the culture and values, winning trust and eliminating misconceptions); triangulation (multiple data sources and using more than one method of analysis); critical discussion with peer group members (supervisors and fellow students); and member checking (discussion with respondents to confirm validity of interpretation and to clarify any obscurities).

My proposal to undertake this study was submitted to the Rhodes University Education Faculty Higher Degrees' Committee. The proposal and ethical clearance were accepted and granted by the committee (Appendix 6).

#### **4.6 Conclusion**

My goal was to explore the relationships and learning that takes place within a workshop setting that may help answer the research question. I chose CHAT as a lens for interrogating and interpreting the relationships within the workshop space and the interviews I conducted. Cultural historical activity theory and the analytical framework allowed me to understand more deeply what people know and learnt from the workshop experience and to surface contradictions that potentially create tensions within the activity system and present opportunities for learning. However, I am aware, as argued by Aronowitz and Giroux (1991); Lather (1991) and Scott and Usher (1996) in Garrick (1999) *"no single method can completely filter out widespread social biases that are deeply inscribed in language and culture"*. Therefore, I tried to be respectful of the language, cultural differences, and experiences of the participants of the workshops. After each workshop and interview I wrote notes and

reflections in order to deepen my own understanding of the context and the lives and livelihoods of the residents of the Tsitsa River catchment.

This chapter has provided details of the research design and the reason for my choices in designing the study. The nature of the research, my own interpretation and understanding of the world influenced the choices I made. The chapter presented the data-gathering methods used and the analysis process. Finally, ethics and validity were presented. The next chapter presents the findings leading to the discussion and recommendations in the final chapter.

## **CHAPTER 5 FINDINGS**

### **5.1 Introduction**

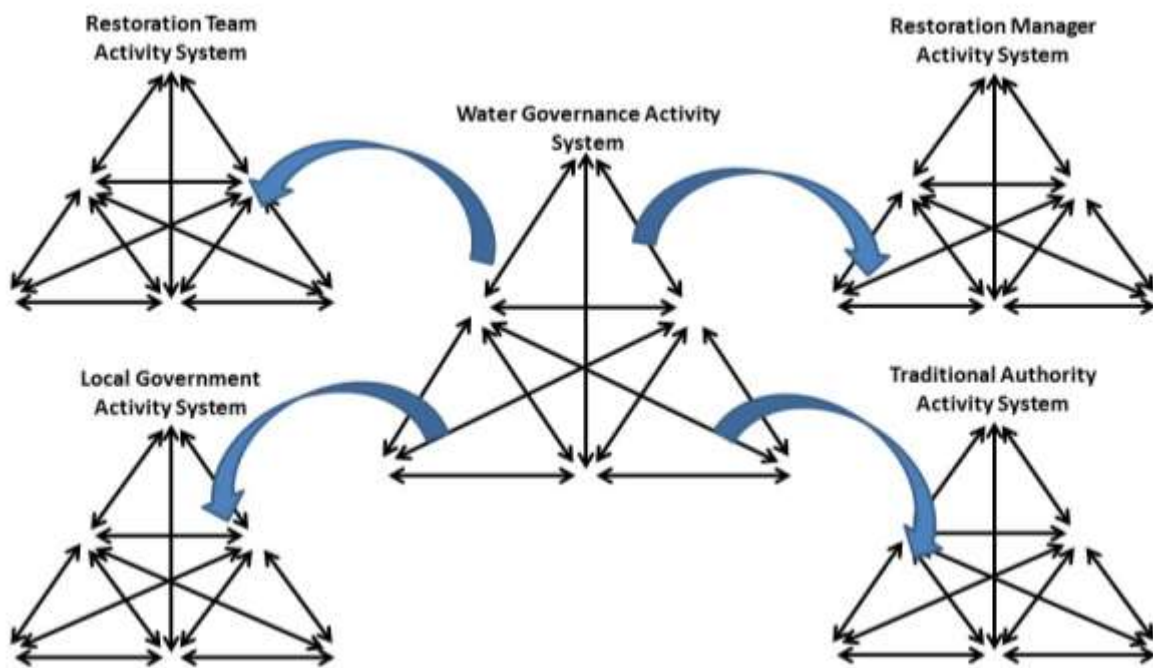
Chapter 5 reports the findings from the data gathered and analysed as described in Chapter 4. The chapter first identifies (Chapter 5.2) and describes (Chapter 5.3) the five activity systems (addressing sub-question 1). The existing learning within and between the activity systems is described in Chapter 5.4 (addressing sub-question 2) and finally the potential for expansive learning through highlighting discursive manifestations and underlying contradictions is identified (Chapter 5.5 addressing sub-question 3).

### **5.2 Identifying activity systems around a common object**

As noted in Chapter 1.6 and Chapter 3.4, five activity systems were identified as priority activity systems for inclusion in CMF formation. Moving towards answering sub-question 1, (What activity systems need to be prioritised for community participation in CMF formation?), the following sections examine in detail the five activity systems identified as central to the learning-centred approach toward CMF formation for the purpose of illustrating the interdependence of the systems on each other and the links between them. By gaining a deeper understanding of the interdependence and influences of these activity systems around a shared common object, the findings illustrate the necessity of inclusion of these activity systems for community participation in CMF formation.

As outlined in Chapter 4.4, this research used the descriptive and analytical framework of Cultural Historical Activity Theory (CHAT) to describe five activity systems identified (Water Governance; Rehabilitation work (Team); Rehabilitation work (Manager); local governance (Local Government); and local governance (Traditional Council)) within the context of the research. Data used for the descriptions of the activity systems was gathered from three semi-structured interviews and two workshops (Table 4-1, Chapter 4.3) held in Maclear in 2016. The workshop data were included for analysis as they helped illuminate existing learning and discursive manifestations of contradictions within the context of the Ntabelanga Laleni Ecological Infrastructure Project and the construction of the Ntabelanga Dam (Chapter 5.4 and Chapter 5.5).

The Water Governance activity system, as the rule-producing activity system, was viewed as the primary activity system in this context. By producing the rules, it is the activity system which most influences all the activity systems. Figure 5-1 illustrates the Water Governance activity system as the primary activity system that influences many of the decisions and frustrations felt by participants in the other activity systems [Note: not all influences between the various activity systems are shown in Figure 5-1, other influences between the activity systems are described later].



**Figure 5-1: Water Governance activity system as primary and most influential system.**

As sub-contractors to physically do the rehabilitation work, the rehabilitation work – team added insight to the work flow and understanding of the landscape within which the team live and work. The rehabilitation work – manager interview and data analysis gave perspectives on how the manager deals with the administration of the rehabilitation teams. The Local Government and Traditional Council activity systems revealed the discursive manifestations of contradictions, from a local government perspective, taking place within the context of the study. Each of the activity systems described are connected and influence, across different scales (village, local, national), the shared common object of water governance and sustainable livelihoods (Chapter 3.4).

### 5.3 Description of activity systems selected

#### 5.3.1 Water Governance activity system

Data used for analysis of the Water Governance activity system were gathered from interviews, workshops and *Guidelines for the Development of Catchment Management Strategies* (DWA, 2007) and the *National Water Resource Strategy Second Edition* (DWA, 2013).

As described in Chapter 2, the implementation of the National Water Act (NWA) and its various institutional requirements is complex and behind schedule. There have been delays in gazetting the nine CMAs for the water management areas in South Africa. In certain cases, these delays have led to frustration on the ground for communities and water-user associations who are attempting to work within the law with oftentimes frustratingly little support from DWS (Ananda & Proctor, 2013; Schreiner, 2013). The confusion as to the state of the CMA in the Eastern Cape seems to aggravate an already complex situation. In spite of the best intentions of the NWA, in many parts of the Eastern Cape it is still 'business as usual' rather than enabling stakeholders and participants to engage meaningfully in water management as desired by the NWA.

Based on the data gathered and analysed, the activity system can be described as follows: the primary **subjects** in this activity system are the employees of local and district municipalities and government departments including, but not limited to, Department of Rural Development and Agrarian Reform (DRDAR), Department of Environmental Affairs (DEA) and Department of Water and Sanitation (DWS). The governance **tools** that are used are the NWA, the Water Services Act (WSA) (Republic of South Africa (RSA), 1997), the business case report for the establishment and development of a CMA in the Mzimvubu to Tsitsikamma water management area (Wilson & Titus, 2014), and the guidelines for setting up CMFs (DWA, 2001; Palmer & Munnik, 2018). The **rules** are the NWA, the WSA, Department of Environmental Affairs numerous acts, acts that fall under Cooperative Governance and Traditional Affairs, and acts governing the district and local municipalities and the traditional authorities. The rules are administered by different divisions within different national government departments. Due to shortages of staff, particularly within the DWS, many laws



are not enforced, for instance issuing of water use licences. The effect of this is that organisations and farmers may be using water ‘illegally’ but out of necessity to run their businesses (Figure 2-3). The **community** is the residents in the Tsitsa River catchment area. The residents include traditional leaders (chiefs and headmen), residents of the rural areas within the catchment, commercial farmers, emerging farmers, business owners, and municipal employees. The **division of labour** is among multiple staff members in multiple departments within government structures with responsibilities for water governance. The **object** of this activity system is water governance and the **outcome** should be equity, efficiency and sustainability in water (integrated water resources management). The influence on the shared object of water governance and sustainable livelihoods is weighted towards water governance, but impacts on livelihoods. The effect that this activity system has on all the others is significant and could be viewed as the source of many of the manifestations of contradictions between the activity systems.

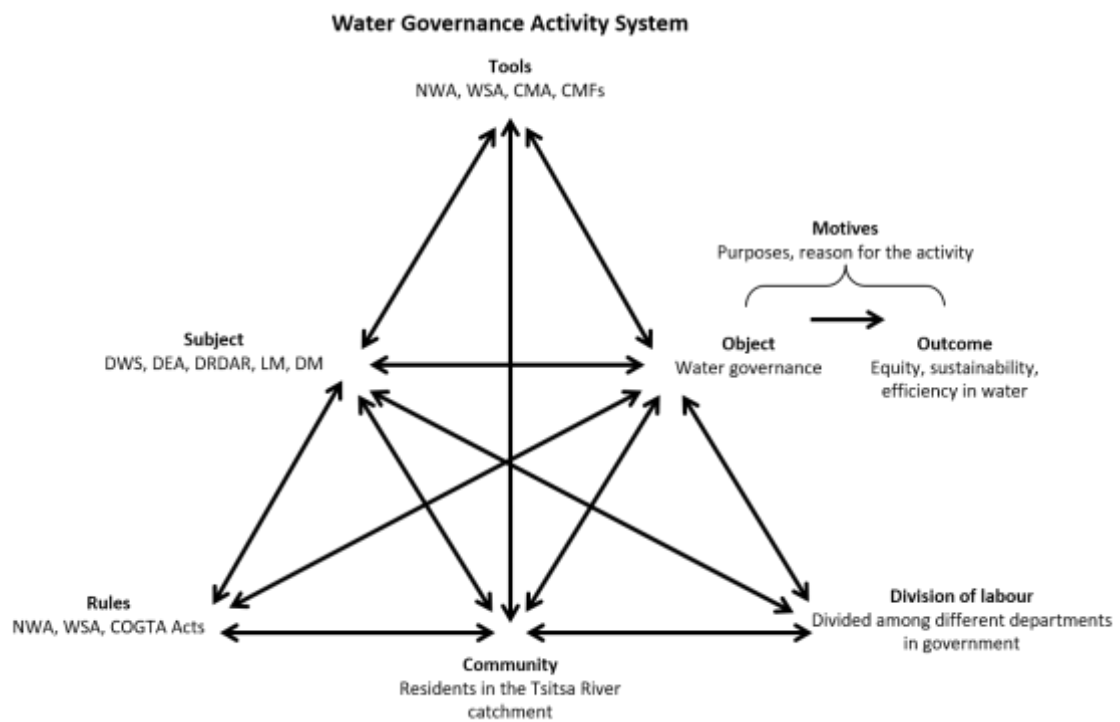
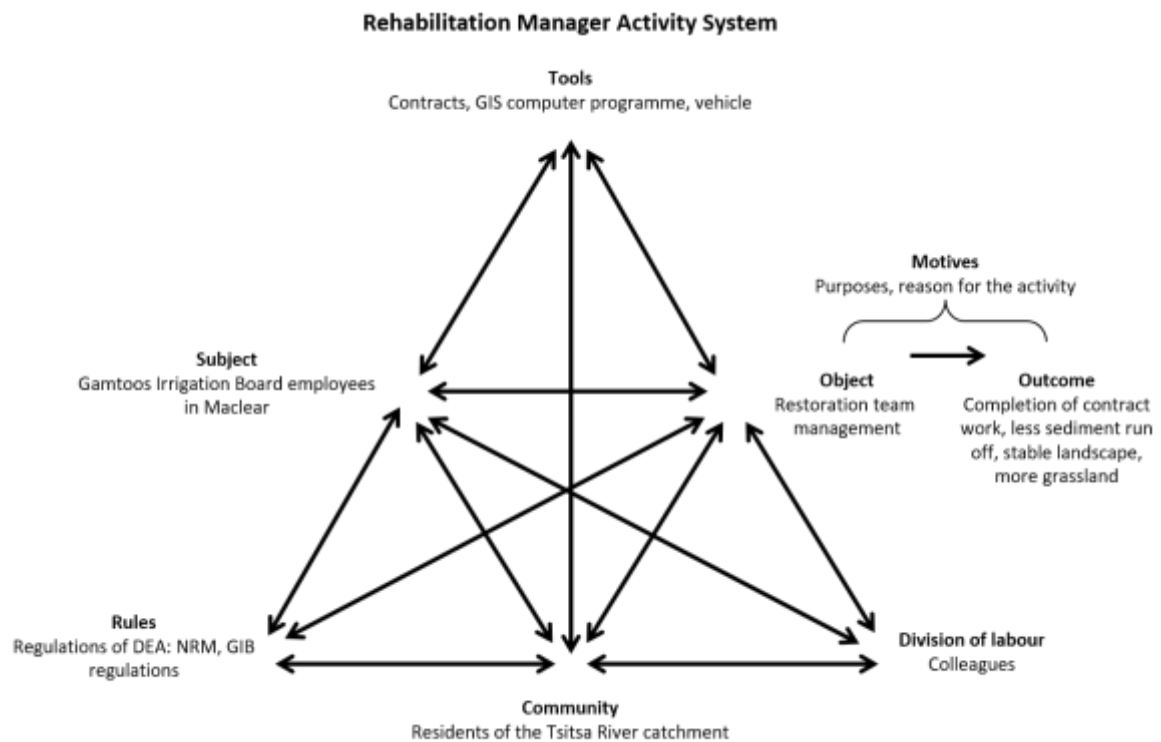


Figure 5-2: Water Governance activity system

(NWA=National Water Act, WSA=Water Services Act, CMA=Catchment Management Agency, CMFs=Catchment Management Forums, COGTA=Cooperative Governance and Traditional Affairs, LM=Local Municipality, DM=District Municipality, DWS=Department of Water and Sanitation, DEA=Department of Environmental Affairs, DRDAR=Department of Rural Development and Agrarian Reform).

### 5.3.2 Rehabilitation Manager activity system

I interviewed the manager of the work taking place and included his activity system with the Rehabilitation Team’s activity system to show the similarities and differences in the work between the management and the rehabilitation team.



