Both Sides Now – Weltanschauung and Offset Mitigation. Environmental Decision Making in New Zealand

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"I've looked at life from both sides now,
From win and lose, and still somehow,
It's life's illusions I recall,
I really don't know life at all"

(Mitchell, 1967)

ABSTRACT

Nature and natural systems are characterised as a complex and poorly understood web of interrelated functions, beset with uncertainty. Many of the 'services' that nature provides to humans depend on the totality of these functions in a way that defies attempts to analyse their components. To attempt to define a view in terms of ecological functions would be akin to defining Turner's seascapes in terms of the quantity of pigments used. Nature, natural systems and ecological concepts are then seen to be based on, and understood in terms of, social rather than biological systems. Widely differing views are also held on the ethics and desirability of basing economic growth on the use of natural resources by humans. It is no surprise then, that when these two subjects combine, as they do when considering the allocation of natural resources, the situation can be seen to have all the characteristics of a messy problem.

The concept of sustainability underpins New Zealand's Resource Management Act 1991. This principle is operationalized through the terms and conditions on resource use consents granted by local authorities. Despite efforts to avoid or mitigate negative environmental impacts, outcomes are frequently perceived as inequitable, and detrimental to the natural environment. An attempt to alleviate this has been the use of the concept of offset mitigation, where an unavoidable ecological loss at one site is compensated for by an equivalent gain elsewhere. To date this technique has not been widely used in New Zealand, but where it has, the perception of inequity remains.

The thesis considers the hypothesis that perceptions of inequality in the process, and outcome, of resource consent applications involving offset mitigation, derive from a failure to incorporate the Weltanschauung of all actors. The existence of divergent Weltanschauung between actor classes is postulated, and the implications of this for problem solving and consensus building considered. Resource consents involving offset mitigation over the last ten years were identified. All actors involved in these applications were surveyed. Their experience and perceptions relating to the environment, the use of natural resources, and citizen participation in the process was sought. Results obtained suggested a qualitatively different Weltanschauung is held by submitters opposing the consent, from those of other actor groups. The results also

indicated that submitters had a quantitatively different opinion of the equity of the process. The conclusion is drawn that the current resource consent process, by failing to incorporate the different Weltanschauung of all actors, cannot achieve an equitable exchange in cases of offset mitigation.

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CHAPTER 1. Introduction

1.1 Background

The term ‘sustainability’ has become so commonplace that it is hard to find a formal document; be it from corporations, local, or central government; that does not include it. However, this all pervasive use obscures the lack of a consensus on either the intent or even the meaning of the term. Like art or pornography (Jacobellis v Ohio,, 1964), it is something that people ‘know when they see it’. It is clear then that although the terminology of sustainability may be common, the intent when it is used, and the interpretation when read, is entirely subjective (Kemp & Martens, 2007).

This subjectivity in an actor’s perception of sustainability is due to the critical influence of the actor’s Weltanschauung (Checkland, 1981; Churchman, 1970). Weltanschauung (plural Weltanschauungen) is a German composite word that has no direct English translation (Crowe, 1996; Freud, 1933), but which has been adopted within the systems movement to describe the view of reality that individuals develop throughout their life, and through the lens of which they unconsciously interpret and perceive both problems and possible solutions (Naughton, 1984). This subjectivity also indicates that these interpretations may, by their nature, be incommensurate (Leal Filho, 2000).

The problems inherent in approaching an issue where actors hold differing Weltanschauungen has long been recognised (Checkland, 1981; Churchman, 1970; Stimson & Thompson, 1975; Vickers, 1972, 1981). Where such a difference exists, it leads not only to disagreement over what is important, but to a perception of intransigence on the part of those who view the situation from an alternate position (G. Salmon, Zilliacus, Scherzer, & Barlund, 2008). The latter arises as the assumptions that contribute to a person’s Weltanschauung are unquestioned, hence they cannot perceive as valid any alternate view. Even within the scientific community, Kuhn (1962) considered that when actors did not have a shared perspective of the world, they could not find a common language by which ideas and concepts could be exchanged and compared. A view shared by Boyd and Banzhaf (2007), who noted the divergence

between, and within, the ecologist and ecological economist communities over what constitutes a ‘service’.

When considering the sustainable use of natural resources the most commonly used definition is: “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations, 1987, A/RES/42/187, Second statement). This definition, contained in the report of the World Commission on Environment and Development (The Brundtland Report), and echoed in UN General Assembly resolution 42/187, which welcomed it, is notable for its consideration of the needs of future generations. In contrast, many contemporary uses of the term sustainable are rooted in a desire to maintain existing behaviour and give primacy to current consumption regardless of future needs. At the extreme, this latter view is exemplified by attempts to justify ‘sustainable growth’ as a viable concept (Iakova & Wagner, 2001).

Within the New Zealand context, the legislation which gives effect to sustainable use of natural resources, the Resource Management Act 1991 (RMA) embraces in section 5, the broad definition of the Brundtland Report. This recognises the need for a holistic approach to land and natural resource use, driven by both resource shortages and increasing public concern with environmental sustainability (Scherr & McNeely, 2008). However such an integrated approach would require an acceptance of sub-optimal production rates in order to realize maximum societal, as well as ecological benefits (Fleischer & Tsur, 2009). A concept that agriculturalists and developers in New Zealand have yet to come to terms with.

In an attempt to reconcile the goal of environmental sustainability with economic development, several jurisdictions have introduced the concept of offset mitigation. This concept requires an ecological loss at one site to be compensated for by an equivalent ecological gain elsewhere. This approach, intended to be an option of last resort to address residual unavoidable harm (ten Kate, Bishop, & Bayon, 2004), relies for its effectiveness, first on an ability to identify what is being lost or modified, as well as what is to be gained, and second how to value this and hence compare the worth of loss and offset. In supporting this, research has concentrated on the identification of

ecological functions and the development and refining of measurement techniques (Boyd & Banzhaf, 2007). In an attempt to simplify what is to be measured and compared, the concept of ecological services has also been proposed (Costanza et al., 1997). However, the 'services' concept, when applied to the totality of the landscape rather than its ecology, has not had the same level of development (Termorshuizen & Opdam, 2009).

To be accepted as successful by all stakeholders, the technique of offset mitigation requires all subjective, Weltanschauung based values placed on aspects of a site to be identified and included (Luz, 2000). However, measuring and comparing subjectively valued benefits and costs remains problematical. Although Boyd and Banzhaf (2007) included in their definition services that provide largely intangible benefits, such as amenity value and fulfilment, and noted that these are in principle measurable, there is little indication of how any values derived can be agreed or equated in a manner acceptable to all. Consequently, social and cultural aspects of the landscape tend to be ignored or treated as something separate from the totality, with the inherent risk that these values remain external to any transaction costs. This problem is exacerbated by the use of measurement techniques and decision making processes acceptable to the dominant rationalist Weltanschauung, which assumes a common basis of understanding and a shared value system for all actors (Allison & Hobbs, 2006). Although this assumption has been questioned repeatedly over the last eighty years (Carr & Tait, 1991; Dilthey, 1976; Emery & Trist, 1969; Stimson & Thompson, 1975; Tait, 1988), this challenge cannot be accepted by those who's Weltanschauung incorporates the rationalist paradigm. As Redclift (2005) noted, actors devalue or ignore any and all aspects derived from an alternative value system that do not accord with their own Weltanschauung.

The use of offset mitigation in New Zealand has been limited, but has typically occurred in situations of high public interest, with an on-going visibility and topicality. Furthermore, the emphasis on the use of offset mitigation in the proposed National Policy Statement on Biodiversity (in Draft at the time of writing) has resulted in a raised awareness amongst regulators, and provides an opportune moment to consider ways in which the technique has been used and could be improved.

1.2 Problem statement

As noted above, there has been widespread recognition of the role that a person's Weltanschauung plays in their perception of a problem, and its solution (Ackoff, 1979; Checkland, 1981; Churchman, 1970; Tait, 1988; Vickers, 1972). However, there is little evidence that this is recognized or applied in determining costs and benefits in the resource consent process under the RMA. An investigation into the value systems that potentially affect actors' ability to participate effectively in the resource consent process, and their views of the outcome, is required.

Twenty years after its inception, New Zealand's Resource Management Act 1991 (RMA) has undergone a series of amendments in the light of practical application. Throughout these changes, the objective of sustainable use of natural resources has remained central. Despite this, concern with the effectiveness of the RMA, when measured against this stated purpose has grown, rather than diminished. In particular, the rate of loss of the most highly threatened native species and habitat is seen as increasing (Walker, Price, & Rutledge, 2005), a view compounded by a persistent failure of the RMA to curb and control behaviour detrimental to the environment, particularly with regard to water extraction and non-point source discharges (Ashworth, 2009; Rankin, 2011; Sharpe, 2012).

To manage the use of natural resources, the RMA requires an assessment of the environmental impact a proposed use would have. The decision to permit, restrict or prevent the activity is then determined on the basis of that impact and the potential benefits. This assessment can occur at two levels. An activity can be designated as permitted in a regional or district plan, or the activity can be permitted through the issuing of a resource consent. As part of the resource consent process, the proposed activity may be notified to the public, who are then able to make submissions either in support of, or opposing the application. All activities permitted through the issue of a resource consent are subject to any conditions included in that consent, but failure of consent holders to comply with the conditions imposed is widespread, frequently due to the cost burden that monitoring of compliance would impose on the regulatory authority (Gunningham & Young, 1997; O'Shea, 2002; Shimshack & Ward, 2005; Wardle, 2010).

Public disquiet over the outcomes of the resource consent process is paralleled by a perceived lack of equity in the process itself, with actors defining key terms and objectives according to their own goals (Walker et al., 2008). Public perception is that the implementation of the RMA has not only failed to achieve equitable outcomes, but that the process is not grounded in a concern to achieve a decision based on a shared value system. Rather, the process undervalues lay opinions and overvalues immediate economic benefits (Walker et al., 2008)

The priority given to short term and easily quantified benefits and costs immediately confers an advantage to the applicant who, in addition to their natural inclination to minimize internal costs, see certainty and immediacy as desirable and necessary. The maintenance of the natural environment on the other hand is, by its very nature long term, variable and has a high degree of uncertainty (Moilanen, van Teeffelen, Ben-Haim, & Ferrier, 2009). This latter point is well understood by community groups that are the leading source of restoration projects and concern for the local environment. Such community groups by their nature frequently have a view of the environment that in contrast to that of applicants, gives precedence to intrinsic and non-use values (Schroeder, 2000).

In the case of resource consent applications, two other groups potentially compound the influence that any difference in Weltanschauung has on the perception of equity of outcome. These are: regulators charged with applying the RMA and with managing the environment under its auspices; and consultants engaged for their expertise.

The role of local authority regulators in New Zealand at both regional and local levels is predicated on their position as defenders of the public good. However, this presumption has been undermined by the expectation of an independent executive providing value free advice (Brower, 2008; Stone, 1997). This situation is exacerbated by a political environment that requires councils to place an emphasis on efficiency and speedy decision making (Thomas & Memon, 2007). Both these influences have contributed to a situation that favours vested interests (Brower, 2008), and a Weltanschauung that values quantitative data and expert opinion.

The role of an independent consultant epitomises the concept of value free, objective advice. They may then share a similar Weltanschauung to regulators regarding the dominant authority of formal qualifications and expert opinion. A position reinforced through their training and background.

1.3 Aims and objectives

The aim of this research is to investigate the degree to which the Weltanschauung of the four actor classes identified in the RMA resource consent process: applicants; regulators; consultants; and submitters; differ. Further it will explore the effect, if any, these differences have on the actors' view of decisions made within the consent process. Specific objectives of the research are to investigate, within the context of RMA resource consent applications involving offset mitigation, potential differences in:

- The Weltanschauung of actor classes;
- Actors' perception of the equity of the resource consent process;
- Actors' perception of the ecological outcomes of resource consent applications; and
- Any relationship between these.

1.4 Limitations of research

This research is limited in its scope to consideration of applications for resource consent within New Zealand under the Resource Management Act 1991. It is further constrained to the consideration of examples where offset mitigation, or compensation, has been offered or imposed as a condition of the consent. Finally, since the research investigates and compares the Weltanschauungen of actors representing views both in favour of the application and those opposing it, it was necessary to consider only those applications that were publically notified, thus allowing submissions against the application to be made.

The number of instances of the use of offset mitigation within New Zealand is small, and consequently a case study approach has been adopted. This approach allows the consideration of data from multiple sources, but suffers from greater restrictions when suggesting the applicability of the results to the general population (Schell, 1992). This

constraint is potentially exacerbated by the likelihood that an actor's Weltanschauung is context sensitive.

The low numbers of actors available for investigation within the cases identified also limits the degree to which the results of the investigation can be analysed. The lack in variety of consent applications in the cases available, also potentially limits the degree to which results can be generalised. Whilst it can be assumed that all applicants share a desire to profit materially from their application, the degree to which they perceive the consent process and any conditions of consent imposed as onerous will depend inter alia, on their ability to transfer the costs incurred to others.

1.5 Outline of Thesis

This thesis is organized into five chapters. This chapter has introduced the problem of conflicting Weltanschauungen in the context of the use of natural resources, and formally states the purpose of the research.

Chapter Two reviews the literature pertinent to the main themes of the problem. It traces the origins of the term Weltanschauung, how it is currently applied, and the philosophical basis of alternative views on natural systems. A brief review of the historical evidence for competing Weltanschauung within New Zealand regarding nature is followed by consideration of the differing Weltanschauung that guided the development and implementation of the RMA.

The practical experience of offset mitigation within New Zealand and overseas, is then explored, and the use of economic methodologies to facilitate equitable outcomes considered. The chapter closes with a brief summary of the findings.

Chapter Three describes the methodology adopted for this research and Chapter Four provides a detailed analysis of the results obtained. Chapter Five presents the conclusions drawn from the research, relates these to the existing corpus of knowledge and makes suggestions for further research.

CHAPTER 2. What's it all about Alfie?[1] Literature Review

This chapter is structured around the two themes that contribute to the subject of the research, and reviews the literature for each in turn. The first section explores the philosophical origins of the term Weltanschauung, whether a person's Weltanschauung can be modified, and the applicability of the concept to a group. Contemporary usage is also considered. Section 2.2 expands on the importance of Weltanschauung when considering complex socially defined problem areas with contextually dependent data. It then relates this to the concept of nature and the ethical and cultural issues surrounding the use of natural resources by mankind.

Section 2.3 takes a step back to explore the philosophical basis of alternative views of nature and natural systems. Contrasting rationalist ontologies with relativist intellectual constructs or epistemologies to describe natural systems, this section considers the impact these philosophies have on the way in which problems are defined and solutions sought.

Section 2.4 traces the historical evidence for competing Weltanschauung within New Zealand regarding nature, examining the development of extractive use and preservation for intrinsic value in turn. Section 2.5 briefly traces the development of the RMA, and the differing Weltanschauung that have guided its development and implementation. The role of ambiguity in achieving consensus is considered, as is the pitfalls that can arise when this technique masks conflicts of value deriving from different Weltanschauungen.

Section 2.6 returns to the influence of competing philosophical approaches on the role of consultation and decision making. The expectations set in the RMA are contrasted with the method of implementation, as is the relative importance given to effective participation and efficient, that is rapid, processing of consent applications.

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[1] (Bacharach & David, 1965)

Section 2.7 picks up the second main theme of the thesis. It examines the concept behind the methodology of offset mitigation and examines the practical experience overseas. The general principle of offset mitigation as a measure of last resort is noted. Having identified key criteria for successful implementation, the section explores the potential of ecological economics to address these. The final part of this section considers the application to date, of offset mitigation in New Zealand, and the implications of the wording of RMA Section 5(2)(c) for the hierarchical approach to the maintenance of natural resources. The chapter concludes by summarising and integrating the conclusions drawn from the preceding sections.

2.1 How does it feel? - Weltanschauung

In his definition of the word, Schulz (n.d.) noted that the term Weltanschauung was first used by Kant in Kritik der Urteilskraft (1790). Schulz considered that within Kantian philosophy the term meant the contemplation of the physical world through the senses and that it's characteristic feature was its subjective basis. He also contended that this distinction was retained as the term gathered more complexity of meaning and grew in importance.

At first glance the word can be seen to be derived from 'anschauung' experience, and 'Welt' the world. This has led to the use of the literal translation 'world view' in many English texts, although Weltanschauung is also often used (Wolters, 1983). However, Kant used the term 'anschauung' in isolation when considering the physical world and in modern usage the more appropriate term when considering objective knowledge would be Weltbild (Schulz, n.d.). The current comprehensive meaning of Weltanschauung, initially expressed by Hegel (Schulz, n.d.) is considered by Crowe (1996) to combine with Welt both experience 'anschauung' and perception 'anschauen', thus continuing the emphasis on subjectivity.

In developing the concept of Weltanschauung, Dilthey (1976) drew on the hermanutic tradition that all knowledge is dependent on previous assumptions, as did Checkland (1981). Checkland in particular extending the hermanutic argument based on the understanding of texts, to a generic principle. The key feature of Weltanschauungen are

however, most clearly defined by Dilthey (1976), who stated that they: '…emerge from our attitude to, and knowledge of, life and from our whole mental structure.' (Dilthey, 1976, p. 141).

Are Weltanschauung then fixed, and are they an entirely personal experience, or can the concept be extended to a group of individuals that share a common Weltanschauung? Dilthey (1976), asserted that although a person's basic nature predisposes them to a certain Weltanschauung, this will change and evolve in response to new and repeated experiences. This circular relationship between Weltanschauung and experience is supported by Blann and Light (2000), and Allison and Hobbs (2006). These sources all consider that as questions about the meaning and significance of events are interpreted through the lens of the individual's Weltanschauung, that Weltanschauung can be modified or reinforced as repeated and novel experiences are interpreted. However, Churchman (1970) considered that empirical data cannot challenge a person's Weltanschauung, since by definition it exists prior to the gathering of the data, and hence provides the context which determines how that data is interpreted. To illustrate this, Churchman used the example of the integration of observational data into the Ptolemaic cosmology, in the face of ever increasing complexity and contrary indications. It is apparent that the possibility that one's Weltanschauung is incorrect is all but inconceivable, a view that is reinforced when that Weltanschauung is shared by one's peer group and /or the societal elite (Checkland, 1981). Although a person's Weltanschauung can then evolve, a fundamental change is extremely rare. Nonetheless, as the example of Ptolemaic cosmology shows, this is possible when an individual or group is faced with an irreconcilable conflict between components of their Weltanschauung (Checkland, 1981; Churchman, 1970; Doyle & Kellow, 1995).

In considering the way in which the concept of Weltanschauung is personal and private, Schulz (n.d.) suggested that although the concept as developed by Hegel indicated an individual and unique property, the term can and has been used to denote a collective view. Wolters (1983) also suggested that despite its connotations of personal and private, Weltanschauung can be applied in the sense of a collective view shared within a group that has common features. This description of a collective aligning with the definition of 'class' as a collection of individuals in which "each individual may be

replaced by another [member of the class] without affecting the subject's response' (Sachs, 1969, p. 406). It has also been noted that communities build around and develop a strongly held agreement in a Weltanschauung (Churchman, 1971). A view with which Emery and Trist (1969) concurred, describing the emergence of values that had a significance for all members of a group. The idea of shared Weltanschauung was also implied by Dilthey (1976) when he described Weltanschauung as 'a product of culture'.

The concept of a person's Weltanschauung being the lens through which they evaluate the world has then a firm philosophical and empirical grounding, as has the extension of the concept to a group of individuals sharing common characteristics. The following section further explores the way in which differing Weltanschauung lead to incommensurable interpretations of a single set of data.

2.2 Complexity and Weltanschauung – 'A nice mess you've got us into'[2]

Three basic Weltanschauung were postulated by Dilthey based on the perceived relationship between mind and 'reality'. These were:

- Naturalism – giving a predisposition to a reductionist, empirical and positivist interpretation;
- Subjective idealism or the Idealism of freedom – in which free will and the superiority of mind over external reality is emphasised; and
- Objective idealism – where mind and reality are seen as an integral whole, leading to a preference for contemplation, aesthetic appreciation, and reflection. (Dilthey, 1976)

It is clear that Dilthey considered adherents of these views would hold to irreconcilable understanding of the natural world. A point emphasised by Rickman in the introduction to his translation of Dilthey's Weltanschauungslehre in which these concepts appear (Rickman, 1976).

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[2] Gilbert, W. S., 1885, The Mikado, Act II dialogue after song 8, D'Oyly-Carte, London

Churchman expanded this view when considering the effect of a person's Weltanschauung in the context of empirical observation and the definition of both problems and potential solutions, when he postulated that analysing a problem through the Weltanschauungen of all problem owners would lead to more insightful understanding and more resilient solutions (Churchman, 1971). The importance and effectiveness of this approach was demonstrated by Stimson and Thompson (1975) using the example of busing children between schools to achieve racial balance. They noted that, as Churchman postulated, not only did different groups (e.g. operational researchers, educators, sociologists, psychologists) seek to solve the problem in different ways depending on their Weltanschauung, but they also identified different problem situations (Stimson & Thompson, 1975). Checkland (1981) also noted that multiple definitions of a problem situation was a common feature when considering problems in a social context. A view that aligned with Vickers (1972) observation that unitary goal seeking was inadequate to describe normal social situations.

The positivist scientific Weltanschauung that has dominated the thinking of the 20th Century and which aligns with Dilthey's 'Naturalism' (Dilthey, 1976), has produced notable success in 'hard' science. This approach has however constrained how the world in general, and natural systems in particular, are perceived and investigated through the requirements of context free data, and unitary definition of problems (Allison & Hobbs, 2006; Naughton, 1984). This limitation being particularly apparent when dealing with 'messy' problems, a term coined by Ackoff (1979) to describe a complex network of dynamic and interrelated problems involving social issues and qualitative factors that defy reductionism (Allison & Hobbs, 2006; Fletcher & Davis, 2003). A problem exacerbated by the common failure of scientists and other problem solvers to recognise the degree to which their methods and understanding are dependent on their own Weltanschauung (Hull, Robertson, Richert, Seekamp, & Buhyoff, 2002; Kuhn, 1962).

In 'messy' situations, problems do not exists in isolation and cannot be evaluated objectively, since social issues are an integral part of the situation and the context is often complex (Allison & Hobbs, 2006; Ison, Maiteny, & Carr, 1997). Uncertainty is

also a major feature of messes, and the rationalist response of seeking more data does not increase the inductive power of the analyst (Churchman, 1970). The role of emergent properties that will not yield to a reductionist approach was also suggested as a key feature by the Open University Systems Group (OUSG) (Naughton, 1984). It has also been pointed out by the OUSG that although there may be no agreement on the nature of a problem, or its solution, within a social context all perspectives must be considered equally rational and valid.

2.2.1 This land was made for you and me[3] – Weltanschauung and nature

The way in which nature and natural systems are perceived and understood can be seen to fall into the category of messy problems. What is understood by 'nature' is culturally defined and ambiguous (Hull et al., 2002). The concept of, and what constitutes, intrinsic and qualitative aspects of nature are also value laden and can only be understood within an appropriate social framework (Choi, 2007; Davis & Slobodkin, 2004). Keller (2009) further noted that any discussion on nature and the place of mankind in relation to it, takes place in a metaphysical framework, and is dominated in Western culture by a modernist Weltanschauung, effectively excluding any who hold to a different understanding.

Many common concepts used when considering nature and natural systems defy the application of a reductionist approach. The concept of a wilderness is readily understood, but cannot be defined in terms of its components. Nor can they be reduced to a partial state, again a semi wilderness making no sense (Doyle & Kellow, 1995). When the impact of development on natural systems is considered, stakeholders Weltanschauung is likely to determine their reaction to this property of non-fungibility. As progress and development are also perceived by some sections of the public as dangerous illusions, rather than unquestionable goals (Dunlap, 1999, p. 275), it is clear that a multiplicity of Weltanschauungen exist in the context of nature and natural systems. This leads inevitably to the view that a consensus on what exists, how to value

[3] Guthrie, W, 1940, This Land is your land, refrain.

it, and how to interpret that value, is extremely unlikely, and that it is far more probable that the objectives and understanding of actors are incommensurable (Checkland, 1981).

In addition to the complexity and value laden nature of definitions concerning nature, the scientific discipline from which guidance is most often sought, ecology, can also be seen as falling outside the Weltanschauung of the 'hard' sciences (Dice, 1952). Although requiring detailed and rigorous study, it does not fit well with the reductionist ethos that has served the 'hard' sciences so well. Practitioners may also fail to accept the detached stance presumed necessary in other scientific fields (Dunlap, 1999), whilst ecological concepts can be seen to rely on social rather than biological systems (Ison et al., 1997).

The following section considers the basis for differing Weltanschauungen with regard to the natural environment. It identifies two fundamentally different approaches, and briefly considers their development within the New Zealand context.

2.3 *"When I use a word it means exactly what I choose it to mean"[4] – competing epistemologies*

The process of decision making with regard to the use of natural resources largely follows the pattern established in other fields of human endeavour. The dominant methodology relies on a model of the world constructed through a Weltanschauung that considers facts to be objective and that decision making actors should be rational and detached (Allison & Hobbs, 2006). To be successful, this ontology requires agreement on the problem, the method of analysis and the goal. Since problem situations involving the use of natural resources are instead messy problems, with a rich social context and multiple Weltanschauungen amongst the actors, an approach that requires a singular problem statement cannot cope (Naughton, 1984). In this situation the appropriate decision making model is seen as an intellectual construct (an epistemology), where the problem perception is not shared amongst all actors, but all

[4] Carroll, (1871) Chapter VI Millennium Fulcrum edition, Project Gutenberg.

conflicting perspectives are accepted as equally rational (Ison et al., 1997). The implications of these differing approaches can be clearly seen when considering the issues of public participation and the role of the expert in decision making.

In the context of the RMA, although the legislative and procedural framework is prescribed, the method of its implementation, and the resources applied to this, vary widely across the country (Oram, 2007). The RMA requires public consultation when resource usage that will cause more than minor effects is considered. However, it has been suggested by both Forgie (2002) and O'Faircheallaigh (2010) that the level of consultation undertaken can be seen as tokenism, since the public has no direct influence over the outcome of this process. Further, in the decision making process, the imbalance of power between vested and other interests is a dominant factor (Brower, 2008). This dominance being most apparent in the level of resources they are able to command, a factor that can determine the outcome (Ong, 2000). Ong also considered that this advantage in resources deployed was amplified by the attitude of the planning authority to the perceived authority of the person presenting information.

2.3.1 "What I tell you three times is true"[5] - Rational problem solving

The practice of framing debate on resource allocation and sustainable use in terms of the dominant positivist and materialist culture (Doyle & Kellow, 1995) that interprets both problem and potential solutions in terms of this ontology allows adherents to dismiss and dis-empower those with opposing views. This tactic is widely reported from overseas by Tauxe (1995) and within New Zealand by Brower (2008) and J Warren, (personal communication 2009). The weight given to the phrases used in these exchanges such as: 'unhelpful', 'extreme views', 'emotive', 'illogical', 'subjective' etc relies on unquestioning dismissal of context based values in favour of the myth of rational, value free, apolitical decision making by experts (Ison et al., 1997; Stone, 1997). Even when a lay person has considerable expertise in a subject, their views are still frequently marginalised if they lack professional qualifications, with the result that they are not just dis-empowered, but 'rendered opinionless' (Goodwin, 1998, p. 488).

[5] (Carroll, 1876) Fit the First, second stanza

Within the political environment, the positivist paradigm is expressed in terms of politically neutral officials, operating within a rational factual based environment to determine the most efficient outcome. The normative view being that as rational actors they will seek objective, and hence the best, solutions based on a comprehensive analysis of the issues. However, as Brower (2004) pointed out, political debate is the bedrock of democracy, and any attempt to remove it can only benefit dominant vested interests. This view is supported by Nash (2007) who suggested that actors representing businesses, developers, and community bodies seeking to minimise rates, have little to fear from a perspective that emphasises a financial agenda, and the minimisation of short term cost over more environmentally sustainable solutions.

Nash (2007) also contended that within any formal institution, the unspoken and unquestioned objective of the culture is to reinforce the stability of that institution. Hence, within local government in New Zealand, the informal culture that shapes and constrains actors' choices takes it for granted that objectivity and expert technical argument will be the basis for decision making. This focus, by embracing the limiting consequences of the mainstream scientific paradigm as presented in Table ensures that messy problems and uncertainty are effectively excluded from consideration.

Table Assumptions and consequences of the dominant science paradigm

Assumed attributes of methodology	**Assumed outcomes of methodology**	**Consequences of methodology**
Purposeful enquiry	Single 'best' answer	Average dominates
Predictability	Reversibility	Context ignored
Certainty	Objectivity	Externalities ignored
Reductive analysis	Control	Equilibrium
Rationality	Single linear causality	Stability

Note. Based on *Science & Policy in Natural resource management* (p. 57) Allison & Hobbs, 2006, Cambridge: Cambridge University Press

The dominant or 'normal', scientific methodology, is based on certain assumptions, shown in the first column of Table . These assumptions themselves lead to further assumptions concerning the outcome of an enquiry based on this methodology (Allison & Hobbs, 2006). Allison and Hobbs considered that these assumptions collectively lead to a mechanistic world view in which the problem of sustainable use of natural

resources can be solved objectively if only sufficient data and computing power can be made available. However, as Allison & Hobbs also noted, these assumptions lead to outcomes (column three of Table) that are inimical to successful resolution of problems which do not fit within the assumptions of low risk and certainty. The dominance of this positivist paradigm within the RMA process creates an unquestioned hegemony that can shape not only actors' views and ideas of 'appropriate' behaviour (Lowndes, 2002) and lead to the valuing of views and actions that stifle dissent (Brower, 2008), but also creates a series of positive feedback loops within the process that ensure its continuance, as shown in Figure .

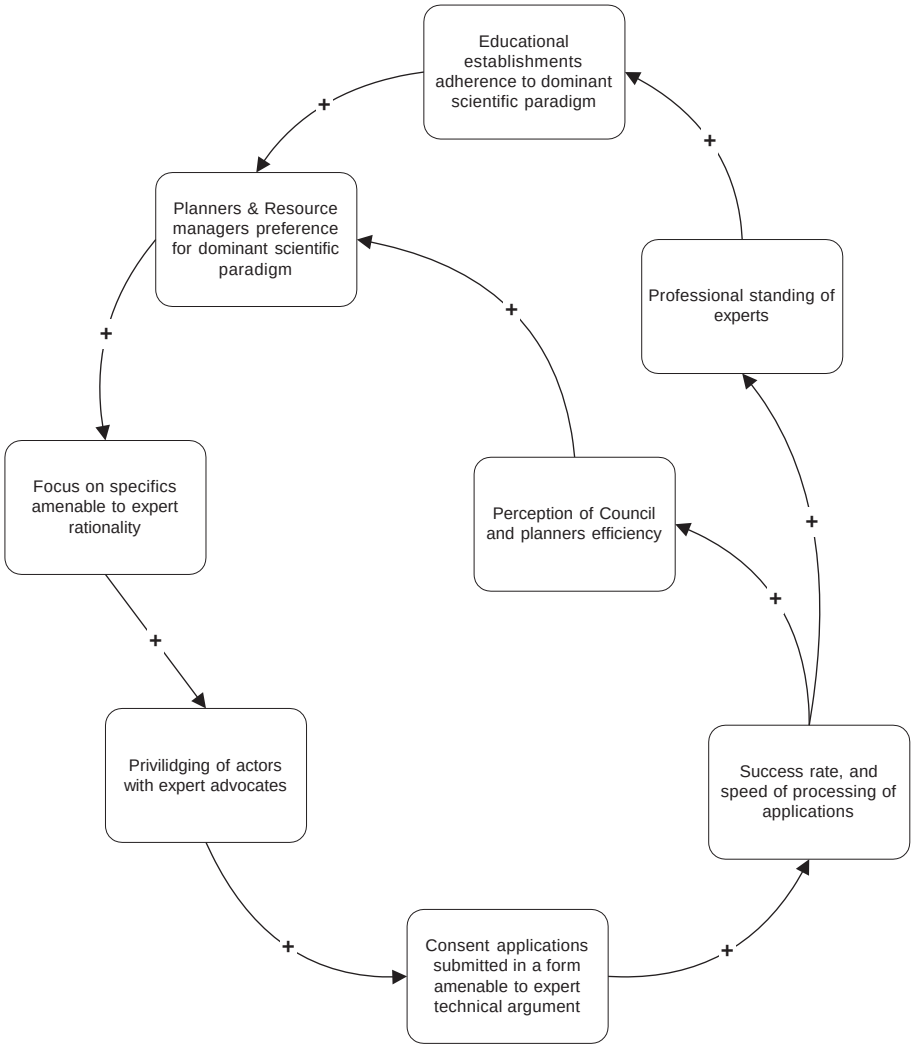

Figure **Influence diagram showing behavioural positive feedback loops within the RMA consent process**

As shown in Figure , the support for solutions based on the dominant positivist scientific paradigm exists within two positive feedback loops that connect procedure, academic and professional standing and economic criteria, with a reductive approach to problem solving that prioritises certainty and efficiency. Best practice is identified as shorter processing times, methodology with better formal training and compartmentalisation of tasks, whilst success is measured by productivity, consistency and customer ie applicants', satisfaction (Ministry for the Environment, 2011). No provision is made at any point for the goal of the system to be amended.

The normative process of problem solving in Western culture extends far beyond the scientific domain, and is embraced by the general public (Cronin & Jackson, 2004), precisely because it has proved so successful. The terms factual and objective have become synonymous with effective problem solving. Yet it has already been suggested that objectivity is a personal construct, and on closer inspection, what is a 'fact' can also be seen to be entirely subjective. These aspects are considered in the next sub-section.

2.3.2 "All we want are the facts Ma'am"[6] – The Ontology and epistemology of sustainability

Despite the widespread distrust of experts when they are perceived to be supporting a particular faction in a consent hearing, it is acknowledged that citizens in general are also imbued with a belief in the dominant scientific paradigm, and are concerned that arguments and objectives are based on facts (Nash, 2007). As noted above, this concern for 'facts' ignores the wide variety of influences and subjective concerns that determine what are considered as 'factual', illustrated in Figure .

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[6] Dragnet quotation, written by Jack Webb, frequently misquoted as "Give me the fact Ma'am, just the facts."

Note. From *Science and policy in natural resource management* (p. 88), Allison & Hobbs, 2006, Cambridge: Cambridge University Press

Figure Influences on the perception of a problem

The rationalist approach employs the mechanistic application of a proven methodology to identify and solve a problem. In this Weltanschauung the problem solver is considered external and the problem amenable to solution by anyone capable of applying the correct methodology (Allison & Hobbs, 2006). However, Jayaratna (1994) considered that the identification of a problem, and the success obtained with any given methodology used to address it, is dependent on the mental construct of the problem solver. To different actors then, the perception of a problem may stem from basic differences in values that are not amenable to compromise, and can include fundamental differences in what is considered 'factual'. This mirrors the differing epistemologies that actors apply to the question of sustainable management of resources, again depending on their underlying Weltanschauung. Alternate approaches derived from differing philosophical standpoints exist on a continuum, but can be summarised as shown in Table .

