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The Role of Social Factors in Complex Decision-Making Processes

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Declaration of Originality

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i. Abstract

Conservation proponents worldwide have recognized the important role that government decision making processes have in determining our impacts on the environment. Attempts to engage with and influence them however, have achieved only mixed success and have been hampered by our poor understanding of their complexity. My research focuses on an empirical examination of the undocumented social drivers of a government decision making process.

I begin my thesis with a global survey of the design and use of spatial conservation prioritisations, a tool often used to inform decision making. I demonstrate that prioritisations are being developed in line with the recommendations of the peer-reviewed literature and are translating to implementation.

For the main body of my thesis, I examine decision making within an Environmental Impact Assessment (EIA) process in South Africa. I begin with a study of the flow of applications through the process. I demonstrate that whilst authorisation is granted at the final stage, decisions about mitigation efforts are made earlier, and often confidentially. I also demonstrate that conservation agencies influence decisions.

Guided by this insight, I use an interview-based approach to study the social dynamics of the EIA process and understand the realities of decision making. I find that scientific evidence is treated with high regard but that the process is a negotiation and as a result the rationale behind outcomes is not always transparent. I demonstrate that reputation plays a central role in determining negotiations and, as a result, environmental impacts. Finally, I apply these insights to a specific policy issue and explain the mechanisms behind globally encountered issues in biodiversity offsetting.

If we, as a global society, are to make informed decisions about our environment, we will need to understand the complex social mechanisms which inform decision-making and the interpretation of scientific advice.

ii. Acknowledgements

Whilst I've pulled this work together, I by no means did it alone. I was helped along the way by a wide range of people for which I am extremely grateful.

I want to thank E.J. for believing in me, being patient with my mistakes and teaching me so many things about not only science but life in general. It was E.J. that let me onto her masters course, just days before it started, nine years ago, giving me the chance I needed to start my career in conservation. It's an enormous honour to finish my PhD with her now, and it suggests that the gamble she took on me paid off! I could not wish for a better mentor.

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1. Thesis Introduction

"If you don't know history, then you don't know anything. You are a leaf that doesn't know it is part of a tree."

- Michael Crichton, Timeline, (1999)

1.1. Reading this introduction

The practice of conservation science is complex with many elements interacting simultaneously. This thesis aims to explore the practicalities of environmental decision-making; correspondingly it touches on multiple academic fields which may appear unconnected. This introduction therefore reviews the key literature in each field and then demonstrates the link to the central content of the thesis; the use of social science to understand the drivers of environmental decision-making in practice. Figure 1.1. demonstrates how these fields interact at a macro scale.

1.2. Conservation engagement with decision-making processes

Despite conservation science being concerned, at heart, with biological diversity and natural ecology, it is substantively a field which addresses human activities (Schultz, 2011; Kareiva and Marvier, 2012). Accordingly, there have been considerable efforts by both conservation scientists and practitioners to engage with the laws and decision-making processes which play key roles in determining how people behave (United Nations, 1992; Kiesecker *et al.*, 2010; Rajvanchi, Mathur and Slootweg, 2010; Redford *et al.*, 2015). At the highest level international agreements such as the Convention on Biological Diversity (CBD) and the Sustainable Development Goals (SDG) demonstrate a stated intention of nations to make sustainable decisions (United Nations, 1992; United Nations Department of Economic and Social Affairs, 2015). Governments around the world have translated this intention to the context of their nations through the development of products like National Biodiversity Strategic Action Plans (NBSAP) which demonstrate the actions required to reach their commitments under the CBD (United Nations, 1992). The development of NBSAPs is reflective of a wider trend of increasing inclusion of biodiversity and environmental concerns into government planning at multiple resolutions (Chaker *et al.*, 2006; Morgan, 2012; Bonneuil, 2015). This has occurred at national levels with long time frames and broad scopes, for example the UK governments 25 year plan for the environment (HM Government, 2018) but it has also been incorporated into regional and local planning such as Environmental Impact Assessment (Rajvanchi, Mathur and Slootweg, 2010; HM Government, 2018).

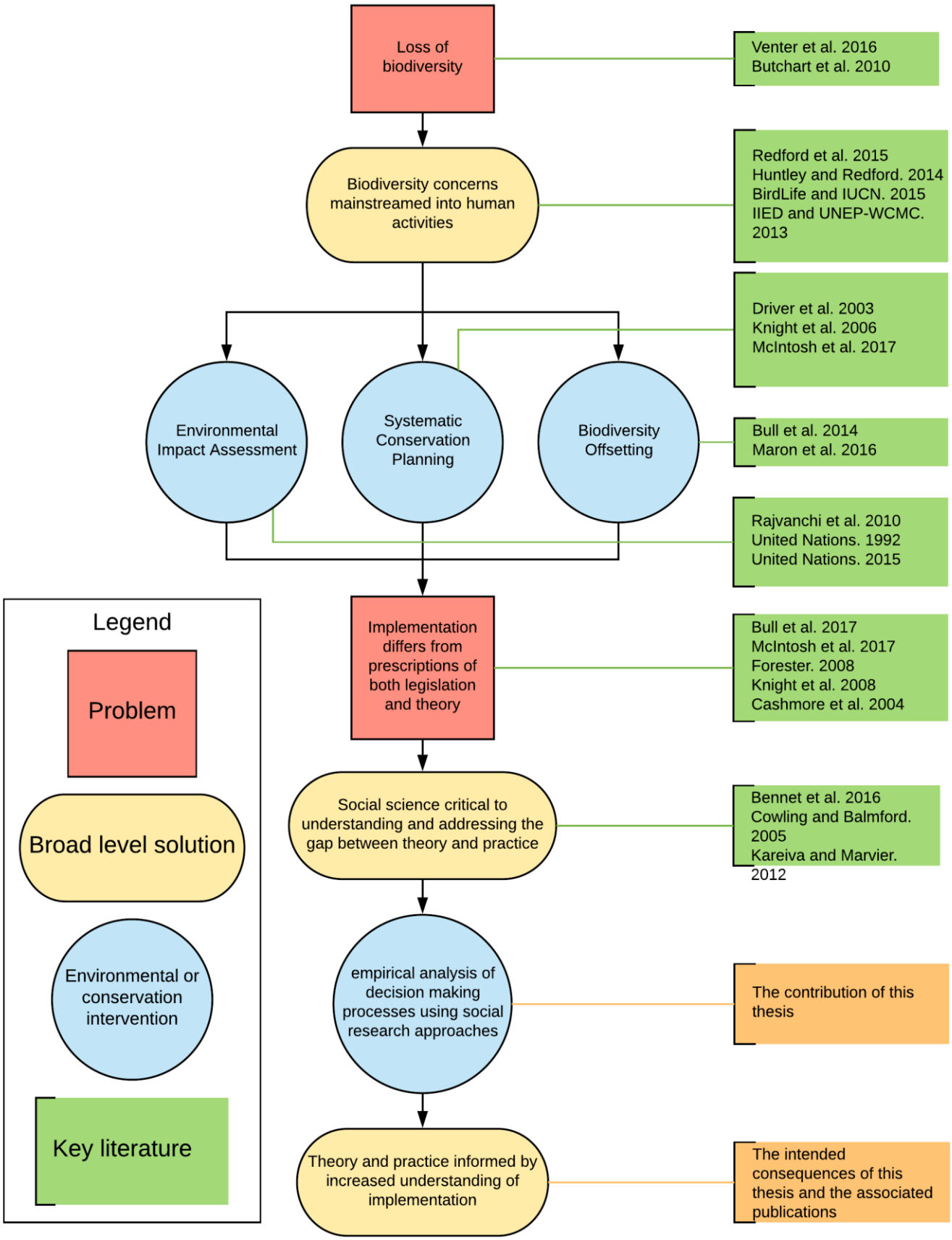


Figure 1-1 A conceptual diagram of the interacting literatures.

These efforts are viewed by some as the "mainstreaming" of biodiversity and the environment, i.e. the incorporation of biodiversity concerns into the full gamut of human activities with the potential to impact on the environment (IIED and UNEP-WCMC, 2013; Redford *et al.*, 2015). As a result, there have been widespread attempts by scientists to contribute to and influence decision-making (Schultz, 2011). There have however been concerns about the effectiveness of efforts by conservation scientists to engage with such processes, there are countless examples of environmentally damaging decisions being made despite scientific advice to the contrary (Sunderland and Sunderland-Groves, 2009; Ntshotsho, Esler and Reyers, 2015; Walsh, Dicks and Sutherland, 2015). There are concerns that this is a result of complacency on the part of policy makers and practitioners (Sutherland and Wordley, 2017), an irrelevant scientific literature (Sutherland and Pullin, 2007; Milner-Gulland *et al.*, 2009; Kullberg and Moilanen, 2014; Toomey, Knight and Barlow, 2017) or a tendency for politics to override scientific considerations (Khalilian *et al.*, 2010; Carpenter *et al.*, 2016). There has however been an increasing awareness that, despite being under-investigated, the challenging contexts of decision-making play a large role in the underutilisation of science in decision-making (Reyers *et al.*, 2007; Evans *et al.*, 2017). Correspondingly, there have been calls for empirical, contextual studies into the decision-making processes themselves in order to better inform the engagement efforts of the environmental and conservation sciences (Kågström and Richardson, 2015; Maron *et al.*, 2016; Bull, Lloyd and Strange, 2017). One of the most widespread approaches to incorporating biodiversity into government decision-making processes is Systematic Conservation Planning (SCP) (Kukkala and Moilanen, 2013).

1.3. Systematic conservation planning

One of the inherent challenges for conservationists of contributing to planning processes is the complexity of considering a wide breadth of concerns about land use trade-offs, covering considerable areas over large timescales. Experts can provide useful guidance but are often limited in their ability to address complex spatial optimisation problems (Cowling *et al.*, 2003; Martin *et al.*, 2012). To meet this need, spatial conservation prioritisation (hereafter referred to as prioritisation) has emerged, defined by Kukkala and Moilanen as the "biogeographic-economic activity of identifying important areas for biodiversity; where, when and how we might efficiently achieve conservation goals". Prioritisations are often embedded in a larger systematic conservation planning (SCP) process, which uses one of a number of operational models to facilitate the design of effective, user-useful decision-making tools (Margules and Pressey, 2000; Pierce *et al.*, 2005; Sarkar and Illoldi-Range, 2010). Since its early inception, SCP has grown widely in use and, as a result of its theoretical grounding and specific objectives, it has become widely regarded as one of the most thorough and

defensible conservation planning approaches (Sarkar *et al.*, 2006; Pressey and Bottrill, 2009; Watson *et al.*, 2011). The process is frequently conducted through the use of technical softwares, such as Zonation or Marxan, which are in turn based on a rigorous scientific grounding (Ball and Possingham, 2000; Moilanen, 2005, 2007; Ball, Possingham and Watts, 2009; Moilanen *et al.*, 2011).

The earliest uses of SCP were for guiding the acquisition of land when expanding protected area networks (Pressey 2002). Since then however, the approach has been adapted and used to guide other decisions and actions (McIntosh et al. 2017). Prioritisation was central to representing biodiversity concerns in the negotiation and development of a multiuse zoning plan for The Great Barrier Reef (Fernandes et al. 2005). The approach has also been used by private entities to allocate funding and target the most cost-efficient areas, for example The Nature Conservancy have used these techniques to coordinate a breadth of multifaceted conservation interventions (Groves et al. 2002). Government bodies have also adopted SCP approaches; the South African parliament has legislated specifically for the inclusion of conservation plans in multiple levels of state decision-making processes, and in the USA, states routinely produce State Wildlife Action Plans using SCP principles (Minister of Environmental Affairs, 2014; Carter *et al.*, 2015).

As the use of SCP has evolved, so too have the methods of developing plans. Originally described as a 6-stage process in 2000 by Margules and Pressey, SCP has been repeatedly redefined with increasing numbers of stages and iterative processes (Pressey and Bottrill, 2009; Sarkar and Illoldi-Range, 2010; Lehtomäki and Moilanen, 2013). The core process has remained similar between variant models, i.e. collating data, identifying goals, reviewing existing conservation areas and selecting additional areas for conservation action (Margules and Pressey, 2000; McIntosh *et al.*, 2017). The additional stages included in later iterations of the process have predominantly focused around engagement with stakeholders, reviewing context and including socio-economic data (Knight *et al.*, 2006; Sarkar and Illoldi-Range, 2010; McIntosh *et al.*, 2017). These stages were incorporated as it was increasingly recognised that the successful implementation of conservation plans required meaningful buy-in from stakeholders as well as the tailoring of plans to suit their implementation context (Driver, Cowling and Maze, 2003; Reyers *et al.*, 2007; Knight *et al.*, 2008; Smith and Verissimo, 2009; Langford *et al.*, 2011). This was coupled with an increasing awareness that the process by which the plans were created was almost as important as, if not more important than, the final product itself in delivering conservation impacts (Bottrill and Pressey, 2012). Conservation planners were therefore broadly encouraged to foster shared ownership and applicability to implementation contexts through co-creative processes (Wilson *et al.*, 2007; Smith and Verissimo,

2009; Carter *et al.*, 2015; Groves and Game, 2016). This was reflected in a review of the outcomes of systematic conservation planning processes at the Wildlife Conservation Society, which identified that whilst multiple types of capital were generated, there were considerable social, human and institutional benefits which emerged from co-developing a shared vision (Bottrill *et al.*, 2012).

Despite considerable investment in the field (Kukkala and Moilanen, 2013)there remains a deficit of evidence as to the impact and effectiveness of SCP in delivering conservation returns (Kukkala and Moilanen, 2013; McIntosh *et al.*, 2017). Meaningful counterfactuals for evaluating SCP effectiveness are rare, there are multiple potential theories of change, and the process of influence delivery is unclear and often convoluted (Bottrill and Pressey, 2012; McIntosh *et al.*, 2017). Whilst there has been considerable investment into the development of SCP as an approach, it is also unclear to what extent this has translated to implementation (Knight *et al.*, 2008; Kukkala and Moilanen, 2013). It is clear from the incorporation of SCP into government planning processes in South Africa and the USA, and its adoption by NGOs that SCP is being adapted to address novel challenges; however there is a deficit of peer reviewed publications which explore these novel usages and connect the scientific literature to practice (Minister of Environmental Affairs, 2014; Groves and Game, 2016; McIntosh *et al.*, 2017). There is therefore a clear need to understand the extent and nature of SCP usage globally, as well as the processes by which conservation plans deliver a conservation return (Knight *et al.*, 2008; Bottrill and Pressey, 2012; McIntosh *et al.*, 2017).

1.4. Environmental impact assessment

Environmental Impact Assessment (EIA) is one of the most ubiquitous decision-making processes used by societies to make trade-off decisions about their actions (Jay *et al.*, 2007). Initially created in the USA in the 1980s to address public concerns about the ecological consequences of development (Bonneuil 2015), EIA is now used in 192 UN member countries (Morgan, 2012). Whilst it was originally used to manage broader issues like pollution, it has since been adapted to address impacts to biodiversity, making it relevant to conservation, indeed so much so that it is directly cited as critical to achieving the goals of the CBD and SDG (United Nations, 1992; Slootweg *et al.*, 2009; Rajvanchi, Mathur and Slootweg, 2010; United Nations Department of Economic and Social Affairs, 2015). At the core of the EIA process is the mitigation hierarchy, a conceptual framework for sequential steps which if taken can mitigate the environmental impacts of an activity (Figure 1.2.) (BBOP, 2012). This prescribes that development proponents must first attempt to avoid impacting on sensitive environmental features. This is usually via spatial placement of impacts, but may also be implemented in other ways, for example a road may be closed during important migration periods.

Where this is not possible they must then minimise their impacts, such as through limiting the areas impacted during construction. Impacts remaining after minimisation are then rehabilitated where possible, for example through habitat restoration activities. Finally, where there are impacts not mitigated by previous stages of the hierarchy, many nations require development proponents to offset their impacts on biodiversity and the environment, that is to provide gains commensurate to the residual losses incurred as a result of the development (Bull *et al.*, 2013). Mitigation efforts are usually informed by a breadth of ecological, engineering and social studies. The EIA process is frequently discursive and in the vast majority of countries public participation plays a key role (Esteves, Franks and Vanclay, 2012; Morgan, 2012). Comments are solicited from interested and affected parties and used to inform development design (BBOP, 2012). Whilst there is considerable variation (Hartley and Wood, 2005), these inputs can have a considerable effect on the outcome of the process (Kruger *et al.*, 1997).

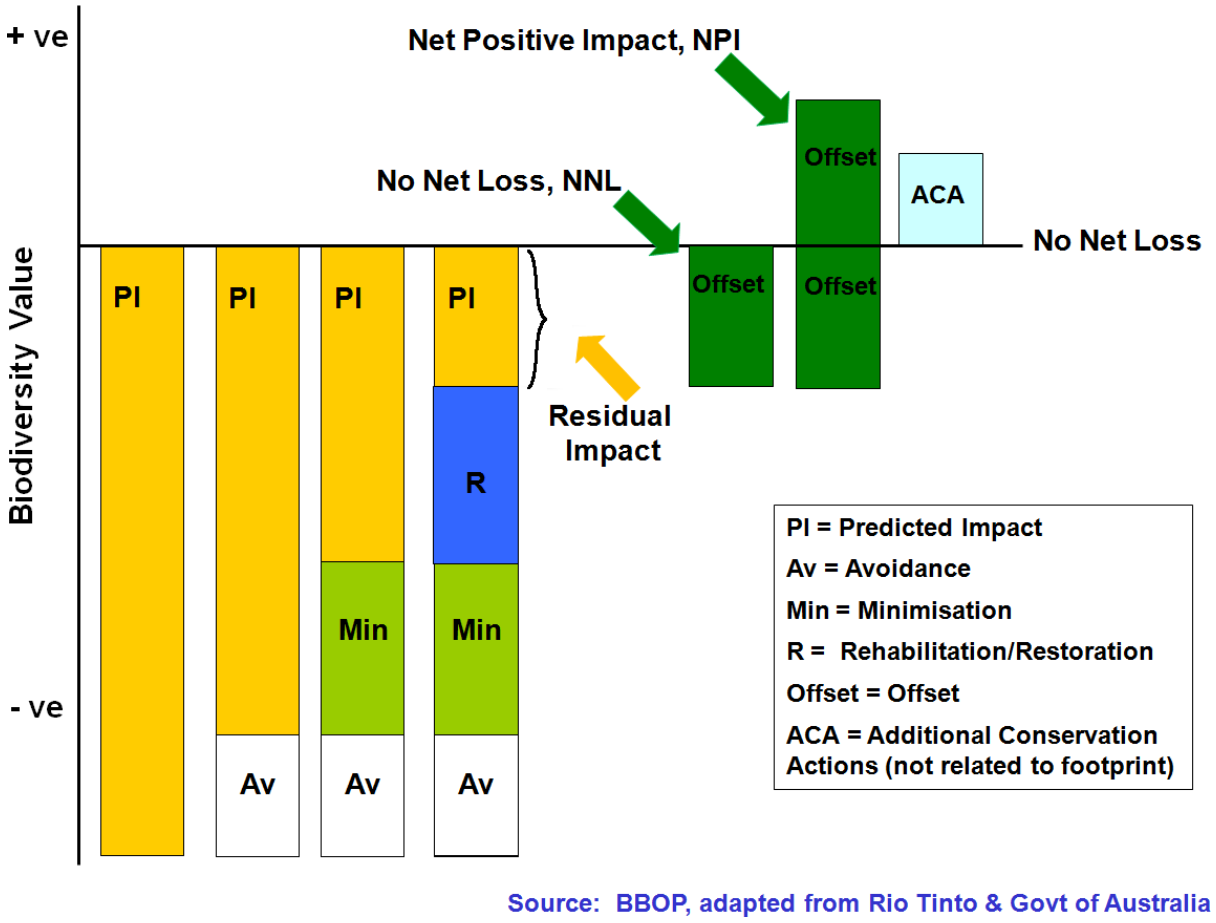


Figure 1-2 The mitigation hierarchy as visualised by BBOP

While EIA is inherently an applied topic, its central position in government planning processes around the world has led to the development of a considerable research literature (Jay *et al.*, 2007;

Morgan, 2012; Pope *et al.*, 2013). The breadth of literature covers a wide range of subtopics; there are debates around technical aspects of impact assessment (Barker and Wood, 1999; Fischer and Onyango, 2012), the development of new planning approaches (Dalal-Clayton and Sadler, 2005; Fischer and Onyango, 2012) and the incorporation of elements such as social impact assessment (Esteves, Franks and Vanclay, 2012) or biodiversity (Slootweg and Kolhoff, 2003; Brownlie, King and Treweek, 2013a). Arguably the central debate however is around effectiveness, more specifically how is it defined (Cashmore *et al.*, 2004; Chanchitpricha and Bond, 2013), measured (Morrison-Saunders, Annandale and Cappelluti, 2001; Nooteboom, 2007; Hansen and Wood, 2016) and improved (Cashmore, 2004; Morrison-Saunders and Retief, 2012). The challenge of defining effectiveness is in part a product of the multiple aims of the EIA process; it is intended to facilitate sustainable development, incorporate public participation through the application of a prescriptive legal process, and deliver the above goals within a reasonable timeframe and budget (Cashmore *et al.*, 2004, 2010; Chanchitpricha and Bond, 2013). As a result effectiveness can be interpreted through four main lenses; procedural, substantive, transactive and normative (Chanchitpricha and Bond, 2013). Procedural effectiveness is the extent to which the process "conforms to established provisions and principles", i.e. is the correct procedure followed in implementation (Sadler, 1996; Bina, 2007). This is in turn comprised of multiple elements including the degree to which design and decisions are politically motivated (Fischer and Gazzola, 2006), the extent of public participation efforts (Del Furia and Wallace-Jones, 2000), and the capacity of governance infrastructure to implement the process (Lukey *et al.*, 2016; Brownlie *et al.*, 2017). There have been extensive doubts raised about the extent to which EIA is able to function in practice as it is theoretically and legally prescribed (Le Maitre, Euston Brown and Gelderblom, 1998; Forester, 2008; Maron *et al.*, 2016; Bull, Lloyd and Strange, 2017). Substantive effectiveness is the extent to which EIA delivers its objective of facilitating sustainable development through supporting evidence-based decision-making (Sadler, 1996). This category is heavily debated (Gordon *et al.*, 2011; Ives and Bekessy, 2015; Gibbons *et al.*, 2017) and is to a certain degree subjective as environmental proponents may favour sustainability and development proponents may favour the facilitation of development (Cashmore, 2004; Pischke and Cashmore, 2006). Transactive effectiveness is the extent to which EIA delivers outcomes in a timely and cost-efficient manner and is largely a governance concern (Chanchitpricha and Bond, 2013; Lukey *et al.*, 2016). Normative effectiveness is the extent to which the outcomes delivered through EIA processes are reflective of the principles and values of the society within which they are embedded (Bond, Morrison-Saunders and Howitt, 2013a). The considerable demographic variations within any society causes this category of effectiveness to be inherently challenging, however there are numerous cases where this may be said to have been demonstrably achieved through the extent

and influence of public participation (Kruger *et al.*, 1997; Bond, Morrison-Saunders and Howitt, 2013a).

From a conservation science perspective these interpretations of effectiveness are important, however the extent to which the EIA process is able to safeguard ecological infrastructure, protect important ecosystems and conserve biodiversity is paramount (Rajvanchi, Mathur and Slootweg, 2010; BBOP, 2012; Bull *et al.*, 2013; Maron *et al.*, 2016). As the process is increasingly leveraged to address biodiversity concerns, it is important to understand EIA as an arena within which multiple stakeholder groups with equally well substantiated rationales and paradigms interact and ultimately compete (Parliament of the Republic of South Africa, 2004; Slootweg *et al.*, 2009; van Stigt, Driessen and Spit, 2013; United Nations Department of Economic and Social Affairs, 2015; Bond *et al.*, 2016). As conservationists increasingly engage with and attempt to influence government decision-making through developing spatial tools (Reyers *et al.*, 2007; McIntosh *et al.*, 2017), theory (Bull *et al.*, 2013; Maron *et al.*, 2016) and best practice (Pilgrim *et al.*, 2013), there is an increasing need to understand how decisions are made in reality (Bull, Lloyd and Strange, 2017). Examinations of the process have highlighted the agency of stakeholders within it and the importance of the strategies they use to achieve their personal objectives (Samsura, van der Krabben and van Deemen, 2010; van Stigt, Driessen and Spit, 2013; Bond *et al.*, 2016). As these strategies are frequently undocumented or actively concealed, there is an increasing awareness that quantitative approaches are incapable of effectively examining the underlying mechanisms, actors have high levels of agency, motivations are complex and behaviour frequently diverges from perceived rationality (Weber and Johnson, 2009). To effectively understand, model and predict these complex processes qualitative approaches are essential to furthering our understanding (Kågström and Richardson, 2015; Bennett, Kemp and Hudson, 2016; Hansen and Wood, 2016). There is therefore a clear and demonstrable need for social, empirical studies into the practicalities of EIA implementation if the multiple forms of effectiveness are to be understood and conservation engagement is to deliver impacts (Cashmore *et al.*, 2004; Forester, 2008; Bull, Lloyd and Strange, 2017).

1.5. Biodiversity offsetting

Biodiversity offsetting is an increasingly adopted yet controversial component of the mitigation hierarchy which aims to compensate for residual impacts, i.e. those which were insufficiently addressed through application of the hierarchy (BBOP, 2012; Bull *et al.*, 2013). Offsets are frequently a component of No Net Loss (NNL) policies, i.e. those which aim to deliver no additional loss of biodiversity calculated at a landscape level against a baseline although there is considerable

variation as to the exact definition and execution of this (BBOP, 2012; Maron *et al.*, 2015, 2018). Where NNL is a stated goal, impacts which remain after the application of the avoid, minimise and remediate stages of the mitigation hierarchy are quantified through ecological survey and compensated for through equivalent gains at a receiving site (BBOP, 2009a). Gains are delivered at a receiving site either through averted loss, where a site of conservation importance is afforded protection against projected destruction or degradation, or through restoration of degraded habitat or both (BBOP, 2012; Bull *et al.*, 2013). As biodiversity losses at the impact site are frequently complete, i.e. no biodiversity remains, and gains at the receiving site are often partial, e.g. sites are restored from low to high quality habitat, a multiplier is used to ensure gains are equivalent to losses (BBOP, 2009a; Bull *et al.*, 2013). Multipliers are used to compensate for multiple factors such as risk, time lag and habitat quality (Laitila, Moilanen and Pouzols, 2014). Additionally, there is a disparity in the confidence of gains and losses; losses are certain outcomes of development whereas gains are uncertain as there are many potential pitfalls in implementation. Accordingly, estimates of risk are often incorporated in to multipliers, which require a greater than 1:1 relationship between compensation and loss (Laitila, Moilanen and Pouzols, 2014).

Despite increasingly widespread usage it is unclear whether offsets are effective and there are fears that policies which incorporate them may fail to deliver NNL within a reasonable time frame (Maron *et al.*, 2015; Bull, Lloyd and Strange, 2017; Gibbons *et al.*, 2017). Restoration efforts under-deliver (Maron *et al.*, 2012; Arnas *et al.*, 2015), species specific interventions fail (Lindenmayer *et al.*, 2017), averted loss offsets have unreasonable timeframes for returns (Buschke, 2017; Gibbons *et al.*, 2017), multipliers are lower than prescribed by theory and legislation (Bull *et al.*, 2013) and developing governance capacity is a major obstacle (Lukey *et al.*, 2016; Brownlie *et al.*, 2017). Critically, the root causes of many of these implementation issues presents a considerable knowledge gap (Maron *et al.*, 2016; Bull, Lloyd and Strange, 2017). As a result, there is a need for empirical studies which examine the realities of offset design, agreement and implementation (Maron *et al.*, 2016; Bull, Lloyd and Strange, 2017; Lodhia, Martin and Rice, 2018). In particular there has been explicit identification of the need for social research able to identify potentially concealed social dynamics (Martin *et al.*, 2016; Bull, Lloyd and Strange, 2017; Lodhia, Martin and Rice, 2018).

1.6. The research-implementation gap

Planning and decision-making processes are almost ubiquitously complex and frequently represent an arena where multiple stakeholders and forms of information interact and conflict (Forester, 2008; Khalilian *et al.*, 2010; Carpenter *et al.*, 2016). As a result, processes deviate from prescribed formats,

plans fail to translate into action and decisions are made which contradict the available evidence (Carpenter *et al.*, 2016; Evans *et al.*, 2017; Sutherland and Wordley, 2017). Correspondingly, the concept of a "research implementation" gap or space is routinely applied (Toomey, Knight and Barlow, 2017). This is often conceptualised as the difference between the prescriptions and recommendations of theory (often scientific literature or legislation) and how practice or implementation is actually realised (Toomey, Knight and Barlow, 2017). The issue of a gap between theory and practice has been raised in SCP (Knight *et al.*, 2008), EIA (Forester, 2008) and biodiversity offsetting (Bull, Lloyd and Strange, 2017). Where raised, the suggested response to the gap is ubiquitous; an identified need for empirical research into the realities of implementation with the aim of informing research, theory and practice (Forester, 2008; Langford *et al.*, 2011; Kågström and Richardson, 2015; Bull, Lloyd and Strange, 2017; Lodhia, Martin and Rice, 2018).

1.7. The use of social science in conservation

It is broadly realised that providing clear demonstrations of the consequences of environmentally destructive practices for both people and the environment is insufficient to alter behaviour (Khalilian *et al.*, 2010; Walsh, Dicks and Sutherland, 2015; Carpenter *et al.*, 2016; Evans *et al.*, 2017; Sutherland and Wordley, 2017). Environmental consequences are ignored or discounted for a breadth of reasons; reducing impacts may introduce extra costs, have negative political outcomes or be perceived as restricting economic development. Additionally, those benefiting from destructive behaviour may not be suffering the costs, or the costs may be outweighed by their personal gain. Decision-making processes are frequently subjective and therefore open to a considerable range of biases and influences (Burgman, 2005; Weber, 2017). Understanding and influencing the decision-making processes which govern sustainability is therefore critical to conservation science (Balmford and Cowling, 2006; Hicks *et al.*, 2016). As a result social science approaches are now "routinely" called for to understand and combat anthropogenic threats to biodiversity and the environment (Bennett *et al.*, 2016).

Many of the issues with practice and decision-making faced in conservation are comparable to those previously addressed in other fields, and as a result there are numerous calls for interdisciplinary solutions (Pullin and Knight, 2001; Sutherland *et al.*, 2004). In 1980 Lipski used sociological and anthropological methods to investigate the role of "street level bureaucrats" and argued that the daily struggles of front line civil servants ultimately defined the reality of policy outcomes. Lipski used interviews and participant observation to highlight the considerable agency of most civil servants to control and vary their application of laws and legislations, showing that understanding

the personal and professional pressures that they experience is fundamental to understanding policy implementation (participant observation is where a researcher embeds with a study group and uses participation in their activities to observe and understand (Russell-Bernard, 2006)). This has been echoed in medical fields; Glaser and Strauss applied social anthropological approaches to improve practice in nursing by developing Grounded Theory, a flexible inductive research approach which has since been applied to a vast selection of issues (Glaser and Strauss, 1967; Strauss and Corbin, 1991; Burge and Jamieson, 2009). Grounded Theory research methods encourage researchers to use their study subjects to guide the direction of the research, developing and testing theories as an outcome of the process rather than testing *a priori* hypotheses (Strauss and Corbin, 1991). As a result, the strength of such approaches is they are highly flexibility and thus able to detect a wide breadth of phenomena (Strauss and Corbin, 1991; Russell-Bernard, 2006).

The challenge of flexible social anthropological approaches however, is that the outputs are frequently esoteric and not readily applied to address policy and practice challenges (Braun and Clarke, 2006). Accordingly, psychological analysis approaches can be applied to data gathered through social-anthropological research methods, which have the advantage of both a theoretical grounding and the ability to address specific research questions (Braun and Clarke, 2006). Psychological understanding of cognitive biases has also been suggested as a means of understanding and addressing the challenges of biodiversity conservation, however in contrast to social anthropological approaches, these are specific in nature and explain individual phenomena rather than broader systems (Papworth, 2017; Weber, 2017).

There are risks in applying social science approaches within conservation research however; a recent review found that many social research approaches in conservation were inappropriately justified, designed and reported (Young *et al.*, 2018). Young et al (2018) found that in many peer-reviewed articles the details of the methods used were incompletely reported; sampling strategies were not detailed, the rationale for using the approach was not included or coding methods were not reported. As reporting was not comprehensive in many cases it is not possible to have confidence in the standard of methodological rigour of social research in conservation. Given the range of approaches available, it is therefore critical that, in answering calls for the use of social science to address conservation issues, appropriate methods are used, pilot studies and grounding are thorough, and assumptions are clearly stated (Bennett *et al.*, 2016; Young *et al.*, 2018). Further to this, if social science approaches are to prove useful, they should be solution-oriented and support understanding of how best to

improve ecological outcomes. This requires them to combine relevant bodies of literature to demonstrate practical applications to issues in policy and practice (Watts, 2017).

1.8. Aims and Objectives

At a broad level, this thesis addresses the barriers to using science effectively to inform environmental decision-making. As there have been increasing attempts to incorporate biodiversity and environmental considerations into decisions, it has become increasingly apparent that a lack of understanding of contextual complexities is a considerable barrier and that there is a need for fine scale qualitative examinations of implementation contexts (Redford *et al.*, 2015; Bennett *et al.*, 2016; Bull, Lloyd and Strange, 2017; Evans *et al.*, 2017). This thesis therefore aims to use two provinces in South Africa as an in-depth study of decision-making within a specific planning process. Insights from this deep examination will then be explored in a discussion and used to provide insights into globally identified science and policy issues, with the aim of strengthening connections between research and practice.

The objectives are:

1. To understand the extent to which the recommendations of the systematic conservation planning literature are being applied to develop implementation-focused conservation plans and translated into on-the-ground action
2. To understand the extent to which conservation agencies are able to influence the environmental impact assessment process
3. To understand the social factors which contribute to decision-making in the environmental impact assessment process
4. To understand the consequences of introducing biodiversity offsets on the social dynamics of an existing environmental impact assessment process
5. To understand what practical steps may be taken to improve consideration of biodiversity and the environment in complex land use decision-making processes

1.9. Thesis outline

1.9.1. Chapter 2: Background

For the main body of my thesis, I examine the realities of government decision-making in South Africa. In this chapter I introduce the South African environmental impact assessment process as a case study. I also detail the process by which the methods were selected and the epistemology which underpins them.

1.9.2. Chapter 3: The use and usability of spatial conservation prioritisation

I begin my thesis with a global survey of prioritisations which examines whether they are developed in line with recommendations from the literature, and the extent to which they translate to action. I demonstrate that prioritisations can be divided into two categories, those intended to innovate and advance the field, and those intended for implementation. I also show that implementation-focused prioritisations are translating to on the ground action.

This chapter has been accepted with revisions as "The use and usability of spatial conservation prioritization" in Conservation Letters. I developed the research questions and questionnaire with input from E.J. Milner-Gulland and Andrew Knight. I conducted the literature review, recruited respondents, conducted the analysis and wrote the manuscript. Bob Smith and Emma McIntosh contributed to interpreting the data and provided comments on the manuscript at multiple stages. Bob Smith additionally created figure 3.1 in Chapter 3 using data I provided.

1.9.3. Chapter 4: Achieving conservation influence within Environmental Impact Assessment

Using the Environmental Impact Assessment (EIA) process as a case study, I use a mixed methods approach to examine the progress of applications through the process. I demonstrate that the majority of applications proceed with limited debate and ultimately incorporate the majority of the recommendations made by conservation agencies. I also show that decisions about the application of the mitigation hierarchy are routinely made either in confidential stages of the process or through negotiation between applicants and conservation agencies, well in advance of authorisation stages.

This chapter has been submitted for publication to Conservation Biology. I reviewed the EIA applications, interviewed the respondents, developed the codes, analysed the data and wrote the

manuscript. E.J. Milner-Gulland, Prue Addison, and Andrew Knight helped interpret the data and provided comments on the manuscript.

1.9.4. Chapter 5: The social factors which contribute to environmental decision-making

Guided by the quantitative research of Chapter Four, I present the results of an in-depth interview-based study of the realities of EIA implementation. Firstly, I explore the factors which motivate stakeholders in decision-making. I demonstrate that while science plays a key role, these processes are inherently negotiations and accordingly are governed by social mechanisms such as reputation, communicating ability and the need for consensus. I then use this in depth understanding of stakeholder behaviour to take a system-level view and examine the structure of these informal negotiations. Previous game-theoretical evaluations of the EIA process have predicted conflict, yet I demonstrate that reputation has a significant impact on stakeholder interactions and as a result it is frequently cooperative and discursive in practice. I show that, because of the effect of reputation, the impact of environmental protection efforts are often undetected.

1.9.5. Chapter 6: The challenge of negotiating top down offsets in a bottom up process

I apply the findings of Chapter Five to a specific policy issue, the implementation challenges of biodiversity offsetting. I demonstrate that because biodiversity offsets are inherently prescriptive and inflexible, they often fail to achieve their impacts effectively when implemented through a negotiative EIA process.

1.9.6. Chapter 7: Synthesis and discussion

I conclude by making recommendations for policy and practice which will both inform the representation of biodiversity in government decision-making and facilitate the development of impactful practice-relevant science.

1.10.Other work

During the course of this PhD I also contributed to the following papers which both influenced and were influenced by the work contained within this thesis.

Bull, J.W., **Lloyd, S.P.** & Strange, N. (2017). Implementation Gap between the Theory and Practice of Biodiversity Offset Multipliers. *Conserv. Lett.*, 0, 1–14.

Lukey, P., Cumming, T., Paras, S., Kubiszewski, I. & **Lloyd, S.** (2017). Making biodiversity offsets work in South Africa - A governance perspective. *Ecosyst. Serv.*, 1–10.

McIntosh, E.J., Grenyer, R., Pressey, R.L., **Lloyd, S.** & Smith, R. (2017). The Impact of Systematic Conservation Planning. *Annu. Rev. Environ. Resour.*, 42.

(N.B. Sam Lloyd changed his name to Sam Sinclair shortly before this article was published)

William N. S. Arlidge, Joseph W. Bull, Prue F. E. Addison, Michael J. Burgass, Dimas Gianuca, Taylor M. Gorham, Céline Jacob, Nicole Shumway**, Samuel P. Sinclair**, James E. M. Watson, Chris Wilcox, E.J. Milner-Gulland, (2018) A Global Mitigation Hierarchy for Nature Conservation. BioScience, *In press*

2. Introduction to the South African case study

"I dream of our vast deserts, of our forests, of all our great wildernesses. We must never forget that it is our duty to protect this environment."

- *Nelson Mandela interviewed by Peter Godwin for National Geographic, September 2001*

2.1. Why South Africa?

Societies around the world make challenging decisions about the environment. To study complex decision-making processes in practice however, a deeper analysis of a specific example is needed (Lipsky, 1992; Evans *et al.*, 2017). For this purpose, I selected South Africa. A megabiodiverse country, South Africa contains 3 biodiversity hotspots including a floral kingdom (Mittermeier and Goettsch, 1997; Myers *et al.*, 2000). Understanding the challenges of conserving this wealth of biodiversity is therefore not only of considerable value in and of itself but also has important implications for conservation efforts in other highly biodiverse areas.

The nation is also demographically complex; there are eleven national languages and it is often referred to as "the rainbow nation" because of its racial diversity. With one of the largest Gini Indexes in the world, the nation has one of the most extreme levels of wealth disparity and as a result has numerous social issues including employment, housing and service delivery (Seekings and Nattrass, 2006; The World Bank, 2017). This inequality means that the nation combines elements of both developed and developing countries and thus research into the challenges of environmental management in a South African context is applicable to many other nations.

The environmental management legislation is similar in scope, aim and design to that in many other countries and reflects international best practice (Morrison-Saunders and Retief, 2012). South African conservation agencies have also developed and implemented numerous conservation tools and approaches which are widely used internationally (Knight *et al.*, 2006; Rouget *et al.*, 2006; Selinske *et al.*, 2015). Biodiversity offsetting, a rapidly emerging conservation issue, has also been conducted in South Africa for over ten years (Maron *et al.*, 2016; Brownlie *et al.*, 2017). potentially broadly relevant. Whilst South Africa does have issues, there are many ways in which it is one of the leaders in the field of environmental planning and ideally this study would be twinned with one in a less advantageous situation. Unfortunately, the time restrictions of sensitising to multiple areas restricted the potential for this. Additionally, an understanding how relatively functional systems operate may well provide lessons which could be useful for improving less effective processes elsewhere.

2.1.1. Systematic conservation planning in South Africa

Systematic Conservation Planning (SCP) is widely used to make decisions about conservation actions and the management of biodiversity (Lloyd et al 2018). Despite its economic status, South Africa has

made a disproportionately large contribution to SCP; Kukkala & Moilanen (2013) identified the nation as being the fourth most prolific in terms of publications on this topic. Originally developed by academics (Cowling and Pressey, 2003), conservation planning in South Africa (often referred to as bioregional planning or biodiversity planning) is now specifically provided for under the Biodiversity Act (2004), and as a result is conducted by government agencies as an integral part of the nation's management of its natural resources (Department of Environmental Affairs, 2015). Provincial conservation organisations now develop high resolution, locally relevant plans which prioritise areas for conservation, known as Critical Biodiversity Areas (CBAs) (Department of Environmental Affairs, 2015). These local plans (see figure 2.1.) in turn contribute to a larger national level plan. Between them, these plans identify areas which will need to be preserved if South Africa is to meet its commitments under the Convention on Biological Diversity (CBD) (Department of Environmental Affairs, 2015). In addition, the plans leverage multiple components of South African legislation to provide support for the protection of CBAs; for example they incorporate concepts referred to in The Natural Environmental Management: Biodiversity Act, such as listed ecosystems, ecological support areas and populations of protected species (Parliament of the Republic of South Africa, 2004). Conservation agencies have actively mainstreamed these plans, leveraging their international relevance to incorporate them into both private and government decision-making processes (Reyers *et al.*, 2007). As a result, they are a routine component of strategic documents used by extractive, economic and infrastructure sectors (Department of Environmental Affairs, 2013). South Africa is therefore a suitable case study for understanding the influence of these plans on decision-making processes, as it has gone further down the road of integrating them into mainstream environmental decision-making than any other nation.

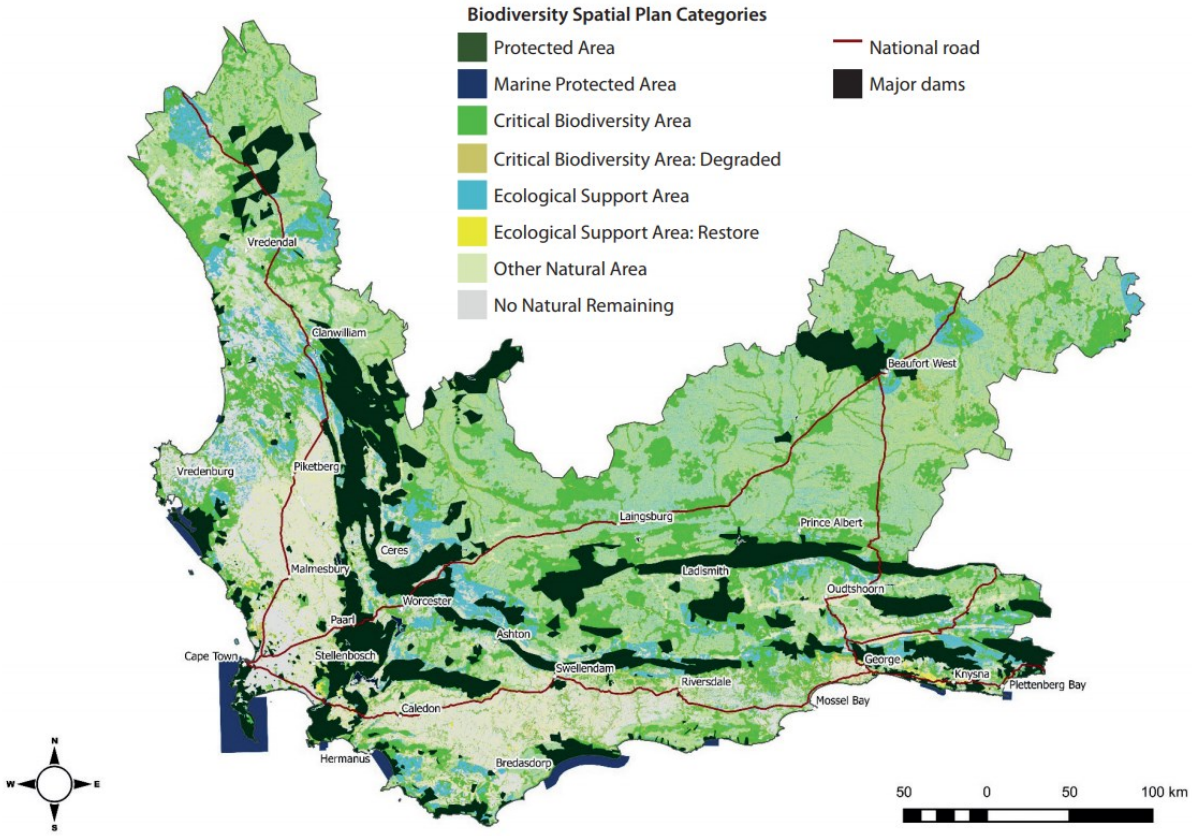


Figure 2.1. The Critical Biodiversity Area Map for The Western Cape (2017). More details and an interactive map can be found at http://bgis.sanbi.org/Projects/Detail/194.