**Figure 5-3: Rehabilitation Manager Activity system (GIS=geographic information system, DEA: NRM=Department Environmental Affairs: Natural Resource Management, GIB=Gamtoos Irrigation Board).**

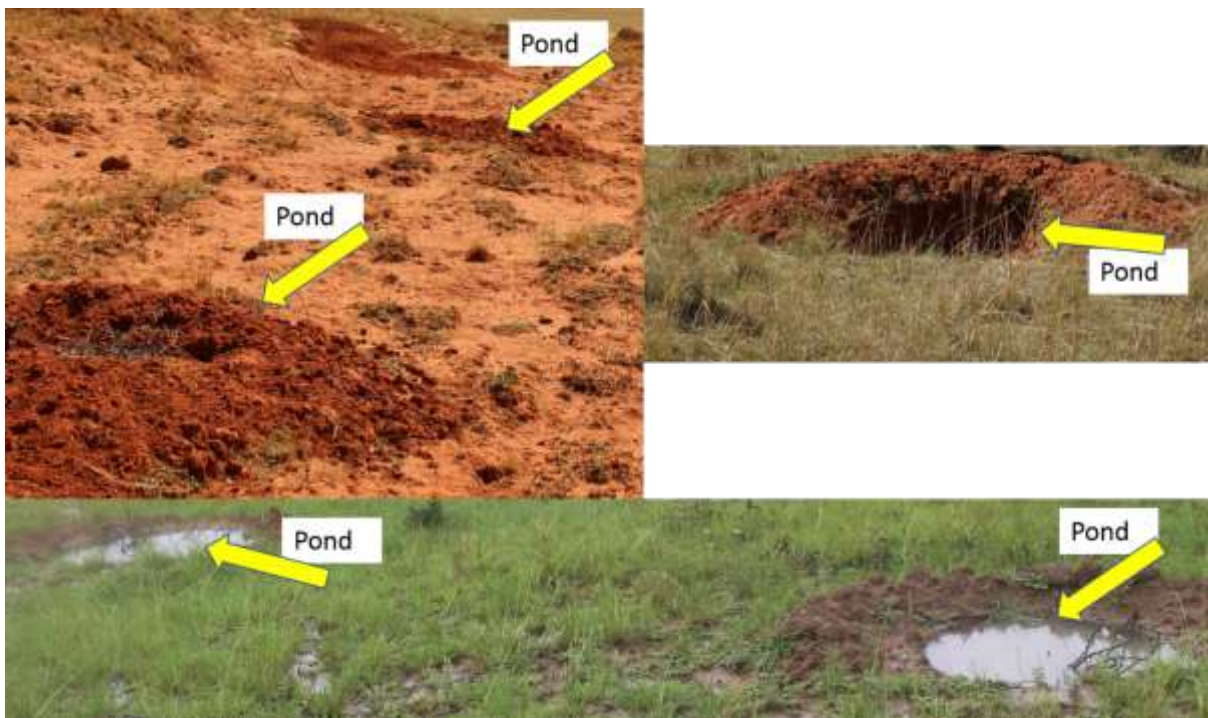
The interviewee (**subject**) and his colleague are employed by the implementing agency, Gamtoos Irrigation Board, and is responsible for the teams working in the Tsitsa River catchment close to the proposed Ntabelanga Dam site. The Gamtoos Irrigation Board is appointed by the DEA: NRM as the implementing agent for a number of ‘Working for’ programmes across the Eastern Cape. The Gamtoos Irrigation Board head office is in Patensie over 600kms away. The managers of their various projects may not be residents of the areas they work in which adds a difference perspective to the information shared by this interviewee. The **tools** used by the manager included the paperwork required by Gamtoos Irrigation Board and therefore the DEA: NRM, a vehicle, and GIS (geographic information system) computer programme and software. The **rules** of his employer (Gamtoos Irrigation

Board) and the DEA: NRM guide the work that he is doing. The interviewee is not from the Maclear area but comes from another small town (Patensie) in the western part of the Eastern Cape (Figure 4-1). He is therefore 'new' to the area and lives within a **community** that is not his own. He adheres to the culture of the place in which he lives presently (Maclear). He does not live in the village in which the rehabilitation work is taking place and is mindful of the traditional rules that govern the community. He deals with the chief in the area, and the local and district municipality officials with whom he has contact. He has made an effort to develop a good relationship with the chief (Int2 line 127: *I also do have a very good relationship with the chief*). He is responsible for all paperwork related to the eight teams that are currently working in the area, and ensures that they are working in the correct areas and that rehabilitation work is being done to the correct standards. He has one assistant at the office in Maclear and reports to the Gamtoos Irrigation Board head office in Patensie (**division of labour**). His experience working on other projects across the Eastern Cape as a sub-contractor provided the training for the paperwork required as a manager and he received minimal training for the specific rehabilitation work taking place in the Tsitsa River catchment. The **object** of the manager's activity system is rehabilitation team management and administration. The **outcome** is the rehabilitation of the landscape in the small area of the catchment where the teams are working and the completion of the necessary paperwork and documentation in order for the contracted teams to be paid timeously and for contracts to be renewed. This activity system influences the sustainable livelihoods of the shared common object by providing short-term contract work to some of the residents in the Tsitsa River catchment through the rehabilitation work being undertaken.

### **5.3.3 Rehabilitation Team activity system**

The DEA: NRM is working in the Tsitsa River catchment as part of their NLEIP. The project aims to restore parts of the landscape in an effort to slow the progress of erosion and the creation of further dongas and gullies that will affect the storage capacity and the lifespan of the proposed Ntabelanga Dam. In order to start with the rehabilitation work, the Gamtoos Irrigation Board was appointed as the implementing agent in the area as they are implementing agents for the DEA: NRM across large parts of the Eastern Cape. The rehabilitation work in the Tsitsa River catchment area requires particular methods for

rehabilitation which are being undertaken at the moment. At the time of the interviews and workshops, the methods being used were all manual labour intensive, no heavy equipment was used for rehabilitation. Various rehabilitation teams worked in different areas close to the proposed site of the Ntabelanga Dam. The initial goal was to slow the rate of water run-off, to re-shape smaller gullies and dongas, and to encourage grass growth on the landscape. Teams use ponding (digging a hole in the ground and filling it with grass seed and thorn tree branches to discourage animals eating the new grass, (Figure 5-4), silt nets (placed across some smaller gullies to slow water and trap silt, Figure 5-5) and re-shaping the head cuts of the smaller gullies. The various methods used depend on the requirements of the specific area in which the team is working.



**Figure 5-4: Ponds on the landscape.**



**Figure 5-5: Silt traps placed on slopes or across small gullies to trap silt and slow water run-off rate.**

In order for the rehabilitation teams to work in the area, a process of tendering for the rehabilitation work to the DEA: NRM via the Gamtoos Irrigation Board must be followed. The rehabilitation team manager must submit the tender documents (including quotes) to the Gamtoos Irrigation Board. In the process, the rehabilitation team becomes a sub-contractor to Gamtoos Irrigation Board for the rehabilitation work that will take place.

The rehabilitation team sub-contractor manager in the extract below explained the delays that may be caused in issuing order numbers and the impacts that has on the team's starting date for working. The procedure described is followed every 21 days as per the requirements of the DEA: NRM 'Working for' programmes (Figure 5-6).

*Interviewee (rehabilitation team sub-contractor manager): I'm doing the quotations.*

*Researcher: Ok, so the first thing you do is the quote?*

*Interviewee (rehabilitation team sub-contractor manager): Ja.*

*Researcher: Quote and that would include - what does that include? Vehicle? Tools? People? So that includes everything?*

*Interviewee (rehabilitation team sub-contractor manager): Yes. Then I send it to them [Gamtoos Irrigation Board] and they give me the order number then I go to the site.*

*Researcher: Ok, so it's, so you send that to Gamtoos Irrigation Board?*

*Interviewee (rehabilitation team sub-contractor manager): Yes.*

*Researcher: Ok, and then you get an order number?*

*Interviewee (rehabilitation team sub-contractor manager): Ja.*

*Researcher: Ok and then you would – now when you get an order number can you start working?*

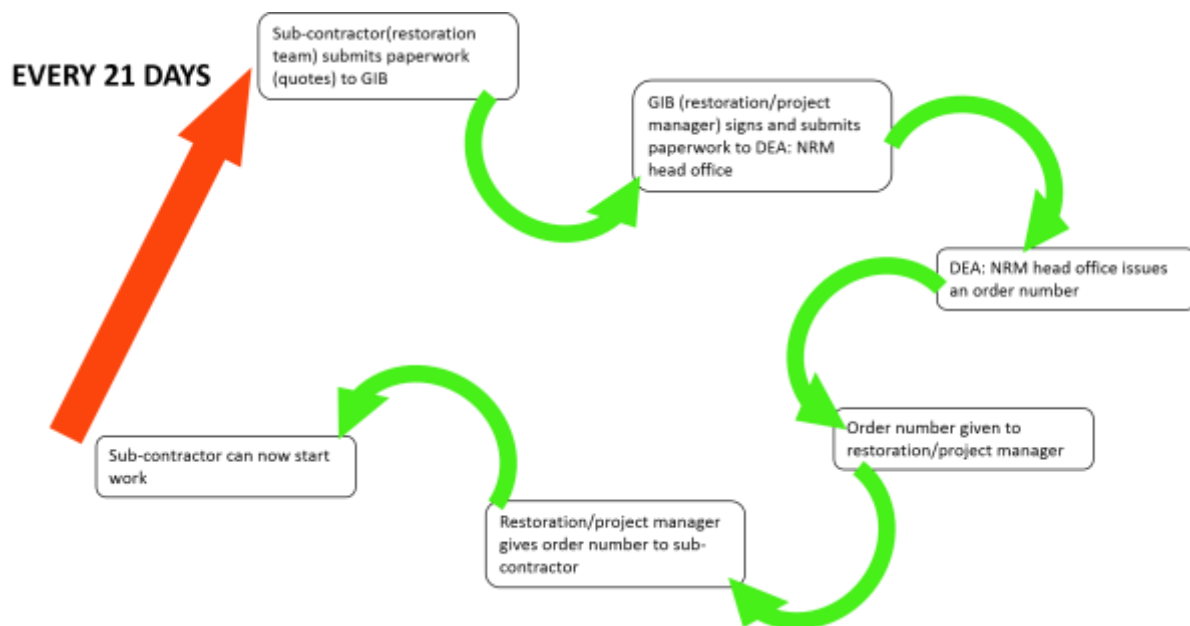
*Interviewee (rehabilitation team sub-contractor manager): Yes.*

*Researcher: Ok, and – um, if are there delays between sending and getting order numbers? Have you experienced delays?*

*Interviewee (rehabilitation team sub-contractor manager): Yes.*

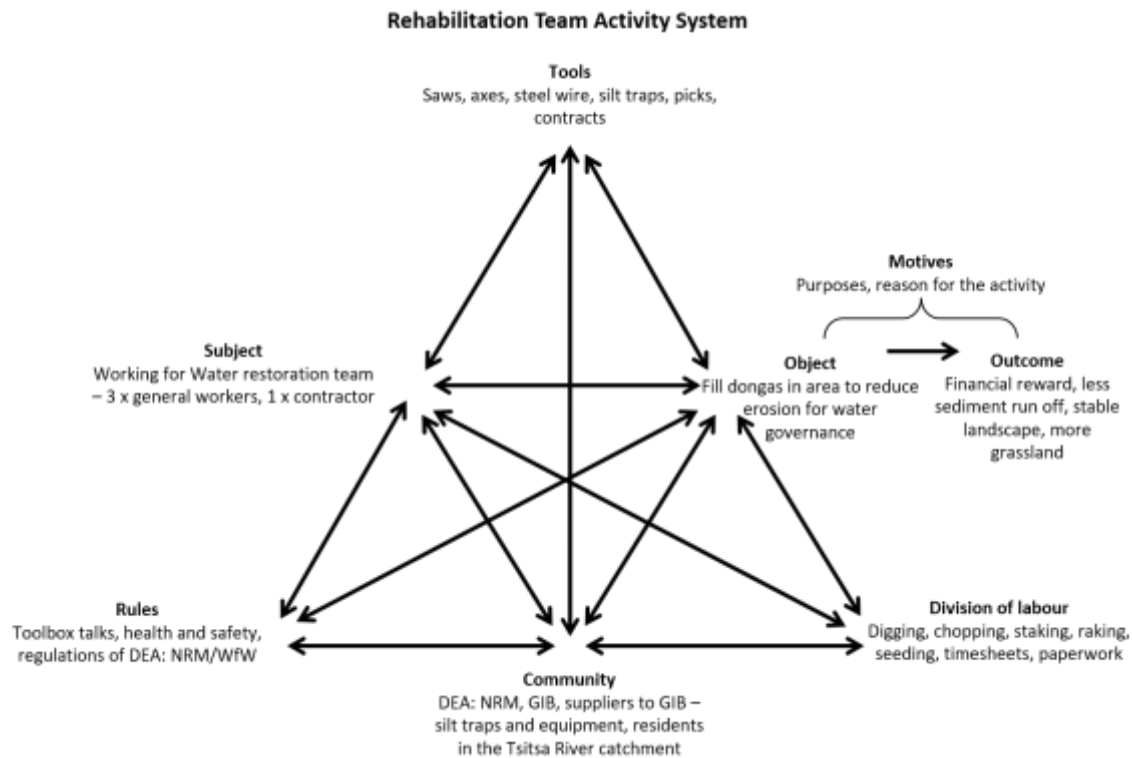
Int1 lines 123–131

NOTE: The interviews were conducted in English and translated to isiXhosa as necessary. The conversation above took place between the researcher (myself), the translator and the rehabilitation team sub-contractor manager. Although it appears that the questions are leading (from the researcher), I was confirming my understanding of the rather complicated process of submitting tender documents and quotes (the paperwork).



**Figure 5-6: Work flow diagram showing tendering process and paperwork (quotes) process in order for the Rehabilitation Team (sub-contractor) to receive an order number to commence rehabilitation work.**

At the time of the interview with the manager of the rehabilitation teams (November 2016) there were 14 teams, each consisting of 14 general workers and one sub-contractor (team manager). The team members interviewed all live in the area, although they do not all live in the same village. In analysing the interview with the rehabilitation team using the CHAT analytical framework I was able to identify the various elements referred to in CHAT.



**Figure 5-7: Rehabilitation Team activity system**  
 (DEA: NRM=Department of Environmental Affairs: Natural Resource Management, WfW=Working for Water, GIB=Gamtoos Irrigation Board, ELM=Elundini Local Municipality)

The **subjects** of the Rehabilitation Team activity system were three general workers and one sub-contractor manager. The entire team (as explained during the interview) were given one week’s training in order to conduct the rehabilitation work by a person from Cape Town (Int1 line 167: *I think he's from Cape Town*). The **tools** used by the team include picks, saws, hammers, wire, spades, administration work required for Gamtoos Irrigation Board, and a vehicle. The **rules** that this group follow include toolbox talks, which take place every working morning before work commences. The toolbox talks are opportunities to air grievances and ensure that people know what is required for them on the work day (Int1 line 259: *in the morning - when you are sitting down toolbox talks*). The toolbox talks mean that there are few fights or arguments among the group as these talks are the times when issues are aired and resolved (Int1 line 360: *Like in the mornings there's always a toolbox talk, there in the toolbox talk, each and every one will say whatever he wants to say. If you're not happy you say that and then you sort that*). The Rehabilitation Team is also subject to the rules that control being a sub-contractor to Gamtoos Irrigation Board and the DEA: NRM, although the Rehabilitation Team does not work directly with DEA: NRM.