Table Competing paradigms of sustainability

	Dominant paradigm	Biological science / ecological economics	Integrative view 'Deep ecology'
Philosophical epistemology	Positivist	Post positivist	Relativist
Ontology[7] of nature	A source of raw materials for human consumption	Recognition of the intrinsic value of some aspects of nature	Many intrinsic values recognized in nature. Equal status with Humans
Substitution for natural capital	Infinite substitution	Some natural capital cannot be substituted	No decline in natural capital
Attitude to regulatory control of resources	Avoidance or reluctant compliance	Competitive advantage in performance beyond compliance	Performance beyond compliance an obligation
Economic growth	Essential and without limit	Win-Win strategies emphasised	Finite limits and decline necessary
Population growth	No limit	Population growth must be accompanied by per capita offsets	Growth must be reversed
View of technological capabilities	Optimism	Scepticism	Pessimism
Social equity	Market forces	Mixed economy	Attention to re-distribution
Stakeholder participation	Decisions by experts	Collaborative process	Grass roots democracy
Intergenerational ethic	Current material growth compensates for future costs	Concern for human survival / wellbeing in near future	Concern for future of all species
Causal factor in ecological degradation	Economic	Social	Ethical

Note. Compiled and adapted from "Shifting Paradigms for Sustainable Development: Implications for Management Theory and Research", T. Gladwin, J. Kennelly, T. Krause, 1995, *The Academy of Management Review 20(4)*, p. 883; Competing approaches to sustainability: Dimensions of controversy (p. 5) by R. Vos, in *Flashpoints in environmental policymaking: controversies in achieving sustainability*, Eds S. Kamieniecki, G. Gonzalez, R. Vos, New York: State University of New York; Defining Sustainability: "A Conceptual Orientation" by R. Vos, 2007, *Journal of Chemical Technology & Biotechnology, 82(4)* p. 336

Frameworks based on the philosophical approaches shown in Table , and through which the problem of sustainability of natural resources can be analysed abound in the literature. These include: eco-theology, eco-feminism, eco-socialism (Mebratu, 1998); industrial ecology (Allenby, 1999); 'thin / weak' sustainability, 'thick / strong' sustainability (Pearce & Atkinson, 1993; Vos, 2007), ecological modernisation (Jackson & Dixon, 2007), and sustaincentrism, and ecocentrism (Gladwin et al., 1995). All these

[7] Ontology in the sense of a shared conceptualisation (Gruber, 1993)

approaches have in common a rejection of the dominant positivist paradigm as an appropriate or effective epistemology for addressing the problem of sustainability.

Although Vos (2007) considered that the existence of differing views of sustainability was to be expected as knowledge increased, he also pointed out that concern for sustainability itself could be seen as an emergent property of the interaction of human socio-economic systems with the environment. While in his 2007 paper, Vos expanded this concept in drawing a distinction between views based on post-positivist and relativist philosophies as shown in Table , although still pointing out that these two views existed on the same continuum.

As noted previously, the concept of emergent properties, ones that cannot be inferred from an analysis of components at a lower level of complexity, marks a fundamental departure from the reductionism of the dominant positivist philosophy (Manyon-White & Morris, 1982). Both Churchman (1971) and Vos (1997) also identified the lack of any ethical dimension as a distinctive trait of the technocentric ontology of the positivist paradigm.

The reductionist view aligns well with the rational positivist ontology, imposing a framework of artificial categories and divisions on nature that obscure both linkages across taxonomies, and emergent properties (Checkland, 1981; Churchman, 1970). This approach however simplifies the consideration of specifics and facilitates the consideration of natural capital as a commodity. Unlike an approach that specifically includes consideration of actors Weltanschauung and the effect this has on both perception of the problem area, and its outcome, a rational reductionist approach ignores context including the values of the observer (Checkland, 1981; Stimson & Thompson, 1975; Vickers, 1981).

The implicit assumption by dominant actors that a rational unitary goal seeking Weltanschauung is common to all, is clearly false in the context of resource consent applications. Yet it is in situations where this approach has exposed the existence of differing Weltanschauung and been found wanting, that it is most rigidly and repeatedly applied. Failure in these cases being typically ascribed to incorrect procedure, lack of

data and lack of objectivity (Allison & Hobbs, 2006). In particular, council planners will seek to exclude any input or concern perceived as subjective or qualitative, concentrating on knowledge that is considered factual and objective. In these circumstances, council staff can be considered to be in a 'mind trap', blindly repeating a failed strategy like a lobster in a pot, trapped through an inability to conceive the existence of alternatives (Vickers, 1972). Ironically, the techniques of the positivist reductionist paradigm enabled Mitroff & Betz (1972) to argue that if all actors are assumed to be teleological and to seek the maximum utility value, desired outcomes are only shared where the actors have a shared Weltanschauung.

2.4 Where have all the flowers gone? – conservation in New Zealand

A fundamental dichotomy in how nature and natural systems are perceived, depending on the philosophical paradigm incorporated in the observers Weltanschauung, has been put forward by Hull et al. (2002). Adherents of these two views are characterised as 'preservationists' and 'interventionists'. Preservationists hold to the view that natural systems should be allowed to self-regulate, whilst interventionists as their label suggests consider that mankind can and should improve on nature's 'inefficiencies'. Whilst noting the importance of the differing Weltanschauungen (which they describe as a 'conceptual model [intuitive understanding]') (Hull et al., 2002, second page first paragraph) they also note that this fundamental difference is not as widely recognised or acknowledged as some of the views that stem from them, such as the preservation of individual property rights, faith in technology, and the ultimate outcome desired. Nonetheless the Weltanschauung of each group can be perceived through the terminology used, and the connotations attached to these. Thus Hull et al argue that 'biodiversity' is firmly grounded in a preservationist Weltanschauung. This view considers an exotic species inferior, even where it performs the same ecological function, and out competes a native, since this represents a deviation from what 'evolution intended' (Hull et al., 2002, Evolutionary nature, final sentance).

In contrast interventionists may share the goal of conserving natural systems but consider that intervention by mankind is necessary to optimise the success of this

process. Alternatively they may consider intervention to meet mankind's needs at the expense of natural systems as a right. The common interventionist Weltanschauung across this spectrum is however that of nature as something that can, and should, be bound to human will.

Within New Zealand this dichotomy can be traced from the earliest settlement. New Zealand, in common with most newly inhabited lands was initially developed as an extractive economy by both Maori and European settlers (A. Anderson, 2002). To a large extent the national perception of conservation in terms of sustainable use of resources was derived from, and continues to be shaped by this initial view of New Zealand as a land with limitless resource, and the subsequent efforts to maintain and enhance production when that initial view proved illusory (McAloon, 2002).

The parallel view of conservation for the intrinsic worth of the natural world or in terms of guardianship or kaitiakitanga, also has a long history, and although the tension between these views remains unresolved, it has been long recognised. The most eloquent and frequently quoted evocation of this tension is that of Herbert Guthrie-Smith. In the preface to the third edition of Tutira, he reflects on the ethical implications of his life's work in the economic field and with the insights that his parallel work in understanding nature has brought, asks: "Have I then for sixty years desecrated God's earth and dubbed it improvement?" (Guthrie-Smith, 1953, p. xiii)

2.4.1 An extractive economy

Archaeological evidence suggests that initially Maori settlers had a diet containing a high percentage of animal protein, principally large ratites and fur seals (A. Anderson, 2002; Young, 2004). During this period Maori, and their accompanying kiore (*Rattus exulans*) "tore through the naive and vulnerable ecology as if there were no tomorrow" (Young, 2004, p. 41), driving 50 percent of existing bird species into extinction as well as an unknown number of mega invertebrates. Young also considered that these initial depredations resulted in the loss of all fur seal rookeries from the North Island and those of sea lions from all three main islands.

These depredations enforced changes in diet and social organisation on the Maori way of life, as well as a greater appreciation of their interdependence with the landscape. The latter evidenced by the use of rahui[8] to preserve and protect food sources. The continued and widespread practice of habitat destruction through the burning of forest to increase availability of bracken fern root, also brings into question the degree to which concern for the mauri[9] of the land took precedence over economic and political considerations (Young, 2004).

With European settlement, the mining of natural resources gathered pace. The new settlers followed the same path to initial utilization of those resources most easily exploited, and then to strategies of landscape modification, but over a much reduced timescale and with the assistance of an ever increasing array of mechanical and chemical aids (Young, 2004). Nonetheless, despite this widespread clearance, during the 1890's the perception remained that the bush was 'endless' (G. A. Wilson, 1992). Wilson also noted that where stands of trees were retained, this was done for practical rather than aesthetic or environmental reasons.

Similarly, although many plants and animals were introduced by Europeans for aesthetic, social and cultural reasons, (Galbraith, 1993; Troup, 2009; G. A. Wilson, 1992), the overwhelming driver remained economic. The entire process supported by the pervading cultural norms of European dominance, the inevitability of progress and the appropriateness of natural selection (Armstrong, 1871; Jobberns, 1956; C. King, 1987; Wynn, 2002).

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[8] A ban on the harvesting of a resource

[9] The life force that binds and animates all things in the physical world. A tree has a mauri, but so does the forest in which it exists (Waitangi Tribunal, 1999)

2.4.2 Sustainability – the goose or the common?[10]

Inevitably, after the initial gathering of 'low hanging fruit' both Maori and Europeans were faced with the prospect of diminishing resources and growing requirements. Both sought to implement forms of sustainable management within their own cultural norms. Underlying the Maori approach to sustainability are the interwoven concepts of Mana, Tapu and Mauri (Young, 2004) and through them the imposition of rahui, to either gain time for the resource to recover; the 'fallow field' principle, or to establish exclusive proprietorial rights

Within the European culture, the need for a sustainable approach to natural resources in New Zealand was first articulated as early as the 1840s, for example by the exhortation to refrain from culling female and young whales (Dieffenbach, 1843). It was not until the 1860s however that such a strategy was formally implemented with a closed season for oysters (Star & Lochead, 2002), and the 1870s before the force of law was added with the Forest Act 1871, and Fish Protection Act 1877.

Timber was of prime importance to the new colony but even here the legislation sent mixed messages. The Forestry Act 1874 set aside State Forests and appointed a Conservator to ensure continuing supplies through effective management and planting, and the development of a cadre of experienced foresters. In contrast, various Land Acts from 1877 to 1892 included a requirement for an annual clearance of bush (G. A. Wilson, 1992). By 1907 the Department of Lands was concerned at the substantial drop in milled timber, and the near exhaustion of supplies of kauri (Star & Lochead, 2002). The fear for the loss of this essential commodity led to the imposition of further restrictions in the form of export controls, and the introduction and rapid expansion of plantation forestry using exotic species (M. Roche, 2002).

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[10] The law locks up the man or woman
Who steals the goose from off the common
But lets the greater felon loose
Who steals the common from the goose (Anon 17th Century)

The destruction of immense areas of forest by the settlers' ubiquitous and most effective tool – fire, initially masked the fragility of soil fertility. When, after two to three years of good yields the realisation dawned that the fertility derived from the ash rather than the soil itself, the response was further burning (G. A. Wilson, 1992). In parallel, despite work by the Department of Scientific and Industrial Research during the 1920s and 30s, and the clearly visible effects of de-forestation on the stability of the landscape, farmers continued to resist restrictions on how they could utilise their land. Any retirement of land from 'productive' use was still seen as a failure of civilization, a viewpoint that had, in the context of river management, characterised the policy of the Public Works Department under the leadership of F. W. Furkert (M. Roche, 2002). Once acknowledged however, legislation in the form of the Soil Conservation and Rivers Act 1941 led to rapid progress by promoting not only soil conservation measures, but the increase of fertility of land through measures such as top dressing, which allowed farmers to maintain or increase their production levels despite potential loss of farmable area.

2.4.3 Conservation for intrinsic value

European colonisation of New Zealand coincided with the development of an appreciation of nature derived from the Romantic Movement. This movement, often consider a reaction against the rationalism of the Enlightenment, lauded the mysteries of the natural world, and saw them as superior to the works of mankind (Casey, 2008). This Weltanschauung brought intrinsic aesthetic values to the fore, and led to a burgeoning of the consideration of landscapes as a whole. These views, exemplified by the ideas of John Muir and the Sierra Club in the United Sates, and Ruskin and the National Trust in Britain, held little sway in the practical life of early settlers, (Young, 2004). Nonetheless, the genesis within New Zealand of the idea that the native land form and ecology had an intrinsic worth beyond its utilitarian value can be seen in the Royal Instructions to William Hobson in 1840 to reserve areas for "public convenience, utility, health and enjoyment" (Nightingale & Dingwall, 2003, p. 16). However it was not until 1868 that this subject was first discussed in the House of Representatives when Thomas Potts spoke of his concern for the condition and conservation of native forest (Hansard / House of Representatives, 1868).

Conservation of land for its intrinsic and spiritual worth took a major step forward in 1887 with the gift of Tongoriro, Ngauruhoe and Ruapehu by Ngati Tuwharetoa paramount chief Te Heuheu Tukino, as "A sacred place of the Crown, a gift forever from me and my people." (Forbes, 1994, p. 12). Preservation of native species as an ethical duty was also first recognised in the 1890s with the creation of island sanctuaries for endangered bird species, and a public campaign advocating the creation of further National Parks was instigated by the Nelson Society in 1898 (Star & Lochead, 2002).

Specific reference to "scenery" was first included in the Land Act 1892 and, as Nightingale & Dingwall (2003) noted, 105 sites had been created under the authority of this Act by 1902. The importance of the natural landscape for both aesthetic values and in creating a sense of place was given further impetus by Premier Seddon with the Scenery Preservation Act 1903. This Act was particularly important, not only establishing in law the principle that scenery had an intrinsic value, but in providing the financial means to give effect to its purpose. The other major contribution of this Act was the right of a public good to over-ride private rights, regardless of tenure. Many settlers opposed this curtailment of their property rights, often aided and abetted by local authorities that were described by Robert McNab (historian and Minister for Lands 1906-1908) as environmental vandals (Nightingale & Dingwall, 2003, p. 25).

Whilst legislation supporting preservation concentrated on landform and flora, native birds found a champion with the founding of the Native Bird Protection Society (now the Royal Forest and Bird Protection Society) in 1923. Although they and many others advocated for both habitat protection and predator control as essential elements of preserving New Zealand indigenous biota, they remained a minority voice.

A sea change in the attitude of the general public can be traced to J. T. Salmon's book 'Heritage destroyed, the crisis in scenery preservation in New Zealand' (1960). For a younger generation who had, for the first time, access to television and cheap air travel (M. King, 2003), and who were alerted to anthropogenic damage to the environment by authors such as Rachel Carson and Paul Ehrlich, and the fundamental limits to business as usual by the Club of Rome's 'The Limit to Growth' , Salmon's work was a profound influence (Nightingale & Dingwall, 2003).

The issues highlighted by Salmon came to a head in 1969 when the environmental damage to be wrought by the raising of Lake Manapouri was identified. The 'Save Manapouri' campaign not only challenged the establishment on the question of how best to use the nations' resources, but united people from across the political spectrum, and from all walks of life. King (2003) noted however, that although the success of the campaign itself set a valuable precedent, the most enduring legacy was a national debate on environmental issues.

2.4.4 Continued dichotomy

As agricultural development progressed, the need to retain and improve production perpetuated the dominance of the positivist, interventionist view. The success achieved by agricultural scientists confirming the application of this philosophy as essential to economic salvation. This view point continues within much of the farming community, with increasing use of mechanised irrigation, supplementary feed and high fertilizer input becoming the orthodoxy (J. Roche & Reid, 2002). These endeavours were not universally lauded however, and the restriction of conceptual boundaries to events 'within the paddock fence' is seen as a major constraint on the understanding of natural systems (Brooking, Hodge, & Wood, 2002). Growing concern over the degradation of streams and rivers by farm effluent, particularly associated in the public mind with intensive dairying (Ashworth, 2009; Sharpe, 2012), also indicates the continued existence of an alternate Weltanschauung.

It is then clear that from the first, there have been two differing ways in which New Zealanders have viewed the natural environment. The dominant view based on an interventionist Weltanschauung aligned with Dilthey's Naturalism. However, an approach grounded in the beliefs of the Romantic movement, and Dilthey's Objective Idealism, can also be seen to have been present from the beginning. Given that Dilthey (1976) considered the basic Weltanschauungen he identified were incommensurable, a view echoed by Rickman (1976), it is unsurprising that an inherent conflict exists between them when considering the intrinsic and extrinsic value of natural resources.

As discussed in section 2.3.2 above, these alternate views not only differ in how they value nature and natural systems, but also on the basis for decision making, and hence stakeholder participation. Since the equity of participation as much as that of outcomes under the RMA is questioned, it is appropriate to explore the development of that Act in the context of differing Weltanschauung.

2.4.5 One Act to rule them all – the gestation of the Resource Management Bill

The perceived success of sustainable use as the appropriate Weltanschauung when considering use of natural resources has largely been due to the invisible nature of the environmental damage done, and the use of a discounting method that devalues long term ecological costs whilst economic benefits are obvious and given wide publicity (Weiss, 1992). Only when degradation reaches a point where it becomes obvious and the public consciousness is roused, is reluctant action contemplated by authorities whose political leadership is inevitably drawn from those who most benefit under the current regime. The ultimate manifestation of this dichotomy is perhaps exemplified by the process of development of the Resource Management Act 1991 which will be explored in the next section.

2.5 The Resource Management Act 1991 – No Direction Home?

> "Modern environmental law consists of nebulous, discretionary concepts and lists of narrow prohibitions for specific situations. Neither is based upon an abstract definition of sustainability in ecological terms" (Pardy, 2005, p29).

Currently, the primary legislation governing natural resources within New Zealand is the RMA. Like the development of public awareness of the environment noted above, the RMA arose from the convergence of a wide variety of ideas (Young, 2001). The need for better and sustainable management of natural resources can be traced to events such as the United Nations Conference on Environment and Development in 1972, which gave rise to the concept of sustainable management as a viable and necessary policy goal. Similarly, the audit of New Zealand's environmental management by the Organisation for Economic Development (OECD) in 1980 drew attention to problems with the then current means of managing the environment.

In retrospect, Philip Woolaston, Minister for the Environment in the Labour government that oversaw the original drafting of the Bill, considered that these issues were to be addressed by four key objectives:

- A more efficient and community based approach to resource management
- A process giving greater value to sustainability and the needs of the future
- Effects based judgements
- A process that sought an accommodation of interests (Young, 2001).

The environmental focus of the Bill was also emphasised by the subsequent Minister for the Environment, Simon Upton when introducing the third reading. He considered that the Bill provided:

> '… a new process for the management of land, water, soil, air quality … The Bill provides us with a framework to establish objectives by a physical bottom line that must not be compromised. … The Bill has a clear and rigorous procedure for setting environmental standards – the debate will be concentrating on just where we set those standards.' (Hansard, 1991, pp. 3018-3019)

However, the Bill that would result in the RMA had had a gestation that was by no means limited to the ideals of conservation and sustainable use. The Treasury, with a zeal equal to that of conservationists, advocated an approach based on market efficiency (Young, 2001). This viewpoint, emphasizing laissez faire policies, considered that the ability of untrammelled market forces to internalise environmental costs; plus the imposition of regimes driven by managers focused on outputs and with 'right' answers produced by experts, would lead to more 'efficient' and less regulatory government. (Saul, 1992; Young, 2001). This perspective was adopted by both the Labour and National governments involved in the drafting, despite the opinion of Anderson & Hide (1991), in a paper ironically intended in support of such an approach, that the definition and allocation of property rights could not guarantee an outcome of any level of environmental quality.

Extreme opposition was faced from a section of the National party caucus, led by former Federated Farmers president, Rob Storey, who viewed any enforcement of environmental responsibility as an unwarranted assault on property rights. This group continued their resistance after the 1990 election had returned National to power, and sought to abolish the Bill (Young, 2001). The history of the Bill's development can perhaps be summed up in the statement by one of the original team to work on it: "There were a lot of people who thought they knew what the answers should be but they weren't talking about the same problem." (Denise Church quoted in Young, 2001 p. 23).

These uneasy bedfellows: ecological concern; and economic rationality; lie at the centre of alternate interpretations of the RMA (Grundy, 2000; Jackson & Dixon, 2007). These different views also underlay the requirement to create a policy based on symbolic statements sufficiently ambiguous to unite support, despite the differing and potentially conflicting ways in which it could be interpreted in detail (Stone, 1997; Vos, 2007). The following paragraphs explore how key concepts of the RMA utilise this approach, and the consequences for the success of the Act and its implementation as perceived by differing actors.

2.5.1 Like a complete unknown - Problems of ambiguity.

Stone (1997) considered that the development any policy was a contest between differing interpretations of goals or values, and that in this process ambiguity can provide sufficient obscurity for a wide consensus to be achieved. From a policy perspective, this obscurity can have the added benefit that the widely differing interpretations ensure that any failure of the policy is impossible to prove (Brower, 2008; Saul, 1992; Stone, 1997). A view that can be summarised as the creation of policies that aspire to high ideals but accomplish little in practice (Edelman, 1960).

A further factor central to the development and implementation of the RMA was the widely espoused view of the desirability and effectiveness of an apolitical administration guided by rational experts (Stone, 1997). This approach sought to remove from policy development and the decision making process the vagaries of politics and of 'emotional' views. It is argued however, that far from being rational and objective, any policy is a social construct, that these social constructs are themselves based on societal myths, where a myth has the sense of an authoritative narrative. Further, that these societal myths themselves derive from distinctive Weltanschauung (Brower, 2008; Murray & Swaffield, 2000; Stone, 1997).

It should be no surprise then that the existence of differing Weltanschauungen and the need to achieve consensus between them should lead to the deliberate employment of ambiguity. Nor is it strange that when the resulting policy is applied, it is often perceived as failing, since the detail required at specific case level exposes the differences that the ambiguity sought to hide.

Ambiguity within the RMA can be considered to start with the title of the Act itself. Despite the intended focus on ecological sustainability (Peart, 2008), the concept of 'Resource management' can be seen as deriving from a positivist viewpoint where natural resources are to be used in pursuit of economic goals (Vos, 2007). Within this view resources, defined as 'a means of supplying a want' (The Concise Oxford Dictionary of Current English, 1964) are something external, artefacts that have no existence unless and until they are perceived as having a potential for use by human society. This leads to the view of the environment as a series of discrete, measurable,

and tradable commodities (Murray & Swaffield, 2000). Murray and Swaffield also pointed out that this separation of the environment as something external, 'the other', not only encourages the view of the environment as a tradable commodity, but removes the necessity to consider the complex webs of interaction inherent in any natural system. This view can be seen as drawing validity from the Judeo / Christian creation myth with its exhortation to "… replenish the earth and subdue it; and have dominion over … every living thing" (Gen. 1:28 King James Bible, 1611), which is implicit, as noted above, in the justification for an extractive approach to the environment. Bell (1996) also considered an enduring aspect of the New Zealand self image was the cultural construct of natural resources as things to be tamed, irretrievably altered and above all owned.

This dominant and reductive view of resources eased the adoption of the concept of sustainable management as a plausible and achievable goal despite the evidence noted above of its continued failure within succeeding cultures and legislative frameworks. By association, the positivist philosophy has also been instrumental in rallying support behind the idea of resource management. In contrast, the alternative ecological systems view based on a relativist philosophy challenges the established anthropocentric view of resources as a source for consumption (Vos, 2007).

The purpose of the RMA, set out in Section 5 is: "to promote the sustainable management of natural and physical resources." where sustainable management is defined in Section 5(2) as:

> Managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while -
>
> (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
>
> (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
>
> (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Despite his view that Section 5 represents a radical embodiment of environmental and intergenerational principles, Grundy (2000) acknowledged that the section in general and sustainable management in particular will be construed according to the interests of

the group involved. He further noted that to achieve the goal set out in Section 5, the environment must be protected and economic development accomplished, all within a framework of social and cultural equity. Pardy (2005) considered that the failure to set a priority for these goals, or to prescribe a means of resolving conflict between them, reduced the Act to a convenient umbrella concept, whose ambiguity allows the hard questions of implementation to be avoided. With the legislative definitions so open as to be considered a shifting foundation on which any conclusion desired can be derived from a given set of facts (Wheen, 2002), it has been left to the courts to interpret the intent (Skelton & Memon, 2002).

Although noting that the courts interpretations have recognised the importance of avoiding prescriptive rules and principles Wheen (2002) also considered that the approach of applying broad judgements comparing and considering conflicting considerations, degrees of scale and significance, has effectively reversed the intent of Section 5 as perceived by its authors. This intent being to 'overturn the whole philosophy of the decision making process' (Palmer, 1995, pp. 172-173). Palmer, one of the co-authors of the Bill, recognised the inherent bias towards development in any 'balancing test', since the benefits offered are tangible and immediate, whilst the loss from the environment tends to be obscured and long term. Karen Cronin of the Ministry for the Environment explicitly stated that this was the intent of the Act, when she summarised her reasons for having a pre-eminent objective of sustainability as "…avoid[ing] the obscure and uncertain business of weighing competing objectives." (quoted in Upton, 1995 p. 20).

Despite references that seek to draw a distinction between a 'balancing approach' and an 'overall judgement', a report to the Ministry of Economic Development agreed that a balancing approach has been adopted (St.Clair, Moncreiff, Willis, Hardy, & Hassan, 2010). With regard to Section 5 of the RMA, St. Clair et al further stated on page eleven of their report that: "At the core of sustainable management under section 5 is a balancing between the relevant resources, communities and environmental concerns that make up the environment." However, they draw an important distinction between the balancing of resource [use] and environmental concern, and the balancing of objectives; confirming that sustainability is still paramount, although noting that this position, set

out in Part 2 of the RMA is tenuous, and that any change to it would risk introducing explicit balancing of objectives and upsetting "the delicate threshold that currently prevents socio-economic benefits from being traded off against ecological costs." (St. Clair et al, 2010, p. 4).

It was noted above that any approach that pits tangible against intangible is inevitably biased towards the tangible (Brower, 2008). A major impediment to the recognition and removal of this bias is its invisibility. Through the lens of the positivist Weltanschauung each degradation to the environment is presented not as a loss but rather as a triumph for technology and a contribution to economic and social good (Redclift, 2005). The population is persuaded at every opportunity, both explicitly with concerns over GDP and 'catching up with Australia'; and implicitly through a constant barrage of advertisements for consumer goods, that there is only one legitimate value system, and that is based on financial gain. Thus even questioning what is to be sustained is seen as equivalent to questioning the meaning of wealth.

A further fundamental ambiguity is over what is to be sustained. Whilst the RMA is quite clear that 'sustain' means that the foreseeable choices of future generations should not be constrained by current activity; how this is interpreted and implemented results in quite different implications for decisions made in the present. Even leaving aside the consideration that the needs of future generations, beyond the basics of food and shelter, are impossible to extrapolate from the present, Redclift (2005) noted that the dominant system of knowledge ignores culturally diverse definitions and perceptions of sustainability in favour of its own.

It is clear that currently, the RMA fails to provide a mechanism for achieving its definition of sustainable use that is acceptable to all actors. The application of economic definitions to the concept and processes of sustainability has been advocated as a possible solution. In particular the definition of sustainability as the preservation of natural capital would seem to offer an overarching definition that is not only simple enough to be easily understood and accepted, but provides a framework within which practical application could be derived. This approach at its simplest states that natural resources are sustainable if and only if the rate of use is no greater than the regenerative

capacity plus savings, where savings represent the substitution of natural capital by man-made capital (Pearce & Atkinson, 1993). However, Pearce and Atkinson went on to point out that the elasticity of substitution is not infinite, and that a better indicator would require the identification of critical natural capital for which any positive depreciation would render the system unsustainable. Redclift (2005) argued however that the conservation of natural capital itself introduces further complications in the spheres of distribution and property rights, with the neo-liberal assault on rights held in common in favour of defined, tradable and above all *private*, property ownership. The dominant role that private property rights has assumed in determining outcomes under the RMA can be illustrated by the example of non-point-source discharge of pollution by dairy farming. Whilst Brower (2008) pointed out that farmers will argue from contradictory views of property rights as best fits their case, their constant theme is a strident rejection of any constraint on their activities or property rights (O'Shea, 2002; Oram, 2007).

In summary, the meaning of sustainability is culturally derived, and hence will differ from person to person, and attempts to resolve these conflicting views by constraining the use of private property will face determined opposition. A view that Treasury accepted during the Bill's preparation, when they argued that the outcomes sought by vested interests could not be assumed to align with those of the wider community (Skelton & Memon, 2002). Thus, the 'complications' identified by Redclift (2005) can be seen to be the consequences of the previously identified differences in Weltanschauung held by the actors. A view supported by McAfee (1999, p. 133) who pointed out that there is *"*no universal metric for comparing and exchanging real values of nature among different groups from different cultures and with vastly different degrees of political and economic power."

Ambiguity continues when the key concept of 'adverse effect' noted in Section 5 (2)(c) is considered. Here the ambiguity is of scope. The RMA requires effects that are not 'minor' to be considered, but this criterion is not defined in any quantitative manner. Rather a series of sections in the Act describe the process to be followed where the effect is "irreversible" and of national significance (s142); "significant" in terms of specific sensory criteria (s70); and "more than minor" (s95(a)). Resolution of this

ambiguity is left to councils to define within District and Regional plans. The differentiation in scale of effect has also been tested in Court, although the resulting judgement may be considered less than helpful: "The word minor is a comparative word meaning lesser or comparatively small in size or importance. Minor is less than major but could be more than simply minute or slight." (*Bethwaite v Christchurch City Council*, 1993, p. 19). In practice the main problem in this area occurs in the consideration of cumulative effects. Here the issue is not just the significance of an effect per se, but the scope that must be considered when considering whether of itself it will breach a cumulative threshold. A minor effect when considered at one level could be sufficient to breach a cumulative threshold if a wider view is taken. Yet as Oram (2007) noted, it is often easier to get that final consent than the first since, despite the RMA not recognising precedence, that is in effect the principle that councils apply by default (Personal communication, Hutt City Council training session on s104 of the RMA, 2011-09-05).

2.6 Hunting the Snark – Consultation or participation?

The critical role of consultation in determining actor's acceptance of a process and the outcomes of that process are well documented (Checkland & Scholes, 1990; Churchman, 1970; Ison et al., 1997; Luz, 2000). Within the context of systems relating to the natural environment the exclusion of local lay stakeholders from participation takes two forms. First, they remain largely invisible in a process dominated by professionals with a positivist rational Weltanschauung (Flood & Jackson, 1991; Ison et al., 1997; Luz, 2000; Ong, 2000). Secondly, where participation is allowed or mandated it is constrained to at best to opinion gathering. Lay stakeholders remain effectively excluded from the decision making process (Nash, 2007; O'Faircheallaigh, 2010).

The RMA creates a hierarchy of regional and district plans (Figure) that define activities that can or cannot be conducted without further regulatory intervention. It also establishes the right of concerned individuals and organisations to determine what activities are deemed appropriate within these plans, and to challenge an activity that is outside that scope. This requirement, set out in Schedule 1 of the RMA provides for public consultation on any proposed plan, a review of an existing plan, or any change or variation to an existing or proposed plan.

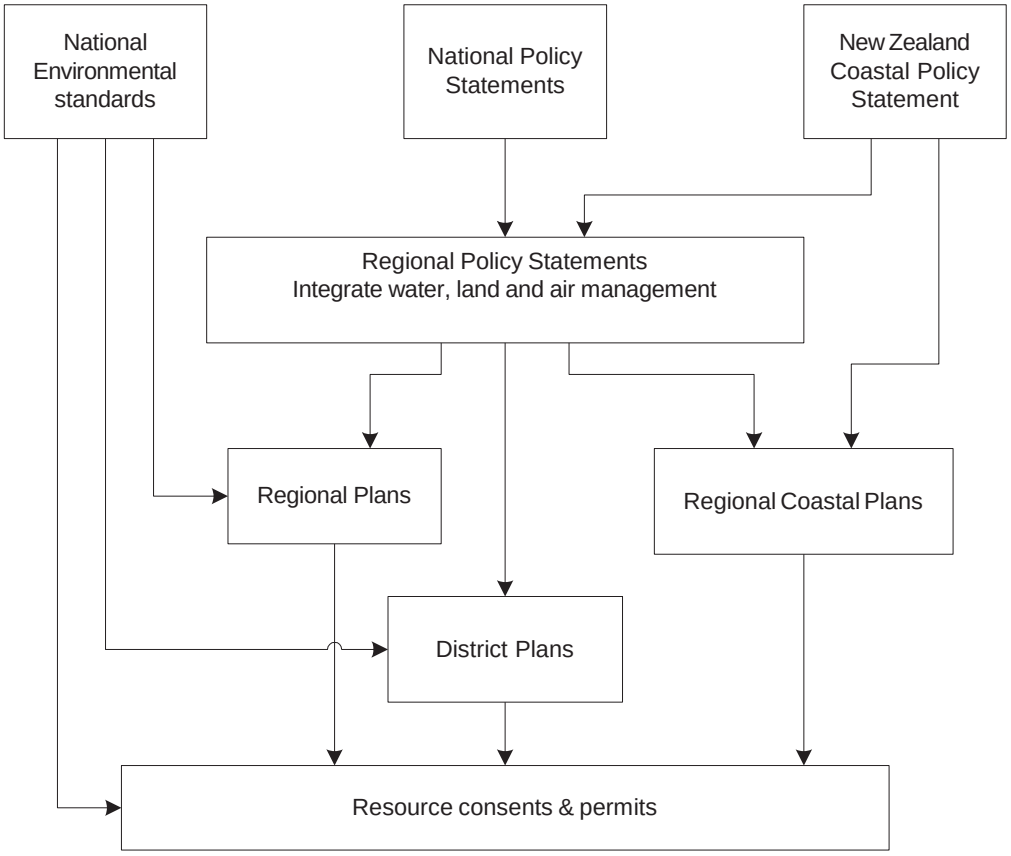

Figure **Relationships between Plans, Policy Statements, Standards and the issuing of consents**[11]

The requirement to consult, and the broad structure of the principles and policies contained in the RMA, provides a wide opportunity for discretion. The RMA also relies for its effectiveness on decisions made at the level: local; regional; or national; at which the impact on the resources considered will be most apparent. This decentralisation has many benefits for the engagement of all interested parties, but also suffers from being reactive, and in a reliance on detailed and complex planning documents that are difficult for the general public to follow or understand (Nixon, 2000). A problem exacerbated, as Nixon also noted, by the highly risk averse nature of Local and Regional Councils, who seek to cover every eventuality.

[11] Compiled from information at http://www.rmaguide.org.nz/rma/introduction/overview.cfm, and http://www.mfe.govt.nz/publications/rma/ki-teuo-te-hiahia/html/page4a.html

A further complication arises through the different emphasis on consultation between the RMA and the Local Government Act 2002 (LGA). Both impose a duty to consider sustainability and to consult, but the LGA has specific provisions for the method of public consultation whilst the RMA does not. Accordingly, Local Authorities must follow the consultative provisions of the LGA. (Schedule 1(3c) of the RMA). The requirement of the LGA to consult widely and to derive 'community outcomes' from this process is a key element in the public's expectation of consultation, and the degree to which their views will be considered. This increasing community expectation of inclusive consultation brings with it two distinct and opposing views that will now be explored.

As the general public perceives the consultation process as an exercise in participative democracy, the discovery that outcomes are determined through a quasi-judicial process dominated by technical and legal experts leads to a disillusionment and frustration. This situation is exacerbated by the often insufficient time allowed during the consultation period for individuals and community groups to garner a collective view and support this with an evidence base (Borrie, Memon, Ericksen, & Crawford, 2004). The contrary view, espoused by vociferous applicants, lobby groups such as Federated Farmers, and groups representing small businesses and developers (Young (2001), is that the consultation process is too long and an unwarranted cost on business (Oram, 2007). That view, Oram went on to point out, is not substantiated by research carried out for the Ministry for Economic Development and the Ministry for the Environment (Burrell, Blight, Moore, & Cheng, 2006). Nonetheless, these findings have not diminished the calls for a lessening of public participation, culminating in the amendments to the RMA passed in 2010. Nor has it diminished the emphasis placed on the ‘efficiency’ of the RMA process rather than its effectiveness.

This focus on ‘efficiency’ in the implementation of the RMA militates against any commitment by councils to an iterative process that involves the public. The barriers to public participation is best exemplified by the access to resources, both time and money, but also easy access to research. This mismatch in resources inherently bias the process towards corporate and other vested interests, resulting in participation by individuals and community groups being increasingly limited to a few with the stamina and

endurance to overcome them (J. Wilson, 1996). The importance of access to resources in the form of expert witnesses is confirmed in a statistical analysis of Environment Court decisions by Ong (2000). This demonstrated that to have any chance of winning their case, objectors not only have to have their evidence presented by 'experts', but need to match the number of 'experts' fielded by the applicant; a barrier which few, if any community groups, and fewer individuals, can hope to surmount.