2.1.2. Environmental impact assessment theory and practice in South Africa

The Natural Environmental Management Act of 1998 established Environmental Impact Assessment (EIA) in its modern incarnation in South Africa, by determining that activities with the potential to impact the natural environment were required to seek environmental authorisation from the state before proceeding. This was followed by a second piece of legislation, The Natural Environmental Management: Biodiversity Act (2004) which integrated biodiversity into the remit of EIA. Morrison-Saunders and Retief (2012) examined the South African EIA legislation against the international context and concluded it had "a strong and explicit sustainability mandate" and that the EIA system itself was well established and favourably comparable to examples of good practice elsewhere in the world (Lee, 2000; Wood, 2014). Academic elements of South African EIA are also well established (Morrison-Saunders and Retief, 2012) and the debates at the South African chapter of the International Association for Impact Assessment are reflective of wider international debates amongst both academics and practitioners (Retief, 2010).

Biodiversity offsetting has been an important component of South African EIA implementation for over ten years (Brownlie *et al.*, 2017). Whilst there is currently no single national policy, two provinces have produced provincial guidelines for offset implementation; Western Cape and KwaZulu Natal (Department of Environmental Affairs and Development Planning, 2007; Integrated Environmental Management Ezemvelo KwaZulu Natal Wildlife, 2013). There is also expert capacity at a national level and South African authors have generated numerous peer reviewed publications on the topic (Brownlie, King and Treweek, 2013b; Gardner *et al.*, 2013; Lukey *et al.*, 2016; Buschke, 2017).

Whilst socio-political and biogeographical factors may differ between nations, the theory, legislation and practice of South African EIA and biodiversity offsetting is directly comparable to international norms and as a result, findings in this context have important wider implications for biodiversity conservation.

2.1.3. The Promotion of Administrative Justice Act

Whilst the EIA process is embedded in a broad legislative environment, it is particularly important to note the critical role of the Promotion of Administrative Justice Act (PAJA) (2000), an act which addresses decision-making by government entities. This act states that individuals who make decisions on behalf of the government are personally responsible for ensuring that the appropriate evidence is used. This evidence may take many forms depending on the decision being made, however in regard to environmental management it frequently leads to the use of “best available science”. In practice “best available science” is usually obtained by referring to specialist scientific reports or relevant organisations, such as government departments, NGOs or universities. Where this act is deemed to have been breached, the individuals responsible for the decision are directly liable and may face prison, termination of contract or other disciplinary action. Additionally, this act specifies that members of the public may view all evidence used in decision-making. As a result, all documents relating to official environmental planning processes are publicly available. The presence of this act does have implications for the transferability of this research. It is unusual in that it holds individuals legally responsible, rather than the organisation more broadly. Other nations have comparable acts with regards to responsibility for decisions, often associated with access to information laws, however it’s possible that they do not promote the use of science as directly. This may mean that science is treated more sceptically in other jurisdictions and systems.

2.1.4. The mitigation hierarchy

The mitigation hierarchy prescribes a sequential series of steps which may be applied to address the environmental impacts of a project and is a central component of EIA processes in South Africa and around the world (Morgan, 2012). The process begins with the "avoid" stage, where possible impacts must be averted by locating development activities away from sensitive areas. Where it is not possible to avoid impacts, they must be minimised, for example by reducing pollution or noise impacts. The next stage is remediation (often referred to as restoration or rehabilitation) where areas temporarily impacted during the construction process are restored or rehabilitated, for example, areas damaged through the development of temporary access roads may be ecologically restored. Biodiversity offsetting is the final stage of the hierarchy where impacts which remain after the previous three stages are compensated for by commensurate biodiversity gains at a receiving site (Ten Kate, Bishop and Bayon, 2004; BBOP, 2009b).

2.2. The Environmental Impact Assessment process

The Natural Environmental Management Act (1998) and The Natural Environmental Management: Biodiversity Act (2004) prescribe a specific process for obtaining environmental authorisation for developments through an EIA process, as detailed in Figure 2.2. Depending on the scope of the activity and the potential to cause impacts, applicants are required to follow one of two EIA processes; either a simpler "basic assessment" (BA) process or a more in depth "scoping and environmental impact reporting" (SEIR) process. The two processes have identical objectives and are very similar in terms of the stages followed. The key difference is that SEIR is more thorough and includes a scoping stage to provide guidance in executing the process. Both processes are contained with the same acts and regulations and are therefore referred to throughout this thesis under the shared moniker of "EIA process". The steps of the EIA process are:

1. *Listed activities identified*

The acts which govern EIA are accompanied by Listing Notices which detail "Listed Activities", i.e. those for which environmental authorisation is required. These activities vary considerably but examples include "moving more than 5 cubic metres of sand" or "any activity with the potential to impact the natural environment in an Important Bird Area" (Minister of Environmental Affairs, 2014). The first step is therefore to consult the listing notices and identify whether environmental authorisation is required.

2. *Environmental Assessment Practitioner contracted*

Applicants are required to be represented by an Environmental Assessment Practitioner (EAP). The second step in the process therefore is the instruction of an EAP to represent the applicant through the process.

3. *Scoping phase*

Applications going through the SEIR route begin with a scoping phase which is intended to facilitate guidance and planning of the application. During this phase applicants and EAPs identify potential environmental concerns, discern what ecological information is required to inform mitigation, and use this information to compile a scoping report. This report is required to be approved by and lodged with the component authority, a body tasked with making the final decision, where it is assigned to a specific case officer.

4. *Specialist studies conducted*

Applications must be scientifically informed. Accordingly, biodiversity specialists are frequently contracted to conduct ecological surveys which identify potentially sensitive ecological or biodiversity features and guide the appropriate mitigation of development activities. These surveys are delivered in the form of a report.

5. *Application drafted*

Once ecological information has been gathered about the sensitivity of the development site, the mitigation hierarchy is applied to develop a strategy for mitigating the impacts of the proposed development. This process is detailed in the draft application. This comprehensive report details a wide breadth of information about the application, including the justification for the activity, the potential economic, social and environmental impacts, any alternatives to the proposed activity, the ecological reports, all public participation efforts and the comments of any authorities or interested and affected parties. This draft is edited during the application process as more information is received and mitigation efforts are developed.

6. *Application sent for public comment*

Once the draft application has been developed, comment is sought from the public and any affected bodies or organisations. The acts specify appropriate methods for engaging the public, i.e. through signs, adverts and other means in an appropriate language for the area. Additionally, however,

comment is required from appropriate government bodies, for example any activities with the potential to impact biodiversity require comment from the provincial parastatal conservation agency. All comments received through this process must be addressed in some form and the response detailed in the application.

7. Application altered in response to comments

All comments received through this process must be addressed in some form and the response detailed in the application. This process often requires alteration of the proposed activities, additional ecological surveys or improved mitigation. Where significant issues are raised, steps 6 and 7 can become iterative until an appropriate solution is found.

8. Formal submission of the application

Once the applicants feel they have developed an appropriate mitigation strategy they formally submit an application for environmental authorisation. Applications must contain all supporting information such as ecological reports and comments received during public participation.

9. Formal decision

Once an application has been submitted, the competent authority makes a decision about whether to approve or reject an application, or alternatively request alterations. The decision is first made by the case officer previously assigned the application. The decision is then reviewed by a senior case officer and the head of department before it is made public and deemed legally binding. Where approval is granted, the applicant is given "Environmental Authorisation" to commence the activities. Environmental Authorisations specify the exact activities for which approval has been granted and are accompanied by a list of terms and conditions. Terms and conditions frequently make reference to mitigation efforts, offset agreements or specific elements of sensitive biodiversity, for example instructions to avoid damage to specific trees.

10. Commencement

Where approval is granted, applicants have two years to commence the activities specified or the approval lapses. In some cases, the terms and conditions may be altered if new information comes to light, however considerable justification must be provided for doing so. In small developments there is no specific enforcement of conditions, however members of public can and do contact the competent authorities to report perceived breaches of contract. Additionally, breaches of contract are often detected when other interactions between applicants and the state or other third parties

occur, such as the granting of water use licenses, purchasing of mortgages or sale of property. In medium to larger developments, the conditions often dictate the contracting of an independent expert or team of experts who visit the development site periodically and audit activities and impacts. If breaches are identified during development, then “stop notices” may be issues which order the immediate halting of construction until the issue can be resolved. If breaches are detected after development has finished, then the consequences vary but developers may be required to tear down their construction and rehabilitate.

11. Appeals

Decisions can be appealed by any party on the basis that incorrect or inappropriate information was considered, the wrong decision was made with the correct information, the process was not followed correctly, or an illegal action occurred. Appeals are made directly to the Minister of Environmental Affairs and so go above the competent authority.

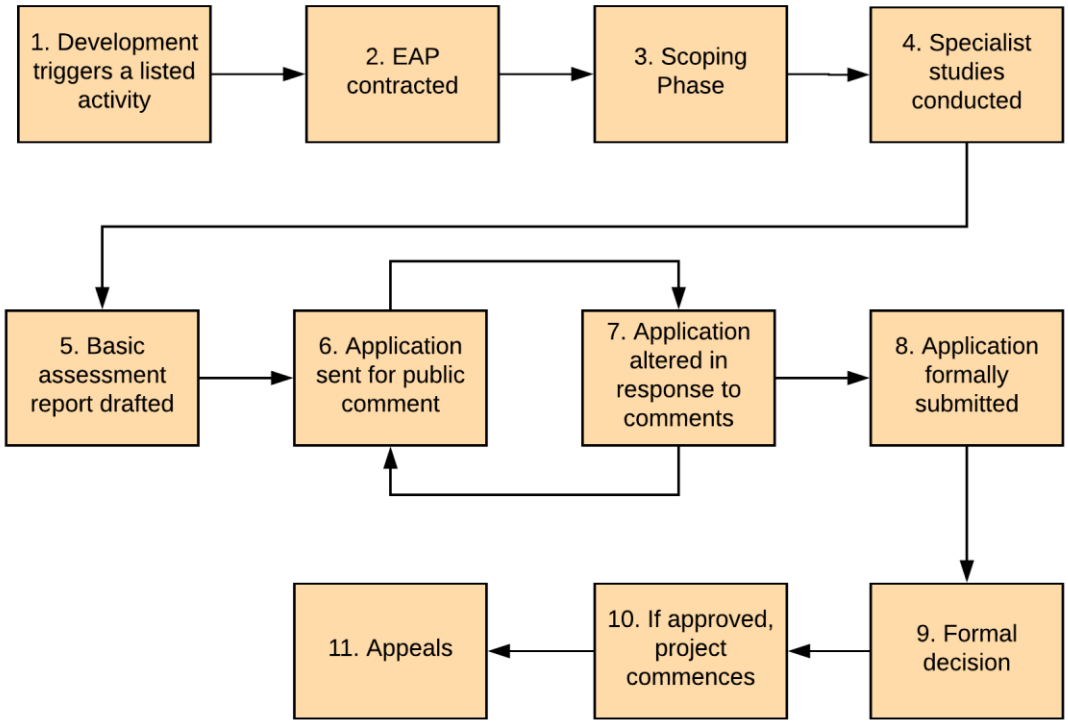


Figure 2.2. The environmental impact assessment process.

2.3. Stakeholders in the EIA process

2.3.1. Defining stakeholder

A wide range of people are affected by the outcomes of EIA applications. Local residents may be affected negatively, for example by loss of local biodiversity and green spaces, or positively, such as through increased employment or local facilities. There may also be broader impacts, such as economic development or service delivery. Other government bodies may also become involved to represent their position in fulfilment of their mandates. Whilst this range of stakeholders are critical to understand and take into account, they are involved intermittently; a stakeholder may play a central role in one case but not be involved in any other EIA applications. Five stakeholder groups are involved in every application however, and between them form the central infrastructure of the process. This thesis therefore focuses on understanding the interactions between these core groups to provide insights into the basic structure of the process. Applicants are individuals, groups or organisations, both private and state, who wish to conduct activities which require environmental authorisation. Consequently, this stakeholder group potentially comprises any organisation or member of society.

2.3.2. Environmental assessment practitioners

Any applicant wishing to apply for environmental authorisation is legally required to do so through the services of an Environmental Assessment Practitioner (EAP). The EAP provides guidance, writes the necessary reports, subcontracts specialists and acts on behalf of the applicant. Importantly, EAPs are required to act independently; they represent their clients in the process, but they are required to have no vested interest, financial or otherwise, in the outcome of the application. For example, if they observe illegal activities or attempts to bypass the process, they are legally required to report them. In order to operate as an EAP, individuals must register with a certification board known as the Environmental Assessment Practitioners of South Africa. Registration, and thus ability to conduct professional activities, may be revoked if EAPs are found to have behaved illegally.

2.3.3. Biodiversity specialists

Applications must be scientifically informed. As a result, biodiversity specialists are frequently contracted to conduct specific ecological surveys in order to identify potential impacts on sensitive biodiversity. Specialists must have a demonstrated scientific expertise in their field which usually takes the form of multiple advanced degrees, publications and professional experience. The

community of specialists is partially comprised of those who focus solely on consulting and partially on those who also hold other professional positions, such as within academic institutions. Specialists are required to act independently and provide their expert opinion on the potential impacts of an activity without favouring any party including the applicant. They are required to maintain membership with an authorising body which may be revoked if they are deemed to have behaved unethically or to have shown deliberate bias.

2.3.4. Land use advisors at provincial parastatal conservation agencies

Where there are potential impacts on biodiversity, input must be sought from specific commenting bodies. These are provincial parastatal conservation agencies which are mandated to represent biodiversity in government processes. These agencies are parastatal in that they are government funded yet are expected to maintain independence in order to play a watchdog role. The agencies fulfil multiple roles within their provinces, such as conducting biological research and managing provincial nature reserves. In both Western Cape and Kwazulu-Natal the agencies have staff, known as land use advisors, dedicated to commenting on EIA applications. Supported by in-house scientists, these teams of land use advisors review applications and provide their expert opinion on mitigation efforts and potential impacts of proposed activities on biodiversity. They frequently discuss the potential impact of applications with applicants and EAPs and provide guidance on which specialist studies are required.

2.3.5. Competent authority

Applications are processed by competent authorities, in this case provincial departments of environmental affairs. These government bodies play multiple roles in environmental management and are mandated with the facilitation of sustainable development. They contain teams of case officers dedicated to EIA applications which provide guidance to potential applicants, ensure the legality of the process and make the final decision about applications. To achieve this, they frequently consult with conservation agencies and other government departments. Within the EIA team, decisions are verified by multiple levels of hierarchy. The competent authorities are also responsible for compliance after authorisation.

2.4. Case study provinces

Two provinces were selected as case studies; KwaZulu Natal and Western Cape (see figure 2.3.). These provinces were selected because they combine high biodiversity, capacitated conservation

agencies and high development pressure. This combination of factors was selected so that the EIA process could be examined whilst functioning in a manner approximately equivalent to how it was originally intended. There is evidence that in other regions, both within South Africa and internationally, EIA does not effectively support decision-making (Sandham and Pretorius, 2008; Morgan, 2012). Where EIA is ineffective it is viewed as a façade, a process which has no effect on decisions and thus environmental outcomes. Whilst understanding the causes of this is undoubtedly a pertinent issue for both governance and environmental protection, it would not allow for insights into the EIA process itself. Conservation agencies in both of these provinces have developed and maintained world leading systematic conservation plans for the entire province, which identify priority areas for conservation. They also have provincial-level guidelines for biodiversity offsetting. As such, these provinces are suitable study areas not only for EIA implementation, but for the practical implementation of both biodiversity offsetting and SCP.

Figure 2.3. The provinces of The Western Cape and KwaZulu-Natal within South Africa.

2.4.1. Western Cape

Western Cape is home to the Cape Floristic region, a biodiversity hotspot and one of six floral kingdoms in the world (Cowling, R.M, 1997). As a result of the area's Mediterranean climate it is highly biodiverse and contains an unusually high frequency of endemic species and habitats which are spread in a mosaic across the province (Cowling and Heijnis, 2001). Cape Nature (CN) acts as the provincial conservation agency (see figure 2.1. for their CBA map). As such they manage 20 provincial nature reserves, run a pioneering stewardship program and a wide breadth of conservation initiatives (Cumming, 2015; Selinske *et al.*, 2015). Their counterparts are The Department of Environmental Affairs and Development Planning (DEADP) who arbitrate over all elements of provincial planning including the EIA process.

Western Cape is one of the wealthiest provinces in South Africa, indeed some of the most expensive land in the country is in the provincial capital, Cape Town. As such it experiences considerable development pressure, both from private enterprises and state agencies. This is largely planned, for example the Saldhana Bay area north of Cape Town has been designated an Industrial Development Zone (IDZ). This development pressure has caused friction between development proponents and conservationists; the Saldhana Bay IDZ contains multiple critically endangered ecosystems. The province also has large social pressures; Cape Town has some of the largest slums in the world and as a consequence, land use pressure is very high in many areas. This has political consequences, as provision of low cost housing and sanitation services for informal settlements are high priorities. The large numbers of informal settlements have also led to unusual challenges, for example flooding and fires have historically caused major impromptu relocations. As these relocations are enacted by impoverished communities and not organised by state agencies they bear little regard for formal planning processes. The challenges faced in land use planning, and thus EIA, are therefore complex.

2.4.2. KwaZulu Natal

KwaZulu Natal (KZN) is 92,100 km^2, roughly the size of Portugal and has three distinct bio-geographical areas. The coastal lowlands are home to subtropical thicket, the midlands comprise largely of savannah habitats and The Drakensberg Mountains host alpine grasslands. There are numerous threatened plant and vertebrate species, including charismatic megafauna such as rhinoceros and elephant. As well as containing multiple protected areas and two world heritage sites, iSimangaliso Wetland Park and Drakensberg Park, Kwazulu-Natal also has a network of private protected areas.

Biodiversity protection is the mandate of Ezemvelo KwaZulu Natal Wildlife (Ezemvelo), the provincial state agency, while EIA applications are managed by The Department of Economic Development, Tourism and Environmental Affairs (EDTEA). Ezemvelo is one of the most highly capacitated provincial agencies, runs an annual conference and notably manages all nature reserves within the province rather than just provincial level reserves.

KwaZulu Natal is demographically complex. Historically part of the Zulu Kingdom, areas of the province are still under traditional leadership structures. The provincial capital, Durban, has a high population of ethnic Indians and is reportedly the largest Indian city outside of India (Anahita Mukherji, no date). The province has a high wealth disparity and a breadth of social issues, including racially motivated violence and poverty.

Table 2.1. The government agencies within study provinces.

Province	Competent authority	Conservation Agency
Western Cape	Department of Environmental Affairs and Development Planning (DEADP)	Cape Nature
KwaZulu-Natal	Economic Development, Tourism and Environmental Affairs (EDTEA)	Ezemvelo KwaZulu-Natal Wildlife

2.5. Methodological Considerations

2.5.1. The need for grounding

In order to conduct impactful and insightful research into implementation, it is critical to first develop a strong understanding of the study context which informs research questions and methods (Evans *et al.*, 2017; Young *et al.*, 2018). It is critical therefore to undergo a "grounding" process, i.e. one where the researcher(s) attempt to discover as much as possible about the context of their study system (Strauss and Corbin, 1991; Russell-Bernard, 2006; Young *et al.*, 2018). In empirical social research, especially that which addresses the practicalities of implementation, this often

requires extensive open-minded investigation on the part of the researcher as the information required may not be documented, synthesised or publicly available (Strauss and Corbin, 1991). This section therefore briefly describes the efforts taken to ground this research in the South African context.

2.5.2. Initial investigations

I began the grounding process by conducting a general literature review of both the peer-reviewed and grey literatures regarding systematic conservation planning and environmental decision-making more broadly, both internationally and with specific refence to South Africa. Additionally, I conducted a systematic review designed to develop a database of spatial conservation prioritisations which was used in Chapter 3. Key search terms were entered into web of knowledge and papers were assessed against a set of criteria to determine whether they included a prioritisation. I also held scoping meetings with people at strategic positions within multiple South African organisations, both governmental and non-governmental. As a result of these meetings I ran a scoping workshop at the Biodiversity Planning Forum in 2014 where I facilitated a debate about potential research topics and methodological challenges. Based on the suggestions of this workshop I then conducted multiple further meetings with over 40 stakeholders from private, government and not-for-profit organisations and identified the Environmental Impact Assessment (EIA) process as the most suitable case study for investigating the practical implementation of environmental decision-making, systematic conservation planning and biodiversity offsetting.

2.5.3. Participant observation

One of the most widely used grounding techniques of social-anthropological research is participant observation (Strauss and Corbin, 1991; Russell-Bernard, 2006). This entails the researcher embedding within the study population, participating in their activities and observing their actions, culture and social paradigms. Accordingly, I established collaborations with both Cape Nature and Ezemvelo KwaZulu Natal Wildlife, and over the course of a year I spent approximately four months at each of their offices for a total of approximately eight months embedding. During this time I debated my research extensively with staff and designed my research through active discussion with them. I have maintained ongoing communications with people in both organisations since. Whilst at their offices I informally reviewed over three hundred EIA applications over the course of six months. This activity took around eight weeks in total and produced extensive notes which guided experimental design and analysis. I also attended internal meetings and discussed the practice of the EIA process extensively. As recommended by the anthropological literature I also participated

socially; I attended a traditional cultural dance, shopped at markets together, and hiked with government staff (Strauss and Corbin, 1991; Russell-Bernard, 2006). I then used this deeper understanding of the realities of the EIA process to develop my research methods. I determined that the participant observation was sufficient when I had a research plan which not only satisfied my key informants in that it addressed the most important elements of decision-making but that was also scientifically novel and rigorous.

In parallel with the participant observation I examined the quantitative aspects of the EIA process, which led to chapter Four. The results of this work identified that much of the substance of decision making occurred in confidential, undocumented stages, indicating the importance of qualitative research which was able to access these processes. Whilst the EIA literature in South Africa is extensive, there is a considerable deficit of qualitative research within it, reflective of the EIA literature more widely (Retief, 2007; Morrison-Saunders and Retief, 2012; Kågström and Richardson, 2015). As a result of this deficit of pre-existing studies upon which to base my methodological approaches, I applied techniques detailed in the sociological-anthropology and psychology literatures to address my research questions.

2.5.4. Grounded Theory

The Grounded Theory approach has been central to the design and execution of this research. Originally conceived of in 1967 by Glazer and Strauss, the approach is intended to provide researchers with a procedural framework for qualitatively examining complex social issues about which limited information exists (Glaser and Strauss, 1967). The process is inductive; rather than making hypotheses about a phenomenon and then testing them, researchers are encouraged to allow members of the study populations to guide them, especially during the early stages. For example, where many interview techniques use a pre-defined list of questions, Grounded Theory recommends using broad open-ended questions which allow the respondent to discuss what they believe is important, rather than what the researcher pre-supposes is relevant. The researcher must then ask follow-up questions to continue the avenue of investigation indicated to be pertinent by the respondents. This is also reflected in the analysis; transcripts or other data are read and “codes” are used to highlight sections, where a code is “the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon” (Boyatzis, 1998: 63). These codes are then arranged into themes which address broader topics and describe the data. Through this approach the theories emerge from, and are grounded in, the data. The advantage of this is that if the researcher has misjudged the factors which are critical to

understanding a study topic, they are likely to be corrected. This flexibility and proximity to primary data sets this method aside from empirical examinations of secondary data, allowing it to provide more nuanced results. This adaptive method of data collection must be matched with rigour however. As theories emerge, researchers must actively discuss them with respondents who have the appropriate knowledge or understanding to disprove or challenge them. It is also important to be thorough, interviews must be conducted until "saturation" is reached, i.e. no novel topics, angles or perspectives emerge during interviews. This often occurs after 15-25 interviews (Strauss and Corbin, 1991). Researchers must also be extremely aware and explicit about the bias they introduce to their work at every stage. For example, during interviews researchers must attempt to empathise with and understand their respondents and should reflect after about the potential biases they may have introduced. One weaknesses of Grounded Theory is that as it relies on the interpretive ability of the experimenter, it can be susceptible to experimenter bias or limitation. Additionally, many of the topics historically addressed using Grounded Theory are academic and do not directly inform implementation or practice. As a result, its use in addressing practical issues is under-developed from a methodological perspective. There are two main forms of Grounded Theory; Glazarian and Straussian. I used Staussian theory to inform my methods. As my research questions are different to those typically addressed by Grounded Theory however I have drawn from other fields and tailored my methods.

2.5.5. Methodological needs

The participant observation identified the importance of social mechanisms in the decision-making process, as well as highlighting that considerable elements of the EIA process were undocumented. For example, the discovery of sensitive biodiversity may lead to a redesign of the project footprint to mitigate the impacts. The process of redesign, however, is often the result of confidential discussions between the biodiversity specialists, EAPs and applicants. It was also clear that the EIA process was often not linear; rather than progressing through the stages in order, applications would often repeat stages or regress to earlier stages as development plans changed when additional information became available. It was also clear that decisions and events were often the result of multiple interacting elements, for example, a development may become economically unviable as a result of several factors acting together. Applications would progress smoothly only to lapse for unknown reasons and then remerge five years later. Projects would develop with a consistent vision only to alter dramatically at the last moment. Factors which dominated the debate in one instance would have no effect on a neighbouring application. Applications varied enormously in every way, and almost every appli cation contained a feature seemingly unique to that circumstance; essentially

there was no “normal” application. This complexity presented a significant obstacle to the research, because each application contained a large number of factors from a wide range of categories, all of which were interacting simultaneously and often without documentation. The process in practice appeared to differ considerably from the process portrayed by legislation or guidelines documents. As the study was exploratory, it was important that the research identify the drivers of the decision-making process, whatever form they might take. Not only is this complexity challenging to address, but due to the wide range of factors and interactions occurring there is a high potential to introduce bias through study design. For example, a social network analysis may highlight the quantity of interactions, but would be unable to identify whether this was the most important mechanism of

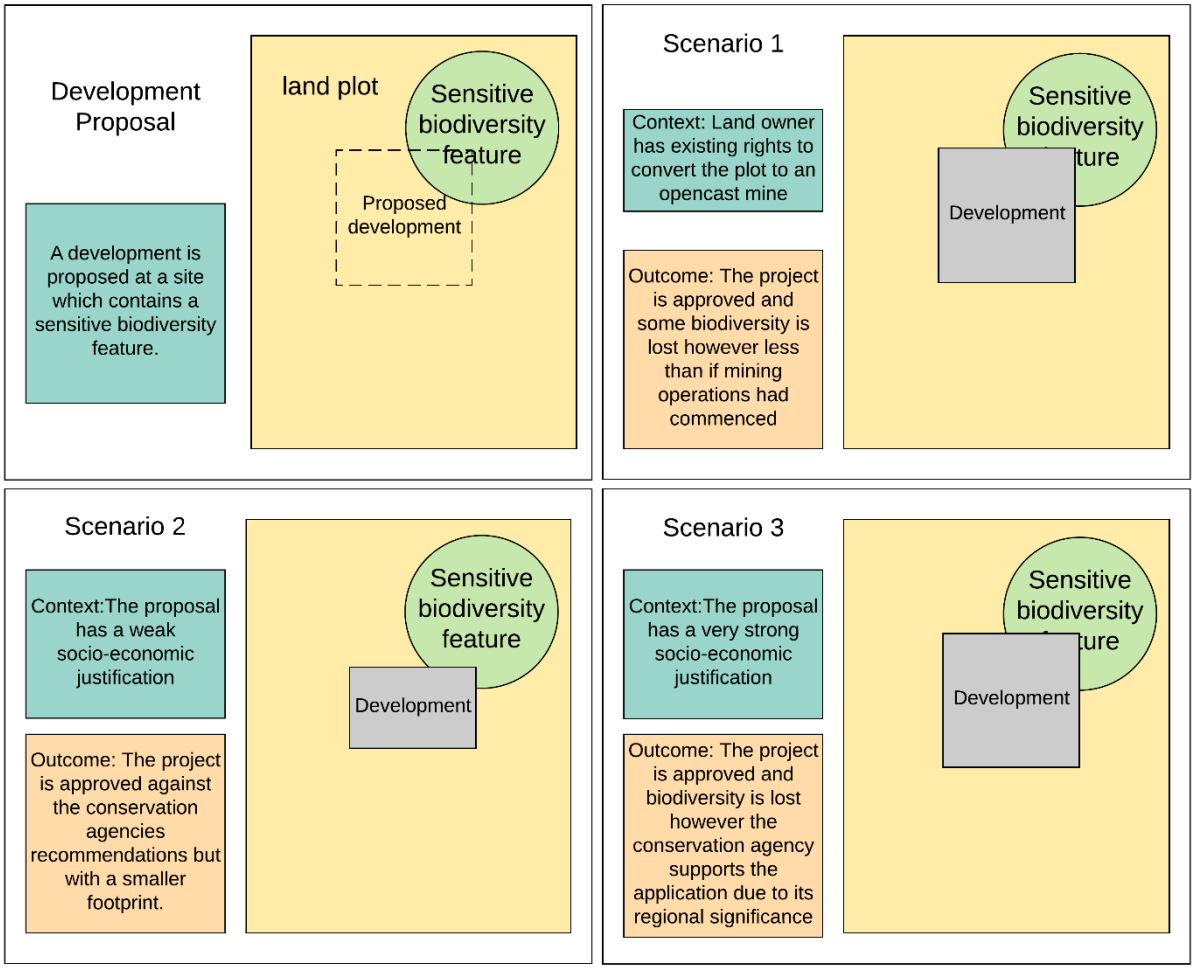


Figure 2.4. The extent to which the outcome of a decision is positive or negative from a conservation perspective can be highly contextual. From the perspective of a conservation agency, Scenario 1 may be perceived as a better outcome than Scenario 2 despite leading to more loss of biodiversity. Equally, Scenario 3 may be perceived as a better outcome than Scenario 1 despite having equivalent biodiversity loss.

the process, or an emergent property of other mechanisms. There was a clear need therefore for methods which would:

1. Be sufficiently flexible and rigorous to record, analyse and contrast a broad range of potential factors to understand the critical drivers of decision-making

For example, factors which emerged during participant observation which were potentially central to the process included; scientific evidence, corruption, legislation, personal relationships, political pressure, incompetence and cognitive biases. As it was unclear which of these were central to the process and which were incidental, it was important that the methods were able to adapt to detecting a wide breadth of phenomena.

2. Be able to examine both documented and undocumented stages

The EIA process contains multiple stages which incorporate both those with considerable documentation, such as the final application, and those with limited or no documentation, such as those where corruption or political influence occurs.

2.6. Developing research methods

Based on the grounding efforts, I used interview-based research methods for Chapter Five and Six and a mixed methods approach for Chapter Four. Two separate methods were used to address the overall objectives of the thesis, in order to allow for triangulation. As with much research, the chapters within this thesis were designed, executed and written in parallel rather than in series. As such, they informed and interacted with each other, as visualised in Figure 2. 5. In order to provide an understanding as to the rationale behind the methods used, a brief summary of the approaches and the connections between chapters is detailed.

2.6.1. Brief overview of Chapter Three's methods:

Chapter Three uses an online questionnaire to examine the design and usage of spatial conservation prioritisation at a global level. The questions were designed to explore the aims and objectives of the prioritisations, the methods by which they were designed and the extent to which they lead to implementation. Respondents were recruited through two means; a search of the peer reviewed literature and a snowballing technique designed to elicit responses from authors of non-peer-

reviewed plans. A cluster analysis was then used to identify groups within the data to provide insights into the global use and application of spatial conservation prioritisations.

2.6.2. Brief overview of Chapter Four's methods:

Chapter Four is a mixed methods study of the influence that conservation agencies have on applications as they progress through the EIA process. Due to availability of data, this Chapter focused solely on the province of KwaZulu-Natal however Chapters Five and Six addressed both study provinces. The participant observation and the analysis of EIA documents suggested that the first response from conservation agencies to applications was an effective proxy for the for overall nature of the application; for example, whether it was straightforward and likely low impact, or complex and potentially high impact. A categorisation was developed through document analysis and then refined through the interviews conducted in Chapter Five. A pre-existing indicator used internally as a measure of the influence of conservation agencies was also used. Land used advisors were then asked to apply both of these categorisations to applications which were legally initiated within CBAs in 2013. These results are explored to provide quantitative insights into what “business as usual” represents in terms of the progression of applications through the process, and the influence of land use advisors on the final decisions.

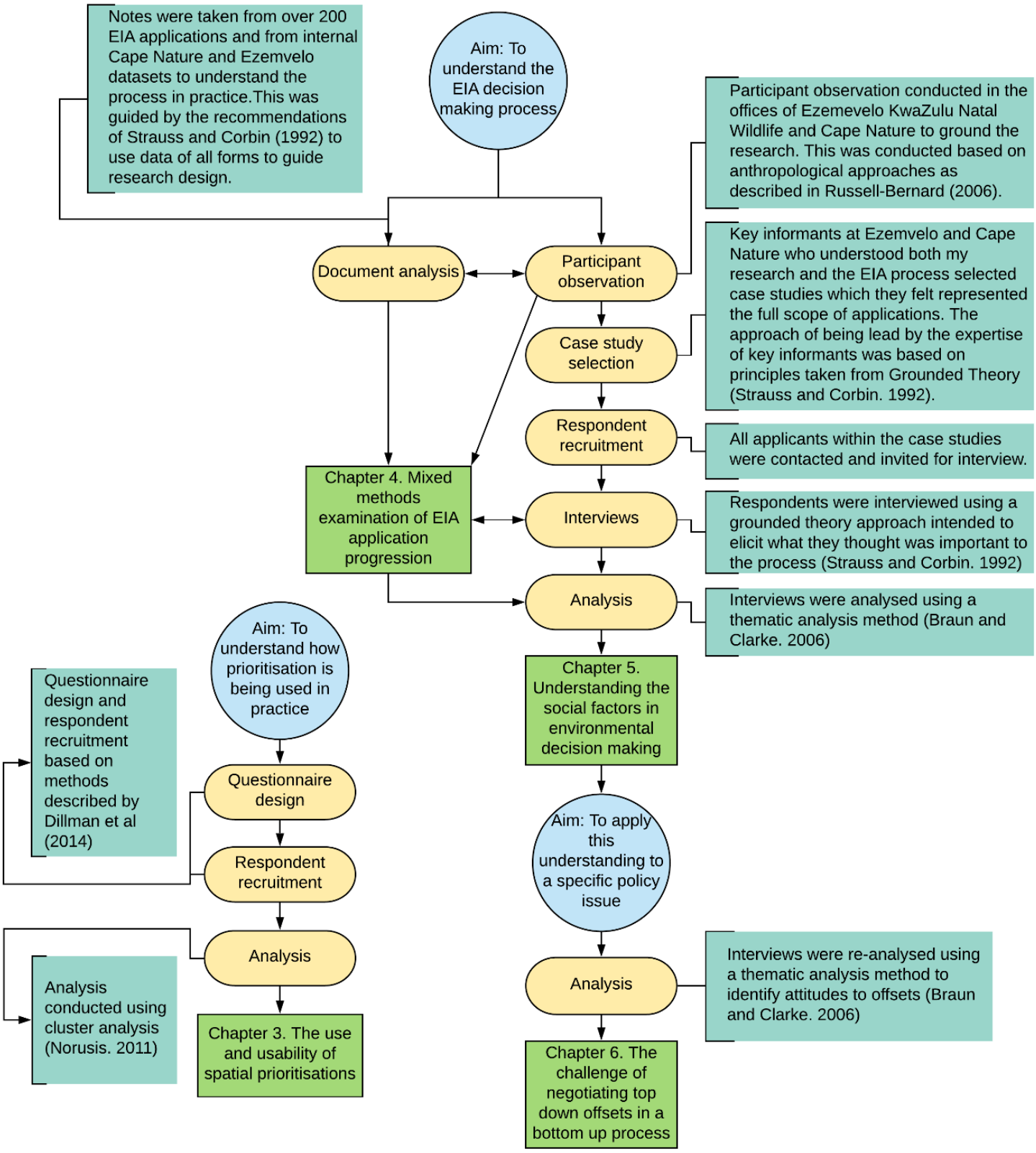


Figure 2.5. The flow and connection between chapters and methods.

2.6.3. Brief overview of Chapter Five's methods:

To provide a flexible method of data collection capable of examining the undocumented stages of the EIA process, interviews were used in Chapter Five and Six (Figure 2.5.). First, I asked my key informants at Cape Nature and Ezemvelo to identify 10 case studies from each province which they felt between them illustrated the full breadth of variation between applications within the EIA process; i.e. political cases, unremarkable cases, cases with sensitive biodiversity, controversial cases, cases which incorporated biodiversity offsets etc. I then contacted all the stakeholders involved in these applications and invited them to participate in interviews. I interviewed those that were available using a grounded theory method. I then had the interviews transcribed by hand by a reputable company and finally, I conducted a thematic analysis on the data.

2.6.4. Brief overview of Chapter Six's methods:

Chapter Six applies the findings of Chapter Five to understand the implementation challenges of biodiversity offsets using data from the interviews which related to biodiversity offsets, which was not analysed in Chapter Five, and a separate analysis. Many of the respondents raised the topic naturally. Those that didn't were asked about their experiences with biodiversity offsets. All references to offsets were then examined using a thematic analysis.

2.7. On bias and inspiration

"it is fascinating that so many respondents reported that "Computer-based analysis was the sole means for conducting the prioritisation", as if no expert knowledge or subjectivity was used to decide what area to analyse, what datasets to use, and how the computer model should go about selecting prioritization areas! This is inherently contradictory, but it is fascinating in what it says about how conservationists think of their actions as entirely apolitical, neutral and objective, as if they were autonoma without any kind of subjectivity or value judgement."

- Reviewer #1 for the publication that resulted from Chapter Three

2.7.1. Personal experience

I began my career by completing an undergraduate degree in Biology. Shortly after, I worked in South Africa at two field stations and developed an interest in conservation. To further this interest, I studied Conservation Science at Imperial College London, successfully completing my master's degree. I then worked work NGOs in a number of African countries, translating the education I'd had

into practice. Whilst I was involved in a range of projects, I predominantly focused on community governance elements of conservation. In Tanzania I lived in a small village and actively negotiated land use plans with the intention of preserving wildlife corridors. This work was essentially a combination of policy development and anthropology, I was trying to develop an understanding of local cultures with the aim of delivering both improved land management and conservation outcomes. Through this work I developed first hand experiences of the negotiated realities of many legal systems. Whilst in Zambia I worked with government agencies and traditional leadership to foster the development of community fishery management organisations. In this work I tackled the challenges of translating national acts in to a locally relevant set of guidelines and principles.

Whilst my earlier education grounded me in a quantitative science, I had worked at the interface between theory and practice for six years before starting my PhD. I was therefore very familiar with the contextual challenges that can present barriers to seemingly well-designed systems and approaches. These insights proved very useful in the design and implementation of my doctoral research.

2.7.2. Specific biases

In order to provide an insight into how my personality may have affected my results, I now describe the actions I took to address the larger potential biases that I perceived.

Bias towards the land use advisors at the conservation agencies

It would be very reasonable to assume that after having spent so much time at the conservation agencies in The Western Cape and KwaZulu-Natal, I may be biased towards this stakeholder group. These people are my friends and I am grateful to them for the considerable time they invested in me and the welcome they showed me. They were very clear however that they wanted to know how the system in which they operated functioned. They were not interested in being glorified but wanted to understand what was going on so that they could achieve more. As a result, it's very clear that if I were to favour them in some way, that I would be doing them a disservice as I would present a less truthful report, which could in turn lead them astray. Whilst I do like these people, it is because of that that I have been careful not to favour them in my study.

Bias towards or against environmental assessment practitioners

Surprisingly I found that I identified the most with this group. They sat in the middle of negotiations and addressed problems with aggressive pragmatism, a position I have found myself in multiple

times. It was hard to interview the less ethical EAPs, I felt that they were lying to my face as they directly contradicted things that had either been verified by multiple respondents or legal documents. However, I made a concerted effort to empathise with them and withhold judgement. They generally didn't see themselves as unethical but as players within a larger uncaring game. Seen through this lens I found it much easier to understand their actions.

Bias towards exciting results

Every scientist wants to make exciting, ground-breaking, paradigm shifting discoveries! I was aware therefore that during my analysis, I might be tempted to over-emphasise my results or to choose to interpret something in a more dramatic fashion. To combat this, I followed the advice given by many social scientists, which is to get as close as possible to my data. I put aside all of my theories before analysing and made sure that I really read the transcripts and listened carefully to the interviews. Unsurprisingly perhaps, many of the ideas that emerged during analysis had already popped up in one form or other earlier in my PhD. Where this happened, I sought out sections of the interviews where the respondent explicitly described the theory and triple checked that I hadn't contaminated the interview by mentioning it at an earlier stage. I also used the fact that I analysed stakeholder groups separately as an extra check; I only reported on phenomenon independently described by separate stakeholder groups.

Bias towards optimism

I have a tendency to be optimistic and believe that I am capable of achieving what I set my mind to. I was concerned therefore that I might paint a more optimistic picture of the study system than was justified. One of the reasons for including the mixed methods approach in Chapter Four was specifically to provide a quantitative check in order to effectively calibrate my results.

Bias imposed by my training

My undergraduate degree is in Biology, an intrinsically quantitative science. In developing the methods for this research, I struggled at times with the adaptation to qualitative science. It was challenging to understand which elements of the methods are central to robust social science and which are flexible and can be adapted to suit my needs. Part of this process was one of gathering sufficient experience to confidently work with the occasionally esoteric and intangible concepts which make up qualitative research. As a result, I probably spent more time grounding my research than was necessary, but I do feel that this led to better research. Part of the challenge was also that of meshing methods and approaches from different fields to address my research questions.

Learning to do this whilst maintaining a clear and consistent epistemology was time consuming but I feel ultimately led to a clearer understanding of the inherent assumptions of my methods and approaches.

Opportunities of my experiential background

Prior to starting my PhD, I had worked for NGOs in multiple African countries. As a result, I was often very close to the coalface of conservation action, I lived in grass huts, tracked poachers and negotiated with councils. This gave me a practical insight which I feel was essential for this research.

3. The use, and usefulness, of spatial conservation prioritisations

"Well, it may be all right in practice, but it will never work in theory"

- Warren Buffet, Berkshire Letters, 1984

3.1. Introduction

Threats to biodiversity are a global challenge (Venter *et al.*, 2016). Organisations seeking to protect biodiversity inevitably make difficult trade-offs in deciding where to concentrate their efforts (Margules and Pressey, 2000). Experts can provide useful guidance to decision makers but there are limitations in their ability to address complex spatial optimisation problems (R. M. Cowling *et al.*, 2003; Martin *et al.*, 2012). As a result, spatial conservation prioritisation (hereafter referred to as prioritisation) has emerged to address this challenge. Prioritisation is defined as the "biogeographic-economic activity of identifying important areas for biodiversity; where, when and how we might efficiently achieve conservation goals" (Kukkala and Moilanen, 2013). Prioritisation, synonymously known as conservation assessment, is often contained within a larger systematic conservation planning (SCP) process, which uses one or more operational models to both design and translate prioritisations to on-the-ground conservation action (Kukkala and Moilanen, 2013; Groves and Game, 2016). There are many options for incorporating ecological understanding in decision making processes, but SCP represents an adaptive approach for spatially considering complex biological data in a collaborative process which includes key stakeholders. The operational models and supporting literature make multiple recommendations to improve the effectiveness of prioritisation. Central among these recommendations are the involvement of stakeholders in the development process, identification and collaboration with end users early in the process and the delivery of final products in a user-useful format, such as by producing supporting documents (Theobald *et al.*, 2000; Pierce *et al.*, 2005; Jumin *et al.*, 2017). These approaches help deliver conservation outcomes though improving stakeholder buy-in, increasing trust and improving communication (Pierce *et al.*, 2005; Knight *et al.*, 2006; Bottrill *et al.*, 2012).

Prioritisation has received considerable investment, reflected in academic publications, software development and legislation (Cullen, 2013; Kukkala and Moilanen, 2013; McIntosh *et al.*, 2017). It is unclear however whether there has been widespread development and implementation of prioritisations and consequently, what return this investment has yielded. A decade ago, Knight et al (2008) found that only 5.7% of conservation assessments in the peer-reviewed literature "documented the implementation of actions that promoted nature conservation on-the-ground", suggesting that prioritisations may be subject to the so-called implementation gap (McNie, 2007; Sutherland and Pullin, 2007; Milner-Gulland *et al.*, 2009; Cook *et al.*, 2013). To determine the extent to which this gap still exists, this chapter addresses this knowledge deficit by examining both the peer reviewed and "grey" literatures to identify global distribution of prioritisation use, the extent to

which the recommendations of the literature for collaborative co-creation are being followed, and whether prioritisations are translating to on-the-ground implementation of conservation actions.

