

From Vision to Action: Transitions to Sustainability in Otago's Tertiary Education Institutions.

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Abstract

The imperative for tertiary education institutions (TEIs) to use their unique and influential positions to assist society in a transition toward sustainability is keenly observed in the public sphere, as the global environmental crisis looms ever closer. Despite an increasing level of expectation at the global level and a certain resonance with the challenge, TEIs do not demonstrate an innate ability to perform this task, and their collective response has been slow.

This thesis explores *how* TEIs are addressing sustainability, through a comparative case study approach. The University of Otago - Te Whare Wānanga o Otāgo, and Otago Polytechnic - Te Kura Matatini ki Otāgo, are neighboring institutions operating within similar conditions. However, their approaches to sustainability have previously been recognised as distinct. The qualitative approach used for this research was designed to gather information that would enable an investigation into the institutional practice of sustainability and the process of its development. The study maintains a focus on lived experiences and questions of change at the day-to-day level, where individual engagement, decision making and innovation serve to constitute and evolve the processes, structures and cultures of an institution.

The analysis of emergent themes in interviews with staff at the TEIs uncovered elements of governance, social mechanisms and processes that are influential in the transition toward sustainability. Findings hold compelling implications for systems approaches. Clear evidence was found of the viability of sustainability as the strategic direction for a TEI. In uncovering and explaining relevant structures and processes that govern events in terms with universal relevance, it is hoped this study may have transformative value outside the context in which it was formed.

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Introduction

1.1 Introduction

We are in the midst of a global environmental crisis that is propelling exponential change in the ecological and social systems that sustain us. Addressing challenges such as climate change, loss of biodiversity and social inequity requires urgent action. An all-encompassing questioning of human-nature relationships has a central role to play, as we seek to substantiate a world that is environmentally, socially and economically sustainable.

A central challenge is *how* do we transform our current, unsustainable patterns and activities. Education is globally acknowledged as the critical platform from which society can learn to find new approaches, manage change and make transitions toward more sustainable worldviews and practices (Williams, 2008, p. 1). There is a resonant global call for action which has a particular reverberation with the deep influence and unique potentials of the higher education sector as a whole. Individual institutions are responding to the call in various ways, including approaches through student learning, role modelling, research and outreach. For example, graduates are generally regarded as the most significant contribution of the sector to the wider world, with attitudes, values and critical thinking developed alongside focused vocational skill sets. Alongside the implementation of curriculum objectives, campus operations and management practices model and experiment with sustainable practice. This can contribute to learning outcomes associated with values, attitudes and behaviours, as well as catalysing broader societal change in domains such as sustainable procurement. Further institutional responses to the call for action can be found within academic research, which can generate and develop theoretical insight and innovation. Additionally, interdisciplinary approaches can integrate ideas from different disciplines in order to create new knowledge perspectives and common language. Finally, collaboration and partnerships connect people, networks and ideas, and community outreach promotes and supports practical action, catalysing change in wider society. The value, characteristics and interconnections between these approaches are discussed in the literature (see,

for example, Ferrer-Balas et al., 2008; Stephens, Hernandez, Román, Graham & Scholz 2008; Shephard, 2008; Van Weenen, 2000; Wright, 2002, 2007). When such means of moving toward sustainability are combined and transformed into systemic approaches (see Sterling, 2004; Tilbury, 2004), higher education can be seen to have a critical role to play in moving toward future global well-being.

The emergence of the sustainability movement in higher education can be traced back to the environmental education movement of the late 1960s and 1970s (Corcoran, Walker & Wals, 2004). More recently, a strong and unified response was evident in the formation in the year 2000 of the Global Higher Education for Sustainability Partnership (GHESP), which brought together many international alliances and partnerships committed to making sustainability a major focus of higher education, including the signatories to well-known declarations such as the Talloires Declaration.¹ However as noted by Corcoran et al., (2004, p. x), progress has been slow in reorienting education toward sustainable development.

In an attempt to renew a global focus on the role of education in society's transition to sustainability, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) has declared 2005-2014 to be the United Nations Decade of Education for Sustainable Development (UNDESD). In their report on New Zealand's starting point for action and early contribution to the initiative, Chapman, Flaws and Le Heron (2006) argue that institutional realities in New Zealand severely constrain any ambitions for becoming a world-leading example, with evidence suggesting "that until understanding of the constraints of existing educational frameworks is taken seriously, prospects are slim for anything other than rhetorical and cosmetic adjustments in educational curricula and educational outcomes" (pp. 281-282). With almost zero recognition or commitment to any aspect of the UNDESD agenda revealed in a 2006 email survey of New Zealand's universities (Chapman et al., 2006, p. 289), central recommendations include a realistic assessment of the existing situation and compromises to be faced, and a focus on removing the institutional obstacles and impediments to creating a 'sustainability mindset'.

Expectation for action toward sustainability from an increasingly frustrated and anxious society, the compelling potential of the tertiary education sector to shape futures and make change, and the emerging cumulative response of increasing numbers of TEIs would seem to have elevated the topic of sustainability promotion through higher education both in the public sphere and in academic literature. Prominent tertiary education institutions (TEIs) such as Harvard, Cardiff, Rhodes and Griffith Universities, to name just a few, appear to have made the principles

¹ The Talloires Declaration (ULSF, 1990) is a declaration specific to higher education, with a central focus on ecological degradation. The declaration presents a set of principles for taking vision through to action through education, policy formation, institutional transformation, research and information exchange. It now has over four-hundred signatories, from over forty countries and across five continents worldwide (ULSF, 2008).

and practice of sustainability an increasingly central focus of objectives and activities in domains including learning and teaching, management, outreach and operations.² Substantial response and action in such exemplary institutions reveals a building momentum for change that sends a clear message to all other institutions to commit sincerely to sustainability. Many TEIs have responded to the increasing expectations of stakeholders, including students and wider civil society, by making some attempt to promote sustainability within their institution, and thus enhance their "sustainability credentials" (Ryan, Tilbury, Corcoran, Abe & Nomura, 2010, p. 109). The contextual and contested nature of sustainability in higher education (see Wals & Jickling, 2002) means there is vast scope for what can be perceived as a meaningful response, commitment and action. However, the potential transformative value of TEIs to propel society toward sustainability does not equate to an innate ability to perform this task. At a deeper level, the formal education system, including that of higher education, has been identified to largely remain a part of the 'unsustainability problem' that it seeks to address (Sterling, 2008, 2010). Institutions of higher education can thus be viewed in two ways: either heralded as unique and potent change agents, or perceived as needing significant internal change themselves (Stephens et al., 2008). Achieving internal change to meet expectations will be dependent on a range of factors, both complementary and competing.

This research study is grounded on a qualitative, comparative case study of two TEIs which held divergent approaches to sustainable practice at the time of investigation. A learning opportunity on the processes to advance sustainable practice within a TEI was anticipated through a comparison of relative differences. The two TEIs are located in Dunedin, New Zealand. Academic, and general (i.e. administrative) staff who are actively engaged in pursuing sustainability oriented goals at Otago Polytechnic - Te Kura Matatini ki Otago, and the University of Otago - Te Whare Wānanga o Otāgo, were interviewed with the purpose of furthering the understanding of the key factors, challenges and opportunities that influence the development of sustainability in higher education. A diversity of literature from multiple disciplines has been reviewed, reflecting a key methodological aim of the study, namely, to allow the data to speak for itself to an open mind, through a grounded theory approach. The study aims to contribute beyond the reasonably saturated area of a mere description of the key factors, challenges and opportunities, attempting instead to live up to what Corcoran et al. (2004) describe as the transformative potential of problematising practice, ultimately seeking insights applicable to other institutions and beyond.

² These institutions appear to have well-established, multi-faceted approaches to sustainability, as indicated on their websites: <http://green.harvard.edu/>; <http://www.cardiff.ac.uk/sustainability/>; <http://www.ru.ac.za/environment/>; <http://www.griffith.edu.au/sustainability>

The following sections of this chapter introduce the concept of transitions to sustainability as it has been applied to this research, before placing emphasis on institutional cultures and governance in this process. The case study institutions are then introduced more fully, followed by a study of the viability and reasoning behind the selection of general and academic staff as study participants. An introduction to the methodology is then followed by a statement of the research aims and objectives. The final section of this chapter presents a brief summary of the structure and outline of the remaining chapters of the thesis.