Thus the question of participation marks a dividing line in the views held of the RMA's effectiveness. For those, like Federated Farmers, who have adamantly opposed the principles of the Act from its inception (Young, 2001), the way in which the public participate is not an issue, since their opposition is to consultation itself, perceived as a diminution of property rights. However for the general public, the divergence between the expectation of participation and the reality they face is a major factor in their perception of equity. This divergence in the views of actors, is confirmed in the results of a survey undertaken on behalf of the Ministry for the Environment (MfE). Actors in five resource applications that raised significant community concern were asked to rank the purpose of consultation. The results are reproduced in Table .

Table Ranking of perceived purpose of consultation under the RMA

Reason	Project advocate	Council planner	Community representative
Ascertain community views & opinions	1st	1st	1st equal
Achieve a better project	2nd equal	2nd equal	1st equal
Inform the community	2nd equal	2nd equal	2nd equal
Meet RMA requirements	2nd equal		
Obtain community acceptance		2nd equal	
Achieve consensus on the project			2nd equal

Note. From Striking a balance: A practice guide on consultation and communication for project advocates (p. 4), Ministry for the Environment

All participants questioned saw the primary purpose of consultation as determining the views of the wider community. However, those objectives that could be considered as involving the public in the decision making process: achieving a better project; and achieving a consensus; were rated more highly by community representatives. Indeed, neither council staff nor project advocates (applicants) considered the objective of achieving a consensus as a major objective. This divergence of expectations and especially the failure to provide for active public participation leads directly to frustration, disillusionment and disempowerment, and ultimately to a perception that

they have been cynically manipulated (Goodwin, 1998; Halseth & Booth, 2003; Nash, 2007).

To assist in determining the intent of consultation by local government, Burns, Hambleton & Hoggett (1994) developed a typology of citizen participation in civic decision making based on the three categories of non-participation, tokenism and citizen power suggested by Arnstein (1969). They also extended Arnstein's eight 'rungs' to twelve; from level 1 representing hype or manipulation to 12 representing direct control by the citizenry as shown in Table .

Table Ladder of citizen participation

Citizen control	12	Independent control
	11	Entrusted control
	10	Delegated control
Citizen participation	9	Partnership
	8	Limited decentralised decision making
	7	Effective advisory boards
	6	Genuine consultation
	5	High quality information
Citizen non-participation	4	Customer care
	3	Poor information
	2	Cynical consultation
	1	Civic hype

Note. From *The politics of decentralisation* (p. 162) Burns et al. 1994, London: Macmillan

Using this 'ladder of citizen participation', Nash (2007) investigated the degree to which councils and council processes within New Zealand engaged with the public, and provided an opportunity to influence the outcome of decisions. He considered that for the majority of councils, consultation was at a level that fell within the level of 'citizen non-participation'. This level, essentially equating to the statutory minimum required, is often driven by other agendas, such as gathering support for council or councillor led initiatives, and legitimising previously made decisions. The information made available is also often manipulated and selective, resulting in mistrust and a cynical view of the honesty and competence of the council (D. Wilson, Syme, & Knight, 2000).

Nash (2007) noted that level six of Table , 'Genuine consultation' is the highest level achieved within New Zealand, and the norm is between rungs 1 and 4. The best level of consultation achieved falls within the central band identified in as 'citizen participation', but the way in which it is applied is perhaps more correctly described by the term 'tokenism' used by Arnstein (1969) to describe this central group. Indeed the objective

of ‘genuine consultation’ is normally to give legitimacy to previously determined policies, albeit tweaked cosmetically, (D. Wilson et al., 2000). A view confirmed by Forgie (2002) who considered that whilst this level of consultation offers the opportunity for informed debate and understanding, it provided little improvement in opportunities to affect the outcome when compared to the approaches identified with the lower rungs of the table. The content of the Ministry for the Environment’s Best Practice guidelines lends further weight to this view, concentrating on legal requirements and communication whilst omitting any reference to engagement in the decision making part of the process (Ministry for the Environment, 1999).

At this ‘best practice’ level of consultation, councils may seek to gather information from an informed public to contribute to the decisions they make, but there is no evidence of any desire or willingness on their part to concede any decision making authority (O'Faircheallaigh, 2010). O'Faircheallaigh also considered that the degree of public participation was tightly controlled politically, precisely to avoid possible challenge to the decision making authority of either officials or elected representatives. Inherent to this is the concern of authorities that acknowledgement of diversity would add complexity and length to the consent process. As has already been noted, councils’ performances are rated by central government on the efficiency with which applications are processed, and since even a minimum level of public engagement can lend apparent legitimacy and authority to decisions, councils have little encouragement to improve their level of consultation. O'Faircheallaigh further noted that this propensity to avoid delegation of authority is not confined to any one political system, but is a common factor in all (Figure).

Note. From A ladder of Citizen Participation (p. 1) Arnstein, 1969 http://www.mendeley.com/research/transportation-demand-management-planning-development-and-implementation/#page-1

Figure French student poster. We participate – they profit

Arnstein (1969) considered that the process of consultation without a redistribution of power was an empty ritual, meaningless to the powerless, and intended to ensure the outcome benefited and preserved the existing power structure. Using the example of the 1968 French student protest poster in Figure , he also suggested that this imbalance and the reasons for it were well understood by those subjected to tokenism in the name of consultation. The next sub-section continues the consideration of consultation by exploring attempts to present decisions based on the resolution of conflicts of interest as a so called 'win-win' outcome.

2.6.1 The Snark was a Boojum you see[12]- Win–win outcomes

The RMA has been interpreted by Jackson & Dixon (2007) as an attempt by policy makers to resolve the neo-liberal desire for minimal regulation, reliance on internalisation of environmental costs, and market forces, with the parallel desire to expose all environmental impacts to public scrutiny and devolve decision making on relative benefits to a level concomitant with the effect. Perceiving this divergence of views as a conflict of interest, an approach, termed 'ecological modernisation' has become the 'dominant discourse of sustainable development' according to Hinchcliffe, Blowers and Freeland (2003, p. 256). The goal sought by this approach is for policies

[12] Carroll, 1876 Fit the Eighth, last line

to focus on both production processes and inclusive decision making to achieve sustainable development and higher environmental standards without compromising economically derived standards of living.

The epistemology underpinning this approach, set out by Jackson and Dixon (2007) equates with those defined by Vos (2007) as a 'thin' version of sustainability in its emphasis on collaborative stakeholder processes, and some restriction on economic growth, exemplified by the emphasis on win-win outcomes. Nonetheless, it remains reliant on the neo-liberal belief in the efficacy of market forces to ensure that internalisation of environmental costs lead to innovative technological developments to reduce or replace natural capital. The research by Jackson and Dixon however indicated that when measured against the desired objectives of ecological modernisation, the RMA fails to deliver. Eason, van Roon & Dixon (2005) also considered that both developers and councils have shown considerable resistance to attempts to stimulate innovation, or any approach that requires higher initial investment, even where long term savings can be demonstrated. As Frieder (1997) also noted, sustainable management cannot occur without the consent of the business community, but the experience is that a majority of small businesses prefer to put their energy into fighting against the RMA process rather than participating in the development of environmental practices that would potentially enhance their competitive advantage.

Further, the RMA, or more properly, the processes by which it has been applied, fail to capture public aspirations and have an over-riding goal of 'maintaining economic growth' where the environment is seen as a resource for the economy (Buhrs, 2000). As noted by Pederson (1993), the exposure in mass media and academic literature of environmental damage for over fifty years has still failed to generate any serious debate at a political level, or lead to the establishment of environmental goals for society.

Perhaps the most demonstrable point of failure for the RMA to achieve win-win outcomes is within the area of cumulative effects, and non-point source pollution. Jackson & Dixon (2007) noted that despite requirements for applicants to identify effects on the wider community (RMA clause 2(a)), councils have adopted this task, and that the extent to which it is applied varies widely. Using the example of land transport

planning, Kissling & Bachels (2000) asserted that ‘downstream’ costs, whether spatial or temporal are not internalised, and are left to be met by the wider community with no balancing benefit.

Outcomes presented as a ‘win-win’ are then, from an economic perspective, almost certainly hiding or ignoring externalities (Brower, 2008). At root however, the failure to achieve a non-zero sum outcome for resource usage under the RMA is a clear divergence in expectations of participants based on differing value systems. Businesses perceive the process as restrictive to economic growth, whilst environmentalists see it as based towards economic development. Similarly, the underlying contention between views of natural resources outlined above aligns closely with the Weltanschauung of these two actor classes, applicants typically seeking to maximise profit through some form of reduction in natural capital, whilst environmentalists seek to maximise existing intrinsic values even if this results in a diminution in economic activity.

A specific approach that seeks to close the gap between values held, and address the desire for economic exploitation of resources whilst maintaining a constant level of natural capital has been utilised in North America, Europe and Australia under the banner of ‘no net loss’. This technique, known variously as offset mitigation, or compensation has always been available under the RMA, and an increase in its use is suggested in the Draft National Standard on Biodiversity issued for consultation in 2011. The next section explores the philosophy behind this concept, the degree to which it has been successful in other jurisdictions, and in the New Zealand context.

2.7 Offset mitigation - protection hierarchy or hired anarchy?

Offset mitigation is the concept by which an unavoidable loss of natural capital at one site, is balanced by the creation at another, of natural capital with an equivalent value. This can take two forms. The creation or improvement of an ecosystem, or ecosystem services that are the same as those lost – referred to as ‘in kind mitigation’, or the creation of services or ecosystems of a different type, but which are deemed to have an equivalent ecological value – ‘out of kind mitigation’ (Kiesecker, Copeland, Pocewicz,

& McKenney, 2009; Zedler, 1996). A third approach which does not meet the above definition, but which has been employed in New Zealand under the guise of this rationale, is the use of financial compensation.

The roots of offset mitigation as a concept can be traced to the desire to address residual harm and a growing public concern over the increased loss of natural habitats, wetland in particular. This desire articulated as a 'no net loss' or 'net gain' objective, has been implemented, either explicitly or by inference (sustainable use) in legislation in North America, Europe and Australasia. Although these outcomes are generally defined in ecological terms 'no net loss of biodiversity' (ten Kate et al., 2004), it has also been more broadly defined in social terms as the maintenance of natural capital whilst allowing the continuation of social activity (Cowell, 1997). Memon and Skelton (2004) also described the process as socially based, and suggest that it is largely driven by political and economic pressures to maintain economic growth in the face of increasing public concern over environmental degradation. As has been noted in section 2.4, the principle of maintaining 'biodiversity' is firmly associated in the lexicon of sustainability with a preservationist Weltanschauung (Hull et al., 2002). The use of this term in a context that clearly intends to imply an interventionist approach, even if this is directed towards a positive ecological outcome, is then likely to lead to misunderstanding, and differing goals.

International legislation intended to manage and balance man-made disturbance of natural resources, is predicated on two principles. First, there are some situations where the potential loss cannot be tolerated, no matter what the perceived benefit; secondly where an activity can be allowed, there is a strict hierarchy by which any harm is to be addressed. This hierarchy, generally noted as:

- Avoid;
- Remedy; and
- Mitigate (ten Kate et al., 2004))

is augmented by the requirement for compensation in the event of residual environmental harm after these steps have been taken. Although differing in detail, a commonality can be seen in the definitions of mitigation and environmental compensation across legislatures as shown in Table .

Table Definitions of mitigation and ecological compensation in Europe and USA

Mitigation	Environmental Compensation	Country
Minimizing rectifying and reducing impact	Restoration of ecological functions and values in context. Re-establishing impaired functions of nature Replacement of ecological functions and values in another functional context substituting the impaired functions of nature in an equivalent way	Germany
a) Minimizing rectifying and reducing impacts b) Replacement of ecological functions and values	Restoration, creation, enhancement in exceptional cases preservation of other wetlands as compensation for impact on natural wetlands	USA
Minimizing rectifying and reducing impacts	Replacement of ecological functions and values. Substitution of ecological functions or values that are impaired by development	Netherlands
Minimizing rectifying and reducing impacts	Provision of positive environmental measures to correct, balance or otherwise atone for loss of environmental resources	UK
Minimizing rectifying and reducing impacts	Restore functions in the right functional context or replace functions in another functional context	Sweden

Note. From Environmental Compensation in Planning: A Review of Five Different Countries with Major Emphasis on the German System, (p. 207), Rundcranz & Skarbeck, 2003, *European Environment 13(4)*

In the jurisdictions noted in Table , a distinction is drawn between two means of addressing environmental loss or damage. The first is direct mitigation, actions taken within the ambit of the proposed activity that will ameliorate but not remedy an adverse effect. The second, compensatory or offset mitigation, where the user of the resource is required to undertake or fund, work outside the scope of the proposed development that is deemed to provide an ecologically equivalent value to the irreversible loss caused. In Europe the latter is referred to as compensation whilst in North America it is described by the term mitigation (Moilanen et al., 2009; Race & Fonseca, 1996; ten Kate et al., 2004). This potential confusion of terminology is compounded by the use of a wide variety of terms for this process, including Biodiversity offset, Mitigation banking, Set aside, etc. However it is clear that these terms are all intended to refer to an ‘option of last resort’ (McKenney & Kiesecker, 2010).

The principle of offset mitigation is well established in Europe (EU Wild birds directive 1979, EU Habitats directive 1992); and in North America where both the USA (Clean Water Act 1972) and Canada (Fisheries Act 1985) have legislation imposing a ‘no net

loss' condition on any development involving wetlands. Similar provisions for no net loss have also been introduced with respect to land clearance in several Australian States, and policies with this aim also exist or are being developed in South Africa, and South America. However, whilst this experience has given rise to an extensive literature on how things could or should be done, there is little evidence of success in stemming the loss of habitat or ecosystems the legislation is intended to protect (Hossler et al., 2011; Pittman & Waite, 2009). Principal causes of failure have been identified as inadequate size of offset, lack of on-going management and monitoring (Memon & Skelton, 2004), failure to implement the offset (Norton, 2009; Walker, Brower, Stephens, & Lee, 2009), and accumulative loss of ecological function through temporal lag (Bendor, 2009; Moilanen et al., 2009).

The objective of 'no net loss' fits well within an economic framework, equating with the maintenance of [natural] capital by 'savings' of similar worth; either by substitution or environmental measures of comparable value. Proponents of this viewpoint also argue that the formalisation of the process of offsetting in economic terms provides for the introduction of instruments such as ecological banking, which can ease the process of offset mitigation by removing the ad hoc evaluation of value, and by providing a more certain outcome from an ecological point of view. Nonetheless, looking to the USA which has had the longest experience of this approach, it appears that most approved offsets have failed, due to an inadequacy of one or more components of the valuation framework used (Walker et al., 2009).

2.7.1 How many blue beans make five white ones? Ecological economics

The literature on offset mitigation is united in identifying key attributes that must exist before an equitable outcome can be assured, let alone one that provides a net gain. The first of these being what is being compensated for and how to value it; the second a currency that can adequately represent the goods being exchanged and will allow comparison between differing aspects and thirdly, an accounting model that can capture variability (McKenney & Kiesecker, 2010; Stephens & von Hase, 2010; Walker et al., 2009).

As noted above, the assumed agreement on the desired outcome, 'no net loss' of biodiversity, potentially hides other agendas that surface when faced with the practicalities of identifying a solution. To be effective then, the currency used needs to capture the values of all stakeholders. If it does not, those values omitted will remain externalities and be ignored (Salzman & Ruhl, 2000). If this occurs, not only does the 'market' fail, but those actors whose values are not included become disenfranchised. Nonetheless, Salzman and Ruhl's argument that there is no ecologically sound way to equate differing ecosystems or species is supported by Redclift (2005) who suggested that the real values of nature as perceived by different groups and cultures are incommensurable, a situation exacerbated when the differing groups also have widely different access to economic and political power.

Ecological values are largely non-fungible, that is one unit cannot be replaced by another unit even if they are considered to have the same notional ecological value, since their functions almost certainly differ. In an attempt to circumvent this apparent impasse the concept of ecological services has been put forward (Boyd & Banzhaf, 2007; Costanza et al., 1997). This concept, whilst by definition anthropocentric since it defines services as benefits derived by humans (Costanza et al., 1997), seeks to avoid problems of capturing complex and imperfectly understood functional mechanisms, or indeed knowledge of the component parts of an ecosystem. Instead the final services delivered are all that are considered relevant. Similarly, a 'welfare index' approach is advocated which removes the need to consider pricing, since this is held constant and can thus be arbitrarily assigned. An increase or decrease in services provided alone, determines if the offset is successful.

A strength of this approach is that it can as readily capture services that provide intangible non consumptive benefits as those that provide consumptive benefits. However, although the approach is ultimately based on things of benefit to human society, Boyd and Banzhaf (2007) consider that the units of service delivery are biophysical and that adopting an economic approach reinforces the importance of the underlying ecological analysis.

Two further dimensions must also be addressed by an effective accounting system: uncertainty and time discounting (Moilanen et al., 2009; Norton, 2009; Salzman & Ruhl, 2000). Uncertainty can have two aspects, whether the offset will deliver the expected outcomes or services, and whether the required offset will even be undertaken. To address the latter, the approach most often advocated is the use of either a redeemable bond or a system of mitigation banking. Time has a twofold impact on accounting, the nature of the impact may be 'one off' or ongoing, and the level of impact may itself vary over time. The same considerations apply at the offset site, with the added complication that a prolonged time gap before achieving like for like can cause the complete loss of a component. To compensate for this, and in a critical departure from standard accounting practice Salzman and Rhul suggest that different discount rates are likely to be appropriate for the loss, and offset.

However, many of the problems noted above regarding participation and ambiguity remain when attempts are made to put such a scheme into practice (Salzman & Ruhl, 2000). Whilst the ideal currency of exchange would be based on social value (Salzman & Ruhl, 2000, p. 623), the currency of exchange most frequently used, simple measures of area, omit any consideration of this. If an economic approach is adopted, a further practical constraint to the capture of the value of intrinsic and non-marketed goods is the time and cost of creating shadow pricing through mechanisms such as hedonic pricing or contingent valuation. Similarly, although Salzman and Ruhl noted that a comprehensive and detailed analysis is required to quantify the value of ecological services, they acknowledged that these also involve a costly and lengthy process. Applicants and regulators have an incentive to avoid these and concentrate on simple currencies that mask the non-fungible nature of the trade (Salzman & Ruhl, 2000).

As noted in Walker et al (2009), this attitude is, according to the public choice theory of politics, an inevitable consequence of the disparity of political and economic power between actor groups. For vested interests, the primary incentive is to minimise costs, and hence favour a simplistic currency and a non-precautionary approach. Walker et al also pointed out that the theory predicts that when regulators have interests that differ from any statutory mandate they will pursue their own interests given the opportunity. Since, in most cases, the political and financial pressure on regulators is to conform to

the interests of powerful vested interests, it is unsurprising that regulators also see simplistic and inexpensive currencies that benefit development at the expense of biodiversity as the preferable approach despite their presumed role as auditor of the public interest.

The three actor classes: applicants; regulators; and the public (submitters); then bring the same Weltanschauung based values and preconceptions to the implementation of any economic mechanism of exchange that have been noted previously. These determine both their objectives when considering the values that should be taken into consideration when effecting an offset, the exchange rate of that value, and what form the process to determine the offset should take.

From a process point of view, the public has a clear objective of effective participation in the decision making process (Salzman & Ruhl, 2000), and the curtailment of the discretionary powers of regulators. In contrast applicants seek a higher degree of certainty, and regulators, Salzman and Ruhl considered, sought greater discretionary powers and ultimate authority. Turning to the consideration of values, a similar diversity is apparent, but the dominant consideration for regulators and applicants remains cost minimisation. Since the aspects valued most highly by the public are frequently non-marketed services, and the capture of shadow pricing is regarded as cost prohibitive in most cases, these factors are simply ignored, and no opportunity to test a possibility of compromise is created.

The analysis above, based on experience in the USA (Salzman & Ruhl, 2000), closely resembles the process of RMA consent hearings where applicant and regulator engage in detailed discussions and attempt to reach a consensus prior to any involvement of the public. Here, as there, a lack of effective audit whether by a vigilant public or third party, enables public goods to be devalued or ignored, and allows regulators and applicants to arrive at ‘closed shop’ deals that further these actors’ agendas to the detriment of the environment. Experience of offset mitigation under the RMA is explored in the next section.

2.7.2 Offset mitigation under the RMA

In the USA and Europe, legislation specifically notes offsetting as a measure of last resort and prohibits its use as a means to make acceptable a project that would otherwise be rejected, (US EPA & DA 1990); or of allowing other types of benefit to overrule ecological criteria, (Natura 2000[13]). Memon & Skelton (2004) noted however, that in New Zealand the implication of the RMA Section 5 (2)(c) that mitigation is an alternative, weakens the requirement to treat offsetting as a last resort. They also reported, quoting as an example a witness' testimony in *Transit New Zealand v Auckland Regional Council* Decision A100/2000, that the use of offset mitigation in place of avoidance had become established practice in Auckland. Although the many revisions to the RMA have consistently rejected proposals to include specific reference to environmental compensation or 'no net loss', Memon and Skelton further argued that the Environment Court has taken the view that environmental compensation is implicit within the framework of 'avoid, remedy or mitigate', and in the provisions of RMA Section 108(c).

Despite or perhaps because of the wording of the RMA Section 5 (2)(c), the technique of offset mitigation has not been widely used by regional or district councils. As noted above, methods that seek to compare an ecological loss at one site with a potential gain at another, require a degree of dis-aggregation and contextualisation that is expensive to obtain, and frequently contains much qualitative data. It has also been noted previously that the emphasis placed by the Ministry for the Environment when assessing councils' performance, is on completion times for resource consent applications, and that dominant political influence lies largely with those organisations seeking to minimise compliance costs. It is unsurprising then, that where councils in New Zealand have employed offsetting, a comprehensive evaluation has almost exclusively been ignored in favour of 'practical' simplistic measures not reliant on context.

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[13] Natura 2000, the centrepiece of EU nature & biodiversity policy, is an EU wide network of nature protection areas established under the 1992 Habitats Directive also incorporating Special Protection Areas designated under the 1979 Birds Directive.

The failure of regulators in New Zealand to employ adequate currencies when considering offset conditions follows a similar failure internationally. However it is suggested that the inevitability of this outcome is exacerbated by the wording of RMA section 5(2)(c) that encourages regulators to ignore the international hierarchy of 'avoid, remedy, mitigate and compensate', and instead take compensation as a starting point (Bean & Dwyer, 2000).

Closed preliminary negotiations between regulators and applicants are actively encouraged both by the RMA and the Environment Court. This not only lessens the publics' ability to influence decisions at any subsequent hearing by establishing an information asymmetry, but protects 'insiders' from scrutiny and accountability (Walker et al., 2009). In summarising the degree to which the technique of offset mitigation and the underlying commitment to 'no net loss' has been an effective practice in New Zealand, it is worth noting that, writing in 2004, Memon and Skelton stated that no case existed where offset compensation had been imposed on an unwilling developer.

Previous sections have suggested that a fundamental difference exists between those who perceive the natural environment as a commodity to be exploited and those who believe it has an intrinsic value. The use of simplistic currencies to determine rates of exchange when considering offset mitigation fails to encompass these divergent views, recognising only the first. Consequently, the method as applied, not only fails to meet its professed objectives, but contributes to the mistrust with which the public views what they perceive as closed deals between applicants and regulators.

2.8 Conclusions

When it was passed in 1991, the Resource Management Act was seen as world leading in its intent to create a shared understanding of sustainability and a means of integrating the mechanisms required for effective implementation. The use of catchments to define the practical boundaries of operation, together with the Act's emphasis on outcomes also placed the legislation firmly at the end of the spectrum that gave precedence to environmental concerns (Young, 2001). Twenty years later, the Act appears to be mired in process within the urban environment, toothless in rural areas, and to have failed to halt the loss of native biodiversity and ecosystems.

Unsurprisingly, the most endangered ecosystems are those that stand in the way of the most lucrative development. Although the drafters of the RMA specifically sought to avoid this problem through the requirement to consider cumulative effects, the compartmentalisation of resource consents within bounds set by district and regional plans, and in particular the tightening of the definition of significance when assessing effects, has militated against the overall intent of the Act. This is most clearly seen when considering offset mitigation. Despite the ostensible intent of this process to prevent loss of natural resources, the process, by focussing attention serially on specific cases has constrained the development of generic protection measures, and lowered the visibility of overall loss (Walker et al., 2009).

The implementation of resource management under the RMA is also intimately bound up with the issue of decision making, and the public's participation in this process. In this, the role of elected councillors and local authority staff are frequently assumed to operate in the interests of the community as a whole, and to seek to maximise public goods such as biodiversity. Brower (2008) and Walker et al (2008) both argued that this rarely occurs for a variety of reasons. Amongst the most prominent is the contrast between the predicted immediate and short term economic benefits of development, and the long term and less quantifiable nature of benefits from the environment.

As long ago as 1969 Friend & Jessop reported that the failure to allow for the different Weltanschauungen of actors in the decision making process when considering the use of natural resources had been identified as a primary reason for the subsequent recognition that those decisions were at best flawed, and potentially worthless. They also pointed out that there was a world of difference between agreeing that something needed to be done, and gaining agreement on *what* should be done. Although written in a different context, their observation that gaining such an agreement was most problematical in a changing environment, where 'before' and 'after' comparisons, and competing values were involved; is directly relevant to cases of offset mitigation under the RMA. It has been noted by Salzman & Ruhl (2000), Brower (2008) and Walker et al (2008) that the objectives of developers and regulators frequently coincide. In contrast, the views of those who oppose development are often characterised as obstacles to progress.

McDowell (2010), suggested that in New Zealand, the epithet ‘greenie’ is becoming increasingly pejorative, and linked in the mass media with a radical fanaticism. The preceding literature review suggest that this divergence of perspectives can be considered to derive from the differing Weltanschauung of the actors and that differences in values are ignored in the decision making process.

This research seeks to test these conclusions by investigating the degree of commonality between the views of actors with regard to the RMA consent process, conservation, and the state of the environment. The degree to which quantitative approaches to the classification and measurement of ecological loss and gain suggested in the literature are understood by actors, and used in practice will also be canvassed. The way in which this research is to be carried out is covered in the next chapter.

CHAPTER 3. Methodology

This chapter sets out and discusses the research design, the development of the survey instrument, the identification of appropriate recipients, and the methodology used to analyse the results obtained. Since the scope of the research is limited to situations where offset mitigation has been employed, and as noted there are few examples of this methodology in New Zealand, a case study approach is proposed to enable the use of complementary data gathering techniques. As the key aspect being investigated is the Weltanschauung of actors, a primary tool will be a survey. This survey will be designed to explore the underlying Weltanschauungen through sets of questions on a series of topics related to the environment, its utilisation, and the equality of participation by actor classes.

The literature has suggested that there are two fundamentally different views on the relationship of mankind to nature. Further, that these differing views also condition the actor's perspective on the data to be considered, and the form of the decision making process when considering the ecological equity of offsets. Thus, as stated in Chapter 1, the aim of this research is to:

1. Examine the extent to which the Weltanschauungen held by the four classes of actors in the resource consent process: applicants, submitters, consultants, and regulators, differ with regard to nature;
2. Investigate differences in actors' perceived equity of the resource consent process and the environmental outcome;
3. Consider any relationship between an actors' Weltanschauung and their perception of equity in the process and outcome of resource consents.

This investigation will be undertaken in the context of resource consent applications where offset mitigation is imposed as a condition. A further set of questions asking who should be responsible for the tasks necessary to determine ecological equivalence was suggested by initial informal contact with council officers.

This research is to some extent inductive since its genesis was personal observation of the failure of the resource consent process to satisfy all participants, and the expressed views of both applicants and submitters that the process was flawed. This view was

formed over a period of several years through my involvement with community groups, where I took on the role of evaluating and preparing submissions on resource consent applications that affected the local community. My experience was that even though the submissions I and others put forward did not normally oppose the consent, and offered constructive proposals to alleviate community concerns, these were ignored in favour of existing solutions put forward by regulators. This led me to ask why this was. From my previous study (Matcham, 1994a, 1994b) and practical application of a systems approach to problem solving, I inferred that although the problem at root was due to a conflict of Weltanschauungen, the process in place failed to recognise this. Further, it appeared that as implemented, RMA consent hearings actively sought to avoid considerations of qualitative value, and despite the stated intent of the Act to manage outcomes, has devolved into a rule and output driven process. I therefore decided to test my hypothesis through the medium of this research.

3.1 Choice of research strategy

The choice of research strategy was informed by the strengths and weaknesses of the techniques identified by Schell (1992), and shown in Table .

Table Relevant situations for different research strategies

Strategy	Research questions addressed	Requires behavioural control.	Contemporary focus
Experiment	How? Why?	Yes	Yes
Survey	Who? What? Where? How many?	No	Yes
Archival analysis	Who? What? Where? How many?	No	Yes / No
History	How? Why?	No	No
Case Study	How? Why?	No	Yes

Note. From *The value of the case study as a research strategy* (p. 3) by C. Schell, 1992, Manchester Business School, retrieved from http://www.finance-mba.com/Case%20Method.pdf

Since the research question posed clearly focuses on the present, and the behaviour of actors cannot be controlled, both experiment and history can be discarded immediately. Each of the remaining methodologies has its advantages, but they should not be considered as mutually exclusive. A combination of approaches can strengthen the results by providing a range of qualitative and quantitative data that allows results to be triangulated. Similarly, as Schell noted, the techniques can be nested, that is one

strategy, for example a survey, can be used as a means of capturing specific information within an overall strategy employing a case study approach.

Case studies are typically associated with the social sciences, where in depth research of a single subject is required. Schell (1992), noted that case studies are a form of empirical inquiry that are typically concerned with situations where the object of study is current, the context is important and not easily distinguished from the object of study; and where multiple sources of evidence exist. As its name implies, this approach allows the selection of specific cases rather than a random selection of examples. A case study approach can elicit a richer data set; as suggested by Schell, who describes them as taking "selected examples of a social entity within its normal context" (1992, p. 2) with the objective of gaining a better understanding of "how" or "why" behaviour leads to the observed outcomes. The obverse of this benefit is the care required when extrapolating to the general population from the specific cases chosen. Criticism of the case study approach has been countered in detail by Flyvbjerg (2006), and by Yin (2009). Given that the current enquiry is limited in scope, and that as Flyvbjerg noted, this approach provides a more nuanced appreciation of reality, and embraces the concept of context dependent data, I decided to use a case study approach, supported by both a survey and an analysis of archival documentation.

The present study is focused on the role of actors Weltanschauung in cases where offset mitigation has been used within a resource consent. Although the number of instances of this approach in New Zealand is small, they typically occur in situations of high public interest and have an on-going visibility and topicality out of proportion to their numbers. Furthermore, the emphasis on the use of offset mitigation in the proposed National Policy Statement on Biodiversity (in Draft at the time of writing) has resulted in a raised awareness amongst regulators; and provides an opportune moment to consider ways in which the technique is viewed.

The strategy adopted for this case study has two components. First, a review of archival documentation of resource consent applications will be carried out to determine how the methodology used to evaluate and equate the offset aligns with the Weltanschauungen of nature described in Chapter 2. Secondly, a survey of actors within these consent

hearings will explore the alignment of the four actor classes with those Weltanschauungen.

3.2 Development of survey instrument

To achieve the second part of the investigation, the perceptions of actors, it was necessary to survey them directly. This was done through a mailed survey which had three objectives. The first was to establish a set of data sufficient to investigate any difference, either qualitative or quantitative between the Weltanschauungen of actors in the context of the RMA resource consent process. Secondly, the survey sought to investigate any quantitative difference in actors' perception of the equity of outcome from this process. A further set of questions sought to identify if any common ground existed between actors on means of addressing any perceived problems with the consent system as currently implemented. To achieve this, actors were asked for their views on the responsibility for specific tasks that could assist in giving a common view of ecological effects and of a means of comparing the ecological value of loss with any offset.

When planning the survey, the options considered were:

- Face to face interviews
- Self-administered questionnaire
- Group questionnaire
- Mail questionnaire
- Telephone interviews

Of these, face to face interviews and self-administered questionnaires were considered to be impractical given the national spread of actors, the limited time frame and budget available. Group questionnaires were also inappropriate for the same reasons but also due to the need to avoid any inter and intra actor class biasing of responses.

A mail survey was therefore felt to be the most appropriate tool with the advantages that:

- Respondents can complete the survey in their own time.
- There is no need to set up interview appointments.

- All respondents have a mail service, but may not have a directory listed telephone.
- Contact details available from resource consent hearings are limited to physical address.
- No interviewer bias can be injected.
- Responses are in a standardised format, so data entry and analysis is straightforward.

The main disadvantage, the self-selecting nature of respondents, was felt to be justified since the populations surveyed were small and their role in the situation of interest was also self-selected. The further disadvantages of closed questions; lack of opportunity to clarify or amplify points of interest; and a typically low response rate; were felt to be outweighed by the advantages of ease of administration, and the relative lack of time pressure on respondents to complete the survey

The survey questions were preceded by a request for sufficient demographic information to enable the class of actor to be confirmed. Within the questionnaire, responses were asked to circle the response that most closely matched their response to each statement. Responses from 'Strongly disagree' to 'Strongly agree' were offered on a five point Likert scale. Provision was also made for a 'Don't know' or 'Not applicable' response.

Likert scale responses have the advantage of easy administration, and have been shown to provide reliable and consistent responses (Matell & Jacoby, 1972). However, two aspects of Likert scale have been the subject of debate: the inclusion of an intermediate 'no opinion either way' response; and the effect of varying the number of points on the scale. Matell and Jacoby found that the proportion of the scale used was independent of the number of scale points, but that the use of the mid-point varied inversely with the number of scale points. The inclusion of a mid-point may also exacerbate central tendency bias. However, it was felt that the inclusion of a central 'neutral' option would, in this case, assist in assessing the factors that actors considered most important within a given question set. Central tendency bias can also be effectively eliminated in analysis by reducing the results to a nominal accept or reject value.

Likert scale questionnaires are also known to be vulnerable to social desirability bias, the tendency to give replies that conform to societal norms (Nederhof, 1985). Whilst this source of bias cannot be effectively eliminated, it is felt unlikely to be a major issue. It is postulated that if respondents display this bias, it is more likely that they will acquiesce to the norm of their peer group, which is the attribute under investigation, rather than that of society as a whole. A final multiple choice multi-response question sought actors' views on the actual and preferred allocation of responsibility for specified actions relevant to the previous question set. An iterative top down development model was adopted to derive the questionnaire, as shown in Figure .

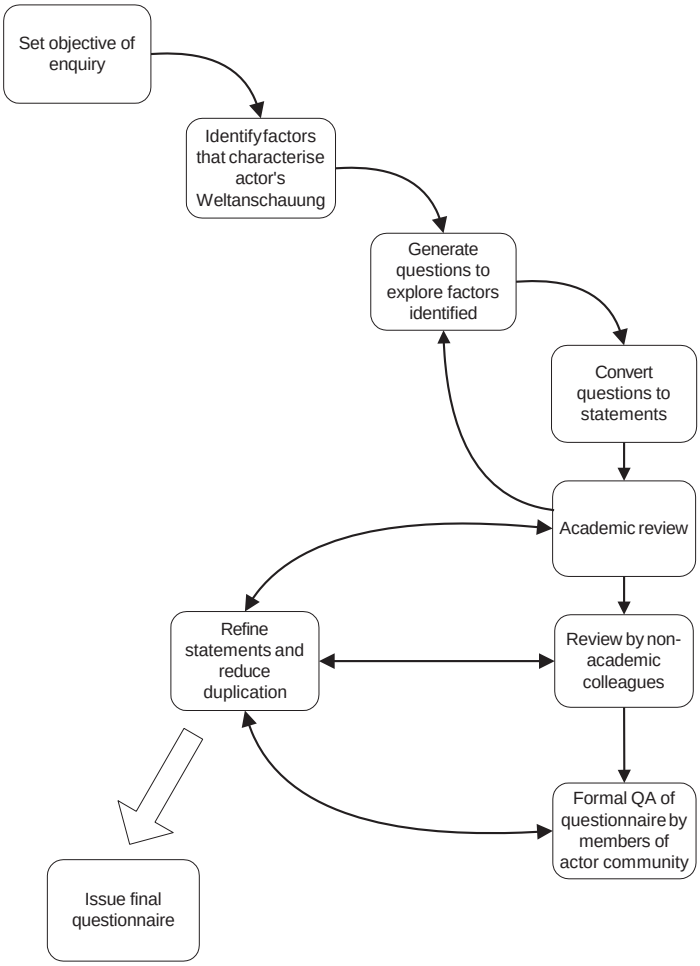


Figure Development of questionnaire

The questionnaire sought to establish if different groups of actors, defined by their role in the resource consent process, exhibited different Weltanschauung. It also investigated their perception of equitability in the outcome of resource consents. To

achieve the first goal, aspects of the resource consent process that the literature indicated were potentially important indicators of an actors' Weltanschauung were first identified. These were:

- The state of the natural environment;
- The importance of conservation;
- The acceptability of economic constraints;
- The effectiveness of the RMA in protecting the environment;
- The perception of bias in the consent process;
- The importance of lay evidence, and
- The ability of the public to participate in decision making.