3.2. Methods

3.2.1. Recruitment of authors of spatial conservation prioritisations

This research was conducted through an online survey targeting individuals who had conducted a prioritisation activity. Potential respondents were identified through a literature review and a snowballing technique. I used a keyword search in ISI Thompsons Web of Science to return papers containing prioritisations (Appendix 9.1.). The search returned 15,588 papers which were refined by reading article titles or abstracts, or the body of the paper, and assessing whether an article detailed a prioritisation. I applied 6 criteria to identify papers containing prioritisations (Appendix Table 9.1.). The literature search returned 645 articles. Email addresses for lead authors were extracted from Web of Science. As email addresses were infrequently provided for authors before 2003, only papers published after 31/12/2002 were included. Lead authors were invited by email to participate in the survey. Email addresses were available for 587 authors. Of these, 79 were identified as no longer functional by failure notifications, although the actual number is likely higher.

I used a snowball approach to recruit respondents who had not published their prioritisations in the peer-reviewed literature. Sixty-eight experts, identified by publication records or reputations, were invited via email to identify individuals who had developed non-peer-reviewed prioritisations. Potential respondents were contacted by email and asked to suggest other potential respondents. This process was repeated until no further authors were identified. Through this method 161 additional authors were contacted. This research was conducted in line with Imperial College London's ethics procedure. Before starting the survey, respondents were presented with a detailed explanation of the purpose and aims of the research. The identities of respondents have been kept confidential.

3.2.2. Survey design

Questionnaire design was informed by the prioritisation literature; questions were designed to identify what purpose prioritisations were being designed for, whether they were in line with the recommendations of the peer-reviewed literature and whether they translated into on-the-ground implementation. Respondents were asked questions about four main elements:

1. The respondent: which type of organisation did they work for?
2. The development process: was the process computer or expert driven, who was involved, what data was used?
3. The intentions: what was the primary aim of the prioritisation, was it intended to translate to on-the-ground implementation, were specific outcomes intended?
4. The consequences: was a conservation intervention attempted on-the-ground, were impacts achieved, was a peer-reviewed publication produced?

An online software, Qualtrics®, was used to host the questionnaire. Table 3.1. illustrates the questions addressed in the questionnaire, response options are available in the Appendix (Tables 9.2 and 9.3). A metric for the extent to which prioritisations were collaborative was calculated by multiplying the number of stakeholder groups "Strongly involved" in development by two and the number "consulted" by one and summing the result. Where potential respondents had developed multiple prioritisations, they were asked to report on the most recent one so as to limit the potential for personal biases. Because of the bias towards recent prioritisations this introduced, temporal trends could not be assessed.

3.2.3. Cluster analysis

To identify groups in the data we used a cluster analysis, a technique which separates the responses into clusters which share similar characteristics. I used two-step clustering in IBM SPSS software with a log likelihood distance measure as the data consisted of both ordinal and categorical variables and the number of groups was not known *a priori.* Two-step clustering is a data-driven approach and uses a pre-clustering method, an inherent part of the two step method which identifies the most appropriate number of clusters, followed by a hierarchical aggregative procedure, which allocates prioritisations to clusters (Norusis, 2011). A cluster analysis was used because variables were expected to vary in the extent to which they predicted whether a prioritisation was realistically expected to lead to implementation. Schwarz's Bayesian Criterion was used to determine cluster number (Schwarz, 1978; Barabba, 1990). Prioritisations were clustered based on key variables that indicated the intended purpose and the approach used in the development of the prioritisation (Table 3.1.). Variables which were unlikely to be key determinants of implementation, yet which pertained to development approach and purpose were used to compare and contrast between clusters (Table 3.1.). These variables were determined through discussion between the authors based on the recommendations of the literature.

The silhouette coefficient, a measure of both cohesion (i.e. how similar elements are within clusters) and separation (how different elements are between clusters), was used to assess the goodness of fit of the cluster solution. For categorical and ordinal input variables, the percentage of cases in each of the modal categories was used to interpret the clustering.

Table 3.1. The questions addressed in the questionnaire, the responses to which were used as predictor variables in the cluster analysis or as comparison variables in order to contrast clusters. Response options are detailed in Appendix Table 9.4.-9.16.

Cluster input variable	Results
Was the prioritisation undertaken to achieve any specific outcomes?	Appendix Table 9.4.
Was the prioritisation was intended to translate to specific implementation?	Appendix Table 9.4.
Was the prioritisation designed to comply with any laws	Appendix Table 9.4.
To what extent was an end user identified and involved?	Appendix Table 9.5.
To what extent were NGOs involved	Appendix Table 9.6.
To what extent was government involved	Appendix Table 9.6.
To what extent were academics involved	Appendix Table 9.6.
Collaboration metric	Appendix Table 9.7.
What was the single most important intended outcome?	Appendix Table 9.8.
Which of the following best describes your process?	Appendix Table 9.9.
Did you produce a peer reviewed article?	Appendix Table 9.10.
Comparison variable	Results
Has a conservation intervention been attempted on the ground at the priority areas identified by this prioritisation as a direct result of the prioritisation?	Appendix Table 9.11.
What data did you use in the prioritisation?	Appendix Table 9.12.
What products did you produce?	Appendix Table 9.13.
Would you say that overall the prioritisation was effective in achieving its goals?	Appendix Table 9.14
What software was used?	Appendix Table 9.15
Why was the area selected?	Appendix Table 9.16

3.3. Results

I secured 161 responses in total. There were 107 responses from the authors of papers published in the peer-reviewed literature, a 21% response rate which represents 17% of the total literature identified. The snowballing technique secured 54 responses, 34% of the 161 people contacted. Of

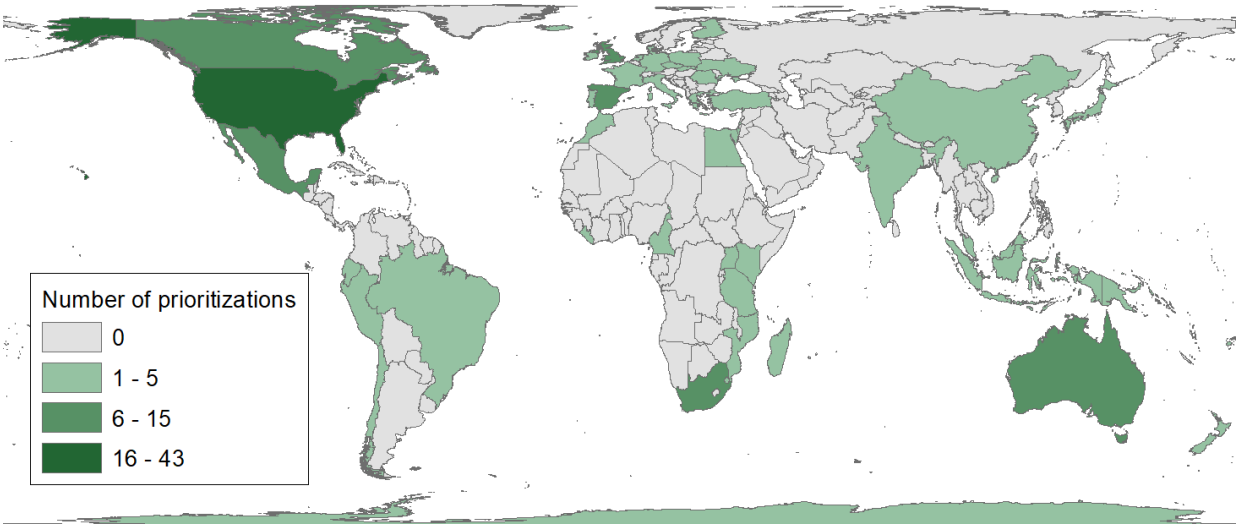


Figure 3.1. The distribution of prioritisation development.

those that began the survey, 96% completed it. There was an imbalance in responses towards peer-reviewed prioritisations; 80% of prioritisations reported on had been published in the peer-reviewed literature. Respondents worked for universities in 51% of cases, governments 23% and conservation NGOs 16%. No respondent completed multiple questionnaires. Prioritisations were developed for areas within the USA in 24% of instances, Australia in 10% and Canada and South Africa in 5% respectively (Figure 3.1). Overall 47 separate countries were represented in addition to 9 multinational prioritisations. Development of prioritisations was led by universities in 36% of cases, by governments in 34% and by conservation NGOs in 22%. Respondents reported covering terrestrial (57%), marine (16%), freshwater (16%) and coastal (11%) realms and 26% reported covering multiple realms.

3.3.1. Prioritisation developers, methods and goals

Schwarz Bayesian Criterion produced a two cluster solution determined by highest ratio of distance (Appendix Table 9.18.), with a silhouette coefficient of 0.2 (results between 0.2-0.5 are considered a fair solution; (Norusis, 2011)). Responses were split, 69 (42%) were allocated to Cluster 1 and 96 (58%) to Cluster 2. The most important variable for determining cluster membership was whether the prioritisation was intended to translate to specific implementation (Table 3.2.). The extent of

collaboration, identification and collaboration with an end user and the involvement of NGOs and governments were also important in determining cluster membership. The involvement of academics had a negligible effect on cluster membership. Both included examples from all 7 continents; Cluster 1 included plans from 26 countries and 7 multinational regions (e.g. sub-Saharan Africa) and Cluster 2 included plans from 39 countries and 2 multinational regions.

Table 3.2. The relative importance of cluster input variables in predicting cluster membership as determined by the two-step cluster analysis, where importance is scored between 1 (most important) and 0 (least important.

Cluster input variable	Predictor Importance
Was the prioritisation was intended to translate to specific implementation?	1
To what extent was an end user identified and involved?	0.87
Collaboration metric	0.83
To what extent were NGOs involved	0.7
To what extent was government involved	0.69
Did you produce a peer reviewed article?	0.4
Was the prioritisation designed to comply with any laws	0.32
Which of the following best describes your process?	0.26
What was the single most important intended outcome?	0.24
Was the prioritisation undertaken to achieve any specific outcomes?	0.24
To what extent were academics involved	0.06

3.3.2. Characteristics of Cluster 1: advancement focused prioritisations

These prioritisations were intended to translate to specific implementation actions in 24% of cases. They were less collaboratively developed than those in Cluster 2 with an average collaboration metric of 3 and end users (such as government or conservation NGOs) were infrequently identified (29%) or involved in development (9%). All prioritisations in this cluster were published in peer-reviewed journals. These prioritisations were rarely created to comply with laws (13%) and were more frequently developed using computer-based processes (70%) than expert. Respondents reported that over half (55%) were intended to lead to specific outcomes with the majority

intending to improve prioritisation techniques (45%) or to contribute to creating a more effective protected area network (35%). Academics were strongly involved in 76% of cases.

These prioritisations were reported to have led to on-the-ground implementation or were in the process of being implemented in 21% of instances and 57% of respondents reported that they considered that their prioritisation was either “somewhat effective” or “very effective” in achieving its goals. The outputs of these prioritisations were largely electronic maps (78%) and peer-reviewed publications (100%), hard copy maps (41%) and reports (42%). They were developed using multiple types of software but most frequently GIS (49%) and they used on average 4 distinct categories of data. The study area for the prioritisations were predominantly chosen due to threats to the study area (52%), because the data already existed (51%) and because of the presence of target species (50%) and important ecosystems (49%).

3.3.3. Characteristics of Cluster 2: implementation focused prioritisations

These prioritisations were predominantly intended to lead to specific on-the-ground implementation (87%) and end users were frequently identified and involved in the development process (74%). They were more collaborative than Cluster 1 with an average collaboration metric of 8, involving NGOs (59%) and governments (71%). They were published as peer-reviewed articles in 63% of instances. They were often developed to comply with laws (51%), and used approaches that were more frequently either expert driven or a mix of computer and expert driven than those in Cluster 1 (55%). They were frequently intended to deliver specific outcomes (85%), most frequently improved protected area networks (37%) or incorporation of biodiversity into government processes (26%). Academics were often strongly involved (69%).

Respondents reported that these prioritisations frequently led to on-the-ground implementation or were in the process of being implemented (74%). Three quarters of respondents reported that they considered that their prioritisation was either “somewhat effective” or “very effective” in achieving its goals. Prioritisations in this cluster were associated with multiple outputs; respondents reported producing electronic maps (96%), usage guidelines (70%), policy briefings (57%), media articles (55%) and reports (83%). Data pertaining to implementation was used more frequently in Cluster 2 than in Cluster 1; cost of implementation (33%), land use (82%) and threat data (78%) were more frequently used. They were most frequently developed using GIS (60%) and Marxan (34%) and used on average 6 distinct categories of data. Study areas were selected for multiple reasons, predominantly the

presence of important ecosystems (68%), target species (57%), threats to the area (58%) and/or because it was the area in which the prioritisation developer already worked (61%).

3.4. Discussion

Our results segregate prioritisations into two clear clusters. Cluster 1, the advancement cluster, comprises advancement focused prioritisations developed by academics predominantly without intention to be translated into action but rather to deliver technical advances. Cluster 2, the implementation cluster, comprised prioritisations that were predominantly intended to lead to on-the-ground implementation.

Whilst it can be argued that prioritisations are inherently intended to lead to action (Knight *et al.*, 2008), those in the advancement cluster were only intending to do so in a quarter of instances. Instead their primary aims were to "improve prioritisation techniques" or to "contribute to more effective protected area networks". These tools were also developed less collaboratively and were more focused on computer-driven than expert-driven approaches, as would be expected if the primary aim was to deliver technical advances. Interestingly, respondents stating their approaches were entirely computer driven did not appear to consider their experts efforts in developing the prioritisation to be an expert contribution. Those that intended to contribute to scientific debate and deliver technical advances potentially achieved their objectives, as all prioritisations in this cluster were published in a peer-reviewed journal. Despite being predominantly technical exercises, 21% of these prioritisations were reported to either have translated to on-the-ground implementation or be in the process of being implemented.

Prioritisations in the implementation focused cluster were predominantly intended to lead to action and to achieve a broader set of goals than those in the advancement cluster, in particular to contribute to "more effective protected area networks" and to "incorporate biodiversity into government processes". These prioritisations are inherently more practical and are intended more often as political tools than those in the advancement cluster. As a consequence, implementation focused prioritisations are designed more collaboratively, are associated with supporting products and routinely identify and involve end users. These collaborative development approaches align with recommendations in the literature, appear to be embedded in larger SCP frameworks and suggest a clear intent to translate prioritisations into action through engagement of larger socio-political processes (Cowling and Pressey, 2003; Pierce *et al.*, 2005; Jumin *et al.*, 2017; McIntosh *et al.*, 2017). Interestingly, in practice prioritisations are used infrequently for fundraising or improving

organisational effectiveness but instead for delivering more effective protected areas and engagement with government decision-making processes, often to address specific legislations. As one respondent put it “Prioritisation is not an exact science, but a dialogue that software tools can effectively mediate”.

I am cautious to extrapolate reported implementation to on-the-ground effectiveness. Measuring effectiveness of conservation actions is notoriously challenging and was beyond the scope of this study (Sutherland *et al.*, 2004). Additionally, it must be highlighted that as these results are self-reported, findings regarding effectiveness should be treated as perceptions and therefore prone to a range of biases. It is important that future research examines these prioritisations and establishes whether the on-the-ground implementation that respondents reported is actually contributing towards achieving conservation goals.

Accessing prioritisations outside of the peer-reviewed literature is challenging. There is no single database, there are language barriers and they are often not disseminated. As a result, the majority of responses we collected were derived from peer-reviewed literature. Additionally, it is likely that a limited number of experts are responsible for multiple prioritisations due to the specialist skills required. As each respondent filled out a single questionnaire these experts may be underrepresented in this study. Despite these limitations I feel I obtained a reasonable sample of available studies for undertaking the cluster analysis. Half of the respondents worked for universities, suggesting that practitioners were well represented in the results. Including the grey literature also helped deliver global coverage. I received responses from 64 discrete countries and 9 multinational areas. The survey is also supported by previous work: the characteristics of the advancement cluster are similar to the findings of a previous survey of the peer-reviewed literature (Knight *et al.*, 2008). The finding that prioritisations in the advancement cluster were intended to translate to on-the-ground implementation in 24% of instances is similar to Knight et al.'s (2008) finding that 26% “had the objective of implementing some form of action”. However, these results build on this finding with information from the grey literature, which paints a very different and previously untold story.

There is a commonly perceived gap between conservation academics and practitioners (McNie, 2007; Sutherland and Pullin, 2007; Cook *et al.*, 2013). While prioritisations in the advancement cluster were predominantly driven by the academic community and were less likely to be implemented, these findings suggest that the approaches developed through these methodological

advances appear to have been broadly adopted and used in practice to guide implementation. Additionally, I found that academics were frequently directly involved in implementation-focused prioritisations and that the peer-reviewed literature is open to publishing practice-driven research, suggesting that this potential gap is being bridged through collaboration. These findings therefore suggest that the considerable efforts invested in developing prioritisation techniques, and the SCP operational models in which they are embedded, have led to the development of globally-used tools that are guiding conservation decisions, while also generating novel science.

4. Achieving conservation influence within Environmental Impact Assessment

"Some people are heroes. And some people jot down notes."

- Terry Pratchett, from the book “The Truth”, 2000

4.1. Introduction

Habitat loss stemming from development is one of the most pressing threats to biodiversity (Venter *et al.*, 2016). Development is rarely unregulated however; the vast majority of countries use planning processes such as Environmental Impact Assessment (EIA) (Morgan, 2012). The role of EIA is to provide decision makers with an independent, objective means of understanding the potential environmental impacts of an activity, usually a development, thus allowing them to make an informed decision about whether or not to permit the activity to proceed (Chanchitpricha and Bond, 2013). Originally created to address public concerns about pollution in the USA (Bonneuil, 2015), EIA has since expanded globally to address impacts to biodiversity and ecosystem services (Slootweg and Kolhoff, 2003). Whilst EIA is a fine scale tool, it meshes with planning processes that operate at other scales; international biodiversity targets outlined in the Sustainable Development Goals (SDG) and Convention on Biological Diversity (CBD) (United Nations, 1992; SDG, 2015) guide nations in developing national conservation strategies (e.g., National Biodiversity Strategic Action Plans (COP, 2002)), which can influence fine-scale implementation of EIA processes to regulate environmental impacts of developments on a case-by-case basis (United Nations and CBD, 1992; United Nations Department of Economic and Social Affairs, 2015). EIA is therefore a critical part of realising international agreements about the conservation of biodiversity and environmental sustainability (United Nations and CBD, 1992; United Nations Department of Economic and Social Affairs, 2015). EIA also represents a process by which not only the public sector, but also the private sector are responsible for the conservation of biodiversity, contributing to international aspirations to "mainstream biodiversity" (Redford *et al.*, 2015). Whilst it connects to wider goals, the purpose of EIA is to establish through informed, transparent debate, whether and how a development may be realised with an acceptable level of environmental impact (Morgan, 2012). Acceptable impact is often defined as No Net Loss (NNL) of Biodiversity against a baseline, the definition of which varies between nations (Maron *et al.*, 2018). To this end, applicants produce a proposal detailing the intended development, its potential impacts and proposed mitigation efforts. These are determined through application of the mitigation hierarchy, which prescribes that sensitive areas must first be avoided (BBOP, 2012). If this is not possible then the impacts must be minimised, rehabilitated, or compensated through a biodiversity offset (BBOP 2012). Proponents of environmental protection and biodiversity conservation have recognised the potential of EIA to contribute to wider environmental and conservation goals and so have engaged with the process at global, national and local levels (Brownlie, 2005; Jay *et al.*, 2007; Morgan, 2012). There has been extensive debate on the theory and practice of biodiversity offsetting (Bull *et al.*, 2013; Maron *et al.*, 2016) and systematic

conservation planning has used internationally to incorporate biodiversity into government processes such as EIA (McIntosh et al. 2017; Driver et al. 2003, Chapter Three).

There is however considerable debate as to the extent to which EIA is able to effectively contribute to informed decision-making (Cashmore *et al.*, 2004). Multiple categories of effectiveness have been identified (Figure 4.1) (Chanchitpricha and Bond, 2013) and the issue of whether the EIA actually achieves effectiveness within these categories as been deemed "interminable" (Cashmore *et al.*, 2004). It is therefore pertinent to understand the degree to which EIA is effective in this regard. There are however countless cases of decisions being made by state entities against scientific advice with negative consequences for the environment and there are concerns that the mitigation hierarchy is often incorrectly applied, resulting in a failure to achieve goals of NNL within a reasonable timeframe (Gibbons *et al.*, 2017; Phalan *et al.*, 2017; Sutherland and Wordley, 2017). There is also considerable motivation for development proponents to avoid mitigation efforts which are not only expensive to execute but may additionally reduce the ongoing profitability of their enterprises (Forester, 2008). To present a check against this, many nations use agencies which are mandated to safeguard biodiversity and the environment to play a watchdog role with the process, providing input, reviewing evidence and putting impacts into a wider perspective (Parliament of the Republic of South Africa, 2004; The Parliament of the United Kingdom, 2017). As such, these bodies play a critical role in connecting the recommendations of conservation scientists to decision-making processes. If EIA is to contribute to the CBD, SDG and biodiversity conservation more generally, then the extent to which these conservation agencies are able to actually influence the process is a critical consideration. It is therefore important to understand the degree to which agencies are able to achieve their legal mandate of influencing the EIA process in a scientifically informed manner to ensure the meaningful application of the mitigation hierarchy with respect to biodiversity.

Studying the implementation of EIA is complex; as well as combining multiple definitions of effectiveness, the process contains myriad interactions and dynamics between a wide range of stakeholders (Zellner *et al.*, 2008; Kågström and Richardson, 2015; Bond *et al.*, 2016). There have been theoretical examinations of the process at a system level (Prenzel and Vanclay, 2014; Bond *et al.*, 2016) however there is a lack of empirical studies of implementation (Forester, 2008; Fischer and Onyango, 2012; Prenzel and Vanclay, 2014; Kågström and Richardson, 2015; Bond *et al.*, 2016; Bull, Lloyd and Strange, 2017). One of the barriers to study is that of concealment; whilst the EIA process contains considerable documentation, sections of the process are confidential, such as discussions between consultants and their clients and the applicant's true intentions. These confidential

elements can conceal the strategies used by stakeholders to achieve their goals through the process, for example; an applicant may wish to build four houses but expect resistance, and so may apply for authorisation for ten houses, with the expectation of being negotiated down to four (Bond *et al.*, 2016). Kågström and Richardson (2015) examined the delivery of influence at a practitioner level and identified the understanding of how practitioners interact and achieve influence through their roles as a critical knowledge deficit, which is reflective of a wider research gap in our understanding of decision-making within complex planning processes in practice (Forester, 2008; Cashmore *et al.*, 2010; Morrison-Saunders and Retief, 2012; Kågström and Richardson, 2015; Bull, Lloyd and Strange, 2017). Addressing this gap is challenging however, practitioner realities are complex, decisions are multifaceted and contextual elements can dramatically affect the process (Forester, 2008). There is a need therefore for studies which use practitioner insights to interpret the meaning behind the contextual complexity to provide insights into system level patterns (Kågström and Richardson, 2015).

This chapter therefore aims to address this knowledge gap through a practitioner guided, empirical investigation of conservation influence in the EIA process. To achieve this, I examined the actions of a conservation agency in KwaZulu Natal, South Africa. I addressed three research questions: i) At what stage are decisions about mitigation made in the EIA process? ii) Is there evidence that conservation agencies are able to influence the process? iii) Where should future research focus if these processes are to be better understood?

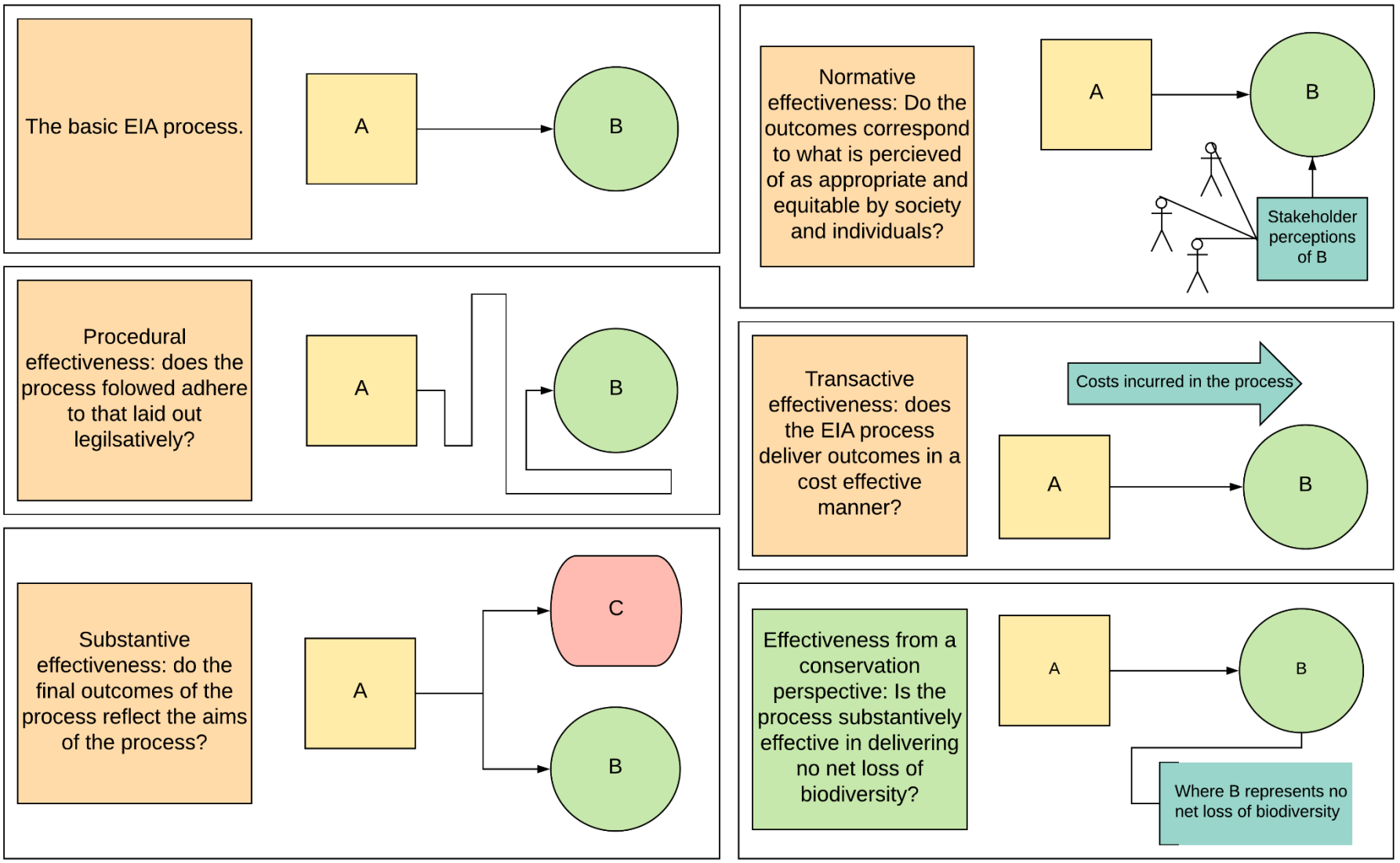


Figure 4-1 The four main categorisations of the effectiveness of EIA. Whilst all are important, conservation is also concerned with substantive effectiveness with regards to no net loss objectives.

4.2. Methods

4.2.1. Contextual introduction

South Africa is notable for pioneering conservation tools and approaches, in particular systematic conservation planning (SCP) (Knight *et al.*, 2006). South African legislation prescribes a strongly participatory EIA process, focused on sustainability (Morrison-Saunders and Retief, 2012) designed to guide the nation in achieving NNL against a baseline of national and international biodiversity targets (Brownlie and Botha, 2009). The structure and aim of EIA in South Africa is comparable to legislation internationally (NEMBA, 2004; Morrison-Saunders & Retief 2012). As only 6.5% of the country is under formal protection (Department of Environmental Affairs, 2012), EIA plays a key role as a barrier to biodiversity loss (Brownlie, King and Treweek, 2013a). Under the 2004 National Environmental Management of Biodiversity Act (NEMBA), all applications that have the potential to impact on biodiversity and ecosystem services require comment from a commenting body, usually an independent government conservation agency, often known as a "parastatal".

The South African province of KwaZulu-Natal (KZN) is an ideal case study for examining conservation representation in the EIA process. The province contains globally important biodiversity, which is represented in the EIA process by Ezemvelo KZN Wildlife (Ezemvelo), a state-funded conservation organisation. KZN has a range of pressing social issues including poverty, unemployment and racial tension. Development is seen as key to resolving these problems and consequently has strong political support. This combination of high development pressure and important biodiversity makes KZN an important case study. Decisions are made in this province by the department of Economic Development, Tourism and Environmental Affairs (EDTEA).

This province is also an appropriate case study as Ezemvelo uses SCP to identify priority areas essential to meeting national and international conservation targets under the CBD, known as Critical Biodiversity Areas (CBAs). CBAs are split into two subcategories. The lower level of priority is CBA - Optimal (CBAO) which indicates the area is optimal for achieving the targets but that there are other options elsewhere. The higher level of priority is CBA – Mandatory which indicates the area is essential to meeting targets. By systematically and scientifically identifying areas of biodiversity importance, Ezemvelo can inform the implementation of the mitigation hierarchy.
This research examined applications that required an EIA in the province of KwaZulu-Natal in 2013. This year was chosen as it is recent, yet enough time has passed that most applications have been completed. As the dataset only addresses applications which required an EIA, most applications in

urban or other human-dominated areas are automatically excluded. Given the complexity of the study system, we adopted a mixed methods approach. We collected quantitative data regarding applications and conducted key informant interviews to collect qualitative data to provide context and guide interpretation. Ezemvelo focuses commenting resources on applications within CBAs. This research therefore addressed applications within CBAs. As data was challenging to obtain this focus meant data from outside CBAs was too limited to be meaningful.

4.2.2. The capacity of Ezemvelo

In order to examine the influence achieved by the conservation agency, Ezemvelo, it is important to understand their capacity. Ezemvelo is mandated with ensuring effective conservation and sustainable use of biodiversity in KwaZulu-Natal and states its vision as :"To be a world renowned leader in the field of biodiversity management" (KwaZulu-Natal Nature Conservation Board, 2015). As a component in this, Ezemvelo runs an annual conference, “The Symposium of Contemporary Conservation Practice” which is attended by representatives from local, national and international organisations. The organisation takes its mandate from 27 separate acts. As such, it contains a breadth of staff including rangers, scientists and environmental management specialists who focus on governance aspects such as land use planning and EIA. The integrated environmental management team consists of four permanent staff members and a rolling intern program with approximately 10 interns at any one time. The permanent staff members had over 30 years of collective experience in their current roles in 2013 but depend on a large team of scientists and field staff with a higher collective experience.

During the participant observation it became apparent that staff at the conservation agencies routinely negotiated with other stakeholders through emails, meetings and phone conversations. It appeared, however, that the majority of cases were relatively simple and that a small number caused significant problems and contributed to the majority of their workload. In the words of one land use advisor “80% of the applications take up 20% of our time and 20% of the applications take up 80% of our time”. It was often not clear from the start however whether an application would be challenging or simple, in many cases applications progressed and developed unexpectedly. What was needed therefore was an understanding of what “business as usual” looked like from a negotiation perspective.

4.2.3. Review of impact

Publicly available data for EIA applications submitted to Ezemvelo for comment in the year 2013 were accessed along with comments provided by Ezemvelo through their role in the EIA process, which include recommendations for the conditions of approval. As part of their internal reviewing process, Ezemvelo staff record whether these recommendations are included by EDTEA in the final authorisation. If all recommendations are taken into account, then Ezemvelo's influence is deemed "full impact", if some but not all are included then "partial impact" and if none are included then "no impact". This information was only available for applications within CBAs. No impact often occurs where environmental concerns are over-ridden by social benefit, for example expansion of important roads.

4.2.4. Key informant interviews

Key informant interviews (KII), were conducted with individuals with an intimate knowledge of the EIA process to properly contextualise the data collected in the document analysis (Russell-Bernard, 2006). We identified key informants through a snowballing technique (Patton, 2002). After initial consultation with the Manager of Biodiversity Spatial Planning and Information at Ezemvelo and the Manager of Impact Assessment at EDTEA, four land use advisors at Ezemvelo and three case officers at EDTEA were identified as potential key informants. Land use advisors at Ezemvelo provide comments on applications with the support of in-house scientists and field staff. Case officers at EDTEA make the decision to approve or deny applications and write any subsequent conditions of authorisation. All individuals identified agreed to be interviewed. More information about the interview technique, protocol and theory is detailed in Chapter Five.

4.2.5. Categorisation of initial Ezemvelo KwaZulu-Natal Wildlife responses

Key informants indicated that the initial response of Ezemvelo to an application was a suitable proxy for the characteristics of an application and therefore the route it follows through the EIA process. A set of categories which between them describe all possible responses was developed through analysis of application documents. One hundred and thirteen applications within CBAs from the year 2013 were available. For each application, files detailed both the initial application and any correspondence or recommendations between Ezemvelo and external organisations such as EDTEA or the applicant. A coding approach was used to develop a wide range of categories for Ezemvelo's initial responses with the aim of reflecting the connection between Ezemvelo response and application content. In addition to the interviews detailed in Chapter Five, land use advisors were

asked to verify that the categories developed through the document analysis and interviews accurately covered the breadth of possible responses. The land use advisors at Ezemvelo then categorised their responses to the study set of applications. I independently verified categorisations where data was available. The categories are as follows:

1. *No impact* - The application has limited or no potential for biodiversity impact provided standard operating procedures are followed. Ezemvelo supports the application.
2. *Potential impact yet sufficient mitigation* - The application has the potential for biodiversity impact, however the mitigation is sufficient. Ezemvelo therefore supports the application.
3. *Potential impact leading to negotiation* - The application has the potential to be acceptable however one or more aspects could potentially cause an unacceptable impact. Ezemvelo requests alterations, favours a specific alternative or requires specific concerns to be addressed. If these conditions are met, Ezemvelo will support the application.
4. *Fatally flawed application* - The application has a fatal flaw, i.e. it has an environmental impact which it is not possible to mitigate, and thus Ezemvelo opposes it in its current form.
5. *Insufficient information to make a decision* - The application has insufficient information for Ezemvelo to make an informed decision. Ezemvelo therefore requires specific further information to make a decision. The outcome will then likely fall into one of categories 1-4.
6. *Comment not provided* – This application was briefly reviewed and found to be unlikely to cause significant impacts, however due to high application numbers, Ezemvelo is unable to provide any comment.

4.3. Results

4.3.1. Contextual analysis

There were 461 applications in 2013 in KZN that required comment by Ezemvelo on potential biodiversity impacts. There were applications from 16 sectors, made by 174 applicants and managed by 99 separate consulting companies. Applications from government entities comprised 51% and the remaining 49% by private organisations. Of 461 applications received, 2 were in protected areas (these were for minor projects such as installation of new park gates), 22 were in 100% modified areas, 276 (60%) were in Other Natural Areas and 159 (34%) in CBAs, of which, 47 were in Optimal CBAs and 114 in Mandatory CBAs.

4.3.2. Results of coding of Ezemvelo responses to applications

Ezemvelo response data were available for 82% of the applications in CBAs. The categories were found to be appropriate and all applications were categorised (See Figure 4.2). Informants reported that providing comment for applications in categories 1 and 2 (low impact) required relatively limited effort on Ezemvelo's part, the principal requirement being to scrutinise the application effectively to ensure sufficient rigour. Due to the lower complexity, informants reported these applications are often completed relatively quickly; an application can be completed in full within a year of commencement. These low impact applications comprised 63% of applications.

Informants reported categories 3 and 4 (high impact) are significantly more complex and are correspondingly challenging. As a result, these applications often continue for multiple years with many changes. These applications therefore comprise the vast majority of the Ezemvelo staff's workload despite only representing 37% of CBA applications. There was no difference in the proportion of high to low impact projects between CBA categories.

Category 1 – No impact (28% of applications) The footprint of these projects was typically small and in fully converted habits, for example an extension of an existing building into an applicant's garden or the widening of a road into farmland. Comment could be provided rapidly in these instances as they required limited input from both the applicant and Ezemvelo.

Category 2 – *Potential impact yet sufficient mitigation. (21% of applications)*
Applications in this category were generally characterised by a limited potential for impacts which had been appropriately mitigated but also included applications which had the potential to cause impacts but that had appropriate mitigation strategies proposed. Typical examples include petrol stations or bridges, which if not properly managed and mitigated could affect water flow or quality and in turn impact biodiversity.

Category 3 – *Potential impact leading to negotiation. (27% of applications)*
This was the most heterogeneous category. Applications originated from multiple sectors and had varied impacts and footprints. Cases in this category were complex, and correspondingly commenting by Ezemvelo staff required significant effort. The environmental impact of applications in this category was often difficult to accurately determine. The applications commonly contained multiple studies by biodiversity specialists. The combination of landscape-level context from the CBA maps and expert opinion allowed Ezemvelo commenters to interpret these specialist reports and

make informed comments on likely biodiversity impacts. Category 3 applications often changed significantly during the EIA process. Through negotiation and discussion, applications were iteratively altered, and compromises reached to facilitate sustainable development.

Category 4 – *Fatally flawed applications. (5% of applications)*
Category 4 was the least frequent but most contentious category, containing 7 applications in 2013. These were typically large, geographically inflexible applications such as mining or dams. The high impact combined with the limited geographic flexibility constrained applicants in their ability to apply the avoidance stage of the mitigation hierarchy. Informants reported that when Ezemvelo opposes applications, confrontation was likely, such as decisions being appealed. Comments on these applications therefore required more effort than the other categories, as there was a greater chance of them being challenged in court.

Category 5 – *insufficient information to make a decision. (2% of applications)*
Applications in this category either lacked the correct scientific reports or had not properly considered the potential impacts. This could potentially be an oversight by the applicant or a deliberate attempt to avoid including information that would reflect poorly on the application. In many of these instances the information was subsequently provided. Applications were also included in category 5 in instances where the project was in an early phase and so an accurate evaluation was not possible. Issues in these applications were addressed through iterative revisions.

Category 6 – Comment not provided. (16% of applications)
Ezemvelo did not provide comment on applications in this category due to high workloads, either other organisations passed comment, such as a municipal-level environmental department, or the application proceeded without Ezemvelo's involvement. Applications in this category were subject to a brief examination to check that they were likely to have a limited impact.

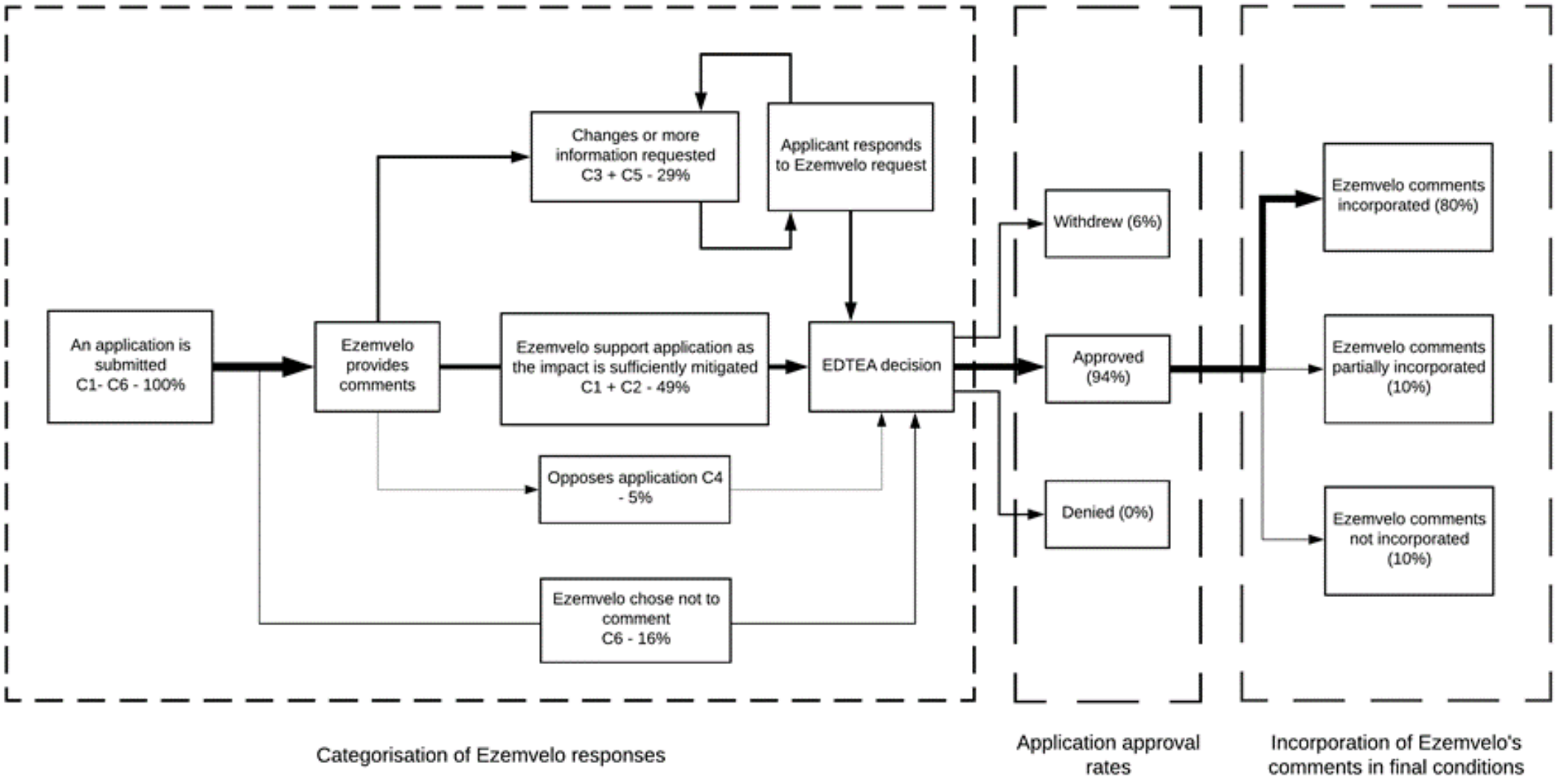


Figure 4-2 Responses, approval rates and comment uptake within the EIA process.

4.3.3. Rates of approval

Of 159 applications within CBAs, data on comment uptake and approval rates by EDTEA were available for 62 and 69 applications (Figure 4.2). Data were not available in some cases as the applicant had not officially notified authorities of their decision to withdraw the application. A high rate of approval was recorded; 94% were approved, 6% were lapsed or withdrawn and none refused. Informants suggested that this does not indicate that approval is guaranteed; due to the high cost of the EIA process, applicants attempted to determine whether their applications would be successful on an informal basis, for example by telephoning land use advisors and asking what their response might be to different potential development impacts, at an early stage or through a category 3 response. Problematic applications were therefore altered or abandoned before reaching the decision stage. Ezemvelo appeared to influence the decisions made by EDTEA, full impact of Ezemvelo comments was recorded in 80% of applications, partial impact in 10% and no impact in 10%.

4.3.4. At what stage are decisions about mitigation made in the EIA process?

Whilst the decision to grant or deny approval formally occurs after an application has been submitted, the decisions about mitigation strategies occur earlier in the process (Figure 4.3.). In instances where appropriate mitigation strategies have been developed before the application is submitted for comment (C1&C2) there are two possible decision windows; some applications have an inherently low impact and so mitigation decisions are effectively made before any consultation is required, in other instances, discussions between applicants and their consultants lead to the development of appropriate mitigation strategies. Mitigation decisions within categories C3, C4 and C5 are made as a result of comment and/or discussion with the conservation agency.