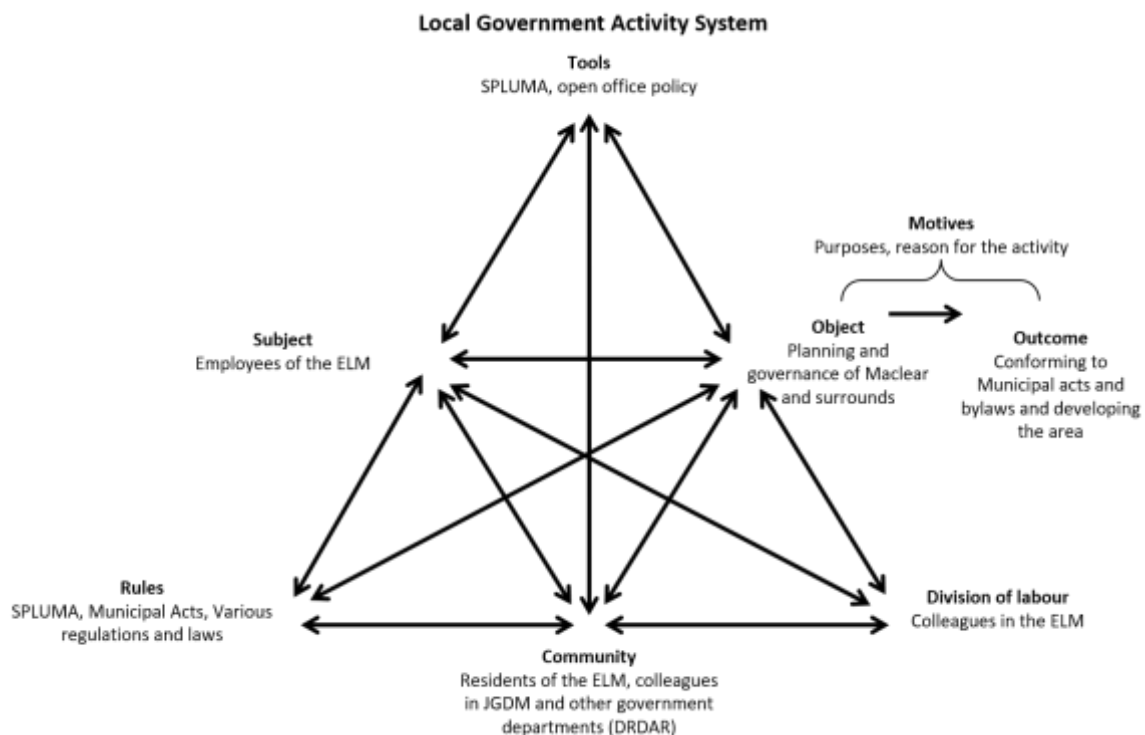
The **community** in which they live (neighbours) and work (Gamtoos Irrigation Board) is the first point of contact and possible learning. The way in which the community responds to the work they are undertaking and the explanations they give to the community is a further point of learning (Int1 lines 309–311 (translated): *He [rehabilitation team member during interview] says they'd also do it [ponding, Figure 5-4] in his house so that if someone comes and asks why he's doing it he'd explain the reasons to do so. He'd tell them how it's done and if they can't do it then he'd show them how*). There are other teams in the area all from the same location and form part of the community in which the Rehabilitation Team live and work. The teams are in contact with Gamtoos Irrigation Board and the suppliers of the various materials used for the work. Although the suppliers are not directly responsible to the sub-contractor for the supplies of materials, any delays in material delivery impacts the work. The **division of labour** within the Rehabilitation Team is mostly between digging holes, chopping out small trees, seeding ponded areas, and taking care of the health and safety of the group. The team has two safety trained individuals and one who takes responsibility for ensuring work is carried out correctly when the sub-contractor is not on site. The sub-contractor manager is responsible for all paperwork and timesheets required by Gamtoos Irrigation Board and, in turn, DEA: NRM. The sub-contractor manager does not necessarily do any of the physical labour, but rather takes the team to the work site and continues with paperwork and any other functions required. The **object** of the work done by this activity system is to fill dongas, restore landscape, and create silt/soil traps in areas on the land in order to slow down the rate of water flow to the tributary rivers of the Tsitsa River. For team members, the financial gain of working and interacting outside the home was a motivation. They stated that they would not necessarily do the work if they did not get paid, leading me to wonder about the long-term sustainability of the rehabilitation work. The **outcome** is an income for the team, albeit tenuous, potentially less sediment run-off, restoration of the landscape, and in time, creation of healthy grasslands and therefore better grazing for the cattle.

#### **5.3.4 Local Government activity system**

In order to gain a deeper understanding of the Local Government activity system I interviewed the Elundini Municipality town planner (one of the **subjects**) who lives and works in Maclear. Although this is the job description under which he is employed, it became clear during the



interview that he is involved in more than simply town planning and fulfilling the requirements of certain laws and legislation relating to municipalities.



**Figure 5-8: Local Government activity system**  
 (SPLUMA=Spatial Planning and Land Use Management Act, ELM=Elundini Local Municipality, JGDM=Joe Gqabi District Municipality, DRDAR=Department of Rural Development and Agrarian Reform)

The fact that Elundini Local Municipality is a small rural municipality impacts on the work that is required of the interviewee (Int3 lines 282–285: *what I'm doing from this side is a vast difference from what it is outside you know because they just focus in terms of planning, perspectives and you know legislations and stuff where we've got to cut across whole range of things*). The town planner is responsible not only for what is required of his job, but his focus on town planning is impacted by the various connected legislations that have greater implications for rural municipalities as they include urban and rural areas.

The **tools** that are used in the Local Government activity system, in this context, are specifically the Spatial Planning and Land Use Management Act (SPLUMA) (Republic of South Africa (RSA), 2013) (which is currently in a transitional phase for five-years in the Eastern Cape – Int3 line 266: *fortunately, we've been given a five-year transitional phase*). The SPLUMA

replaces the Development Facilitation Act (No. 67 of 1995) (DFA) which dealt with spatial development and land use. Under the DFA, applications for land use and development were submitted to the municipality or province which held jurisdiction over the planning and land use. As there are still applications outstanding under the DFA, and municipalities are expected to pass Land Use Management by-laws in line with the SPLUMA, national government has granted municipalities a transitional period to finalise applications made under DFA and align by-laws with the SPLUMA. The interviewee makes use of GIS, and various planning programmes in the work that he undertakes. He is grateful that he speaks fluent isiXhosa as he feels this has given him a more direct way of communicating with the people in the area who are predominantly isiXhosa speakers. The **rules** that influence the work he does in the local municipality are numerous Municipal Acts, WSA, SPLUMA and various other regulations and laws relating to municipalities and town planning. He is aware of the culture and history of the area and has lived in the area for many years:

*Researcher: So, you've been here since 2000?*

*Interviewee: Ja. Part of the furniture, I think I've also got a - what do you call this - a barcode on my forehead.*

Int3 lines 154–155

*Interviewee: My understanding of how they operate how they do things traditionally helps me a lot you know so specifically when it comes to planning*

Int3 lines 159–160

He feels he understands the unwritten rules and behaviours in the context. There may be tension and even contradiction between 'rules-in-form' (formalised policy and expectations of institutions) and 'rules-in-use' (informal rules that are adapted in practice) (Clever, 2012; Clifford-Holmes, 2016). The town planner must work within the regulations and acts governing municipalities ('rules-in-form'). But as a long-term resident of Maclear (and member of the community), he has gained an understanding of the history and culture of the people who live in the area. He appreciates that the way in which traditional lines of communication work may be different to those expected by regulations and legislation issued by government departments in other parts of the country. He is able to work with people to ensure the 'rules-in-form' are adhered to and, at the same time, not alienate or create tensions within the traditional system. The **community** (residents of the local municipality) in

which he lives influences the way in which he operates. He interacts with colleagues in the local municipality (**subjects**) and district municipalities and others in various government departments. For this interviewee (Local Government activity system) the **division of labour** is between his colleagues within his immediate sphere of influence (two colleagues, one professionally registered town planner and one building control officer) and other employees of the Elundini Local Municipality. He makes all the necessary applications for town planning requirements in order to conform to the appropriate rules and laws. The paperwork includes applications within and beyond the local municipality borders. He attends meetings within and outside the municipal borders in line with the requirements of his job. The **object** of this activity system is the contribution to spatial development planning and governance of the immediate Maclear area and surrounds and the Elundini municipal area. The **outcome** is conforming to SPLUMA and economically growing the Elundini Local Municipality via increased investment in the area. The impact of increased investment may contribute to more jobs in the local municipality and possible sustainable livelihoods. Although the interviewee is not directly involved with water governance, his planning recommendations are influenced by the water requirements and regulations of the WSA and NWA and therefore impact the water governance of the shared common object.

*Interviewee: There's quite a few big projects that we initiated, some of them with the Department of National Public Works in Mount Fletcher. We're talking including infrastructure and the proposed developments within five years from now. We're talking about a billion-rand investment in the town. There's also some other similar, not at that scale, in Maclear and Ugie. It'll bring, it's all from part of the small- town revitalisation programme. We [Elundini Local Municipality] didn't sit back, we just moved, you know, and see what we can do and fortunately the premier saw we just didn't sit and wait for something to happen and that's why we actually managed to get additional funding. We managed to get a very good track record in terms of our audit reports. All of these things assist obtaining additional funding.*

Int3 lines 353–361

*Interviewee: So now in this, you know, because of being able to getting additional funding, makes the environment more conducive for investment. So, ja, that's what we were aiming at the end of the day that will result in job creation and sustainable job creation not just a temporary thing.*

Int3 lines 363–365

### 5.3.5 Traditional Council activity system

This activity system was analysed using data gathered from workshops (WS1 and WS2) and interviews (Int1, Int2 and Int3) and from the stakeholder analysis conducted by Sisitka et al. (2016) on behalf of the DEA: NRM.

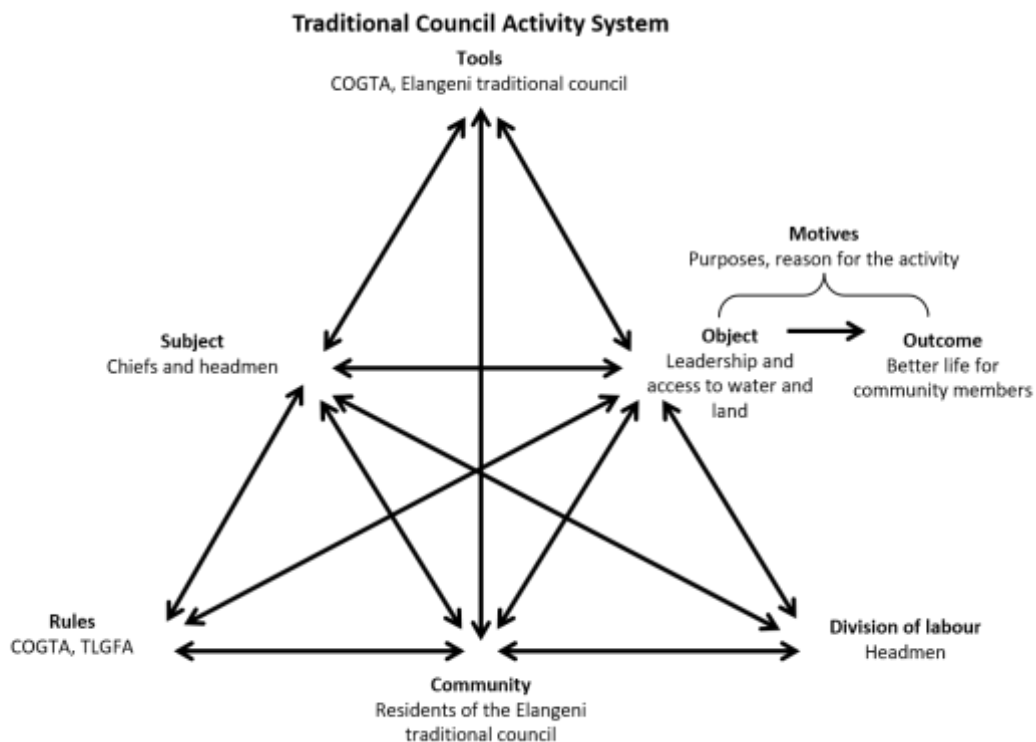


Figure 5-9: Traditional Council activity system (COGTA=Cooperative Governance and Traditional Affairs, ELM=Elundini Local Municipality)

Traditional leadership continues to play an important, and sometimes controversial role, in post-Apartheid South Africa. There are contradictions between the espoused democratic values of South Africa (equality, non-racialism and non-sexism, and regular multi-party elections) and the often patriarchal, customary laws (Beall et al., 2005). However, there are opportunities for participation at gatherings when community members may voice their opinions and concerns (Logan, 2009). A chief may be defined as “a traditional leader of a specific traditional community who exercises authority over a number of headmen in accordance with customary law, or within whose area of jurisdiction a number of headmen exercise authority” (Bizana-Tutu, 2008). Chiefs are not in control of service delivery; that is the responsibility of local government. Chiefs and their headmen are regarded as social leaders who regulate behaviour within the community they lead (Bizana-Tutu, 2008).

Traditionally the authority of the chief was derived from loyalty and allegiance of subjects (Mkhize et al., 2005) and leadership is inherited through kinship ties and ancestry (Bizana-Tutu, 2008). In post-Apartheid South Africa, the Constitution ((Republic of South Africa (RSA), 1996) recognises the role and status of traditional leadership and programmes have been implemented so that traditional leadership contributes to society. In 2003 the government passed the Traditional Leadership and Governance Framework Act (Act 41 of 2003) (Republic of South Africa (RSA), 2003), which provides guidance on how the relations between authorities of government and traditional leaders should be promoted:

*5. (1) The national government and all provincial governments must promote partnerships between municipalities and traditional councils through legislative or other measures. (2) Any partnership between a municipality and a traditional council must: (a) be based on the principles of mutual respect (and recognition of the status); and (b) be guided by and based on the principles of cooperative governance. (3) A traditional council may enter into a service delivery agreement with a municipality.*

(Traditional Leadership and Governance Framework Act 41 of 2003)

For the purposes of describing this activity system, I selected the chief and headmen of the relevant administrative area (traditional council) as the **subjects** (Figure 5-10). Although I did not interview either the chief or the headman, I did observe and record the chief and one of his headmen in a workshop and the chief in a second workshop (WS2, Table 4-1), and I used data from both of those workshops, to describe this system. The **tools** in this activity system are Co-operative Governance and Traditional Affairs regulations and procedures and content of discussions in the relevant traditional council. These tools are used along with traditional **rules**, cultural norms, and governing acts (Traditional Leadership and Governance Framework Act, No. 41 of 2003) to help in decision making regarding the administration of the area that falls under the chief. The relevant traditional council meets once a month, and the chief is invited to meetings of all traditional leaders in the Eastern Cape. The chief and/or a representative are also members of the municipal council and its committees within the Elundini Municipality. The people that live in the traditional council area are the **community** in which this activity system is placed, which includes the headmen. The interactions with the Elundini Municipality and the relevant traditional council form part of the community. The extract from the workshop below gives an indication of the frustration the chief feels at the

way in which the Mzimvubu Water Project has been undertaken and the disrespect shown, not only to him, but also to the community. The extract indicates the area that the chief is the leader of (*“the villagers that live inside of the catchment that’s going to be under this dam”*) (Figure 5-10))

*Chief [translated]: Secondly, that he's the leader of the villagers that live inside of the catchment that's going to be under this dam. He feels that the Department of Water and Sanitation should at least come and meet with him to explain the whole thing that's happening and also to the people so that they can also know what's going to be happening in their catchment.*

WS1 lines 43–56

The **division of labour** is between the chief and his appointed headmen to attend meetings within the traditional council area, meetings with the traditional council and community members along with local and district municipalities as well as government departments when necessary. As chiefs are included on various local municipality committees, there are many meetings to attend which are divided (when necessary) amongst the chief and his headmen. The **object** for the chief, in particular, and his headmen, is leadership of the community that falls under his immediate authority in a traditional structure. Although water governance may not be at the forefront of the Traditional Council activity system, concerns over water supply and access to water are raised by the chief and headmen during traditional council meetings and to the municipality. The prospect of the Ntabelanga Dam that will flood arable land but not necessarily supply piped water to the relevant traditional council area is one of frustration and confusion for the chief and the community. The loss of arable land will impact the ability of the residents of the relevant traditional council area to sustain their livelihoods. The **outcome** may be a better life and more sustainable livelihoods for his community members (WS1 line 188: *aim of the traditional council is to make the lives of the people better*).