1.2 Transitions to sustainability

In the current era of degradation and exponential change in the ecological and social systems that sustain us, the nature of long-term, sustainable and harmonious relationships between human beings and the natural world has garnered renewed focus as an acute, existential concern. Our cumulative behaviours as a species on this planet require change. A transition can be defined as the process or a period of changing from one state or condition to another (The Oxford English Dictionary, 1989), a concept utilised here to imagine changes within and between human societies and their relationships with the natural world, that are currently and widely perceived to be unsustainable in the long term (UNEP, 2012).

A salient feature of attempting change toward improved sustainability is the ongoing struggle with problems of definition of the central term, and of boundaries and assumptions in interpretation and construction (Brown, Hanson, Liverman & Merideth, 1987; Byrch, Kearins, Milne & Morgan, 2007; Wals & Jickling, 2002). In moving toward sustainability, challenges go beyond the absence of a clear picture that defines what sustainability 'looks' like, including difficulty in connecting theory with practice. A spectra of philosophical views make particular assumptions on, for example, notions as to whether humanity is separate to or part of the natural world, and of the centrality of human or environmental wellbeing. According to Laws et al., (2004), implementation is a process whereby "knowledge derived from theory and disciplinary research is applied to improve or perfect problem solving in the world" (p. 253). The divide between theory and practice is core to long-standing philosophical reasoning and debate, with a level of focus on both the validity of a theory, and how it informs process. In applying theory to practice, additional questions are inevitably raised, such as what action is valid, and under whose authority. These overlapping themes are central to the focus of this research on the social, cultural and political factors that support or constrain the practical, the tangible and the applied.

In terms of action, participative approaches to developing sustainable practice are widely advocated. For reasons associated with the complexity, progressing toward a goal with a final

form that is unknown must function in tandem with strong, organization-wide engagement and participation for knowledge creation and innovations in practice, as advocated by Allen (n.d.), Hopkins (2008), Lozano (2006), Tew (2005), Voss et al. (2006), and Wals (2007) amongst others. The resilience that diversity brings to a system (see Meadows, 2008) is a concept of particular relevance to the argument of the need for wide participation in decision-making and action at the institutional scale. Additionally, in redesigning human systems, participation is a valuable educational experience that provides understanding and knowledge to assist an organisation to realise its objectives (Mumford, 2003). Action is deeply linked to knowledge acquisition and understanding: rather than as a set of outcomes, learning from experience can be conceived as a valuable process of profound learning (e.g. Barth et al., 2007; Kolb, 1984), which is operational at an organisational as well as an individual scale. Such organisational learning can be assisted by the creation of new contexts, whether through generating new understandings of a situation, or by engaging in new actions (Morgan, 2006, pp. 255-260). Morgan goes on to describe the well-known concept of how small but critical changes in these new contexts at critical times can trigger disruptive and transforming effects. With a focus on learning-by-doing and doing-by-learning, incremental transitions initiatives can serve a process of exploring the various options for addressing persistent problems by searching, learning and experimenting (Kemp & Rotmans, 2008; Voss et al., 2006). New ideas emerge from new understandings in new contexts, and further, while incremental change is only moderately disruptive, transformative change of deeper systems can occur when critical change takes place at critical times (Morgan, 2006). Drawing on the above, the concept of transitions initiatives is defined for the purpose of this study as incremental change initiatives that emerge within changed operating and decision-making contexts, with the ultimate goal of leveraging transformative change toward a tertiary education model fit for the twenty-first century.

Given that there is an absence of a blueprint toward achieving clearly predefined sustainability goals, the focus of this research is on the processes and conditions that support or constrain transitions initiatives, which effectively define or prioritise sustainability goals at the selected case study TEIs. Actual activities within any one TEI may include carbon reduction, commitments with curriculum, initiatives with waste and a myriad of other material resource, capacity building and cultural inclusion elements (Sofer & Pottern, 2008). However, rather than attempting to measure or verify the impacts of initiatives, this study seeks to understand *how* sustainable practice evolves within the case study institutions. It is the day-to-day decision-making processes and institutionally localised social and cultural influences that are intrinsic to this comparative case study analysis. The value in distinguishing transitions initiatives as discrete and incremental actions is significant when juxtaposed against complexity theory, which

emphasises that new order *emerges* (Corning, 2002), and that the precise nature of the new order cannot be found through prescribed targets or imposed control (Morgan, 2006, p. 256). Given the inherent complexity of sustainability and the diversity of perspectives and experience of individuals in any one organisation, implications for access to participation forms an omnipresent theme integrated into discussion throughout this thesis. This focus has the effect of continually questioning culture and governance within an organisation.

In examining aspects of the implementation of sustainability, from vision to action, in the two case study TEIs, the goal is to further understand how emerging ideals surrounding sustainability become active elements of normative practice. The purpose of this study is to improve sustainable practice within the author's TEI, and potentially to help others elsewhere to improve their practice, by drawing lessons that may be transformative beyond the context in which they have been founded.

1.3 Institutional governance and transitions to sustainability

Governance can be described as the process of decision-making and the process by which decisions are implemented or not implemented (United Nations Economic and Social Commission for Asia and the Pacific [ESCAP], 2011). These processes may be political, economic, administrative and social in nature, and may be formalised into policy or embodied less explicitly as a culture or accepted practice. There are implications as to who is included, who stands to benefit and under whose authority, in the exercise of power within a given domain of activity. These implications extend to the situation of transitions to sustainability in the case study TEIs.

We live in a democratic era, with a widespread belief that rules are only legitimate if they conform to broadly democratic principles, appropriately adapted for the context (Keohane, 2003, p. 3). A normative claim is that those who are affected by a rule or practice should have a say in its creation; as such, participation is a crucial element in the governance of transitions. From Cleaver (2007, pp. 223-224), the participation of individuals in negotiation and decision making around collective arrangements is seen as instrumentally desirable, assumed to positively influence rule making, with the potential to renegotiate and transform norms.

Governance in an organization that is learning to be more sustainable encourages and promotes broad-scale engagement and participation in finding a way forward. Transition Towns networks, a very rapidly growing global movement for localised community resilience and capacity building in sustainable practice (see www.transitiontowns.org.nz), and a network of

which the author is a member, recognise that transition initiatives function best in a collaborative governance arrangement that combines top-down and bottom-up responses (Hopkins, 2008). Likewise in a higher education context, governance for change is best managed with facilitation from the top (i.e. top-level administration), and innovation and implementation from the bottom (i.e. academic and general staff) (Elton, 2003). According to Wals (2007, p. 14), leadership in an organisation that is learning to be more sustainable therefore consists of continually facilitating the emergence of new structures and incorporating the best of them in the organisation's design. Lozano (2006, p. 793) points out that participation works both ways; even though leadership plays a vital role in bringing sustainability into higher education institutions, all individuals in the organisation need to examine their attitudes and work towards integrating it into their culture and system. It has been proposed that change within higher education, therefore, depends upon more than a hearts and minds approach. In drawing on change theory, Elton (2003, p. 210) emphasises the definite need for power structures—that is, the 'carrots and sticks' socio-political approach, as a complement to educational strategies and reasoning.

Within a co-evolutionary or participative management approach, there will be a diversity of knowledge, of guiding images and ideals, and of influences in the network of people making decisions within and/or on behalf of any institution. Topics such as climate change can bring forth highly polarised and conflicting perceptions of risk, and appropriate responses may be culturally informed and adopted according to an individual's self-defining values (Kahan et al., 2012). Attempts at sustainability praxis therefore hold innate controversy as disruptive, transformative change is sought in a complex decision-making environment.