Questions were developed to investigate attitudes to each of these aspects. The first aspects of Weltanschauung explored was the actor's views on the current state of the natural environment and the sustainability of natural resources. This set of questions sought to establish if the dichotomous view of the natural environment in New Zealand established in Chapter 2 persists, and if a particular actor group identifies more strongly with one of these views than another. The other aspects investigated concern the consent process, and the degree to which actors are able to participate and influence the outcome. This latter aspect is explored both for bias in the choice of data considered, the role of qualitative data in decision making, and the actor's perceptions of the balance between 'expert' and local opinion.

A second set of questions explored actors' perceptions of the equity of the RMA process and its outcomes. To achieve this, questions related to the following factors were posed:

- Equity of information
- Equity of power
- Equity of measurement
- Equity of outcome

The final part investigated actors' knowledge of which tasks were currently completed and by whom, and also asked for their opinion on which organisation they would prefer to be responsible.

The questions developed for each of these headings were then re-worded into one or more statements that either supported or opposed the goal. An attempt was made to include both supportive and negative statements for each goal to minimize acquiescence bias. The initial set of statements produced was peer reviewed within the Ecology division of the Institute of Natural Resources at Massey University, and then by non-academic colleagues. The refined set of statements was field trialled by a small cohort of actors involved in a local resource consent not included in the final survey. As a result of each of these reviews, duplication was reduced and several statements reworded to improve clarity. This process was repeated as necessary to achieve the required level of comprehension, comprehensiveness, and relevance, (see Figure).

Finally, as it has been established that respondents to mailed surveys are influenced in their replies to a question by immediately adjacent questions (Ferber, 1952), the order of the statements in the survey sent to respondents was randomised. Although, given the closely related nature of the sets of questions, it is unlikely the randomisation will be fully effective; it was considered the best method of mitigation of question order bias. The final questionnaire as sent to respondents is included in Appendix A.

3.3 Identification of survey recipients

There is widespread public interest within New Zealand on the state of the environment, and an equally widespread grass roots movement actively seeking to address the loss of endemic biodiversity through local restoration plantings. However, neither has led to a widespread interest in engaging at a policy level. Nor, unless a major, obvious and local impact is concerned, are consent hearings well attended. Experience with the principles and techniques of offset mitigation is also very limited.

All these factors limit the available population of actors, added to which, in regions where the methodology is used, the same officers and consultants are engaged with most cases. Consequently a random sample from any of the actor classes, even if access to a comprehensive database of names and addresses were available, would be unlikely to produce sufficient usable responses. The population surveyed was therefore limited to those listed as attending the resource consent hearings where offset mitigation had been identified as a condition of the consent.

Initially all Regional and Unitary[14] councils, were approached for details of all notified consents processed by them since 2000, and for details of any examples of offset mitigation employed during that period. The enquiry was restricted to notified cases since the core purpose of this research required the views of objectors. It is recognised that this filtering may have excluded examples of offset mitigation that had been employed by District Councils, or in cases of non-notified consent, that is, a consent application where the general public are not notified of the application and have no opportunity to make submissions. These can arise in two ways. Either the council considers that the effects of the activity will be less than minor (RMA s95A), or all those adversely affected have given their approval in writing.

Given the prominence such cases tend to attract, it was thought likely that examples would be restricted to notified consents, but a further search of the academic literature and public media was also conducted. This resulted in the discovery of two extra examples, both from District Authorities. One was a one non-notified consent, and one notified consent. In the situation where cases of offset mitigation were identified from perusal of consent listings, rather than directly by officers, the file references were provided to the council and copies of consent conditions, commissioners' hearings, and any other relevant internal documents were requested. From a study of the records provided, 16 examples of offset mitigation that had generated public submissions in opposition were identified, from six regions. One, from the Canterbury Region that has been the subject of discussion on the scientific literature, unfortunately had to be excluded as records of submissions made were inaccessible due to earthquake damage to the Regional Council buildings. Also included were the applicant and council staff that dealt with an example that resulted from the non-notified consent mentioned above. The cases identified occurred in the following regions: Northland (3), Auckland (2), Waikato (2), Hawkes Bay (1), Wellington (4), and Southland (4). Within these cases, the number and range of submitter types was largely determined by the profile of the application. The number of submitters was further constrained by the exclusion of those

[14] Unitary councils are territorial authorities with regional council responsibilities (Local Government New Zealand, n.d.)

whose submissions were on other than ecological grounds, which in high profile cases such as Project West Wind in Wellington, comprised the majority. The final categories and number of actors identified from the hearings documents and other council records are shown in Table .

Table Number of actors found for consents involving offset mitigation

Actor type	No. Identified
Applicant / applicant's representative	26
Consultants for applicants	12
Council officers	24
Consultants for councils	3
Individuals	69
Local representatives of environmental / residents groups	19
National representatives of environmental groups / Dept. Conservation	20

3.4 Analysis techniques

For the analysis of the questionnaire, responses were split into the sub categories initially identified. The results were also converted from adjectival to numeric values as shown in Table .

Table Numerical values assigned to responses

Adjectival value	Don't know / Not applicable	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Numeric value assigned	0	1	2	3	4	5

The numerical values assigned were chosen to ensure that a higher value indicated stronger support for the concept being investigated. As noted above, to reduce bias, the questionnaire included statements both supporting and opposing a given idea. For statistical analysis it was then necessary to align all responses to the same sense. To maintain the relationship between a high value and strong support, the sense chosen was support for the category of the statement. To achieve this, where a statement was worded in contrary fashion, the scores for that statement were reversed to align a high score with an attitude that supported the category rather than with the statement. For example, for Statement 36 "In my region consent decisions go to the side with the most experts" which investigated perceptions of equity, strong agreement would indicate inequality in the process, and so scores for this statement were reversed.

The resulting numeric values for each actor class and for the entire data set were checked for deviation from the assumption of having been drawn from a normal population using D'Agostino and Pearson's (1990) omnibus test for skew and kurtosis. Sufficient deviation was found to suggest that the Kruskal Wallis test for difference in median values would be the most appropriate tool for analysis. Where this test showed a significant difference between the values for actor classes, post hoc pair wise analysis was conducted using Mann Whitney tests. A Bonferroni correction was not applied at this stage out of concern that, in view of the small sample sizes and number of variables measured, the decrease in type I errors would be balanced by a similar or greater increase in type II errors (Nakagawa, 2004). When analysing responses within categories, 'Don't know' responses were removed before analysis, and have been reported separately.

The literature is conflicted over the validity of combining results from individual statements for analysis. Clason and Dormody (1994) argued that Likert never considered the possibility that individual responses would be analysed. They go on to state that Likert scales, that is data combined from responses to several statements using an arbitrary scale as proposed by Likert, characterise a respondents' attitude, and should be considered as an underlying continuous variable that cannot be measured directly. This view is supported by Carifio and Perla (2007) who pointed out that analysis of responses to individual statements introduced family wise errors associated with repeated statistical testing. They suggested that such an approach was akin to a one question intelligence test, and likened such an analysis to an 'unorganised laundry list' (Carifio & Perla, 2007, p. 110), whose validity was further diminished when applied in qualitative analysis. A contrary view, raising concern over the tendency of amalgamation to increase the lumpiness of the data has been expressed (Gardner & Martin, 2007). However, the objections put forward appears to be based as much on the presumed subsequent analysis using parametric tests, as on the underlying concept. As it is intended to use non parametric analysis, and the object of interest in this research is the underlying opinions and attitudes of actors as suggested by Clason and Dormody (1993), it is considered that the analysis of results in groups of statements relating to specific areas of interest, is justified.

Concern has also been expressed in the literature of an over-reliance, particularly in connection with Likert response survey data, on null hypothesis statistical testing. The suggestion being that more emphasis should be placed on effect size, a calculation that can give a better understanding of real world effects than a binary accept / reject test for a common mean (Barnette, 2006; Ferguson, 2009; LeCroy & Krysik, 2007; Neill, 2011). LeCroy and Krysic noted it is widely accepted that many statistically significant results do not represent anything of practical significance, and that practical importance is normally determined by the size of the effect. The debate over the validity of parametric tests when analysing Likert scales extends to this area with several parametric tests of effect size advocated, most commonly Cohen's *d* (Howell, n.d.; LeCroy & Krysik, 2007; Trusty, Petrocelli, & Thompson, 2004). However, the statistic considered most appropriate for ordinal data is Cliff's delta (Hess & Kromrey, 2004; Romano, Kromrey, Coraggio, & Skowronek, 2006), and consequently this metric has been chosen for this analysis.

Although arbitrary figures representing 'large', 'medium', and 'small' effects have been calculated for Cliff's delta, based on the values accepted for Cohen's *d* (Hess & Kromrey, 2004; Romano et al., 2006), it should be noted that these values *are* arbitrary, and that Cohen did not intend them to be used rigidly (Trusty et al., 2004). Rather, the practical interpretation of effect size is context dependent (Hill, Bloom, Black, & Lipsey, 2008; LeCroy & Krysik, 2007; Trusty et al., 2004). In the following analysis, calculated effect sizes have been reported against the benchmarks derived from Cohen's *d*, but the interpretation has been based on these in the context of other parts of the research and reports in the relevant literature considered in Chapter 2.

Although there is wide recognition in the literature, as noted above, and in Chapter 2, of the importance of Weltanschauung in the definition of, and in methodologies seeking to resolve, messy problems, there is little evidence that previous attempts have been made to directly evaluate and compare the Weltanschauungen of actors involved. Both Lamb (1998), and Yeung (2005) have proposed methods in the context of Soft Systems Methodology (Checkland, 1981; Checkland & Scholes, 1990). Lamb proposed the use of petri nets to model, and combine, the Weltanschauungen of actors, but as pointed out by Yeung this approach obscures emergent properties of the system and is reliant on

linking common properties of Weltanschauungen. Lamb also conceded that the example given is mechanistic and not one where consideration of Weltanschauung would normally be contemplated or necessary. Yeung in turn proposed a hierarchical tree model, but failed to indicate how this might be applied in the absence of a shared root Weltanschauung, or how the root Weltanschauung could be determined. Although either of these methods could be useful in exploring Weltanschauungen, neither provides an immediate means of demonstrating that different Weltanschauungen exist.

To meet this requirement, a graphical approach is proposed. Each actor groups' collective Weltanschauung is considered to be defined by their overall support for each of the main themes identified in the preparation of the questionnaire. To quantify this, the scores of each actor group for each attribute were reduced to binary support / reject categories, with neutral responses ignored. The difference between the positive and negative counts was then expressed as a percentage of the total. The resulting values were then graphed using a radar plot to clearly identify differences both quantitative; graphs similarly shaped but with areas of different magnitudes; and qualitative, indicated by differently shaped graphs. The results of this research and its analysis are presented in the following chapter.

CHAPTER 4. Results of investigation

As noted in the previous chapter, this investigation consisted of two parts within a case study framework. This chapter presents the results of the investigation conducted. The first section of the chapter presents the results of the first part of the investigation, the analysis of historical data regarding offset mitigation. The second and third sections record the analysis of responses to the questionnaire. The second section deals with the response rate, and the incidence and impact of missed and 'Don't know' responses. The third section presents the analysis of the responses received, and is also subdivided into three main parts. These sub sections deal with in turn: the factors that are considered to represent any differences in the Weltanschauungen of actors in the resource consent process; actors perceptions of the equity of the process and of outcomes; and a comparison of respondents views on who is and who should be responsible for key tasks required to establish ecological equity in cases of offset mitigation.

4.1 Review of historical data

The initial approach to councils for details of all notified consents since 2000 showed a wide variation in their ability and willingness to provide the information requested. Few councils provided the ability for the general public to make searches of resource consent information directly. It also became clear that with the exception of Auckland Regional Council (ARC) and Christchurch Regional Council (CRC), neither the information collected by councils, nor the information systems utilised to store information concerning resource consents, were designed to facilitate retrieval of information concerning conditions imposed. For the majority of councils contacted, identification of cases of offset mitigation was reliant on the institutional knowledge of the staff involved. In the majority of cases, those staff members were very helpful, both supplying copies of files and suggesting other sources for material. A summary of the examples found is shown in Table .

Table Numbers of consents and examples of offset mitigation by council

Council	Notified consents	Total consents specifying mitigation	Total consents specifying Offset mitigation
Northland	na	na	2
Auckland	1,116	175	6
Bay of Plenty	na	na	na
Hawkes Bay	418	36[4]	1
Manawatu Wanganui[1]	na	na	na
Taranaki	223	na	na
Waikato	na	na	na
Wellington	502	na	8
Canterbury[3]	na	216	1
Otago[2]	1,242	na	na
Southland	836	na	5
West Coast[2]	na	na	na
Tasman	na	na	na
Marlborough	na	na	na
Nelson	na	na	na
Gisborne	na	na	na

Notes:
1. Officers stated that examples recalled could not be considered as offset as no comparison was made between loss and gain.
2. Officers stated verbally that they could not recall any examples of offset mitigation being used.
3. Complete analysis of records from CRC was prevented due to inaccessibility of records following earthquake damage to CRC building in Feb 2011
4. Hawkes Bay regional council use a standard form of words in consents that includes the requirement to comply with any mitigation specified, whether or not mitigation measures are imposed.

The documents obtained for the examples where offset mitigation had been used were examined for details of the methodology used to determine the appropriate offset. In the majority of the examples obtained, the only mitigation condition imposed was the preparation of a management plan and on-going monitoring for a specified contaminant. Where an offset was specifically mentioned a few cases required some form of ecological compensation, such as pest eradication programmes, but without any exchange currency or rationale for equating loss with offset being specified.

The most common consent category to which the technique of offset was applied was 'work in a water course'. This typically involved an application to either pipe or canalise a permanent and previously unmodified water course. In these examples, most councils applied a common 'exchange rate' per meter of water course lost regardless of any ecological assessment. In the seven examples of Land use consent (work in a stream) for which the ARC required mitigation over the period 2005 –2010, five calculated the offset mitigation required on the basis of $\$330m^{-1}$ of stream lost, and the remaining two specified that a length of riparian planting 'equal to or greater than' that

lost should be carried out. It should be noted that the examples found were all processed prior to the adoption by ARC in October 2007 of the Stream Ecological Valuation methodology. This methodology was introduced to determine the ecological value of steams, and as an aid to assessing comparable value between loss and compensation. No examples of the use of this methodology were found in the notified consents provided by the ARC that had been processed after that date.

The technique of using a dollar value as compensation derived from a lineal or area measure of the resource habitat lost was also used by Southland and Wellington Regional Councils. In the case of Southland, land area was considered the appropriate currency of exchange when considering wetland drainage. This was then converted to a monetary value based on current market rates for the area and land type in question. Similarly, although Environment Waikato does not make any exchange rate explicit, the $60K imposed by it in the case of Whitianga Waterways (*Resource consent hearing 102425*, 1999) as compensation for the removal of a 200-metre reach of pipi bed, plus an estimated 0.6 hectares of mangroves and associated saltmarsh habitat, compares closely with the lineal metre exchange rate used by the ARC.

Cases from Southland and Wellington regional councils also provided examples of valuing ecological loss in terms of monetary units. In the Southland example (*H163-006 Permit to drain wetland* 2010), an area with a similar ecology (wetland) was to be provided as compensation. Here applicants sought to minimise their costs by arguing for a higher land value for that provided as compensation than the market value proposed by council officers. In the Wellington example (*WGN080187 Divert stream and drain wetland*, 2009), an out of kind mitigation (fencing of streams) was proposed to compensate for loss of streams and wetland. Here the applicant sought to minimise the proxy dollar value assigned to the loss. In both cases the goal of subsequent arguments devolved from considerations of ecological equity into agreement on a dollar value.

4.2 Response to questionnaire

A total of 173 survey forms (see Appendix A) were mailed in July 2011. Forty one were returned by the requested date, and a reminder letter resulted in a further 18 responses. In addition, 21 questionnaires were returned unopened as the potential respondent was

no longer at that address. This gave a total response of 59 out of a possible 152, a response rate of 39 percent, well within the range expected for a postal survey. This response rate also compares well with those reported elsewhere for surveys concerning environmental issues. For example, the biennial survey of public perceptions of the New Zealand environment reports an average response rate of 44.5 percent over the period 2000 to 2008 (Hughey, Kerr, & Cullen, 2008)

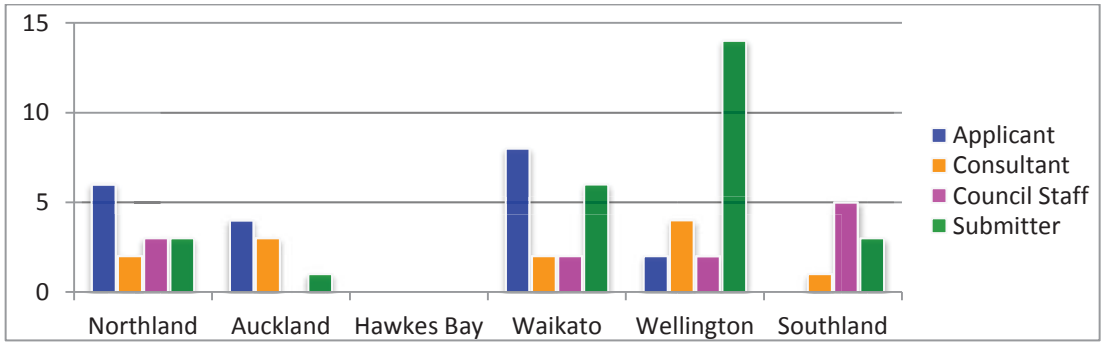
Of the responses received, a rate of over 50 percent was achieved for council staff and consultants. A good response rate was also achieved for applicants. Responses from submitters, by contrast, were rather poor, with response rates of 30 percent or less from all categories apart from Non-Governmental Organisations (NGOs). This breakdown is not definitive however, since some respondents identified themselves as having dual roles as both individuals and community representatives. The final breakdown of responses is shown in Table .

Table Response rate by actor type

Actor type	Number sent (excl. return to sender)	Replies received	Percentage response (%)
Applicant	25	12	48
Consultant in support of applicant	10	7	70
Council staff	21	12	57
Consultant in support of council	3	1	33
Individual submitter	59	16	27
Submitter on behalf of local community organisation	10	3	30
Submitter on behalf of local iwi	6	2	29
Submitter on behalf of National NGO	8	3	38
Submitter on behalf of Dept of Conservation	10	3	30
Total	**152**	**59**	**39**

The low numbers of responses for some actor classes makes analysis at the lowest level of categorisation problematical, and consequently no attempt has been made to differentiate between consultants who identified as acting for councils and those who identified as acting for applicants. Similarly, since with submitters the problem of low numbers within sub categories is compounded by the number that selected multiple roles, no attempt has been made to disaggregate responses within this category of actor. It is also noted that the majority of consent applications considered, particularly those in Northland and Waikato, were high value subdivisions where any financial burden imposed by an offset requirement could be passed on to the ultimate purchaser. In

addition, any compensatory work undertaken on site was likely to enhance the resale value of the properties. These applicants are therefore likely to have a different view to those for whom an offset requirement could be perceived as a direct cost. The distribution of responses by region and actor class is shown in Figure .



Note 1: Nil response from Hawkes Bay
Note 2: Regions limited to those where case studies occurred
Note 3: Since some respondents dealt with more than one council the totals shown will exceed the number of respondents.

Figure Distribution of responses by region

Overall, there were few occurrences of respondents failing to answer a question. A total of eight respondents missed one or more questions, sixteen in total or 0.5 percent of possible responses. There was no discernible pattern to the questions missed. Only two questions were missed by more than one respondent, and no statement was missed by more than two respondents.

Incidence of 'Don't know' responses was also low. A total of 176 'Don't know' responses were received out of a possible 3,540, or just under 5 percent. Within this total five respondents accounted for 45 percent of the total (79 responses). Similarly, four statements accounted for 24 percent (42 responses) of the total; or a 'Don't know' response rate for those statements of 18 percent. The highest number of 'Don't knows' occurred for statements seeking to explore the perceived equity of outcome, and lowest for those exploring attitudes to the natural environment.

In all, ten statements out of 60 had a 'Don't know' response from six or more respondents. For seven of these statements, the majority of 'Don't know' responses were from submitters. These seven statements related to processes that would not necessarily occur under public scrutiny. However, it could be argued that if the

procedures in question for example; use of ecological services to quantify ecological loss, not net loss policy etc., were in place, councils would wish to publicise the fact, and that consequently, lack of knowledge of their existence could reasonably be taken to imply that they do not in fact exist. It is also possible that the terminology used in the statements was unfamiliar to respondents and this resulted in a 'Don't know' response.

4.3 Analysis of questionnaire responses

This section presents the results of the analysis of responses to the questionnaire. For analysis the survey results were divided into three groups. The first group consisted of those statements that sought actors' views on general concepts related to the use of natural resources and the RMA, that were considered to be indicative of any underlying Weltanschauung. The results for this group are presented in section 4.3.1. The second group comprised those statements that explored actors' views of the equity in process and outcome of consent hearings involving offset mitigation, the results of which are shown in section 4.3.2. The results for the third group which considered differences between current practice and actors' views of optimum conditions for the establishment of equity are given in section 4.3.3.

In the following and all subsequent discussions on raw response rates, percentages quoted are calculated with 'Don't know' responses excluded. The aligned responses to these statements expressed as a percentage of the response by actor class are shown in the accompanying bar charts. Percentage values for 'Agree' and 'Strongly agree' responses have been coded as positive, whilst those for 'Disagree' and 'Strongly disagree' have been coded as negative. Thus in the following figures in this chapter, complete disagreement with the aspect queried would be shown as -100%, whilst complete agreement would be reported as +100%. 'Neither agree nor disagree' responses have been split evenly between positive and negative values. All statistical calculations were performed using the SOFA Statistics package v 1.1.3

4.3.1 Establishing actors' Weltanschauung

In the context of resource consent applications under the RMA, the aspects of an actor's Weltanschauung that are considered likely to affect their view of the outcome were their view of:

- The current state of the environment;
- The degree to which conservation efforts and finance should be targeted;
- The acceptability of constraint on the use of natural capital;
- The success of the RMA in managing the use of natural resources sustainably;
- The existence of bias in the resource consent process;
- The importance of lay evidence; and
- The ability of all stakeholders to participate effectively in the consent process.

In the following sub-sections the responses to the groups of statements that explored these aspects are considered in turn. A descriptive analysis of responses to the group of statements is provided as is descriptions of responses to individual statements where these have particular relevance, or differ from the response to the overall group. This is followed by the results of statistical analysis of the grouped results. Each sub-section concludes with a brief summary of the implications that can be drawn. In groups of statements that contain both positive and negative forms of the same statement, the results of comparing these are given prior to the statistical analysis of the group.

4.3.1.1 The current state of the environment

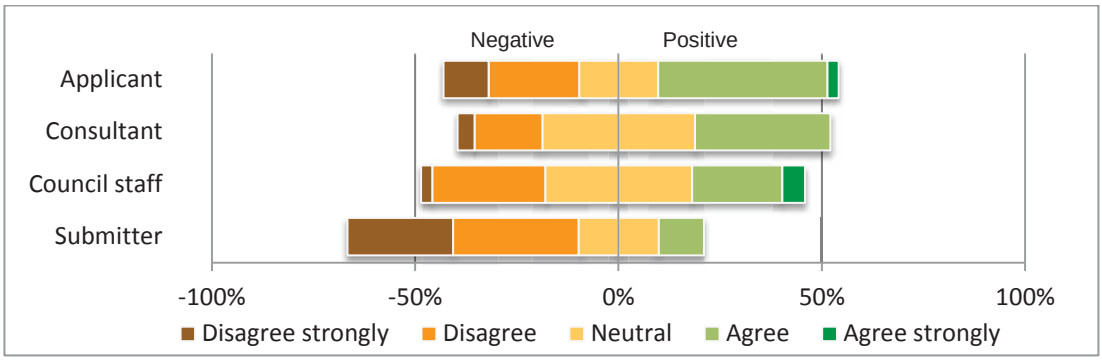
Three statements explored the perception of respondents towards the current state of the natural environment in their region and these are listed in Table .

Table Statements exploring views of the state of the natural environment

No.[1]	R[2]	Statement
26	Y	Indigenous ecosystems are being destroyed at an increasing rate in my region.
43		The environment is well managed in my region.
52		Councils in my region have adopted a 'no net loss' policy towards the natural environment

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

To establish a view of the underlying attitude that gave rise to actors' responses to these statements, the results for each statement were initially aligned with the sense of the aspect being investigated, in this case the current state of the natural environment. Thus agreement with statement 26 indicated a poor state, and so responses to this question were reversed. The combined and aligned results were then graphed (Figure) and analysed. This procedure was repeated for all subsequent sets of statements.



Note 1. 'Don't know' responses have been excluded in this and all subsequent figures
Note 2 Percentage rates calculated as positive for support, and negative for disagreement.
Note 3 'Neither agree nor disagree' responses split evenly between positive and negative.

Figure Views of the state of the natural environment

Based on the aligned responses to these statements, shown in Figure , submitters were alone in having a distinctly pessimistic view of the state of the natural environment, with only 13 percent of responses representing a positive view. Submitters also had the highest level of 'Strongly disagree' responses to these statements, at 30 percent. Whilst applicants had the highest number of positive responses (50 percent), they also recorded the second highest number of strong disagreement (11 percent). For both council staff and consultants, the highest category of response was 'Neither agree nor disagree' at 38 percent and 40 percent respectively [15].

Since the combined responses in Figure shows an apparent difference in the views of actor classes with regard to state of the natural environment, a Kruskal Wallis test was conducted to establish if this difference was significant. Table 12 presents the mean (a higher mean indicating a more positive view of the state of the environment), and standard deviation for each actor class, plus the Kruskal Wallis test statistic.

[15] Statement 52 in this group attracted 11 'Don't know' responses out of a possible 59, the highest rate recorded, and one of only three statements to attract this level. Seven of the 'Don't know' responses were from submitters.

Table State of the environment, responses by actor group

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	3.03	1.12	24.44***
Consultant	3.09	0.87	
Council staff	3.00	0.95	
Submitter	2.18	1.00	

*** $p < 0.001$

Analysis of the aligned responses using the Kruskal Wallis (KW) test indicated that responses were significantly related to actor group membership at the 1 percent level of significance ($p = 0.000$ (3dp)). Further analysis of the group was conducted using Mann Whitney tests to explore differences between pairs of actor classes (see Appendix B, Table B1). The effect size of the difference between responses for pairs of actor classes was also calculated to obtain Cliff's delta. These calculations confirmed that effect of actor class on responses was significant at the 1 percent level between submitters, and those of all other actor classes. Effect size calculations, when comparing responses of submitters with those of other actor groups were large (Cliff's δ ranged from 0.41 to 0.45). These results support the findings from the KW test that that there is a consistent and large difference between the views of submitters and those of each other actor group for this aspect of actors' Weltanschauung. However, whilst a difference in views between submitters and applicants could be anticipated due to their opposing position in the context being investigated, a different view of the current state of the environment is not necessarily an outcome that could be assumed a priori.

4.3.1.2 Targeting conservation effort

The statements shown in Table sought to explore attitudes to the conservation of indigenous ecosystems and the implications of this for management practices and on-going financial costs.

Table Statements on targeting conservation

No.[1]	R[2]	Statement
1	Y	We are currently preserving enough of New Zealand's natural ecology.
10		We have a duty to preserve remaining New Zealand species.
19		On-going management will always be required to maintain re-created indigenous ecosystems
49	Y	The least damaged ecosystems should receive priority for conservation.
57	Y	In my view conservation efforts should be restricted to endangered species.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

The aligned responses to these statements are shown in Figure , and represent the degree to which actors support the concept of a targeted, and hence limited, approach to conservation.

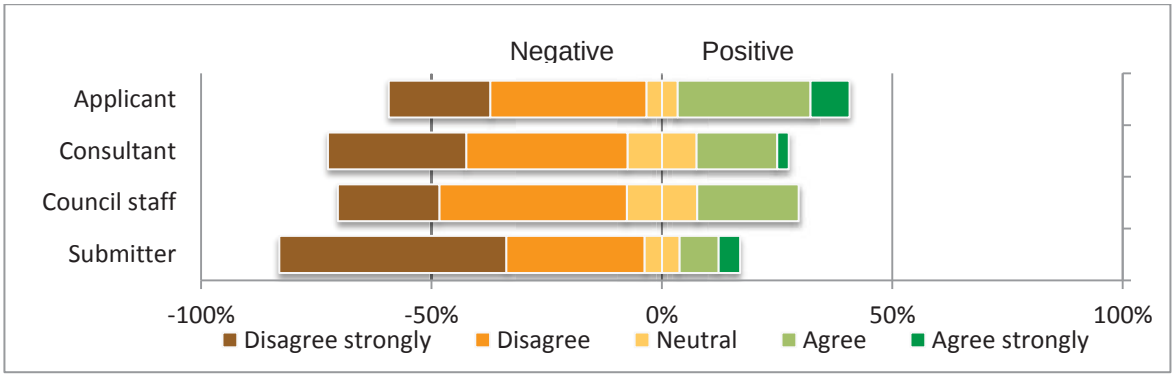


Figure Support for targeting conservation

The distribution of the aligned responses shown in Figure indicate that there was little support for the concept of targeting conservation effort, with applicants most in favour at 37 percent, and submitters the most opposed at 79 percent. One submitter made the comment on the returned questionnaire that priority should not be taken to imply exclusivity, and that no native ecosystem was expendable.

When a Kruskal Wallis test was conducted on this group of results, it showed (Table) that the aligned responses indicated that the views expressed stemmed from an underlying attitude to conservation that was significantly influenced, at the 1 percent level (p = 0.000 (3dp)), by membership of an actor class.

Table Targeting conservation, response by actor group

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	2.68	1.33	21.713***
Consultant	2.28	1,15	
Council staff	2.37	1.07	
Submitter	1.89	1.15	

*** p < 0.001

Subsequent comparison of responses between actor classes using Mann Whitney tests (Appendix B, Table B) confirmed that the more strongly expressed views of submitters, and their low level of agreement with any statement in the group represented an underlying attitude that was significantly different at the one percent level to those of

both applicants (p = 0.000 (3dp)), and council staff (p = 0.001), and that the difference between views of submitters and consultants was also significant at the 5 percent level (p = 0.034). The effect size calculated for all comparisons with submitters' responses was between small and medium. The largest effect size was for the comparison between submitters and applicants (Cliff's $\delta = 0.32$), and the smallest between submitters and consultants (Cliff's $\delta = 0.18$), supporting the results of the Mann Whitney tests.

The analysis of responses to this group of statements indicate that it is statistically very unlikely that the views of submitters, as expressed through their responses, arose from a viewpoint of conservation and the environment that is shared with other actor groups. The effect sizes calculated, together with the results of the Mann Whitney tests indicate that the difference in views exposed varies. For this aspect of Weltanschauung, the greatest difference exists between the views of submitters and those of applicants and council staff. Despite those surveyed having predominantly acted for applicants, consultants showed a viewpoint more closely aligned with submitters, although the difference was still statistically significant. This closer alignment could perhaps be anticipated, due to involvement of both groups in conservation at a practical 'hands on' level.

4.3.1.3 Sustainability – support for constraints on the use of natural resources.

This set of five statements, shown in Table , focus on the acceptability of constraints on the use of natural capital, either directly or through substitution of manmade capital.

Table Constraints on the use of natural capital

No.[1]	R[2]	Statement
2		I believe our economic needs can be met without further depletion of natural resources.
3	Y	Economic growth is essential for society .
8	Y	I believe that technology will always be able to deal with environmental problems arising from development.
22		The public has a right to prevent a land use that will damage the environment.
46		A restriction on economic growth is implicit in the RMA requirement to sustainably manage natural and physical resources.
51	Y	I don't believe we can afford to restrict use of natural resources.
53	Y	Public opinion should not be allowed to constrain how those who work on, and improve their land, can use it.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

In this group, two pairs of statements, 2 and 51 and 22 and 53 explored the same concept from opposite viewpoints. The aligned responses to these two pairs of statements were compared by actor class using Mann Whitney test. The results are shown in Table .

Table **Comparison of responses to positively and negatively phrased statements**

	Comparison between responses for 2 and 51				Comparison between responses for22 and 53			
	Possible matches[1]	p	U	z	Possible matches[1]	p	U	z
Applicant	144	0.21	50.5	1.27	144	0.30	54.5	1.02
Consultant	64	0.92	31.0	0.11	64	0.34	23.0	0.96
Council Staff	144	0.47	59.5	0.73	144	0.25	53.0	1.15
Submitter	729	0.31	307.0	1.02	729	0.42	319.0	0.81

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.

The results indicate that the sense in which the concept was presented had no significant effect on responses for any actor group. The results for the group were therefore analysed as previously.

The percentage distribution of responses for this group of statements (Figure), shows that overall, applicants and consultants were equivocal about the degree to which sustainable use of natural resources could be accomplished or allowed to limit economic development.

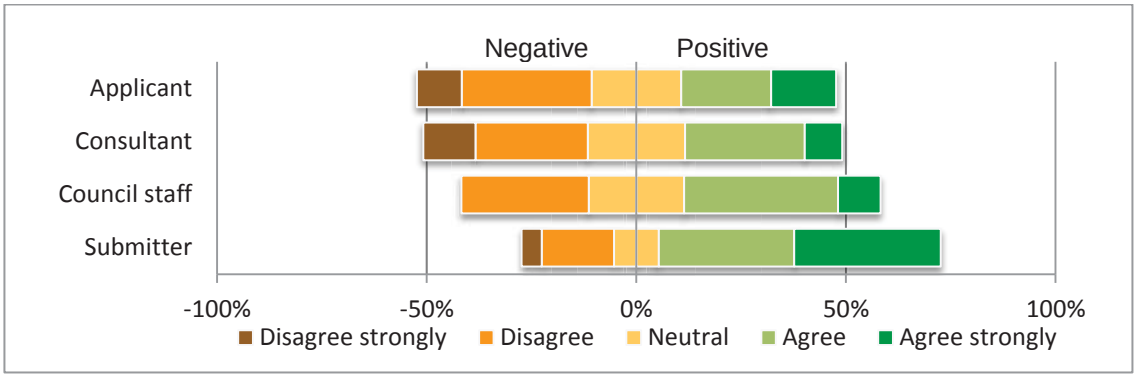


Figure **Views on constraints on the use of natural capital**

More council staff supported constraint than opposed it, but their 30 percent support also indicates that a strong commitment to economic growth exists within the actor class charged with regulating the use of natural resources. One submitter, who dealt with

many regions, commented that this predisposition was particularly evident when consents concerned with farming were considered (see Appendix D Table D1). Submitters overall were largely in favour of restraint and were pessimistic about the ability of technology to replace natural capital; although a significant minority (22 percent) held a contrary view. When the aligned responses to this set of statements were analysed for correspondence between views expressed and actor class using the Kruskal Wallis test (Table), this relationship was shown to be significant at the 1 percent level of significance (p = 0.000 (3dp))

Table Constraints on the use of natural capital, comparison of responses

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	3.0	1.26	33.99***
Consultant	2.95	1.20	
Council staff	3.27	1.01	
Submitter	3.75	1.24	

*** p < 0.001

Further, pairwise analysis using the Mann Whitney test conducted on differences in attitude between actor classes confirmed that there was a difference in responses at the 1 percent level of significance between those of submitters and those of other actor classes (see Appendix B Table B). Submitters were more supportive of constraining the use of natural resources, and more sceptical of the capability of technology to alleviate future resource problems. Calculations of Cliff's delta comparing responses of submitters with the other actor groups consistently showed a medium sized effect, ranging from 0.27 (vs council staff) to 0.37 (vs consultants).