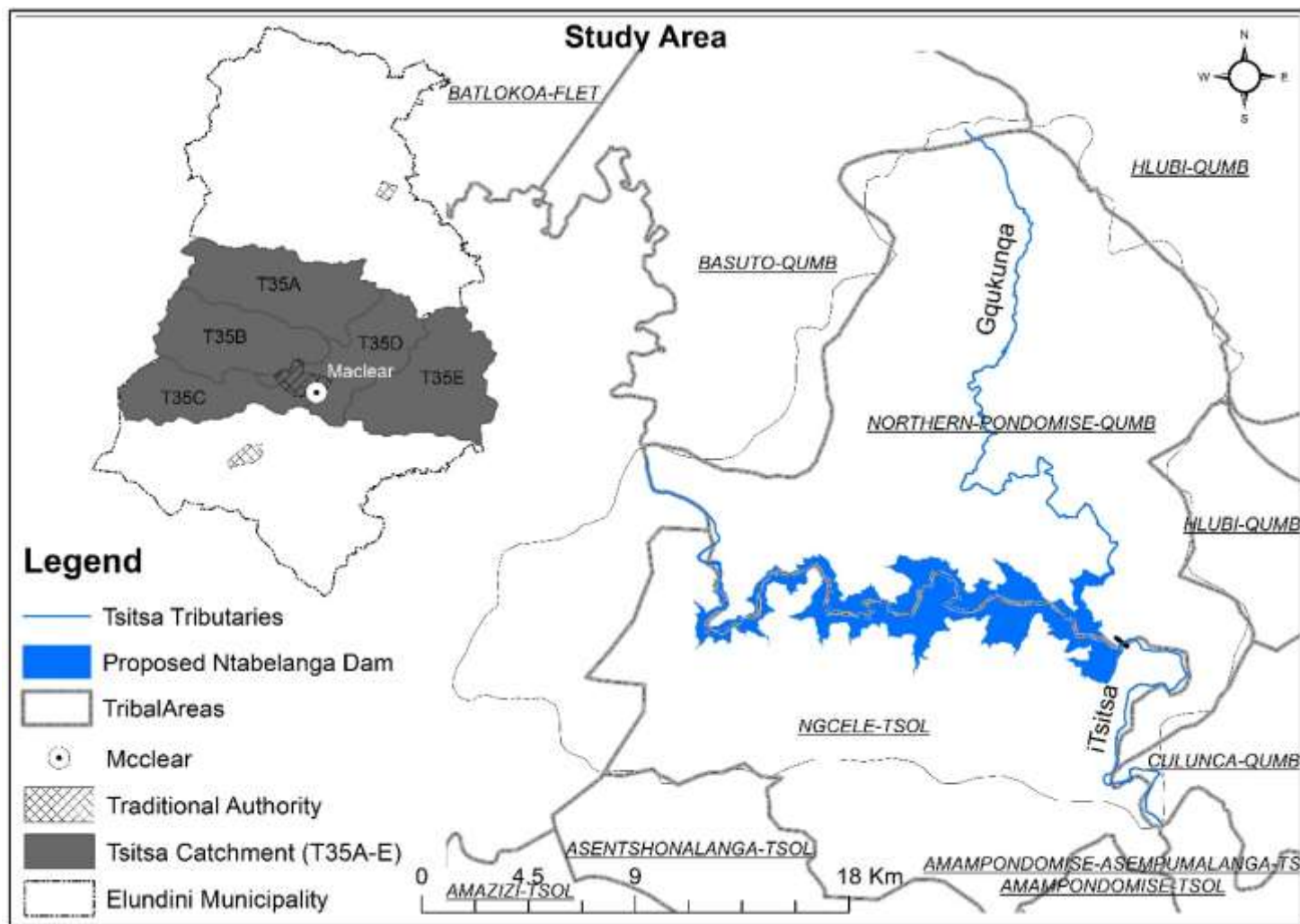


Figure 5-10: Map showing Elundini Local Municipality boundary, quaternary catchment boundaries (T35A-E) and enlarged map includes traditional council boundaries (map by S.Mazibuko).

## 5.4 Existing learning within and between the activity systems

To answer sub-question 2 (What existing learning can be identified within the activity systems?) the following sections detail the kind of learning already existing in three of the activity systems discussed above (Rehabilitation Team, Rehabilitation Manager and Local Government). As noted in Chapter 4.3.2 and Chapter 5.3.1, no interviews were conducted with representatives of the Water Governance or Traditional Leader activity systems. Existing learning with regards to water governance and the impacts on sustainable livelihoods emerged in the workshops which is discussed in Chapter 5.5.

### 5.4.1 Learning within the Rehabilitation Team activity system

The **subjects** of the Rehabilitation Team activity system described some of what they learnt while working in the programme. The first extract describes the safety training received and procedures that need to be followed. Note the interviewee is describing his responsibility as one of the safety officers in the team, although all team members received training on methods for rehabilitation. William [pseudonym] is a contractor based in Cape Town employed by the DEA: NRM to provide training to the rehabilitation teams in the Tsitsa River catchment as well as for other DEA: NRM 'Working for' programmes.

*Interviewee: This thing I must make sure that everyone is wearing their uniform, all of their safety stuffs must be on, helmets, shin pads, shin guards, all that, masks, must make sure everyone is got that stuff before you go in site. Then I have to look after them when they're working, they mustn't hurt each other. Must give others space all that. Must work safely.*

*Researcher: Who trains the teams? I mean is there training provided and who does that?*

*Interviewee: The one who trained us was William [pseudonym].*

Int1 lines 161–167

When discussing dongas (gullies) the team stated:

*They didn't know that dongas could be you know [be] restored, they only learnt it.*

Int1 lines 292–293

Note: 'they' refers to the workers in the Rehabilitation Team. The comment above was translated from isiXhosa to English by the translator during the interview.



Talking about further training – interviewee comments:

*Health and safety and the first aid we have that each and every year.*

Int1 lines 187–188

(No further training is given with regard to the rehabilitation techniques used.)

The rehabilitation team explained the role of a peer educator. The peer educators lead the on-site toolbox talks in the mornings and are also trained to engage with community members outside of the rehabilitation team. The opportunity to engage with community members means knowledge about rehabilitation can be shared. It also gives the team a slightly elevated position (as holders of knowledge) in the community as they may be invited to contribute their knowledge at community events. The peer educator might be equivalent of a counsellor among peers.

*Interviewee: Ja, as a person you can see that this person is not feeling well today you can see if you are a peer educator and then you take that person aside, talk to her, that's what he does.*

*Researcher: Ok, so that person...*

*Interviewee: I mean in the community if you're a peer educator if there's a, if there's an event, you can stand there, tell them what, about AIDS, about TSI [STI – sexually transmitted infections], that's what they do.*

Int1 lines 195–199

The team explained that when a new person joins the rehabilitation team “*The current team members will train the new*” (Int1 lines 182–185) again highlighting the holding and sharing of knowledge amongst current team members and new team members.

Learning between the **subjects** and the **community** of the Rehabilitation Team activity system. Two of the interviewees explained that they could make ponds (ponding) at their own houses. Interviewee 2 explained that he made a few ponds at his own house and explained to members of the community what he was doing and why when they asked. The ponds are holes dug into the slope of the landscape and filled with thorn tree branches. The ponds catch water and help to slow sediment run-off during the rain (Figure 5-4).

*Interviewee 1: They can do it in their house.*

*Researcher: You would be able to do it in your house.*

*Interviewee 2 [translated]: He says they'd also do it in his house so that if someone comes and asks why he's doing it he'd explain the reasons to do so. He'd tell them how it's done and if they can't do it then he'd show them how.*

Int1 lines 307–311

Learning also takes place between the subjects of the Rehabilitation Team activity system and their community of other rehabilitation teams working in the area. There is a willingness to share information and techniques with other teams, possibly because the teams all come from the area.

*Researcher: Now do you ever meet with other contract workers and discuss techniques or, um, ways of doing things that your team has learnt or can teach some other teams?*

*Interviewee: Yes.*

*Researcher: Ok, and what sort of things, what sort of thing, do you meet regularly or just every now and then?*

*Interviewee: Now and then.*

*Researcher: Ok and what sort of things do you think teams have learnt from each other? And is it useful?*

*Interviewee: Ja, the ways of doing the sloping and pondings.*

*Researcher: Ok, and do you feel, do you ever feel as a team, I don't want to tell that team anything else – like it's your knowledge or are you happy to share the information?*

*Interviewee: Yes, we're happy to share*

Int1 lines 246–253

Note: During this part of the interview it was necessary for me (as the researcher) to find out if the teams shared information. The extract shows open questions followed by closed questions and short answers. The interviewees appeared to struggle with the idea of not sharing information.

#### **5.4.2 Learning within the Rehabilitation Manager activity system**

The rehabilitation manager (**subject**) worked previously in the Baviaanskloof (Eastern Cape) where he gained experience building weirs. He then received training, with the rehabilitation teams, from an outsider. The training took place on site.

*Interviewee: ... I was involved with bigger structures before. I think the right word is weirs, they call it weirs in the Baviaanskloof. So basically, what we're doing here [T35A-E] is just a smaller version of those bigger structures. That is basically where I got my experience, but then again there was also in-field*

*training. There was a guy who gave us training on site, me and the teams as well together.*

Int2 lines 45–49

The rehabilitation manager explained that in future the he and the rehabilitation teams would be guided by the research (as part of the NLEIP) being conducted so that the sites selected for rehabilitation are more applicable. Learning is taking place between the rehabilitation manager (subject) and the teams and the outside researchers.

*Interviewee: But the challenging part is I'm not very good, what you call, these GIS things stuff. So, there's certain priority areas which the professionals know but which [Interviewee] doesn't know. But I think we're in the process to get that under the knees. There's a guy who's busy doing a study, so I think in the near future we'll just, you can exactly point us to where to do the actual job. You understand? So, that will be much easier since, maybe, because there's, I think, the last time I heard about some place, we're not supposed to work, because of duplex soils and stuff like that.*

Int2 lines 56–64

The rehabilitation manager went on to explain that some training for himself and the teams in the GIS would be beneficial:

*Interviewee: I would say more training on the, let's say, the mapping part and how to understand those maps, you understand?*

Int2 lines 141–142

*Interviewee: I would also suggest that especially the contractors [rehabilitation teams] can also have those trainings.*

Int2 line 146

The rehabilitation manager (**subject**) also works with other activity systems (for instance, the Rehabilitation Team activity system) to help these activity systems with the administrative work required for the teams to be sub-contracted to do the rehabilitation work.

*Interviewee: ... working on a tendering process. Yes, they [rehabilitation teams] do have the peoples do their quotations and some of them do it by their own and there are certain attachments which I have to attach to those quotations. The contractor maybe do or the bookkeeper do.*

Int2 lines 74–78

The rehabilitation manager is influenced by the rules that guide the Gamtoos Irrigation Board, as the contractor and his employer, and, in turn, Gamtoos Irrigation Board is guided by the rules of the DEA: NRM 'Working for' programmes. The short-term contracts mentioned by the Rehabilitation Team activity system are confirmed by the rehabilitation manager:

*Interviewee: It [the contract with the sub-contractor] doesn't go more than 23 days, since DEA doesn't allow to go more than 23 days.*

Int2 lines 85–86

#### **5.4.3 Learning within the Local Government activity system**

The Elundini Local Municipality town planner (**subject**) is influenced by the rules of the new Spatial Planning and Land Use Management Act (SPLUMA) (Act 6 of 2013). Decisions with regard to planning in the Elundini Local Municipality are now influenced by this new Act, along with other regulations and acts governing municipalities. The acts and regulations form part of the **tools** that he uses as part of his job. In working with colleagues and residents, he is learning about the SPLUMA and is sharing his knowledge with his colleagues (subjects) of the Local Government activity system.

*Interviewee: ... it [traditional council areas] was not part of it as it used to be under the old Cape Ordinance and stuff like that. Now with this SPLUMA, that's the Spatial Planning Land Use Management Act 6 of 2013 I think it is, there's this initiative that must be wall to wall.*

*... the SPLUMA also opened up a new way of thinking. You need to think outside of the box. You need to change things ... opportunity to bring in more of an African way of looking at planning or our legislation ... was very based on Western approach ... it was very much within urban edge areas ... not so much on land specifically on communal land areas.*

Int3 lines 60–72

The town planner (**subject**) went on to explain the relationship with the **community** influenced by the Local Government activity system and the inclusion of those **community** members in decisions that need to be made with regard to the SPLUMA. Note: 'they' and 'them' in the extract refers to the traditional leaders.

*Interviewee: ... they also form part of our council in our all the structures that we've got so they know exactly what and where and how things are done, but you need to make it official and the way that we approached SPLUMA ... is that they will form part of the approval process.*

Int3 lines 74–77

The community is learning together about SPLUMA and contributing to decisions made by the Local Government activity system with regard to planning processes.

*Interviewee: ... the area where you need the community participation and ... should remove our boundaries that you've got, your ward boundaries, your demarcation boundaries. You should remove them [boundaries], ... the community participation process, ... even if the application is in town or in their area, they must be part of that approval process.*

Int3 lines 79–86

The town planner is acknowledging the previous way of planning and making decisions did not consider rural community participation. He is willing to share his knowledge and learn from the community to make better decisions with regard to planning.

*Interviewee: ... technical administrative process ... but then, in that process, you include them, in this whole planning process and that will make them also more aware of why do we look at things and how do we select certain areas for cemeteries, agriculture, stuff like that.*

Int3 lines 86–91

The town planner encouraging sharing knowledge.

*Interviewee: ... adapt for each area, you can't say this is how you're going to do it all over, you'll have to adapt it ... fortunately, the Act does allow for that variances within each context or municipal area. Coz you can't even compare us, one of the municipalities within the Joe Gqabi District. They [Joe Gqabi district municipality] just combined. Now it's Gariep, they don't have communal land areas, so you won't, what we do here, you won't be able to implement there.*

*Researcher: Replicate there, modified?*

*Interviewee: That type of thing, but you must have that similar, say, concept, you know, where they do play a role. I think that's, personally, I think that's the way forward. You have to do it with them.*

Int3 lines 93–99

The town planner acknowledges that understanding the landscape and context with input from a wide variety of community members is important and how you plan in the area is impacted by the needs of the area and there is some flexibility in the SPLUMA.

## 5.5 Identifying potential for expansive social learning – contradiction analysis

As described in Chapters 1 and 3, contradictions, tensions or ruptures, may be viewed as the illuminative hinges (Foot, 2014) out of which learning and change can possibly take place. The contradictions should not be viewed as stumbling blocks, but rather as co-learning opportunities or ‘bridges’ across which people in activity systems can move together towards better understanding and connection. With the four possible sources of contradictions suggested by Engeström (1987) (Chapter 3) in mind, the activity systems described in Chapter 5.3 together with the transcripts from workshops and interviews, were analysed looking for linguistic cues as evidence of discursive manifestations of contradictions. This analysis and surfacing of contradictions were guided by sub-question 3 ‘*What are the sources for expansive social learning?*’ In each of the following sections the discursive manifestation and possible source of the contradiction are identified. An explanation of the researcher-identified contradiction is given identifying the source of the contradiction as well as its manifestation as found in the data.

### 5.5.1 Contradictions related to the Water Governance (WG) activity system

*Contradiction WG#1: Between the rules of the Tradition Council activity system and the tools of the Water Governance activity system (Figure 5-11)*

The chief of the relevant traditional council finds himself in a situation that is unacceptable to him as the senior traditional leader. The quotes below are discursive indicators of a **critical conflict** and led the researcher to note the quaternary contradiction between the tools of the Water Governance activity system and the rules of Traditional Council activity system.

*Participant [translated]: He [chief] feels that the Department of Water and Sanitation should at least come and meet with him to explain the whole thing that’s happening [referring to the Ntabelanga Dam] and also to the people so that they can also know what’s going to be happening in their catchment.*

WS1 lines 44–47

*Chief [translated]: No, water and sanitation came and they held this meeting at the Tsolo Community Hall and there was someone from the provincial office came and they raised the issue that they wish they could come, you know, and explain things and let people know what’s happening otherwise they might not go, you might not succeed*

*because of certain things – because of the steps they skipped. They have never met them.*

WS1 lines 44–56

*Chief: Up to now no one has come to give us our answers....*

WS1 lines 507–508

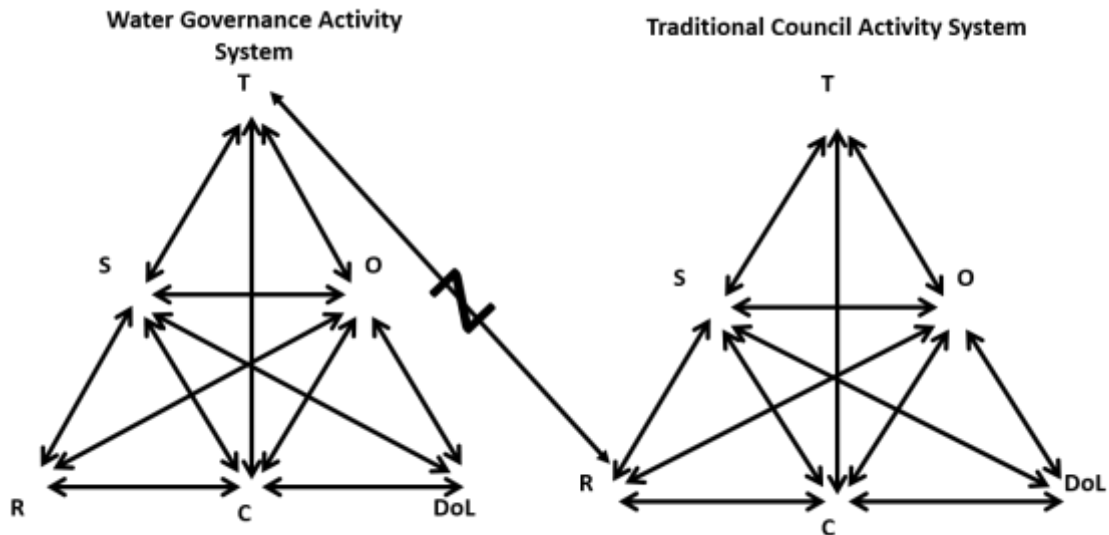


Figure 5-11: Quaternary contradiction between the tools of the Water Governance activity system and the rules Traditional Council activity system.