While participative decision-making approaches for institutional transitions toward sustainability are recognised as desirable, TEI governance is strongly guided by the external operating environments. The roles and functions of TEIs are contested as economic and policy environments change, with pressures on institutional resources along with stakeholder expectations having led to the adoption of governance and management structures that are closer to those in the corporate sector (Middlehurst, 2004). TEIs have become increasingly corporatised (Stephens et al., 2008), and are repositioned to serve global knowledge economies (Middlehurst, 2004). Ultimately, knowledge is in demand, but is at risk of becoming a commodity. In this increasingly competitive environment, access to education is increasingly restricted to those who can afford it, with teaching and research programmes aligned with the demands of the economy, and costs often cited as a barrier to investment in transitions initiatives. The accountability of governance in large organisations has also come under increasing scrutiny, as the influence of large organisations and their effect on public policy formulation and implementation in the current neo-liberalised operating environment is acknowledged (e.g. Sørensen & Torfing, 2005). Such

external factors form an intrinsic part of the context in which organisational change takes place, from inhibition to opportunity—from the establishment of regimes and dichotomies of practice that restrict transformative change, to the pursuit of excellence and global leadership informed by concepts of good governance.

Both the external operating environment and internal governance factors influence sustainability transitions. This research maintains a particular focus on examining internal factors including institutional leadership, and socio-cultural processes and mechanisms for staff participation, in two case study institutions that operate under similar external conditions. By naturally lending themselves to the concept of a 'case', distinct organisations provide a methodologically useful entry point for research, and have become an important focus of interest in contemporary human geography (MacKinnon, 2009). Further, Williams (2008) asserts, that it may be factors that are internal to institutions that present the greatest challenge to sustainability initiatives.

1.4 Interview participants in the case study: general and academic staff

Academic and general staff have been selected for interviewing for this research, as they have been identified by Brinkhurst, Rose, Maurice & Ackerman (2011, p. 338) as potential critical leaders in institutional efforts to achieve lasting progress towards sustainability. Further, academic and general staff are uniquely positioned to recognise the opportunities and limitations of operational processes, and work with them in leading transitions initiatives (Brinkhurst et al., 2011; Kezar, Bertram Gallant, & Lester, 2011). The literature on 'middle-out' organisational change (as distinct from leadership- or student-initiated change), questions the conditions under which faculty and staff can best be supported in their efforts.

Through an extensive case study, Kezar et al. (2011) found that the tactics for change used by faculty and staff are distinctly shaped by and aligned with the culture and character of the organisation of which they are a part. Factors such as official permission, support and reward for action toward a more sustainable future greatly assist in integrating such activity into a workplace. In the absence of such strategies and culture in a workplace, the resulting sense of misalignment does not necessarily extinguish transitions efforts; instead, different approaches are generated. Meyerson's (2001) concept of the 'tempered radical' describes marginalised institutional agents who work toward transformational ends incrementally with patience, courage and conviction. The problems with such an approach, however, include a dampening of the creativity, innovation and criticism that take place when, according to Lehrer (2012, pp. 175-212), people and their ideas

join together. Employee disillusionment and subsequent disengagement, and inefficient progress toward institutional vision statements are inevitable outcomes.

In Wright's (2007) report on the results of an extensive consultation exercise with thirty-five experts to develop research priorities for the emerging field of higher education for sustainability, research into institutional culture and organisational governance was identified in the top three of nineteen emergent research themes. This study aims to contribute further evidence to the literature on sustainability in higher education institutions, by investigating institutional culture as experienced and perceived by academic and general staff involved in transitions initiatives in the case study organisations.

For the purposes of introduction, the two case study institutions are briefly profiled in the next sections of this chapter, to confirm the scope for a learning opportunity based on a comparative analysis of internal governance factors. Given the rapidly growing global attention given to sustainability transitions, allowing for the maturing or fruition of activities in both institutions, and the changeover to a new Vice-Chancellor for the University case study later that same year, this research should be taken as a snapshot in time, against which gains can be benchmarked and celebrated.

1.5 Introduction to the case study institutions

Two case study TEIs, both located in Dunedin, New Zealand, were selected for this study: the University of Otago - Te Whare Wānanga o Otāgo, and Otago Polytechnic - Te Kura Matatini ki Otago. The two case study institutions fulfill similar social and economic roles and operate within the same external environment of central policy and funding structure, with a common geographic context implying similar regional-specific sustainability challenges. Of particular note in this regard is that in New Zealand, the responsibility for higher education to be the critic and conscience of society is clearly stated in the Education Act (New Zealand Parliamentary Counsel Office, 1989). The elements that form a common external operating environment are explored more fully in the first part of Chapter Three, in which a critical review of external agreements, public policies and documents provide a more detailed understanding of the specific context for the study.

This common frame of reference facilitates a comparison of the case studies, from which similarities and points of difference can be highlighted. An anticipated difference between the two institutions was apparent at the outset of the study, in the public documents that detail what are shown to be the divergent approaches to sustainability held by the two institutions. Reported activities of each institution are reviewed very briefly below; however this overview does not aim

or claim to be a comprehensive summary of action in each institution. This study is ultimately less concerned with *what* activities are taking place, rather seeking instead to understand *how* certain factors and conditions influence the implementation of transitions toward sustainability.

Apparent differences between the institutions are explored more fully in the second part of Chapter Three through a critical review of documents specific to each of the case study institutions, with the intention of investigating the apparent divergence in approach to sustainability goals in each of the case study institutions in depth. Based on this, the next objective is to build an appreciation of the background context for the comparative case study analysis which addresses the deeper purpose of the study.

1.5.1 Case study: Otago Polytechnic - Te Kura Matatini ki Otago

Since 2004, sustainable practice has been the strategic platform at Otago Polytechnic that underpins the organisational, operational, teaching and learning, community engagement and site management practices of the institution. Considerable effort has reportedly gone into aligning this range of activities at the institution with this strategic goal, and the institution has been recognised by Shephard (2010) as having taken clear leadership in the Australasian region. The vision and aim of the institution is stated on the website (Otago Polytechnic, n.d.), partially reproduced here:

The Otago Polytechnic sustainability vision is that our graduates, our practitioners and our academics understand the concepts of social, environmental and economic sustainability in order for them to evaluate, question and discuss their role in the world and to enable them to make changes where and when appropriate. Our goal is that every graduate may think and act as a 'sustainable practitioner'.

By bringing education for sustainability and transformative learning approaches into learning and teaching practice across all disciplines and into all qualifications, coupled with pervasive modelling of sustainability on campus and in operations, the institution aims to ensure that every graduate is confident and capable to think and act as a sustainable practitioner. In other words, by undertaking internal change, the institution aims to affect change in the wider community.

A fuller appraisal of the documents and publications that indicate the position of the Polytechnic are presented in Chapter Three of this thesis; however, an assessment of impact is not attempted in this study. Rather, attempted engagement in learning by doing and reflection is

acknowledged to have potential educative value as a means to increase individual and institutional capacity, knowledge and understanding.

1.5.2 Case study: the University of Otago - Te Whare Wānanga o Otāgo

At the time of data collection, it was discerned that there was no formal sustainability policy at the University.³ Despite the apparent absence of an overarching institutional framework to ensure continuity of progress, there has been substantial effort to instill a level of sustainability into the institution.

Perhaps the most prominent and developed example is contained in the vision of the Campus Master Plan, in which sustainability acknowledged from the outset as a core driver for activity. A full section is devoted to sustainability in the public document, which is available on the University website. Additionally, certain existing programmes, such as the degrees and postgraduate qualifications in Energy Studies through the Physics department, the Master's programme in Planning, and human geography programmes through the Geography department, have a natural affinity and strong grounding in what could easily be considered to be sustainability principles. Many academic staff across various schools and programmes have also developed individual papers or incorporated sustainability perspectives into taught material. Individual research in many departments constitutes another strong contribution toward sustainability by the University of Otago. CSAFE, an acronym for the Centre for the Study of Agriculture, Food and Environment (as of 2011; renamed in 2012 as Centre for Sustainability), is one interdisciplinary, research-only (i.e. non-teaching) centre, within which research academics have collectively attracted funding from external entities to support several long-term, sustainability-focused research projects.

The overall picture going into this study was that much activity was taking place somewhat independently of supportive and coordinating policies and frameworks. A more thorough appraisal of the public documents of the University is presented in Chapter Three of this thesis, to gain a critical appreciation of the institution's position.