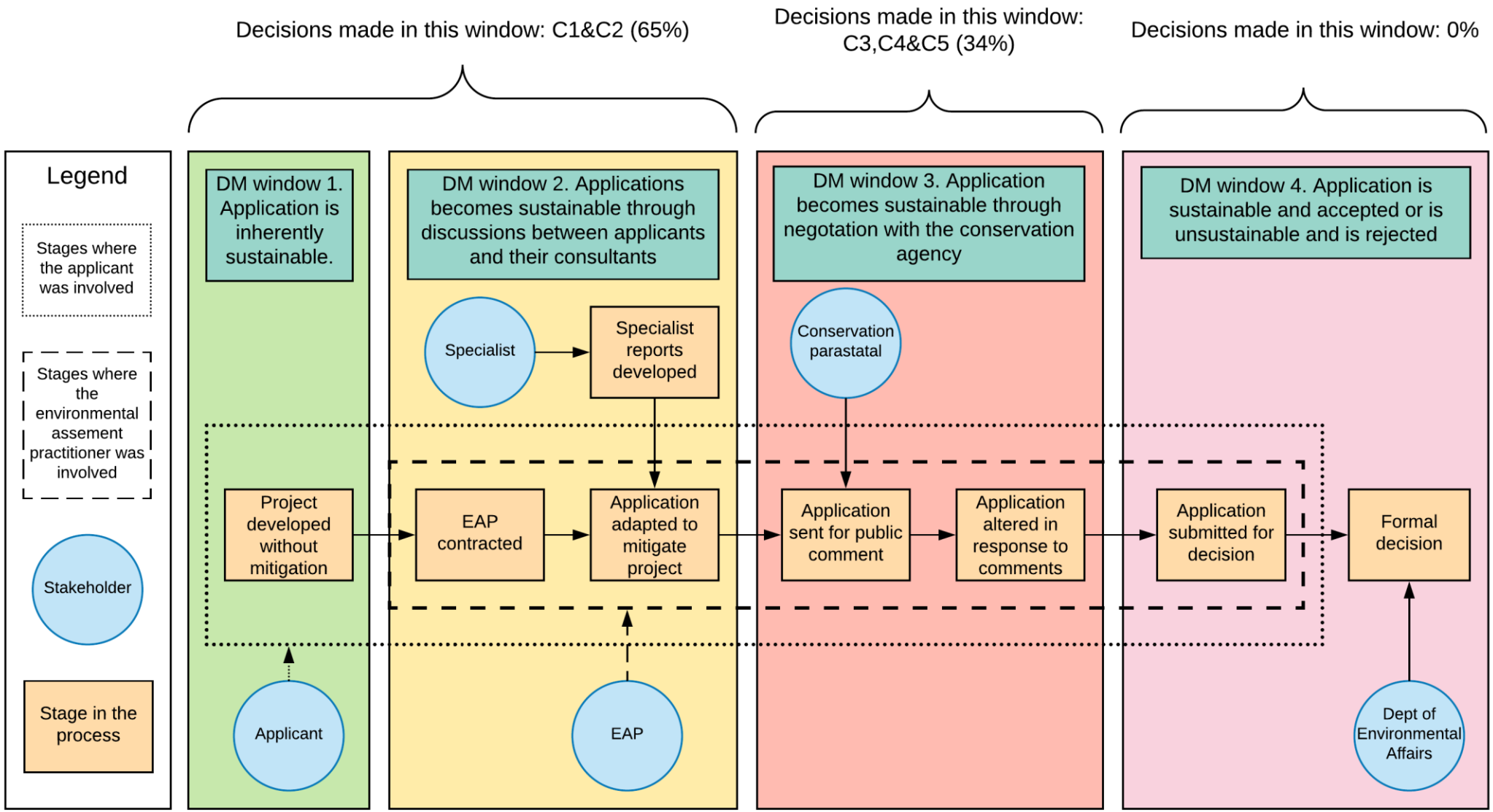


Figure 4-3 The windows within which decisions about mitigation are made.

4.3.5. Is there evidence that conservation agencies are able to influence the process?

Measuring influence is challenging and it is often qualitative rather than quantitative (Strauss & Corbin 1991; Lipsky 1992), however, the high rate of uptake of the conservation agencies comments in the final conditions suggests that a degree of influence is being achieved. This also suggests that despite the 100% acceptance rate, the majority of applications have appropriately mitigated their impacts as perceived by the conservation agency. Influence in negotiations is nonlinear, applicants or consultants may alter strategies based upon their previous experiences with conservation agencies within the process (van Stigt et al. 2013; Kågström & Richardson 2015; Bond et al. 2016). Whilst it is beyond the scope of the data to determine this, the high rate of appropriate mitigation (as perceived by Ezemvelo) may reflect consultants or applicants applying prior knowledge to predict Ezemvelo's suggested mitigation in order to incorporate it into the application at an early stage, thus leading to a reduced commenting period and faster progression of the application through the process.

4.4. Discussion

There are some important caveats to these findings. It is challenging to independently evaluate the degree to which the environmental impacts of a development are acceptable, as this is a factor of the socio-political importance of the development, and the extent to which it effects the ability of the province to achieve its biodiversity and environmental goals. To address this contextual complexity and provide an interpretation which is understandable by external parties, the professional opinions of land use advisors were used to apply categories. Potentially the primary issue with this method is that the evaluation of an impacts acceptability rests upon the judgement of the conservation agency, which is in turn dependant on the capacity of the land use advisors. The conservation agency was however selected due to its high capacity and the support it provides to the land use advisors though in-house scientists and systematic conservation plans. With regards to use of scientific approaches and attention to issues such as accumulative impact, the land use advisors are likely to be well informed. It is less clear however how they evaluate socio-political importance. As this is potentially an extremely complex topic, this aspect should be addressed through further research.

It is also important to note the limitations introduced as a result of specificity of the research, there is a risk that findings from this case study do not represent the reality of implementation in other contexts. At the legislative level, South African environmental management laws and policies reflect

international best practice (Morrison-Saunders & Retief 2012), the issues raised at practitioner conferences are consistent with international debates (Retief 2010), the barriers at a national level to elements of the process such as biodiversity offsetting are directly comparable to internationally barriers (Lukey et al. 2016; Maron et al. 2016) and attempts by conservation scientists to contribute to the process through systematic conservation planning have yielded the same lessons as attempts in other nations (Knight et al. 2006; Groves & Game 2016). The deficit of comparable studies also presents a barrier to identifying transferability, whilst the EIA literature is extensive, the inclusion of biodiversity considerations is relatively novel in many nations and there are considerable barriers to examining the practice of planning processes including the lack of counterfactuals, the complexity of decisions and the critical role of local contexts (Head 2008; Smith & Verissimo 2009; Rajvanchi et al. 2010; Knight et al. 2011; Morgan 2012; Evans et al. 2017; McIntosh et al. 2017). As a result there are limited studies which are comparable to those conducted within this chapter (Kågström and Richardson, 2015).

The main implication of these findings is that the EIA decision-making process can be leveraged to mitigate impacts on biodiversity, supporting the importance of the considerable efforts to do so (BBOP 2009; Slootweg et al. 2009; Rajvanchi et al. 2010). These findings also suggest that efforts to design systematic conservation plans which incorporate biodiversity into decision-making processes have the potential to influence decision-making when applied by conservation agencies within EIA (Chapter Three). This work also provides insights into the relationship between development and biodiversity impact. Whilst the two social objectives of economic growth, and preservation of biodiversity and the environment conflict at the macro scale, these findings suggest that at the project level there is considerable variation (Venter et al. 2016). Of the 462 applications in 2013 which required an EIA, 34% were in areas identified as potentially sensitive (CBAs). Of those, 37% had sufficient unmitigated impact to require opposition or alteration (i.e. were category 3 & 4). This was a total of 13% of all development applications. In other words, despite a combination of both high development pressure and important biodiversity, in 87% of instances application of the mitigation hierarchy by the applicants before receiving comments from the conservation agency was sufficient to achieve an environmental impact that was considered acceptable. This suggests that overt conflicts between development and conservation may be limited to a small minority of cases rather than being a standard component of most applications.

These results also suggest that whilst the decision to grant or deny authorisation is made at the final stage, decisions about the extent and strategy of mitigation are substantively made earlier in the

process. This supports the identification of “decision windows” as an important means of understanding EIA implementation, defined as “moments in an intricate web of substantively connected deliberative processes” (van Stigt et al. 2013). This suggests that whilst there are broader concerns that scientific evidence is not used to inform decisions, this may be an artefact of the complexity and confidentiality of the decision-making process (Kågström & Richardson 2015; Evans et al. 2017; Sutherland & Wordley 2017). As these decision windows may occur in confidential conversations between applicants and their consultants, there is a risk that when applications are submitted to environmental or planning agencies for comment or judgement, the information may provide a biased or limited interpretation of the facts thus presenting a barrier to effective governance (Hallatt et al. 2015; Phalan et al. 2017). This therefore supports the suggestions of Kågström and Richardson (2015) at an international level and Morrison-Saunders and Retief (2012) at a South African national level, that understanding and influencing the behaviour of consultants is critical to ensuring effective decision-making within an EIA paradigm.

There is evident need for future work, this study represents a mixed methods examination of a component of the EIA decision-making process however it requires contextualisation within the wider process. It also highlights the need for research into the role of stakeholder interactions within decision-making windows in both the visible and confidential stages of the process (van Stigt et al. 2013; Kågström & Richardson 2015). If the widely identified knowledge gaps in our understanding of the implementation challenges of environmental decision-making are to be addressed, then there is a need for holistic research into the factors which govern negotiation between stakeholders, within the critical decision windows which determine the outcomes of the process, and therefore the impacts of development on biodiversity and the environment.

5. The social factors which contribute to environmental decision-making

"Let's agree—for the sake of making assumptions clear— that in the real world of planning, where we see a great deal of ugliness, inefficiency, sprawl, lack of coordination, vulgar pragmatism, short-sighted incrementalism and worse, practitioners who care about public welfare, equity, and/or environmental justice need always to be sharp and discriminating: many parties will plead their cases and worry little about fabricating, exaggerating, or misrepresenting how wonderful or how horrible a proposed project will be."

- Professor John Forester, Editor of Planning Theory & Practice. Editorial in "Planning Theory and Practice" (2008)

5.1. Introduction

Biodiversity loss to human activities is a global phenomenon (Venter et al 2016). One of the most significant threats is habitat loss and degradation as a result of development. Development is not unchecked however; the majority of nations have decision-making processes which govern activities and subsequently their impact on the natural environment. At the global level, agreements such as the Sustainable Development Goals (SDG) and Convention on Biological Diversity (CBD) (United Nations, 1992; SDG, 2015) attempt to guide nations in delivering a sustainable future. These international agreements are then theoretically realised through a host of government decision-making processes, from low resolution plans such as strategic environmental assessments, to fine scale processes like Environmental Impact Assessment (EIA) (Figure 5.1.). As a consequence, the importance of engaging with these processes is widely recognised by conservation scientists (Rajvanchi, Mathur and Slootweg, 2010; Seddon *et al.*, 2016). Considerable efforts have been invested in developing tools, such as conservation plans, and strategic documents, such as National Biodiversity Strategic Action Plans which have been developed in many countries (Chapter Three).

Engaging with decision-making processes has proved challenging for scientists, however (Shanley and López, 2009). Despite considerable efforts to produce informative science, policy makers and practitioners make decisions which contradict scientific advice and perpetuate unsustainable environmental impacts (Venter *et al.*, 2016; Ripple *et al.*, 2017; Sutherland and Wordley, 2017). Whilst some have suggested this is reflective of complacency among practitioners with regard to the scientific evidence (Sutherland and Wordley, 2017), others have highlighted the challenges faced by practitioners in decision-making processes and have called for research into these complex contexts (Evans *et al.*, 2017). Societal decisions about the environment are inevitably made through multifaceted processes with multiple forces, mechanisms and effects occurring simultaneously, and the role of personal interactions and influences has been repeatedly highlighted as critical (Lipsky, 1992; Forester, 2008; Ostrom, 2009; Bull, Lloyd and Strange, 2017). The role of stakeholder interactions in reaching decisions is often under-documented in the natural sciences and correspondingly, the conservation literature routinely points to the critical importance of social science in understanding and influencing decision-making processes (Schultz, 2011; Kareiva and Marvier, 2012; Kujala, Burgman and Moilanen, 2013; Bennett *et al.*, 2016; Hicks *et al.*, 2016). The identification of the deficit of research into the social and contextual elements of decision-making is also a component of wider concerns that the conservation literature inadequately addresses the needs of practitioners (McNie, 2007; Milner-Gulland *et al.*, 2009). An empirical examination of the

consequences of personal interactions in environmental decision-making therefore has the potential to both inform implementation and to guide academics in producing impactful research (Mascia *et al.*, 2003; Balmford and Cowling, 2006; Schultz, 2011; Hicks *et al.*, 2016).

Environmental Impact Assessment (EIA) is one of the most ubiquitously used decision-making processes (Morgan, 2012; Bonneuil, 2015). Applied in 193 countries, EIA is a fundamental component of the realisation of international environmental sustainability targets (United Nations, 1992; SDG, 2015) and is being increasingly adapted to manage the impacts of development on biodiversity (Slootweg *et al.*, 2009; Rajvanchi, Mathur and Slootweg, 2010). Conservation proponents have recognised the potential for EIA to contribute to biodiversity conservation and have engaged with it in a breadth of ways including developing theory (Maron *et al.*, 2016), contributing to policy design (Slootweg and Kolhoff, 2003) and actively participating in the process (Chapter Four). Attempts to examine EIA as a process have however revealed its complexity; implementation frequently diverges from theory (Morrison-Saunders, Annandale and Cappelluti, 2001; Bond *et al.*, 2016; Hansen and Wood, 2016), the extent to which EIA achieves its objectives is highly debated (Cashmore *et al.*, 2004), and there are multiple definitions of effectiveness (Bond, Morrison-Saunders and Howitt, 2013b). It is clear however that interactions between stakeholders are important (Morrison-Saunders and Bailey, 2009), and that stakeholders can employ varying strategies to achieve their goals (Bond *et al.*, 2016).

Van Stigt et al (2013) used frame theory to examine the form of decision-making employed in the EIA process and identified "decision windows", which they defined as "moments in an intricate web of substantively connected deliberative processes". Put more simply, and for the purposes of this thesis, decision windows are opportunities that emerge during processes within which stakeholders decide upon actions. In practice windows may include meetings, phone calls, planning sessions or email exchanges. Decision windows are a function of the needs, attitudes and circumstances of stakeholders and so are inherently social creations (van Stigt, Driessen and Spit, 2013; Kågström and Richardson, 2015). These decision windows have been examined from a game theoretical perspective; Prenzel and Vanclay (2014) viewed the EIA process as a prisoner's dilemma where development proponents and environmental proponents were faced with the choice of cooperating or opposing each other. As such, whilst the optimal and most sustainable outcome was mutual cooperation, the most likely was mutual obstruction and thus conflict (Prenzel and Vanclay, 2014). Bond et al (2016) echoed these predictions of conflict but further suggested that if the structure of the EIA decision-making process was appropriately designed such that appropriate and ethical

behaviour was the most optimal choice for stakeholders, then sustainable decisions would naturally follow. This structural design would need to be achieved through combination of elements potentially including legislation, penalties, the role of certification bodies or taxation models. If this were achievable then not only would it improve the decisions made as an outcome of the process but additionally, the resolution of conflict has the potential to provide a suite of other benefits such as improved mutual understanding and trust (Bottrill *et al.*, 2012; Prenzel and Vanclay, 2014).

Chapter Four identified the importance of negotiation within EIA and highlighted that the majority of meaningful decisions occurred within decision windows throughout the process (outlined in Figure 5.1), many of which were confidential, rather than at the final, formal decision-making stage. This chapter therefore aims to contribute to the wider understanding of complex decision-making processes by using a social science approach to examine the role of personal interactions and influences in EIA in the provinces of The Western Cape and KwaZulu-Natal, South Africa. This will be achieved by addressing the following research questions:

i. How do stakeholders approach decision-making in practice?

ii. What are the consequences of these approaches at a system level?

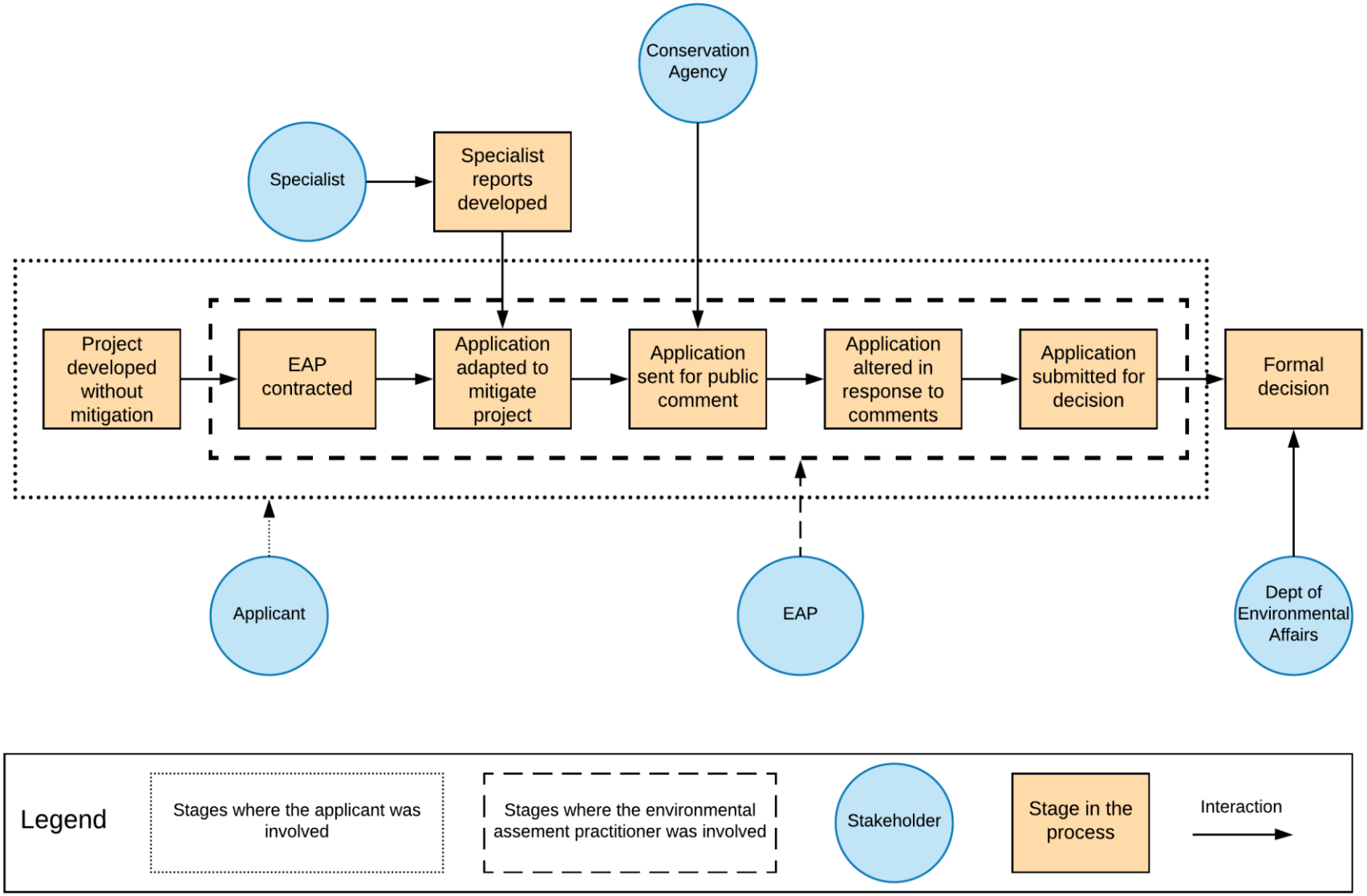


Figure 5-5-1 The stakeholders and stages in the formal environmental impact assessment process.

5.2. Methods

5.2.1. Respondent recruitment

Ten case studies of EIA applications for individual developments were identified in each province by key informants, the land use advisor teams at the parastatal conservation agencies. The teams were asked to identify case studies which between them reflected the breadth of diversity in EIA applications. Stakeholders involved in these case studies were then contacted and invited to participate in the research through being interviewed by Sam Lloyd about their experiences in their EIA process, both in terms of the case study and about the process more broadly. Interviews were scheduled at a location convenient to the respondents, frequently in their offices or cafes.

The case studies involved 85 stakeholders, see table 1. Of these, contact details were available for 64, all of whom were contacted and invited to interview. Of those who were invited, 1 refused interview, 53 were available for interview and were subsequently interviewed and 10 stated they were willing to be interviewed but were not actually interviewed due to logistical restrictions. These included the respondent being unable to find time or being out of the area or being uncontactable..

Table 5.1. The number of respondents recruited from the population initially identified in the case studies.

Stakeholder	Identified as potential respondents	Number for which contact details available	Refused interview	Not interviewed due to logistical constraints	Interviewed	Proportion recruited
Applicants	18	8	1	2	5	28%
EAPs	21	19	0	2	17	81%
Specialists	27	18	0	2	16	59%
Advisors	6	6	0	0	6	100%
Case Officers	13	13	0	4	9	69%
Total	85	64	1	10	53	62%

5.2.2. Interview technique

Interviews were conducted using a semi-structured, Grounded Theory based technique. This began with a brief introduction of the research aims and the intended uses of the data. In accordance with the ethical procedure, the confidentiality agreement was then discussed and signed. Interviews were recorded using an iPhone 4. I then invited the respondents to "tell the story of the case study starting with how they first heard about it". Follow-up questions were then asked to encourage the respondents to elaborate on their responses and talk more generally about their views on the process. Both initial and follow up questions were expressed with the intention of allowing respondents to take the content of the interview where they wished, rather than the interviewer dictating the interview direction (Strauss and Corbin, 1991).

Once respondents had discussed the issues they wished to raise, hypotheses and theories which were emerging through the research were presented to respondents in order to actively test them, in accordance with Grounded Theory recommendations (Strauss and Corbin, 1991; Burge and Jamieson, 2009). This section of the interview was intentionally conducted at the end, so that the concepts discussed did not bias the respondent's reports and as an additional measure was analysed separately.

5.2.3. Ethical considerations

Interview protocol

Due to the potential for sensitive confidential material to be raised in these interviews, I obtained ethical approval. As South Africa has had an unusually tumultuous history, especially with regards to race relations, I sought ethical approval from a committee based in South Africa so as to ensure sensitivity to local issues. The Nelson Mandela Metropolitan University awarded me ethics clearance, reference number H16-SCI-BOT-EXT-001. Accordingly, I adhered strictly to the ethical protocol agreed with the ethics committee. In addition, where it did not contradict the ethical protocol, best judgement was used to ensure that respondents were protected.

Before starting all interviews, I introduced myself, and gave a brief explanation of what the research aims were and how I intended to use the interview data. I explained that I intended to analyse the data using an approach that abstracted concepts from the data rather than discussing specifics, thus sanitising the data in the process and ensuring anonymity. Once the respondent was satisfied with the explanation I showed them the confidentiality agreement, talked through each point and

answered any questions they had. In this process I highlighted that they were under no obligation to respond to questions if they did not wish to, and that they did not have to give a reason for declining to respond. I also demonstrated how to pause the recording device and made it clear that they could pause this at any time they wished for any reason. If they were satisfied, then the agreement was signed, and the interview proceeded.

During the interviews I paid attention to the mood and tone of the respondent in order to ensure that I did not cause any distress. On the rare occasions that respondents did not wish to answer a question I accepted this immediately and changed the topic. On rare occasions respondents paused the recording device so that they could answer their telephones, however none felt it necessary to pause the recording because of the sensitivity of the topics discussed.

Post interview

The most critical ethical aspect of the research post-interview is confidentiality. In accordance with the ethical protocol, findings have been reported in a manner which preserves anonymity and does not associate any statements with any respondents which would allow for identification by a third party. In addition to this protocol, as an extra layer of protection, I decided not to report on the case studies used as this would allow a third party to identify respondents.

5.2.4. Interview analysis

Interviews were transcribed independently by "Gotranscribe", an independent, confidential transcription service. The transcripts were then checked against the recordings and corrected where necessary. The interviews were then analysed in NVIVO software, using a thematic analysis method as described by Braun and Clarke (2006). Each stakeholder group was analysed separately, producing five discrete analyses. The transcripts were read and codes relating to the research aims were highlighted. Codes are defined as "the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998: 63). After the analysis of each interview, the codes were further categorised into "themes". Themes are categories which represent a broader meaning than a code, usually some form of patterned response within the data (Braun and Clarke, 2006). These themes were then reviewed to identify whether they were supported or contradicted by the data more broadly and whether they addressed the research aims. Once emergent themes had been identified across the stakeholder groups, they were refined to directly address the research questions. The results of the analysis categorised by stakeholder group and theme are detailed in Appendix 9.2-9.6..

Chapter Four identified that decisions were frequently made at multiple stages throughout the EIA process. These stages were identified during interview analysis and described in the context of the emergent themes.

5.2.5. Epistemology

In order to provide clear boundaries to analysis, four decisions were made about the epistemological position of this research, in addition to defining codes and themes, as prescribed by Braun and Clarke (2006).

1. Realism versus constructivism

Speed (1998) defines these two views as:

1. Constructivism - the view that what we know is determined by our ideas, so that our view of reality is only that, a view, something constructed in our heads, invented by us. We can never know reality, we can only ever have views of reality. In a nutshell, our ideas determine what we know.

2. Realism - the position that reality exists, can be discovered by people in an objective way and thus strongly determines what we know. Knowledge can therefore directly reflect this reality and will be valid, i.e. true. In a nutshell, reality determines what we know.

As the research is exploratory, the risk of introducing bias is more significant as there is a deficit of other studies for comparison and calibration. Using a simpler theoretical approach reduces the potential for "forcing", i.e. imposing existing frameworks onto the data (Strauss and Corbin, 1991). This study therefore uses a realist perspective.

2. The depth and breadth of analysis

Given the large amount of data collected during interviews and time limitations there is a trade-off between the breadth of analysis, i.e. whether codes and themes reflect the entire dataset or just aspects, and the depth of analysis, i.e. the extent to which individual elements are explored. Broad analysis provides a better overview, however deep analysis may provide more nuanced understanding (Corbin and Strauss, 1990; Strauss and Corbin, 1991). As this research is exploratory and is focused on identifying system-level processes, a broad analysis is more likely to yield useful and widely relevant results (Russell-Bernard, 2006). This study therefore uses a broad analysis

approach, recognising that there is substantial scope in the dataset for a deep analysis at a later date.

3. Inductive vs theoretical thematic analysis

Inductive thematic analysis is a "bottom up" approach which seeks to answer research questions using the interview data. A theoretical thematic analysis is a "top down" approach with seeks to understand whether an existing theory can usefully explain the data. As this research aims to understand the realities of decision-making processes it is essential that it focuses on the reports of respondents. This study is therefore strongly inductive.

4. Semantic or latent themes

In a semantic analysis, themes reflect the explicit meanings of the data, i.e. what the respondents report. Analysis of the themes then moves from description to interpretation in order to provide meaningful insights into the study system (Patton, 2002).

A latent approach goes significantly deeper and further and aims to understand the underlying ideas, assumptions and ideologies, often with the objective of creating or testing novel psychological theory (Patton, 2002).

This research was conducted using semantic themes, as understanding of the decision-making process itself is prioritised over deeper psychological theory. Analysis began with inductive codes and moved to broader semantic themes through the analysis.

Epistemological summary

This study has been approached with an inductive realist approach using a broad semantic analysis of the data. As there is limited prior research on this topic, existing theory was not imposed on the data. Instead the interview and analysis approaches were intended to develop theories emergently. Respondents were therefore encouraged to be broad in their interpretation of what was relevant to the research.

5.2.6. Emergent themes

As a result of the broad interview approach, themes emerged regarding a wide range of topics. Detailed results of emergent themes divided by stakeholder group may be found in Appendix 9.2-

9.6. Those which were substantiated by all stakeholder groups and which related directly to the research questions are detailed here.

5.2.7. Assessing and ensuring the integrity of the interviews

During interviews the reports of respondents are affected by many factors, opinions inherently contain personal biases, comments may be flavoured in response to the interviewer or there may be intentional attempts to obscure the truth (Strauss and Corbin, 1991; Patton, 2002; Russell-Bernard, 2006). This was addressed using different methods, firstly during the interview and secondly during the thematic analysis. During the interview, the statements of the respondent were received with an open mind yet were also assessed critically in the process. Follow up questions were used to probe the views of respondents and explore the justification and evidence base behind statements (Russell-Bernard, 2006). Where bias was perceived by the interviewer, notes were discretely taken and these informed both interview technique and analysis. Potential bias identified in the interviews took multiple forms, some conservation proponents were extremely negative about the ability of the EIA process to have any impact whatsoever, whilst some development proponents felt that the EIA process had an intolerably large impact on their activities. During the analysis, interviews were analysed according to stakeholder group. This allowed for triangulation within stakeholder groups; if an individual gave a notably different response to other members of their group then this highlighted the need to critically review that individual's comments with a view to understanding the causes of variation. Respondents also shared their views about the biases and positionality of members of other stakeholder groups. This allowed for triangulation between stakeholder groups.

5.3. Results

5.3.1. Negotiation

Stakeholders unanimously agreed that the majority of agreements in the EIA process were reached through negotiation, both formally and informally, prior to the official decision-making stage. Formal negotiation is that which occurs through the legislated stages of the process, for example, when a land use advisor provides written comments about an application in the commenting stage. Contrastingly, informal negotiation is that which occurs outside of the legislated stages of the process, for example after an EAP has taken on a new client, they may telephone a case officer to ask for their opinion about the application and gauge whether the application is likely to prove controversial. One respondent summarised this, "ultimately the way the decisions are made, the decision is actually made way out of the formal processes. It could be during an informal discussion

between two colleagues and that shapes the process in the end" (Specialist 1). Negotiations involved multiple iterative stages as applications progressed and stakeholders became involved in the process; "we depend a lot on conversation between all other parties to sort out the issues" (Case officer 3). In the vast majority of cases environmental mitigation was perceived to improve between iterations, for example applications for housing developments usually started with a high number of housing units with a large footprint but were usually granted permission for far smaller number with a considerably smaller footprint. Negotiations were conducted either in person, via email or over the telephone. The extent of negotiation was extremely heterogeneous; respondents reported that a small minority of cases represented the majority of negotiation activities. The extent and intensity of the negotiation varied in response to an extremely wide breadth of contextual factors, including the personalities of those involved, disagreements over the facts of the case or as a reflection of wider political activities. Additionally, there was ubiquitous agreement that negotiations could be "intense" experiences with strongly opposed views being expressed. In the majority of cases, however, negotiations resulted in informal shared agreements between stakeholders before applications were formally submitted.

5.3.2. Consensus

Consensus and compromise played a key role in the negotiation process; one EAP noted, "we're going to have to go through a long and painful process and there'll probably be a compromise, which means no one will be particularly happy, but they'll live with it." (EAP 8). Where decisions were not agreed in advance of the formal process, stakeholders bore a risk of a negative decision by case officers or delays where case officers were dissatisfied with the evidence presented and requested more information or further negotiation. A key motivation for engaging in negotiation was therefore to reach consensus between stakeholders and thus minimise risk. This frequently resulted in compromise by stakeholders where they felt the benefits of consensus outweighed the cost of the concession. For example, applicants and EAPs frequently reported making environmental concessions specifically to "sweeten the deal" and reach consensus earlier with less negotiation.

5.3.3. Communication

Case officers, advisors, EAPs and specialists all highlighted the importance of communication, in particular with applicants. In the words of one respondent, "you need to keep the communication channels open, and if you are not approachable then I foresee problems" (Case officer 3). Stakeholders described the process as educating applicants about the importance of sensitive biodiversity and their obligations to protect it. Environmental proponents felt that educating

applicants and their representatives was central to their roles; “If you have a good way of explaining it to a consultant or to an applicant, then it’s like, “Okay, I get it now.”” (Land use advisor 6) and, “you can see when a penny drops, when people understand.” (Land use advisor 3). This educational aspect is in part a product of the need for consensus; applicants who understand the need for biodiversity protection are more amenable to agreeing to mitigation measures. Additionally however, increasing applicants’ understanding of the evidence base and reasoning behind conservation arguments was reported to improve their attitudes towards environmental concerns. It is likely that this was in part due this improved understanding leading to an increased awareness of the influence of conservation arguments in this system, thus providing a motivation to reach a compromise agreement. Conversely, applicants and EAPs reported communicating contextual elements which they felt negated or lessened the need for environmental mitigation, such as the viability of mitigation efforts, for example relocation efforts were widely expected to fail, the political climate, for example low cost housing was often perceived to be more urgently important than biodiversity, or the “fairness” of the suggested environmental mitigation.

5.3.4. Fairness

Respondents consistently reported that the perceived “fairness” of environmental mitigations was an important factor in reaching consensus; “what is acceptable is not a scientific concept, it's a socioeconomic decision” (EAP 8). Where stakeholders viewed the burden of environmental protection to be unfair, they presented higher resistance and, in many cases, the environmental outcomes were correspondingly poorer as a result. Fairness involved a wide breadth of cultural components including the perceived extent of the land owner’s right to profit from their property and the cost of mitigation efforts relative to the application. As a result, mitigations which were perceived as excessively unfair were less likely to be agreed upon, for example biodiversity offset conditions prescribing the purchase of expensive land would rarely be enforced where proponents were relatively poor farmers. As a subjective element, fairness was comprised of multiple contextual factors such as the applicant’s socio-economic status, the contribution of the proposed project to society and perceptions of their honesty in engaging with the process. As a result, a rich individual known for deception intending to build a mansion was treated differently to a charitable organisation hoping to install an HIV clinic in an impoverished area.

5.3.5. Reputations, relationships and trust

Respondents all reported that reputations and relationships played central roles in EIA decision-making. There was unanimous agreement that applicants, EAPs and specialists were all subject to

judgements made by land use advisors and case officers about their professional integrity and capacity. This was supported by all stakeholders; one advisor noted, “he needs to maintain that relationship with us, so that we trust him” (Land use advisor 1), an EAP corroborated “I work very hard to impress the authorities with the quality of my work” (EAP 4) and a specialist stated, “reputation is the key” (Specialist 13). These judgements were often made rapidly; respondents reported that a single incident could lead to a reputation being established. Whilst reputations were nuanced, the most important component was trust; whether an advisor or case officer felt that they could trust the applicant, EAP or specialist to behave ethically and deliver good work. If the advisor or case officer trusted an individual, then they would scrutinise their intentions and documentation to a lesser degree than if they did not trust them. This had a broad spectrum of effects; when dealing with untrusted individuals, advisors and case officers would seek independent verification of evidence provided through informal channels, would be more likely to object to applications and would require more evidence in support of claims. This variation in scrutiny also affected timeframes; individuals who were trusted received less scrutiny, and so received responses more rapidly from advisors and case officers as less effort was required to assess their applications. Issues arising with trusted individuals were often addressed through informal discussion, resolved faster and required less supporting evidence. This could often result in fewer iterations and thus a faster process.

5.3.6. Informal communication

The EIA decision-making process in South Africa is designed to be transparent. All communication between stakeholders, minutes of meetings and reports relating to an applicant must be included in the publicly available documents. Despite this, informal communication plays a key role in the decision-making process and occurred most frequently between conservationists, i.e. between biodiversity specialists and land use advisors. One advisor noted, “you couldn't go back to the botanist and ask him (within the official process), although we have informally, although that will be done outside of his contract” (Land use advisor 1). Individuals within these stakeholder groups had frequently developed relationships through their careers and often shared ideologies. As a result, these informal communications were often a form of collusion; specialists and advisors were cooperating by sharing experiences and opinions about the EAPs, the applicants and the applications themselves. This communication was often used to convey the nature and outcome of negotiations between the specialists and the EAPs and applicants based on the survey work conducted by the specialists. This could benefit the applicant; where a specialist was satisfied by the proposed mitigation this could be effectively conveyed through informal private conversation which would

then result in a more favourable review process by the land use advisor. Equally, this communication could have negative consequences for the applicant. If the specialist felt that the mitigation was not significant then informal communication could be used to draw the attention of the advisor to problematic areas of the application. Additionally, the specialist could provide their opinions of the motivations of the applicant and EAP or disclose information which was withheld in the application but was necessary to make an informed decision. Where these two stakeholder groups communicated informally it was frequently a case of specialists using their existing relationships to leverage their professional reputation in order to achieve either a personal goal, such as environmental protection, or a professional goal, such as reputational defence by distancing themselves from a poorly mitigated application.

5.3.7. Workload impacts

Respondents ubiquitously reported that there was high variation in the degree to which applications, or elements within them, impacted on their workloads. The consequences varied according to stakeholder: EAPs and specialists were frequently paid a set fee and so complications lowered their profits, whilst for advisors and case officers an increased workload led to unpaid overtime in evenings or weekends. There was therefore a mutually shared aversion to complexity; for example, some EAPs reported specifically avoiding representing cases which included biodiversity offsetting due to the increased workload and preferred to address impacts through other stages of the mitigation hierarchy, “you do everything possible to prevent you from having to do an offset” (EAP 5).

5.3.8. Lying in applications

All stakeholder groups are legally required to act independently and honestly, that is to present the details of the application such as they are without obscuring or altering the facts. Applicants, specialists and EAPs are required to sign a contract to this effect which must be included in every application. Despite this, respondents from all groups reported that in some cases applicants, EAPs and, less frequently, specialists exhibited bias, “bent the truth” and exaggerated or underreported factors in order to further their case. Due to the higher sensitivity of this topic, quotes in this section are not linked to respondent numbers.

Applicants were motivated to do this by a desire to receive environmental authorisation at the lowest cost and at the lowest impact to their project. The key decision about independence and honesty is made by EAPs however. Biased behaviour among EAPs largely takes the form of

manipulating information or suggesting legal loopholes to their clients; “You get the information together and you present it in such a way that it's okay”. Most EAPs are on a spectrum between biased and independent. Biased behaviour in EAPs was reported to be primarily motivated by profit; "Generally, people who do biological science are haggard, you're going to be poor but if you want make some money, do EIA.", whereas EAPs are primarily motivated to act independently by a desire to protect the environment and/or maintain professional integrity, “We are basically environmentalists” (EAP 2), “it's by showing your professional integrity in biodiversity” (EAP 3) and “I'm not going to try to approve things which are not moral” (EAP 13). Independent EAPs condemned those who behave unethically; one reported “we call them "bounty hunters"” (EAP 6). Applicants were reported to obscure or alter their reporting of facts in order to maximise financial gain; by reducing their mitigation they could increase their profit. Biased EAPs were also motivated by profit; however, due to the potential for reputational consequences, such behaviours are more complex.

Whilst there were widely held concerns about the prevalence of such behaviour, the evidence suggests that it is actually infrequent. For example, advisors reported that the vast majority of the applications for which they provided comment required limited effort and were not concerning. This is supported by the findings of chapter Four which suggested only a small minority of applications were problematic. Additionally, respondents often stated that they had no first-hand experience of biased or unethical behaviour by other stakeholders. Whilst this may be due to reluctance to make statements which could be repeated to third parties, the candid nature of the interviews and disclosure of other potentially more confidential issues suggests that this is not the case.

5.3.9. Conceptual inertia

It was ubiquitously reported that altering the design of a development was easiest in the early stages of project development. As a design develops, the applicants invest in the project. Investment has a financial component, usually spending on project design such as architects and engineers. It also has a personal component; applicants wish to see their application brought to life and become increasingly invested in their vision as the project develops. One applicant described his motivations for becoming a developer in these personal terms; “Myself, I've always wanted to be a builder. I grew up on construction sites. I wanted to be just like my dad” (Applicant 3). This can be additionally interpreted as an example of a “sunken-cost fallacy”, where applicants become emotionally attached to their vision of their proposed development and so are resistant to alterations, even where resisting those changes bears a cost.

5.3.10. Pro-active negotiation

Mitigation measures therefore entail a lower cost and reduced resistance if negotiated early. Reduced resistance in negotiations provided environmental benefits but additionally reduced the workload of stakeholders. Stakeholders who negotiated on behalf of the environment reported that this motivated them to engage in informal negotiations as early as possible. Additionally, they described a number of strategies which they employed to maximise this benefit. Case officers reported, “Part of what we've done is we've created an outside process to help before they get into the formal process. We call it a pre-application” (Case officer 4). Advisors also described the importance of informal discussions and dedicated considerable resources to providing easily accessible information for applicants and EAPs.

5.3.11. Systematic conservation plans

One of the main tools used to achieve early engagement by land use advisors at the parastatal conservation agency was systematic conservation plans. These plans, in the form of maps, were developed to highlight areas of natural habitat which, if protected, would allow South Africa to optimally reach its commitments under the Convention on Biological Diversity. The plans are publicly available and designed to be sufficiently accessible that EAPs, applicants and specialists are able to understand and use them to inform project development. Whilst opinions about their utility and accuracy varied, stakeholders in all groups ubiquitously reported awareness of these plans and frequently cited them in applications and reports; indeed, many EAPs reported that the ease of use and access led them to check the plans early in project development, “You'll always look at the maps” (EAP 3). These conservation plans therefore played a key role in influencing development by making applicants aware of the need for environmental mitigation early in the process, thus prompting them to engage in pre-application discussions at a stage where project plans were still flexible.

5.3.12. Dynamic and evolving contexts

Respondents were clear that the EIA process is not a static entity; economies boom and bust, policies change, and new conservation tools are developed. As a result, stakeholders with opposing interests, such as EAPs and advisors, are constantly adapting their strategies in a form of arms race. Where the balance of power remains constant, this may cause the process to appear stable, however this is in fact evidence of a “red queen” phenomenon where the balance is maintained through constant effort by all parties.

5.3.13. Government applications and political pressure

There was clear agreement from respondents that politics played an important role in the EIA process. There was also agreement that such pressure affected the outcome of applications from government bodies but not from private entities. Political pressure was applied to case officers and advisors by individuals working for government bodies. In some cases, this pressure could be threatening; if respondents did not comply they felt their positions could be threatened or they may be professionally reprimanded, “We would get jumped on from the highest level, probably from the minister” (Case officer 2). In other cases, the pressure was in the form of an appeal from an individual or department for help in achieving their mandate. The request could be made directly to the case officer or advisor, or it could be made at a higher level through senior management.

Respondents reported that in the majority of instances political pressure was not applied to alter the decisions but rather to fast track them. This was usually due to budgetary restrictions, such as a need to spend budgets before a certain date, “the municipality would find out now, ”We have this money to spend. We have to spend it now". Now they expect you to rush through the process” (Case officer 3). In these instances, case officers and advisors often saw little issue with prioritising such projects as there was frequently a clear social benefit. Case officers and advisors reported that a small minority of applications received more significant political support. These projects were frequently but not exclusively large, nationally important developments such as power plants or industrial development zones. In these cases, decisions had been made at “higher levels” and case officers and advisors were explicitly told not to object to these projects but to approve them, “we're still forced to say yes. But if it weren't a municipal project, and it was a private guy wanting to build, and his consultant didn't meet the requirements. They wouldn't have a problem with us saying "no" to that” (Case officer 2).

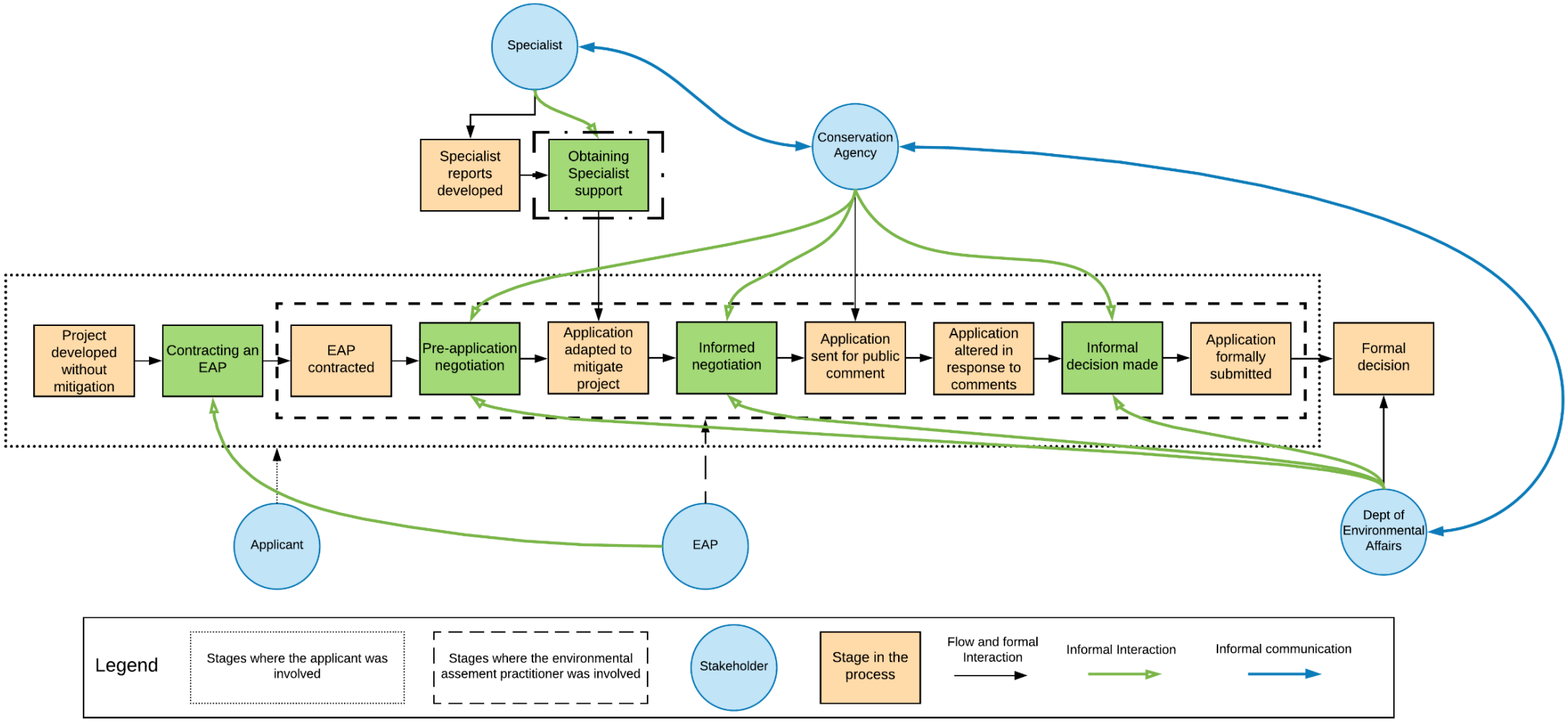
Whilst it was widely acknowledged that government and private applications followed separate processes, it is unclear what the consequences of this uneven treatment were for the process, outcomes and environment. Many respondents reported that government applications were often associated with broad social benefits, such as road networks or electricity pylons and so decisions were made for a wider social good. It is possible that individuals may have taken advantage of this process for personal gain, however this is beyond the scope of this research. Whilst this political interference is undoubtedly a conservation concern, it is reflective not of issues with the EIA process per se but of the ability of politically backed projects to sidestep planning legislation in general.