*Contradiction WG#2: Between the subject and tools of the Traditional Council activity system (Figure 5-12)*

The lack of communication between the Water Governance activity system and the Traditional Council activity system has impacted the standing of the chief within his community which leads to another contradiction. This contradiction, as the **critical conflict** in the following quote makes clear, is a secondary contradiction within the Traditional Council activity system between the subject and tools (the information the chief has available to him). The chief's position as the authority figure and leader in the community is undermined by the lack of information and knowledge that he has about the construction of the Ntabelanga Dam.

*Workshop participant (translated): Because now if the country men ask him [participant who spoke] about that [the Ntabelanga Dam] he has no idea, doesn't know how to answer and that doesn't look good when you don't know what's happening, according to the rules you're supposed to know everything you know.*

WS1 lines 47-49

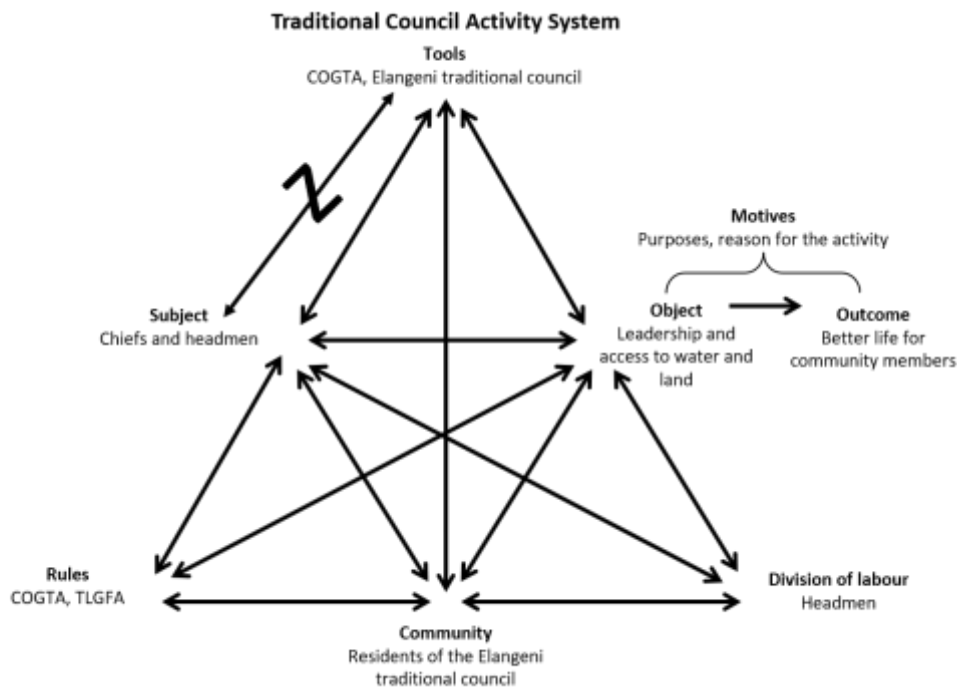


Figure 5-12: Secondary contradiction between the subject and tools of the Traditional Council activity system.

*Contradiction WG#3: Between the subject of the Rehabilitation Manager activity system and the object of the Water Governance activity system (Figure 5-13)*

This quaternary contradiction manifests as a **dilemma** between the object of the Water Governance activity system and the subject of the Rehabilitation Manager activity system. Gamtoos Irrigation Board was awarded the contract by the DEA: NRM to undertake the rehabilitation work in the Tsitsa River catchment (specifically T35A-E, Figure 1-1). The rehabilitation manager, as an employee of the Gamtoos Irrigation Board, manages the rehabilitation teams. Because rehabilitation work is taking place, the rehabilitation manager is at times asked questions about the Ntabelanga Dam and the progress regarding the possible start of construction of the Ntabelanga Dam. The rehabilitation manager pointed out that the community is not fully informed about the Mzimvubu Water Project (and the dam construction), the need for the rehabilitation processes, and how both of these projects (rehabilitation work and dam construction) will impact their lives and livelihoods. He stated that the community seemed uninformed about what is taking place in their community. The rehabilitation manager faces a **dilemma**. The rules of his job, the position he holds within the company and his role in the NLEIP, do not necessarily give him authority to speak about the



Mzimvubu Water Project. The responsibility for communicating the information regarding the construction of the Ntabelanga Dam resides with the DWS as part of the Water Governance activity system.

*Rehabilitation manager: [We] drove through the community ... they are basically not well informed about everything that's happening down there ... have more people and ... just call a meeting, I mean, inform the community about what's going on I think it will be a better place. Because they seem quite uninformed about the whole thing.*

Int2 lines 319-324

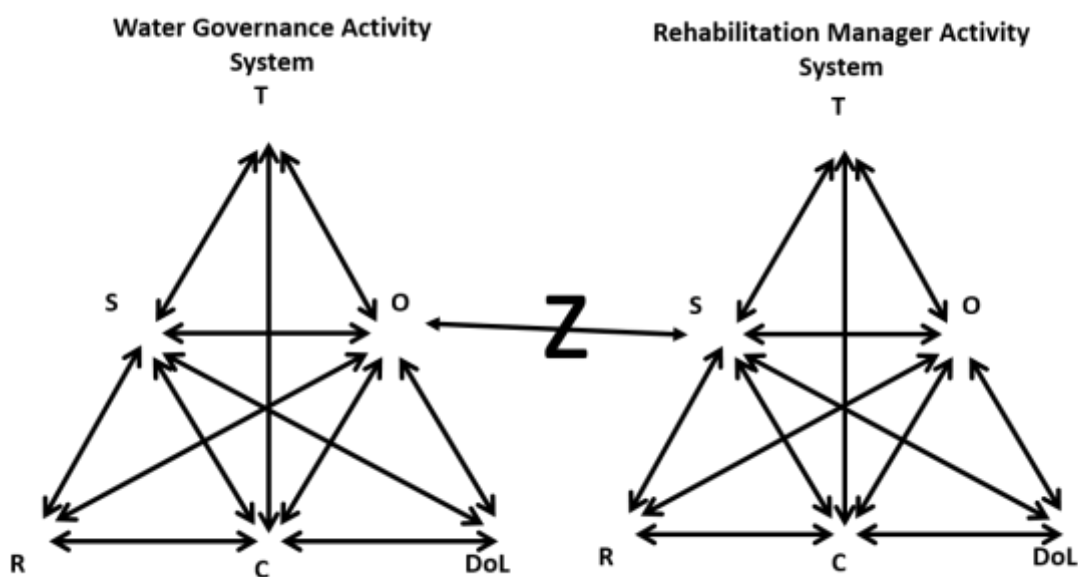


Figure 5-13: Quaternary contradiction between the object of the Water Governance activity system and the subject of the Rehabilitation Manager activity system.

### 5.5.2 Contradictions within the Rehabilitation Team (RT) activity system

*Contradiction RT#1: Between the rules and object of the Rehabilitation Team activity system (Figure 5-14)*

This contradiction manifests as a **double bind** between the rules and object of the Rehabilitation Team activity system. The sub-contractor (manager of the rehabilitation team) is expected to submit all the quotes and paperwork to the Gamtoos Irrigation Board timeously in order for the contract to be accepted and signed before work can commence (Figure 5-6). An order number is required from the DEA: NRM head office in order for the sub-contractor to be contracted to work. If there are delays in the office in Maclear (rehabilitation manager) or in the submission of the paperwork from the Gamtoos Irrigation Board head office

(Patensie) to the DEA: NRM (head office), there are repercussions for the contractor and the work team as they will not be able to commence work. The impact of this **double bind** adds insecurity to the job of the team as, without the order number, they are not able to continue the work.

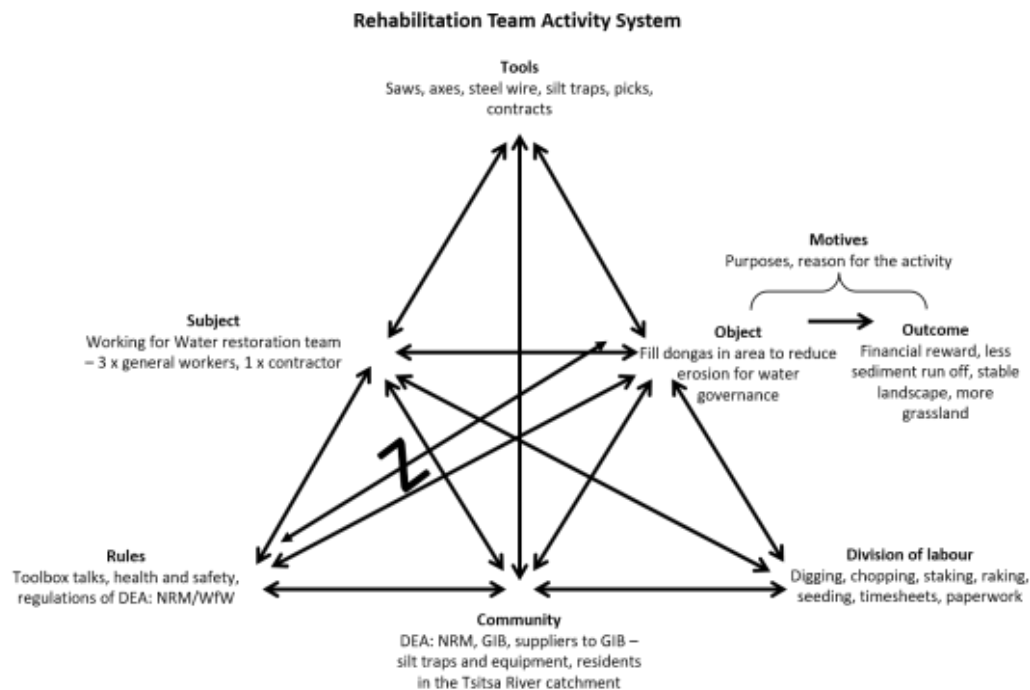


Figure 5-14: Secondary contradiction between the rules and object of the Rehabilitation Team activity system.

*Contradiction RT#2: Between the subjects and rules in two different activity systems*

Each of the contracted teams must submit all paperwork required to carry out the work of rehabilitation every 20 days. This is a requirement of the DEA: NRM 'Working for' programmes. The sub-contractor manager is under pressure to ensure that the work allocated is complete within the 20 days of the contract as no payments will be made if the work continues beyond the 20-day period.

The pressure to complete the contract on time and in budget is therefore passed on to the workers in the contracted team. The contract length (**double bind**) impacts on the job security of the Rehabilitation Team and can create tension between the sub-contractor manager and the team members.

*It's not like she's pressurising us for her fun. She's pressuring us because she's like the deadline's 20 days so we must make by the 20 days. We must be done*

with our task. So now if she doesn't pressure us, then maybe we might just go beyond 20 days.

Int1 lines 210–212

*Contradiction RT#3: Between the rules and object of the Rehabilitation Team activity system (Figure 5-15)*

This contradiction manifests as a **double bind** between the rules and object of the Rehabilitation Team activity system. Due to the possible delays in processing the necessary quotes and paperwork, the rehabilitation teams may stop working on sites where rehabilitation work has already commenced. Once rehabilitation work begins again, the conditions on site may have changed (rain, cattle grazing) and these delays impact the outcome of the desired rehabilitation of the landscape. Again, the **double bind** of the requirements of the DEA: NRM Working for programme cause a secondary contradiction in the activity system. In addition, this contradiction has a negative impact on the livelihoods of the community members due to the delay and lack of income.

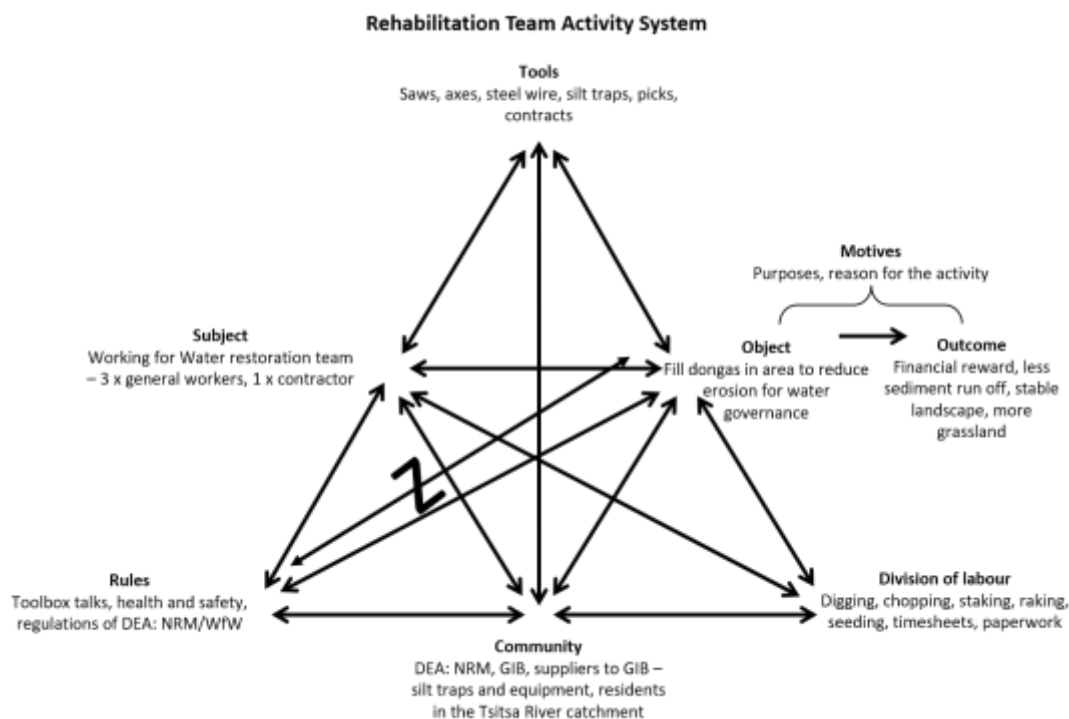


Figure 5-15: Secondary contradiction between the rules and object of the Rehabilitation Team activity system.

### 5.5.3 Contradictions related to the Local Government (LG) activity system

*Contradiction LG#1: Between the subject and rules of the Local Government activity system (Figure 5-16)*

This contradiction manifests as a **dilemma** between the subject and rules of the Local Government activity system. The introduction of SPLUMA in 2013 (Act No. 16 of 2013) created challenges regarding spatial planning for small, semi-rural local municipalities. The impact of the SPLUMA means that the way in which town planners need to view and act within their boundaries is a lengthier and more drawn-out process. Although this **dilemma** has created more work for the Local Government activity system with regard to planning processes, the town planner of Elundini Local Municipality views this as an opportunity for learning between the various leaders within the local municipality.