³ Data for this research was gathered in mid-2011, just prior to the change of Vice-Chancellor. Findings therefore represent a snapshot in time.

1.5.3 Opportunity for comparison

At the outset of this study, a difference was perceived in the approach to sustainable practice taken by the two case study institutions. This study set out to ascertain if this perception was valid. With the distinctive approaches potentially representing a wider phenomenon at a range of TEIs globally, this difference suggested an axis for a critical, comparative case study, and therefore an opportunity for contribution to a gap in the literature identified by Corcoran et al (2004).

While this research acknowledges that 'what works' will vary from place to place, the perceived differences in approach of the two case study organisations invited rigorous investigation into relevant background vision statements, and the mandate, means for taking action, and methods for evaluation and review in each institution. Within this deeper understanding of context, research into the experiences and perspectives of human actors involved in sustainability transitions may assist in interpreting conditions and key factors that influence the ability of TEIs to make transitions toward sustainability.

1.6 Introduction to the methodology employed

The research approach was designed to gather information from study participants that would best investigate their perceptions and experiences of institutional culture and conditions for transitions to sustainability in Otago's two most significant higher education institutions. According to an analysis of studies of sustainability in higher education by Corcoran et al. (2004, p. 9), case study methodology is a common and appropriate research tool. The research should provide a critical analysis of practice, giving others something to learn from the study which is documented in such a way that it can have transformative value for others. For this reason, a comparative case study method has been taken as an appropriate lens through which to view the results.

Qualitative methods, using open-ended, semi-structured interviews allowed opinions, experiences and perceptions to be expressed by staff who were involved in transitions initiatives within each of the specific case study organisations. The ability for interview participants to respond freely allowed insights to be gained into the participants' own thinking and perspective, rather than responses being constrained by pre-structured categories. This interview style generated a nuanced and in-depth appreciation of sustainability transitions implementation practices and cultures in real life settings.

Sixteen interviews were conducted in total, with eight participants from each institution. A grounded theory approach, which demands a non-biased, open-minded position from the

interviewer, was brought to this qualitative data collection process. Gradually, as patterns in the data began to emerge, the rationalised creation of themes to which selected discrete sections of the research data could be sorted or coded, supported the discovery of trends and insights into approaches that support or constrain efforts for change. This method, known as thematic analysis, is a common approach to making sense of qualitative data, and demands a high level of rigour and care with taking field notes, broad cross-referencing of literature and ongoing critical, reflexive appraisal (Miles & Huberman, 1994).

According to Corcoran et al. (2004, p. 8), case study research in sustainability in higher education can be more effective in bringing about change if methodology is better theorised and documented. The theoretical approach to the methodology and the methods used to gather data are substantiated in Chapter Four, documenting how the research aims and objectives have been addressed.

1.7 Broad research aims, and the three initial objectives as start points for the research

It is the position of this study that the degree to which there is an understanding and integration of sustainability throughout all levels of responsibility and activity within an institution reflects their commitment to this responsibility. In identifying TEIs as ideal places to initiate change in society, this study seeks to investigate, through in-depth interviews, the experiences and perspectives of general and academic staff involved in implementing sustainability initiatives and transformations within two case study organisations. Institutionalised cultures around sustainability are of particular interest. In investigating aspects of *how* sustainability transitions are being achieved in the case study institutions, the research maintains a broad aim to contribute a nuanced analysis to the existing literature on key governance factors and cultural conditions that contribute to transforming the existing paradigm in TEIs.

In an analytical overview of case study research on sustainability in higher education (see Corcoran et al., 2004), a key concern was raised that the descriptive quality of much existing research does not allow the research to live up to its potential for improving or transforming the response of institutions. By using data to tell a story—a 'tempered radical' approach that aligns with the academic culture of the higher education climate (Meyerson, 2001)—this critical, comparative case study seeks to throw into relief some of the unspoken sentiments of the general and academic staff of the institutions. Potential findings may represent a wider phenomena. As such, it is an additional broad aim of this study to generate transferable insights applicable beyond the context of Otago's main TEIs.

These broader aims have been approached using a grounded theory research method. The initial research objectives that formed starting points for data collection were: expectations for change, attitudes toward achievements to date and identification of key factors. These initial objectives are detailed in the following sub-sections, and were used to assist in devising open-ended questions for the interview guide, which is attached as Appendix 1. Findings to these initial research objectives are summarised in Chapter Five, with a discussion around the broader aims comprising Chapter Six.

1.7.1 Expectations for change

The first initial research objective was to understand the expectations held by individual research participants surrounding sustainable practice within their professional roles at the case study institutions. The research also sought to explore how these expectations influenced their decision making in their professional roles.

The innovation and enterprise of a broad range of human actors has potential to generate a rich and diverse institutional response to the sustainability imperative. Opportunities for participation and engagement extend beyond formalised facilitation mechanisms, to include institutionalised cultures that effectively distribute and align power and which influence outcome. Experiences with management and administrative systems, as well as organisational culture that direct and facilitate day-to-day professional activity, are particular foci of this study.

The resulting influence of these understandings, expectations and experiences on day-to-day action is explored as the extent to which social actors in the case study institutions perceive they are able to contribute, integrate and implement role-relevant sustainability responses to influence agenda and action in day-to-day decision making, with a view to investigating implications for optimal social outcomes.

1.7.2 Attitudes toward achievements to date

The second objective considered participants' perceptions of institutional achievements to date, in implementing sustainable practice in the case study institutions. This study does not attempt to quantify and qualify every initiative and activity within the institutions; rather, this objective aims to capture the sense of confidence held by general and academic staff in the commitment and ability of their employing institutions to implement and integrate actions to transition toward sustainability.

In providing another angle from which to further understanding into the overarching topic of how sustainable practice develops, this objective seeks insight into the depths and qualities of institutional response to the sustainability imperative, giving evidence of systems approaches, or fragmented, project-based approaches. As important stakeholders in their employing institutions, potential staff perceptions of an implementation gap, if such exists, between institutional aspirations and tangible action, has conspicuous implications for institutional accountability and credibility. Their accounts of achievements to date provide an understanding of institutional commitment and day-to-day alignment with vision.

1.7.3 Identification of key factors

An investigation of key factors perceived by participants to be most influential in the implementation of sustainability transitions forms a third initial objective for research toward the research aims. Insight from a diversity of human actors into the critical resources and supports, as well as challenges and barriers to the processes are explored. Questioning was intentionally conversational, to support the grounded-theory process of searching for themes and insights.

1.8 Structure and outline of the thesis

This final section of Chapter One provides an overview of the following chapters of this thesis.

The literature review, Chapter Two, provides an overview of current and important research and is designed to provide a succinct summary of the scholarship relevant to this study. The concept of sustainability is explored more closely, with further definition and value afforded to the concept of transitions as praxis. Current research in the field of the internal transformation of higher education institutions for advancing and promoting sustainability is then surveyed, with particular emphasis placed on reviewing works that identify conditions that support or constrain internal change.

Chapter Three is both descriptive and critical, and surveys selected agreements, policies and documents that pertain to the case study institutions. These are from the international to the institution-specific scale, and aim to provide a more detailed understanding of influential factors, the operating context and positioning of each of the case study institutions.

Chapter Four details the methodological approach, including the underlying philosophical position from which the research has been conducted, and the qualitative methods employed to gather and analyse data.

Chapter Five presents a summary of findings related to the three initial research objectives. These objectives were the starting points for interview questioning. The findings can be considered to be the raw data findings, with representative verbatim quotes from participants presented to illustrate the explanatory narrative.

Chapter Six synthesises and discusses emergent themes from the research findings, derived using a thematic analysis methodology. These interpreted themes are considered in relation to the literature.

Final conclusions and a summary of the research are presented in Chapter Seven.