The results of the effect size calculations suggest that a larger practical difference in attitude exists between submitters and consultants, rather than between submitters and applicants. The latter result is contrary to expectation given the antipathy of applicants, as reported in the literature, to any constraint on their activity.

4.3.1.4 Effectiveness of the RMA

The set of statements presented in Table explored actors' perceptions of the success of the RMA, or more pertinently as one responder commented, the way in which the RMA has been implemented; in achieving the stated intent of sustainable use of natural resources.

Table Success of RMA in managing the environment

No.[1]	R[2]	Statement
24	Y	In my region conditions imposed at consent hearings are restricted to criteria that are easily monitored.
25	Y	In my view the RMA has failed to protect the environment for future generations
27		The RMA requirement to Avoid, Remedy and Mitigate is a mandatory hierarchy that must be followed.
28		In my region environmental planning is reactive.
31	Y	In my area regional and district plans are too concerned with rules and not enough with outcomes.
54		The needs of future generations are a major determinant of the outcome of consent applications in my region.
60	Y	In my view offset compensation is often used by applicants to purchase resource consents.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

This set of questions also included a reversed pair, statements 25 and 54, concerning the degree to which the needs of future generations were considered in resource consent decisions. The responses to these two statements were aligned and compared using the Mann Whitney test, with the results shown in Table .

Table Intergenerational needs - Comparison of responses to positive and negative statements.

	Comparison between responses for 25 and 54			
	Possible matches	**p**	**U**	**z**
Applicant	144	0.598	63	0.527
Consultant	64	0.703	28.5	0.381
Council Staff	144	0.906	70	0.118
Submitter	729	0.382	315	0.874

The results of comparing the aligned results indicate that responses were not influenced by the wording of the statement for any actor class. When the results of the aligned responses were considered, the distribution shown in Figure suggested that apart from submitters, who had an overall pessimistic view of the success of the RMA with only 22% being positive, actors were again equivocal in their views.

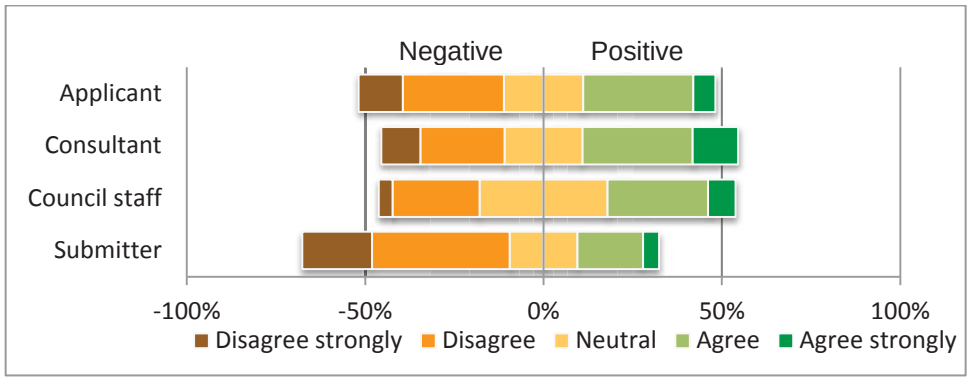


Figure **Views of the success of the RMA in managing the natural environment**

Council staff were least likely to express an opinion with 36 percent 'Neither agree nor disagree' responses. Consultants recorded the highest (13 percent) responses strongly agreeing with success, and applicants, although having a balanced view overall, recorded the second highest rate of 'Strongly disagree' views. These results were compared using the Kruskal Wallis test, which confirmed that a difference based on actor class existed at the 1 percent level of significance (p = 0.000 (3dp)), see Table

Table Success of RMA comparison of views

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	2.9	1.16	23.346***
Consultant	3.11	1.23	
Council staff	3.12	0,99	
Submitter	2.5	1.13	

*** p < 0.001

Subsequent to the initial Kruskal Wallis analysis, a comparison of the responses between pairs of actor classes was conducted using the Mann Whitney test. These confirmed that there was no significant difference in the responses received from applicants, consultants and council staff, but that a difference existed at the 1 percent level of significance between submitters and all other actor classes (see Appendix B Table B). The common difference in significance between the views of submitters and those of other actor groups is clarified by the effect sizes calculated, which showed a similar medium effect when comparing submitters with council staff and consultants (Cliff's $\delta = 0.29$ and 0.27 respectively), but a smaller effect (Cliff's $\delta = 0.19$) when compared with applicants. The differences in effect sizes indicates that, when consideration is restricted to the role of the RMA in protecting the environment, the

views of applicants may be more closely aligned with submitters than might be expected.

4.3.1.5 Bias in the resource consent process

To explore actors' perception of bias in the resource consent process, two statements considered predisposition at a policy level towards economic growth, and one the degree to which the uncertainty of the cost of ecological equity would be allocated (Table).

Table Bias in resource consent process

No.[1]	R[2]	Statement
9		Those investing in development cannot be expected to bear the on-going costs of offset mitigation if the initial actions taken fail to achieve ecological equity with the adverse effects
18		Regional plans and policies in my region favour development over the environment.
42		The councils I deal with are predisposed to support consent applications that provide economic growth.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

The percentage distribution of responses to this group of statements is presented in Figure

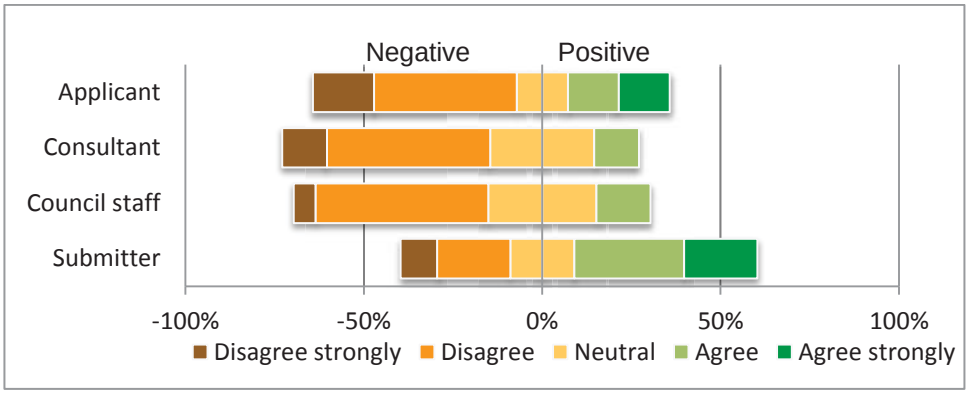


Figure Perception of bias in resource consent process results by actor class

Figure shows that apart from submitters, a majority of actors disagreed with the idea that there was inherent bias in the RMA process towards development, either directly (statements 18 and 42), or through the lack of appropriate financial impost on development where offset mitigation had been used. A substantial proportion of submitters (31 percent) also disagreed that the suggested bias existed, whilst 28 percent

of applicants agreed that it did. Since they are intimately involved with the process, the lack of agreement by consultants and council staff is perhaps unsurprising.
The observed difference in the distribution of responses by actor class shown in Figure , was confirmed to be significant at the 1 percent level (p = 0.000 (3dp)) when analysed using the Kruskal Wallis test, the results of which are shown in Table .

Table Influence of actor class on views of bias in RMA process

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	3.31	1.32	15.628***
Consultant	3.58	0.88	
Council staff	3.45	0.83	
Submitter	2.69	1.29	

*** p < 0.001

When Mann Whitney tests were conducted between paired actor classes, the only significant differences found were those between submitters and applicants, at the five percent level (p = 0.023) and between submitters and both consultants and council staff at the one percent level (p = 0.002). However, whilst the effect sizes calculated for the differences between the views of submitters and those of other actor groups also varied, they suggested a different relationship to those of the Mann Whitney tests. The values for the difference between submitters and both applicants and council staff was medium (0.29 and 0.27 respectively), whilst that between submitters and consultants was large (Cliff's $\delta = 0.43$).

Mann Whitney tests were also used to conduct a secondary analysis of the two statements that specifically addressed institutional bias; statements 18 and 42 (see Table B). These results again showed a significant difference in responses by actor class, restricted to comparisons with submitters. In these the differences between submitters and all other actor classes was significant at the one percent level (p = 0.000 (3dp)). Similarly, the effects sizes calculated using Cliff's δ were also much larger. The effect size for submitters compared to both applicants and council staff being 0.52 and for submitters compared to consultants 0.72.

The difference in the two sets of results suggest that perception of bias by submitters was engendered more by the political and institutional support for development and economic growth than by it was by concern for bias within the process itself. The

consistently higher effect when submitters were compared with consultants may reflect the level of investment consultants have in defending a process that provides their income, and the degree to which they perceive suggestions of bias as an attack on their professional standing as impartial experts.

4.3.1.6 Perceptions of the ability to participate – importance of lay evidence

Two sets of statements explored the ability of the general public to participate in and influence the outcome of resource consent hearings. This first set (Table) sought views on the ability of lay submitters to effectively challenge the dominant decision making paradigm by inclusion in decisions on what information is relevant; the comparative weight given to qualitative data; and the preference given to formally qualified witnesses.

Table Importance of lay evidence

No.[1]	R[2]	Statement
11		Lay opinions are as valid as those of technical and legal experts when considering the potential impact of resource consent applications.
12	Y	The public does not understand the complexities of resource use in a farming environment.
17		I believe the public should have a say in deciding what technical data is relevant in resource consent hearings.
35		In my region resource consent hearings give the same weight to intrinsic values as to financial costs.
58	Y	Values ascribed to emotional ideas such as a view should not be given the same weight as real financial costs.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

Inspection of the raw responses to these statements suggested a divergence of views between those involved with the RMA process on a daily basis, and those only interacting occasionally. The overall distribution of responses shown in Figure , shows that predictably, a majority of submitters (55 percent) were in favour of equal weight being given to lay evidence, and qualitative information. Equally unsurprising was that 46 percent of applicants disagreed. More surprising was the degree of support from applicants at 37 percent, and the level of disagreement from submitters (36 percent).

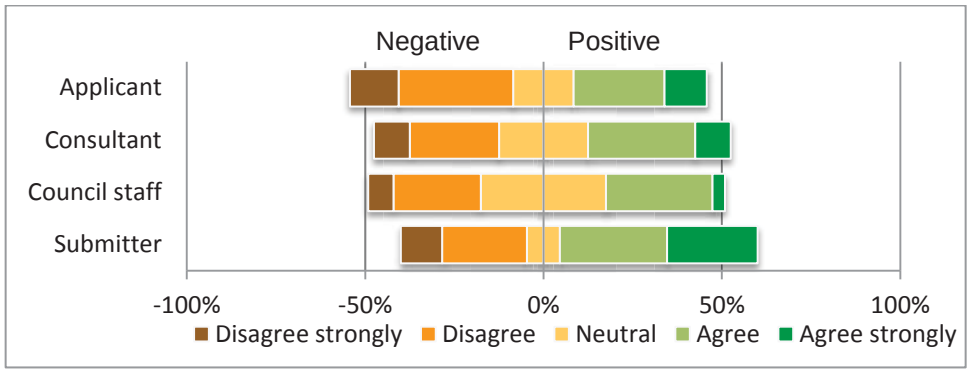


Figure Views on the importance of lay evidence

That the views of actor classes were not as clear cut as those for other aspects considered was confirmed by the Kruskal Wallis test, where a difference between the views of actor classes was found, but at the 10 percent level of significance ($p = 0.074$) as detailed in Table .

Table Views on the importance of lay evidence, by actor class.

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	2.9	1.27	6.934*
Consultant	3.05	1.18	
Council staff	2.98	0.99	
Submitter	3.34	1.38	

* $p < 0.1$

This indication that role was not as influential in determining an actor's responses to this set of statements as had been the case for previous sets, was borne out by subsequent analysis using Mann Whitney test, and the effect size calculations. Analysis of responses between pairs of actor groups gave a difference, significant at the 5 percent level, between applicants and submitters, and between council staff and submitters. No statistically significant difference was found between any other pairing (Appendix B Table B). Similarly, small effect sizes (Cliff's $\delta \approx 0.2$) were shown to exist between submitters and all other actor classes.

However an analysis of the statements directly referencing the validity of lay opinion (statements 11 and 17) showed that for these, the relationship between actor class and response was significant at the 1 percent level (KW test $H = 24.44$, $p < 0.001$). Mann Whitney tests showed that the difference in responses between submitters and applicants for these statements was still significant at the 5 percent level, whilst the

difference between submitters and both consultants and council staff was now significant at the 1 percent level. This change was echoed when the effect size was calculated. For these statements in isolation, the effect size between applicants and submitters was moderate (Cliff's $\delta = 0.34$), whilst when submitters' responses were compared with both consultants (Cliff's $\delta = 0.47$) and council staff (Cliff's $\delta = 0.63$) the effect size was large. The comparatively small differentiation between responses by actor classes overall, and the small effect sizes found for this group of statements supports the views found in the literature and discussed in Chapter 2, that the paradigm of rational unbiased expertise as a means of problem solving, remains strongly held by the public; even when faced with evidence of its failure.

4.3.1.7 Ability to engage in the RMA process

The last set of statements, shown in Table , investigate actors' views of the openness of the consent process towards effective public engagement.

Table Ability of the public to participate in the resource consent process

No.[1]	R[2]	Statement
14	Y	The implication that qualitative data is emotive is frequently used to discredit it in resource consent hearings.
21		In my region local communities' concerns are always taken into account in resource consent decisions.
23	Y	Too much time is wasted at consent hearings on emotive objections
30	Y	In my view developers and councils use non-notified consents to allow development damaging to the natural environment to slip past the public's notice.
44	Y	In my area councils are more concerned with processing consent applications quickly than determining outcomes.
45		In my region far too many resource applications are open for public consultation
56	Y	In my view quantifying environmental damage in dollar terms can distort participants views of the compensation required to avoid overall loss to the environment.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

Submitters were particularly concerned over the issues addressed by this group of statements. Overall responses, shown in Figure , indicate that only 17 percent of submitters did not consider the resource consent process hostile to their participation.

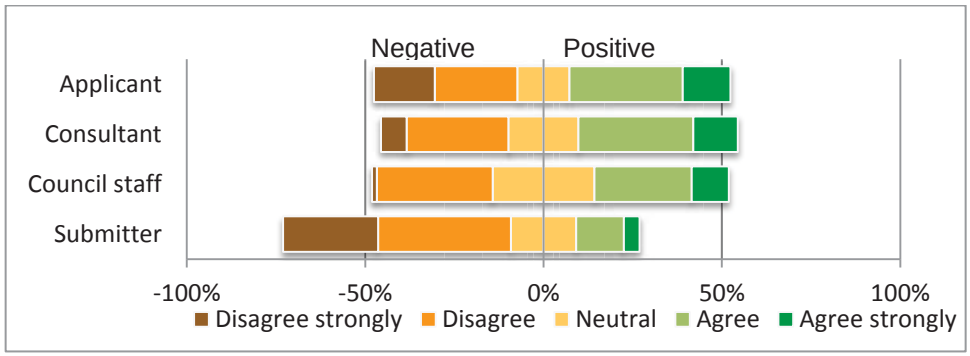


Figure **Ability of public to participate in the resource consent process, distribution of responses**

Apart from submitters, responses from all actor classes indicated that their views were evenly split between concern over the ability of the public to participate and belief that the current process was adequate. This apparent difference was substantiated by the results of the Kruskal Wallis test on this set of statements, which is presented in Table .

Table **Ability of public to participate in resource consent process – comparison of views**

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	2.94	1.34	38.231***
Consultant	3.14	1.18	
Council staff	3.01	1.11	
Submitter	2.24	1.17	

*** $p < 0.001$

The results in Table showed that there is a significant difference (at the 1 percent level) in the views of the different actor classes with regard to the ability of the public to participate in the resource consent process. Subsequent pair-wise tests showed that this significant difference in views was again limited to comparisons between submitters and other actor classes. In each case the Mann Whitney test showed that the views of other actors on the public's ability to participate in the resource consent process was different to that of submitters at the 1 percent level of significance (see Appendix B Table B). The effect size calculated for the difference between submitters and other actors varied, however. When compared with both applicants and consultants the effect size was between small and medium (Cliff's δ was 0.26 and 0.22 respectively) whilst the effect between submitters and council staff (Cliff's $\delta = 0.35$), was above the benchmark (0.33) for a medium effect. This difference in effect size again indicates that the difference in underlying Weltanschauung between submitters and council staff was

wider than between submitters and both applicants and consultants. Given the proposition explored by this section of statements, it is suggested that this difference is, once again, a reflection of council staff's 'ownership' of the RMA process.

4.3.1.8 Attitude to attributes as evidence of Weltanschauungen

Of the seven sets of statements that explored respondents' views on the natural environment, sustainability and the ability of the public to participate effectively in the resource consent process, all showed that the opinions recorded were influenced by membership of an actor class. For six of the sets of statements, the difference in views between actor classes was statistically significant at the 1 percent level, whilst for the other, which explored actors views on the importance of qualitative data and lay opinion, the difference was shown to be significant at the 10 percent level.

In each case, post hoc pair-wise analysis of responses to these sets of statements confirmed that a significant difference existed between the views of submitters and those of other actors, but not between any other pairing. Calculations for Cliff's delta indicated a range of effect size from small to large. In only two cases, those which considered the relevance of lay opinion, and the current state of the environment, was there an indication that the effect size between the views of submitters and others was not influenced by actor class. Also worthy of note is that of the remaining five aspects, the difference between submitters and applicants was found to have the greatest effect size only in the case concerning targeting of conservation. For the other categories, the greatest effect size when compared with responses from submitters was found to be with Council Staff when considering the effectiveness of the RMA in protecting the environment, and the importance of lay opinion. Responses from consultants showed the greatest effect size compared to submitters for the sets of statements concerned with constraint on the use of natural capital, and ability of the public to engage in the consent process.

These results indicate that the conflict in cases of resource consent is far from the simplistic 'them and us' relationship between applicants and submitters that is most commonly portrayed. Rather it is suggested that the underlying theme connecting the disparity found in the responses can be validly ascribed to the existence of a qualitative

difference in Weltanschauung between submitters and all other actor classes. To illustrate this, the overall positive or negative scores for each attribute explored were plotted on separate axes for all actor classes and this is presented in Figure [16].

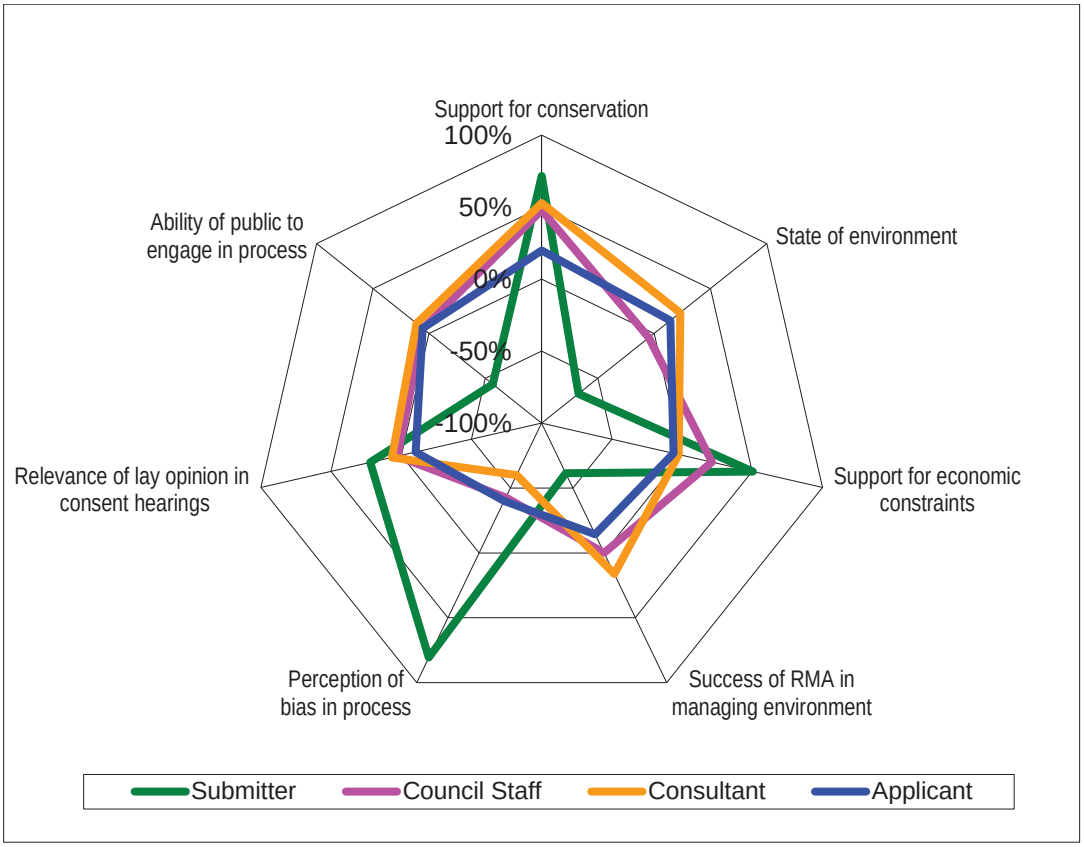


Figure Comparison of attributes contributing to actor's Weltanschauung

The graph of respondents' overall view of the attributes explored with regard to the resource consent processes (Figure) shows that the plot generated for the views of submitters is quite different in shape to those of other actor classes. The difference shown by this plot is supported by the statistical analysis previously reported, that respondents' views were significantly affected by membership of an actor class. Similarly supportive is the level of effect sizes shown to exist between the responses of submitters and other actors. It is therefore proposed that the unique shape of the plot for submitters, and the relatively similar plots of other actor classes is a valid indicator that submitters views derive from a significant and qualitatively different Weltanschauung.

[16] Neither agree nor disagree' responses were excluded and no weighting given to strongly held views.

Although at a detail level there are instances where there is a commonality of views across all roles, and where applicants and submitters have more in common with each other than with council staff and consultants, within the scope of this enquiry, submitters' results indicate a distinct Weltanschauung. It is suggested that the results found also support the view that this difference in Weltanschauung can be related to the two divergent beliefs examined in Chapter 2: the disparity between the view of natural resources as commodity or as intrinsically valuable, and support for the positivist scientific and economic paradigm as the optimum method of resolving resource allocation.

4.3.2 Considerations of equity

Four aspects of equity were considered when analysing responses to statements concerning the outcome of resource consents involving offset mitigation:

1. Equity of measurement.
   This group of statements explored the way in which the ecological value of offset and loss were measured, if these were applied consistently, and if the resulting data were compared in a manner that did not prejudice or pre-judge the outcome.
2. Equity of information.
   Here, the views sought were concerned with the way in which information was, or was not shared, or equally available to all participants.
3. Equity of power.
   This group considered ways in which the process of resource consent hearings can be manipulated to create barriers to participation by non vested interests.
4. Equity of outcome.
   Whether the existing process had delivered outcomes that were ecologically equitable in the eyes of the participants was explored by this group of statements.

To set the stage, a single statement (7) shown in Table , sought respondents' views on desirability of ecological equity when assessing loss and compensation.

Table **Statements exploring respondents' views on the desirability of outcome**

No.[1]	R[2]	Statement
7		In my view, offset compensation offered in mitigation for ecological loss should be evaluated on ecological equity, not financial equity.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

Figure shows by the percentage distribution of responses, that respondents were virtually unanimous in their agreement with this statement. Only three respondents disagreed, one applicant and two submitters, one of whom strongly disagreed.

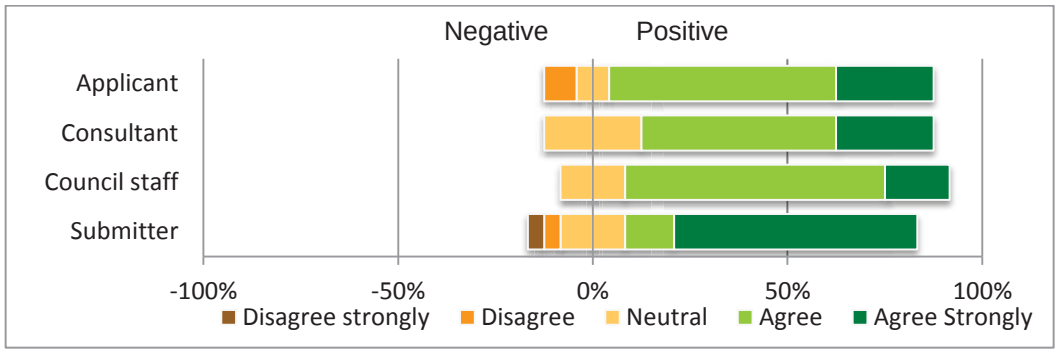


Figure **Views on desirability of offset comparison on ecological terms**

When a Kruskal Wallis test was conducted on the responses, it confirmed that membership of an actor class had no significant effect on response (H = 3.471, p = 0.325).

4.3.2.1 Equity of ecological outcome

Two statements explored respondents' views on how effectively the objective of ecological equity had been met in practice, are shown in Table .

Table Statements exploring equity of outcome

No.[1]	R[2]	Statement
47		In the consent hearing I was involved with, the compensation offered was shown to have the same ecological value as the loss.
48		In the resource consent hearings I have been involved with, everyone thought the outcome was fair.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

These two statements addressed the perceived equity of outcome, both directly in terms

of ecological value, and in the more general sense. The percentage distribution of responses to these statements is shown in Figure .

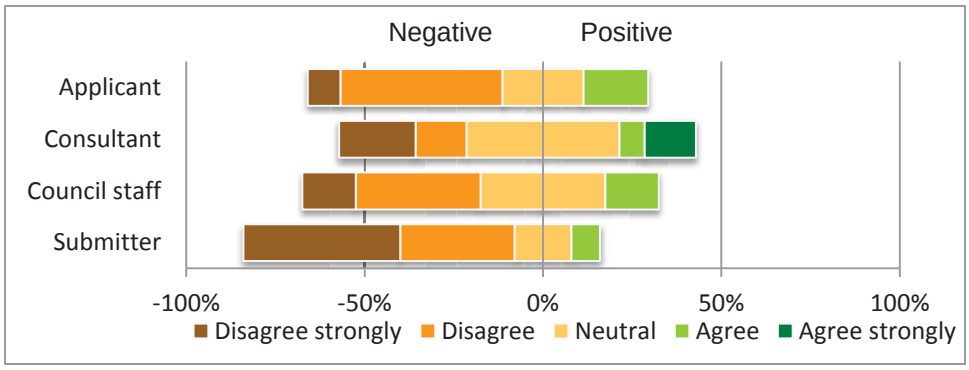


Figure Has ecological equity been achieved – views by actor class

A majority of responses for both submitters (76 percent) and applicants (54 percent) disagreed with both statements. Whilst more consultants and council staff also disagreed than agreed, consultants were alone as a class in expressing views strongly in agreement. Consultants, with council staff, also differed in having 'Neither agree nor disagree' as the largest percentage of responses. Despite the high percentage of replies from each respondent disagreeing with these statements, when they were analysed using the Kruskal Wallis test, a significant difference between actor classes was found at the 1 percent level ($p = 0.009$) as shown in Table .

Table Was ecological equity achieved in resource consent applications, views by actor class

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	2.45	0.96	11.625**
Consultant	2.79	1.31	
Council staff	2.5	0.95	
Submitter	1.88	0.96	

** $p < 0.01$

Subsequent Mann Whitney tests showed that a significant difference between responses by paired actor class was found only in comparisons with submitters, which were significant at the 5% level (see Appendix B Table B). The effect size calculated indicated that a medium sized effect existed between submitters and both applicants and consultants, Cliff's δ being 0.28 for both of these comparisons. In contrast the effect size for the comparison with council staff was smaller at 0.19. These results confirm

that a statistically significant and moderately sized difference exists in the views of different actor classes. However, the percentage distribution shown in Figure , and the mean values in Table , which are below 3 for all actor classes, indicate that the difference exposed is in the degree of negativity perceived rather than an opposing view.

4.3.2.2 Equity of measurement

Responses to the statements regarding equity of measurement, shown in Table attracted the highest level of 'don't know' responses of any group[17].

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[17] 'Statements 6 & 59 both had 22% of responses from submitters as 'don't know', whilst for statement 50, 18% of all responses were 'don't know'. Most surprising was the high incidence of 'don't know' and 'neither agree nor disagree' responses from council staff to statements that addressed measurement and valuation techniques. Council staff had a combined 'Don't know' response rate of 58% for statements 50 & 59.

Table Statements exploring equity of measurement

No.[1]	R[2]	Statement
4	Y	In resource consent hearings, the way future benefits are valued disadvantages natural resources.
5		The concept of ecosystem services is well understood in my region.
6		The councils I deal with use a variety of techniques to value natural resources.
13		Cost benefit analysis is the best method of evaluating the impact of resource consents.
29	Y	In my region consent conditions consistently fail to internalise the full cost of environmental effects
32	Y	In the resource consent hearing I was involved with, cost of measurement was a major constraint on the evaluation of the environmental impact.
34		The councils I deal with use appropriate technical expertise to evaluate environmental costs and benefits when considering resource consent applications.
50		In my region the concept of services provided by the environment is used to quantify benefits and loss when assessing ecological compensation.
59		The councils I deal with use a variety of techniques to incorporate intrinsic value in cost benefit analysis.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

This group of statements also attracted a high number of comments on returned questionnaires, particularly those statements that implied or referred to the use of the techniques of ecological economics to asses ecological and intrinsic values (see Appendix D Table D1). That submitters as a class had the least confidence that appropriate measurement techniques were utilised, or applied equitably, in assessing ecological loss or gain is shown by the percentage distribution of responses in Figure .

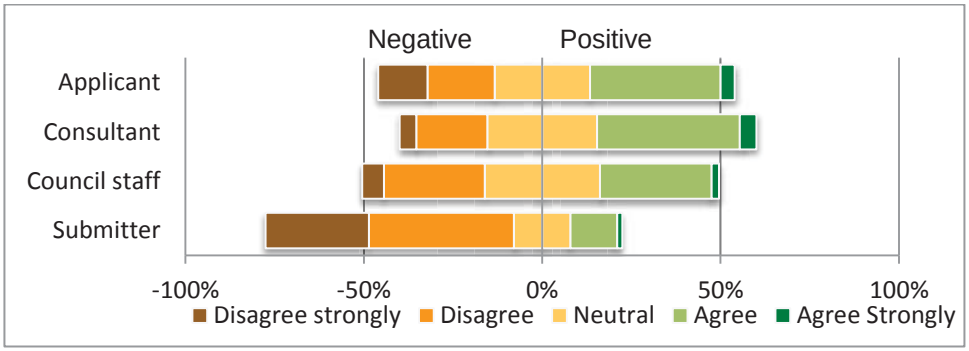

Figure Equity of measurement – actors' views

This difference was confirmed as significant by the Kruskal Wallis test. The results of this test, plus the mean value for each actor class are given in Table .

Table Equity of measurement, influence of actor class

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	2.98	1.13	72.629***
Consultant	3.2	0.97	
Council staff	2.95	0.96	
Submitter	2.17	1.04	

*** p < 0.001

Since the Kruskal Wallis test confirmed that responses were significantly affected by membership of an actor class at the one percent level (p =0.000(3dp)), further pairwise tests were conducted using Mann Whitney test (Appendix B Table B). The results of these tests again showed that a significant difference (p= 0.000 (3dp)) existed when the responses of submitters were compared with each of the other actor classes. No significant difference was found for any other pairing. The values of Cliff's delta calculated for pairings with submitters showed values consistent with a medium to large effect when compared to applicants and council staff (Cliff's $\delta = 0.39$ and 0.42 respectively), and of a large effect when compared with consultants (Cliff's $\delta = 0.52$).

Whilst the results of the Kruskal Wallis and Mann Whitney tests confirmed that the views of submitters were significantly different, the percentage distribution and mean values shown demonstrated that this difference arose from a view of the equity of measurement in the resource consent process that was distinctly more negative than other actor classes. The difference in effect size calculated also indicated that the greatest difference in viewpoint existed between submitters and consultants. It is suggested that this latter results again from the investment consultants have in the current process. The greater willingness of council staff to acknowledge problems, as reflected in the lower effect size, is suggested to relate the greater willingness, noted earlier, to criticise the process itself, where there is no implication of their responsibility for the failure.

4.3.2.3 Equity of knowledge

This set of statements, shown in Table , explored the perceived equity in the information available to different actors, its independence, and the degree to which the presentation of information was itself a barrier to a common understanding or acceptance.

Table Statements exploring equity of knowledge

No.[1]	R[2]	Statement
15		In my region local knowledge is considered as relevant as external expertise when

		considering resource consents.
16	Y	At resource consent hearings in my region, technical data is presented in a manner that is a barrier to public understanding.
33		The councils I deal with always ensure an independent evaluation of ecological impacts is available at consent hearings.
55	Y	In my region decisions on appropriate compensation for environmental damage are hidden from public scrutiny.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

The percentage distribution of responses to this group of statements again showed a distinctive separation between the views of submitters and those of other actor classes (Figure).

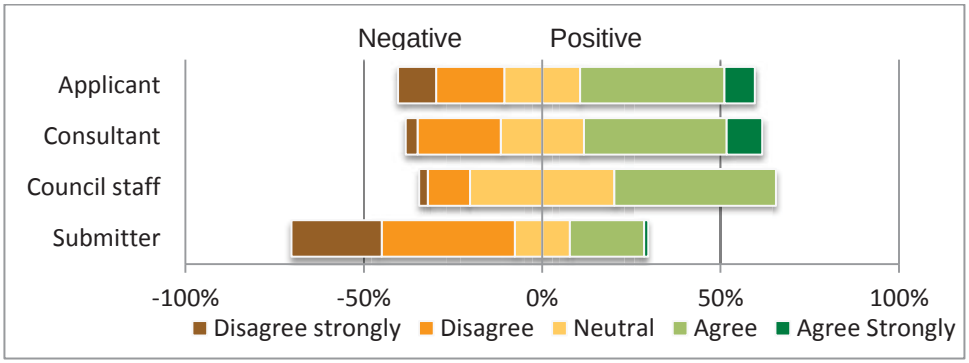

Figure Equity of knowledge, respondents' views

All actor classes apart from submitters had more responses affirming the equity of knowledge than considered it wanting, with 45 percent or more positive responses for each class. In contrast, a majority of submitters, 62 percent, considered access to information and acceptance of local as opposed to external 'expert' knowledge to be inequitable. This marked difference in the percentage distribution of responses by actor class was shown to be statistically significant (Table).

Table Equity of knowledge, influence of actor class

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	3.17	1.17	31.176***
Consultant	3.3	1.06	
Council staff	3.29	0.77	
Submitter	2.35	1.11	

*** p < 0.001

The implication of the percentage distribution of responses shown in Figure , that responses were dependent on actor class, was reinforced by the difference in mean

values. Submitters had a mean value that implied a negative view of the supposed equity, whilst all other classes had a mean value that implied a positive view. The Kruskal Wallis test then confirmed that the effect of actor class on responses to this group of statements was significant at the one percent level ($p = 0.000$(3dp)).

Once again, Mann Whitney test of paired sets of responses showed that a significant difference in responses was limited to comparisons with submitters where each comparison showed a difference that was significant at the one percent level ($p = 0.000$(3dp)). The effect sizes calculated using Cliff's δ varied from medium (Cliff's $\delta = 0.38$) when submitters were compared with applicants, to large when submitters were compared with consultants (Cliff's $\delta = 0.45$), and council staff (Cliff's $\delta = 0.48$).

The large effect sizes shown indicate that equity of knowledge is, for submitters, a key concern with the current resource management process, and a major contributor to their lack of faith in the equity of the process. The larger effect sizes when submitters were compared with consultants and council staff again suggests an identification of these latter actors with the current process and their strong adherence to the positivist paradigm of decision making by objective rational experts.