*Interviewee: ...where you need the community participation and then I think you should remove our boundaries that you've got, your ward boundaries, your demarcation boundaries...*

Int3 lines 79-81

*Interviewee: ...you include them, in this whole planning process...*

Int3 lines 89-90

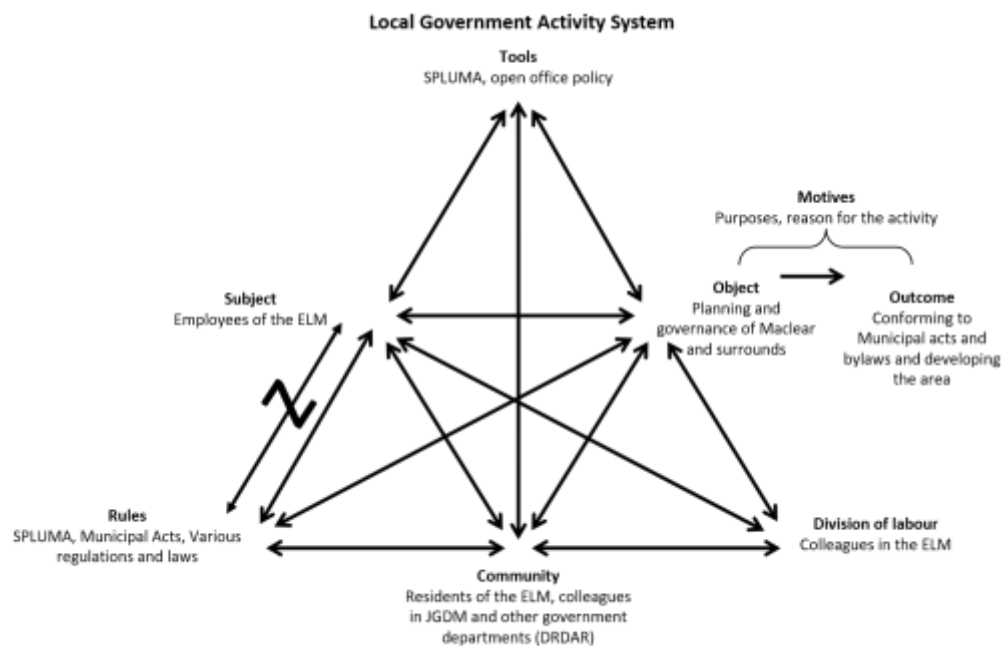


Figure 5-16: Secondary contradiction between the subject and the rules of the Local Government activity system.

*Contradiction LG#2: Between the subject and division of labour of the Local Government activity system (Figure 5-17)*

This contradiction manifests as a **double bind** between the subject and division of labour of the Local Government activity system. The Elundini Local Municipality functions well compared to rural municipalities:

*Interviewee: ... part of the small-town revitalisation programme we didn't sit back, we just moved, ... see what we can do and ... that's why we actually managed to get additional funding. We managed to get a very good track record in terms of our audit reports. All of these things assist obtaining additional funding.*

Int3 lines 357-361

However, the requirements (for example, applications from businesses for expanding businesses, investors to the area, road works, new regulations and legislation) for the town planner within the municipality space means he is under pressure (to work towards the growth of the town, and to keep the rural communities serviced, he needs to work closely with sometimes overly bureaucratic colleagues and laws within government departments) from colleagues within the municipality.

*Researcher: Where do pressures come from?*

*Interviewee: All the sides. It's community, it's political, ... it comes from all over.*

*Researcher: ... within the municipality as well?*

*Interviewee: Ja, no. Ach but that is to be expected.*

Int3 lines 366-370

This **double bind** (pressure within the municipality to perform and from external rules), indicates a secondary contradiction within the Local Government activity system but also a quaternary contradiction as the town planner and colleagues are influenced by external factors over which they have little control.

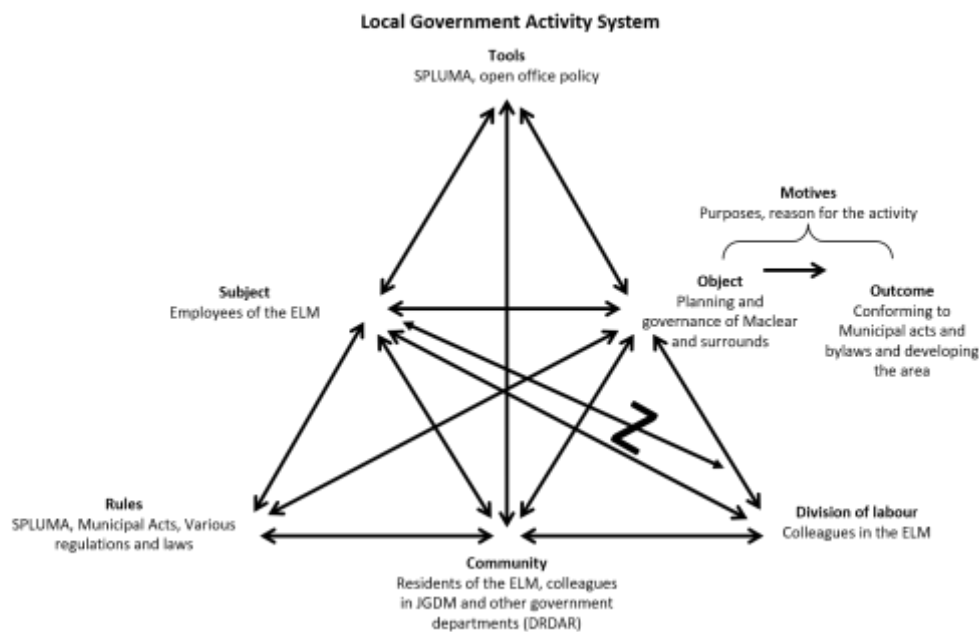


Figure 5-17: Secondary contradiction between the subject and division of labour of the Local Government activity system.

#### 5.5.4 Contradictions emerging from the workshops

During the workshops, (Table 4-1, Chapter 4.3) concerns about the proposed Ntabelanga Dam were raised but also about other issues faced by residents in the catchment, including illegal sand mining. When the groups (WS2) worked together they were instructed to pick their top five concerns for the catchment area and decide what actions they could possibly take to work towards solutions to the concern or problem. It was during the report back phase from each group that individuals (including the research team) learnt about the issues facing the people living in the catchment, as put forward by the three groups. The workshops created the opportunity for the participants, through co-engagement, to learn from one another. The participants learnt about common concerns and knowledge held by individuals.

Three key areas of concern (wetlands, soil erosion, water pollution and waste) were reported back to the workshop participants during the feedback session of the workshop. It is worth noting that while there is learning taking place between the participants and the researcher, the information shared also highlights a **double bind** manifestation of a contradiction tools and community of the Water Governance activity system. The importance of the wetlands, for instance, is undermined by the lack of good management of the wetlands. The linguistic indicator (“we”) in the quote by Group 3 presenter shows the sense of helplessness at the

degradation of the wetlands. The Group 3 presenter suggests that people need to be educated about the importance of wetlands, an indication of the need to work collectively towards resolving the perceived problem. Many of the concerns raised by the groups and the possible actions included the word “we”. This terminology is partly because the presenters were speaking on behalf of the group, and partly because (the researcher assumed) that the participants are deeply concerned about the degradation of the landscape from various factors but, in many instances, seem powerless to make a real difference in their communities. The extracts below highlight the three key areas of concern and the knowledge shared with participants and the need to share knowledge (“*educate those that do not know*”) with residents.

#### Wetlands:

*Group presenter 2: So, even the wetlands, they are not well management*

WS2 line 8

*Group presenter 2: Good management of wetlands involving our communities so by fencing off those areas and not grazing our animals on those wetlands just to keep them as they are. So, the wetlands are doing a good job because they purify water. When there is drought you can put your stock there.*

WS2 lines 19–22

*Group 3 presenter: ... lack of better management of wetlands ... we must have awareness. The truth is people at home they do not know the advantages and the importance of having wetlands, so, if you find them dumping on the wetlands, not valuing them it's ... because they do not know ... those that know must educate those that do not know ... in order for us to be able to manage our wetlands better we must first make our people aware of what is a wetland and what does it do to a water resource.*

WS2 lines 115–121

#### Soil erosion:

*Group 2 presenter: ... soil erosion that leads to silting of dams.*

WS2 lines 6

*Group 2 presenter presenting the group solution to the soil erosion:  
... we need to construct gabion structures just to trapped that water from running on a high speed and trap some of the soil.*

WS2 lines 17–18

*Group 1 presenter presenting the groups concern (soil erosion) and a possible solution:*

*... the soil erosion which in other cases is also due to over-grazed land ... the action would be the land rehabilitation plans which would talk directly maybe to the Department of Environmental Affairs and other related departments. Where your Working for Water and Working for Wetlands programmes should be strengthened in terms of funding so that they touch everyone, not just specific smaller areas of our communities.*

WS2 lines 58–63

*... land rehabilitation plans which would talk directly maybe to the Department of Environmental Affairs and other related departments ...*

WS2 lines 93–94

The extracts above highlight the need to work in a more integrated way towards a solution that could impact livelihoods through better land management.

Water pollution and waste:

*Group 1 presenter: ... waste ... we're suggesting there should be waste management plans for the rural areas as well. They seem to be a bit neglected ... In the rural areas, they're expected to burn their waste and stuff like that, how do we manage those things so all these things should filter down to itsitsana ekhaya [rural communities] ....*

WS2 lines 53–58

*Group 3 presenter: Water pollution that is caused by many things, people dumping on the river, ... the issue of your Pampers [disposable nappy brand] being thrown in the river, all your dead animals, all your bed, all your mattresses that you no longer use, you want to dump them in the river, in that process you are having pollution. ... pollution also that is caused by our industries that are decharging directly to the river and we are saying one of the solutions that we must employ there is educational awareness, people should be made aware how they should dispose of their waste.*

WS2 lines 73–79

The two extracts relating to water pollution and waste highlights the knowledge held by those participants at the workshop but also illustrates the needs for sharing knowledge with the broader community.



Other areas of concern included infrastructure and maintenance and the apparent lack of communication between the various departments involved in the planning of developments at a provincial government level. This lack of communication indicates a top-down and silo approach that impacts the employees at the local and district municipality level. The secondary contradiction manifests as a **dilemma** between the tools and community of the Water Governance activity system.

*... infrastructure we're talking about backlog and maintenance of existing infrastructure ...*

WS2 lines 64–65

*... the actual infrastructure has never been upgraded since, so Department of Housing [Department of Human Settlements] was just happy with delivering houses ... without actually communicating with the Local Municipality or the District Municipality*

WS2 lines 70–72

*... the biggest problem government departments think they can do as they like ... they just took a thing and they run with it and that's why sometimes it happens in a failure because they don't communicate with the people on the ground - that's that top down approach...*

WS2 lines 17–19

*But a government department in general has got a silo approach. Everybody does his own thing .... There's even a huge difference between the provincial and the national office .... It's like the one doesn't know what the other does .... It is a problem. ... they've got this tendency especially when it comes to a rural municipality, they want just overrun you or overpower you and ... they don't even consider what the people on the ground has got to say about it.*

Int3 lines 174-179

One participant noted that a concern of their group was the local plantations (*... plantations, our plantations though they are creating more jobs, and they are consuming a lot of water but at the same time are providing a lot of jobs, they are creating jobs that our communities are benefitting from those plantations* WS lines 38-39). This **dilemma** highlights the tensions between water use (tools) by forestry plantations and the need for job creation (object) in this poor, rural Eastern Cape area.

The need for a driver for the CMF was raised by a participant at the workshop (any such structure to be able to continue would need a driver ... you can have the driver that's active all the time to start something from the ground you need action within the same area WS2 lines 3-6) and a clearer understanding of a catchment was required (what do you mean by catchment area, what do you mean by catchment in the first place WS2 line 28).

CHALLENGES	ACTION
1. Infrastructure • backbg • Maintenance of existing	• Co-ordinated communication & planning in Govt depts • Alignment of current budget
2. Drought / Climate change • portable water • Agricultural water	• Drought mgmnt plans / back up systems in place • Testing + purifying all water sources (springs / boreholes etc)
3. Waste	• Waste mgmnt plan for the rural areas as well
4. Soil EROSION / overgrazed land	• Land rehabilitation plans (r/fw + wetlands) programme.
5	

Figure 5-18: Challenges and action presented by Group 1, Maclear workshop (WS2)

CHALLENGES GROUP 2
1. ALIEN SPECIES (wattle & RBs) Consume lot of water
2. Plantation
3. Soil erosion - lead to silting of dam
4. Floods due to slopy lands water runs off
5. Wet lands not well managed
6. Over stocking
<u>ADVANTAGES</u> LOT OF CLEAN WATER NO POLLUTION

SUGGESTED SOLUTIONS
1. NEED TO ERADICATE the alien plants and plant grass to rehabilitate the land. Project will provide income to fund other projects.
2. Must create more jobs to boost local economy.
3. Construction of silt traps Gabions
4. Good management of wet lands including communities fencing off, no grazing
5. Create proper camps for rotational grazing

Figure 5-19: Challenges and solutions presented by Group 2, Maclear workshop (WS2)

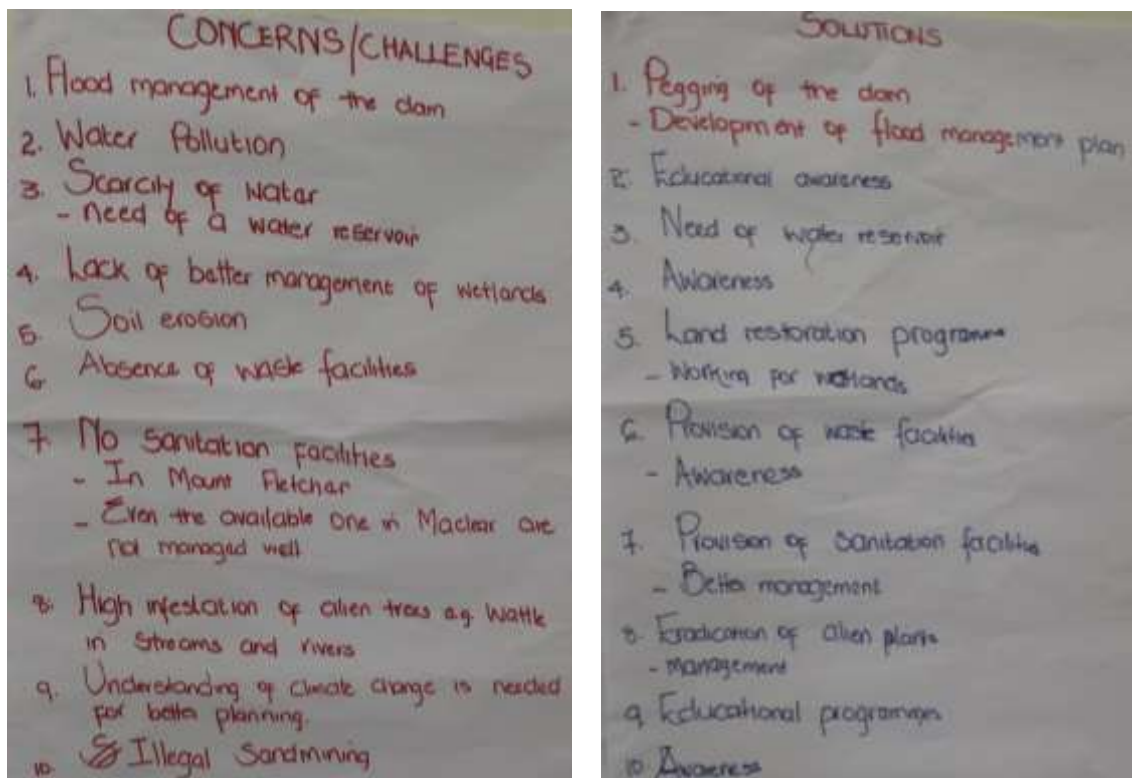


Figure 5-20: Challenges and solutions presented by Group 3, Maclear workshop (WS2)

The format of the workshop encouraged knowledge exchange, the opportunity to disagree and reach consensus about the top five concerns for the area, but also enabled the participants to share ideas for action that could be taken in order to address the concerns raised by the groups.

Feedback forms completed after the workshop (WS2) indicate the participants enjoyed the experience of working in groups and being able share knowledge and understanding with each other:

*Respondent 1: It is good to work in groups because we exchange ideas, we hear and notice the different ways thing happen in different areas, we exchange ideas and solution in our problems.*

*Respondent 4: Kumnandi kuba sabelene ngezimuo [translated: It was nice to share different views.]*

*Respondent 5: It was marvellous especially working for the first time and it was good and information flew well.*

*Respondent 6: It was very interesting sharing of ideas and learning from other people.*

*Respondent 7: It was a wonderful thing, as we have gathered many different views about the important challenges and also coming up with solutions.*

*Respondent 10: Good experience and empowering engagement.*

*Respondent 11: It was very informative. You get to understand how other people view things and the challenges they encounter.*

*Respondent 12: Very interesting. Got to learn other people's challenges.*

*Respondent 13: It make us understand those things we don't understand.*

*Respondent 14: Easy – challenges raised and attitudes were not difficult to manage.*

## **5.6 Conclusion**

The findings presented in this chapter described the activity systems that were identified as priorities for participation in CMF formation with a particular focus on community participation. The residents of the Tsitsa River catchment are members of multiple activity systems which influence and impact on one another. The existing learning within and between activity systems (as described) and learning from the workshops, revealed an understanding of the landscape and its challenges. The structure of the workshops allowed knowledge to be shared and allowed participants to gain new knowledge about water governance. The discursive manifestations and researcher-identified contradictions indicate possible points of expansive social learning. Chapter 6 will discuss the findings in more detail and provide recommendations for future research.