5.3.14. The primacy of science

Whilst many elements and factors were disputed, respondents from all stakeholder groups reported a high respect for scientific evidence, “We take the position of our specialists very seriously” (Specialist 9). Specialists corroborated this and noted that discussion focused not on the validity of their work but on the implications, “They do tend to respect the science. Interpretation sometimes they're not so happy” (Specialist 10). For example, the reports produced by biodiversity specialists were frequently treated as untouchable and whilst the implications of their findings were often debated, the factual content was not. There was strong evidence of a culture shared across stakeholder groups which considered scientific evidence to be sacrosanct. The Performance of Administrative Justice Act allows members of the public to access the reports used to make any decision and additionally allows for the prosecution of any civil servants who fails to use appropriate information to inform their actions. This act specifies that civil servants must use “the best available science” and both case officers and land use advisors reported that this was taken extremely seriously.

5.4. The informal decision-making stages

Whilst there was considerable variation between cases, respondents from all stakeholder groups reported the existence of clearly identifiable informal decision-making stages (see figure 5.2.) with distinct characteristics. Respondents were also in agreement both as to the function of these stages and the varying motivations of separate stakeholder groups for engaging in them. In this section, I describe how the emergent themes I identified above influence the movement of an application through the stages and interact in complex ways to generate environmental outcomes.



5-2 The informal negotiation stages in the environmental impact assessment process

Stage 1: Contracting an EAP

Applicants legally require an EAP to facilitate the development of mitigation strategies and to produce their application documents. For many applicants the first step in the EIA process is to identify and contract an EAP to represent them. This is frequently where the first application of the mitigation hierarchy occurs, in particular the avoid stage. The EAP requires the custom of applicants for their business to be successful, however they are motivated by a desire to protect their professional reputations and as a result if the EAP feels an application is fatally flawed or has potentially fatal issues, then they are likely to either request significant alterations or refuse to represent the client as they are aware that doing so may cause them to be seen negatively by case officers and advisors; EAPs reported, “we don't take on those risky ones” (Specialist 9), “We fight with all our clients” (EAP 2). and “I'll walk away from a project if they don't do what I tell them to” (EAP 13). Their estimation of the likelihood of negative reputational consequences is based on past experiences and conservation plans. As there may be a finite number of EAPs working in an area the issue of obtaining representation can present a significant obstacle and is reportedly where the majority of unfeasibly projects fail. This stage is therefore where the avoid step of the mitigation hierarchy is most frequently and meaningfully applied.

Stage 2: Pre-application negotiation

Once an EAP has accepted a client, they are faced with a professional trade-off which must be carefully managed throughout the application. The EAPs must maintain a positive relationship with their client if they are to receive future business and so are motivated to minimise the mitigation efforts required by the applicant. Counter to this however, if they propose a project with an unacceptable environmental impact, as perceived by case officers and advisors, this can cause delays to the application and damage their reputation with other stakeholders in the long term. They are therefore motivated to produce an application which will be accepted, whilst maintaining both client satisfaction and sufficient professional reputation with case officers and land use advisors to operate profitably. The EAPs reported that conflicts with their clients were common at this stage.

Where EAPs are contracted to represent an applicant, the initial step is to identify potential issues with the application and propose mitigations. To obtain clarity on this, they often contact case officers and advisors to determine potential issues with the application. One case officer highlighted the frequency of these informal pre-application negotiations, “We are very involved in the pre-application work” (Case Officer 5). Case officers and advisors highlighted the importance of this stage in providing an opportunity to influence applications before applicants had invested heavily in

one particular design option. One case officer noted that they engaged in the discussion because, “before they start finalising designs and plans you can highlight, "Look, this area is going to be an issue. Try putting that somewhere else, then stay out of this area," and it works really well.” (Case officer 2). Advisors frequently used conservation plans and scientific databases to justify and request specific specialist studies at this stage.

Stage 3: Obtaining specialist support

Stakeholders ubiquitously reported a high degree of respect for the importance of specialist reports. Subsequently, the professional position of specialists regarding the environmental viability of an application has a considerable impact. Specialists ubiquitously reported that they engaged in significant negotiations at this stage. These negotiations are confidential and frequently involve multiple iterations of project design before agreement is reached.

One specialist summarised this stage;

“Quite often you end up doing two or three layout assessments, and those first two or three never goes to the public only the third or final actually goes out to the public, so they keep it in-house a lot of times which is often good because you can be more critical then, and you don't have to actually go change reports that often.” (Specialist 1)

Specialists are presented with a trade-off decision in these negotiations. They are motivated to protecting their professional reputations and so do not wish to be associated with an environmentally unacceptable application. It is therefore in their professional interest to negotiate effectively with applicants and EAPs to reach a sustainable solution for the application. Conflictingly however they wish to maintain a positive relationship with their clients which would lead to future employment and so may be pressured into accepting a higher impact than is appropriate.

Whilst specialists were motivated to negotiate by professional reasons, they were also motivated by a personal interest in their study species. These personal motivations played a key role in determining the extent to which they were willing to negotiate. Specialists were frequently reported, both by specialists and by other stakeholder groups, to negotiate for reduced impact of applications to their professional detriment.

Stage 4: Informed negotiation of impacts

When specialist reports are completed, EAPs enter an informed negotiation with COs and advisors. This negotiation may happen both before, during and after the submission of applications for public consultation and may result in multiple iterations of applications which may extend over months or years. In 65% of instances the mitigations negotiated in the previous stages are sufficient and advisors support the application (Chapter Four). In 35% however a change is requested, and negotiation occurs. Of this 35%, the majority require only minor alterations however advisors reported that a small minority of cases at this stage comprise the majority of their workload.

Where negotiation occurs at this stage there is often informal communication between stakeholders. Biodiversity specialists, advisors and COs all reported informal information sharing about the potential impacts of applications. These communications played a key role in establishing and updating the reputation of EAPs in the perceptions of the specialists, advisors and case officers.

Stage 5: Achievement of an informal decision

In the vast majority of cases an informal decision is reached through consensus before the final submission of a formal application. This consensus was usually achieved after public comment was obtained however the negotiations which determined the outcome may have occurred at an earlier stage.

5.5. Reputation as a critical component of EIA processes

5.5.1. The role of reputation in informal negotiations

Advisors and case officers reported that their negotiations at all stages were informed by their prior knowledge of specialists and EAPs, and to a lesser extent applicants. Where advisors and case officers perceived that individuals had previously behaved independently and exhibited a high standard of work they treated those individuals more favourably. In practice this meant a lower level of scrutiny, faster processing and less opposition in negotiations; “If he picks the right consultant-- if he picks the guy who's going to do a good job, there's less critical reviewing that needs to be done by the authorizing department” (Land use advisor 4). Where advisors felt individuals had previously behaved unethically, delivered a low quality of work or, in the case of EAPs and specialists, were too favourable towards the applicant, advisors and COs applied higher scrutiny to applications and frequently sought independent verification of the facts presented through informal communication

with their contacts or the specialists. One respondent reported, “We've got a list of people that we know we have to watch” (Case officer 1). This higher scrutiny could cause delays and could lead to a higher workload for all stakeholders involved. As a result, specialists and EAPs were highly motivated to maintain positive reputations in the eyes of case officers and advisors.

While there are many effects of the reputational system, the key impact at a system level is to provide a clear motivation for specialists and EAPs to promote sustainable development by effectively negotiating with applicants for appropriate mitigation. As a direct result of the impact of reputation, the actions of EAPs and specialists in a single application have consequences for their career in the medium to long term. Consequentially whilst applicants may be motivated by optimising a single application, those that represent them have longer term motivations; “your reputation is more valuable than your relationship with an individual client.” (Specialist 1).

One EAP summarised this issue;

“If you consistently deliver a high standard of work, then they would take your opinion more easily than someone who is not delivering such a high standard of work. So, that's why you do build up a relationship, because it's by showing your professional integrity in biodiversity” (EAP 3).

Specialists and EAPS also track the negotiating effectiveness of advisors and case officers. Where they are effective, for example for specific habitat types, ecological features or species, EAPs and Specialists will become aware, either through their own experiences or through learning of the experiences of others. The EAPs and Specialists will adapt accordingly and alter their negotiations with applicants in order to pre-emptively avoid delays or reputational impacts. Through first and second-hand experience, Specialists and EAPs develop a mental map of substantive biodiversity protection as afforded by the negotiative abilities of advisors and case officers. These mental maps together form a professional culture of perceived conservation protection. This protection is not necessarily reflective legal status or official prescriptions but of the resistance experienced in practice, for example a habitat patch with low biodiversity value but which is highly appreciated for aesthetic reasons by local communities may receive higher protection in practice than a remote but biologically more important habitat patch. Conservation agencies have the ability to influence this culture through their actions. Where they concentrate their resources on specific areas, species or other aspects of biodiversity, this will often result in EAPs experiencing increased resistance and

subsequently the culture will shift to reflect this. In practice this focus is often communicated by the conservation plans and mainstreaming efforts.

5.5.2. The role of reputation as enforcement

Negative reputations were primarily established where individuals were perceived to have lied, failed to mitigate appropriately and promoted an unacceptable application or otherwise acted unethically. Many of the activities with negative reputational consequences are legally prohibited, for example EAPs must sign a legal declaration which states that they will act independently and represent the environment, not the applicants. Despite this case officers and advisors reported many instances where they felt EAPs did not act independently and breached this agreement. Legal recourse in these cases is extremely challenging, difficult to prove, expensive and time consuming. Subsequently legal recourse is reserved for high profile or extreme cases. Negative reputational consequences however can develop rapidly and with limited effort. Due to informal communication they function at either a provincial or national level and can be long lasting. As a result, whilst technically legal recourse is a deterrent to unethical or illegal behaviour, in practice it is relevant to a minority of offenders. The threat of a negative reputation, however, is both real and relevant on a day to day basis for all stakeholders and as such, has a far greater effect on behaviour and therefore plays a more frequent enforcement role in the EIA decision-making process.

5.5.3. The impact of mainstreamed conservation plans

The EAPs predict negotiative resistance using a number of sources of information. Primarily, however, they use a combination of their prior experiences and the systematic conservation plans developed by state conservation agencies; one noted “You'll always look at the maps” (EAP 3). As the EAPs are professionally motivated to avoid conflict, they therefore use the plans to guide applicants away from CBAs, “they do affect environmental impact assessments because they provide consultants with an indication of sensitivity” (EAP 4). The plans therefore deliver biodiversity protection by acting as predictors of conflict in a system which inherently rewards the representatives of environmental impactors for behaving cooperatively. The conservation plans deliver impact therefore because they are developed using biological data, communicated in practitioner-relevant terms, interpreted as predictors of conflict and supported by specialist negotiators (Cowling and Pressey, 2003; Reyers *et al.*, 2007).

5.5.4. The invisible impact of conservation negotiation

As EAPs and Specialists attempt to predict potential opposition and engage in informal negotiations at stages 1&2 they routinely migrate negotiation of the mitigation hierarchy out of both the formal process and the view of advisors and case officers. Where higher negotiative resistance is expected, this migration is more frequent. As a result, the more advisors and case officers are effective, the less frequently they observe their impact, as EAPs and Specialists will privately and pre-emptively negotiate with applicants. It is therefore extremely challenging to detect or measure substantive effectiveness of conservation efforts, SCPs, and indeed the EIA process as a whole.

5.6. Discussion

Chapter Four demonstrated that decisions within the EIA are substantively made throughout the process rather than at the final formal decision-making stage. The findings in this chapter further suggest that these decision-making processes should be viewed as informal negotiations. Viewing official governmental processes as underpinned by informal negotiations has consequences for attempts to understand and influence them. Critically, where the outcomes of formal adversarial processes are determined by a third party, informal negotiations are determined through achieving consensus. Undoubtedly, the official decision maker still plays an important role, yet the substantive decision is frequently outsourced to earlier negotiations.

In practice there are a wider range of stakeholders than those included in this study. Whilst using a reduced list of stakeholders did allow for the complex system to be meaningfully assessed, it does influence the results. Firstly, the simplification of the system makes it appear more stable than it likely is in practice as the stakeholders that were studied have well established relationships. Stakeholders who are less frequently involved in EIA processes will not have such well-developed relationships, may be unaware of established culture and may therefore behave unpredictably and thus disrupt the existing dynamic.

To reach consensus in EIA, a shared understanding of the application between stakeholders is fundamental. Accordingly, stakeholders must first be educated in the issues, concerns, constraints, goals, risks and intentions of the other parties; they must therefore learn about the practicalities of fields other than their own. Successful communication is critical to effective education (Salomon, 1981) and as a result, to the decision-making process. The extent to which conservation influence is achieved in EIA therefore hinges on the extent to which the justification for conserving nature is

effectively communicated (Reyers *et al.*, 2007; Pullin and Knight, 2009). What constitutes justification will differ by person, this may mean social pressure, government legislation or a moral reasoning (Pearson, 2016). The skill of the communicator in identifying and communicating the appropriate justification is therefore critical. Additionally, the complexity of the issue plays a key role, for example it may be easier to communicate the contribution of a wetland in cleaning water than the concept of additionality in biodiversity offsetting (Driver, Cowling and Maze, 2003; Groves and Game, 2016).

Humans have an inherent predisposition towards fairness (Tabibnia et al. 2008). Correspondingly it plays an important role in consensus reaching in environmental decision-making. Fairness is an inherently subjective consideration yet in practice it may supersede objective considerations, contributing to a contrast between how a process functions theoretically and in practice (Hulme, 2014; Toomey, Knight and Barlow, 2017). Balancing trade-offs between conservation returns, social equity and economic benefit is challenging, relationships are non-linear and win-win scenarios are often not possible (Halpern *et al.*, 2013; Pascual *et al.*, 2014). It is important therefore that efforts to engage with consensus-based decision-making processes both communicate the fairness of the conservation argument but additionally consider ceding where the burden is perceived as excessively unfair (Knight *et al.*, 2006; Reyers *et al.*, 2007; Pascual *et al.*, 2014). Persisting with insufficiently justified arguments may result in negative reputational outcomes, inefficient use of resources and outcomes which fall short of theoretical and legislative recommendations for biodiversity protection (Reyers *et al.*, 2010; Bull, Lloyd and Strange, 2017; Evans *et al.*, 2017). Perceptions of fairness however are highly contextual, subjective and may change over time (Walsh, 2006). As a result, this presents a challenging obstacle to conservation implementation.

Early engagement with actors causing potential environmental loss is critical in reaching consensus. Efforts to promote environmentally sustainable decisions are more likely to be effective if issues are raised early in the process (Pierce *et al.*, 2005; Redford *et al.*, 2015). These findings therefore suggest that there is strong potential for communication tools such as SCP to deliver impact by facilitating communication with non-conservationists (Reyers *et al.*, 2007; Redford *et al.*, 2015; Groves and Game, 2016). By providing a scientifically supported, spatially explicit, landscape-level statement of the relative conservation value of natural areas that is easily accessible by development proponents, SCP can support conservationists in these negotiations. To achieve this effectively however, plans may require a different factual foundation to traditional SCP (Knight *et al.*, 2006; Reyers *et al.*, 2007; Evans *et al.*, 2017). For example, explicit linkages to national, local or departmental targets may be

more relevant than ecologically based metrics of biodiversity to a non-conservation government audience and thus may deliver more influence (Pressey *et al.*, 2007; Langford *et al.*, 2011; McIntosh *et al.*, 2017).

South African legislation requires that EAPs act independently and represent the environment rather than their client (NEMA, 1998). In the words of Bond (2016), however, "providing the opportunity for legitimacy is not the same as ensuring legitimacy" and practice often deviates from the prescribed process. Game theory analyses of the EIA decision-making process suggest that it inherently motivates stakeholders to escalate conflicts and oppose each other, leading to mutual loss (Prenzel and Vanclay, 2014; Bond *et al.*, 2016). These findings partially support these predictions, in that some EAPs attempt to promote the interests of their clients over those of the environment and escalate applications towards conflict (Appendix 9.6.3.). These individuals appear to be the exception rather than the rule, however, and the influence of reputation on the behaviour of EAPs in informal negotiations results in the lower than predicted prevalence of conflict. This suggests, therefore, that the influence of reputation is capable of altering the process such that the "least worse" option, or Nash equilibrium, is cooperation and sustainable development rather than conflict and opposition. This suggests that these results may be readily interpreted through the lens of bounded rationality; stakeholders in this process are "satisficing", essentially they are tolerating outcomes that are not optimal but that they can live with in order to reach consensus (Simon, 1955). The development of a process which inherently promotes cooperation, as theorised by Bond et al (2016), is therefore possible. However, I suggest it is most effectively achieved through the use of social mechanisms rather than legislated elements of the decision-making process itself. These findings also support previous work which highlighted the importance of effectively motivating environmental assessment practitioners in the EIA process (Morrison-Saunders and Retief, 2012).

This deviation from the game theory predictions of the prevalence of conflict in the EIA process has important implications for the effectiveness of conservation plans and other mainstreaming efforts. The conservation plans communicate the rationale for biodiversity conservation of priority areas as a function of multiple components including legislation, international targets and threat status (Driver, Cowling and Maze, 2003; R. . Cowling *et al.*, 2003; Knight *et al.*, 2006; Reyers *et al.*, 2007). These plans are then supported by the actions of conservation agencies, whose influence in the EIA process leads the plans to become predictors of conflict. The EAPs are therefore motivated to use the plans to inform the mitigation of development applications. The efficacy of the plans is therefore a result of the degree to which EAPs consider them to indicate the potential for resistance. Whilst the

priority areas may have been determined by biological factors, their efficacy therefore hinges on their communication of elements which provide a negotiative benefit, such as provision of politically relevant ecosystem services or legislative protection. Additionally, as the conservation plans have been increasingly mainstreamed through adoption in government strategic planning, wide dissemination and endorsement by other sectors, they have gained legitimacy (Brownlie *et al.*, 2005; Knight *et al.*, 2006; Reyers *et al.*, 2007). This legitimacy has grown as they have been incorporated into applications by EAPs as standard best practice, cementing their influence. These findings therefore support widespread calls to mainstream biodiversity considerations as a routine element of economic activities (Petersen, 2005; Balmford and Cowling, 2006; Cowling *et al.*, 2008; Redford *et al.*, 2015).

This has broad consequences for the international conservation community. Conservation planning is used internationally to influence government processes (Chapter Three), yet despite this widespread use, its impact has not yet been demonstrated (McIntosh *et al.*, 2017). These findings indicate that well-mainstreamed conservation plans which identify priority areas for biodiversity through a clear scientific and legal rationale, and which are practically supported by a sufficiently capacitated conservation agency, are capable of influencing decision-making processes. These findings therefore suggest that the extensive efforts invested in the development, mainstreaming and enforcement of conservation plans in South Africa have yielded a return and are therefore a suitable model for the large number of conservationists in other nations wishing to use plans to influence government decision-making processes (Driver, Cowling and Maze, 2003; Brownlie *et al.*, 2005; Knight, Cowling and Campbell, 2006; Reyers *et al.*, 2007; Cowling *et al.*, 2008; Evans *et al.*, 2017; Phalan *et al.*, 2017). It is unclear however what the extent of this impact is. It is therefore important for future research to investigate the degree of impact delivered through these informal decision-making processes.

It is also important to note that, despite the influence of the conservation plans, the majority of the impact is delivered outside of the view of conservation agencies through a social and previously undocumented mechanism. These findings therefore support the importance of calls for in-depth qualitative research into the contextual and social factors which are an inherent feature of complex decision-making processes if the impacts of conservation engagement efforts are to be understood (Balmford and Cowling, 2006; Knight *et al.*, 2011; Bennett *et al.*, 2016; Bull, Lloyd and Strange, 2017; Evans *et al.*, 2017).

Practitioners implementing government processes have considerable agency and so have a significant impact on the realisation of legislation and policy (Lipsky, 1992). If conservationists are to make fullest use of the breadth of governance processes intended to mitigate the impacts of human activities on biodiversity, then there is a need to incorporate an understanding of the contextual realities of those implementing them into our engagement efforts (Evans *et al.*, 2017). It is also critical not to view divergence from scientific recommendations as evidence of complacent decision-making. As implementation processes are opaque and discursive, the logic behind them may be unclear but this does not mean it is lacking. Conservation relies on a social license to operate, and collaborative relationships with other sectors or groups of stakeholders are essential (Morrison-Saunders and Bailey, 2009; Smith and Verissimo, 2009). Whilst undoubtedly poor decisions are made, not all decisions with negative environmental consequences may be defined as such.

Finally, these results support the wealth of previous studies which identify the teams of conservation practitioners who engage in government decision-making as vitally important (Mascia *et al.*, 2003; Balmford and Cowling, 2006; Knight *et al.*, 2011; Redpath *et al.*, 2017). The effectiveness of the conservation plans is backstopped by the negotiating ability of the conservation agencies, which is in turn a product of the extensive contextual knowledge of the practitioners. This ability to track reputations, identify deception and communicate the conservation rationale is critical if the EIA process is to be leveraged for biodiversity conservation. This therefore implies a risk, that people in these positions may move onto different positions and thus this contextual knowledge may be easily lost. Opposingly however, in the larger context of biodiversity conservation, recruiting, fostering and supporting specialist negotiators is a relatively achievable goal. The most effective way of tackling the challenging problem of environmental representation in complex decision-making therefore appears to be to embrace it through well supported contextual specialists.

6. The challenge of negotiating top down offsets in a bottom up process

"Most of the great triumphs and tragedies of history are caused not by people being fundamentally good or fundamentally evil, but by people being fundamentally people"

- Terry Pratchett, from the book "Good Omens", 1990

6.1. Introduction

One of the consequences of facilitating sustainable development through an environmental impact assessment (EIA) process, is that the outcomes frequently incorporate some degree of negative impact on the environment. Many countries have policies which require No Net Loss (NNL) of biodiversity relative to a defined baseline, in which case residual impacts must be compensated for with an offset (Maron *et al.*, 2018). Biodiversity offsetting is a controversial approach which is used in multiple different contexts as a means of calculating appropriate compensation for impacts through restoration activities or impact avoidance at a separate location (Bull *et al.*, 2013; Maron *et al.*, 2016). The approach is increasingly being incorporated in EIA as a final stage in the mitigation hierarchy, however there are considerable doubts as to the extent to which biodiversity offsetting implementation is effective (Spash, 2015; Maron *et al.*, 2016; Bull, Lloyd and Strange, 2017). Biodiversity offsets were introduced in the Western Cape and KwaZulu Natal in 2007 as an addition to the existing EIA process with the aim of delivering NNL against a baseline of national ecosystem retention targets under the Convention on Biological Diversity (Brownlie and Botha, 2009; Department of Environmental Affairs, 2015; Maron *et al.*, 2018). This chapter therefore uses the understanding of the South African case study described in Chapter Five to examine the challenges and consequences of incorporating offsets into an existing EIA process.

The Business and Biodiversity Offsets Program defines biodiversity offsets as "measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken" (BBOP, 2009a). Impacts on the project site and surrounding area are usually determined through ecological surveys, the gains however are more challenging to calculate (Moilanen *et al.*, 2009; Bull *et al.*, 2013; Maron *et al.*, 2016), in some instances, habitat equivalent to that lost is restored from degraded land and the increase in biodiversity from the restoration actions generates the compensatory gains (Maron *et al.*, 2012). Alternatively, averted loss offsets may be used, where existing habitat is protected from future impacts, thus providing a biodiversity gain over time against a baseline where losses would have been likely (Maron *et al.*, 2012, 2018; Bull *et al.*, 2015). In both approaches, it must be demonstrated that the protection or restoration would otherwise not have occurred without the offset, a concept known as "additionality" (BBOP, 2009a; Bull *et al.*, 2013). Losses at the site impacted is frequently complete, i.e. all biodiversity is lost, whereas the gains at receiving sites are usually partial, e.g. habitat is restored from low quality to high quality. Consequentially the receiving site must be larger than the

impacted site, the ratio between these two areas is calculated through the use of a multiplier, i.e. the factor by the receiving site is larger than the impacted site such that biodiversity gains are equivalent or larger than losses (Moilanen *et al.*, 2009; Laitila, Moilanen and Pouzols, 2014). The multiplier is a composite feature which is used to adjust for multiple considerations including risk, time lag and habitat quality (Moilanen *et al.*, 2009). Theoretically the additional gain delivered through restoration or protection activities at an appropriately sized receiving site therefore deliver NNL as calculated against a baseline (BBOP, 2009a; Bull *et al.*, 2013).

Despite the theoretical basis, there have been challenges with implementation and as a consequence there are concerns about multiple aspects of biodiversity offsetting (Lukey *et al.*, 2016; Maron *et al.*, 2016; Bull, Lloyd and Strange, 2017). In a study over ten years of implementation Gibbons et al (2017) found that background levels of decline were overstated, leading to averted loss offsets which were non-additional and thus only delivered NNL over 147 years. This is supported by a global review by Bull et al (2017) which identified that multipliers in practice contravened the recommendations of both theory and legislation and rarely exceeded 10:1, as the multiplier is a function of multiple specific accounting components this suggests that the goal of NNL is not being delivered within a reasonable time frame at a global level (Moilanen *et al.*, 2009; Laitila, Moilanen and Pouzols, 2014). There are also concerns that offsets undermine the hierarchy by providing a more attractive option to developers than other stages (Phalan *et al.*, 2017). Further to this, the capacity of states to deliver effective offset governance has been raised as a considerable obstacle, both academically (Bull *et al.*, 2013; Maron *et al.*, 2016) and by practitioners (Lukey *et al.*, 2016). If biodiversity offsetting implementation is ineffective in achieving its goals then there is a considerable risk of undermining the mitigation hierarchy and ultimately accelerating the loss of biodiversity (Gordon *et al.*, 2015; Ives and Bekessy, 2015; Maron *et al.*, 2015, 2016). There is a clear need therefore to examine the implementation of biodiversity offsets within a well understood context (Bull, Lloyd and Strange, 2017).

South Africa provides a suitable case study for an empirical examination of offset implementation within an EIA context. In 2007 offset guidelines were legally adopted in the provinces of KwaZulu Natal and The Western Cape (Department of Environmental Affairs and Development Planning, 2007; Brownlie and Botha, 2009; Ezemvelo KwaZulu Natal Wildlife, 2013). Since then there has been a slowly increasing level of offset implementation and the national policy is in development (Brownlie *et al.*, 2017). South African EIA policy and practice is consistent with that of other nations and has a well-established literature and body of practice (Morgan, 2012; Morrison-Saunders and

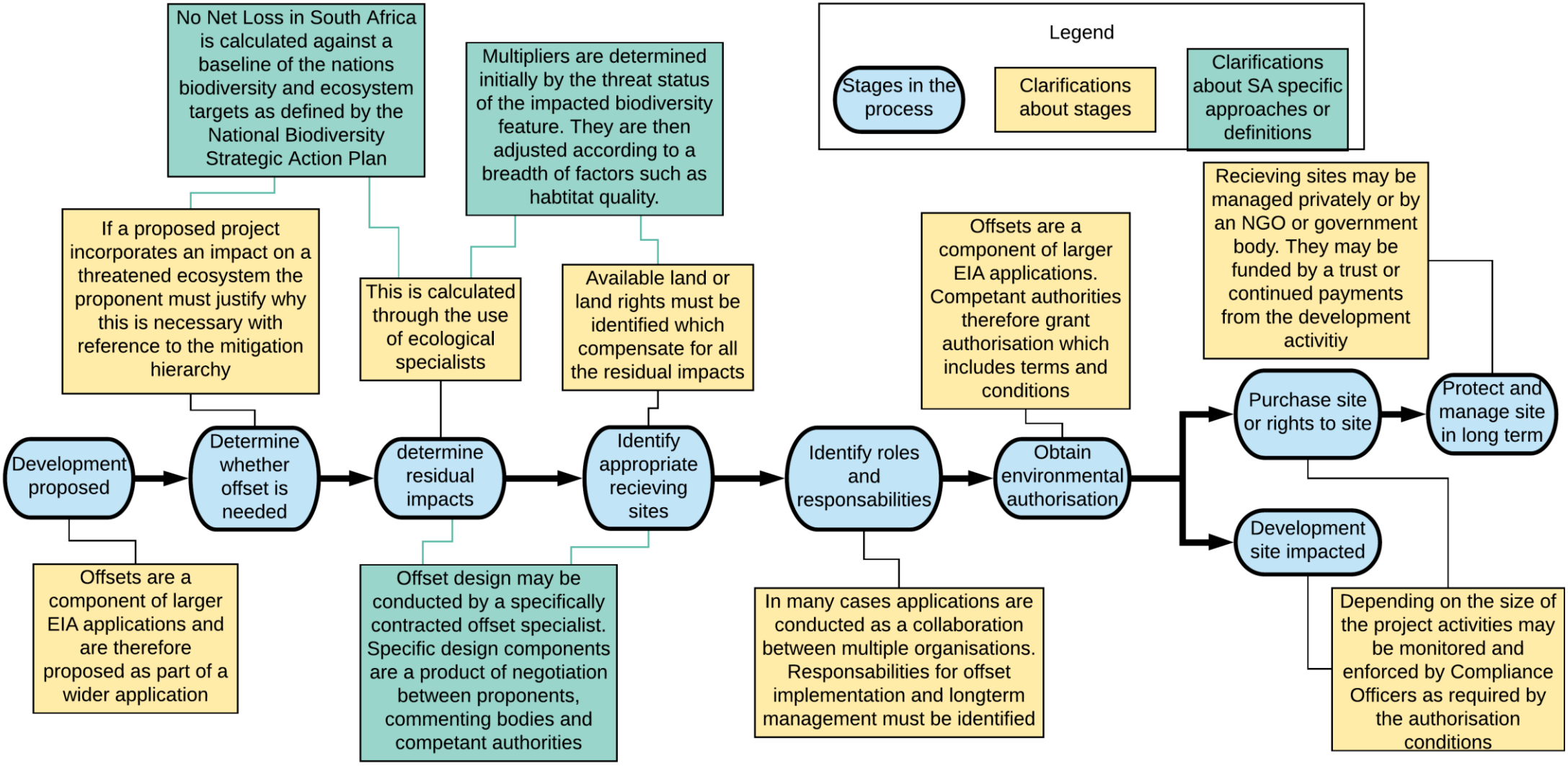
Retief, 2012). Chapter Five provides a basis for understanding the practicalities of EIA implementation and demonstrates that whilst the process is inevitably evolving in the long term, the social dynamics which underpin the process are stable. The challenges faced by offset implementation in South Africa are also comparable to those faced internationally. Lukey et al (2017) examined barriers as perceived by a breadth of stakeholders and described three categories; theory-related, governance and those related to environmental improvement. These categories and barriers within them are directly comparable to the those synthesised by Maron et al (2016) in a global level review of potential obstacles to implementation.

It is therefore possible to apply the understanding of EIA implementation in a South African context demonstrated in Chapter Five to address the broadly identified need for empirical examination of offset implementation. This chapter therefore aims to understand how biodiversity offsets have functioned in practice as a component of the mitigation hierarchy within the EIA process. This will be achieved through an interview based approach which explores stakeholders personal experiences with the implementation of biodiversity offsets in South Africa.

6.2. Methods

6.2.1. The offset process in South Africa

This research addresses biodiversity offsets as a component of the environmental impact assessment process in South Africa. Whilst acting within the confines of the EIA process offset development and implementation in South Africa may follow multiple routes, Figure 6.1. demonstrates the basic stages of the process. Applicants frequently contract ecological and offset specialists to design part or all of the offset. Rational is presented within the EIA application in a report and is subject to scrutiny and commenting in a similar manner to other elements of the report. No net loss is calculated against a baseline of the national targets as laid out in the National Biodiversity Strategic Action Plan (NBSAP) which in turn demonstrates how South Africa will achieve its commitments under the Convention on Biological Diversity (CBD). Multipliers are initially calculated according to the threat level of the impacted biodiversity feature and are then adjusted according to a range of other characteristics (Brownlie and Botha, 2009; Laitila, Moilanen and Pouzols, 2014). The factors that determine offset multipliers include; time lag, habitat quality/degradation, the provision of management costs. Decisions are made by the competent authority.



6-1 The basic offset process as defined by gazetted provincial guidelines.

6.2.2. Data collection

Interviews were conducted as described in Chapter Five following the same ethical protocol. Whilst many of the case studies selected did not incorporate biodiversity offsets, all respondents were asked “Have you encountered biodiversity offsets and if so, what is your opinion of them?”. The word “encounter” was used as different stakeholder groups interact with offsets in different ways based on their professional roles.

Where respondents had not encountered offsets through their professional activities but had opinions about the topic, their responses were excluded from the analysis so as to focus on direct experiences. In addition to the initial question respondents were asked follow-up questions to encourage further discussion as appropriate. Of the 53 respondents, 36 had encountered biodiversity offsets (Table 6.1).

Table 6-1. The respondents who had experience with offsets.

Stakeholder	Interviewed	Had encountered offsets
Applicants	5	1
EAPs	17	12
Specialists	16	8
Advisors	6	6
Case Officers	9	9
Total	53	36

6.2.3. Offset prevalence in South Africa

There is no national database of offsets in South Africa and there is considerable debate between government departments as to how to define and record offsets. The South African National Biodiversity Institute released a report in December 2016 stating that 16 offsets had been approved in The Western Cape, 9 had been approved in KwaZulu Natal and 70 had been approved nationally for a combined offset receiving area of 275.6km^2 (SANBI; pers comm). All of these offsets had been approved through the EIA process. As the EIA process can take many years, this does not reflect the number of offsets which are currently been considered, which are being developed, which have lapsed or those which have been dropped from applications which have otherwise continued. The number of applications which have incorporated an offset to some degree is therefore considerably higher.

6.2.4. Interview analysis

A thematic analysis was used to examine interviews as detailed in Chapter Five (Braun *et al.*, 2006). Codes were developed to address all elements relevant to the research question. Once the data had been sufficiently coded to reflect all elements discussed, the codes were grouped into emergent themes which addressed the questions posed. This work falls under the same ethical approval and protocol as Chapter 5.

6.3. Results

6.3.1. Attitudes to offsets

Respondents almost ubiquitously reported negative attitudes to offsets; one stated simply, “I hate offsets” (Land use advisor 5) and another said “is just not practical or realistic. it’s all uphill” (Specialist 9). The most frequently cited objection was a perception that offsets were challenging to implement and as a result were unlikely to deliver in practice what they proposed in theory: “as a tool and a process, I don’t think it’s working in this province” (Land use advisor 6). Respondents reported many anecdotes of offset failure, the most frequently cited are illustrated in Figure 6.2. Additionally, stakeholders reported that they disliked offsets as they resulted in an increased workload which put the respondents under additional professional pressure, “it cost a lot of money as well for the developer, and cost a lot time and money for us well. Because we have to review the offset and see whether we are happy with it or not.” (Land use advisor 5). As a result, many respondents reported that they avoided working with offsets where possible; one Environmental Assessment Practitioner (EAP) said, “I avoid them at all costs” (EAP 5). Despite these perceptions, many respondents reported that they felt that offsets were going to become a legislated component of the EIA process and that therefore engaging with the process was likely to give a better conservation return than not, “I don't like them at all, but I do think they are inevitable” (Specialist 8).

Whilst EIA frameworks have been in operation for decades, biodiversity offsets are a comparatively recent addition in South Africa. As a result, they are an infrequent component of EIA applications and are still viewed as a novel addition to the process. Respondents reported that the introduction of offsets into this existing system presented challenges as they are more technically complex than other elements of the EIA process, respondents noted “when it first came up, it was a bit of an issue, how do we do it?” (Case officer 4) and, “I think it'll be a steep learning curve on many fronts,

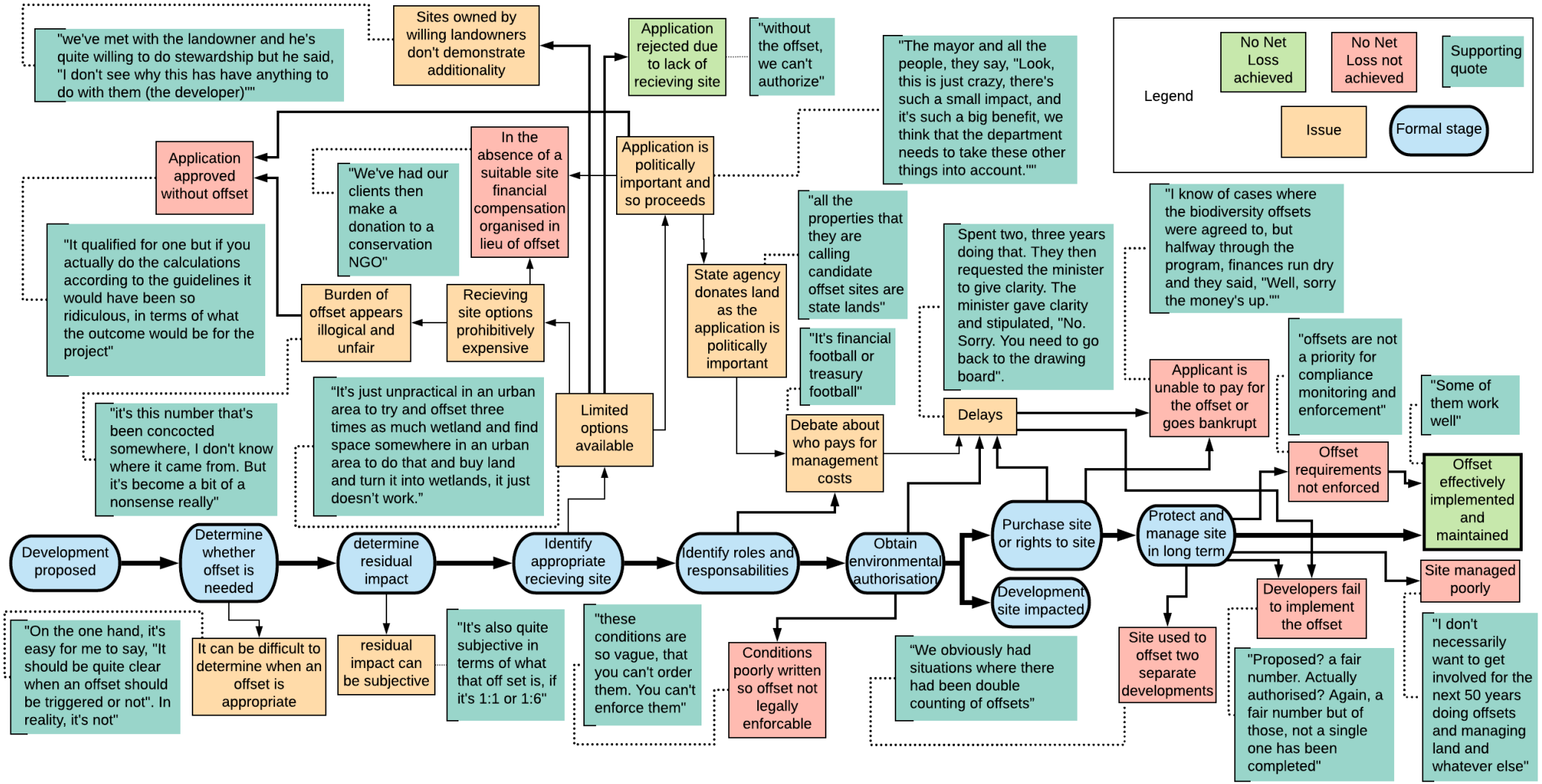
especially with biodiversity offsets. Because that's quite new" (Specialist 12). Issues experienced in offset implementation were broad and wide ranging, however the majority could be classified into challenges with either technical aspects of offset design or with governance and enforcement.

6.3.2. Technical challenges

All stakeholder groups reported extensive issues in implementing the technical aspects of biodiversity offsets. In particular, respondents reported that identifying suitable receiving sites presented a major challenge. In many cases, there was a deficit of areas with biodiversity or ecological features which could appropriately compensate for losses. Where suitable habitat could be found, it was rarely possible to purchase a specific area as properties are rarely divisible under South African legislation. Instead, those seeking to offset had to either buy larger properties, negotiate rights to portions of land owned by a third party or identify sites within their existing property. As a result, receiving sites frequently contained habitat patches which differed in both size and quality to those prescribed by offset calculations.

The vast majority of offsets described by stakeholders used averted loss rather than restoration. In practice however, the additional gains achieved through averted loss were frequently determined subjective rather than calculated quantitatively. One of the issues was determining predicted future loss; natural areas are afforded some degree of protection by government planning processes, however they are administered through unpredictable negotiated processes (Chapter Five). As a result, calculations of the legal protection of natural areas on private land and thus the expected future loss were frequently subjective, in the words of one respondent "It's also quite subjective in terms of what that offset is" (EAP 14).

This was further complicated by the issue of landowner attitude. Where a suitable receiving site had been identified on a third-party property, either a sale or transfer of rights had to be negotiated. Where areas of suitable biodiversity were owned by landowners who were positively predisposed to conservation of some form, they had frequently previously engaged to some degree in private conservation action, such as formal stewardship, and as a result limited additionality could be demonstrated. Where landowners had an intention to convert natural areas as part of their economic activities, they were infrequently inclined to relinquish rights over those areas and were either uninterested in participating in an offset or requested prices far exceeding market value. The use of averted loss offsets and the presence of highly threatened habitats meant that prescribed multiplier ratios were high, frequently between 10:1 and 30:1. These high ratios combined with the



6-2 The issues arising in offset implementation.

challenges of identifying appropriate habitat patches, owned by willing landowners, on suitably sized land parcels, presented a significant obstacle. One respondent summarised this, “The offsets in that area will be 30 times the amount of area that you are transforming. And that farmer, the owner of the land, he doesn't actually have that type of area to give. And even if he had it, he wouldn't give it.” (EAP 2).

6.3.3. Governance challenges

Offset implementation was also challenging from a governance perspective. Stakeholders reported that the complexities of biodiversity offsets meant that writing legally and technically robust conditions of approval was difficult and as a result, errors were common, “When the authorization came out, all we had as the condition was a reference to our report. Which I think seriously diluted the power that they (the competent authority) could have wielded in terms of compliance monitoring and importance” (Specialist 4). This complexity also hampered monitoring and evaluation of conditions as an appropriately capacitated specialist was required to inspect compliance, “Then you have to audit, you have to get someone to audit that is quite aware of how to deal with those situations” (Case officer 7).

Offset enforcement varies, however is frequently conducted by compliance officers contracted by applicants as a component of the terms and agreements of authorisation. Alternatively, applicants may state that they are unable to comply, or complaints are lodged by members of the public or environmental organisations. Where offset conditions were not met, it was challenging to legally enforce them however. Respondents reported that applicants cited a wide breadth of reasons for non-compliance. The most frequently claimed reason for non-compliance was lack of funds, either due to unexpected financial difficulties or an unexpectedly high cost of offset implementation, “I know of cases where the biodiversity offsets were agreed to, but halfway through the program, finances run dry and they said, "Well, sorry the money's up."” (Case officer 1). Respondents also reported that applicants would use legal means to avoid complying with offset agreements, “I think what they were doing was; "We'll just say yes to whatever we need to now, and then we'll apply for an amendment”” (Land use advisor 4).

It was also frequently unclear who was ultimately responsible for offset sites in the long term. Whilst offset guidelines appear to be clear about responsibility by prescribing that the polluter pays, in practice projects were often executed by consortiums of both state and private entities. One respondent described the negotiations between departments after offset implementation as

“financial football or treasury football” (Specialist 4). This avoidance of responsibility was partially a financial issue but was also about capacity; organisations which caused environmental impacts rarely wished to manage environmental areas, “Generally developers don't want to be involved, also they don't have the experience or expertise to manage conservation areas.” (Case officer 8).

Offsets were also introduced into a complex, pre-existing legislative environment and as a result caused clashes and contradictions. One respondent summarised this; “The differences between policy, national, provincial, the conservation guys, the forestry guys, water affairs, they've all got different ideas in terms of offsets and different approaches and different methodology of determining ratios or offset and where trees lack or where you can at for alternatives. Quite a bit of conflicts, mashed up. You got a whole lot of dropped policies and dropped guidelines.” (Case officer 8)

6.3.4. Offsets as a negotiated process

Chapter Four and Five demonstrated that the EIA process is implemented through communal negotiation. Respondents reported that correspondingly, offsets were also designed, developed and executed through discussion, negotiation and compromise. One respondent described the process as “very much a negotiation” (Land use advisor 4). As a result, the social elements described in chapter Five played key roles in offset design and implementation.

Respondents frequently reported that the challenges of communicating technical aspects of offsetting to stakeholders presented obstacles to reaching consensus. Stakeholders from all groups also described issues with fully understanding the obligations of offsetting. Where consensus was reached, applicants regularly misunderstood the obligations of their offset agreements and subsequently attempted to avoid adhering to them. One respondent noted that developers frequently, “had no idea what they were actually getting themselves into” (Land use advisor 4). Respondents reported that developers misunderstood the obligations of their agreements both because offsets are inherently complex and because developers frequently failed to properly educate themselves about the terms of agreement.