1.9 Conclusion

This chapter has introduced important topics and themes in this comparative study of sustainable practice in Otago's TEIs. Starting with an acknowledgement of the global environmental crisis, higher education was described as the critical platform from which society can make the transition toward more sustainable worldviews and practices. However, such expectations for action do not necessarily equate to an innate ability to perform this task, with education identified to largely remain a part of the 'unsustainability problem' that it seeks to address (Sterling, 2010). Broad participation in developing contextual responses to the complex challenge of sustainability were identified as being vital in generating a systemic institutional response to the sustainability imperative. In acknowledging the need for broad engagement, learning and innovation, the concept of transitions to sustainability were defined for the purpose of this study as incremental change initiatives that emerge within changed operating and decision-making contexts. According to Morgan (2006), transformative change of deeper systems can occur when critical change takes place at critical times. The ultimate goal of participative action is the leveraging of transformative change, toward a tertiary education model fit for the twenty-first century.

This research study is grounded on a qualitative, comparative case study of two TEIs, which held divergent approaches to sustainable practice at the time of investigation; Otago Polytechnic - Te Kura Matatini ki Otāgo, and the University of Otago - Te Whare Wānanga o Otāgo. A learning opportunity on the processes to advance sustainable practice within a TEI was anticipated, through a comparison of relative differences. Academic and general staff have been selected for interviewing for this research, as they have been identified by Brinkhurst et al. (2011, p. 338) as potential critical leaders in institutional efforts to achieve lasting progress towards sustainability. The research approach was designed to gather information from study participants that would best investigate their perceptions and experiences of institutional culture and conditions for transitions to sustainability. Qualitative methods allowed opinions, experiences and

perceptions to be expressed by staff who were involved in transitions initiatives within each of the case study organisations. The ability for interview participants to respond freely allowed insights to be gained into the participants' own thinking and perspectives.

The initial research objectives that formed starting points for data collection were: expectations for change, attitudes toward achievements to date and identification of key factors for sustainable practice. Through an extensive case study, Kezar et al. (2011) found that the tactics for change used by faculty and staff are distinctly shaped by and aligned with the culture and character of the organisation of which they are a part. The methodology used in this study supports the discovery of insights into approaches that support or constrain efforts for change. This research maintains a particular focus on examining internal factors including governance and socio-cultural processes and mechanisms for staff participation.

Literature Review

2.1 Introduction

"Education, in short, is humanity's best hope and most effective means to the quest to achieve sustainable development." (UNESCO, 1997).

Within education provision, tertiary education institutions (TEIs) are unique and distinctive entities, playing a pivotal and influential role in society. Vested with the role of imparting values and developing capacity in graduates to contribute to social progress and the advancement of knowledge, TEIs are uniquely placed to act as change agents (Corcoran, Calder & Clugston, 2002; Cortese, 2003; Ferrer-Balas et al., 2008; Ferrer-Balas, Buckland & de Mingo, 2009; Stephens, Hernandez, Román, Graham & Scholz, 2008; Lozano, 2006; Owens & Halfacre-Hitchcock, 2006; Sibbel, 2009; UNESCO, 1997; Wright, 2002; Yarime et al., 2012). Future leaders and decision makers are shaped and formed within TEIs, which are a microcosm that is representative of wider society. According to Owens and Halfacre-Hitchcock (2006, p. 115), "understanding how to implement sustainability at this [institutional] scale is a powerful tool for understanding how to successfully spread sustainability principles throughout society."

While there is no consistent method or blueprint for achieving the successful implementation of principles of sustainability, an interdisciplinary approach is widely supported within academia as an appropriate research approach to address complex problems, as new meaning can be found by drawing together ideas from different disciplines (Ferrer-Balas et al., 2008; Kates et al., 2000; Laws et al., 2004; Yarime et al., 2012). As such, the literature contributing to this case study of transitions to sustainability in TEIs emerges from a number of academic disciplines, which inform part of a rapidly developing field of scholarly learning. A key journal has been the *International Journal of Sustainability in Higher Education*, however literature has also come from publications spanning human geography, critical theory, environment and planning, systems and organisational theory, public administration, policy and management, as well as higher education. Drawing on this span of literature, this chapter is

structured in a way that develops the argument on the centrality of selected aspects of governance and institutional culture within an individual TEI, for progressing sustainability vision through to action.

The chapter begins with a brief exploration of various conceptualisations of sustainability. This exploration of the concept of sustainability demonstrates a diversity of values and viewpoints, and the varying levels of integration between them. The purpose of this expansion is to reveal the lack of consensus on actual definition of the key term, and to conclude with the need for systems thinking approaches that support broad participation in decision making, and with mechanisms for information flows and feedback between actors.

The second key concept to be further clarified in this chapter is that of transitions to sustainability. This was briefly defined in Chapter One as "incremental change initiatives that emerge within changed operating and decision-making contexts, with the ultimate goal of leveraging transformative change" (e.g. Morgan, 2006). This concept is explored in greater depth in this chapter in recognition of its importance to the central arguments of this thesis, including the role of institutional leadership in nurturing and facilitating sustainable practice, and the essential value of broad participation in building institutional capacity from within a multitude of contexts.

The need for radical, yet incremental internal change within TEIs constitutes the next section of this chapter, which relates the special significance of these influential institutions in society to the increasing importance of the sustainability imperative, and the barriers to meeting this challenge. The potential for organisations, and TEIs in particular, to undertake institutional change, build relevant capacity and advance knowledge through contextually relevant actions has been shown in variously related studies to be enhanced by certain factors and conditions in institutional governance and culture. These include leadership and support from top-level administrators, broad participation and engagement, explicit policy to promote sustainability, economic factors and the cultural norms of an institution. Literature on these aspects of governance and culture are explored in separate sections in the latter part of this chapter, with the purpose of explicating the conditions and factors that support or constrain the taking of a sustainability vision through to action. A descriptive and critical survey of these characteristic qualities establishes a foundation from which a qualitative analysis of the two case study TEIs can then be made in later chapters.

2.2 What is sustainability?

Long-term, or 'sustainable', harmonious relationships between human beings and the natural world that supports all life are an ancient existential concern. A spectrum of philosophical views have been held at historic moments in time and place which make particular assumptions about, for example, notions as to whether humanity is separate to or part of the natural world, as well as the centrality of economic or environmental wellbeing (Brown, Hanson, Liverman & Merideth, 1987). This section investigates the terminology applied to various world-views, before reviewing characteristics of sustainability discourse. The inextricable link to social justice is acknowledged, before persistent themes of selected influential publications are reviewed. This leads on to a consideration of environmental positionality in the debates, before a final section on systems approaches and their relevance to this study is presented.

2.2.1 Terminology

The term 'sustainability' has been applied to all scales; from the global through to the local, in different contexts and disciplines, and as shown by Brown et al. (1987), priorities within definitions will reflect varying perspectives, environmental constraints and local challenges. The literature drawn on in this study variously uses the terms 'sustainability', 'environmental sustainability', 'sustainable development' in attempting to explore, understand or advance knowledge from various perspectives.

Some distinction is sometimes afforded to the core terms. For example, sustainability as been summarised as concerning human-nature relationships generally, whereas sustainable development, as a subset of sustainability, is concerned with use of the environment for human development (Byrch, Kearins, Milne, & Morgan, 2007, p. 47). In a similarly anthropocentric view, the goal of environmental sustainability has been defined as "maintaining unimpaired the capacities of environmental sinks for human wastes and sources of raw materials" (Goodland & Daly, 1996, p. 1003). Assumptions from the epistemological through to the practical may underlie the variously applied definitions, however there is inevitable overlap in the 'territory' of each term. Within the thesis as a whole, therefore, the referencing of literature that uses various terms and language is purposeful, and can be taken to represent an interdisciplinary approach. By drawing together evolving ideas from the different disciplines noted in the introduction to this chapter, arguments are synthesised to develop a potentially new understanding of the term.

The vision contained in any one constructed definition is derived from divergent world views. Selecting and defining a term may be considered as concerned with representing the perspectives and priorities of any one viewpoint, in any one context. According to a study by Byrch et al., (2007) on two groups—the promoters of business and promoters of sustainable development—a problem of "culture clash" remains (p. 47). The malleability of definition is the salient, common feature that attracts much criticism and debate within a diverse and rapidly expanding field of enquiry.