4.3.2.4 Equity of power

Seven statements were used to explore respondents' views of the equity of power between actors in resource consent hearings. These are shown in Table .

Table Statements exploring equity of power between actors at resource consent hearings

No.[1]	R[2]	Statement
20	Y	Environmental groups have too much influence on regional and local policy making.
36	Y	In my region consent decisions go to the side with the most experts.
37	Y	I consider voluntary groups to be disadvantaged at consent hearings.
38		In the consent hearings I have been involved with, all parties sought compromise.
39	Y	In my view evidence from experts hired by one side in a consent hearing is inevitably biased towards that side.
40		In my region public consultation over resource consents is open and participative.
41		In my region, all views are given equal weight in resource consent hearings.

1. The number shown refers to the statement number in the questionnaire (see Appendix A)
2. A 'Y' in this column indicates that the responses to that statement were reversed to align with the sense of the aspect being investigated

The two factors that were felt to influence the power relationship, and actors perceptions

of these were the preferencing of actors operating within the dominant paradigm, and the degree to which actors perceived the process as adversarial. The percentage distribution of responses to this group of statements is shown in Figure .

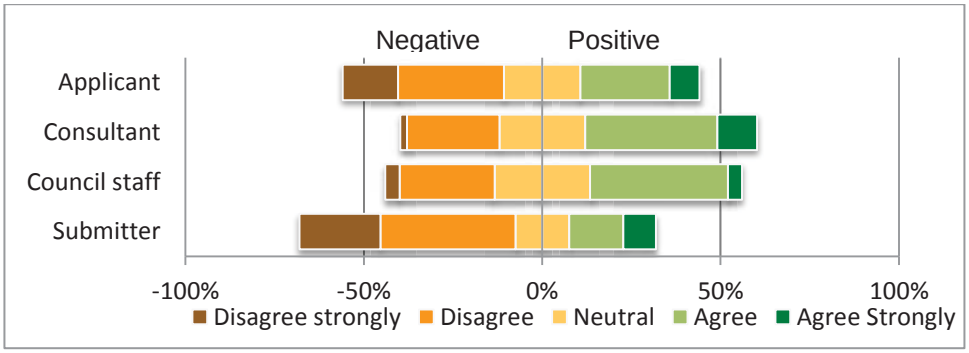

Figure Equity of power, respondents' views

Although submitters are the only actor class to have a majority (61 percent) that felt the power exercised by different actor classes was inequitable, applicants also had more responses that considered the power within the process to be imbalanced (45 percent) than considered it equitable (33 percent). However, more consultants and council staff considered the power balance as equitable (48 percent and 43 percent respectively) than the reverse (28 percent and 31 percent respectively). A substantial minority of submitters (24 percent) also considered the balance equitable. When compared using the Kruskal Wallis test, the influence of actor class on responses was confirmed to be significant at the one percent level (p = 0.000(3dp)) (see Table).

Table Equity of power, influence of actor class

Group	Mean	St. Dev.	Kruskal Wallis test statistic (3df)
Applicant	2.81	1.22	28.475***
Consultant	3.30	1.04	
Council staff	3.12	0.99	
Submitter	2.50	1.25	

*** p < 0.001

The mean values for responses by actor class also indicate that both submitters and applicants have an overall pessimistic view of the equity of power within the resource consent process. In contrast the mean values for both consultants and council staff indicate that they hold an opposite view. This division of views is supported by Mann Whitney tests of paired actor classes, where the pairing of consultants and council staff

was the only one where the difference was not significant (Appendix B Table B).

A statistically significant difference between the views of applicants and all other actor classes was found. Compared with the responses of both consultants and submitters, the difference was significant at the five percent level ($p = 0.021$ and $p = 0.045$ respectively), whilst compared with council staff the difference was significant at the 10% level ($p = 0.086$). The responses of submitters were compared with those of consultants and council staff, were found to be significantly different at the one percent level ($p = 0.000$ (3dp)).

The calculated values for Cliff's δ also demonstrated that applicants held to a different view from other actor classes, although the effect size when compared with the views of submitters and council staff was small (Cliff's $\delta = 0.15$) for both, and rather larger when compared with consultants (Cliff's $\delta = 0.23$). The effect size for the difference between submitters and both consultants and council staff however was medium (Cliff's $\delta = 0.38$ and 0.31 respectively)

These results again suggest that the difference in views of the equity of power within the resource consent process is largely determined by the degree to which an actor identifies with the rational positivist paradigm of decision making. Interpretation of the results showing that applicants consider a power imbalance exists, must be made in the context of the statements presented. Thus it is as possible that the results obtained stem from a view that those opposing applications for resource consent are intransigent and wield too much power, as to infer that they consider voluntary groups disadvantaged. What can be inferred however is that, as a class, applicants consider the process faulty. A view that is unlikely to find favour with those intimately involved in its management and application.

4.3.2.5 Equity considered

There was little divergence in respondents views that ecological equity was the desired outcome of offset mitigation. Opinions diverged however when asked to consider the degree to which ecological equity had been achieved in the examples respondents were familiar with. Few applicants or submitters believed so, whilst council staff and

consultants were as likely to agree as disagree. The overall positive or negative scores[18] for each component of equity explored were plotted on separate axes for all actor classes and this is presented in Figure .

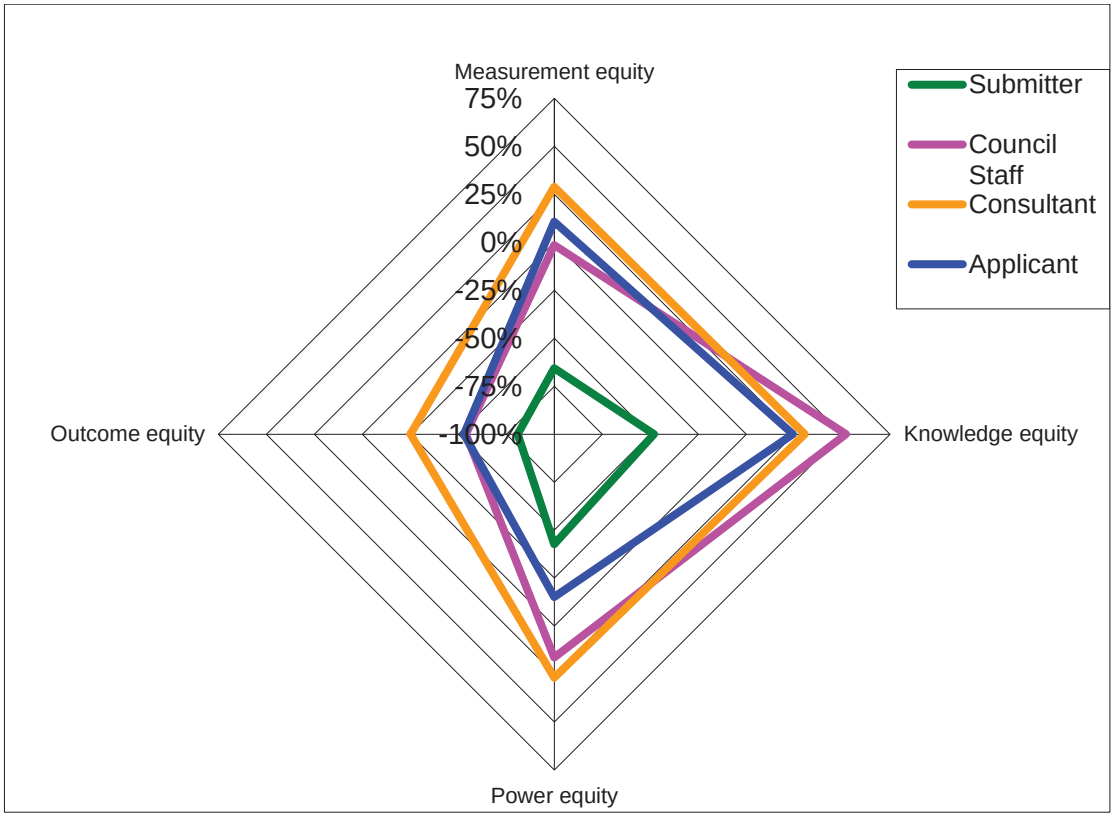

Figure Perceptions of equity by actor class

When looking at the perceptions of equity explored in the survey, since a common component of respondents' perception is being considered (equity), with axes only differing in specific applications of that value, a similar shape profile for all classes of actors is expected, with a quantitative difference, limited to the values ascribed. The four sub sections under which equity was considered all showed a statistically significant difference in responses by actor class at the one percent level, and that the greatest difference was between submitters and others. What was less expected was the

[18] Calculated as all positive (Agree + strongly agree) responses minus all negative (Disagree + strongly disagree) responses, expressed as a percentage of responses. Neither agree nor disagree responses were not counted. No weighting given to 'Strong' responses.

degree to which views of applicants were closer to those of submitters than those of regulators and consultants when power imbalance and the role of expert evidence in hearings was considered.

Also unexpected was the degree to which council staff gave a neutral or 'don't know' response to many statements in this section. The number of times this occurred in response to statements directly concerned with council methodology or policy leads to the view that either the staff members concerned were woefully ignorant of their own councils activities, or that they felt unable to express an opinion lest they undermine the supposed impartiality of their role. Although it might be considered that they have indeed "Sat so long on the fence the iron has entered their soul"[19], a less cynical explanation may be that their positivist Weltanschauung will not allow them to consider the possibility of an alternative stance to that of impartiality, despite the daily evidence of its failure. That this trait was less in evident when statements called into question procedural failures that could not be directly attributable to council staff also suggests that maintenance of the myth of impartiality was a powerful motivating factor in determining their responses.

The degree to which council staff and consultants professed to have no knowledge of ecological economics and other methodologies for evaluating offsets was also a surprise, although the lack of their use was not. These techniques were neither well known nor understood by submitters or applicants. The general distrust of cost benefit analysis as an accounting method can perhaps be attributed to the absence of the necessary currencies to incorporate all value systems, and the application of single positive discount rates to the detriment of natural systems in favour of development biased economic return. The difference in Weltanschauung between submitters and other actors exposed in the previous analysis (section 4.3.1), is again suggested as the underlying reason for the disparity in views expressed.

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[19] Rt. Hon. David Lloyd George (attrib)

4.4 Responsibility for tasks

The final section of the questionnaire asked respondents to identify who was currently responsible for a series of tasks related to the evaluation of ecological costs and benefits, and their integration into the resource consent process. These tasks are shown in Table and the options for current responsibility are shown in Table .

Table Tasks necessary to evaluate all costs and benefits of resource consent application

No.	Task
1	Identifying the causes of environmental impact
2	Determining social costs and benefits that would result from the application
3	Quantifying economic costs and benefits that would arise from the application
4	Quantifying the environmental impact of the application
5	Determining environmental services at consent and offset site
6	Choosing measurement techniques to establish the value of environmental services
7	Determining how future value was calculated for ecological compensation
8	Establishing the value of ecological uncertainty
9	Establishing equal value between loss and offset

Table Choice of organisations currently responsibility for tasks

Council	National NGO	Voluntary group	Applicant	No one	Don't know

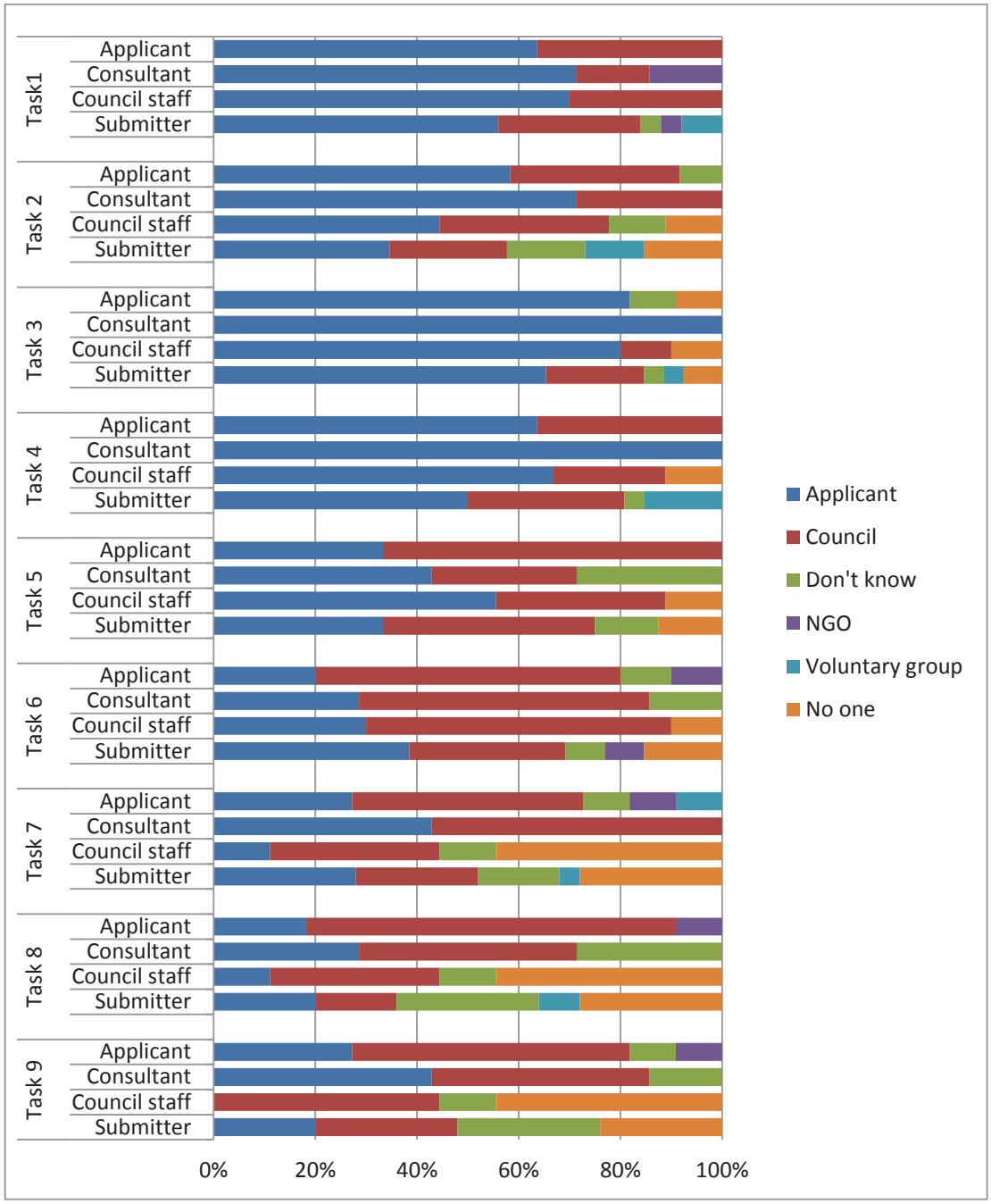
Respondents were also asked to identify whom they considered the most appropriate organisation for the same task. The choices offered for the preferred option were those listed in Table , but without the 'No one' option.

The preamble to these questions stressed that what was sought was who had or should have the primary responsibility, and that responsibility for the task should not be construed as necessarily bearing the cost. Nonetheless, council staff and consultants appeared, both from their responses and their comments (see Appendix D), to have difficulty with this section. Consultants in particular appeared to be concerned that identifying a lead responsibility implied sole responsibility.

Both consultants and council staff, also seemed to have difficulty in differentiating between consideration of what would be most effective, and what legislation currently requires. An attitude summed up in one comment *"A pointless exercise. It is the applicants responsibility to do almost all the tasks listed and for council staff to check the information and carry out any section 32 report necessary."*

The responses to these options are given in figures 21 to 24. Figure 21 shows the views of respondents as to the current responsibility for the tasks listed.

Figure Current responsibilities – views by actor class



Two results from this section stand out. First the disparity in the views of participants on who was currently responsible for the tasks. Second, it is striking that responses of both applicants and consultants indicate a current responsibility for all tasks, when their

responses to the first part of the questionnaire suggested that these tasks had not in fact been carried out.

Whilst it is acknowledged that some variation exists in the implementation of RMA provisions between councils, this is unlikely to have led to the wide range of views held. It is suggested that this is rather a further indication of lack of clarity in the process, and of a clear responsibility within it for an advocate on behalf of the environment. Several submitters made the point that their voluntary group had carried out many of the tasks, but that they lacked resources or the perceived authority for that information to be fully accepted. The following comments being especially pertinent in view of the statutory requirement to consult with Tangatawhenua.

> *''The reality is Tangatawhenua in my region are the ones who actually see & pinpoint most if not all these aspects, but have no actual authority to have a meaningful input."*
> *"Much lip service is given to Tangatawhenua in the RMA …at the end of the day little credibility or credence is given to our perspectives."*

Turning to a comparison between perceived current responsibility and the respondents' preferred option, the principle point of interest was the degree to which the process currently specified by the RMA was seen to be inadequate or problematical. For analysis therefore, responses that selected as responsible, those currently defined in the RMA, applicant and council, were combined; as were responses that suggested a voluntary organisation or national NGO were or should be responsible. This gave a two by two contingency table that was analysed using Fisher's exact test[20] with a two tailed probability to determine if there was a significant difference.

When responses from council staff and consultants were inspected, with the exception of one consultant who felt that an NGO was responsible for task one, these respondents selected only those currently defined in the legislation, that is, applicants and council

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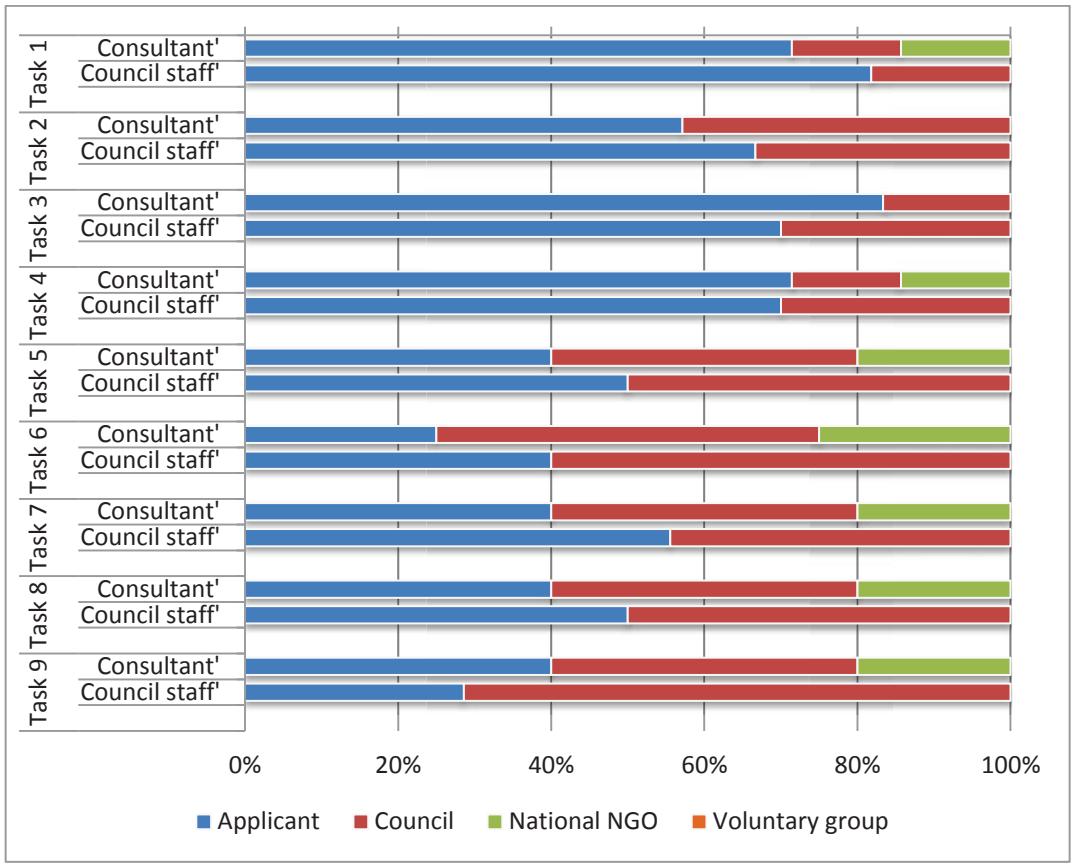
[20] Fisher's exact test is a statistical test that can be used to examine the significance of the association between categorical data in a contingency table when the sample size is small (Fisher, 1925). The sample size data did not allow the constraints of the Chi square test that 80% of expected frequencies should be > 5 to be met (Scanlan, n.d.)

staff as having current responsibility. The results of these two actor classes selection for preferred responsibility is shown in Figure .



'Don't know' responses omitted

Figure **Preferred responsibility for tasks, views of consultants and council staff**

This result further emphasises the reluctance of council staff and consultants to consider any option outside current practice, with no council staff respondent suggesting anyone other than the applicant or council staff should have responsibility for any task.

With council staff unwilling to consider anything but current practice, there was clearly no significant difference between their current and preferred responses. However for consultants, the identification by one respondent of a National NGO as the preferred option for seven of the nine tasks was sufficient for the preferred option to be significantly different at the five percent level ($p = 0.025$). In contrast the difference between actual and preferred options for applicants shown in Figure , varied considerably.

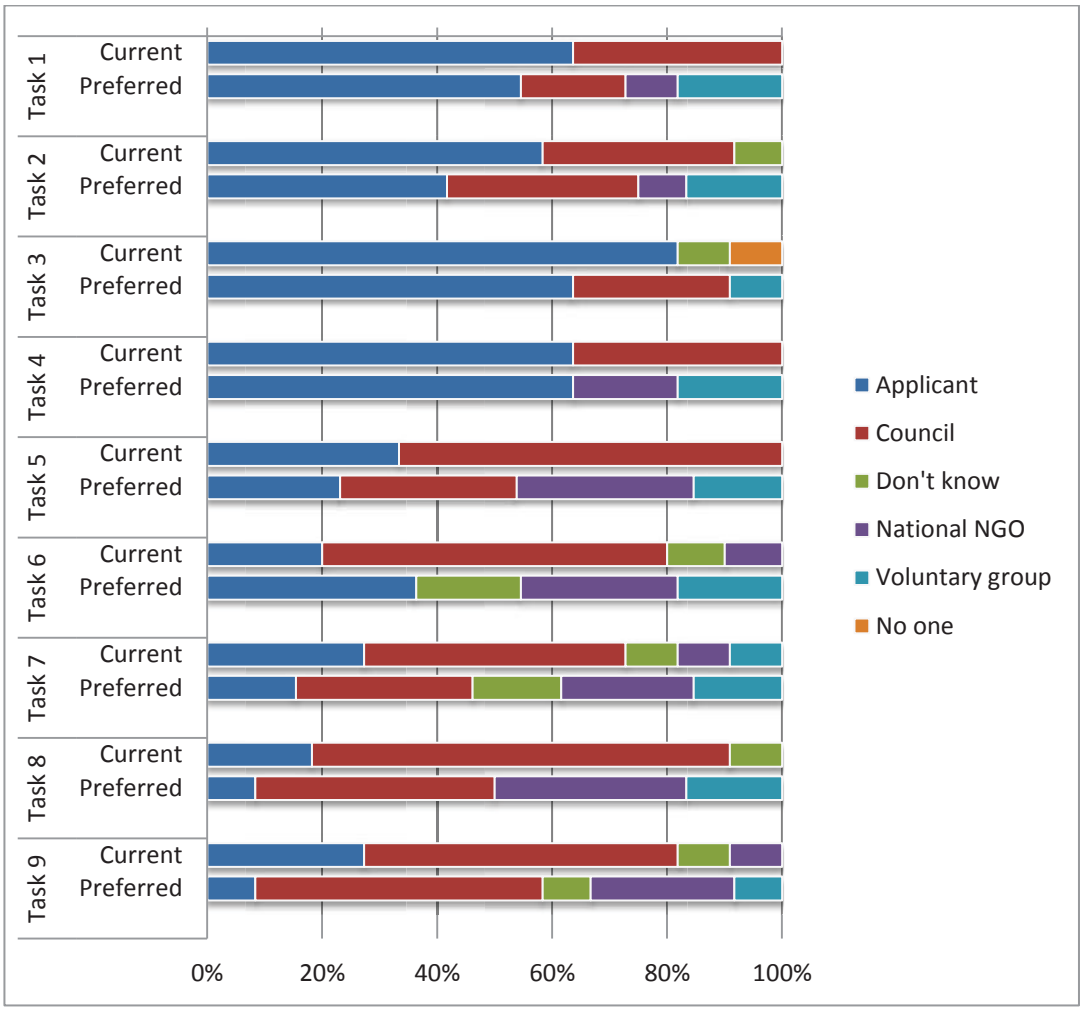


Figure Current and preferred responsibility for tasks – views of applicants

The most obvious difference in the views of applicants to those of consultants and council staff, is the degree to which applicants considered that tasks should be carried out by a body not formally identified with the current RMA consent process. Overall, thirty five percent of applicants considered either a National NGO or a voluntary group should be responsible for tasks compared with only thirty one percent that favoured council staff. This preference for change was confirmed to be significant at the five percent level for tasks five and eight, and at the ten percent level for task four. When the responses for all tasks were considered, the preferred options selected by applicants was significantly different from the current responsibilities at the 1 percent level ($p = 0.000$(3dp)). A similar outcome was found when the responses of submitters were compared (see Figure).

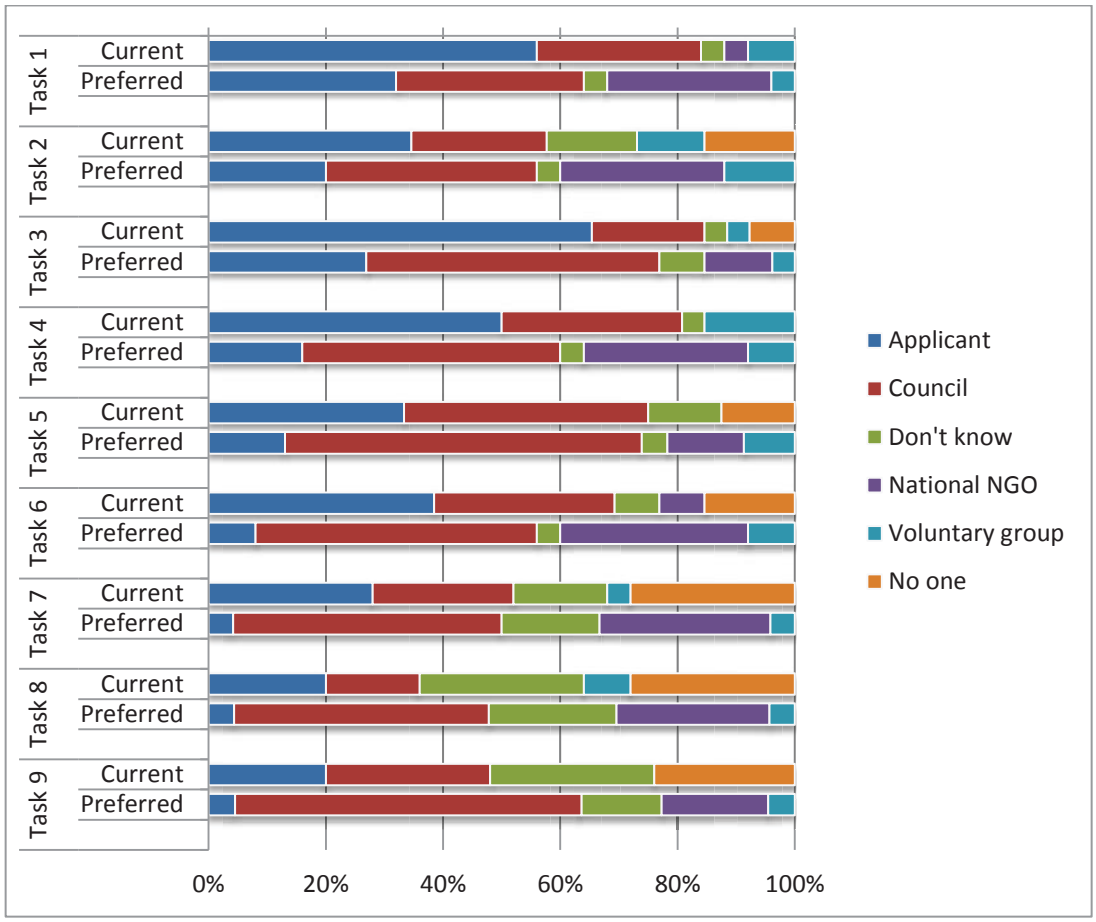


Figure Current & preferred responsibility for tasks – views of submitters

For submitters, the difference between current and preferred values when compared using Fisher's exact test, found that for task five to be significant at the ten percent level ($p = 0.053$), and for task six and seven at the five percent level ($p = 0.039$ & 0.050 respectively). Again, when responses to all tasks were considered, the difference between submitters views of current and preferred responsibility was significant at the one percent level ($p = 0.000$(3dp)).

4.4.1 Discussion

The issues apparent from the responses and comments of applicants and submitters to this set of questions were the dissatisfaction with the current system, and the perceived inequity that stemmed from it. Some respondents from all actor classes, apart from council staff, felt that some or all of the tasks listed should be carried out by a body other than the council or applicants. Overall 25% of respondents considered that the tasks listed should be carried out by either an NGO or a voluntary group. This figure

does not however reflect the true extent of this view, since several recorded a response allocating responsibility to the council, or 'Don't know' but qualified this with comments questioning the independence of councils for example: *"Councils should be primarily responsible but as they can't be trusted…*". Whilst most respondents were not as cynical about the role of councils, there was a sense that they had failed in their perceived role: *"Ticked 'Council' but really … the role is beyond [their] resources"*; and that for some respondents at least there was a perception of council staff having been captured by the vested interests of developers: *"should be completely independent of the developer and [their] hirelings."*. A further comment in this section referenced the concern over the dominant role of experts explored in the main questionnaire; acknowledging the preference given to expert testimony "*Should be Govt led investigator equal or better in expertise to developers' consultants."*

Of particular interest in this context was the divergence in views between applicants and submitters. Contrary to expectations, applicants were more likely to consider an external third party more appropriate than council staff, whilst submitters, despite their expressed distrust of councils, still considered that they should take on the responsibility on behalf of the public and the environment. These and other conclusions are discussed further in the following final chapter.

CHAPTER 5. Conclusion

The purpose of this research was to investigate through a case study approach, resource consent applications involving offset mitigation. The hypothesis was that the procedures used in the process, and their outcome, were perceived differently by different classes of actors. Secondly, that differing views of the process and outcome were derived from the differing Weltanschauungen of the actors. Four classes of actors were identified within the resource consent process. These were: the applicants; professional consultants; council staff; and submitters opposing applications. A survey instrument was used to gather the views of actors in identified consent applications to test these ideas.

This chapter brings together and discusses the results of the literature review and survey, drawing conclusions of the role of actors' Weltanschauung in their perception of equity of process and outcome. Suggestions are made on the origin of aspects of actors' Weltanschauung, and the implications of these for achieving improvements in both process and outcomes. Limitations on the extrapolation of the results are considered, and the chapter concludes with suggestions for further research.

5.1 Weltanschauung – the historical context revisited

The preservation of native biodiversity and the ideal of sustainable use of natural resources both have a long history in Maori and European cultures. The literature review conducted and detailed in Chapter 2 suggests that attitudes to natural resources in the New Zealand context are based on two mutually exclusive Weltanschauungen. The first considering natural resources a commodity to be used as and when necessary and sustainability equated with the maintenance of resources that can be exploited for economic potential. This Weltanschauung is considered to be based on a positivist philosophy aligned with Dilthey's Naturalism. The second emphasises the intrinsic value of nature, and a wish to preserve intact the intangible aspects of the natural environment that are valued for their own sake. Philosophically, this Weltanschauung can be seen to align with Dilthey's Objective Idealism, and post-positivism.

Chapter 2 also explored the role of ambiguity in the drafting of the Resource Management Act, and the implications this has for how the intent, and success, of the Act is perceived. The degree to which public participation in resource consent decision making met the expectations implicit in the two Weltanschauungen was examined. Here again a distinction was suggested. A positivist Weltanschauung was considered to dominate official enquiry and decision making processes, with an emphasis on efficiency, rational objective judgement, and quantifiable data. In contrast, the desire of the lay public for meaningful participation in the decision making process, and for the inclusion of context laden qualitative data and intrinsic values, indicated a post-positivist Weltanschauung.

5.2 Congruence between survey results and literature review

Turning to the results of the research, there was little divergence amongst respondents' views when presented with statements that addressed issues at a conceptual or ethical level. This expected result confirms the logic that led to the ambiguous framing of legislation such as the Resource Management Act. However, the problem of translating such agreement at a conceptual level into practical application was immediately exposed when survey responses to statements addressing the relative worth of economic and intangible assets were considered. The difference in these responses can be aligned with the split between preservationist and interventionist Weltanschauung identified in the literature.

The growing awareness of the vulnerability of indigenous ecosystems and the largely grass roots led proliferation of 'restoration' projects indicates that the view of intrinsic worth of nature is widespread and passionately held. Nonetheless, when their responses are considered overall, it is apparent that at least some submitters appeared conflicted in their views. This may be attributable to the equally long existence and dominance of the positivist 'resource as commodity' Weltanschauung within New Zealand, explored in section 2.4. The neo-liberal economic philosophy of all New Zealand governments for the last thirty years may also have reinforced a positivist view of resources in the New Zealand psyche.

In a similar manner, applicants had no problem in aligning themselves with the key concepts of conservation and intrinsic worth when these are considered in the abstract. They largely demurred however, when specific constraints on development, either direct financial cost, or inhibitory of action were suggested. The possibility therefore exists that these results represent a wholly interventionist Weltanschauung, since as was noted in section 2.4, an interventionist Weltanschauung can support both exploitative and conservation framed goals.

Ambiguity also existed in the responses of regulators. As a whole, regulators disagreed with statements suggesting that existing procedures and methodologies had been inadequately or inappropriately applied. However they readily accepted that those same procedures and methods were inadequate or inequitable. Thus, although their responses indicated an alignment with an approach based on a legalistic and procedural interpretation of RMA requirements expected from their role, there was an indication that their personal views may well differ. Nonetheless the responses of regulators were wholly consistent with a Weltanschauung based on a positivist philosophy and Dilthey's naturalism.

Despite these mixed messages, the evidence, as tested by the questionnaire, supported the view that those objecting to applications for resource consent, held a different Weltanschauung to other actor classes. However, the hypothesised distinction between council staff and other actors was not confirmed. The ambiguity in some of the responses noted also bears out the view that individuals react to situations through the entirety of their Weltanschauung, not just those facets determined by their role (Selznick, 1948).

5.3 The implications of differences in actors' Weltanschauung

Despite their basic acceptance of the scientific method as a valid approach to problem solving, submitters' perception is of process failure. The results obtained suggest the origins of this lies in their perception of bias in the use of data and the relative

importance of expert witnesses. This in turn indicates their Weltanschauung is more closely aligned with a post-positivist, or relativist philosophy. A view supported by the priority submitters give to intrinsic values over more easily quantifiable aspects of natural resources.

The failure of the current process to acknowledge the importance submitters attach to context and value judgement in determining what is 'factual', and the exclusion of intrinsic and other non-market values would suggest that the process is operated within a strictly positivist framework. This being the case, a clear clash of Weltanschauung exists between the current process, those who administer it, and submitters. This situation is exacerbated by the casting of the resource consent process as an adversarial, quasi-judicial framework that further disadvantages lay participants.

Applicants that responded to the survey can reasonably be described as from a cohort that sees competitive advantage in complying with environmental best practice, and were also able to some extent to pass on any costs incurred in the process. From their responses they can also be seen as holding to a Weltanschauung that embraces a post positivist epistemology, recognising the intrinsic worth of some natural resources and sceptical about the ability of technology to either replace natural capital or always deal with the negative consequences of unlimited growth. Of interest in considering the implications for better environmental outcomes specifically within the offset mitigation mechanism, is their belief in the ability to achieve a win–win outcome; and their concern that any balance between loss and offset is seen to be fair ecologically, demonstrated by the number that responded to the task allocation questions by emphasising the need for an independent arbiter. Like some applicants, the majority of submitters indicated that they felt the tasks of assessing ecological loss, potential offset gain and achieving an equitable balance between them should be carried out by an agency seen to be independent. It is also clear that many considered councils incapable of fulfilling that role.