Offset characteristics are often the result of specific calculations, for example multipliers are a composite feature used to balance multiple considerations such as risk, additionality and time lag (Moilanen *et al.*, 2009; Laitila, Moilanen and Pouzols, 2014). In practice however, these specific prescriptions were implemented in complex contexts and subsequently there were rarely “neat fits”.

Receiving sites were not the perfect size, third party properties came with complications, and applicants often had unusual circumstances. Accordingly, these contextual elements were addressed through the wider negotiations of the EIA process. The complexity of offset requirements presented a major obstacle in these discussions and respondents reported frustrations during negotiation as a consequence, “we were getting to stalemates because they just refused to be co-operative. They wanted to argue every point” (Land use advisor 4). The prescriptions of both the offsetting theoretical literature and best practice guidelines were therefore implemented loosely.

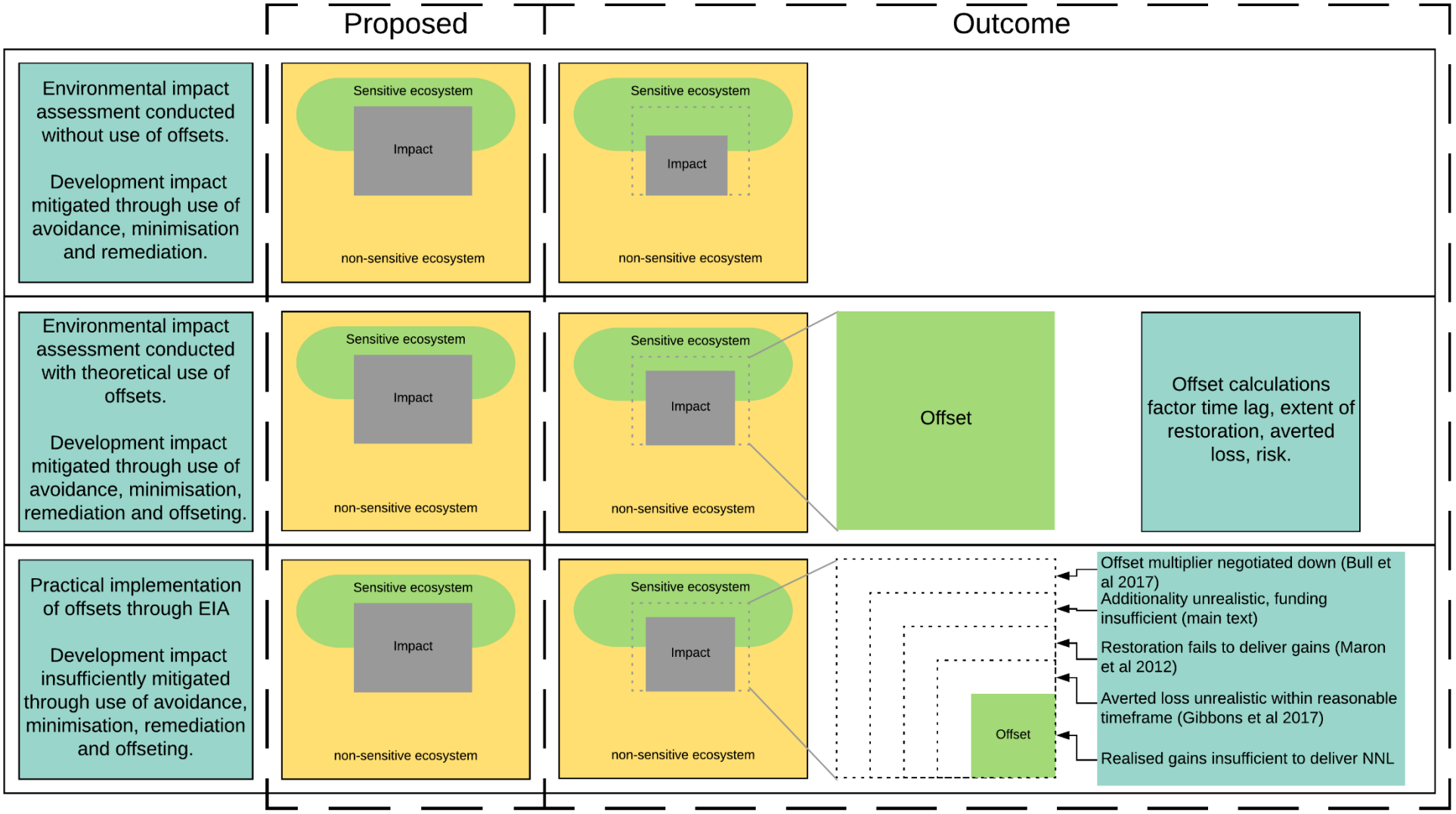
Implementation through negotiations also introduced social pressures (Chapter Five). Respondents reported that they felt offset requirement were too rigid and so made unfair demands on applicants. Accordingly, implementation was adapted to the context and circumstances of the applicant. One respondent summarised this, “It isn't always fair to hit them with a big offset right up front when they don't have the cash necessarily, so we've got all sorts of ways of implementing.” (Specialist 1). Farmers in particular received special treatment. If offset guidelines were interpreted strictly then farmers would frequently be unable to achieve no net loss through an offset on their existing property and would be required to buy either a second farm or third-party rights to a property purely for offset purposes, and the cost of implementation would therefore be far more than the value of their financial gains. As farmers frequently operate with small profit margins and have limited capital to invest, this was viewed as disproportionate and unfair, consequently they were infrequently expected to implement offsets. Where an applicant was wealthy however, this did not apply, and they were expected to observe best practice guidelines. One specialist summarised this, “The problems come when they're little guys who don't have much land to develop and haven't got much to trade off either. It's nice working with bigger land owners who often have multiple farms that you can then do bigger conservation areas perhaps for a bit bigger development.” (Specialist 1).

Theoretically, where offsets were unviable due to high cost, lack of receiving site or other logistical issues this would result in a rejected application. Respondents reported that this happened in some instances, “we've got this problem with this crossing on the river, they just said, "No swamp forests, it's not offsettable." It's just not offsettable, so that's the end of that discussion.” (EAP 8). This was not always the case however; the unviability of offset implementation was frequently viewed as an issue with offsetting as an approach rather than with the proposed development. One respondent commented, “It’s just unpractical in an urban area to try and offset three times as much wetland and find space somewhere in an urban area to do that and buy land and turn it into wetlands, it just doesn’t work.” (Specialist 9). In practice therefore, the inability to effectively offset was often

addressed through other means, in some instances applications were redesigned and in others financial compensation was arranged in lieu of an offset. In the words of one respondent, offsets frequently became “a simple blood money payoff for development” (Specialist 1). Offsets therefore failed to act as a true market mechanism as lack of suitable gains did not reliably lead to rejection of an application.

6.3.5. Offsets as a destabilising influence on the existing environmental impact assessment process

Chapter Five demonstrated that whilst the EIA process is inherently dynamic, many of the social mechanisms which underpin it are established and relatively stable. The addition of biodiversity offsetting to the mitigation hierarchy has the potential to decrease the environmental protection afforded by the process however. Where offsetting is not an available option, development proponents are required to propose an acceptable environmental impact through the other stages of the hierarchy, in practice this is frequently achieved through avoiding sensitive areas. The availability of offsetting has weakened the implementation of the “avoid” stage by providing development proponents with the ability to impact threatened ecosystems which they would otherwise be unable to do, “offering up an offset was opening the doors to negotiation“ (Specialist 2). Offset design is prescriptive, complex, unsuited to implementation through a negotiative process and highly prone to failure, “I don't know any successful biodiversity offsets” (Case officer 1). As a result, environmental proponents reported being forced into agreements which would not have been previously possible through the use of offsets which were ultimately unsuccessful, and which were therefore worse than if impacts had been addressed without them. In addition, in reality the hierarchy is rarely applied sequentially but simultaneously, with applicants making decisions about the use of stages financially rather than environmentally. Essentially, the addition of offsets into the EIA process introduces a negotiation loophole which weakens the entire process as a result (Figure 6.3).



6-3 Offsets can mitigate impacts which would otherwise be acceptable. Where offsets are unsuccessful they can then lead to an unacceptable loss of biodiversity.

6.4. Discussion

6.4.1. Transferability

As the case study in this instance was South African, understanding the transferability of the research requires an insight into the variations in EIA processes internationally. Over 192 countries have some form of legislation that refers to EIA (Morgan, 2012). The core of the process, the mitigation hierarchy, is also widely consistent between nations, with a number of international organisations promoting unified best practice (Esteves et al, 2012). There is also consistency in certain geographical areas, for example the EU nations have sought homogenisation and consistency in both policy and practice. Offset policy frameworks are internationally congruent (McKenney and Kiesecker, 2010), and whilst there are policy variations between nations, the process maintains a consistent structure (Esteves, Franks and Vanclay, 2012). Additionally, the theory-implementation gap recognised at a global level in offsets (Bull, Lloyd and Strange, 2017) has also been identified in the EIA process (Cashmore *et al.*, 2004; Forester, 2008; Chanchitpricha and Bond, 2013; Kågström and Richardson, 2015; Bond *et al.*, 2016). Whilst there is no consensus as to the determinants of this gap, it is clear that stakeholder strategies play a key role (Cashmore & Axelsson 2013; Kågström & Richardson 2015; Bond et al. 2016;Chapter Four), that context frequently deviates the process from what is formally prescribed (Pischke and Cashmore, 2006; Forester, 2008; Hansen and Wood, 2016) and that there is a considerable risk of the process failing to deliver its objectives (Cashmore *et al.*, 2004; Morgan, 2012; Chanchitpricha and Bond, 2013; Morrison-Saunders *et al.*, 2014). There is undoubtedly considerable socio-economic, legislative and bio-geographic variation between nations and their interpretations of EIA. I suggest however that biodiversity offsets as a component of EIA are routinely implemented through negotiation to a greater or lesser degree, and that this inherently subjective process leads to a divergence between practice and theory. There is also evidence to suggest that there are comparable stakeholder attitudes in other countries. Taherzadeh and Howley (2017) found that stakeholders perceived the potential for offsets negatively in England. Many doubted whether they could be effectively implemented, whether businesses would accept the new burden or whether no net loss could be achieved. The central issue with understanding the extent of transferability however is the deficit of comparable studies exploring the intangible elements of offset implementation.

6.4.2. The impact of negotiation on the theory-implementation gap

Offset implementation as a component of the mitigation hierarchy within EIA frequently fails to deliver the intended biodiversity gains which are essential to achieving NNL (Maron *et al.*, 2012; Gibbons *et al.*, 2017; Lindenmayer *et al.*, 2017). Viewing the process by which offsets are conceived, designed and implemented as a negotiation goes a considerable way to explaining the underlying drivers behind this gap. Offsets are a

composite of inherently complex concepts which are difficult to quantify, measure and comprehend (Lukey *et al.*, 2016; Brownlie *et al.*, 2017). They are executed through legal systems which are adversarial rather than prescriptive (Bond *et al.*, 2016) and which are intended to be flexible and adaptive according to needs and circumstances (Zellner *et al.*, 2008; Prenzel and Vanclay, 2014). Accordingly, mistakes, misunderstandings and misinterpretations are commonplace (Forester, 2008), messy contexts make interpretation of theory subjective rather than objective (Knight *et al.*, 2011; Evans *et al.*, 2017) and carefully established scientific justifications are viewed as flexible negotiating positions. One respondent, an offset specialist, summarised the issue, “On the one hand, it's easy for me to say, "It should be quite clear when an offset should be included or not". In reality, it's not” (005 01). As a result, where offset theory is perceived by stakeholders as dictating dogmatic and unfair mitigations which are politically and socially egregious as a result of a well substantiated yet poorly understood theory, elements of offsetting are perceived as subjective, are interpreted loosely and are compromised in implementation.

Chapter Five demonstrated that effective implementation of the EIA process in South Africa hinges upon the extent to which development proponents perceive environmental proponents as able to oppose unsustainable impacts. This is particularly true of the avoid stage, the most environmentally acceptable means of mitigation, yet one which appears underutilised due to its unfavourable economic impacts (Phalan *et al.*, 2017). These findings suggest that biodiversity offsetting in its current form is unsuited to implementation through negotiation and as such contributes a weakness to the environmental protection offered by the EIA process as it allows for impacts which would otherwise be unacceptable yet fails to deliver the commensurate gains, thus leading to a net loss of biodiversity. This has serious implications for the increasing global uptake of biodiversity offsets as a component of the EIA process (Maron *et al.*, 2016). These findings support concerns that the adoption of offsetting has the potential to facilitate impacts to biodiversity and the environment which would otherwise have been unacceptable (Bekessy *et al.*, 2010; Ives and Bekessy, 2015; Spash, 2015). The addition of offsets to existing EIA processes has the potential to destabilise existing systems and reduce the biodiversity and environmental protection afforded through EIA in contexts where it is currently effective and could further undermine the process in areas where it is currently ineffective. The challenge of applying scientifically rigorous evidence, tools and approaches within complex decision-making contexts is not insurmountable, however it does require appropriate design, delivery and infrastructure (Groves and Game, 2016; Evans *et al.*, 2017). If this challenge to offset effectiveness is to be addressed, there are the following important focal areas for development of theory, practice and legislation:

Implementation relevant theory

Whilst scientific developments designed to advance applied fields play a critical role (Chapter Three), it is important that the gap between implementation contexts and scientifically supported theory is bridged and that practitioners are supported by the literature (Milner-Gulland *et al.*, 2009; Sunderland and Sunderland-Groves, 2009; Kujala, Burgman and Moilanen, 2013). There is a need for further examination of implementation contexts through methods capable of capturing the complexity in its often unexpected forms (Knight *et al.*, 2011; Evans *et al.*, 2017). This understanding must then be used to inform the advancement of theory which meaningfully contributes to practitioner challenges, potential examples include identifying key decisions that practitioners will face and providing the relevant science (Estévez et al. 2013; Bull et al. 2015; Moilanen& Kotiaho. 2017), accessible reviews (Bull *et al.*, 2013; Maron *et al.*, 2016) and by providing frameworks for decision-making (Burgman, 2005; Regan *et al.*, 2005; Martin *et al.*, 2012).

Appropriate governance support

Biodiversity offsetting is inherently complex and as a result the governance elements are correspondingly challenging (Lukey *et al.*, 2016). Offsetting policies frequently underdeliver (Gardner *et al.*, 2013; Gibbons *et al.*, 2017; Lindenmayer *et al.*, 2017), introducing biodiversity offsetting as an addition to pre-existing governance infrastructure, such as EIA, without developing supporting infrastructure, is unlikely to translate to effective implementation (Brownlie *et al.*, 2017). If offset implementation is to be effective it must be arbitrated by an appropriately capacitated and positioned team supported by specific legislation rather than being added to the responsibilities of pre-existing civil servants, processes or systems without additional support. Achieving this governance will bring an associated cost (Rozema and Bond, 2015).

True "unoffsetability"

It is critical to achieving NNL through offsets that the concept of "unoffsetable" is meaningful, i.e. that applications can be rejected purely on the basis that it is not possible to properly offset residual impacts. If it is felt by stakeholders that applications *may* be accepted on the basis of a partial offset of impacts, then this considerably weakens the position of environmental proponents, negates the functionality of offsetting as a market based tool (Hrabanski, 2015; Lapeyre, Froger and Hrabanski, 2015) and will likely lead to compromise and net loss (Spash, 2015). This may require clear identification of "no-go" areas defined as such on the basis of unoffsetability alone.

6.4.3. The opportunities of implementation through negotiation

Viewing implementation as a product of negotiation has consequences for the underexplored ethical implications of offsetting (Ives and Bekessy, 2015). The EIA process actively facilitates the solicitation and

consideration of the needs and views of local communities (Esteves, Franks and Vanclay, 2012) which, whilst not without issue (Hartley and Wood, 2005; Leong, Forester and Decker, 2009), have the potential to drastically alter the direction and outcomes of applications (Kruger et al. 1997; Chapter Four). This may therefore allow for offsetting of a wider scope of values attributed to natural areas (Ives and Bekessy, 2015; Díaz *et al.*, 2018).

6.4.4. The potential for future work

An important component absent from this assessment is a review of the extent and quality of offsets planned, proposed and implemented in this area. Such a study would yield important insights into the relationship between the quality of the offsets emerging through this process and the frequency of different issues and forms of failure. Given the wide range of different routes that offsets take through design and implementation, a review of their quality would need to include assessment at multiple stages in order to identify factors which predict different outcomes. This would then potentially provide clearer insights into how policies may be designed to more effectively avoid failure.

6.4.5. Conclusion

Offsetting has the potential to allow biodiversity features which would otherwise be protected to be impacted. If they are then unsuccessful then there is potential for considerable loss of biodiversity (Maron *et al.*, 2016). If offsetting is to function as a component of the mitigation hierarchy and EIA process to deliver NNL, then the challenges of developing, approving, monitoring, financing and enforcing offsets must be identified, understood and addressed (Bull, 2014; Hrabanski, 2015; Spash, 2015; Maron *et al.*, 2016). These findings support calls for the use of empirical, qualitative and interdisciplinary research to provide the linkages between both theory and practice and between the ecological, social and legislative realms which are essential if these challenges are to be addressed (Mascia *et al.*, 2003; Kareiva and Marvier, 2012; Bennett *et al.*, 2016; Hicks *et al.*, 2016; Bull, Lloyd and Strange, 2017). Future research must address resolution; understanding and linking the drivers which function at individual, institutional, system, national and global levels is critical if our comprehension of implementation is to be sufficient (Bosch *et al.*, 2007; Bond *et al.*, 2016; Hansen and Wood, 2016). Ultimately, the extensive weaknesses that biodiversity offsets introduce to negotiated systems may mean that it is challenging to design a system that can effectively enforce them. Where applicants act in good faith, implementation is possible, but where they seek to avoid their commitments, biodiversity offsets may present a weakness to the delivery of no net loss.

7. Synthesis and discussion

"If a man will begin with certainties, he shall end in doubts; but if he will be content to begin with doubts, he shall end in certainties."

— Francis Bacon, The Advancement of Learning, (1605)

7.1. Introduction

The field of biodiversity conservation is inherently interdisciplinary. Despite being driven by ecological objectives, it is fundamentally concerned with changing behaviour (Schultz, 2011). As a result, conservation proponents attempt to influence, guide and inform decision-making processes across the globe (Seddon *et al.*, 2016). The mechanisms used by societies to make decisions about their environments are complex, however, and there are extensive debates about every aspect of planning and governance (Cashmore *et al.*, 2004). This is reflected by extensive evidence that these processes often function differently in practice from theory, leading to unexpected outcomes or a failure to achieve targets and goals (Carpenter *et al.*, 2016; Sutherland and Wordley, 2017). Consequently, there have been increasing calls for empirical studies which examine the realities of decision-making in practice (Evans *et al.*, 2017). This thesis aims to answer these calls by providing a thoroughly grounded examination of the social dynamics that underpin decision-making within an environmental impact assessment process.

Of the multiple elements addressed throughout this thesis, there are three themes of wider relevance which run throughout. The first theme is the importance of understanding the inherent complexity of undocumented social dynamics which underpin environmental decision-making. This is twinned with a need to apply insights into these dynamics to broader policy and implementation issues as I have done with biodiversity offsets in Chapter Six. The second theme is that of how to apply social sciences to inform and advance conservation theory and practice. Whilst qualitative approaches are routinely called for, they are frequently used poorly and it can be challenging to identify the most suitable theory or methods to draw from (Young *et al.*, 2018). The third theme is the identification of a clear need for conservation negotiators, individuals who argue on behalf of the environment. The studies contained within this thesis all indicate the importance of contextual experts who are able to understand and work with the subtle dynamics of a situation to ensure that biodiversity and the environment are properly considered in decision-making processes.

7.2. The importance of understanding complex decision-making contexts

The theme most central to this thesis is that of the importance of understanding the complex contexts of decision-making processes. There has been extensive investment into developing science, tools and guidance for decision makers, yet in many instances, decisions with high environmental impacts are made, despite clear advice about the consequences (Carpenter *et al.*, 2016; Venter *et al.*, 2016). Some consider

this an indicator of complacency on the part of practitioners and policy makers, however the findings within this thesis support suggestions that understanding the complex contexts within which decisions are made is essential if they are to be properly understood (Evans *et al.*, 2017; Sutherland and Wordley, 2017). Chapter Four and Five demonstrate together that a process which appears to function relatively smoothly may actually be the result of considerable effort occurring out of sight. This additionally supports research from other fields which highlights how the personal experiences of practitioners ultimately play a major role in the implementation of policy and legislation (Lipsky, 1992). Chapter Five illustrates that in practice, decisions about impacts on the environment are reached through complex stakeholder interactions, which are governed not just by the facts of the case, but also by social dynamics which may not be visible to outside observers. Chapter Six demonstrates that understanding the paradigm within which these dynamics and interactions occur can provide insights into globally relevant challenges to policy and practice, in this case the implementation of biodiversity offsetting (Bull, Lloyd and Strange, 2017). Chapter Three also reflects the importance of understanding complex contexts; implementation-focused prioritisations were a product of collaboration and end users were routinely identified and included the design process. There are wider potential applications of this understanding of these social dynamics as well, such as measuring the effectiveness of systematic conservation planning (SCP), understanding the mechanisms of political corruption and providing insights into the elicitation of expert advice (Martin *et al.*, 2012; McIntosh *et al.*, 2017). Chapter Five demonstrates that where SCP is effective, it is often concealed, as where impacts are avoided, this is often done confidentially. Chapter Three demonstrates that expert knowledge is being used to create and apply spatial conservation prioritisations, a key component of informed decision-making processes. Chapter Five then demonstrates the professional pressures that may motivate an expert when they are contracted to apply their knowledge. Finally, whilst not addressed comprehensively in this thesis, the interviews conducted in Chapter Five include detailed descriptions of the nuanced yet pervasive nature of political interference which represent an important potential avenue for future research (Appendix 9.6.3.).

Critically however, whilst this thesis contributes to understanding these processes, it currently remains unconnected to measurable conservation outcomes. Chapter Four illustrates that whilst business-as-usual may be frequent adherence to the recommendations of conservation agencies, this is nevertheless within a context of biodiversity decline (Department of Environmental Affairs, 2015). There is a wide breadth of ways in which the EIA process may fail to achieve no net loss including; non-compliance, illegal impacts external to the process, inappropriate siting, accumulative impact and political pressure may all contribute to unsustainable impacts on biodiversity and the environment. A clear direction for future research is therefore to understand whether and how the apparent consideration of biodiversity and the environment within the EIA process affects trends in land use change and biodiversity loss at a broad scale, ideally against

a counterfactual (Maron *et al.*, 2015; Rhodes *et al.*, 2017). This may be challenging to study, as planning processes are inherently dynamic with change often occurring rapidly, and there is high variation between the economies, politics and biogeography of even neighbouring regions or nations.

Another important avenue for research is investigating how these social mechanisms emerged; they may be an outcome of South African culture, well written legislation, the targeted efforts of state agents, or, more likely, a combination of many interlocking factors. If other nations wish to recreate the desirable aspects of this process in other contexts, it is critical to understand what precursors must be assembled in order to achieve this. Providing policy makers and legislators with an insight into the links between policy structure and the potential emergent characteristics of a system may contribute to avoiding unintended consequences (Larrosa, Carrasco and Milner-Gulland, 2016).

7.3. The use of social sciences in conservation

The work contained within this thesis strongly supports the large number of calls for social science solutions to conservation problems (Mascia *et al.*, 2003; Balmford and Cowling, 2006; Schultz, 2011; Kareiva and Marvier, 2012; Bennett *et al.*, 2016; Hicks *et al.*, 2016). It is critical, however, that research designed to answer these calls is well designed; a recent review by Young et al (2018) found that many studies which applied interview-based approaches under-reported many important components of their research methods, suggesting that these studies may not use the most appropriate methods or may not have drawn from the most applicable theory. It is critical therefore that the aim and design of empirical social studies within conservation science is seriously considered if they are to address the broader needs of conservation theory and practice (St. John *et al.*, 2014). Participant observation is mentioned briefly in this thesis, yet it was arguably the most critical stage in the research, as it ensured that the research questions were relevant to both theory and practice, that the methods were appropriate for the study subject, and that I had sufficient contextual understanding to easily understand respondents and build a rapport, thus producing rich and nuanced interview data. For example, I was initially alerted to the potential role of reputation through observing land use advisors; I learnt that they had an encyclopaedic knowledge of the education and qualifications of the biodiversity specialists which they used when evaluating their reports. It was also through this process that my research questions were considerably refined; I had originally intended to examine the impact of SCP within a South African land use planning context, yet by observing the application of these tools it became apparent that their role could only be understood within a holistic understanding of the negotiation process. This work therefore supports calls in the literature to co-create research questions in collaboration with practitioners (Balmford and Cowling, 2006; Milner-Gulland *et al.*, 2009; Sunderland and Sunderland-Groves, 2009; Laurance *et al.*, 2012). Co-creation is also essential to

tailoring research methods to the novel challenges of conservation. Social science methods commonly require adaptation; in the words of Corbin & Strauss (1991), "There are as many types of Grounded Theory as there are Grounded Theorists". As a result, this thesis drew from multiple literatures including anthropology for grounding the research, sociology for respondent recruitment and interview methodology, psychology for the analyses, and the economic, impact assessment and conservation literatures for the application and interpretation of results (Strauss and Corbin, 1991; Braun and Clarke, 2006; Russell-Bernard, 2006).

If social sciences are to be used effectively to connect theory and practice in conservation, there are a number of broader barriers to be addressed. Possibly the most widespread issue is the connections between different levels of resolution. There is a clear need to engage with decision-making at a global level (Seddon *et al.*, 2016), yet we do not fully understand how the experiences of an individual connect and contribute to the actions of a stakeholder group, which in turn relate to the broader social trends of nations, and thus play a key role in biodiversity conservation at international levels (Seddon *et al.*, 2016). By demonstrating the connection between issues which occur at a case level to global trends, Chapter Six illustrates the potential for linking fine scale social studies to wider issues. Chapter Three demonstrates that prioritisations are currently being collaboratively developed through to coordinate decision-making, suggesting that the tools and approaches for connecting resolutions currently exist. There is considerable potential for further research, however; for example, it is unclear how the environmental impact assessment process interacts with other state planning processes which operate at regional and national levels. Respondents reported that decisions made within EIA were influenced by other planning tools, yet the interactions did not appear simple; in multiple instances novel information, such as the discovery of threatened species, led to decisions which contradicted regional or national plans.

There is also a need to study systems in their entirety where possible. Whilst it is common to isolate and study components of a process, as done in Chapter Four, it is crucial that these efforts are contextualised by research which addresses the system as a whole, as in Chapter Five (Bosch *et al.*, 2007; Wilhelm-Rechmann and Cowling, 2011; Hansen and Wood, 2016). One of the methodological contributions of this thesis is therefore the use of separate qualitative analyses, as detailed in Appendix 9.2.-9.6., and the more quantitative approach in Chapter Four, as a foundation for Chapters Five and Six, which contextualise these results within the wider system to draw broad implications. It is important however that these studies are consolidated by the further application of suitable theory. For example, the fields of both political science and economics have developed extensive understanding of many types of system. interpreting the findings from this thesis through the theoretical frameworks of these fields has significant potential for providing guidance for policy and management. For example, the offset work described in Chapter Five could be readily interpreted through the lens of well established economic theory, such as the principal-agent problem where one party

(the agent) acts and a second party (the principal) attempts to control their actions through rules or guidance (Jean-Jacques and Martimort, 2002).

This work therefore supports calls for empirical inductive studies by demonstrating that insights which emerge from studying the realities of implementation can produce a nuanced and holistic understanding of how a system functions (Forester, 2008; Kågström and Richardson, 2015). By connecting the experiences of individual to global level trends, the research within this thesis also suggests that there must be a clear connection between resolutions and disciplines if the wider global issues are to be addressed (Forester, 2008; Smith and Verissimo, 2009; Seddon *et al.*, 2016; Toomey, Knight and Barlow, 2017).

7.4. Transferability

Whilst understanding the contextual elements of environmental decision-making requires in-depth research, it is critical to address the issue of transferability, I.e. what are the implications of this research for other systems outside of South Africa? The core of EIA is relatively consistent between countries; in the vast majority of nations the mitigation hierarchy is applied, scoping reports used, the process is adversarial and decision makers trade-off between development and the environment (Morgan, 2012). For example, the South African process is very similar to that in EU member states with directly comparable stages to those described in figure 2.2. (European Union, 2017). There are also comparable institutions; the evidence in applications is examined by “Review Bodies” which play the same role as the conservation agencies in South Africa, there are certification agencies for consultants, and there are decision-making competent authorities (European Union, 2017). The key differences lie in the surrounding legislative and organisational context, for example, conservation agencies in South Africa have developed high quality maps of areas of conservation importance which play a role specifically mandated by supporting legislation. Understanding the implications of these findings for other nations is therefore dependant on understanding the international variations in the contexts that surround the EIA process.

Overall, the context of the EIA process in South Africa is comparable to other nations, Morrison-Saunders and Retief (2012) examined the South African EIA legislation against criteria laid out by Gibson et al (2005) and concluded “that EIA in South Africa has a strong and explicit sustainability mandate” which was directly comparable to those in England, Canada and Western Australia. Retief (2010) analysed the discourse of meetings of the South African chapter of the International Association for Impact Assessment and found that, whilst there was a focus on implementation issues, the debates were comparable to those of the international community, suggesting issues faced by South African practitioners are similar to those faced globally. These similarities are also reflected in offsetting research; Lukey et al (2017) documented the

content of workshops conducted by South African practitioners in offset implementation and highlighted the similarities with issues raised to challenges documented in global reviews by Maron et al (2016) and Bull et al (2013). Further to this, Bull et al (2017) included South Africa in a review of the gap between theory and implementation of offset multipliers and identified this issue to be globally homogenous. There are however elements about EIA in South Africa which are unusual. Retief (2010) noted that EAPs had an unusually high ability to affect the outcome than their counterparts in other countries, and public participation plays a particularly central role in South African EIA as a safeguard against repeating past injustices. Scientific evidence is also potentially held in higher regard in South Africa than in other countries, possibly as a consequence of the Performance of Administrative Justice Act, which holds government employees directly accountable for using the "best available science". Additionally, the scientific community is sufficiently small and cohesive that schisms are unusual, and experts are infrequently challenged (Chapter Five).

The EIA process is fundamentally a governance tool and so reflects the broader objectives of the administration implementing it. Rose et al (2018) reported that conservation proponents ubiquitously identified the lack of political will as the largest barrier to environmental protection. Variations in political support of the environment impact EIA, where political will is pro-development, the EIA process will present limited restrictions on development (Barker and Wood, 1999; Brownlie and Wynberg, 2001; Cashmore, 2004; Forester, 2008). Where environmental considerations enjoy stronger political support, this will often lead to an increase in the surrounding legislation, which in turn provides clearer and stronger prescriptions for what constitutes acceptable impacts. South Africa has data informed, specific biodiversity targets supported by clear, well written legislation, which undoubtedly contributes to the EIA process being relatively well functioning and robust (Retief, 2010). Additionally, as the provinces studied were well capacitated, the results of this PhD may reflect an unusually positive scenario for South Africa in terms of the integrity of the process. Equally however, both provinces are under high pressure to develop, in particular the area around Cape Town and Durban, meaning that these findings also represent a challenging political landscape. This has several implications for the transferability of the findings. Firstly, despite many of the stakeholders highlighting issues within the study systems, this degree of functionality may be aspirational from the perspective of other nations or less well capacitated South African provinces. In such cases other administrations may seek to replicate the reputational dynamics within their own contexts through legislative or institutional change. For example, the role of reputation within a system could be augmented by improving local variants of PAJA to impose stronger consequences on decision makers for ignoring scientific evidence, establishing robust certification agencies for consultants to increase the consequences of poor professional behaviour, or increasing the number, capacity and agency of land use advisors and case officers in order to improve their negotiation positions.

Where nations have effective and robust EIA infrastructures, it is highly likely that there are also strong professional and institutional cultures (Cashmore, 2004). While the exact nature of the social dynamics will vary according to the local context, it is likely that the fundamental components will remain consistent. For example, wherever there are legal or political consequences of poor decisions, it is likely that decision-makers will track the reputations of applicants, consultants and specialists in order to avoid the professional consequences of being deceived into approving projects with inappropriate impacts. The mechanisms identified in this thesis are not unique to EIA but are fundamental components of human interaction. Ultimately however, the main barrier to determining the extent of transferability is the deficit of other comparable studies (van Stigt, Driessen and Spit, 2013; Kågström and Richardson, 2015). The true extent of transferability will therefore only become clear when further research is published.

7.5. Conservation negotiators

Potentially the most broadly consistent consequence of this research is the identification of the importance of conservation negotiators in using scientific outputs to influence decision-making processes. Social decision-making processes are inevitably extremely complex and the outcomes are determined as much by biases, relationships and strategies as they are by scientific evidence (Bond *et al.*, 2016; Evans *et al.*, 2017; Weber, 2017). Chapters Five and Six demonstrate that the facts alone do not determine the outcomes of decision-making processes but that social mechanisms, such as reputation, communication and consensus, can drastically alter the final decisions. If efforts to mainstream biodiversity considerations into a wide breadth of activities and processes are to be successful (Redford *et al.*, 2015; Seddon *et al.*, 2016) then it is not sufficient to simply present the evidence; biodiversity and the environment must be represented by individuals with significant contextual knowledge and an understanding of the strategies being used by potential environmental impactors (Knight *et al.*, 2010; Post and Pandav, 2013). If conservation negotiators are to be successful they must in turn be supported by researchers, institutions and policy, as explained below:

7.5.1. Supportive academia

There are fears that academic researchers may be producing outputs which are not useful to practitioners (Knight *et al.*, 2008; Milner-Gulland *et al.*, 2009). This is a critical gap to bridge; if they are to be effective, negotiators must be supported by appropriate empirical evidence, theoretical frameworks and methodological tools, which are tailored to their needs (Reyers *et al.*, 2007; Burgman, 2013). Significant strides have already been made towards this; there is a considerable literature devoted to creating SCP for

application in land use planning, which has been developed through close collaboration between practitioners and academics over many years (Driver, Cowling and Maze, 2003; Reyers *et al.*, 2010; Groves and Game, 2016). Chapter Three illustrates that prioritisations are translating to on-the-ground action, suggesting that academic innovations are providing outputs applicable to implementation. Further to this, implementation-focused prioritisations are being developed through collaborations between universities, NGOs and government agencies, suggesting that academics are working to deliver their innovations into the hands of those who would apply them. Biodiversity offsets represent a different paradigm of support; originally created by practitioners, the academic community has worked to critique and advance the method by identifying and resolving barriers (Lukey *et al.*, 2016; Maron *et al.*, 2016; Bull, Lloyd and Strange, 2017; Gibbons *et al.*, 2017). In this instance empirical studies like those within this thesis play a key role in the communication between research and practice, as a critical form of feedback from implementation to inform academic debate. It is important, therefore, that this work is followed by further research, which may take the form of comparable studies in other contexts to test the findings, of advances to address the issues raised, or of increased evidence of fundamental issues which suggest that implementation is unlikely to be effective (Maron *et al.*, 2012; Ives and Bekessy, 2015; Gibbons *et al.*, 2017; Lindenmayer *et al.*, 2017).

7.5.2. Supportive institutions

Chapter Five illustrates the importance of personal and professional incentives in motivating negotiators, regardless of their position in the process. Many of these incentives are ultimately determined by the institutions these negotiators represent; for example, if decision makers are evaluated according to their speed, this is likely to produce different outcomes to if they are evaluated according to the rigour of their decision-making. Chapter Five and Appendix 9.6.3. highlight the potential for political interference to affect decision-making, but also note the potential for institutional structures to oppose it, echoing reports from other nations. Institutional structure also plays a key role in fostering the influence of science; negotiators at conservation agencies in South Africa were part of larger teams which included specialist scientists, allowing rapid access to specialist expertise (Chapter Five). As the knowledge which informs negotiations is highly contextual and developed through on-the-job learning, this suggests retaining staff in these positions or using knowledge transfer mechanisms such as internships is important (Argote and Ingram, 2000). These suggestions, however, are at odds with government management strategies which recommend staff transfer between departments at regular intervals to foster skill transfer and combat corruption. In addition, this poses a significant weakness of the system, if large proportions of staff leave their positions, for example due to management problems, this would remove the institutional memory and potentially have major negative effects for the effectiveness of the system. Ultimately institutional management is a developed field with a well-established theory and practice (McCarthy and Possingham, 2007). The role of

conservation science in this instance is to not to prescribe solutions but to provide insights that support effective management (Sutherland *et al.*, 2004).

7.5.3. Supportive policy

Potentially the most critical form of support for negotiators is effective policy. Establishing policy and legislation which effectively protects biodiversity and the environment is a considerable challenge (Mace and Baillie, 2007; Owens, 2012; Lukey *et al.*, 2016), yet as negotiators are obliged to act within the confines of the law, it is critical that it is supportive. Developing effective legal frameworks requires avoiding perverse incentives, loopholes or high governance costs, about which there is a considerable body of theory and practice (Smith, 2010; Gordon *et al.*, 2015; Lukey *et al.*, 2016; Chrisinger, 2017). It is important, however, that conservation science provides feedback about the realities of implementation, for example the social mechanisms identified in Chapter Five could be unknowingly disrupted or augmented by policy change, leading to unexpected policy outcomes (Larrosa, Carrasco and Milner-Gulland, 2016).

7.5.4. Skills and role of a negotiator

One of the consistent themes to emerge throughout the process of this research has been the importance of personal characteristics in conservation negotiators. Whilst conservation tools, policies and institutions play a key role, ultimately individuals or teams must actively negotiate. There is no single method to negotiation or specific characteristics which define an effective negotiator (Barry and Friedman, 1998). Kiik (2018) recently noted that, from an anthropological perspective, conservationists remain remarkably unstudied as a group. Potentially the most pertinent area for future research is therefore into the personal characteristics of conservation negotiators, their experiences and what contributes to, or hinders, their effectiveness.

7.6. Conclusions

This thesis has contributed a deep and grounded understanding of the realities of environmental decision-making and governance. One next step will be to draw on this work and use it to guide future research which can deliver more implementation-relevant tools, theory and evidence. It will also be critical to translate these findings back to practitioners, both in South Africa and internationally. Finally, whilst it may be daunting that these complex processes are comprised of a myriad factors and elements, it is perhaps heartening that many of the building blocks of which they are comprised are relatable human experiences.

8. References

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9. Appendices

9.1. Appendix to Chapter Three	Literature search protocol and additional results
9.2. Appendix to Chapter Five: Applicants	Detailed results of the thematic analysis
9.3. Appendix to Chapter Five: Environmental Assessment Practitioners	Detailed results of the thematic analysis
9.4. Appendix to Chapter Five: Biodiversity Specialists	Detailed results of the thematic analysis
9.5. Appendix to Chapter Five: Land Use Advisors	Detailed results of the thematic analysis
9.6. Appendix to Chapter Five: Case Officers	Detailed results of the thematic analysis

9.1. Appendix to Chapter Three

9.1.1. Literature Search Protocol

I identified prioritisations in the peer reviewed literature through the use of a multicriteria search in ISI Thompsons Web of Science. We entered the following list of terms into the "topic" criteria with each term linked by an "OR" command: conservation assessments, conservation planning, conservation plan, conservation evaluation, conservation value, reserve selection, area selection, area identification, priority area, bioregional conservation, bioregional planning, ecoregional assessment, ecoregional conservation,

integrated conservation and natural areas identification. These terms were intended to identify prioritisations even where the authors had not identified their work as such. Because of frequent usage of the terms “prioritisation” and “conservation prioritisation” in other areas of conservation, these terms were not used. The search was not limited to any start date but the end date was limited to December 31st 2015. The search returned 17,588 papers. These were reviewed initially by title alone to identify papers which potentially included prioritisations. The abstracts of papers in the shortlist were then reviewed and excluded or included in the study according to the criteria in Table 16. Papers which were published before December 31st 2010 were reviewed by George Galloway and papers published after this date were reviewed by Sam Lloyd. This process identified 645 papers which detailed prioritisations.

Table 9-1. The criteria for identification of prioritisations in the literature

Criteria for including papers
Those which present a spatial conservation prioritisation which may include algorithms, specialist software or other specific process. Prioritisations which identify focal, keystone, umbrella or threatened species and select priority areas. Gap analyses of protected area networks where specific areas are identified for conservation action or intervention.
Criteria for excluding papers
Papers which present theoretical methods for prioritisation or which use theoretical data. Biogeographic analyses which could theoretically be used to identify priority areas. Gap analyses of protected areas which do not identify priority areas for expansion or action.