## CHAPTER 6 EMERGENT INSIGHTS

### 6.1 Introduction

The primary objective of this study was to consider how a learning-centred approach towards CMF formation could be constituted. This objective was guided by three sub-questions:

1. What activity systems need to be prioritised for community participation in CMF formation?
2. What existing learning can be identified within the activity systems?
3. What are the sources for expansive social learning?

Five activity systems were identified that should, at least, be included in the establishment of a CMF. The five activity systems contribute in different ways and to varying degrees to the shared common object of water governance and sustainable livelihoods. The Water Governance activity system, as the rule producing activity system, primarily influences water governance of the shared common object, water governance and sustainable livelihoods. The Rehabilitation Team activity system focuses firstly on their personal livelihoods, but the work they are undertaking could contribute to the community's sustainable livelihoods and in future, possibly, water governance. The local governance (municipal and traditional) activity systems are both concerned with water governance and sustainable livelihoods and influence the shared common object to varying degrees at various times. The five activity systems were selected as they are present in the study area, are partly representative of the people who live in the area, and are linked to land and water governance, either through their positions as government employees within the sector, or the NLEIP in ways that influence communities' lives and livelihoods.

Within the context of the rural Eastern Cape, consideration must be given to both local government and traditional leadership as the power relations, traditional cultural and impacts from various levels of government are different, therefore local and traditional activity systems were analysed.

The learning-centred workshops in the Tsitsa River catchment focussed on sharing information about the NWA, CMAs and CMFs with the residents of the catchment. The

interviews gathered information about the activity systems in order to identify discursive manifestations of contradictions to highlight sources for expansive social learning. The insights from the experience of the members of the activity systems and participants in the workshops, allowed me to consider which other activity systems should be included if community participation in water governance through a CMF is to take place. This chapter discusses the findings and makes recommendations for future research and includes a personal reflection of the study undertaken.

## **6.2 Prioritisation of activity systems for community participation**

As noted in Chapter 2.4 and Chapter 3.3, meaningful participation in water resource management through a CMF requires an understanding of the cultural, historical and biophysical context in which that CMF may be formed. The stakeholder analysis undertaken by Sisitka et al. (2016) highlighted some of the challenges and lack of communication between various government departments, municipalities and traditional leaders in the area. This lack of communication was spoken of in both the workshops and the interviews that were conducted. Only the Rehabilitation Team seemed to be fairly well informed about their work, but they did not know much about CMFs and water governance. The interview with the Rehabilitation Team did not include much conversation or knowledge sharing about the NWA, CMA and CMF as I was most interested in understanding the working conditions of the Rehabilitation Team and the contradictions within the activity system. A second stakeholder analysis undertaken by Rivers et al. (2018) again highlights the need for clearer lines of communication between residents within the Tsitsa River catchment.

While this study focussed on specific quaternary catchments (T35A-E) and the five activity systems identified that should, at least, be included in the establishment of a CMF, other activity systems emerged that would be relevant, particularly in prioritising community participation in a CMF, including the commercial and emerging farmer's associations activity systems. These farming association activity systems impact the landscape through grazing and water management practices and would influence the shared common object of water governance and sustainable livelihoods. During the workshop it emerged that the activity systems related to forestry, including PG Bison (a national wood panel manufacturer), and

the Department of Agriculture, Forestry and Fisheries (DAFF), who are responsible for smaller scale forestry plantations in the area, should be included as forestry activities influence water run-off, and landscape use (Section 5.5.4).

From the workshops it emerged that the DWS in particular has failed in their communication regarding the Ntabelanga Dam, not only with the traditional leaders and their community, but also with other residents in the catchment. The Ntabelanga Dam is spoken about among residents but there seems to be little clarity on the inundation levels of the dam, the impacts on arable land, the housing or gravesites that may be flooded. Another activity system that should be included for participation in a learning-centred approach to CMF formation would be the Department of Human Settlements (DHS). From the workshop it was noted that there is lack of communication between the district and local municipality and the DHS regarding their planning. The planning of houses should be discussed and incorporated in the local municipality's planning, particularly with the introduction of the SPLUMA. As noted by one workshop participant, the government seems to think it can do what it likes and it is a top-down approach which participants in the workshop felt was not helpful to planning, not only from a housing point of view, but also with regard to waste and water pollution (Section 5.5.4). The workshops and interviews highlighted the need for better communication and a feeling of understanding and working together that would be more beneficial to the residents of the catchment. Participants in the workshops felt they were being left out of information and were therefore not able to contribute in any meaningful way to the decisions made that would impact on their lives directly. The municipal employees in the workshop, although not saying it openly, appeared to feel that their positions in the municipality were undermined because, although they work for government, they are unable to answer questions or are left in the dark until it is too late to make changes or suggestions to decisions that have been made.

Another government department that should be invited to participate in the CMF would be the Department of Rural Development and Agrarian Reform (DRDAR) activity system. This department is responsible for, among other things, the grazing plan for livestock in the area. Livestock grazing is a primary driver of landscape condition and the grazing plan will shape

grazing impacts and water runoff patterns. Landscape condition impacts on the livelihoods of the residents that own livestock in the rural areas. Systemically connected research on the number of livestock owners in the rural area should be undertaken in order to gain better understanding of the impacts of grazing (or as noted in the workshop – overgrazing) on water runoff and grass cover in the area.

There are six traditional councils within the study site and the traditional leaders and their traditional council areas must be included in a learning-centred approach to CMF establishment as their participation is critical for the community voice to be heard.

Inclusion of these additional activity systems has implications for further research. Chapter 5 has shown that there is need to develop an in-depth understanding of each of the activity systems in order to surface the potential for expansive learning within and between interacting activity systems.

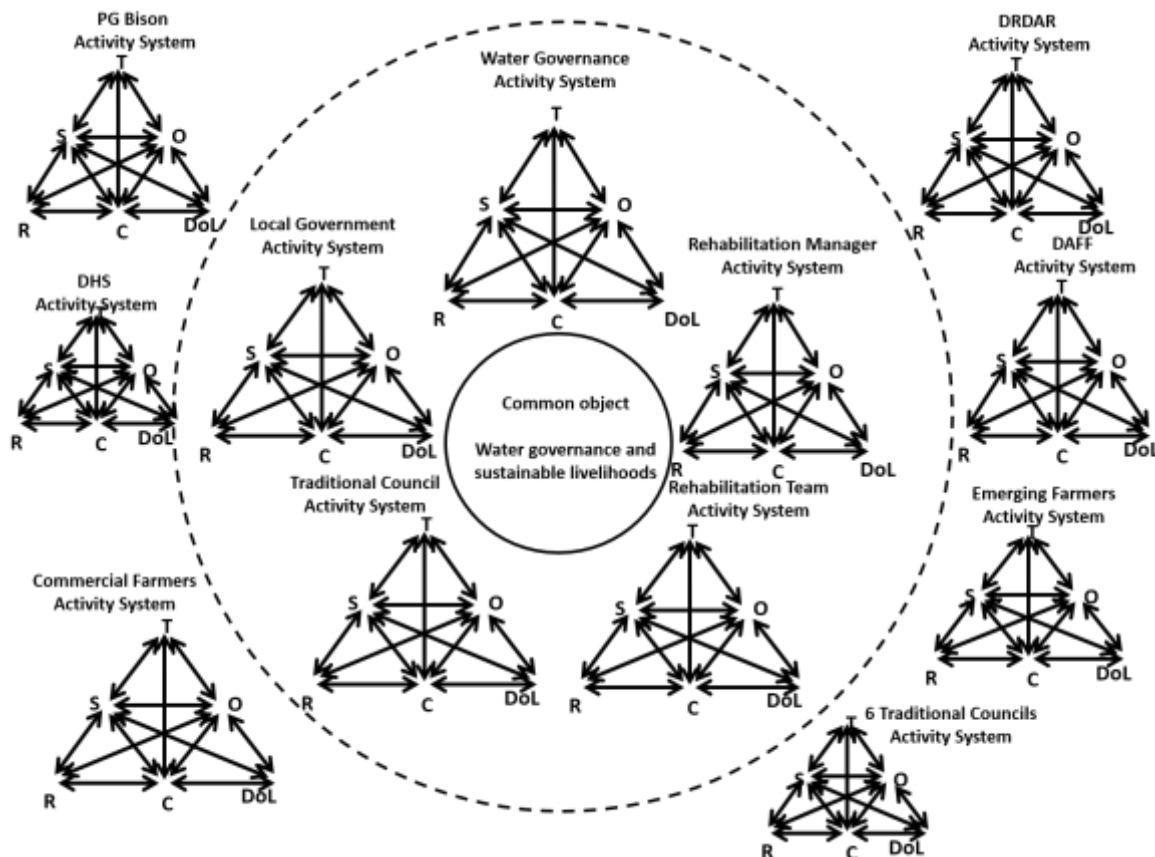


Figure 6-1: Figure showing the five activity systems described with a shared common object and additional activity systems for inclusion.



### **6.3 Identifying existing learning**

In complex social-ecological systems, recognising the non-linearity of the system (Cilliers, 2000) and adapting different ways of communicating so that all people get common understanding of the system. Complex social-ecological systems require understanding, not only from the people who (i) live and work within the system, and (ii) the people who manage the system, but also from (iii) researchers studying the system (Rogers et al., 2013). In this context, the inaccessibility of water legislation and governance, the Mzimvubu Water Project and the impacts this will have on the community has not been clearly articulated and understood. In response to sub-question 2 (What existing learning can be identified within the activity systems?) this research highlighted the existing learning within and between the activity systems. This learning included training received by the rehabilitation team, giving a deeper understanding of landscape rehabilitation to the members of the team. The rehabilitation learning was shared with neighbours of the rehabilitation team (Chapter 5.4.1). The Local Government activity system is learning together with the Traditional Council activity system with regard to the SPLUMA (Chapter 5.4.3). The workshop allowed the participants to co-learn about water legislation and governance and to share their knowledge with regard to wetlands, soil erosion, water, waste pollution and infrastructure with the catchment (Chapter 5.5.4).

Förster et al. (2017) suggest that voices of disempowered participants at meetings may not be heard as there are understanding and language barriers (Goldin, 2013). By engaging in a respectful way that allowed knowledge sharing and learning amongst all participants in the workshops, participants no longer felt embarrassed to speak and were open and honest about the challenges with communication. Employees of the district and local municipalities mentioned the feeling that the rural municipality is overridden by provincial-level departments and that their voices are not necessarily taken seriously. The impending construction of the Ntabelanga Dam gives the chief in the area the feeling that they (the people living in the area) are not allowed to make decisions for themselves and are not fully informed about what the outcomes of the Ntabelanga Dam will be (Section 5.5). The little information sharing that has taken place, at the time of writing, appears to be scattered and

sketchy at best. The ability of the community to exercise agency (Cleaver, 2012) is being undermined by people and departments outside their immediate sphere of influence.

It is difficult for people to participate meaningfully if they feel that they are not heard or that they do not understand the terminology that is used. Again, this is highlighted, with particular reference to water legislation and governance, for example the word 'catchment' cannot be directly translated to isiXhosa (Section 5.5.4). There does not seem to be a good understanding of what a catchment is and the assumption that people know and understand the terminology commonly used by managers and researchers is unfounded. Although the workshops explained the terminology, it was clear that even with an explanation, the ways in which the country has been divided into water management areas and catchments is not clear, and re-iteration and opportunities for discussion are necessary. These misunderstandings indicate a need for further participatory, learning-centred engagement and links to the need for improved lines of communication. During the workshops, the need for, and value of, respectful engagement became clear. An understanding of what may be involved before meaningful participation could take place emerged. People are more likely to participate if they have some knowledge of what is required to participate and whether or not that participation may lead to any meaningful change (Mahasha, 2014; Munnik et al., 2016). In rural areas in South Africa, many people are simply trying to manage their livelihoods and seemingly unnecessary meetings which may not see any real benefits to them, seem unlikely to move them forward. A far better understanding of water legislation and governance is needed before real participation could take place or for the NWA to be implemented in the way it was intended.

The caution by a participant in the workshop that a driver for an institution like a CMF must be taken seriously (Section 5.5.4). A driver or champion for the CMF (Munnik et al., 2016) is a necessary ingredient for this to work. While the issue of a driver was only raised briefly during one workshop, it is a recurring issue for CMF formation. I have participated in numerous learning-centred CMF workshops beyond this research, and the need for a driver as the focal point for emerging and sustainable CMFs is raised repeatedly. A driver who lives

in the area and becomes the focal point for a CMF may make communicating with potential participants is easier.

There are many challenges (access to information, education, service delivery, poverty, equitable natural resource management) facing South Africa. One primary connector of these challenges is water. Dent (2012, p.313) states that water:

*Does not respect human boundaries*  
*Challenges our economic logic*  
*Is fundamental to survival of all living organisms*  
*Has nuisance (floods), infinite (droughts), spiritual and commodity value*  
*Is viewed differently by all sectors of society*  
*Is a common societal good and has no substitute.*

If knowledge is shared, understood, and created in a learning-centred approach to activities about water legislation and governance, such knowledge may be trusted enough to stimulate social action (Dent, 2012; Nowotny et al., 2001). This study shows the potential of a learning-centred approach to CMF formation may enable meaningful relationship building (Clever, 2005) and possible future community participation in water governance in rural South Africa.

During the interviews and workshops, it became clear that there is much knowledge held by the participants of the interviews and workshops. While the data gathered was from only a small percentage of the residents and therefore only a small representation of the knowledge held, there is an understanding that more knowledge needs to be shared by those who know with those who do not know (*those that know must educate those that do not know* WS2 line 119). At the workshop held in Maclear (WS2) it was stressed that awareness campaigns should be held so that people are informed about issues that are faced not only by the residents, but also by the municipality and government departments that are responsible for planning ('awareness campaigns' is the common terminology used by the residents and does not refer to the learning-centred, enabling process of workshops as run during this study).

The workshops revealed that awareness campaigns around various concerns that were raised would be seen as being most beneficial to the community. There was a strong feeling that people needed to be informed about their responsibilities and the impact of what was

happening as a result of their behaviour. People who participated in all the workshops were aware that there was a lack of knowledge within the communities relating to issues such as wetlands, grazing, fire management, water, pollution, sand mining, etc. and that awareness campaigns would be beneficial.

The knowledge about the wetlands and water in the area was clearly revealed during the workshops and strengthens the recommendation of a learning-centred approach to CMF formation. This study supports the assertion by Glasser (2010) that working together to create a more complete picture of reality involves sharing knowledge, co-learning, joyful and respectful, reflexive communities.

Similarly, links with the Umzimvubu Catchment Partnership Programme (UCPP) in Matatiele could be strengthened and learning exchanges could take place for knowledge sharing. Although each area is unique, there are common interest points (in particular grazing management) that could be the starting points for learning exchanges. The continued intervention by and support of the DEA: NRM would provide researchers the opportunity for further engagement and possibly help continue the learning-centred approach to CMF formation started by this study.

Learning is hampered by a lack of communication between the district municipality and the provincial and/or national government departments. In particular this lack of communication was raised in a workshop when discussions were held regarding pollution and waste management. The concern that a government department had gone ahead with a housing programme in the Joe Gqabi District Municipality without consulting either the district or local municipality, was echoed in the silo approach to management mentioned by the local municipality interviewee (*government department in general has got a silo approach* Int3 line 174). This silo approach is cited as a possible reason why integrated management and cooperative governance (not only in within the water sector) is not, in fact, working well in South Africa (Dent, 2012; McAlpine et al., 2015; Pollard & du Toit, 2011). The top-down approach to management and institutional arrangements currently in place does not

necessarily allow for more adaptive integrated management or learning (Mackay et al., 2014; Rogers & Luton, 2011; Roux et al., 2006).

Better communication about planning in order to build on existing knowledge is crucial. The workshops showed that people are willing to share their knowledge but this seemed to be due to the way in which the workshops were run. The facilitated safe workshop space (as suggested by Rogers and Luton (2011) and Wals and Heymann (2004)) allowed participants to feel that their voices were heard (*Respondent 6: It was very interesting sharing of ideas and learning from other people; Respondent 11: You get to understand how other people view things and the challenges they encounter.*)

A learning-centred approach to CMF formation could provide the bridge to the lack of communication. Despite the feeling of a lack of communication between the local and district municipalities in the workshop (WS2), the municipal employee stressed that within their municipal boundaries there were good relationships and lines of communication between the traditional authorities. The Elundini Local Municipality is aware of the need to involve the community of the Elundini Local Municipality in the programmes and projects that it is undertaking and to get input into those.