From their responses, both council staff and consultants would appear to have a similar Weltanschauungen. From their responses, it would appear that the core of the belief system for both these classes of actors is the primacy of rational decision making and

the concept of independent advice deriving from a positivist Weltanschauung. The problem facing them is that, although other actor classes to some extent share the same belief in rationality and the 'scientific method', a majority consider neither consultants nor council staff as independent. It would appear that to regain any credibility as an independent advisor, always assuming that this is an appropriate role for them, council staff in particular need to adopt a far more comprehensive approach to measurement of environmental effects, tailored to specific cases. Unfortunately, this approach is contrary to the political drivers they face, and which determine the funding available to them. Council staff are, and clearly consider themselves to be, constrained by an emphasis on 'efficiency'. Under political pressure to reduce the cost of compliance and ease development to grow the economy, they hasten to manage what can most easily be measured to the detriment of the environment and their own standing in the wider community.

5.3.1 Implications for the consent process

The most consistent result of the research was that participants perceive the RMA to have failed to protect natural resources for future generations and to ensure sustainable use of natural resources. Although council staff and consultants largely defended their own role in the process, council staff in particular concurred that the implementation of the RMA by councils was inadequately resourced, rule bound, and reactive. There was also general agreement that a bias towards development over sustainable use was inherent in the consent process and existed at multiple levels of influence.

Although the majority of respondents can be seen as holding to the post positivist view of sustainability identified in Table , the current process is perceived as incapable of delivering 'win-win' outcomes. Of particular concern for any equitable resolution of resource allocation under the RMA is the level of effect size found between submitters and all other actor classes, particularly council staff and consultants, when the perception of political and organisational bias in the current process is considered. The responses of council staff and consultants indicate that they consider the legal requirements of the RMA, as interpreted by the Courts, as defining the process, and compliance with this, the measure of success. They also align closely with the concept of independent policy advice, and the importance of expert opinion. In contrast, the

public perceive councils' role as defenders of the environment on their behalf. Responses from submitters also support the view that the consultative process should give preference to the value systems of locals, and weight any opinion on worth accordingly.

These results suggest that the opportunity exists within the current legislative framework to improve both the performance of the RMA with regard to sustainable use, and the perception of its success. The survey results also suggest that improvements could most likely be made by extending to objectors, the level of participation currently accorded applicants. Results also indicate that a change in stance by regulators to that of advocates for the environment on behalf of the public could lead to an improvement in overall perception of equity. Since either of these would mean a radical deviation from current behaviour, and the potential adoption of an alternate Weltanschauung, any change is extremely unlikely.

5.3.2 Implications for offset as a mechanism

In addition to the internationally reported problems with non-implementation and restoration failure, all classes of respondent acknowledged that the practice of using offset mitigation to 'buy' consents that would otherwise be rejected was prevalent in New Zealand. The serious implications of this for New Zealand biodiversity is compounded by two factors: the renewed emphasis on the use of offset mitigation in the draft National Biodiversity Standard; and the acknowledged failure of councils to implement let alone achieve, a 'no net loss' policy for natural resources. The latter finding was exemplified by the view of the majority of respondents, that current mechanisms were inadequate to protect the environment, and that the rate of indigenous biodiversity loss was increasing in their region.

Evidence from the archival records mentioned in section 4.1 suggests that to date, where offset mitigation has been prescribed, a simplistic model, based on the metrics most easily gathered, e.g. land area, has been employed. In other cases, some attempt has been made to calculate a proxy value for the loss, but no balancing calculation of ecological value has been undertaken for the proposed offset. This has then led to the proxy dollar value being seen as financial compensation; and to goal transference from

ecological equity to cost optimisation.

Aside from those intimately engaged in voluntary restoration projects there is little recognition of an on-going need to maintain recreated ecosystems. It is unclear from the responses however, if this arises from a lack of practical knowledge or the implied uncertainty of costs this entails, or both. At the heart of the debate on offset mitigation is the dilemma of establishing a clear and unambiguous policy goal of no net loss, plus a mechanism that allows this to be achieved whilst also permitting continued development, versus the unintended consequence of the commodification of resources facilitating greater loss than would have otherwise been allowable.

The ability to achieve an equitable valuation of the loss as perceived by the local community is of primary concern to most submitters with the criteria used in ecological impact assessment commonly at odds with local perceptions of worth. Professional assessments of 'Poor quality regeneration' being a common phrase used in cases studied, which despite local community submissions as to the importance of the area within that community, is accepted as the 'factual' basis on which to make a decision. In a similar vein, public experience of obfuscation of process, mistrust of motives, and inability to contribute to either assumptions or input, means that some methodologies, such as cost benefit analysis, are themselves no longer trusted. A further issue is of out of kind offsetting, particularly when implemented as financial compensation, the approach most commonly taken in New Zealand. This was summed up by one respondent as: "*Offsets are an insult to anyone wishing to improve environmental outcomes in the future*."

5.3.3 The role of Weltanschauung in establishing ecological equity

Failure to establish ecological equivalent value either through a means of exchange, or in outcome, was identified as a problem by all actor classes. Results from the survey indicate that in the New Zealand context, an actor's Weltanschauungen affects their perception of the equity of the exchange in cases of offset mitigation. In attempting to address this, what to measure, how to measure it, and how to compare loss and offset remain leading problems. Before such an agreement can be achieved, the potential existence of multiple Weltanschauungen within all stakeholders needs to be

acknowledged. Only when this is done can there be any chance of incorporating the values of all stakeholders when evaluating loss, or determining an equivalent gain in an offset.

The requirement for an agreed and acceptable currency of exchange between loss and offset remains an issue. Approaches and attitudes to this was not tested in the cases considered, or in the responses to the questionnaire, since no example was found where an attempt had been made to even consider the ecological equivalence of loss and offset. Nor had any attempt been made to include any discount factor to compensate for loss of established services in anticipation of potential replacement in the future. In the cases considered, all uncertainty was borne by the environment whilst certainty of outcome was consistently provided for the applicant.

5.4 Limitations of findings

Although it is argued that the results of the survey confirm the existence of two competing views of natural resources, stemming from two distinct Weltanschauungen, it must be emphasised that an espoused Weltanschauung can itself be context dependent. An individual's Weltanschauung exposed in the context of the situations respondents were asked to consider, can validly be expected to apply in a similar context, and it is likely that this Weltanschauung will also be espoused by actors in a similar role elsewhere. What cannot be construed is that an individuals' Weltanschauung is context independent. An individual may prize an aspect of nature in one context or role; but reject it as unimportant or even inimical to the desired outcome when their role changes. This is most obviously demonstrated in the so called 'Not in my backyard' view, everyone wants a place to dispose of their rubbish, but no-one wants that place near them.

5.5 Summary

In summary, the results of the research suggest that the Weltanschauung of those opposing resource consents on ecological grounds is fundamentally different to that of other actors. The results also suggest that this difference correlates with differing opinions of the equity of process and outcome. The responses of many actors,

regardless of role, indicated that they genuinely wanted to achieve an outcome that maintained or improved native biodiversity and the sustainable use of natural resources. However, the way in which the RMA has been implemented has led to the effective exclusion of the public from the decision making process. This has exacerbated the difficulty in identifying and obtaining the goals derived from differing Weltanschauungen, to the extent where the failure of any attempt to maintain natural capital through offset mitigation appears inevitable.

The literature review identified a fundamental disparity in Weltanschauungen of actors concerning property rights. Although not explored fully in the survey, it is suggested that until the obligation of kaitiakitanga[21] of the environment is accepted as a legal as well as ethical responsibility within the 'bundle of rights' that defines property ownership in common law, any attempt to maintain natural capital through the use of offset mitigation will continue to fail, and the public will continue to correctly perceive the mechanism as flawed.

Although most actors considered that a resolution of differing goals and values could be obtained through an independent arbiter, the concept of independence is itself a value judgement. If desired outcomes are incommensurable, no mediation or changes to process will succeed in satisfying all actors. Although untested, it is suggested that the use of a service delivery approach to the evaluation of loss and offset offers a potential means of more closely aligning Weltanschauungen of participants, and allowing all values to be explicitly incorporated in any evaluation or comparison. A means of addressing the differing Weltanschauungen with regard to the role of public in the decision making process is less easy to identify. In both cases, the legislation constrains the options available, and the degree to which the dominant paradigm supports and

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[21] "[The definition of kaitiakitanga] extends further than a physical relationship only with the resource by reference to the "ethic" and the "nature of the resource itself". This deliberate elaboration is another example of the recognition in the Act of the spiritual dimension of Māori cultural values. The "ethic of stewardship" carries with it an element of morality in the management of a resource rather than merely traditional husbandry...[and]…the coexistent physical and spiritual being of all things in the environment." Spencer, A., 1991, The Importance of Māori Cultural Values in Resource Management, p8

enhances existing power structures means there is little incentive for change amongst those capable of effecting it.

Ultimately, an approach that provides an outcome that is perceived as equitable by all stakeholders, and ensures sustainable use of natural resources can only be achieved through modification of human behaviour and expectations. Checkland (1981, p. 261) concluded that to find and effect practical and desirable change in a situation dominated by differing and opposing Weltanschauungen required a consensus of the actors that owned the problem situation. The most practical way to work towards this is suggested to be the involvement of all stakeholders as equals in the preliminary negotiation phase of any consent application as suggested above. This approach aligns with the experience of Ison et al. (1997), who concluded that improvements in messy problems can most likely be achieved when all actors share common experiences.

5.6 Suggestions for further research

As noted within the body of this document, a better insight into actors perceptions could have been obtained if the ability to pose further questions based on their initial response had been available. Clarification of cases where it is unclear if similar views expressed by actors derive from similar or competing Weltanschauungen would enhance the understanding of the degree of incommensurability of goals.

A key finding of the research was the concern of many actors for an independent assessment and comparison of values in the case of offset mitigation. What is unclear, and problematical, is the criteria by which different actors would perceive and determine independence, and if these criteria would be maintained in the face of judgements made by such a person or body. It is suggested that further investigation of this subject utilising value laddering and Q methodology could expand the understanding gained so far. Finally it is suggested that a case study utilising an ecological services approach to assessment, coupled, or in comparison with, a study where the preliminary engagement includes the public as with the applicant, could establish those factors that are most readily translated to shared concepts or goals, and those that remain incommensurable.

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Appendix A. Questionnaire

Survey on the perceived equity of ecological compensation in resource consent decisions July 2011

What is the purpose of the survey?

This survey is part of a Masters research project exploring how different participants in the resource consent process perceive the level of equity achieved when compensatory action is required to remedy or mitigate ecological loss.

Who is the researcher?

The research is being conducted by Pete Matcham as part of his Masters studies at Massey University. Pete has previously worked with both central government agencies and for international organisations. He can be contacted at pmatcham@actrix.co.nz

Who are the participants of the study?

Participants are drawn from applicants, submitters and council officers who have been involved in resource consent applications under the Resource Management Act that have resulted in conditions that required compensation for ecological damage or loss.

Survey Duration

The survey should take approximately 30 minutes to complete.

Confidentiality

The survey results will not be used in any way that allows individual responses to be identified. Completed forms will be destroyed when the research is completed

The project has been evaluated by peer review and judged to be low risk. Consequently it has not been reviewed by one of the University's Human Ethics Committees. The researcher named above is responsible for the ethical conduct of this research. If you have concerns about the conduct of this research that you wish to raise with someone other than the researcher, please contact Professor Sylvia Rumball, Assistant to the Vice-Chancellor (Ethics and Equity), telephone 06 350 5249, email humanethicspn@massey.ac.nz .

Returning the survey

Please post the completed survey using the reply-paid envelope provided by

Monday 22nd August

If the envelope is missing, please contact Pete Matcham at pmatcham@actrix.co.nz

The supervisor for this research is Sue Cassells, who can be contacted at: S.M.Cassells@massey.ac.nz Tel: 06 356 9099 ext 2094; Toll-free: 0508 439677.

Part 1: Background information

- Which of the following best describes your **main** role in the resource consent process?

	Role	Tick ☑
A	Applicant	
B	Consultant on behalf of applicant	
C	Council staff	
D	Submitter- individual	
E	Submitter: Membership-based Organisation* (**national** level)	
F	Submitter Membership-based Organisation# (**local** level)#	
G	Submitter Business	
H	Consultant on behalf of Council	
J	Other (describe in broad terms) ----------	

- Which of the following best describes your status when you were acting in the role identified?

Your status in the role identified	Tick ☑
A Owner/Senior manager	
B Other management/staff	
C Elected member of community organisation	
D Individual	
E Researcher (community organisation)	
F Other (please describe below)	

* eg Forest & Bird, Federated Farmers, Fish & Game

eg Rate payers Assoc., Restoration group, etc

Which regional or unitary council(s) do you deal with most frequently?

	Regional council	Tick ☑
A	Northland	
B	Auckland	
C	Waikato	
D	Gisborne District	
E	Hawkes Bay	
F	Taranaki	
G	Manawatu-Wanganui	
H	Wellington	
I	Tasman District	
J	Nelson District	

Part 2: Environmental management

For each question, please circle the number that best describes the extent to which you agree with each of the following statements using the key below.

Do not think too long about your answers – your first, quick response is often the best.

0 Don't know / Not applicable	1 Strongly Disagree	2 Disagree	3 Neither Agree nor Disagree	4 Agree	5 Strongly Agree

1.	We are currently preserving enough of New Zealand's natural ecology.	0	1	2	3	4	5
2.	I believe our economic needs can be met without further depletion of natural resources.	0	1	2	3	4	5
3.	Economic growth is essential for society .	0	1	2	3	4	5
4.	In resource consent hearings, the way future benefits are valued disadvantages natural resources.	0	1	2	3	4	5
5.	The concept of ecosystem services is well understood in my region.	0	1	2	3	4	5
6.	The councils I deal with use a variety of techniques to value natural resources.	0	1	2	3	4	5
7.	I don't believe we can afford to restrict use of natural resources.	0	1	2	3	4	5
8.	I believe that technology will always be able to deal with environmental problems arising from development.	0	1	2	3	4	5
9.	Those investing in development cannot be expected to bear the ongoing costs of offset mitigation if the initial actions taken fail to achieve ecological equity with the adverse effects	0	1	2	3	4	5
10.	We have a duty to preserve remaining New Zealand species.	0	1	2	3	4	5
11.	Lay opinions are as valid as those of technical and legal experts when considering the potential impact of resource consent applications.	0	1	2	3	4	5
12.	The public does not understand the complexities of resource use in a farming environment.	0	1	2	3	4	5
13.	Cost benefit analysis is the best method of evaluating the impact of resource consents.	0	1	2	3	4	5

0 Don't know / Not applicable	1 Strongly Disagree	2 Disagree	3 Neither Agree nor Disagree	4 Agree	5 Strongly Agree

14.	The implication that qualitative data is emotive is frequently used to discredit it in resource consent hearings.	0	1	2	3	4	5
15.	In my region local knowledge is considered as relevant as external expertise when considering resource consents.	0	1	2	3	4	5
16.	At resource consent hearings in my region, technical data is presented in a manner that is a barrier to public understanding.	0	1	2	3	4	5
17.	I believe the public should have a say in deciding what technical data is relevant in resource consent hearings.	0	1	2	3	4	5
18.	Regional plans and policies in my region favour development over the environment.	0	1	2	3	4	5
19.	Ongoing management will always be required to maintain re-created indigenous ecosystems	0	1	2	3	4	5
20.	Environmental groups have too much influence on policy making.	0	1	2	3	4	5
21.	In my region local communities' concerns are always taken into account in resource consent applications.	0	1	2	3	4	5
22.	The public has a right to prevent a land use that will damage the environment.	0	1	2	3	4	5
23.	Too much time is wasted at consent hearings on emotive objections	0	1	2	3	4	5
24.	In my region conditions imposed at consent hearings are restricted to criteria that are easily monitored.	0	1	2	3	4	5
25.	In my view the RMA has failed to protect the environment for future generations	0	1	2	3	4	5
26.	Indigenous ecosystems are being destroyed at an increasing rate.	0	1	2	3	4	5
27.	The RMA requirement to Avoid, Remedy and Mitigate is a mandatory hierarchy that must be followed.	0	1	2	3	4	5
28.	In my region environmental planning is reactive.	0	1	2	3	4	5
29.	In my region environmental impacts are insufficiently quantified at consent hearings to enable valid comparison with benefits.	0	1	2	3	4	5

0 Don't know / Not applicable	1 Strongly Disagree	2 Disagree	3 Neither Agree nor Disagree	4 Agree	5 Strongly Agree

30.	In my view developers and councils use non notified consents to allow development to slip past the public's notice.	0	1	2	3	4	5
31.	In my area regional and district plans are too concerned with rules and not enough with outcomes.	0	1	2	3	4	5
32.	In the resource consent hearing I was involved with, cost of measurement was a major constraint on the evaluation of the environmental impact.	0	1	2	3	4	5
33.	The councils I deal with always ensure that an independent evaluation of ecological impacts is available at consent hearings.	0	1	2	3	4	5
34.	The councils I deal with use appropriate technical expertise to evaluate environmental costs and benefits when considering resource consent applications.	0	1	2	3	4	5
35.	In my region resource consent hearings give the same weight to intrinsic values as to financial costs.	0	1	2	3	4	5
36.	In my region consent decisions go to the side with the most experts.	0	1	2	3	4	5
37.	I consider voluntary groups to be disadvantaged at consent hearings.	0	1	2	3	4	5
38.	In the consent hearings I have been involved with, all parties sought compromise.	0	1	2	3	4	5
39.	In my view evidence from experts hired by one side in a consent hearing is inevitably biased towards that side.	0	1	2	3	4	5
40.	In my region public consultation over resource consents is open and participative.	0	1	2	3	4	5
41.	In my region, all views are given equal weight in resource consent hearings.	0	1	2	3	4	5
42.	The councils I deal with are predisposed to support consent applications that provide economic growth.	0	1	2	3	4	5
43.	The environment is well managed in my region.	0	1	2	3	4	5
44.	In my area councils are more concerned with processing consent applications quickly than determining outcomes.	0	1	2	3	4	5
45.	In my region far too many resource applications are open for public consultation.	0	1	2	3	4	5

0 Don't know / Not applicable	1 Strongly Disagree	2 Disagree	3 Neither Agree nor Disagree	4 Agree	5 Strongly Agree

46.	Where development of a different site is considered for compensation at consent hearings, there is sufficient information available to make a valid comparison of their ecological value.	0	1	2	3	4	5
47.	In the consent hearing I was involved with, the compensation offered was shown to have the same ecological value as the loss.	0	1	2	3	4	5
48.	In the resource consent hearings I have been involved with, everyone thought the outcome was fair.	0	1	2	3	4	5
49.	The least damaged ecosystems should receive priority for conservation.	0	1	2	3	4	5
50.	In my region the concept of services provided by the environment is used to quantify benefits and loss when assessing ecological compensation.	0	1	2	3	4	5
51.	In my view, offset compensation offered in mitigation for ecological loss should be evaluated on ecological equity, not financial equity	0	1	2	3	4	5
52.	Councils in my region have adopted a 'no net loss' policy towards the natural environment	0	1	2	3	4	5
53.	Public opinion should not be allowed to constrain how those who work on, and improve their land, can use it.	0	1	2	3	4	5
54.	The needs of future generations are a major determinant of the outcome of consent applications in my region.	0	1	2	3	4	5
55.	In my region decisions on appropriate compensation for environmental damage are hidden from public scrutiny.	0	1	2	3	4	5
56.	In my view quantifying environmental damage in dollar terms can distort participants views of the compensation required to avoid overall loss to the environment.	0	1	2	3	4	5
57.	In my view conservation efforts should be restricted to endangered species.	0	1	2	3	4	5
58.	Values ascribed to emotional ideas such as a view should not be given the same weight as real financial costs.	0	1	2	3	4	5
59.	The councils I deal with use a variety of techniques to incorporate intrinsic value in cost benefit analysis.	0	1	2	3	4	5
60.	In my view offset compensation is often used by applicants to purchase resource consents.	0	1	2	3	4	5

Part 3: Providing information to consent hearings

This question refers to the specific consent application(s) you have been involved with. It asks who you think is, and who you think should be responsible for tasks related to resource consent hearings.

*In your examples who was **primarily** responsible for these functions? (Tick ☑ one only for each issue)*							*In your examples who do you think **should** be primarily responsible for these functions? (Tick ☑ one only for each issue)*				
Present situation							***Preferred situation***				
Council	National NGO	Voluntary group	Applicant	No one	Don't know	**Who was / should be responsible for these tasks?** (**NB** the information sought is with regard to the responsibility for the task, not who should meet the cost)	Council	National NGO	Voluntary group	Applicant	Don't know
						Identifying causes of environmental impacts.					
						Providing information on reduction of environmental impacts.					
						Evaluating alternative sites.					
						Providing information on remedying environmental impacts.					
						Quantifying environmental impacts.					
						Determining environmental services at consent and offset sites.					
						Choosing measurement techniques to establish value of environmental services.					
						Determining discount rate for cost benefit analysis.					
						Establishing the value of ecological uncertainty.					
						Establishing equal value between loss and offset.					

End. Thank you again for your time and effort.

Appendix B. Results of Mann Whitney tests

Mann Whitney tests were carried out on responses for paired actor classes in cases where a Kruskal Wallis test indicated that overall the responses were significantly influenced by actor class at the 10 percent level. All calculations were performed using the SOFA Statistics package v 1.1.3

Section 1 – Aspects used to determine Weltanschauung of actors

From sofa_db.allreversednozero, data filtered by: questionno in (26,43,52)

Table B Current state of the environment - comparison of views

Attribute explored	Groups compared	Possible matches[1]	U	z
View of current state of the environment	Applicants v Consultants	770	384.5	0.008
	Applicants v Council staff	1190	564.5	0.374
	Applicants v Submitters	2485	728.5***	3.512
	Consultants v Council staff	748	342.0	0.551
	Consultants v Submitters	1562	399.5***	3.511
	Council staff v Submitters	2414	692.5***	3.589

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
*** $p < 0.001$

From sofa_db.allreversednozero, data filtered by: questionno in (1,10,19,49,57)

Table B Support for targeting conservation effort

Attribute explored	Groups compared	Possible matches[1]	U	z
Support for targeting conservation efforts and resources	Applicants v Consultants	2360	985.0	1.417
	Applicants v Council staff	3481	1543.0	1.085
	Applicants v Submitters	7670	2502.5***	3.928
	Consultants v Council staff	2360	1103.5	0.558
	Consultants v Submitters	5200	2042.5*	2.116
	Council staff v Submitters	7670	2737.5***	3.240

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
*** $p < 0.001$
* $p < 0.05$

From sofa_db.allreversednozero, data filtered by: Questionno in (24,25,27,28,31,54,60)

Table B Success of RMA in sustainably managing natural resources

Attribute explored	Groups compared	Possible matches[1]	U	z
Success of the RMA in sustainably managing natural resources	Applicants v Consultants	4455	2012.5	0.968
	Applicants v Council staff	3978	2850.5	1.082
	Applicants v Submitters	14499	5810**	2.609
	Consultants v Council staff	4290	2124.5	0.095
	Consultants v Submitters	9845	3533***	3.219
	Council staff v Submitters	13962	4752***	4.14

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
*** $p < 0.001$
** $p < 0.01$

From sofa_db.allreversednozero, data filtered by: Questionno in (9,18,42)

Table B Perception of bias in process

Attribute explored	Groups compared	Possible matches[1]	U	z
Perception of bias in resource consent process	Applicants v Consultants	840	392	0.442
	Applicants v Council staff	1155	576.5	0.013
	Applicants v Submitters	2730	1003*	2.276
	Consultants v Council staff	792	365.5	0.511
	Consultants v Submitters	1872	555**	3.045
	Council staff v Submitters	2574	824**	3.030

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
** $p < 0.01$
* $p < 0.05$

From sofa_db.allreversednozero, data filtered by: Questionno in (18,42)

Table B Perception of predisposition towards development by councils

Attribute explored	Groups compared	Possible matches[1]	U	z
Inherent bias of plans and councils towards development	Applicants v Consultants	384	191	0.028
	Applicants v Council staff	528	243	0.473
	Applicants v Submitters	1248	309.5***	3.57
	Consultants v Council staff	352	158	0.549
	Consultants v Submitters	832	122***	4.337
	Council staff v Submitters	1144	200***	4.489

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
*** $p < 0.001$

From sofa_db.allreversednozero, data filtered by: Questionno in (11,12,17,35,58)

Table B Importance of lay opinions

Attribute explored	Groups compared	Possible matches[1]	U	z
Importance of lay opinions and intrinsic values	Applicants v Consultants	2360	1093	0.629
	Applicants v Council staff	3363	1594.5	0.488
	Applicants v Submitters	7670	3116.5*	2.091
	Consultants v Council staff	2280	1100	0.299
	Consultants v Submitters	5200	2239	1.345
	Council staff v Submitters	7410	3041.5*	1.974

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
* $p < 0.05$

From sofa_db.allreversednozero, data filtered by: Questionno in (14,21,23,30,44,45,56)

Table B Ability of public to participate in the resource consent process

Attribute explored	Groups compared	Possible matches[1]	U	z
Ability of public to participate effectively in the resource consent process	Applicants v Consultants	4704	2179.5	0.744
	Applicants v Council staff	7056	3446.5	0.262
	Applicants v Submitters	15876	5653.5***	3.847
	Consultants v Council staff	4704	2235.0	0.506
	Consultants v Submitters	10584	3177.5***	4.610
	Council staff v Submitters	15876	5140.5***	4.715

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
*** $p < 0.001$

Equity

From sofa_db.allreversednozero, data filtered by: Questionno in (47,48)

Table B Equity of outcome

Attribute explored	Groups compared	Possible matches[1]	U	z
Equity of outcome	Applicants v Consultants	308	130.5	0.777
	Applicants v Council staff	440	211.0	0.232
	Applicants v Submitters	1100	365.0*	2.319
	Consultants v Council staff	280	123.0	0.608
	Consultants v Submitters	700	207.0*	2.379
	Council staff v Submitters	1000	319.0*	2.410

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
* $p < 0.05$

From sofa_db.allreversednozero Data filtered by: questionno in (4,5,6,13,29,32,34,50,59)

Table B Equity of measurement

Attribute explored	Groups compared	Possible matches[1]	U	z
Equity of measurement	Applicants v Consultants	6565	2970.5	1.056
	Applicants v Council staff	9999	4819.5	0.449
	Applicants v Submitters	21614	6554.5***	5.737
	Consultants v Council staff	6435	2753.0	1.599
	Consultants v Submitters	13910	3366.0***	6.421
	Council staff v Submitters	21186	6202.0***	6.015

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
*** $p < 0.001$

From sofa_db.allreversednozero data filtered by: questionno in (15,16,33,55)

Table B Equity of knowledge

Attribute explored	Groups compared	Possible matches[1]	U	z
Equity of knowledge	Applicants v Consultants	1410	671.0	0.363
	Applicants v Council staff	1974	964.5	0.190
	Applicants v Submitters	4277	1328.0***	3.703
	Consultants v Council staff	1260	617.5	0.147
	Consultants v Submitters	2730	753.0***	3.739
	Council staff v Submitters	3822	993.0***	4.521

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
*** $p < 0.001$

From sofa_db.allreversednozero data filtered by: questionno in (20,36,37,38,39,40,41)

Table B Equity of power

Attribute explored	Groups compared	Possible matches[1]	U	z
Equity of power	Applicants v Consultants	4536	1748.5**	2.303
	Applicants v Council staff	6300	2660.5*	1.719
	Applicants v Submitters	15540	6604.5**	2.004
	Consultants v Council staff	4050	1846.5	0.873
	Consultants v Submitters	9990	3114.0***	4.277
	Council staff v Submitters	13875	4756.5***	4.036

1 The further the U statistic is from half the number of possible matches the less likely the difference is by chance alone and the more statistically significant it is.
*** $p < 0.001$
** $p < 0.05$
* $p < 0.1$

Appendix C. Survey data responses

This appendix contains graphs illustrating the percentage distribution of responses to all statements as received. The numbers shown refer to the statement numbers in the questionnaire (see Appenix A). All graphs exclude 'Don't know' responses.

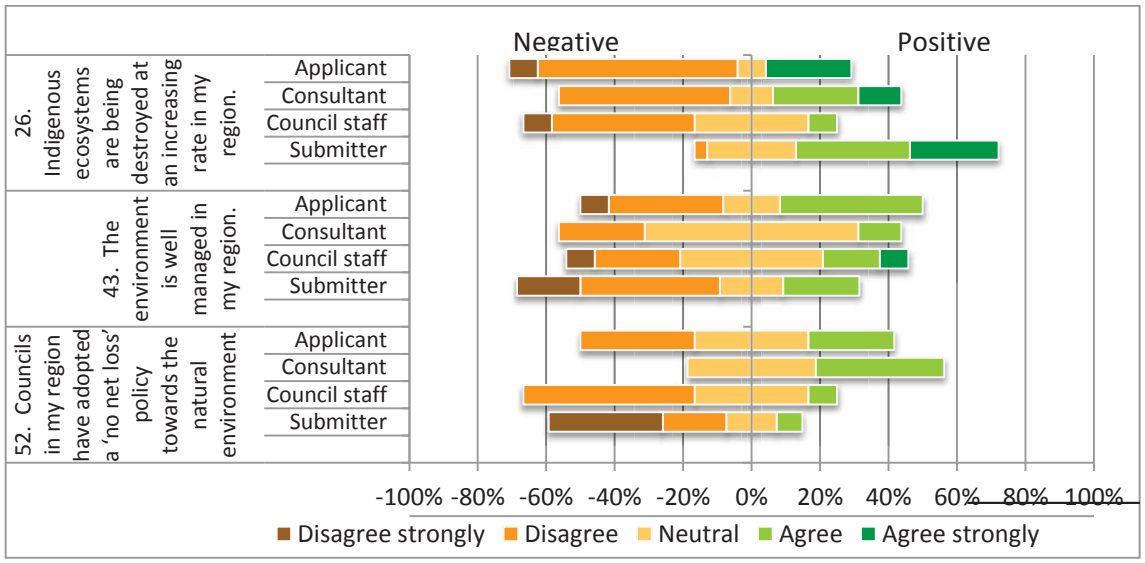

Figure C State of environment in region.

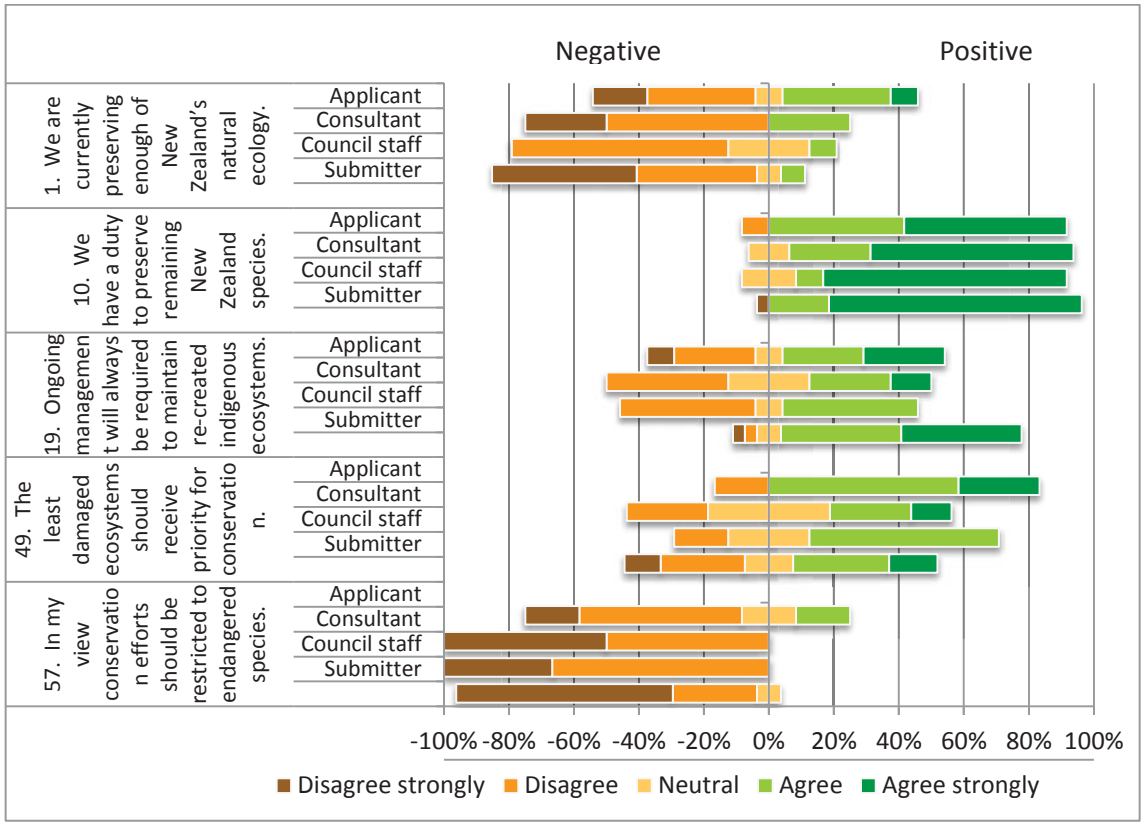

Figure C Attitude to conservation

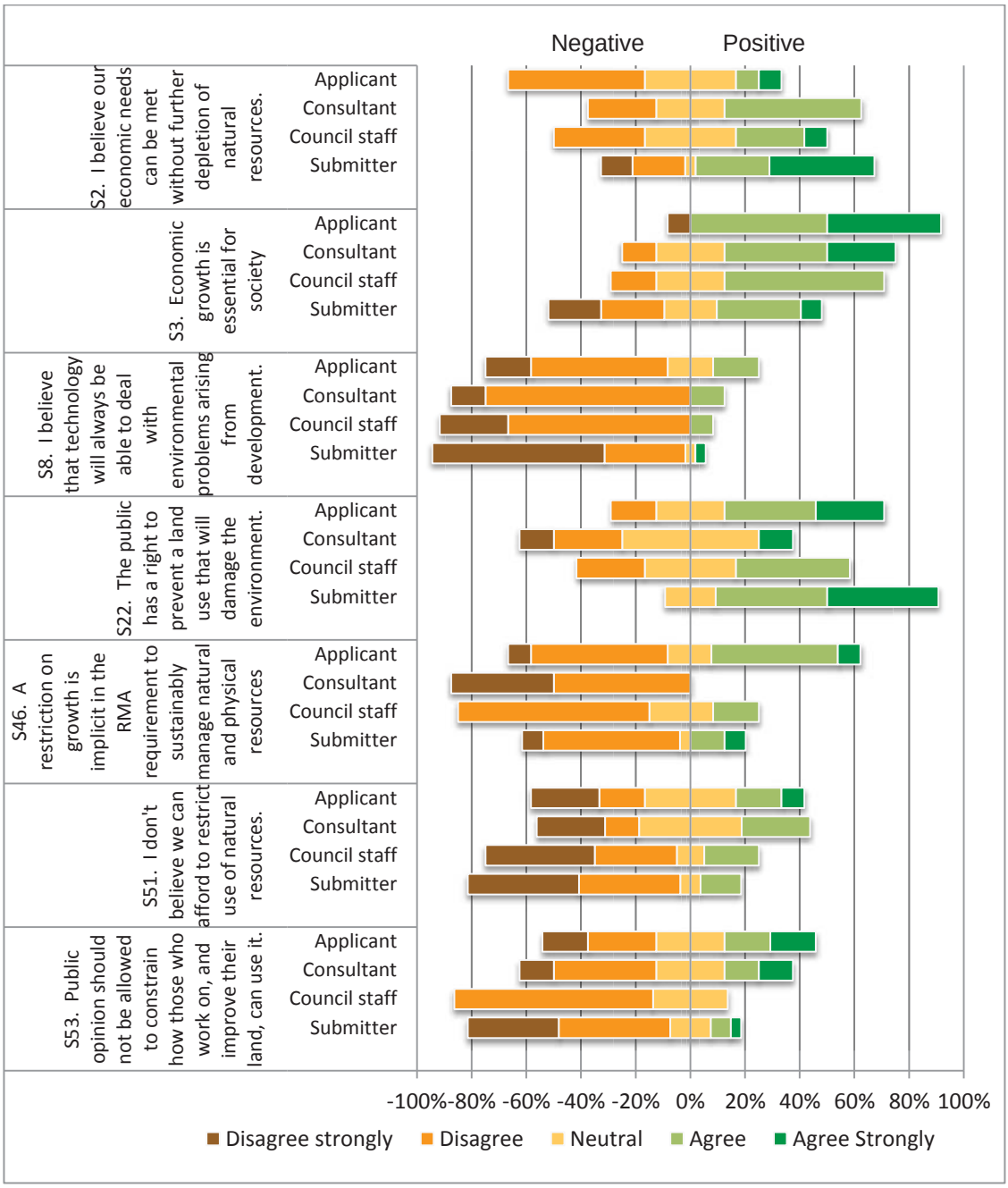

Figure C Acceptability of constraints on growth.