Table 9-2 The 6 comparison variables used to contrast and compare between clusters

Comparison variable	Response options
Has a conservation intervention been attempted on the ground at the priority areas identified by this prioritisation as a direct result of the prioritisation?	1) Yes 2) No 3) No intervention has yet been attempted, but a specific action, or actions, is currently being setup with the intention of being implemented 4) Unsure

What data did you use in the prioritisation?	1) Gene c data 2) Species data 3) ecological or evolutionary processes 4) Habitat or ecosystem 5) Irreplaceability 6) Threat 7) Land use 8) Land value 9) Cost of implementation 10) Political costs and benefits 11) Landowner characteristics (e.g. willingness to conserve) 12) Hydrological data
What software was used?	1) No software was used 2) BIORAP 3) C-Plan 4) CODA 5) ConsNet 6) CLUZ 7) INFFER 8) GIS 9) Marxan 10) MCA 11) MCAS-S 12) R 13) ResNet 14) SCaRPA 15) Spexan 16) Target 17) Zonation 18) Custom developed software 19) Other (please describe here)

Why was the area selected?	1) Because it contains important ecosystems 2) It was an area of importance for a target species 1) Because of threats to the area 2) Because it is the area in which your 3) organisation works 4) Because it has cultural significance 6) It was a region for which data already existed 5) Because national legislation required it 6) Opportunistically
Would you say that overall the prioritisation was effective in achieving its goals?	1) Too early to say 2) Yes, very effective 3) Yes, somewhat effective 4) Too early to say 5) No, not effective 6) Unsure 7) Prefer not to say
What products did you produce?	1) Electronic map 2) Hard copy map 3) Computer-based decision support system 4) Guidelines on how to use the map or decision support system products 5) Policy briefing for high-level decision-maker 6) Media articles 7) Peer-reviewed journal article 8) Funding application Report

Table 9-3 The eleven variables used in the cluster analysis

Cluster input variable	Response options

To what extent was an end user identified and involved?	1) No end user identified 2) End user identified but not included in development 3) End user identified and included in development
To what extent were NGOs involved	1) Strongly involved 2) Consulted 3) Not involved
To what extent was government involved	1) Strongly involved 2) Consulted 3) Not involved
To what extent were academics involved	1) Strongly involved 2) Consulted 3) Not involved
Was the prioritisation designed to comply with any laws	1) Yes 2) No
Was the prioritisation undertaken to achieve any specific outcomes?	1) Yes 2) No
Was the prioritisation was intended to translate to specific implementation?	1) Yes 2) No
What was the single most important intended outcome?	1) Biodiversity incorporated into a government process 2) Improved prioritisation techniques 3) More effective fund raising 4) A more effective protected area network 5) Increased effectiveness of a specific organisation 6) More effective negotiations 7) None of the above 8) A specific change in legislation
Collaboration metric	Based on involvement of stakeholder groups (score ranged from 0 to 15)
Which of the following best describes your process?	1) Computer-based analysis was the sole means for conducting the prioritisation

	2) Computer-based analysis was the primary means for conducting the prioritisation, with some supporting expert knowledge 3) An equal combination of computer based analysis and expert knowledge was used to conduct the prioritisation 4) Expert knowledge was the primary means for conducting the prioritisation, with some supporting computer-based analysis 5) Expert knowledge was the sole means for conducting the prioritisation 6) Other, please specify
Did you produce a peer reviewed article?	1) Yes 2) No

Table 9-4 The intent of prioritisation developers

		Clusters			
		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
created to comply with laws	No	60	87.0%	45	47.4%
	Unsure	0	0.0%	2	2.1%
	Yes	9	13.0%	48	50.5%
itention to achieve specific outcomes?	No	27	39.1%	11	12.1%
	Unsure	4	5.8%	3	3.3%
	Yes	38	55.1%	77	84.6%
intention to translate to specific implementation	No	49	72.1%	4	4.4%
	Unsure	3	4.4%	8	8.8%
	Yes	16	23.5%	79	86.8%

Clusters

Table 9-5 The extent and identification of end users in prioritisation development

	Advancement focused		Implementation focused	
	Count	Proportion	Count	Proportion

Extent of identification and inclusion of end user	0	43	62.3%	18	18.8%
	1	20	29.0%	7	7.3%
	2	6	8.7%	71	74.0%

Table 9-6 The extent of stakeholder involvement in prioritisation development

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
Conservation NGO collaboration in creation	Consulted	14	21.9%	28	29.5%
	Not involved	42	65.6%	11	11.6%
	Strongly involved	7	10.9%	56	58.9%
	Unsure	1	1.6%	0	0.0%
Government collaboration in creation	Consulted	20	31.3%	20	20.8%
	Not involved	33	51.6%	7	7.3%
	Strongly involved	11	17.2%	68	70.8%
	Unsure	0	0.0%	1	1.0%
Academics collaboration in creation	Consulted	11	16.7%	25	26.0%
	Not involved	5	7.6%	4	4.2%
	Strongly involved	50	75.8%	66	68.8%
	Unsure	0	0.0%	1	1.0%

Table 9-7 The extent of collaboration in prioritisation development

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
Collaboration coefficient	0	2	2.9%	0	0.0%
	1	6	8.7%	0	0.0%
	2	23	33.3%	3	3.1%
	3	18	26.1%	1	1.0%
	4	12	17.4%	9	9.4%
	5	1	1.4%	13	13.5%
	6	3	4.3%	11	11.5%
	7	3	4.3%	17	17.7%
	8	0	0.0%	11	11.5%
	9	0	0.0%	10	10.4%
	10	1	1.4%	4	4.2%
	11	0	0.0%	2	2.1%
	12	0	0.0%	6	6.3%
	13	0	0.0%	5	5.2%
	14	0	0.0%	1	1.0%
	15	0	0.0%	3	3.1%

Table 9-8. The primary aim of prioritisations

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
Primary aim	A more effective protected area network	24	34.8%	35	36.5%
	A specific change in legislation	0	0.0%	1	1.0%
	Biodiversity incorporated into a government process	5	7.2%	25	26.0%
	Improved prioritisation techniques	31	44.9%	11	11.5%
	Increased effectiveness of a specific organisation	2	2.9%	6	6.3%
	More effective fund raising	0	0.0%	3	3.1%
	More effective negotiations	2	2.9%	3	3.1%
	None of the above	5	7.2%	12	12.5%

Table 9-9 The development process of prioritisations

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
prioritisation process	1) Expert knowledge was the sole means for conducting the prioritisation	1	1.4%	6	6.4%
	2) Computer-based analysis was the sole means for conducting the prioritisation	23	33.3%	5	5.3%
	3) Expert knowledge was the primary means for conducting the prioritisation, with some supporting computer-based analysi	7	10.1%	19	20.2%
	4) Computer-based analysis was the primary means for conducting the prioritisation, with some supporting expert knowledg	25	36.2%	29	30.9%
	5) An equal combination of computer based analysis and expert knowledge was used to conduct the prioritisation	12	17.4%	27	28.7%
	6) Other, please specify	1	1.4%	8	8.5%

Table 9-10 The extent of peer reviewed article production

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
production of peer reviewed article	No	0	0.0%	31	35.2%
	Unsure	0	0.0%	2	2.3%
	Yes	67	100.0%	55	62.5%

Table 9-11 The extent of translation to implementation of prioritisations

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
Conservation intervention attempted on ground	No intervention has been attempted	43	63.2%	11	12.1%
	No intervention has yet been attempted, but a specific action, or actions, is currently being set-up with the intention	6	8.8%	21	23.1%
	Unsure	11	16.2%	13	14.3%
	Yes	8	11.8%	46	50.5%

Table 9-12 The data used in prioritisations

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
Genetic data	No	55	94.8%	74	85.1%
	Unsure	0	0.0%	2	2.3%
	Yes	3	5.2%	11	12.6%
Species data	No	6	9.4%	4	4.3%
	Unsure	1	1.6%	0	0.0%
	Yes	57	89.1%	89	95.7%

ecological or evolutionary processes	No	42	72.4%	39	43.3%
	Unsure	1	1.7%	2	2.2%
	Yes	15	25.9%	49	54.4%
Habitat or ecosystem	No	16	25.0%	7	7.6%
	Yes	48	75.0%	85	92.4%
Irreplaceability	No	34	55.7%	27	30.3%
	Unsure	3	4.9%	7	7.9%
	Yes	24	39.3%	55	61.8%
Threat	No	25	41.0%	16	17.4%
	Unsure	0	0.0%	4	4.3%
	Yes	36	59.0%	72	78.3%
Land use	No	20	32.8%	14	15.6%
	Unsure	0	0.0%	2	2.2%
	Yes	41	67.2%	74	82.2%
Land value	No	50	86.2%	64	73.6%
	Unsure	0	0.0%	2	2.3%
	Yes	8	13.8%	21	24.1%
Cost of implementation	No	43	74.1%	56	63.6%
	Unsure	1	1.7%	3	3.4%
	Yes	14	24.1%	29	33.0%
Political costs and benefits	No	50	89.3%	61	70.1%
	Unsure	0	0.0%	2	2.3%
	Yes	6	10.7%	24	27.6%
Landowner characteristics (e.g. willingness to conserve)	No	51	89.5%	57	64.8%
	Unsure	0	0.0%	3	3.4%
	Yes	6	10.5%	28	31.8%
Hydrological data	No	50	86.2%	44	48.9%
	Unsure	0	0.0%	1	1.1%
	Yes	8	13.8%	45	50.0%

Table 9-13 The associated products developed alongside the prioritisation

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
Electronic map	No	13	21.7%	4	4.4%
	Yes	47	78.3%	87	95.6%
Hard copy map	No	30	55.6%	18	20.5%
	Unsure	2	3.7%	0	0.0%
	Yes	22	40.7%	70	79.5%
Computer-based decision support system	No	37	66.1%	46	54.1%
	Unsure	1	1.8%	1	1.2%
	Yes	18	32.1%	38	44.7%
Guidelines on how to use the map or decision support system products	No	37	67.3%	25	29.1%
	Unsure	1	1.8%	1	1.2%
	Yes	17	30.9%	60	69.8%
Policy briefing for high-level decision-maker	No	48	90.6%	31	36.0%
	Unsure	0	0.0%	6	7.0%
	Yes	5	9.4%	49	57.0%
Media articles	No	44	81.5%	33	38.8%
	Unsure	0	0.0%	5	5.9%
	Yes	10	18.5%	47	55.3%
Peer-reviewed journal article	No	0	0.0%	31	35.2%
	Unsure	0	0.0%	2	2.3%
	Yes	67	100.0%	55	62.5%
Funding application	No	45	84.9%	52	68.4%
	Unsure	1	1.9%	2	2.6%
	Yes	7	13.2%	22	28.9%
Report	No	32	58.2%	14	15.9%
	Unsure	0	0.0%	1	1.1%
	Yes	23	41.8%	73	83.0%

Table 9-14 The reported effectiveness of prioritisations

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
Was the prioritisation effective in achieving its goals?	No, not effective	3	4.4%	4	4.4%
	Prefer not to say	2	2.9%	0	0.0%
	Too early to say	13	19.1%	15	16.5%
	Unsure	11	16.2%	4	4.4%
	Yes, somewhat effective	20	29.4%	41	45.1%
	Yes, very effective	19	27.9%	27	29.7%

Table 9-15 The software used in prioritisation development

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
No software was used	not used	66	95.7%	88	91.7%
	used	3	4.3%	8	8.3%
BIORAP	not used	69	100.0%	96	100.0%
	used	0	0.0%	0	0.0%
C-Plan	not used	68	98.6%	94	97.9%
	used	1	1.4%	2	2.1%
CODA	not used	69	100.0%	96	100.0%
	used	0	0.0%	0	0.0%
ConsNet	not used	69	100.0%	96	100.0%
	used	0	0.0%	0	0.0%
CLUZ	not used	69	100.0%	92	95.8%
	used	0	0.0%	4	4.2%
INFFER	not used	69	100.0%	96	100.0%
	used	0	0.0%	0	0.0%
GIS	not used	35	50.7%	38	39.6%
	used	34	49.3%	58	60.4%
Marxan	not used	52	75.4%	63	65.6%
	used	17	24.6%	33	34.4%
MCA	not used	69	100.0%	96	100.0%

	used	0	0.0%	0	0.0%
MCAS-S	not used	69	100.0%	96	100.0%
	used	0	0.0%	0	0.0%
R	not used	49	71.0%	82	85.4%
	used	20	29.0%	14	14.6%
ResNet	not used	67	97.1%	96	100.0%
	used	2	2.9%	0	0.0%
SCaRPA	not used	69	100.0%	96	100.0%
	used	0	0.0%	0	0.0%
Spexan	not used	69	100.0%	96	100.0%
	used	0	0.0%	0	0.0%
Target	not used	69	100.0%	96	100.0%
	used	0	0.0%	0	0.0%
Custom developed software	not used	62	89.9%	92	95.8%
	used	7	10.1%	4	4.2%
Zonation	not used	61	88.4%	86	89.6%
	used	8	11.6%	10	10.4%
Other	not used	53	76.8%	73	76.0%
	used	16	23.2%	23	24.0%

Table 9-16 The reason for selection of the study area of prioritisations

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
Because it contains important ecosystems	A primary reason for choosing the study area	30	49.2%	54	68.4%
	Not a primary reason but considered	22	36.1%	20	25.3%
	Not considered	9	14.8%	5	6.3%
It was a region for which data already existed	A primary reason for choosing the study area	30	50.8%	21	29.6%
	Not a primary reason but considered	17	28.8%	25	35.2%
	Not considered	12	20.3%	25	35.2%
	Unsure	30	50.8%	21	29.6%
It was an area of importance for a target species	A primary reason for choosing the study area	29	50.0%	43	56.6%
	Not a primary reason but considered	15	25.9%	23	30.3%
	Not considered	14	24.1%	9	11.8%
	Unsure	0	0.0%	1	1.3%
Because national legislation required it	A primary reason for choosing the study area	4	7.5%	29	36.7%
	Not a primary reason but considered	7	13.2%	18	22.8%
	Not considered	40	75.5%	32	40.5%
	Unsure	2	3.8%	0	0.0%
Because of threats to the area	A primary reason for choosing the study area	31	51.7%	45	57.7%
	Not a primary reason but considered	19	31.7%	27	34.6%
	Not considered	10	16.7%	6	7.7%
	A primary reason for choosing the study area	22	39.3%	53	60.9%

Because it is the area in which your organisation works	Not a primary reason but considered	18	32.1%	14	16.1%
	Not considered	16	28.6%	19	21.8%
	Unsure	0	0.0%	1	1.1%
Because it has cultural significance	A primary reason for choosing the study area	5	9.3%	12	16.4%
	Not a primary reason but considered	14	25.9%	23	31.5%
	Not considered	35	64.8%	37	50.7%
	Unsure	0	0.0%	1	1.4%
It was a region for which data already existed	A primary reason for choosing the study area	30	50.8%	21	29.6%
	Not a primary reason but considered	17	28.8%	25	35.2%
	Not considered	12	20.3%	25	35.2%

Table 9-17 The extent to which prioritisations led to a specific positive conservation impact

		Advancement focused		Implementation focused	
		Count	Proportion	Count	Proportion
Was a specific positive conservation impact achieved as a direct result of the prioritisation?	No	33	48.5%	8	9.0%
	Unsure	27	39.7%	40	44.9%
	Yes	8	11.8%	41	46.1%

Table 9.18. The Schwarz's Bayesian Criterion calculations used to determine cluster number

Auto-Clustering

Number of Clusters	Schwarz's Bayesian Criterion (BIC)	BIC Change[a]	Ratio of BIC Changes[b]	Ratio of Distance Measures[c]
1	3204.812			
2	2975.470	-229.342	1.000	2.075
3	2952.198	-23.272	.101	1.600
4	3000.833	48.635	-.212	1.120
5	3062.357	61.524	-.268	1.055
6	3129.487	67.130	-.293	1.112
7	3206.804	77.317	-.337	1.104
8	3292.738	85.934	-.375	1.079
9	3384.684	91.946	-.401	1.163
10	3487.340	102.656	-.448	1.001
11	3590.055	102.715	-.448	1.049
12	3695.846	105.791	-.461	1.053
13	3804.807	108.961	-.475	1.050
14	3916.620	111.814	-.488	1.118
15	4034.419	117.799	-.514	1.014

a. The changes are from the previous number of clusters in the table.

b. The ratios of changes are relative to the change for the two cluster solution.

c. The ratios of distance measures are based on the current number of clusters against the previous number of clusters.

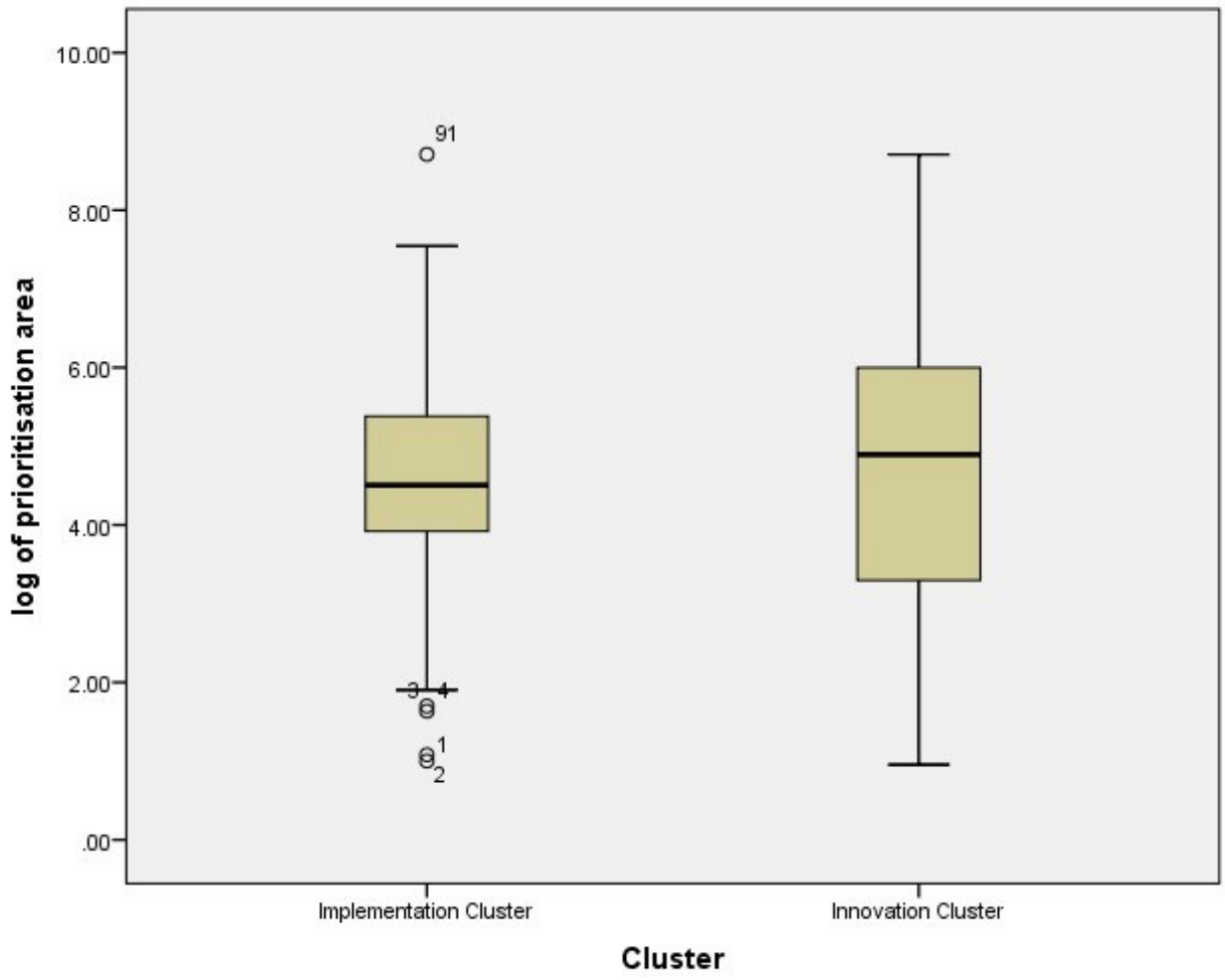

Figure 9-1 The area covered by the prioritisations expressed logarithmically. The innovation cluster ranged from 10km2 to 5.1x108 km2 (global study) with a mean of 33151km2 and a standard deviation of 53523164. The implementation cluster ranged from 9km2 to 5.1x108 km2 (global study) with a mean of 49516 and a standard deviation of 67521343.

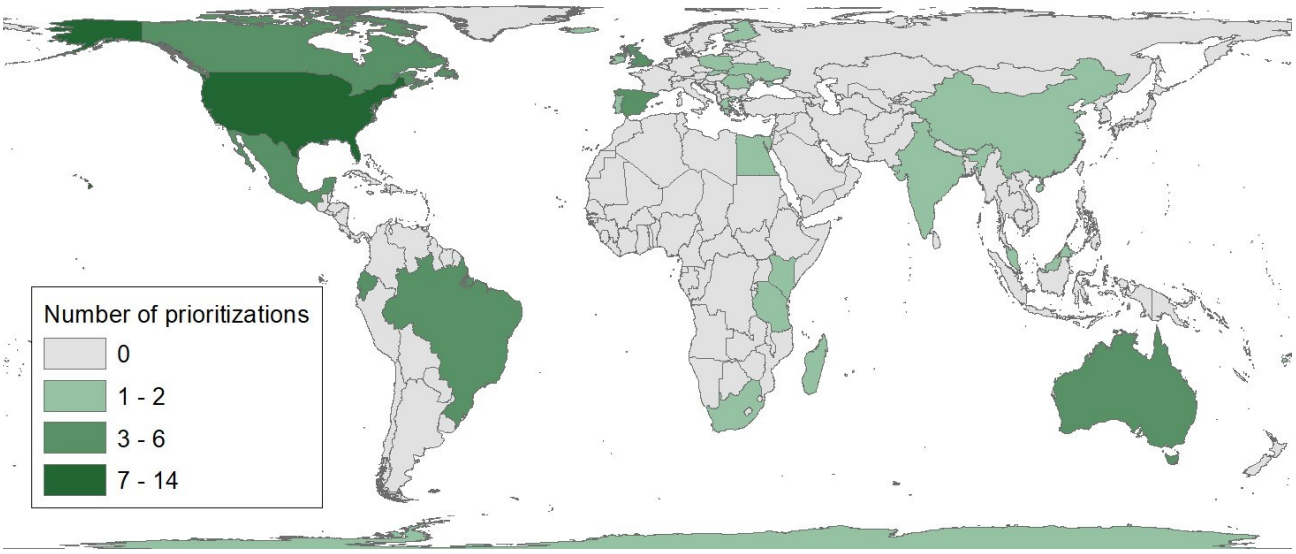

Figure 9.2. The number of innovation focused prioritisations by country

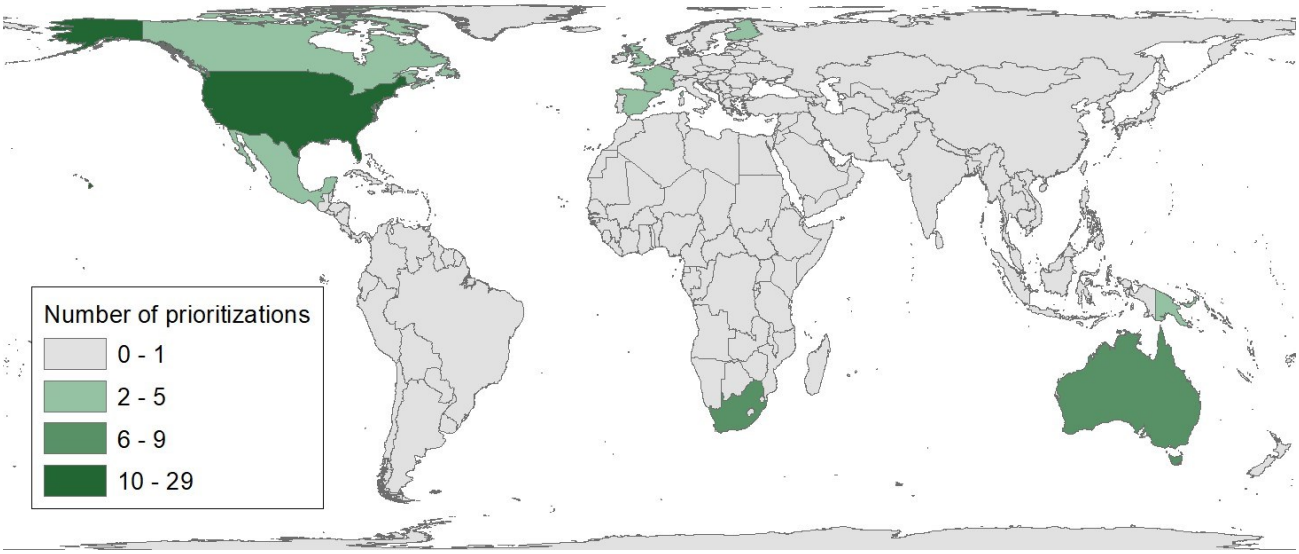

Figure 9.3. The number of implementation focused prioritisations by country

9.2. Appendix to Chapter Five: Applicants

9.2.1. *Notes on the interviews*

Members of this group shared the least with the other stakeholders. The nature of their involvement with the process differed as unlike other stakeholders, applicants were not defined by their professional capacity but by a desire to engage in an activity which required an EIA. These individuals and organisations did not choose to conduct an EIA but were forced to do so by South African law. This affected their attitudes to the process but additionally affected intragroup composition. There was high diversity between respondents in this group on a number of metrics. Some respondents were small to medium business owners whilst others were employees of large corporations.

Members of this group were often not predisposed to having a public presence. Consultants and government departments require a public front as part of their professional activities and so often have websites, receptionists and publicly available email addresses. Remote farmers rarely make their contact details widely available and developers often perceive themselves as targets for job seekers, environmental activists and opportunists and so are cautious of unsolicited contact. As a result, despite this group comprising of the smallest number of respondents it represented the highest investment per respondent recruitment. This may mean that respondent selection was biased towards applicants who are dissatisfied with the process and so wish to use the interview as a chance to vent, indeed respondents in two interviews joked that the interview was “group therapy”. This bias may affect the degree to which these views are shared by applicants in general however the continuity between coding suggests that the themes are representative of the stakeholder group.

These interviews were all conducted in the location of the respondent’s employment or work. In three cases, this was at the farmhouse or building site and in two cases this was at a head office. As a result, the environment was predisposed to a pragmatic, business like atmosphere. The interviews took place in a setting well known by respondents, where they had previously held many meetings and discussions. Possibly as a result of this, these interviews shared a “cut straight to it” style where respondents wished to get to the heart of their grievances with the EIA process. A high level of rapport and trust was achieved in these interviews, there was frequent humour and respondents often reported on personal matters. One respondent gifted SL a bottle of wine grown on their farm and after all interviews respondents requested a copy of the final research.

Five respondents were interviewed in this stakeholder group, comprising of two farmers and three property developers. During analysis 266 discrete codes were identified which were referenced 383 times collectively.

Table 9.19. The themes which emerged from interviews with applicants

1	*Personal motivations for professional activities*
2	*The role of the private sector in addressing national issues*
3	*The value of nature*
4	*Trade-offs*
5	*Being singled out*
6	*Government applications*
7	*Corruption*
8	*Risk*
9	*The importance of delays*
10	*Clarity for proceeding*

9.2.2. ***Themes***

5. Personal motivations for professional activities

Whilst the respondents engaged in different professional activities, one of the most consistent themes was that the motivation behind their choice of work was not purely economic but also personal. Two respondents reported the key role of family heritage in their career choices, one respondent, a developer, noted “Myself, I've always wanted to be a builder. I grew up on construction sites. I wanted to be just like my dad.” (02 013) and a farmer said, “I think I'm sixth generation or something” (01 007). One respondent had changed career, moving from working as a lawyer to becoming a wine farmer. Another talked about having worked in other profitable jobs but returning to development because he enjoyed it more “I got the hell out of there. That's how I came to work where I am now.” (02 023). Whilst there financial aspect to this decision however it is clear that the developers and farmers interviewed were also motivated by job satisfaction.

6. The role of the private sector in addressing national issues

All of the respondents saw themselves as playing key roles in contributing to the economy, and as a consequence perceived themselves as part of a larger solution to larger social issues faced by South African society. One developer saw themselves as providing “an incredible community service” (02 013) by testing

local river water quality and identifying pollution issues. Others highlighted the important role they were playing in the community by providing jobs “There must be five million people that live within the area who've probably got 100,000 jobs amongst them” (02 023), “we must develop and create jobs” (01 007) and “We have 200 mines for example in Kwazulu-Natal” (02 022). One developer did note however that some applicants may overstate their social contribution “I'm sure people would inflate and say we're going to create some new jobs” (02 022). One respondent saw a benefit to social equality by investing in individuals from disadvantaged groups “Alfred one of our-- He started off as a labourer. He's been with my dad since 21, still works with us now. He's 53” (02 013) and another had made significant efforts towards Black Economic Empowerment (BEE) “We are in the BEE. We are in the highest level”. Whilst applicants were undoubtedly conducting their activities for financial gain, it was also clear that they perceived themselves as part of a larger society to which they contributed.

7. The value of nature

The respondents stated that they saw a value in nature, “We have a very nice fauna and flora. We have very nice flowers. I can show you some flowers over there, et cetera. It's very beautiful” (01 013), “I'd also like my kids one day, because it's beautiful little plants there, to see that and to appreciate the flowers” (01 007) and “conservation areas are essential so we don’t end up in just a barren landscape” (02 013). As a result of this perception of the value of nature, they were not opposed to setting aside land for conservation “You need your corridors? You'll get your corridors” (01 013), “The areas that were said to be desirable, we highlighted and we said, "Okay, fine, no problem."” (02 013) and “Let's make that conservation area, let's make this development area” (02 023).

8. Trade-offs

Despite valuing nature, applicants felt that the trade-offs between the environment and social issues needed to be well balanced. As one developer put it “We must focus on investment. We must focus on jobs, not bloody moss” (02 023). Another stated “I think they (the “greenies”) don't care to look at the big picture and understand the repercussions of the decisions they make” (02 022) and a farmer noted “greenies” went into conservation with “quite often with quite ideals, quite big idealism” (01 007) .Additionally, they felt that environmental issues were often overemphasised, a developer noted “if you read those reports, you’d think you're building a dam or you're trying to interrupt a river, the way it's written” (02 022) and another said, “Stop worrying about our little piece of 30ha land, it's not a nature reserve” (02 023). Applicants were also often unconvinced that the mitigation they conducted may not be effective “I got my serious concerns about the real environmental benefit of an isolated patch like that” (01 007) and “We got to rehab cape frogs into flipping Pretoria. Frogs-to Pretoria! They're going to die on the way there.” (02 023).

9. Being singled out

The developers reported feeling that they were unfairly singled out by the EIA process, “It just seems that you want to change something and therefore you're wrong” (02 013) and that the system was applied differently depending on the applicant, “you've got different rules for different people” (02 023). One noted that the surrounding farmers did not appear to follow EIA regulations, “There's a farmer over here running a motocross track. He's done no EIA, he's done no environmental. He hasn't moved one plant, just drive the them over, make the jumps. Do whatever they want” (02 013) and “You think that those over there, do you think they do this stuff?” (02 023). The farmers confirmed this, one felt that breaking the law was an unfortunate necessity “My saying as always every businessman is, somewhere on this route, sometimes a little bit naughty” (01 013) but felt that there was a difference between minor and major infractions and that some farmers had “absolutely no respect for the law” (01 013). Another farmer noted that the ability to break the law unpunished was a result of geographic isolation “we are our own policemen. Nobody was here to come and check if you actually complied with what we said we're going to do” (01 007). Applicants also noted that their contributions to conservation were not acknowledged or appreciated “As soon as the development is done, everybody walks off and nobody gives a damn about it” (02 013). One particularly frustrated developer stated that despite a third of his land being set aside for conservation with in-perpetuity management costs “you’re still a prick, you’re still a developer, you’re still the enemy” (02 013).

10. Government applications

Developers also noted that EIA appeared to work differently for government applications, one remarked that an application went through very quickly and their colleague stated that, “I understand that was because government is involved” (02 013). Additionally, they felt there was a political component to whether applications were opposed or accepted “I think within the actual EIA process you do get some sort of certain high powers that can at some point influence the decisions taken or the priority projects” (02 022) and “It's a political decision” (02 023). One developer stated that they had appointed an investor to their board due to their perceived ability to influence the EIA process politically “we know that this one person see, who's linked to DMR (the department of mineral resources), highly likely we'll recommend him to become our director” (02 022).

7. Corruption

Despite this, the applicants stated that they had not experienced corruption or been solicited for bribes within this process, “in other stuff big time but not in EIA” (02 023). They felt that one potential opportunity for corruption would be to bribe the biodiversity specialists “If I was a proper guy, I'd be giving her an extra 20 grand, saying “would you sit at home”” (02 013). They stated however that the specialists maintained

their independence and would not accept bribery “It’s done by somebody totally independent “(02 013) and one expressed frustration at the independence of specialists, “essentially they say, “this is my professional view”, as opposed to “this is what you want, this is how you can get it” in our minds, defeats the very object of why we've employed them” (02 023).

8. Risk

Applicants also stressed that their businesses are challenging with high capital investment and many sources of uncertainty, one farmer stated “it's high risk, high input business” (01 007). There are also sources of uncertainty which make planning challenging, “We can't control the weather” (01 007). They expressed considerable personal frustration at the challenges they faced in the EIA process; “The level of frustration is immense” (02 023), “You can find it pretty frustrating, really obstructive” (02 013) and “every consequence is leading to the devil” (01 013).

9. The importance of delays

Of the issues expressed about the EIA process, the single most important one was the potential of the process to cause delays, “It took seven years to do it. If the environmental process was 12 months or 18 months, we could've been five years ahead of where we are now” (02 013), “the procedure takes too long” (02 023). One respondent admitted he’d broken the law by converting the land designated in the EIA before it was fully accepted simply because if he’d waited he would have suffered heavy financial loss. Despite issues with delays, applicants actually felt the process overall added value to their projects, “Yes. I'm happy, I'm very happy with the process. It's not an issue.” (01 007) and “There's a lot of benefit coming out of it, long term benefits.” (02 022)

10. Clarity for proceeding

As a result of seeing a value in the EIA process, perceiving a value in nature, accepting that they may have to make compromises yet facing considerable time pressures, the main desire shared by the applicants was for clarity about how to proceed. The issue was not investing resources into biodiversity conservation, it was the uncertainty about how to appropriately do so. One respondent stated, “there just doesn't seem to be the technically minded people in the offices to be able to look at the agreements or look at the drawings and say, "Yes. No. Yes. No. This is our policy. That's the way you can do that." (02 013) whilst another said “Make it easier, simpler, quicker, faster and everybody will agree to and will actually, probably, embrace it.” (02 023).

9.3. Appendix to Chapter Five: Environmental Assessment Practitioners

9.3.1. Notes on the interviews

Environmental Assessment Practitioners (EAPs) were the most responsive to request for interview. All members of this group have a public facing front as an essential part of their professional activities and so were easy to contact. Additionally, respondents were happy to fit in interviews, usually requesting to speak within two days. This may be due to the inherent role of public participation and negotiation in this profession.

Meetings were held in the EAPs office in all but one interview and in a café in the last instance. As a result the meetings had very professional sense to them, these were discussions with professionals about their area of expertise in their offices at a time of their choosing. Some respondents had very specific issues with the system about which they wished to "have some words" (011), sometimes areas of frustration or things that they "wanted to get off their chest". Others were happy to discuss a broader range of topics although these respondents also often wished to talk about issues that they had encountered.

Seventeen EAPs were interviewed. Seven interviews were analysed and saturation was reached. During analysis 590 discrete codes were identified and collectively referenced 652 times. Once themes had been identified the remaining unanalysed interviews were then reviewed for any codes, themes or content which had not been previously identified or which contradicted the existing themes and results. No novel codes or themes or contradicting reports were identified.

9.3.2. Backgrounds

EAPS came into their roles from a wide breadth of routes, far wider than any other stakeholder group. Some came from government "I was a director" (017 002), others from a conservation background "I did my undergrad in conservation ecology" (010 01) and others from the private sector "I started working for an engineering company" (02 002). At the time of interview some respondents worked for large international companies, some for small local firms and others were individual freelancers. Regardless of organisation size, their roles were the same in relation to the EIA process. As a result of this variation in background and current position, members of this group varied in expertise, philosophy and professional approach. Despite this variation, there was consensus on the majority of topics.

Table 9.20. Emergent themes from interviews with EAPs

1	Independence
2	Reputation
3	Ethics
4	*Negotiation*
5	Other stakeholder groups
5.1	Applicants
5.2	Specialists
5.3	Land use advisors
5.4	Case officers
6	The efficacy of EIA in protecting biodiversity
7	Bounty hunters

9.3.3. Themes

1. Independence

Despite being contracted and paid by applicants, EAPs are legally required to act independently and to report on the facts as they stand rather than favouring the applicant. All EAPs reported that this was taken very seriously and that a reputation for professional integrity, independence and high quality of work was extremely important to success in that role, “it's by showing your professional integrity in biodiversity” (010 01), “you’re only as good as your last job” (017 003). EAPs reported that personal relationships were closely linked to reputation and also played a key role, “who you know counts for more than what you know in this business” (02 002). Respondents felt reputation was tracked by other stakeholder groups however reputation with DEA and land use advisors was deemed the most important, “I work very hard to impress the authorities with the quality of my work” (011) and “Cape Nature and DEADP both mentioned to us, in different meetings, that they get an understanding of what consultants are like” (010 01). These two stakeholder groups were singled out because as the decision maker and key environmental proponent they were considered to play the most important roles in any potential opposition to an application. It was also ubiquitously felt that the reputation of the EAP with these two organisations strongly affected how an application they lead was received and treated, as one respondent put it, “If you consistently deliver a high standard of work, then they would take your opinion more easily than someone who is not delivering such a high standard of work. So, that's why you do build up a relationship, because it's by showing your professional integrity in biodiversity” (010 001).

2. Reputation

Respondents reported that as well as developing a reputation through a high standard of work, they also actively protected their reputation. One common method of reputational defence was the refusal of work which had the potential for unacceptable environmental impacts, “Until such time that we are 100% sure that seawater will not ingress into the aquifer, we will not touch the job” (017 03), “we also do turn business away” (008 01) and “we don't take on those risky ones” (02 002). As a result of this, applicants wishing to develop in an unsustainable manner may find that they are unable to find representation for their proposal in its unaltered form. A second method of reputational defence is to negotiate directly with applicants before submitting an application to parastatals or DEA for comment in order to avoid submitting unfeasible applications, “ And he comes in our office and by the time he gets back, it's half of what he thought he could get, but it was an option that you could live with” (008 01) and “At this one meeting I said “guys this is not going to work”” (02 002). These discussions are conducted early in the process, between the applicant and their EAPS. As a result the proposed development activities are often in at early stage and so are more easily altered. As a result there is significant potential to reduce the environmental footprint of developments through these meetings. Respondents reported that applications were often altered or abandoned at this stage. One respondent summarised this, “Everybody wants their project approved, no one is paying billions of Rand on studies and specialist studies for nothing. the environmental process is not supposed to work like that. It's not supposed to be “here is my application, approve it or don't approve it”. It's supposed to be “here is the verification, we have been through a whole suite of things to come up with a solution that best suits the developer and the environment”” (02 002). Another said, “You should never get to a point when you're the EAP writing a project that should not be authorized. You should stop spending that guy's money months before you reach that point” (02 008). Respondents reported that applicants were often unhappy with this process initially however all respondents reported that coercion beyond reasonable debate or negotiation was non-existent or very rare “I have never once been coerced or approached. Obviously, developers always bat for their interests.” (011).

3. Ethics

Respondents also reported an ethical component to their professional decisions, “I'm not going to try to approve things which are not moral” (02 008). Whilst they are private entities they also see themselves as protecting the environment, ”We are here to make money and protect the environment” (011). The majority of the EAPs interviewed saw themselves as environmentalists, “We are basically environmentalists” (008), and therefore had a personal investment in protecting the environment. Whilst

some respondents were more explicit about this than others, it was evident that this was a shared value. There were concerns that they were not seen as being on the side of the environment due to their involvement with development “I'm probably excommunicated by the extreme green lobby because I consort with the devil - governments and the businesses” (02 003) and “you get often seen as being just a puppet for the developer” (02 002). Despite this perception, many EAPS justified their role in development as pragmatic engagement, reasoning that through engaging with applicants they were able to reduce the impact of development, “You've got to understand that development will happen, and it is going to happen, we've got to try and get it done or let it happen in the best possible way” (010 01), “you can actually have quite a significant impact in making sure it's sustainable and it's done in an environment friendly way” (02 006) and that if they did not do so, that development would still happen but in a less environmentally friendly way “they're going to find someone else if they don't find you” (02 006).

4. Negotiation

EAPs universally viewed the process as an active negotiation or “horse trading” (02 003), not an exam style process where the final outcome is unknown, “It's not supposed to be “here is my application, approve it or don't approve it”” (02 002). Some expressed this explicitly, “that was part of the negotiations” (008 02) however all expressed it implicitly in the way they discussed the process. Viewing the process as a negotiation introduces a number of fundamental characteristics about the nature of the process. EAPs reported that trade off decisions were inevitable in these negotiations and ultimately the final decisions often involved compromise by all parties “we're going to have to go through a long and painful process and there'll probably be a compromise, which means no one will be particularly happy, but they'll live with it.” (02 003). Respondents reported that the trade-off decisions being made were often challenging, “you've got, say, an unemployment in the area of say 60%. You've got absolutely no services. People are destitute” (02 003) and “those 2,000 people literally are living under corrugated roofs with plastic sides and they're burning tires in the streets. And, we've gone to the site, we’ve assessed the site, we found sensitive areas” (011). These trade off decisions ultimately require very different categories of both personal and societal cost and benefit to be weighed against each other and ultimately “what is acceptable is not a scientific concept, it's a socioeconomic decision” (02 003). Respondents noted that personalities played a key role, both negatively “everybody has the same problem with the same guy” (017 003) and positively “they respond to emails, and they want to add constructively to the process” (010 01). They also noted that it was easiest to alter development if they were “involved in an early stage” (010 01).

5. Other stakeholder groups

As EAPs play a central role in the negotiation, it is important to understand how they relate to other stakeholder groups.

5.1 Applicants

Their relationship with applicants is defined by the applicants need to obtain legal permission for their intended project. As such, EAPs are often forced to disappoint applicants by telling them that their intended development is unsustainable and thus not possible, “We fight with all our clients” (008 01) and “he comes in our office and by the time he gets back, it's half of what he thought he could get” (008 01). In some cases, applicants fundamentally misunderstand the process “they actually think that we write these authorizations” (008 01) and in others they “get frustrated” (010 01). EAPs noted that some individuals refused to listen, “with him there’s no point in trying” (02 008) and “they just went like a bulldog” (008 03). Despite this they felt they generally retained autonomy, “I'll walk away from a project if they don't do what I tell them to” (02 008). Respondents reported that illegal developments were common, “there's been a lot of section 24Gs” (008 03) however most EAPs felt that most applicants followed the terms and conditions of their development authorisation “they're not going to duck and dive” (02 003).

5.2 Specialists

The EAPs universally had considerable respect for the specialists and their professional opinions, “the most important role is the specialist who write the report” (02 008) and “We take the position of our specialists very seriously” (02 002). They had differing degrees of respect for different specialists and hired better specialists for more complex jobs, “I know who my good freshwater consultants are that I want for the controversial projects” (011) however even with cheaper specialists they expected a high standard of work “I certainly wouldn't get a bad consultant that I thought was going to give me work that was wrong” (011). One of the key reasons for hiring a more expensive, more experienced specialist was for the respect that their opinion was afforded by both DEA and parastatals, “all of the departments respect what he's going to suggest” (02 008). In some cases they used specialists to negotiate with the applicants, “You move your centre of negotiation from between the project team and the community to being between the specialist and the client” (02 002).

5.3 Land use advisors

As the EIA process is adversarial, the main limitation on the activities of applicants is the comments made by the land use advisors. As a result, respondent's opinions of land use advisors varied considerably. Some were appreciative of the environmental protection offered by land use advisors commenting, "they've got their hands on almost every single development application that they should be commenting on" (011) and felt that they responded in time, "They comment in a timely manner" (011). Respondents did express frustration that they were too protective of the environment, "Cape Nature is not keen on approving any developments where biodiversity is going to be compromised" (017 003) and that they "can't see the bigger picture" 02 002. They recognised that the advisors were often under a lot of political pressure, "A lot of pressure comes down to them because they're actually paid by the department" (008 03) however felt that they were able to resist it, "I don't know what is much more justifiable than low cost housing for Africa, and they object to that" (011). They did feel that the advisors had the ability to block unsustainable developments, "I just knew there was no point of fighting it because they would just block and block" (02 008). In some instances, the relationships were very personal and EAPs identified specific individuals with which they had issues.

5.4 Case officers

Opinions of case officers who worked at the provincial level DEA varied yet were generally positive. Respondents said, "I find that the people that I've worked with at DEADP and Cape Nature are all have very high standards and integrity" (010 01), "there are some brilliant, brilliant people in DEADP, people that I'm amazed by and have a lot of respect for" (011). There was also a consensus that they were pragmatic about the trade-offs between environment and development, "They are concerned about the environment, they're also reasonable. They're not sort of trying to stop things from happening because their purists or something, they have a realistic way to look at things." (010 01) and "we've already conserved 600 of it and we think that's enough" (02 003). The capacity of DEA was contentious, some respondents felt that "DEADP will see straight through a report that doesn't have much information, but lots of waffle" (011) where as others doubted the quality of their work, "To be very honest as well, when you submit something to the department, I don't know how much of that they really read" (008 03) and "it's also a bit petty, there's a lack of judgment sometimes" (02 003). Some EAPs highlighted the challenges of developing the capacity of case officers to the state that they were able to both understand environmental concerns and write legally binding Environmental Authorisations, "Yes. It's certainly not an easy job to do. It's very legal" (02 011). Some were frustrated by mistakes they perceived in EAs, "They write up the wrong things, they have no understanding" (02 002) whilst others wrote their applications in extremely simple terms to work with the low capacity that they perceived, "It's actually presented in a way like teaching school kids" (017 003). There

was a commonly shared view that “the decision-making authority will probably not make a decision without having sight of those comments from KZN Wildlife” (02 011) and all EAPs agreed that DEA took the opinion of parastatal land use advisors very seriously.

6. The efficacy of EIA in protecting biodiversity

Respondents in this group were generally positive about the EIA process with many feeling that it added value, “I'm so glad that we have EIA” (010 01), “I can point out how environment adds tremendous financial value if it's well done” (02 003). They felt that the laws were well written, “I actually do believe that our laws are brilliant” (011) in particular the transparency of the system, “There's a huge thing on transparency, so every letter, every comment every image” (02 003). Respondents felt that the system was effective in preventing poor quality development from happening, “there's a regulative framework that you have to comply with, and if you don't, you're just not going to go ahead” (02 003). They did however express doubts about the capacity of the system to cover all environmentally damaging activities, “I think the legislation failed in a sense where it tried to cover each and every little loophole, rather than look at the integrity of the applicant” (017 003), “I think there probably are a few that aren't being caught in the net that should be” (011). Ultimately, they did feel that the process protected biodiversity, “if it turns out to be pristine, KwaZulu Natal or Penstone grassland, then chances are you're not going to be able to deal with it” (02 003).

7. Bounty hunters

Whilst the majority of EAPs acted ethically, there were some that did not, as one respondent put it “we call them "bounty hunters"” (017 003). Bounty hunters were often known by reputation, sometimes through informal communication between EAPs, sometimes through first-hand experience and occasionally through assessment of character, “See, I worry about that guy's independence. Not that I've ever experienced that, or have got an example of how that happened, but I've asked myself.” (011). There was clearly choice faced by EAPs, they could choose to act in an environmentally conscious fashion, independently and within the constraints of the law or they could choose to act non-independently and in the interests of their clients at the expense of the environment. Whilst there is an ethical component to this choice, it also represented two separate professional strategies. Ethical EAPs maintained a favourable reputation with land use advisors at parastatal conservation agencies and case officers at the provincial DEAs and in return received lower scrutiny and a smoother application process. This strategy may however bear a cost to their reputations with applicants who may view them as too environmentally friendly. Bounty hunters used the opposite strategy, maintaining a favourable reputation with some applicants who were not concerned with environmental costs but were instead felt these EAPs were able to “push” their applications through. This

strategy however also comes with a potential cost, if specialists, land use advisors or case officers identify these EAPs as bounty hunters then they will treat their applications with higher scrutiny.

Whilst none of the EAPs self-identified as bounty hunters, two were identified by name in off the record conversations by multiple other respondents. When asked about their professional approaches, these respondents claimed to act in an independent and environmentally friendly fashion. However, as the interviews proceeded and rapport was established they discussed views and actions which suggested that their professional approaches were less independent and more focused on helping applicants achieve their goals regardless of the environmental impact. These respondents reported being in favour of development, one noted, “Obviously I'm not a bunny hugger. I am pro development” and “When the developer wins, everyone wins”. One respondent was frank about their financial motivations for working in EIA, "Generally, people who do biological science are hagard, you're going to be poor but if you want make some money, do EIA.". Bounty hunters reported that they manipulated how they presented the information in their reports so as to lead to a favourable outcome, “You get the information together and you present it in such a way that it's okay.”. They also stated that they collaborated with unethical specialists in order to produce reports which intentionally reported incorrect information about the biological sensitivity of a site, “Well, you choose your specialist depending on the project. You get some good ones, you get some bad ones, sometimes you'll get a bad one to help you.”. Additionally, one specialist confirmed off the record that they had been approached by a named EAP and asked directly to lie about a threatened ecosystem. Bounty hunters also reported advising applicants of strategies for circumventing the law, for example one described telling a farmer to degrade an endangered ecosystem through overgrazing in order to reduce its conservation value to the degree that an application to plough the area would become viable. Respondent actively justified their actions in a number of ways. One stated they were helping farmers “survive” and another felt that developers, “just want to know the rules of the game”. Bounty hunters also denigrated the conservation parastatal organisations, feeling that they were “petty”, “anti-development” and one referred to the national parks as the parastatals having “been given huge tracts of thousands and thousands of hectares”, “for free”.