There are critical implications for this diversity, for the three initial research objectives of this study on sustainable practice. To recapitulate, the first objective aimed to explore the understandings and expectations of sustainability policy and vision held by academic and general staff within their employing TEI, and considered how these expectations influence their decision-making in their professional roles. The second objective aimed to investigate participants' perceptions of, and attitudes toward, institutional achievements to date. The third objective examined the key factors perceived by participants to be the most important and influential in the implementation of sustainability transitions in their institution. In conducting the research and analyses, diversity in priorities and definition was expected and anticipated. No attempt has been made to quantify or prove an absolute impact of outcomes toward predefined targets or goals. Instead, evidence of the opportunities to engage with and learn about this complex and contested idea were the focus of attention. The circumstances in which to develop understanding, foster processes and build capability was of interest both at the individual level of the study participants in their diverse professional roles, and at the level of each case study institution as a whole. According to Kolb (1984) and Barth, Godemann, Rieckmann and Stoltenberg (2007), experiential and informal learning are vital means to learn and retain skills, knowledge and values.

2.2.2 Characteristics of sustainability discourse

Our understandings of structures and processes in the real world are limited by selective enquiry, exposure and experience (Dryzek, 2005, p. 18).⁴ Attempts to engage with sustainable practice within a TEI will lead to engagement with established debates and discourse, which have certain persistent characteristics.

According to Dryzek's discourse analysis in *The Politics of the Earth* (2005), all environmental discourses engage with the long-dominant discourse of industrialism—if only to

⁴ The concept of discourse applied by Dryzek maintains an ontological position of a critical realist philosophy of science (see, for example, Archer & Bhaskar, 1998 for essential readings). That position considers that real structures exist objectively in the world, independently of our minds, that are nonetheless only tendentially (if ever) actualised and so accessible to empirical observation (Jessop, 2005, p. 41).

distance themselves from it (Dryzek, 2005, pp. 13-17). Dryzek identifies the subset of discourses of sustainability as being without a consensus on their exact meaning, and as having a particular axis around which discussion has occurred, since the commencement of the debate in the 1980s. Edging back from the more radical and polemic debates of the 1970s (see section 2.4.4 of this thesis), sustainability discourse is defined by its imaginative attempts to dissolve the conflicts between environmental and economic values, in order to form a meaningful common agenda for policy-makers and industry stakeholders. These imaginative attempts are not necessarily pursued through the prosaic options presented by the status-quo political economy and existing systems of industrialism (Dryzek, 2005, pp. 14-16).

While efforts in attempting to bring together environmental and economic world-views may seem reassuring, the dampening down of the radical proposal of the ecological concept of limits to growth (see Meadows et al., 1972) has not led to the problem of environmental limits simply dissolving. According to Glemarec and Puppim de Oliveira (2012, p. 203), the current approach of growth-focused development, with economic growth as the key variable for driving cultural, technological and operational innovations to solve environmental and social problems, is an approach that tends to give limited credence to the fears of ecosystem degradation and planetary boundaries. Luke (2006) proposes that, despite the noble aspiration of a global sustainable society, the current conditions of production ultimately result in the delivery of narrow strategies that seize upon "profitable opportunities created by the sustaining of market-based degradation" (p. 100). In reviewing the concept of sustainable development, Robinson (2004) observes that the term has been picked up with avidity across many disciplines, and is now linked with the economic viability of an individual organisation, or even applied to unsustainable activities, cosmetic environmentalism and exercises in 'green washing'. Nebbia (2012) describes sustainability as a "popular myth" (p. 101), instead suggesting that "all we can do is envisage a system of human and international relations that are *less unsustainable*" (p. 103).

From these insights into characteristics of sustainability discourse, this study maintains a strong awareness of the central conflict between environmental and economic values that is inherent in a transition toward sustainability. In particular, economic sustainability, as a stand-alone institutional objective, can be conceived of as a mere justification of the perpetuation of business as usual. By contrast, institutional approaches that attempt to imagine new ways to resolve the persistent conflict may be recognised as attempting engagement with the central issue. As such, institutional approaches that support innovation toward the goal are identified as an important means for advance. Elements of institutional governance are given independent attention at a later point in this chapter, with a section devoted to further examining the impact of well-established economic factors on the development of sustainable practice in TEIs.

2.2.3 Sustainability's inextricable link with social justice

The concept of sustainability has an inherent emphasis on equity and social justice over time and space. The focus follows the reasoning that humanity's indefinite and harmonious existence on a finite planet will not be achievable as long as poverty and inequality are present, given the interdependence of economic, social and environmental factors (UNEP, 2012). Since the publication of 'Our Common Future', popularly known as the Brundtland Report (WCED, 1987), the oft-repeated paraphrase "meeting today's needs without compromising tomorrow" has perhaps become the most widely accepted and quoted definition of sustainability. This is reiterated by Glemarec and Puppim de Oliveira (2012), who recognise that making pro-poor development a global priority goes beyond humanitarian fairness, to consider the threats of lasting inequity on the foundations of both environmental and economic systems.

A tendency to situate inequality as an analogy with poverty has been challenged by Wade (2013), who suggests that the focus should be on inequity of opportunities, and therefore on pre-distribution rather than redistribution. In this study, social justice priorities such as inclusion and diversity form a cornerstone of the definition of sustainability. Inclusion relates to a systems thinking conception, whereby the interconnectedness of the whole of society is appreciated with regard to wellbeing of the whole (Meadows, 2008). Additionally, the resilience that diversity brings to a system is a concept of particular relevance to the argument of the need for wide participation in decision-making and action at the institutional scale. Implications in this study relate to the access to higher education for disadvantaged groups such as people with low incomes, and Māori and Pacific peoples.

Sustainability reporting, which is an approach to accounting founded in a holistic conception of capital, can provide guidance for an organisation to comprehensively report on social as well as environmental performance, and is discussed in a later section of this chapter. Holistic capitalism places value on a wider spectrum of institutional assets than more traditional definitions of capital. A holistic conception of capital, relevant to the global-north setting of this study, is accessible through the popular book *Natural Capitalism* (Hawken, Lovins & Lovins, 2010), which considers the inversion of the relative abundance of natural resources to labour since the industrial revolution, and the resultant need for a change in world views. In itself, holistic capitalism can be considered as a good fit to Dryzek's previously described characteristic of sustainability, that being an imaginative approach to dissolving the conflicts between economic, social and environmental world-views. Aspects of social capital that are particularly significant considerations for the analysis of sustainable practice in Otago's TEIs include the building of trust, and the resulting communication, ability to critically reflect and building of collegial relationships.

Much social awareness on themes around human-nature relationships has been raised by popular, inspiring and catalytic publications. This chapter now returns to the deceptive simplicity of the central question of this section, 'what is sustainability?', through a brief review of selected influential publications of contemporary history.

2.2.4 Selected influential publications of contemporary history, and their persistent themes

Many central and enduring themes on the relationships between humanity, industrialism and the natural environment that sustains all life have continued to be repeated in influential publications of contemporary history. Selected publications are reviewed in this section, in recognition of their exceptional influence in raising awareness.

The foundations for the now decades-old environmental era in which we live are widely attributed to the publication of Carson's (1962) *Silent Spring*. This book, which focusses on the devastating impacts of an insecticide on wider ecosystems, has been described as "both a symptom of a changing perception, and a source of inspiration for a slowly growing environmental movement" (Vatn, 2005, p. 239).

The Population Bomb (Ehrlich, 1968), which was first published six years after *Silent Spring*, raised public awareness through a focus on a different parameter of sustainability. The alarming messages centred on the effect of rapidly growing, human global populations and the associated threats to food security, resources and the environment. The fundamental pattern of overshoot and subsequent collapse remains valid, all the while "politicians and elites fail to recognise the basic situation and focus on expanding their own wealth and power" (Ehrlich & Ehrlich, 2009, p. 68).

Four years on, the influential report *The Limits to Growth* (Meadows, Meadows, Randers & Behrens III, 1972) was published by the Club of Rome. The focus in this publication was on the relationship between the economy and ecological systems, and led to much debate on the conflict between commitment to endless growth in production of goods and services, and the ecological concept of limits to growth. A clash emerged, between the utopia of endless economic growth and the material wellbeing it brings, and warnings of limits to growth due to the inherent reliance of economic activities upon near-exhausted, and imperfectly substitutable, environmental goods and services, including cheap energy and ecosystem services.