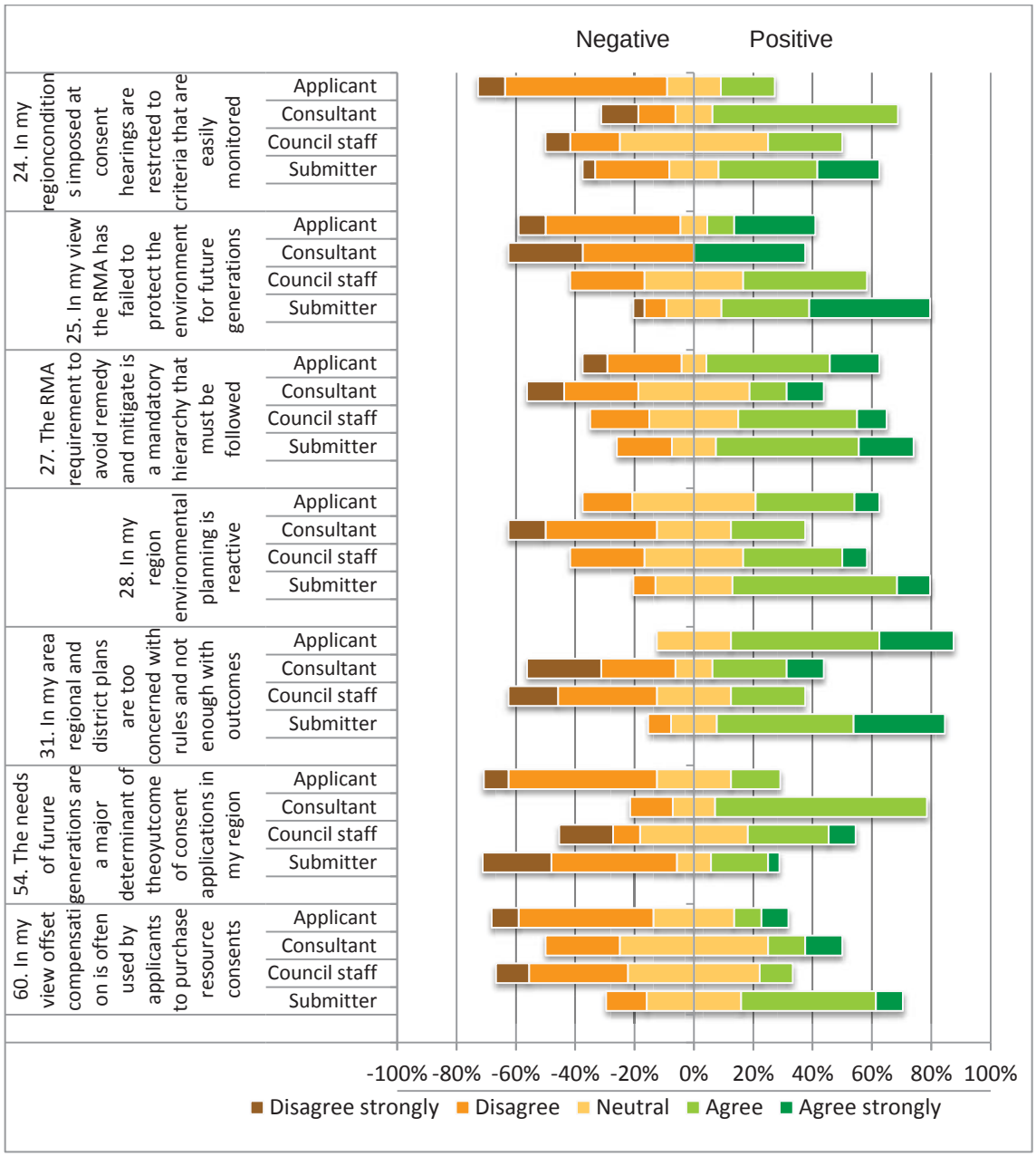

Figure C Success of RMA in managing the environment.

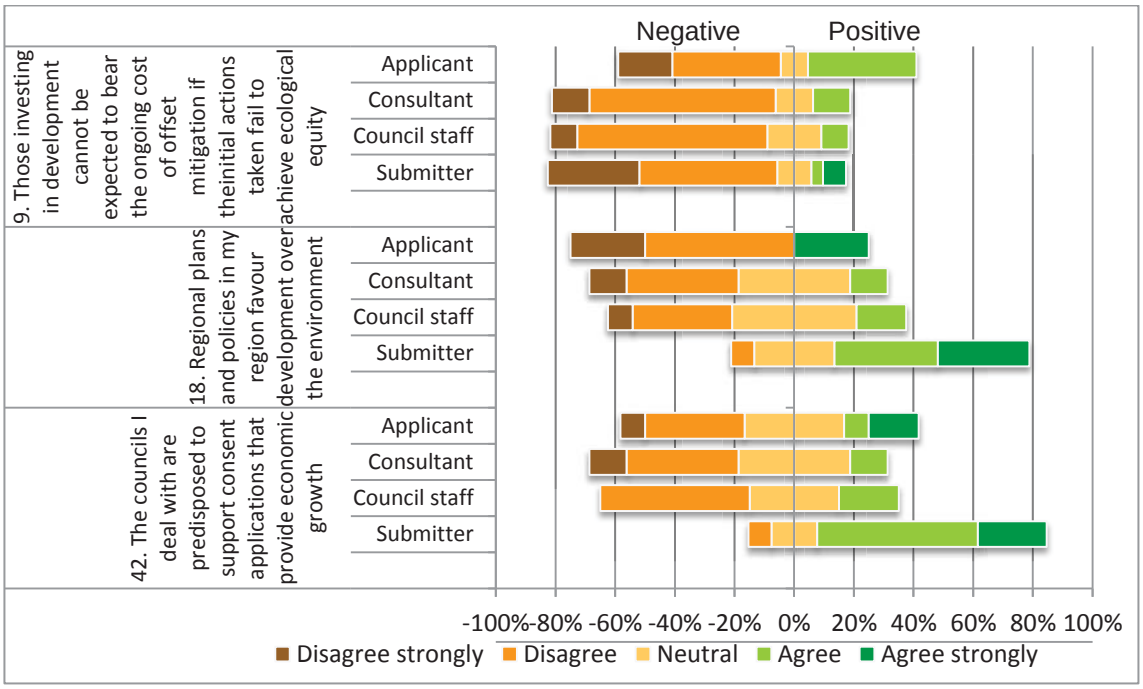

Figure C Bias in the resource consent process.

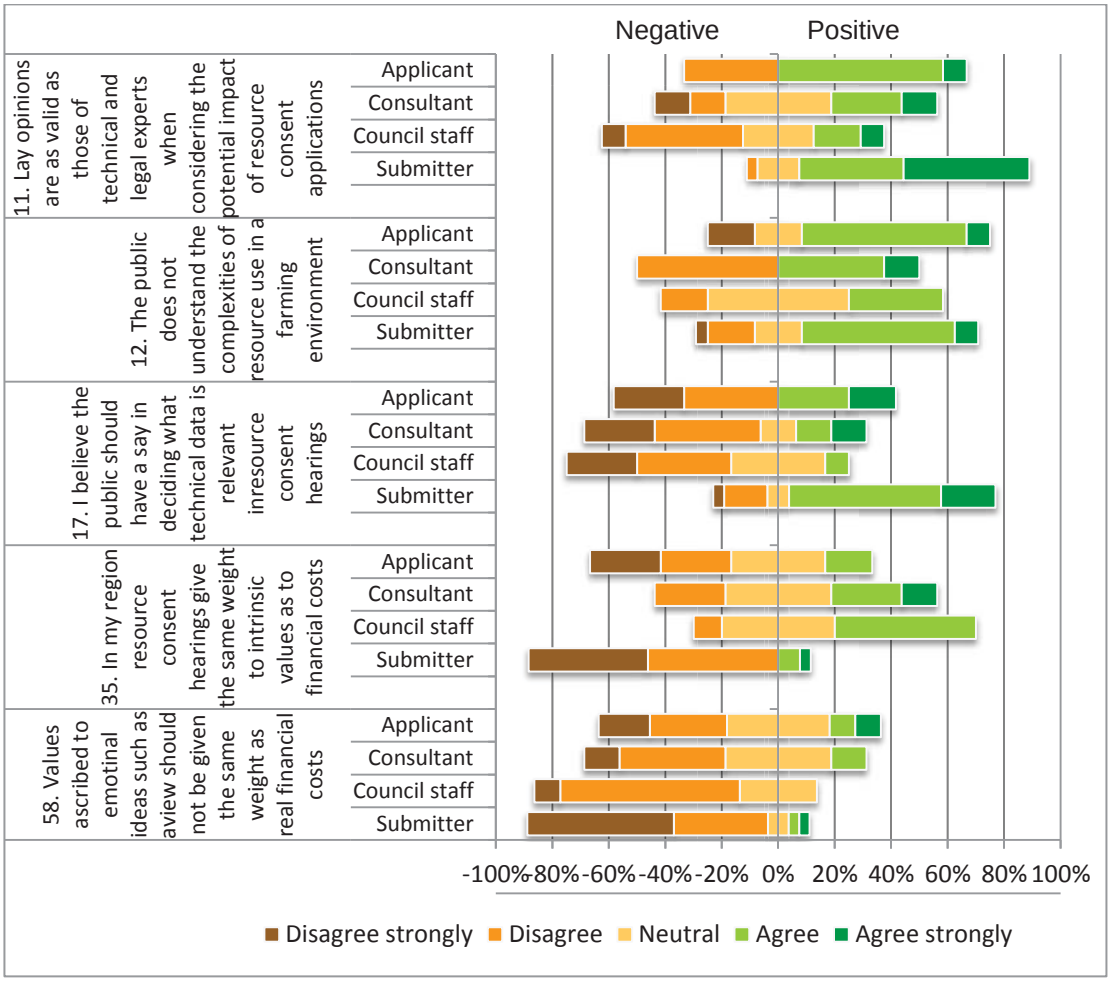

Figure C Importance of lay opinion in resource consent hearings.

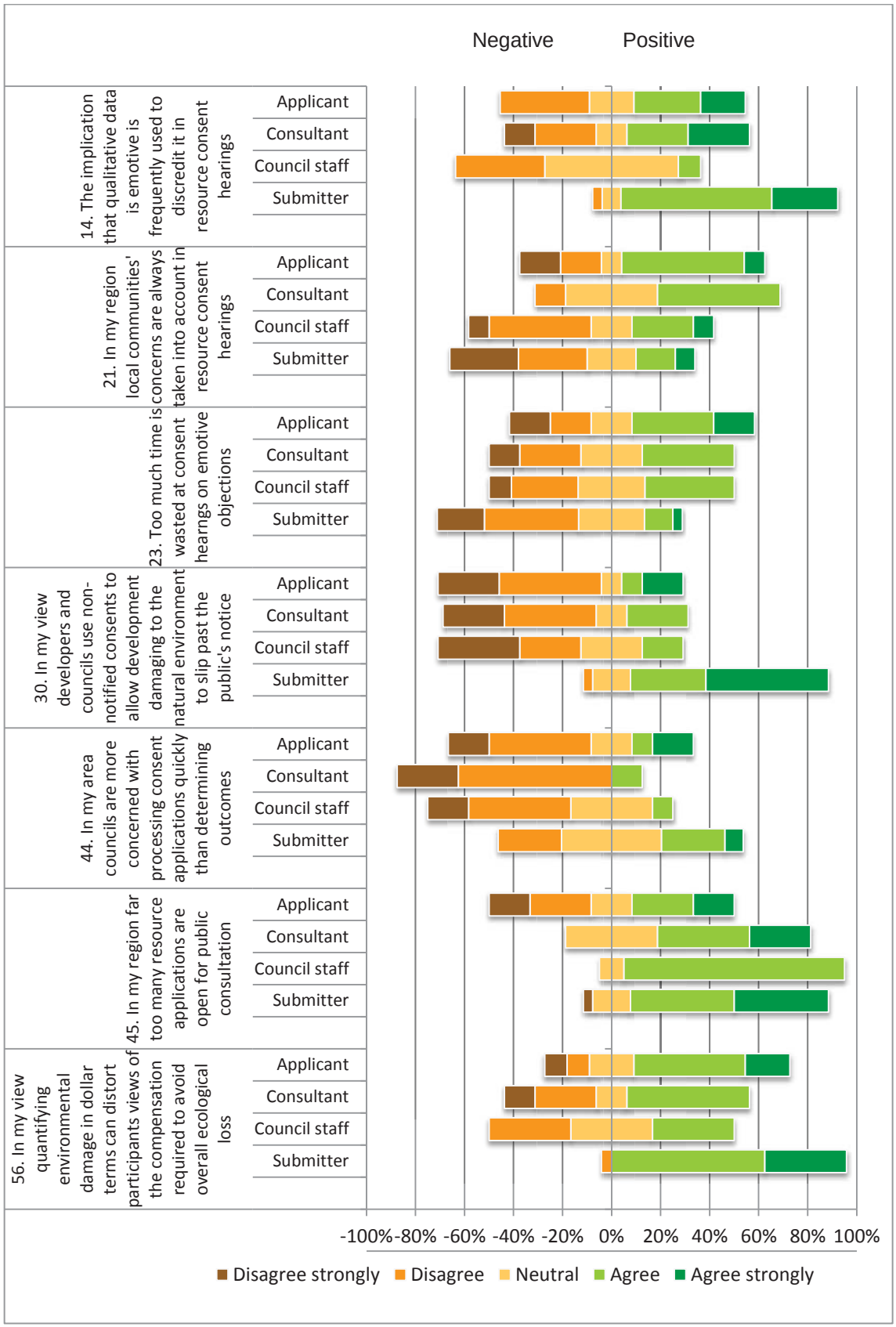

Figure C **Ability of the public to participate effectively in resource consent hearings.**

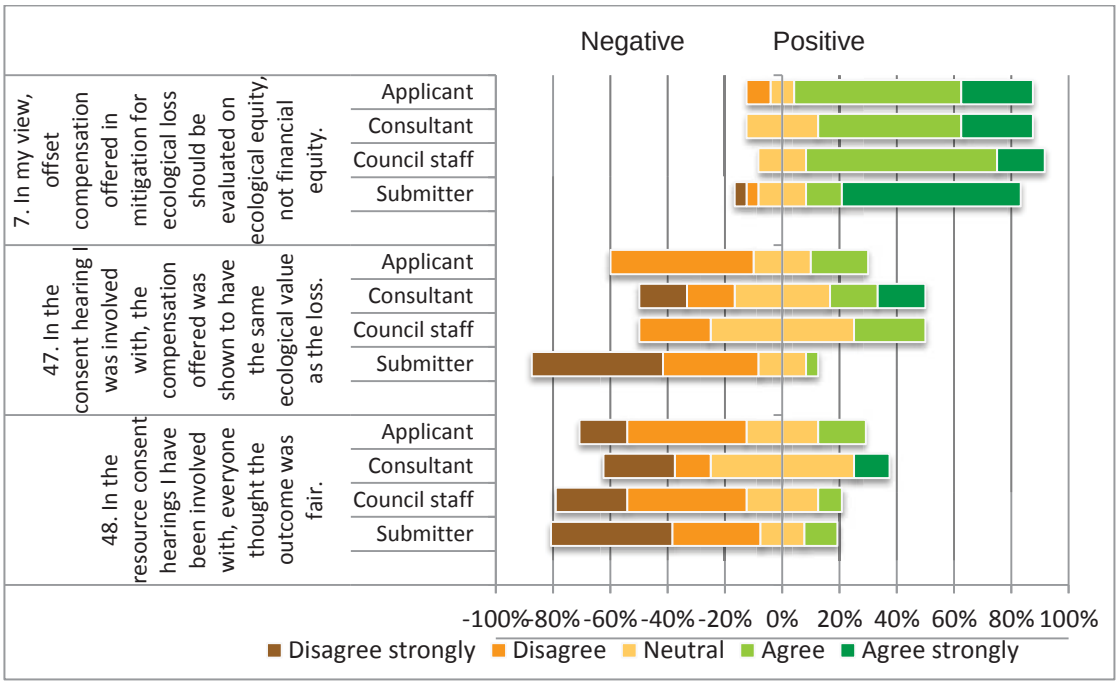

Figure C Equity of ecological outcome.

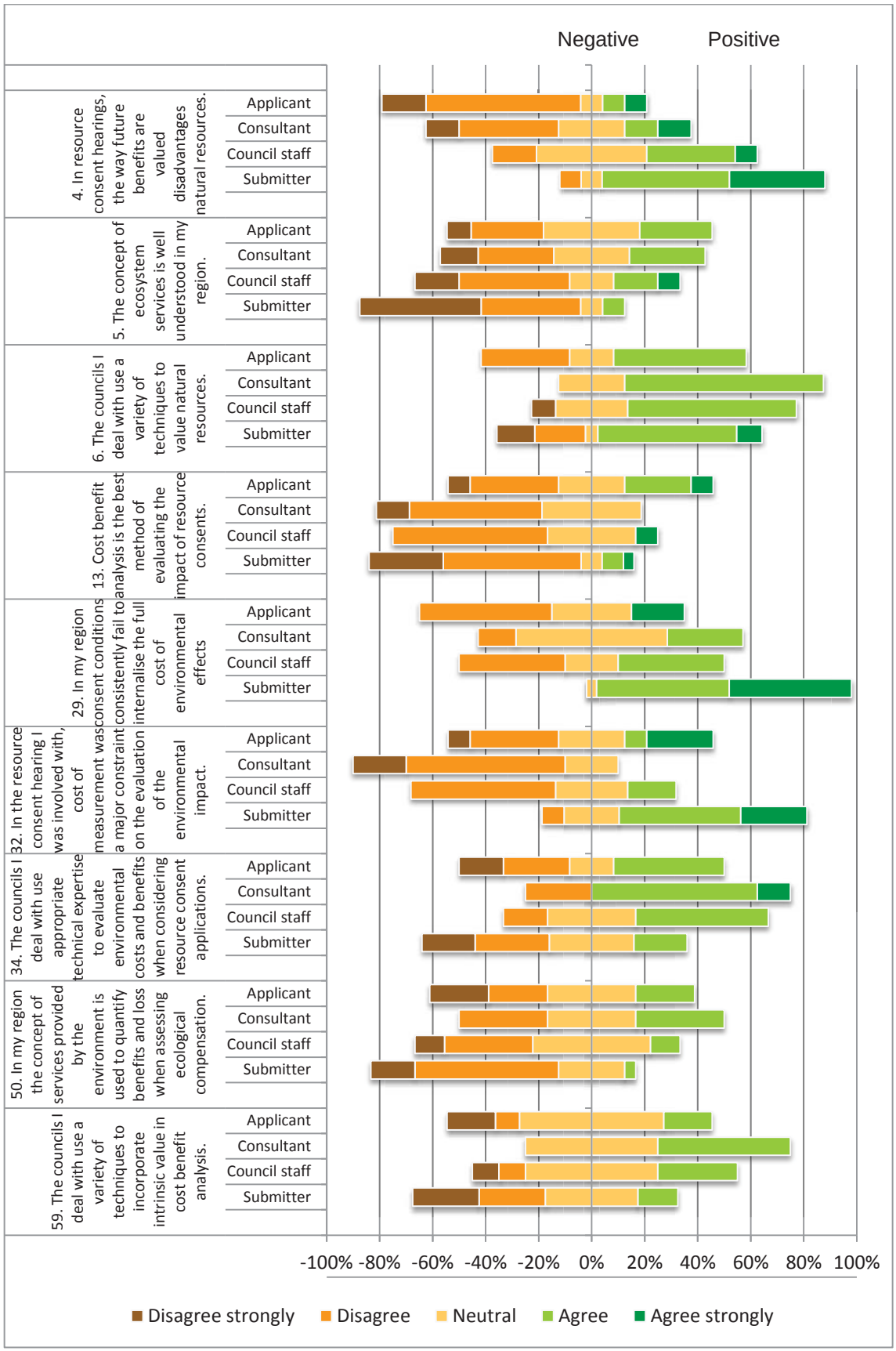

Figure C Equity of measurement.

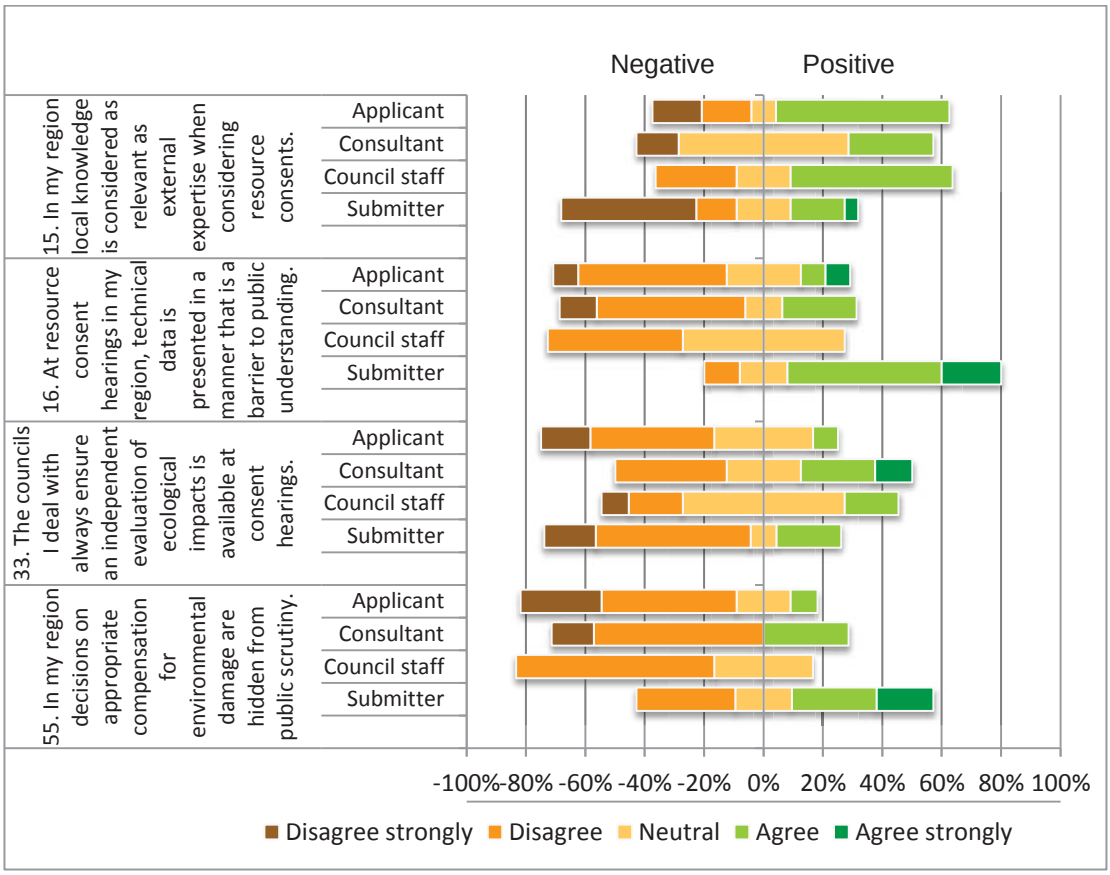

Figure C Equity of knowledge.

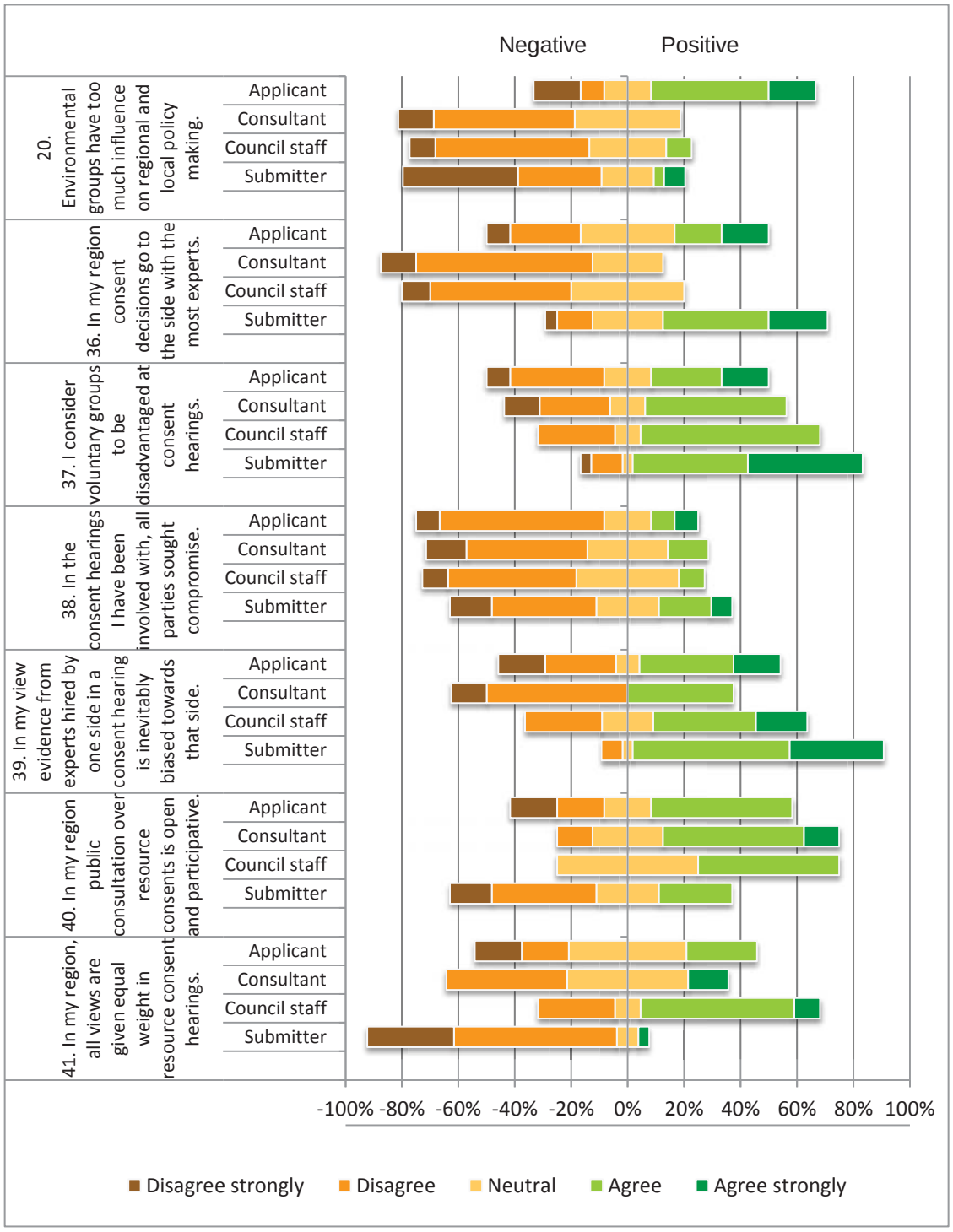

Figure C Equity of power.

Appendix D. Respondents comments

Of the fifty nine respondents, seventeen added comments to the questionnaire. Of these, four made comments on the statements in part 2, eight commented on the preferential selection for task responsibility in part 3, and five commented on both. In part 2, there were a total of 52 comments, spread over 37 statements. Two respondents accounted for over half of the comments in this part with one respondent made 17 comments and another eleven. Only one other respondent made more than 5 comments. Submitters were most likely to add a comment (22 percent), followed by council staff and then consultants. No applicant added any comment. Three statements (13, 32 & 38) had comments from three respondents, nine statements had comments from two respondents.

The majority of comments added in part 2 (80 percent) explained or emphasised the reasoning behind the response. Two respondents, a consultant and a council staff member made comments that queried the meaning of statements. Apart from one comment querying how 'endangered' was to be interpreted, all the statements commented on by these two respondents related to the costing of factors to be considered, and in particular the concept of ecological services.

One respondent also made additional extensive comments on the role of Tangatawhenua and the lack of credibility ("lip service") given to Maori perspectives in consent hearings despite the legal requirements in sections 6, 7 and 8 of the RMA 1991. All comments received are shown in Table D against the statement with which they were associated. The Reply number column refers to the number allocated to a response. Responses were numbered sequentially in the order of receipt

Table D Comments by statement

No.	Statement	Comment	Reply No
3	Economic growth is essential for society.	Depends on how measured	30
5	The concept of ecosystem services is well understood in my region	Never heard of the term	33
7	In my view, offset compensation offered in mitigation for ecological loss should be evaluated on ecological equity, not financial equity.	But not always possible	33
9	Those investing in development cannot be expected to bear the ongoing costs of offset mitigation if the initial actions taken fail to achieve ecological equity with the adverse effects	The question [sic] is too complex to give a worthwhile answer.	33
13	Cost benefit analysis is the best method of evaluating the impact of resource consents.	If use natural resource economics	30
		Uncommon in AEE hearings in my experience (and contentious when presented)	33
		Depends on methods and how well they do it. Q. is open to debate.	54
15	In my region local knowledge is considered as relevant as external expertise when considering resource consents.	Local 'knowledge' can be right and can be wrong	33
16	At resource consent hearings in my region, technical data is presented in a manner that is a barrier to public understanding.	Water planning is technical	30
18	Regional plans and policies in my region favour development over the environment.	Especially farming	30
19	Ongoing management will always be required to maintain re-created indigenous ecosystems	Ongoing maintenance will always be required to maintain both re-created and existing indigenous ecosystems (list of examples given)	45
20	Environmental groups have too much influence on regional and local policy making.	National – Greenpeace does, local groups do not.	47
22	The public has a right to prevent a land use that will damage the environment.	Depends on extent of damage	33
23	Too much time is wasted at consent hearings on emotive objections	Because it is not recognised appropriately	11
24	In my region conditions imposed at consent hearings are restricted to criteria that are easily monitored	I agree this is often the case but also believe that conditions are sometimes (or perhaps more commonly) imposed (to pacify objectors) which would be difficult to monitor – but without any intention of doing so.	45
25	In my view the RMA has failed to protect the environment for future generations	The way in which the RMA has been applied	47
27	The RMA requirement to Avoid, Remedy and Mitigate is a mandatory hierarchy that must be followed	Means nothing – it should be prioritised	30
28	In my region environmental planning is reactive.	Generally but not invariably true	45

No.	Statement	Comment	Reply No
29	In my region consent conditions consistently fail to internalise the full cost of environmental effects	What does this mean?	22
32	In the resource consent hearing I was involved with, cost of measurement was a major constraint on the evaluation of the environmental impact.	? cost of EIA	9
		[cost of measuring] of what?	22
		Cumulative effects in particular	30
33	The councils I deal with always ensure an independent evaluation of ecological impacts is available at consent hearings	not truly independent	11
		depends if you think council independent	33
36	In my region consent decisions go to the side with the most experts	And lawyers!!	11
		'supposed' experts	45
37	I consider voluntary groups to be disadvantaged at consent hearings.	Usually because they are less well informed	33
38	In the consent hearings I have been involved with, all parties sought compromise.	Only some hearings	9
		Where appropriate	30
		Lay groups less likely to - zealots	33
39	In my view evidence from experts hired by one side in a consent hearing is inevitably biased towards that side.	depends	30
40	In my region public consultation over resource consents is open and participative.	Depends on stakes	32
41	In my region, all views are given equal weight in resource consent hearings.	Bad question [sic] ambiguous	22
		Not all views equal some ill-informed	33
42	The councils I deal with are predisposed to support consent applications that provide economic growth	But then I've not process a consent application to reduce growth	33
		'purport' to provide	45
46	A restriction on economic growth is implicit in the RMA requirement to sustainably manage natural and physical resources.	[RMA] not backed up by plan rules	32
47	In the consent hearing I was involved with, the compensation offered was shown to have the same ecological value as the loss	In one case	33
48	In the resource consent hearings I have been involved with, everyone thought the outcome was fair	can't please everyone	33
49	The least damaged ecosystems should receive priority for conservation.	Depends on rarity plus values etc	30
		The most vulnerable and scarce ecosystems should receive priority. However all remaining (greatly diminished) natural ecosystems are of such importance that none (even relatively common or damaged) should be considered as disposable	45

No.	Statement	Comment	Reply No
50	In my region the concept of services provided by the environment is used to quantify benefits and loss when assessing ecological compensation	What does this mean?	22
		Dumb question. The environment can't provide services. A service can only be provided by a human or organisation by definition. Do you mean 'opportunities' or 'resources'?	33
51	I don't believe we can afford to restrict use of natural resources	In NZ? or everywhere?	22
		In what sense [afford]	33
53	Public opinion should not be allowed to constrain how those who work on, and improve their land, can use it.	Depends on constraining factors	11
		[the] public picks up costs of poor land care decisions	30
54	The needs of future generations are a major determinant of the outcome of consent applications in my region.	'perceived' needs	45
56	In my view quantifying environmental damage in dollar terms can distort participants views of the compensation required to avoid overall loss to the environment	Hard to quantify costs	33
57	In my view conservation efforts should be restricted to endangered species.	Are species listed somewhere? Is this [endangered] a defined term or just a personal opinion	22
58	Values ascribed to emotional ideas such as a view should not be given the same weight as real financial costs	Views at Milford versus new port expansion	30
		Amenity and landscape values are not always 'emotional'	33

Comments on identification of actual and preferred responsibility for tasks (Part 3)

Table D Comments on responsibility for tasks

Comment	Reply No
But would need support to do so (Respondent identified voluntary groups and National NGOs as those who should be responsible for the tasks)	11
What is this [environmental services] What does this mean [ecological uncertainty] Questions are ambiguous or require knowledge of terms and phrases not commonly used in my area. This is not possible to answer if only one tick is allowed. In my experience onus is ion applicant but joint effort with council once lodged. 'Academic' question miss coal face experience	22
By voluntary I mean unbiased / impartial group (Respondent identified voluntary groups as those who should be responsible for the tasks)	27
Applicant with review by council [identifying causes of environmental impacts] The weakness is determining cumulative effects. Applicants do not do this work well!	30
I have ticked just one box as requested but the exercise is pointless. (Respondent considered responsibility for tasks changed during process)	33
This question is too restrictive and does not relate to the true situation in hearings. (Should be shared responsibility)	35

Comment	Reply No
This has to be a shared responsibility	40
The reality is Tangatawhenua in my region are the ones who actually see and pinpoint most if not all of these aspects, but who have no actual authority to have a meaningful input.	44
Offsets are an insult to anyone wishing to improve environmental outcomes in the future. How can offsetting biodiversity in another place be seen as an adequate compensation for net loss in this place?	46
Should be Government led investigator and completely independent of the developer, but equal or better in expertise to developers hirelings.	50
1. Ticked council but really this whole area needs national research and guidance. The role is beyond ratepayers & council resources. MfE should be looking at some of this stuff. 2. RMA - onus of proof of no significant adverse effect should be on applicant. All too often it is on submitters & councils required to do far too much work on effects side of applications.	52
This question was difficult to answer. IF councils could be trusted they should be primarily responsible. But as they can't be trusted then an NGO should do the work & an independent council (not necessarily local government) should arbitrate.	54
Applicants role to identify, Councils role is to assess and review	55