9.4. Appendix to Chapter Five: Biodiversity Specialists

9.4.1. Notes on the interviews

This stakeholder group was responsive to requests for interviews. Biodiversity specialists frequently obtain work through unsolicited calls and so were contactable and responsive. Additionally, many specialists participate in voluntary work in their sector and so were amenable to taking the time for an interview.

Members of this group varied in their professional approaches. Some members worked from home as freelancers, others worked for large organisations which focused on biodiversity assessments and yet others took specialist work as additional work to their normal jobs. In two instances specialists reported working as part of a group of freelancers which frequently collaborated to form a team. As a result of this variation interviews were held in a range of places including the respondents home, the interviewers home, cafes and the respondent's offices. In one instance, the respondent was based in another province so the interview was conducted via skype.

Thirteen specialists were interviewed. Seven interviews were analysed and saturation was achieved. During analysis 306 discrete codes were identified which were collectively referenced 365 times. Once themes had been identified, the remaining unanalysed interviews were then reviewed for any codes, themes or content which had not been previously identified or which contradicted the existing themes and results. No contradictions or novel codes or themes were identified.

Table 9.21. The themes which emerged from interviews with specialists.

1	*Social networks*
2	*Quality of work*
3	*Professional reputations*
4	*Client relationships and independence*
5	*Negotiations*
6	*Negotiating skills*
7	*Pragmatism*
8	*The choice between advocacy and brokership*
9	*Unethical specialists*
10	*The primacy of science*

9.4.2. Background

Specialists came from a range of backgrounds and many had held multiple different professional roles previously. All were scientists, however some had come through government, “I started in provincial nature conservation” (02 005), others through academia, “My history is that of a research botanist” (018) and some through NGOs, “I used to work for “Named NGO”” (02 001). A small number had gone straight from university into consulting. “Basically, I left university having finished up the research side of things and just the next step was to look for a job and it happened to be in the consultant field” (014). For many specialists this role was part of a larger career in conservation and the environmental sector. They all had strong positive attitudes to the conservation and the environment, “I'm comforted by the fact that, there will be no wind farm at that particular site because I don't believe it should be there.” (018) and “I basically pursued ecology because I'm passionate about conservation of fauna and flora and what have you.” (02 014).
Themes

1. Social networks

There were only a small number of specialists working in either study province and they reported that members of this stakeholder group all knew each other, “We're a small group. We all know each other” (S 02 001). This social connectivity developed partially through professional activities but in many cases the relationships were long and were established early in their careers “there were a whole bunch of us who were kind of a cohort coming through” (020). This network had a number of effects. One of the most important outcomes in relation to EIA decision-making was informal information sharing. Specialists reported contacting other specialists for “off the record” information about sites or projects, “I would have no problem phoning, for example Joe, whom I regard as a good friend, and say to him, "Joe, off the record, what are you seeing here or there or there?" (S 02 001). Respondents reported that they used this approach to improve their work, “it's always good to share information. It always comes out with a better, more balanced view of things” (S 02 001). Specialists also often cooperated with others in their networks on voluntary projects that they felt would benefit their professional field “I've contributed a lot of voluntary time over the years to helping with guidelines for environmental impact assessments” (004 01).

2. Quality of work

Specialists felt it was important to conduct high quality work, “my measuring stick is to say, “will what I'm saying stand-up in a court of law.” (018). Many respondents described in detail the approaches they used to ensure that their work was of the highest quality possible and spoke negatively about specialists who they thought did not produce work of a sufficient quality. For example, one respondent felt other specialists

were sometimes too rigid in their thinking ""there are quite a lot of practitioners out there who are slaves to the process. Slaves to ticking the boxes" (018). Specialists often saw their work as having a moral component, "you are the person speaking up for the environment" (020). Because respondents cared deeply about the environment they took the failure of other specialists personally, "I was really cross about it, they really got to me this time" (02 005).

3. Professional reputations

In addition to taking the quality of their work very seriously, specialists also highly valued their professional reputation. Indeed, they felt their reputation was what gave them their legitimacy, "you need to communicate your status" (018), "reputation is the key" (02 017). They felt that their reputations were intrinsically linked to the quality of their work and reported that they actively engaged in reputational defences, "your reputation is more valuable than your relationship with an individual client." (S 02 001). This valuation of reputation and work quality was partially due to specialists maintaining ethical standpoints "my ethics are strong" (018) but also because of the professional benefits. Respondents felt that decision makers were aware of the reputations and quality of work produced by specialists and treated them different accordingly. One respondent noted that having a reputation for high quality work meant that "the authorities value your opinion more and they don't query you as much" (004 02). Some specialists worked for not-for-profit organisations rather than private entities and they felt that as a result "the people we engage with, they would see us in a different light" (02 017). Reputations could also act negatively, "There are informal, I gather, off the record blacklists that the department has" (004 02). Respondents reported that it was possible to "damage your reputation to such an extent that you are not going to get work" (S 02 001). As a result, there was a considerable benefit to not only producing high quality work but also to avoiding projects which had the potential to damage the reputation of the specialist, "Where you're dealing with smaller operations with developers that are trying to cut corners, yes, I think that's where you're likely to have issues. We try and avoid doing that work" (02 017).

4. Client relationships and independence

Whilst maintaining a reputation for ethical and environmentally conscious work was seen as essential, respondents highlighted that it was still important to cooperate with applicants. If a specialist was perceived by applicants to be difficult to deal with, unreasonable or too much of a "greenie" (S 02 001) then this could lead to applicants or EAPs employing different specialists, "You've got to be very careful not to end up with a reputation as an intractable individual" (S 02 001). Many specialists were conscious that they had lost work due to their reputation, "It has undoubtedly cost me a lot of work, because I've got a reputation for

being tough on these things” (004). Despite this pressure specialists were very clear that they were not willing to compromise their positions, integrity or ethics, “I have to retain my independence and very avidly so because it means that my ethics are strong and my business is strong and I don't compromise on that” (018), “For me the environment comes first, I don't care what the client thinks.” (02 014) and “And I told him, "Sorry, I don't care if you fire me, you can hear this."” (020). Many specialists also reported that despite taking a strong stance, their careers and professional relationships were not damaged, “I have turned down, I have trashed projects, and I am still being used by those developers” (S 02 001). Some specialists also noted that applicants saw a benefit in hiring a tough but well-respected specialist, “Some of them understand that while I may seem tough in the beginning. It's usually going to be quicker for them to get it through.” (004). Some specialists felt that the challenges of balancing their reputation with both applicants and environmentally minded people was sometimes not possible and that being seen badly by one or both sides was inevitable, “We either sell out or we are greenies” (S 02 001).

5. Negotiations

As a result of this willingness to enter a scientifically informed debate, specialists played a key role in negotiating with applicants. They often negotiated a reduction in environmental impact through redesign of development footprints through “careful manoeuvring maybe reorganizing the layouts on a site or realigning a road or putting a wind turbine here rather than there” (018). The majority of specialists felt that they were able to negotiate in an informal manner which improved their impact, “Quite often you end up doing two or three layout assessments, and those first two or three never goes to the public only the third or final actually goes out to the public, so they keep it in-house a lot of times which is often good because you can be more critical then, and you don't have to actually go change reports that often.” (004 01). They felt that this informal process was where decisions were actually made, “I think in some ways, it's more important, because ultimately the way the decisions are made, the decision is actually made way out of the formal processes. It could be during an informal discussion between two colleagues and that shapes the process in the end” (S 02 001). They reported that through this process they could convince an applicant to act in a more environmentally friendly manner by “getting them to see and visualize what the consequence of their actions are, and then forcing them to be consciously making that kind of choice. If you're good, you start persuading people that actually this picture is nice.” (020). Specialists valued being brought in early in the process as then they could be present for, and therefore affect, these informal decisions, “The best way to avoid that, in other words, to engender that personal human process, is by making the team work as a team. Build up the picture from the bottom as opposed to when you get given a layout and you have to go and assess but the developer has already decided.” (020). Specialists also noted that these decision-making processes were iterative, usually with each iteration reducing the environmental impact, “Very rarely the

iterations get worse from an environmental point of view" (004 01) and "most cases are probably fairly simple. The tricky ones just take more time because they're more iterations, there's more going backwards and forwards" (004 01).

6. Negotiating skills

As a result of this negotiating role, a very strong theme highlighted in all interviews with respondents in this group was the need for specialists to have negotiating skills, "taking one turbine out of a wind farm has got massive implications for the eventual profit. If you're not backing up your arguments really well, you do get challenged from some of these developers and they come with very balanced questions about, "But, why do you say that? Why do you say that?" You need to know what you're talking." (S 02 001). Respondents saw this need for negotiating skills as critical to professional effectiveness, "I've got two guys who, are good botanists. But making them into good consultants is another question." (018). One respondent stated, "I think that's the difference between why some specialists make it and some others don't. You get some brilliant ornithologists out there, but the guys can't play the politics, the unfortunate and inevitable politics that comes with the whole thing. You've got to understand the dynamics. You've got to really understand where power really is at and who makes the key decisions. You've got to be able to influence that process. I always say to people, "I'm the advocate for the birds." I see myself as the advocate for the birds, I do not see myself as the advocate for the developer." (S 02 001). Many respondents suggested that these negotiating skills often developed through practical experience, "when I started out, I would be forced into backing down on certain issues and sites when I didn't really feel comfortable but have subsequently learned not to do that" (004 01), "when I was in my 20s, I wouldn't have had anywhere near the confidence to make the decisions, to make the judgment calls that are necessary" (018). Some respondents felt they had inherent personal characteristics, one respondent stated, "I feel comfortable in a situation of conflict" (020) and another highlighted that "it takes quite a bit of courage to stand up to a developer and tell them to the guy that is paying you and telling that sorry this is not working" (S 02 001). Respondents often noted that social skills were required as they had to negotiated with "people from very different positions and state your case and defend it and deal with whatever gets in your way" (018).

7. Pragmatism

Respondents often highlighted the importance of being "clear-headed and pragmatic" (S 02 001), one respondent said "I try to have a pragmatic approach. I don't want to throw away good conservation and good conservation ethics and good conservation opportunities. But, also see that we have a social contract and that we can't just live in this lovely green bubble and hope for the best." (018). Pragmatism was viewed

by these stakeholders as the ability to make trade off decisions between the environment and development in a holistic manner, one respondent argued “you make sensible decisions because there are trade-offs” (020). Compromise was seen as inevitable in these trade off decisions, as one respondent stated, “you've always got to accept partial happiness” (004 01). Respondents were clear however that their role was not to enable all development; one stated, “My job is not to make it economically viable for you, it's to advise you on the environmental constraints.” (004).

8. The choice between advocacy and brokership

Whilst respondents agreed on most topics, the most divisive issue was the extent to which respondents should be independent from the applicants. Some felt that they were brokers of facts and that they should remain as independent as possible, as one respondent said “I think once you become a consultant or specialist you cannot take an advocacy role at all. You can't.” (02 005), they saw their role as being “an expert witness, you're trying to put the facts on the table so the best decisions can be made.” (02 005). Another specialist stated that they “kept to their knitting” (018) and said, “That's how I operate, strictly within the bounds of botanical work” (020). These respondents wished to negotiate only with the EAP and would rather not meet the applicant “I certainly only like to work with the EAP, I don't want to talk directly to clients” (02 005). They felt that negotiating with the applicant through the independent EAP added an extra layer of independence, one respondent stated, “We are independent within the independent” (02 014). and another said suggested that this was useful when dealing with other stakeholders as if they were accused of non-independence they could state “I don't even know that person. I have nothing to do with them. I work independently” (018). Other respondents however felt that that cultivation of personal relationships with the application team was beneficial to this negotiation process, one respondent talked about the importance of building a cohesive team that were able to work well together, “If the team is working well, then people are properly informed, properly feel grounded in their discipline, properly able to compromise and play in that space.” (020). Personal relationships with other stakeholders was also viewed as important “Your relationship with your clients and with the NGOs plays a massive role in the outcome of projects.” (S 02 001). These specialists felt that if they believed a project was important and could be achieved with sustainable impact then they needed to, “go out to bat” (020) for it and would represent the applicant in discussions with other stakeholders. Specialists who approached negotiation in this manner did however note that there was a risk of becoming too close to applicants, one respondent noted that, “if that person becomes a personal friend, that could cloud your objectivity” (S 02 001) and another stated that “The downside, of course, for a specialist, is that you then start feeling like you don't want to let the rest of the team down.” (020).

9. Unethical specialists

A small number of respondents noted that there were potentially specialists who would write “sweetheart reports” (02 005), i.e. reports which said what the developer wanted. Some respondents made comments like “they will then hire somebody else who will tell them what they want” (004 01). Despite this, no respondents reported examples where they felt a specialist had actively lied, rather they felt that in some instances low quality work was conducted or inexperienced specialists were purposely hired by EAPs or applicants. One specialist who was concerned about the issue stated that some specialists “just seem to be overlooking or are incompetent in finding what they should be looking for” (02 005). One respondent noted that a friend of theirs had been approached by a developer and offered a bribe which they had subsequently refused. It is important to note that whilst this report of attempted bribery is important, it is significant that this is the only evidence of bribery in any form in any of the interviews conducted in the course of this research.

10. The primacy of science

Whilst negotiation strategies varied, all specialists strongly indicated that their scientific positions were valued and respected. The specialists reported that disagreements with applicants were usually limited to the interpretation of the facts but not the facts themselves, in the words of one respondent, “They do tend to respect the science. Interpretation sometimes they're not so happy” (02 005). Another respondent stated that they “put the facts on the table” (018) and that in regard to his opinion, applicants “take it seriously but there’s a lot of trying to get around it” (018). The respondents in this stakeholder group were also all very clear that biodiversity considerations played a key role in decision-making in EIA. Respondents noted that if a threatened species was identified then this would prevent development. In one example, a specialist reported that a nesting pair of Hirundo atrocaerulea, a species vulnerable at a global level yet locally rare, meant “game over straight away” (02 005) for an application. Additionally, in the course of the interviews all specialists gave numerous examples of instances where developments had been altered in order to reduce their environmental impact. There was debate over the extent to which their reports affected development however all specialists unanimously agreed that their work did affect the EIA decision-making process.

9.5. Appendix to Chapter Five: Land Use Advisors

9.5.1. The nature of the interviews

In the process of conducting this work I established collaborations with both Cape Nature and Ezemvelo KwaZulu Natal Wildlife. Respondents in this category were also therefore key informants who had helped me develop an understanding of the study system and therefore my research. Prior to these interviews I had been invited into their offices and had conducted participant observation however the data collected through participant observation is not included in this chapter. Whilst conducting these interviews I did not rely on previous conversations or other methods of data collection and instead approached them in a similar fashion to those of the other stakeholder groups. Additionally, as I had existing relationships with these respondents I made a concerted effort in the interviews to manage potential personal biases.

There were only 7 parastatal land use advisors at the time of the research, 3 in Western Cape and 4 in KwaZulu Natal, consequently, I interviewed them all. The interviews were conducted in their offices except one which was conducted in a restaurant. As I had prior relationships with all but one of the respondents these interviews were friendly and candid. During the analysis I identified 378 discrete codes which between them were referenced a total of 443 times. Saturation was reached.

9.5.2. Backgrounds

All land use advisors interviewed had completed at least one degree in environmental or biological sciences, “botanist scientist, conservation ecologist,” (019) and “my aim was to somehow be a zoologist, spatial ecologist” (02 021). They had come to their positions through various routes however all had intended to work in the conservation sector, “I studied Grassland Science at varsity. Kind of figured going to ecology or game farm management, rather than reviewing EIAs” (02 025). Land use advisors held their positions for long periods, two respondents had worked in that capacity for over 10 years and the newest had spent 3 years in that role.

Table 9.22. The themes which emerged from interviews with land use advisors

1	The experience of being a land use advisor
2	Their approach to commenting
3	Achieving impact
4	Negotiations
5	Compromise and communication
6	Proactive negotiation
7	Biodiversity specialists
8	Personal relationships and reputations

9.5.3. Themes

1. The experience of being a land use advisor

Land use advisors expressed that they were personally invested in their professional roles and that it was important to them to actively protect the environment, as one respondent put it, “I think that's why we're fortunate to be where we are. Where you can be completely principled” (02 001 02). They reported that this passion for their work was important in effectively fulfilling their professional role, “You’ve got to have this passion otherwise you either wouldn’t last or you compromise” (019). This personal investment in their work helped contribute to them functioning as an effective team, one advisor noted that their approach was, “very much a team effort” (02 016 01). Respondents cited that this passion was also important in dealing with professional stresses. One respondent noted that, “this is a burnout job” (02 001 03) and another joked about the pressure saying, “We actually had a recommendation to our management the other day that they should put in a gym with a cage so we can do cage fighting during our lunch times to release some of the pent-up frustrations.” (02 025). Despite this, the majority of land use advisors had been in their roles for over 5 years with some having held their positions far longer (the longest being 13 years), far longer than the usual occupation of a role in their organisations. As a result, land use advisor teams collectively shared considerable institutional memory.

Advisors attempted to approach the decision-making process as consistently as possible, “we have to be consistent, but like adaptable consistent” (019). Respondents noted however that there was considerable variation between applications and that an adaptable approach was necessary, “It's a lot of learning as we go” (02 001 03). Advisors ubiquitously reported that the majority of cases were simple and that only a small number were problematic. They reported that there was an “80/20 rule” where 80% is “literally like a production line going out” (02 016 01) and “you're working the longest for the 20%”. All respondents also

reported that there was a very high workload which lead to a considerable backlog and delays in commenting, “we've got billions that are backlogged here” (02 001 03). Whilst all advisors could cite many instances where they had “won” or had successfully protected the environment, respondents reported feeling pessimistic about their ability to prevent environmental impact, “We often wonder, "What the hell you know. we're not winning."” (019) and, “It is annoying you know, but I’ll keep on” (019).

2. Their approach to commenting

As representatives of the conservation parastatal organisations, the land use advisors are legally mandated to provide comment on all applications that have the potential to impact on biodiversity. Through this commenting process the advisors play a key negotiating role. These negotiations are usually started informally by applicants before an application has been formally submitted so that applicants can determine whether the land use advisors will identify any issues in their application, one respondent said, “we set up another meeting with the consultants and all the specialists just trying to get to grips with what can and can't be done” (02 016 01).

Advisors are expected to assess potential biodiversity impacts, specialist studies and proposed mitigations. Respondents reported that they relied heavily on the expertise of specialists within their organisations, “We’d take it down to Adam and say, “Adam, do you think this will work?”” (02 016 01). The specialist reports commissioned by applicants were also important in informing commenting, respondents frequently referred to specific details from specialists reports and the role they played in informing their comments and decisions.

3. Achieving impact

Advisors were able to have a considerable impact on applications, all respondents in this group reported on cases that they had “refused” or “said no to”, one respondent reported “I put my foot down in the meeting and say, "Guys, you cannot proceed."” (02 025). If they felt that the information that the applicant was providing was insufficient in some way, they were empowered to refuse to make a decision until this had been rectified, “their reports weren't good enough initially, so they said they'd go back to site” (022). If the information provided was sufficient they were still able to object to applications although they noted that a clear reasoning was required, “when it comes to an objection, your list of reasons has to be quite strong” (02 021). These objections could be the identification of “fatal flaws” in which case they would object to the entire development outright, however such instances were rare. In many instances the respondents reported that there were activities or areas which they had identified as fatal flaws, one respondent reported that reserves were no-go “We said, “Sorry, as it stands now we do not allow any new lines through

reserves."" (02 016 01) and multiple respondents reported cases where the presence of rare birds or habitats had halted applications entirely, "we had an obligation because they were a migration species, to ensure that this stronghold here was intact" (02 016 02) and "There is no way we can allow the forest to fragment to the point that it's pretty much cut up" (02 016 01).

4. Negotiations

Whilst outright objection to applications did occur, respondents reported that it was far more common for them to negotiate changes with applicants. All respondents discussed the minutiae of cases and gave multiple examples of instances where they had negotiated development footprints, often down to the metre, "we want coordinates of each of the pylons that are going to be in fynbos" (02 016 01). Negotiation often involved multiple stages, for example in many instances respondents reported negotiating with an EAP who would then take the results of that discussion to their client, the applicant, and negotiate with them, "the consultants they are able to negotiate to this point, then they go back and say look let's sort this out" (02 001 03). Respondents reported that it was common for EAPS to use the objections of the advisors to request that their clients changed their development footprints, "the EAPs will use us as their battering ram" (02 025).

5. Compromise and communication

Respondents reported that these negotiations often led to compromise. Accordingly, they reported that they would not oppose developments unless there was a clear conservation need, "It's quite well represented in terms of our targets. Losing a little bit in that area was not too problematic" (02 025) and, "people think because we just like biodiversity, but we do do some sort of balancing act to try and be fair and realize that we are in the real world here." (02 001 02). The advisors felt that understanding the position of the applicants was important in negotiating these compromises, "I also wanted to understand their thinking" (02 001 02). This need for understanding was mutual, the advisors ubiquitously reported that explaining environmental constraints to applicants and EAPs was central to their professional roles, "If you have a good way of explaining it to a consultant or to an applicant, then it's like, "Okay, I get it now."" (02 025) and, "you can see when a penny drops when people understand." (022). Respondents reported, "It's almost like an educational process more than anything else" (02 016 02). They felt that "It's in our interest to try and guide people" (019) because where people understood the logic behind their comments and requests, they were far more likely be happy to agree to conditions and to comply with those conditions in the long term. As one respondent put it, "it's making the people on the ground happy and happy to look after the swallows going forward." (02 001 02).

6. Proactive negotiation

As with other groups, advisors noted that it was significantly easier to alter a development early in the planning process. As a result they therefore emphasised the importance of proactive negotiation. To this end advisors reported that they attended meetings with applicants to help identify potential issues early on in the process, “she gave us a call and said, "Look, can we swing by?" Just a pre-feasibility, what are our thoughts so that they can identify which direction they probably need to go in.” (02 016 01). Respondents also reported working with other government bodies to coordinate and avoid conflict, “We have cooperative governance meetings here” (019). As part of this proactive negotiation, conservation agencies in South Africa have developed maps which highlight areas of biological importance, known as Critical Biodiversity Area (CBA) maps. Advisors frequently referred to these tools in their decision-making and expected all applicants to be aware of them and make reference to any sensitive areas that they highlighted. One negative aspect of proactive negotiation is the difficulty of measuring impact, “We engaged and we did work. We took up time on the phone and we took up time going to a meeting, but our reporting doesn't work in
that manner.” (02 016 01).

7. Biodiversity specialists

The importance of biodiversity specialists was one of the strongest emergent themes in interviews with advisors. Specialist reports were one of the most important sources of information in their decision-making. Advisors were able to insist on specific types of reports, “we'd insist on a vegetation assessment either baseline or a full study depending on the scale of things and the sensitivity of the site.” (019). In writing their comments respondents often referred directly to, and in many cases relied upon, the recommendations about development footprints made by specialists. They assessed the information and development footprint recommendations of specialist reports using their personal expertise, that of the scientists in their organisations and tools such as CBA maps. Respondents reported however that these scientific means of judgement were considered in the light of their personal knowledge and experience with the specialist, “we look at who's involved and their expertise” (02 016 01), “Okay, who was the specialist? Who was the wetland specialist? Who was the vegetation specialist?” (02 016 02). Advisors ubiquitously reported that they treated reports and applications very differently depending on their knowledge of the authors, “you can know who the specialist was and you can go, "Okay, that's good."” (022). Where specialists with good reputations were used this could lead to a faster and more streamlined authorisation process, “If he picks the right consultant-- if he picks the guy who's going to do a good job, there's less critical reviewing that needs to be done by the authorizing department” (02 016 01). In many instances advisors and EAPs had long running personal relationships, “I was actually at Varsity with Hugh” (02 001 01). Advisors reported that

these personal relationships often lead to informal communication between them and specialists, “you couldn't go back to the botanist and ask him (within the official process) although we have informally, although that will be done outside of his contract” (002 01). This informal communication was frequently critical in informing an advisors decision to support or object to an application. Respondents reported that specialists were aware of this and so actively maintained this personal trust, “he needs to maintain that relationship with us, so that we trust him” (002 01).

8. Personal relationships and reputations

This use of personal relationships and reputations to interpret reports also extended to EAPS, however whereas relationships with specialists were predominantly positive and cooperative, the reputations of EAPs was often used to identify problem cases. One advisor noted that they quickly learnt which EAPs they would have issues with and that there was, “an unwritten list which you pick up very quickly” (02 016 02). Some EAPs were well known for producing unethical or poor quality work, “his name, has the reputation for perhaps not producing the best quality reports, and there have been huge incidences where he's seemed selective in terms of what he gives you” (02 001 03) and, “the consultant has a very bad reputation with our organisation because of his work ethic.” (02 021). The advisors reviewed not only the main application document based on the reputation of the EAP but also the specialist reports in light of this reputation because, as one respondent stated, “some consultants bully the specialists into giving them a less opinionated report.” (022). Respondents reported that they used this reputational information to help them determine how much scrutiny to apply to applications, EAPs who were known to be good received limited scrutiny whereas the applications of EAPs with bad reputations received significant attention and respondents often sought verification from additional sources where possible.

9.6. Appendix to Chapter Five: Case Officers

9.6.1. The nature of the interviews

In order to interview case officers, I had to first obtain written permission from senior managers in their departments. Once I had obtained permission I was invited into the government departments. Whilst the atmosphere was relaxed and very few interviews had been declined previously, I was concerned that the case officers may feel pressure to agree to interviews or may be concerned that I may share the contents of the interviews with managers in their department so I adapted the FPIC protocol conducted at the start of the interview specifically to address this issue. I mentioned my concerns explicitly to respondents and stated that I was a student and that they were under no obligation to speak to me. Additionally, when I stated that

every aspect of these interviews (including whether or not they participated) was confidential, I specifically stated that I would not be reporting back to management within their or any other department.

Two of these interviews were conducted in cafes, the rest were conducted in meeting rooms in government departments. I found these respondents to be extremely candid, they stated their positions unambiguously and clearly, even where the topics were sensitive. This may be because all respondents in this group engage in active face to face negotiation as part of their daily routine. I interviewed case officers at multiple different levels in the hierarchy, some were relatively new to their positions (2-3 years' experience) where as others held management posts and had significant experience (10-15 years' experience).

Provinces in South Africa have independent provincial level departments which deal with EIA applications. These departments are further split into districts. Districts in this instance are an area defined logistically rather than by population or hectares. As site visits and meetings are common, district offices are spread across the provinces in order to minimise travel times. Because of this, different districts can vary considerably, for example the pressures and challenges of managing development in the city of Cape Town are quite different to those of rural areas. In order to accurately record this variation, I recruited respondents from 5 separate offices, 2 offices in Western Cape and 3 offices in KwaZulu Natal. Western Cape has two large offices, whereas KwaZulu Natal has multiple smaller offices. I interviewed 8 respondents, 3 from KwaZulu Natal and 5 from Western Cape. I recorded 510 discrete codes over 579 references. Saturation was reached.

9.6.2. Backgrounds

All respondents had Bachelors degrees, many had honours and some had Masters degrees. Their qualifications were in subdisciplines of biological sciences or environmental management, such as Zoology, Botany or Environmental and Water Sciences. Their previous employment histories varied, some had worked for conservation organisations, others had worked as EAPs and some had previously worked for other government bodies. Respondents reported that their offices contained staff with varied backgrounds, "you get a whole range of knowledges" (02 009 01).

Table 9.23. The themes which emerged from interviews with case officers

1	The experience of being a case officer
2	Decision-making
3	Negotiation
4	Communication
5	Scrutiny
6	Compromise
7	Guiding applicants
8	Pro-active negotiation
9	Rejecting applications
10	Their relationship with land use advisors
11	Their relationship with environmental assessment practitioners
12	Political interference

9.6.3. Themes

2.7.3. 1. The experience of being a case officer

The majority of respondents reported that they cared about their work and saw value in their actions, one respondent noted, “It has made a big difference for me to find that one thing that I know I can stick to and be passionate about”, (023 01) and another said, “I actually really enjoy working here because I think we get to change a lot of things” (024). Many felt their positions were challenging but rewarding; “I admit it's not an easy job but it's definitely gratifying” (027). Not all in these positions are happy however, one respondent noted that they, “get a bit cynical, a bit disillusioned” (02 009 01) and another stated that “people from conservations and in scientific backgrounds struggled more emotionally than those from the arts and more liberal background” (023 01).

Many mentioned that they or their colleagues cared about nature or were motivated by a desire to see natural areas persist, one respondent said, “I have three boys and I want them to also see the nice bushes and all the animals” (025) and another respondent cared about the “beauty in the landscape” (027). Respondents reported that they were motivated to provide a high standard of work, “I like to do a bit more” (027) however they also noted that not all case officers achieved such high standards, “some of my colleagues will go through with it and they won't think twice” (023 01). Respondents expressed frustration and disdain for these individuals; “If you only want to do what's written for you, then you do that” (027) and “you can sit in behind your desk and just do the minimum…but that's not what it's about” (025). One

respondent noted “I think that's where appointments come in. You have to really appoint people who are dedicated or committed to the field.”

All respondents spoke positively about their working environment. They felt that their departments ran well “our department is quite a well-oiled machine” (026) and that they were part of a good team “We’ve got passionate people around the table” (027). They stated that their teams were cooperative and communicative, “we've got a very open relationship” (023 01), “we can all work together” (025) and “My bosses hear it all from me because I can be blunt with them” (024). Respondents mentioned that this cooperation was evident in their approach to decision-making, “we usually call a meeting with our director and our deputy and we sit around the table and we discuss the matter” (025). They felt that this lead to improved decision-making as they were able to review each other’s work, with each individual bringing a different area of expertise. One respondent noted that the “chances are very slim, that it will go through four people without any of them spotting an emotional or irrational decision.” (023 01).

Multiple case officers reported that their positions “can be quite intense” (026). One noted “It gets fired up a lot of times, people get emotional” (026), another reported that “we get people pleading with us and shouting at us” (023 01) and a third said, “I have had EAPs and applicants wanting to know how I am qualified to do this job, have been telling me that I'm incompetent in making a decision, and they would like to see my qualifications” (024). Case officers reported that part of the issue was the consistent influx of applications, “I always say “you can't turn off the tap”” (02 009 01). Despite this pressure, respondents all reported a desire to maintain their standard of quality, one said, “we just have to do it because we want the best” (025) and another stated “there's got to be a standard” (024).

2.7.4. 2. Decision-making

Case officers are faced with the challenge of making defensible and rational decisions about complex multifaceted applications. As a result, they attempt to address applications in a consistent and flexible way. Respondents reported that one of the most fundamental tenants of their mandate was to ensure that the regulations and procedures were observed, “you stay within your regulations” (025). This was largely to ensure defensibility, “If it goes to court then the first thing they will look at is procedure” (02 030).

Within the confines of the law, respondents saw their role as “finding balance” (02 009 01) between different factors. One respondent stated, “my mandate is actually to balance environment, social, economical” (025) and another reported that, “EIA is designed to do is to try and balance impact and

development, socio-economic development and biodiversity conservation" (02 009 01). Ultimately respondents felt that in most instances "there has to be some sort of trade-off" (02 030).

Respondents reported that they tried to base these decisions on facts, one respondent noted "you have to stick to the facts. That's something that's always on your mind" (023 01) and another said, "you try to keep to the facts" (026) and that if they "don't have the information at hand that we need, then we can't obviously make a decision" (026). Respondents felt that their expertise in technical matters, such as biodiversity or hydrology, was limited and that due to the breadth of the decisions that they were faced with, outside input was often required to make informed decisions, "you can't do it just on judgment" (025). One of the main approaches used by case officers therefore was the solicitation of comments from experts. Respondents reported that they would often contact external experts for their opinion, one respondent said, "we've got the coastal department, our unit, and we obtain comment from them because we're not coastal specialists" (024) and another said of experts, "we're not biodiversity experts, so we have to rely on them" (025).

Respondents sought information from the applicant as well. One of the most important parts of an application is the justifications as to why their proposed development is appropriate to the area, known as "need and desirability". One case officer said, "you need to prove that there is a need and that there's a desirability attached to your proposal" (027). Respondents looked at applications to see whether the applicant had justified their proposal in the context of not only the needs of communities in the area but also the government planning for the area, one respondent summarised this, "Obviously, we need to see, is it even appropriate? Timing-wise, location-wise, and does it even fit in with what is required and forward planning for the area?" (026).

Applications must legally be communicated to the public for comment. Respondents reported that the comments received from this process were taken very seriously, one reported, "when I get my report the first thing that I do is I go to my public participation and I see what the public says" (025) and went on to say, "A lot depends on your public participation and the issues that they raise" (025). Whilst case officers agreed that the public had a very meaningful input and could change the course of an application, they also noted that public engagement was uneven and sporadic. One noted, "you ensure that there's a participation process, that people have the opportunity, but you can't force people to always participate" (02 009 01).

2.7.5. 3. Negotiation

Respondents were unanimously clear that they felt the decision-making process was a negotiation, “we depend a lot on conversation between all other parties to sort out the issues” (025). They felt that this approach was effective, as one respondent said, “sitting around a table I mean, it works” (024). One of the main strengths of approaching the decision-making process as a negotiation was the ability for all stakeholders to meaningfully give their input, respondents noted, “we have a way forward because everybody gave their input” (025) and “you obviously have to lay your issues on the table and then frame it so that we can move towards assessment of potential impacts “(027). Case officers felt that as well as being decision makers, their role was as the mediator of this negotiation, “we try and be the mediator” (024)

The case officers saw one of their roles as facilitating the negotiations. They felt that where stakeholders are able to discuss their views, “there is a lot of opportunity for common ground negotiations” (027). They also felt that an effective negotiation could lead to a better outcome, “If we all can sit around the table and discuss these things, especially from conservation side, it’s always the best situation to walk into a structured discussion that is being facilitated” (027). They did however highlight that some applications were already experiencing negotiation issues when they were submitted, “there are plenty of times where an impasse has happened and I’m called in to facilitate” (02 030).

4. Communication

As the facilitators of these negotiations, respondents placed a high value on effective communication. One respondent noted, “you need to keep the communication channels open, and if you are not approachable then I foresee problems” (025). Respondents reported feeling that they were actively interested in improving communication between different stakeholders, “I think it's giving a voice to that person, because I ultimately believe every person can bring something to the table. I mean, all can make difference here. You just need to get that voice” (023 01). The role of case officers in these communications was often that of a facilitator, encouraging and supporting debates rather than arbitrating and making decisions, “It's not a dispute resolution exercise, is more mediation to facilitate discussion and to not necessarily try and resolve an issue” (027). Respondents reported investing time and effort into preparing for negotiations so that they were able to better facilitate them, “I read specific points of discussion that we want to resolve because that would make a discussion much more structured obviously and clear” (027).

2.7.6. 5. Scrutiny

Case officers ubiquitously reported that they scrutinised applications very carefully. Two respondents reported that they felt that some of their colleagues were less rigorous which suggests that there may be variation in both the examination of applications and the rigour of decision-making. The decision-making process is however supported by internal review, decisions are checked at multiple levels by people with increasing degrees of experience, “I'm the first decision maker. My decision then goes to a level higher, my supervisor. From there it goes to my head of component, and from there it goes to my director. Three people above me.” (023 01). Case officers mentioned that they considered the statements in applications with a high degree of scepticism and scrutiny, “you spend most of the time thinking strategically” (027) and, “virtually every application we get in you take with a pinch of salt. You're sceptical of it more than you were in the past, which means that you have to do a lot more work as the assessment person, verify stuff on ground, check with authorities. You have to do a whole lot of other verification, you're not taking a statement on face value.” (02 009 01). Case officers reported that reviewing the applicant’s responses to comments and ensuring that they were thorough was a key part of this verification, one noted “We can't ask questions and then you give us a vague response or else tell us “no you would not want to answer it," because then they're not going to get anywhere.” (026) and another said, “We instruct the EAP “kindly address Ezemvelo KZN Wildlife’s concerns”” (02 030).

2.7.7. 6. Compromise

The environmental authorisation process is inherently about balancing trade-offs between different areas of concern, as a result, respondents reported that compromise was inevitable. One respondent noted, “Everybody needs to find a way to accommodate each other” (027). They felt that once an issue with an application had been raised, “They have to come back with something viable and put it on the table.” (026) and that “in most cases the EAP eventually addresses the issue” (02 030). It was clear however that these compromises were carefully considered however, “You never compromise if you know something’s not right” (02 030) and, “We need to be sustainable in how we do things, I can't allow you to have this and then lose this” (027). An inevitable result of compromise is some form of loss, some respondents felt this inherently meant favouring one side, “I don't always believe a win-win situation. I don't think they exist.” (02 009 01).

2.7.8. 7. Guiding applicants

In order to mediate differing opinions case officers reported that part of their role was to guide applicants through the process, one said, “you have to help them. We take them by the hand. "Come on, come speak

to me”” (025). There were multiple aspects to this guidance, many reported that they attended site visits and demonstrated where issues were likely to arise and what nature of mitigations they expected, “you have to go out and you have to get all parties there to discuss onsite” (025). Case officers also discussed different ways in they encouraged EAPs and applicants to consider potential issues and mitigation approaches, “we can say, "Okay, well, have you thought of it from this way?" or "Have you thought to do that?"” (026).

2.7.9. 8. Pro-active negotiation

It was ubiquitously agreed by case officers that it was easier to change an application if they were involved earlier in the process, “Ideally, I want to know as soon as possible so that I can advise on stakeholders in government what departments they need to consult with” (023 01) and, “We are very involved in the pre-application work” (027). Respondents noted that most of the important decisions happened outside of the legal decision-making process. In order to engage with this informal negotiation, case officers engaged with applicants before they officially applied, “Part of what we've done is we've created an outside process to help before they get into the formal process. We call it a pre-application” (026). This pre-application process allowed case officers to highlight major issues before applicants had invested too heavily (for example on engineer design work), “If somebody comes to us with something completely inappropriate, we can tell them already at pre-application phase” (026) and, “before they start finalising designs and plans you can highlight, "Look, this area is going to be an issue. Try putting that somewhere else, then stay out of this area," and it works really well.” (024). Respondents in more senior positions reported that they engaged with planning processes, including conservation planning exercises, in order to facilitate earlier guidance of applicants "I started doing strategic planning stuff rather, and trying to get development into the right location, rather than development directing where they want to go” (02 009 01).

2.7.10. 9. Rejecting applications

The environmental authorisation process only functions effectively if case officers are able to refuse applications. This issue was highly contentious however, multiple respondents noted that that development was broadly perceived to be the solution to South Africa’s major issues, such as unemployment and poverty, “we have to acknowledge that South Africa is a developing country, so we are development pro” (023 01). As a result, the process is intended to facilitate sustainable development and is not designed to oppose it, as one responded stated, “it's not designed to refuse applications” (02 009 01). Case officers felt that they were under pressure to approve applications. One respondent said, “even though I have full authority to say no to something. I’m kept from saying no” (023 01). The same respondent did later note however that they

were able to refuse applications, “I've said more “no” than “yes”” (023 01) and that they were supported in doing so, “I was supported when I needed to say no and it stayed no” (023 01). There was a strong reported inclination for case officers to request changes to an application rather than to outright refuse them, “at the end of the day we just don't approve it. We tell them to change it.” (024). Respondents reported that where changes were requested, these were often substantial, “you want 50 houses, by the looks of it you're probably going to get 10” (027) and “They'll actually then have to scale it back or else they can't actually do it at all because it's no longer feasible” (026). Case officers reported that it was more common for applications which were too environmentally impactful to be withdrawn voluntarily early in the process, often when issues were raised and changes were requested, rather than through official rejection at the decision-making stage. Respondents were clear that if applicants did not have factually informed responses to the issues raised then they would not be allowed to proceed, one respondent reported, “if they haven't got us the information then that's it. The files closed.” (026) and another stated, “there have been cases where the impasse has reached such a point that the developer has decided to shelve the project” (02 030).

2.7.11. 10. Their relationship with land use advisors

All respondents spoke of the important role played by land use advisors in the decision-making process, one said “we know we won't survive without CapeNature” (023 01). The case officers rely on the technical expertise of the advisors to review the biodiversity impacts of applications, one respondent mentioned that they requested all specialist reports recommended by advisors, “Make sure you identify all the impacts and assess them, and do what Cape Nature asks. If it be a freshwater assessment, or a botanical assessment just do it” (024). The advisors were perceived to be effective in participating in negotiations, “my experience with them is they're very open to being part of meetings and discussions. They've got good communication” (026) and case officers frequently mentioned that this lead to strong personal relationships, “it’s a very good relationship” (02 030). These personal relationships allowed staff from the advisors and case officers to informally discuss applications, “I know I can phone and ask them what did you mean here, or are you in agreement with a specialist who says this as a recommendation” (026). Despite this close relationship, the case officers were clear that the final decision rested with the provincial departments of environmental affairs, “We do also rely a lot on Cape nature to guide us but at the end of the day, it's guiding us and informing us so we still have to make the decision ourselves.” (025).

2.7.12. 11. Their relationship with environmental assessment practitioners

Case officers reported that there was considerable variation in the approaches of different EAPs and applicants, “A lot depends on how you run your process. How you approach your EAP and how you speak

with your specialist” (025). Case officers felt that some EAPs were opaque about how they made decisions as a negotiating tactic, “they'll literally say, "This is the only thing that's feasible," and you know full well that there's been a long history just to get to this one feasible option supposedly. It's a case of, "Okay, show us how you got there”. Don't just tell us that's the only one that you came up with because there must have something else in the pipeline at some other stage." (026). Case officers doubted the independence of EAPs, some felt that independence was rare, “they're supposed to be independent. And I have a huge problem with that, because there's no EAP in this country that's independent” (024) whilst others felt that some EAPs attempted to remain independent, “I think there's some that are very far biased and there's other that do try and maintain an independent view of things.” (02 009 01). Respondents reported that, “We've got a list of people that we know we have to watch.” (023 01) and confirmed that they treated EAPs according to their reputation, “You start to identify the problem characters and you're going to watch them differently.” (023 01). They also felt that the reputations of the EAPs had consequences when dealing with other stakeholders too, one noted the impact that a bad application could have a on a reputation “You couldn’t pay me enough to be an EAP to deal with that application. You are just going to get hammered. You’ll always be tarnished with it” (02 009 01) and noted that the reputational effect would translate into a professional loss, “I hope you get paid enough because you might not work again” (02 009 01). When case officers felt that EAPs were not acting independently they would often address this directly, “you can see when an EAP is not being independent so we call them in” (02 030) and, “I'll tell him to their faces that they are not being independent” (024). More frequently however respondents reported that they reviewed the reports of previously identified problem EAPs with higher scrutiny. Ultimately, respondents noted that this was a challenging issue to address, “It’s a nightmare to deal with those things” (027).

2.7.13. 12. Political interference

All respondents reported that there was political interference in the decision-making process, “Political pressure is real and it’s alive” (02 030). Interference predominantly occurred where public entities, such as municipalities, wished to develop social or communal projects such as low-cost housing, “we're still forced to say yes. But if it weren't a municipal project, and it was a private guy wanting to build, and his consultant didn't meet the requirements. They wouldn't have a problem with us saying "no" to that” (024). Respondents predominantly reported that the central issue was the timescale of the decision-making process rather than an alteration of the final decision. This was often because of budgetary time constraints, “the municipality would find out now, ”we have this money to spend. We have to spend it now". Now they expect you to rush through the process” (025). In these instances, the respondents felt that the pressure was often due to local elected leaders seeking re-election, “So now people are pushing for housing because it's almost election time again” (024). The frequency of political interference did appear to vary

geographically however, some respondents reported dealing with the issue frequently whilst others reported that it was infrequent in their area, “it's rare, there are maybe one of two cases that I know of where there's been a little bit of political involvement” (02 009 01).

Respondents dealt with political interference in different ways. Some stood aside and wished to have no involvement, “I'm here to do my job and do it the best that I can, and if they don't like my decision then fine, then they'll just change it, but then take my name off of it” (024) as they felt that there was a personal risk to objecting to such applications, “We would get jumped on from the highest level, probably from the minister” (024). In other areas, case officers were intentionally excluded from the process, “You just get stepped over your level, they go directly to the Minister” (023 01). In one area, a respondent reported that some senior management effectively opposed political interference, “we used to have a chief director that was quite good at actually dealing with the top political intervention.” (02 009 01). One respondent reported that he used proactive engagement with municipal offices in order to process their applications extremely rapidly in order to avoid the need for interference, “to deal with the political pressure I get in touch with the housing department and get them to send me early drafts” (02 030). They also noted that, “where there is political pressure we review things very very quickly so that no-one has the chance to interfere” (02 030).