A prominent and high profile sustainability issue of current times is climate change. Explicit references to *Limits to Growth*, and to other persistent themes of sustainability, are made by Korten in *The Great Turning: From Empire to Earth Community* (2007) in the following

comment on reconfiguring the world's economy away from the cheap oil that has fueled economic expansion over the past century:

"If we humans do not choose to act on our own, Earth is poised to make the choice for us by forcing the mother of all market corrections. It will be a traumatic lesson in the market principle that subsidies cause markets to misallocate resources, the systems principle that infinite growth cannot be sustained in a finite system, and the cybernetic principle that failure to take timely action to restore system equilibrium results in overshoot and collapse." (Korten, 2007, p. 61).

This sentiment captures the anxiety that is propelling one of the largest and fastest growing social movements of all time.

Higher education is widely seen as an influential, potential change agent in the quest for long-term, harmonious and sustainable human existence, however the persistent themes referred to are complex, interconnected and have long-term trajectories and path dependencies. An institutional gap is perceived to exist, with problems posed due to their establishment "on the basis of narrow preoccupations and compartmentalised concerns" (WCED, 1987, 1.4.31). For these reasons, the lines of responsibility in TEIs are blurred, and policies are difficult to create. The next sub-section looks at the concept of weak and strong models of sustainability, potentially offering new conceptions of human-nature relationships, and new paradigms for institutional forecasting, policy and planning.

2.2.5 Environmental positionality in weak and strong models of sustainability

The crux of much debate around sustainability emerges from the positionality of the natural environment established within traditional academic disciplines, particularly those disciplines that draw significantly on economics, and those that draw on ecological world views. As Brown (2001, p. 3) from the Worldwatch Institute notes, "Economists see the environment as a subset of the economy. Ecologists, on the other hand, see the economy as a subset of the environment." These two views inform separate models of sustainability; the former 'weak', and the latter 'strong'.

Anthropocentric or human-centered 'weak' approaches generally centralise the importance of the economy without acknowledging ecological constraints, and focus on changing supply through, for example, substitution of non-renewable resources, efficiency and technological solutions. 'Strong' approaches, by contrast, place human society within a larger ecological

planetary system, and suggests we adapt ourselves to the finitude of nature, lessening our demands and further, seeing nature as having its own existential rights that do not require justification in human terms (Williams & Millington, 2004, pp. 100-102).

In this study, the distinction between weak and strong models is relevant to analysis of the approach to sustainability in each case study institution. A weak model is taken to be reflected in project-based approaches that rely on mainstream economic analysis, in which the environment is treated as a subset of the economy, and with emphasis on cost benefit analysis that effectively downplays the costs of externalities (Vazquez-Brust & Sarkis, 2012a; O'Riordan & Cameron, 1994). Strong models are correlated with systemic approaches, whereby sustainability principles are elevated within an institutional strategy. By acknowledging the interdependencies of human economies, societies and natural systems, a holistic approach is taken in decision making, which may ultimately deliver inherent efficiencies (Meadows, 2008).

The New Zealand Parliamentary Commissioner for the Environment (PCE), an independent Officer of Parliament and environmental watchdog, explicitly refers to weak and strong models (PCE, 2002), revealing the relevance of this division to policy makers in the New Zealand context. Likewise, Sustainable Aotearoa New Zealand (SANZ), a body that manages the New Zealand inputs to the UN Decade of Education for Sustainable Development (UNDESD) in partnership with the New Zealand National Commission for UNESCO, specifically utilise a strong sustainability concept (SANZ, 2009). The distinction between weak and strong models appears to be a particularly important communication device for advocates of increased ecological awareness. The primary concept of ecological interconnectedness brings us to the useful approach to sustainability of systems thinking.

2.2.6 Systems approach

In a simple definition from Meadows (2008, p. 2), a system is a set of things interconnected in such a way that they produce their own pattern of behaviour over time. As the world becomes more crowded, interdependent and connected, systems thinking is increasingly valued over the reductive, rational analysis that looks at things in small pieces and attempts to trace direct paths from cause to effect; an approach that tends to create further problems elsewhere in wider systems.

From the founding in complex systems theory, many authors propose that the final form of sustainability is unknown, the endeavour involves a moving target, and change is characterised by complexity and uncertainty (Ferrer-Balas et al., 2009; Sharp, 2002; Sterling 2004; Voss, Bauknecht & Kemp, 2006). For this reason, processes and mechanisms for feedback, review and adaptation are of interest in the assessment of the case study institutions. New order in social

adaptive systems is understood by Giddens (1979) to emerge from the bottom up. This important concept, considered alongside systems theory by Campbell-Hunt (2013), emphasises that the whole of a system is involved in change, revealing implications for this study on themes around participation. Systems transitions have been described as a long-term process of fundamental change towards goals that are ultimately chosen by society, which in principle can be realised in different ways, by Rotmans, Kemp and van Asselt (2001).

For the purposes of this study, systems thinking is referred to in two ways. First, systems thinking is part of the analytical approach. The general concept of interconnectedness is assumed in the thematically broad spans of the analysis of findings and background contexts, where interlinked and inclusive concepts such as governance and culture serve as comprehensive frames from which relationships, influences and linkages between participant experiences and structures can be sifted. Each case study TEI is treated as a unique and representative microcosm, embedded within wider social systems. The sets of rules that define the scope, boundaries and degrees of freedom of a system include incentives, informal social agreements and norms (Meadows, 2008, p. 158). This is redolent of the institutional incentives, governance mechanisms and institutional cultures appraised in this study of the summative actions of Otago's TEIs toward a sustainability vision.

Secondly, empirical evidence of systems thinking is sought in the intentional approach to sustainable practice used in each case study TEI. While many authors on sustainability in higher education describe strategies as based on incorporating, or introducing principles (e.g. Van Weenen, 2000; Velazquez, Munguia & Sanchez, 2005), others describe transformative, social learning processes based on innovation and deeper systemic change (e.g. Lozano, 2006; Ferrer-Balas et al., 2009; Sterling, 2004; Tilbury, 2004). According to Sterling (2004), "sustainability is not just another issue to be added to an overcrowded curriculum, but a gateway to a different view of curriculum, of pedagogy, of organizational change, of policy and particularly of ethos" (p. 50). A systems approach can be modelled within a TEI to generate change and to act as an exemplar in the greater systems of which it is part. A distinction within this set of approaches is sought through comparative analysis.

As an array of concurrent viewpoints are actively pursued within dynamic and interconnected systems, transitions initiatives toward sustainability are one way to conceptualise a dynamic, yet incomplete movement toward a contemporary set of goals that constitute social progress and improvement.

2.3 Transitions to sustainability

The concept of transitions is re-introduced at this point as representing incremental and practical change initiatives that emerge from new understandings within changed operating and decision-making contexts, with the ultimate goal of leveraging transformative change. This definition is derived from the blending of widely accepted concepts from learning, systems and organisational change theories. Experiential learning is a means to gain and more importantly retain skills, knowledge and values (Kolb, 1984; Barth et al., 2007). With a focus on learning-by doing and doing-by-learning, incremental transitions initiatives can serve a process of exploring the various options for addressing persistent problems by searching, learning and experimenting (Kemp & Rotmans, 2008; Voss et al., 2006). New ideas emerge from new understandings in new contexts, and further, while incremental change is only moderately disruptive, transformative change of deeper systems can occur when critical change takes place at critical times (Morgan, 2006). The need for radical yet incremental internal change within TEIs is unpacked in the next section of this chapter, carrying through the above idea of transitions initiatives as a way to create internal change.