This research suggests that before there is any real chance of people being able to participate in decision-making with regard to water governance through an institution like a CMF, far more learning-centred workshops will need to be conducted. The fact that people were willing to participate shows that, by allowing people to share their knowledge and acknowledging that people are allowed to disagree, benefits the greater understanding that people will have of their ability to participate.

The data indicate that communities are willing to participate, and appreciate their input being considered. While this resonates with information on learning, it does take a long time and this does not necessarily fit in with the way in which government funding, or project funding, or even management structures work. Again, continued support by national, provincial and

local government would enhance opportunities for people to learn, share, and so build trust and relationships.

#### 6.4 Sources of expansive social learning

Sub-question 3 asked what the sources for expansive social learning are and these sources are revealed in the contradictions that surfaced during the data gathering and analysis process (Chapter 5.5). The contradictions that I identified based on the data gathered indicate opportunities for expansive social learning (Table 6-1).

**Table 6-1: Summary of contradictions and potential for expansive social learning.**

	<b>Contradiction</b>	<b>Potential for expansive social learning</b>
WG#1	<i>Between the rules of the Tradition Council activity system and the tools of the Water Governance activity system</i>	Improve lines of communication through meetings and workshops
WG#2	<i>Between the subject and tools of the Traditional Council activity system</i>	Improve lines of communication through meetings and workshops
WG#3	<i>Between the subject of the Rehabilitation Manager activity system and the object of the Water Governance activity system</i>	Co-learning of challenges with regard to the object of the Water Governance activity system
RT#1	<i>Between the rules and object of the Rehabilitation Team activity system</i>	Improve understanding of rules of the Rehabilitation Team activity system through workshops
RT#2	<i>Between the subjects and rules in two different activity systems</i>	Improve understanding of rules of the Rehabilitation Team activity system through workshops with influencing activity system (DEA)
RT#3	<i>Between the rules and object of the Rehabilitation Team activity system</i>	Improve understanding of rules of the Rehabilitation Team activity system through workshops with influencing activity system (DEA)
LG#1	<i>Between the subject and rules of the Local Government activity system</i>	Improve lines of communication
LG#2	<i>Between the subject and division of labour of the Local Government activity system</i>	Improve lines of communication

There are some activity systems revealed by the contradictions that may be difficult to change as they come about because of the structures of government departments (for instance, the

contract period of the Rehabilitation Team). In order for there to be some change in the way in which these contracts may be undertaken, those involved in these activity systems need to understand the history of the contracting system and have the agency to change processes. I believe that these contradictions (RT#1, RT#2 and RT#3) would require reflection with representatives of the DEA: NRM and those involved in the activity system in order to work together towards a possibly improved system.

The lack of communication between the DWS and the residents of the Tsitsa River catchment particularly regarding the dam, but also regarding water legislation and governance highlights the need for better common understanding. These contradictions (WG#1, WG#2 and WG#3) indicate that there is little consideration of the needs of the people who live in the catchment area in spite of the requirements of water legislation and governance for participation. If there is to be a CMS written for the water management area in which the dam will be built, understanding the frustration of the residents' sense of being ignored by the DWS would be useful as a way to move forward to better planning and management. Communication between various government departments would also be beneficial because in the long term this may lead to better water governance and sustainable livelihoods. At present, the lack of political will with regard to implementing the CMAs and therefore CMSs and participation by the public in CMFs hampers the planning for water governance in South Africa.

The research recommends that the contradictions revealed should be shared with participants so that together people may be able to work out whether or not these contradictions would lead to a different way of functioning. Future formative, interventionist expansive learning research could build on the foundation laid by the research undertaken by this study.

## **6.5 A learning-centred approach towards CMF formation**

The question that led to the research undertaken was: How could a learning-centred approach be constituted towards CMF formation? In order to answer this question three sub-questions guided the research. Although the data presented (Chapter 5) are a small segment of the data captured during the course of the research process it is exemplary in revealing the

underlying concerns, contradictions and existing learning taking place within this context. It is possible to imagine that there are similar contradictions in other rural areas of South Africa. Water is a great '*bringer together*' of everyone (Dent, 2012), which means that in many places, the understanding of the possibility of involvement in water, and in rural areas, land management, may make it easier for people to come together to begin to build relationships around a common and essential requirement for their lives in the catchment.

By considering a learning-centred approach towards CMF formation this study has revealed that certain elements are key to the success and sustainability of CMFs. These elements include a clear understanding of the NWA and getting the right people together from the range of interacting activity systems (around the partially shared object of water governance and sustainable livelihoods) in learning-centred activities. During these activities people need to feel safe about voicing and sharing their concerns, and need to be encouraged to be active in their own context. Participants need to consider finding a driver to work towards sustainability of the CMF, and source funding from national or provincial government in order to allow people attend meetings. The learning-centred approach may allow participants to deal with the multi-voiced nature of contradictions in and across activity systems.

This study reveals that by engaging with people in their home language, and by allowing them to speak openly and honestly without being judgemental, it is possible to create conditions for co-learning but not all issues are resolved. Having translators to explain concepts and for participants to know that what they are saying will be translated is important. This study suggests that, in order for meaningful participation to take place in water and landscape management, people need to build on existing relationships and work on new relationships. The principles of accepting different ways of knowing and understanding (Section 3.3), and finding common values and common goals within the study area are principles that can be taken into other contexts in South Africa.

Real engagement, and reflexive, adaptive expansive learning that addresses the embedded contradictions identified will take time (Lindley, 2014; Mukute, 2010). This study suggests that real engagement and co-learning with people in the Tsitsa River catchment, by government



institutions, may create better relationships between the local and district municipalities and the provincial government departments that work closely in the area, I recommend this analysis be followed by in-depth expansive learning workshops further that engage interacting activity systems around the contradictions that are impeding their current co-learning around the shared object of water governance and sustainable livelihoods.

In this context it would be beneficial for researchers to return to the study site and to those people who participated in the workshops and reflect back the contradictions within the activity systems (Belay, 2012; Kachilonda, 2014; Lindley, 2014; Mukute, 2010). The loosening of these contradictions and discussions among participants could see the emergence of new ways of interacting within and between the activity systems. This might lead to better understanding and knowledge sharing within this context which would benefit, in the long term, all community members in the area. As the DEA: NRM projects continue, the cumulative effect of their attempts to work in a more broadly adaptive and integrated way may lead to changes within at least the DEA: NRM. Studying the interactions between the government departments and residents of the Tsitsa River catchment in more depth would allow reflection on the contradictions revealed by this study, possibly reveal further areas for expansive social learning and inevitably raise further contradictions. Being able to continue working with the participants in the longer term would provide a real possibility to begin working on ways of understanding and sharing knowledge that would be unique and beneficial to the residents in the Tsitsa River catchment.

The NWA aimed to allow people to participate in the management of water in their water management area. It was written at a time when there was great hope in South Africa that the old regime and remnants of an unfair government system could be swept away. Unfortunately, while the NWA is highly acclaimed, it is difficult to implement. This study shows that it is not too late to continue working in the way in which the NWA initially intended and that a learning-centred approach towards CMF formation offers a facilitated space in which learning together can create better understanding, build relationships, and, in time, possibly lead to more integrated management of natural resources. Only by working together, respecting and understanding one another do people in this context, and in South Africa in

general, stand any chance of creating a sustainable future (Swilling & Annecke, 2012). This study suggests that if a learning-centred approach, underpinned by the principles for transdisciplinary engagement suggested by Palmer et al. (2007; 2015), is used in CMF formation, CMFs may provide the bridges to building better spaces for communication through fair and careful facilitation, and could become the stepping stones to a more just, sustainable and equitable future for all South Africans.

## **6.6 Limitations**

In this research study, limitations of time for engagement (travelling distances) and language issues (I would have understood the nuances in the language if I could speak isiXhosa) meant that the data gathered are from a small sample. The limited time for engagement resulted in engagement with only a few activity systems in the study site. One of the challenges faced by a researcher is communication about proposed workshops (gathering contact details, sending invitations, following up with phone calls). The time it takes to run a workshop (full day) impacts on the people who are able to attend the workshop. Those people who depend on subsistence-scale farming are unlikely to attend a full-day workshop away from their land.

## **6.7 Reflection**

I do believe that we live in a complex world and all the work I have ever been involved in somehow seemed to involve complexity. In this study I became more aware of the research using complexity thinking and tried to 'live' complexity thinking (Rogers et al., 2013). If I were to start the process of this particular study again, I would certainly take time off work so that I could focus all my attention on my study. I would read as much as possible to gain a deeper understanding of theory, conceptual framing, methodology and methods and I would write more often. I would like to have spent more time in the field, but travel costs and time prevented this from happening. I think I may have gained a truly deeper understanding of the challenges faced by the community members in the Tsitsa River catchment if I had spent a month (possibly longer) living and working in the community.

I would like to have observed other researchers conducting interviews and picking up skills on how to go about interviews, particularly in cases where English is the second language.

Conducting an interview with a translator means that the interview takes longer, but as the researcher, the nuances of what is being said are missed. I should have learnt to speak more isiXhosa. I appreciate that I would not have been able to understand all the conversations, but there may have been recognition of more words, and better understanding of who speaks to whom, when and why. More data could have been generated by further interviews and workshops, all of which take time and cost money for researchers to be in the field, and to transport participants to a central location for the workshop. In projects where research is conducted alongside rehabilitation, as is the case in this study, I would recommend that enough funding is allocated in the research budget to allow immersion of the researchers in the community to give real insight and understanding to the situation in question.

I have learnt that establishing a learning-centred approach to CMF formation requires an understanding of the NWA and the potential benefits of participation in a CMF; takes an extraordinarily long time and vast amounts of effort on the part of both researchers and participants; requires an acknowledgement of culture and customs different from my own but the opportunity to participate in the process is extremely rewarding.

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## APPENDIX 1      WORKSHOP AGENDA



INSTITUTE FOR WATER RESEARCH  
Rhodes University  
PO Box 94  
GRAHAMSTOWN  
6140 SOUTH AFRICA

### CATCHMENT MANAGEMENT FORUM WORKSHOP

**DATE:**      22<sup>nd</sup> NOVEMBER 2016  
**VENUE:**    TOWN HALL  
                  MACLEAR  
**TIME:**      08h30 – 13h00

#### PROGRAMME

08h30 – 09h00	Registration	All
09h00 – 09h30	Welcome and overview	Margaret Wolff
09h30 – 10h45	Introductions	All
10h45 – 11h00	Tea	
11h00 – 12h15	Concerns and actions	All
12h15 – 13h00	Feedback and discussions	All
13h00	Lunch	

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amanzi amyoli: clean, natural water

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Physical Address: Old Geology Building, Rhodes University Campus, Artillery Road, Grahamstown, 6139  
Tel: +27 (0)46 6224014 or +27 (0)46 6223428 Fax: +27 (0)46 6229427  
<http://www.rhodes.ac.za/iwr> email: [ucewq@ru.ac.za](mailto:ucewq@ru.ac.za)

## APPENDIX 2 INTERVIEW QUESTIONS

### Cultural historical activity theory questionnaire

#### Question 1: involvement

Are you involved in restoration or grazing?

- *If you are involved in restoration, please answer question 2.1 only*
- *If you are involved in grazing, please answer question 2.2 only*
- *If you are involved in restoration and grazing, please answer both question 2.1 and 2.2.*

#### Question 2: The subject of any activity is the individual engaged in the activity.

##### Question 2.1

Please tell me what your responsibilities are for restoration in your company (or institution).

How did you get this job? (Did you choose it) and were you specifically trained for it?

Is it easy or is it quite difficult? Do you enjoy it?

Is restoring land an important issue for you? Does it receive a lot of attention?

##### Question 2.2

Please tell me what your responsibilities are for livestock grazing.

Did you get training for it?

Is it easy or is it quite difficult? Do you enjoy it?

Is livestock grazing important for your community? Does it receive a lot of attention?

#### Question 3: Objective

What is the objective of your work? OR your job description?

And what would it look like if you have achieved the outcomes you are responsible for?

#### Question 4: Tools

What are the tools you have available to do your job with?

What is the basic process? What impacts does it have that you have to manage or cope with?

How do you deal with them?

And what sort of procedures, protocols and paper work is there (if any)?

Can you tell us about changes that have happened, or that you accept to happen in the process of your work?

Which (tools) work well for you, and which would you like to change?

### **Question 5: Sharing the tasks**

The following questions are based on the people or the team, in your community that share tasks with you.

Do you manage a team? What do they need to do to achieve the objective of restoring and/or livestock grazing? How are they doing?

How does your position relate to the people in the hierarchy above you? How do they enable your job? Are there pressures they transmit to you? What opportunities do they provide to you, and how do they support you?

### **Question 6: Community of practice, or peers**

And outside your company/community? Do you have fellow workers/livestock owners that you meet with, or discuss ideas and issues with? Do you belong to an organisation or trade association? Or do you basically work on your own?

In your contact with your fellow workers/livestock owners, what are the topics that are most discussed? Are you concerned about the state of the land or livelihood state in the catchment? and what do you think could be done about it?

### **Question 7: The rules of the game**

What are the formal rules and procedure for the job you are doing? Where do they come from?

And what are the informal ones, the ones that make sure that the job actually gets done? Sometimes it is these informal rules that enable you to actually deal with the challenges, isn't it?

Do you think these rules have been changing, or are changing now?

### **Question 8: The past and the future in the present**

Please share with us your experiences about the past – what has shaped your job, what are the important turning points you remember or you have heard about for community – as well your expectations and concerns about the future.

How long have you been working with restoration and/or livestock grazing?

How are things going – for example, have you been negatively affected by any particular factors such as conflict, drought etc.?

What does the future of the landscape/livelihoods in the catchment look like to you?

## APPENDIX 3 CHAT INTERVIEW ANALYSIS TOOL

### Interview analysis tool (modified from Charles Chikunda)

Element of activity system	Guiding question	Notes
Tools	Physical tools and systems of symbols – tools used and impacts, procedures and protocols towards rehabilitation?	
Subject(s)	Who is doing what or is supposed to do what in terms of responsibilities in the team? Who is responsible for livestock grazing?	
Object (thing to be acted upon)	What is the thing to be acted upon? Evidence of sustainability?	
Object (objectified motive)	Evidence of sustainability?	
Object (desired outcome)	Evidence of sustainability?	
Community	Who do you engage with regarding the work you do?	
Rules	What are the explicit and/or implicit policies, regulations and informal rules that ensure work gets done?	
Division of labour	How is work divided among participants?	



**APPENDIX 4      FEEDBACK FORM**

What was easy to understand?  Yintoni ebilula	
What was not easy to understand?  Yintoni ebinzima	
What I know now that I did not know before?  Yintoni oyaziyo ngoku obungayazi ekuqaleni	
What is was like working in a mixed group of people?  Bekunjani ukusebenza nabantu abazindidi ezohlukeneyo	

**APPENDIX 5            ETHICAL CLEARANCE**



**RHODES UNIVERSITY**

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09 November 2015

To Whom It May Concern

**Re: Proposal and Ethics approval for Margaret Wolff (91C6082)**

The minutes of the EHDC meeting of 29 October 2015 reflect the following:

***CLASS B RESTRICTED MATTERS***

***2015.10.4        MASTER OF EDUCATION RESEARCH PROPOSALS***

***Margaret Wolff 91C6082***

***Topic: Developing the institutional capability of rural communities in the Ntabelanga Catchment, Eastern Cape.***

***Appointment of supervisors: Prof Tally Polster***

***Co-Supervisor: Prof Heila Letz-Sisitka***

***Decision: Approved***

This letter confirms the approval of the above proposal at a meeting of the Faculty of Education Higher Degrees' Committee on 29 October 2015.

In the event that the proposal demonstrates an awareness of ethical responsibilities and a commitment to ethical research processes, the approval of the proposal by the committee constitutes ethical clearance. This was the case with this proposal and the committee thus approved ethical clearance.

Yours truly

Prof. Mellory Graver,  
Chair of the EHDC, Rhodes University