A fundamental implication of an incremental approach, in combination with a systems approach, is that prospective innovations for transitions initiatives will come from multiple and disparate perspectives, viewpoints and contexts (Kemp, Loorbach & Rotmans, 2007; Meyerson, 2001). Dryzek (2005) suggests that sustainable development is not a path, but at most a discourse that will inspire experimentation with what it can mean in practice. Sustainability, "like democracy, is largely about social learning, involving decentralised, exploratory and variable approaches to its pursuit" (p. 158). However, Robinson (2004, p. 382) points out that sustainability is necessarily a political act, such that ultimately a process for expressing and evaluating different views is needed. Implications for the selection of ideas include democratic legitimacy, with Shove and Walker (2007, p. 766) cautioning that "it is necessary to recognise that provisional templates for transition are political statements that can only be partially inclusive." Political concepts around power and democratic legitimacy inevitably enter an exploration of sustainability praxis, relevant to the process of emergence as a TEI selects and learns from varying perspectives and experience. These pervasive and fundamental themes of the social and political sciences will be explored in this thesis through the frames or modes of governance and organisational culture, and their impacts on participation in transitions initiatives by professionals within the case-study institutions.

2.4 The need for internal change in tertiary education institutions

Certain conceptions regarding education in general, and its challenged relationship with sustainability, have emerged in the literature. On the one hand, education can be viewed as having a vital role to play in creating a rational society that understands the need for change in social behaviours to maintain a habitable world, and enabling society to navigate and adapt to current and future challenges (Williams, 2008). However the ecological crisis has additionally been presented by Orr (1992) as a failure of education, producing 'ecological illiterates' with little knowledge of how their actions would disrupt the earth. In the words of Orr (1994, in Cortese 2003), "the kind of education we need begins with the recognition that the crisis of global ecology is first and foremost a crisis of values, ideas, perspectives, and knowledge, which makes it a crisis of education, not one in education" (p. 17). The many adherents to the view of a crisis of education relate the sentiment to the need for radical internal change within TEIs to fulfill changing roles and expectations, and to maximise the potential to create change toward sustainability within society.

Specific themes in this so-called crisis often relate to the changing roles of higher education, and the separation from real-world problems. Readings (1996, in Williams, 2008, p. 196) discusses the implications of change in the roles of universities, from educating for 'culture', to the present focus on 'excellence'. He suggests that this reflects a change in function, leading to a fragmented production of knowledge as an accumulation of facts, rather than educating for a shared culture and conversation among a community. Additional commentary has been made specifically on research institutions. According to the Organisation for Economic Co-operation and Development (OECD, 1995), research universities have been enormously successful in knowledge production in countries where this production is separated from political and social pressure, but with the negative aspect "that universities are very slow to address social problems, especially those that do not fit disciplinary structures" (p. 89).

In order to fulfill changing roles and expectations, and to maximise the potential to create change toward sustainability within society, many authors have described and debated the qualities of the change that is needed. Sterling (2004, p. 53) argues that the answer to the crisis of unsustainability cannot be "a simple tweaking of higher educational policy and practice, nor the current rush to 'improvement'". Similarly, Tilbury (2004) argues that environmental education for sustainability "cannot be inserted into existing learning and teaching structures" (p. 98). According to Sterling (2004, p. 50), "a change of fundamental epistemology in our culture and hence also in our educational thinking and practice" is required. Tilbury (2004) argues that learning for change has "a transformative agenda that requires, and often leads to, professional,

curriculum as well as structural changes" (p. 98). In this vein, Van Weenen (2000) posits "inevitably, management, research, education, communication and operation of any [TEI] with a genuine interest in sustainable development will have to change" (p. 20). Using the prediction of Tilbury (2004, p. 98) to summarise, it is the institutions themselves that will be the subject of change, and not just a vehicle for change, as teachers and students engage in making changes for a better world.

The processes for achieving change is the subject of further literature. Lozano (2006) recognises that although the institutionalisation of sustainability principles is a radical innovation, change should be invoked incrementally, to reduce resistance to change and unnecessary conflict. Following complementary reasoning, Tew (2005, p. iii) identifies an indefinite series of choices by knowledgeable and ethical people in different contexts, times and places, as opposed to one great fell swoop of collective agreement, as ultimately representing the choice to pursue, or ignore, sustainability. Transitions initiatives, as incremental and practical change initiatives that emerge from new understandings and changed decision-making contexts, are a means to create change by harnessing the innovation, creativity, enthusiasm and insights of a broad mix of actors. This study is not seeking to assess *what* transitions achievements have taken place within the case study institutions, attempting instead to understand *how* key factors enable actors to take action. Access to participation within a dynamic of the organisational culture is a particular focus.

Several studies on organisational change in TEIs question the conditions under which effective and vital action by general and academic staff can best be supported (eg. Shriberg, 2002; Velazquez et al., 2005). The opportunity to make a meaningful contribution with this study of conditions is evidenced by cohesion with the research priorities for the field of higher education for sustainability that were developed through an impressive consultation exercise with thirty-five experts representing seventeen countries in Halifax, Canada (see Wright, 2007). Here, the examination of barriers and opportunities of taking broad statements through to integration was identified as a top research priority and valuable research endeavour, as was and the investigation of institutional culture and governance (Wright, 2007, pp. 39-40). Additionally, while much case study research to date has involved best practice examples, particularly in the areas of campus greening initiatives and sustainability assessment, it was considered by the group of experts that any further investigation into the modelling of sustainability on campus was best suited to moving the field forward by facilitating research into organisational structures and politics, as well as social change (Wright, 2007, p. 40). This study actuates close adherence to these emergent research priorities, in an attempt to address the social expectations and widely perceived need for internal change in TEIs.

2.5 Factors and conditions that support internal change in tertiary education institutions

In published literature, there is clear value in adopting a broad-based research perspective, for identifying factors and conditions that support internal change within TEIs for a transition toward sustainable practice. Literature in the areas of organisational behaviour, decision making and governance for higher education have informed this section on the conditions that support internal change in TEIs, along with other published studies in the flourishing field of research on sustainability in higher education. The integration of diverse scholarship from such fields to identify conditions for change has previously been undertaken by scholars such as Newman and Abrams (2005), Brinkhurst, Rose, Maurice and Ackerman (2011), Shriberg (2002) and Velazquez et al. (2005).

From this integrated perspective, the applied practice of identifying and seeking evidence of important conditions for analysis is shown to be an established standard in case study analysis. The approach of describing critical conditions and then analysing a case study to reveal the extent to which they are exemplified was identified as a recurrent theme in an analysis of fifty-four papers on sustainability in higher education by Corcoran, Walker and Wals (2004). This section on factors and conditions that support organisational change in TEIs is divided into sub-sections on the role of leadership, the role of participation, internal policy and socio-political processes, economic and accounting barriers and finally an exploration of the organisational culture.

2.5.1 The role of leadership in organisational change

There is consensus amongst researchers working in the area of sustainability in higher education on the critical importance of leadership and top-level support in achieving meaningful transitions to sustainability (Lozano, 2006; Sharp, 2002; Van Weenen, 2000; Tew, 2005; Shriberg, 2002; Williams, 2008; Ferrer-Balas et al., 2008; Owens & Halfacre-Hitchcock, 2006).

According to Ferrer-Balas et al. (2009), and Shriberg (2002), leadership is most influential in shifting and coordinating the structure and culture of an organization, while Van Weenen (2000) adds that leaders can set the conditions and mechanisms to stimulate, assess and evaluate progress. However, a top-down, directed approach on its own is not well suited to the task at hand. According to Laws et al. (2004, p. 247), research and action for sustainability take place with the sense that understanding of the problem changes as we work to figure out how to address it. This idea is also captured in the description by Voss et al. (2006), of a "moving target". According to

Morgan (2006), merely imposing specific targets for organisational change tends to "create straitjackets" (p. 92).

It is evident the type of leadership needed is not in the form of inflexible rules, excessive bureaucratisation and strict targets, but rather is better suited to what Morgan (2006) describes as the modulation and management of new contexts and understandings. Lozano (2006, pp. 793-794) establishes that while engaging and obtaining top-level support, through policies, programmes, financial and human resource allocation is essential, a top-down approach works best in combination with allowing bottom-up innovation. Professional development and engagement in new activities comes about through official permission, encouragement and support rather than explicit directives, and as Wals (2007) states, leadership in an organisation that is learning to be more sustainable consists of continually facilitating the emergence of new structures and incorporating the best of them in the organisation's design (p. 14).

Leadership that is committed to progressing toward a goal with a final form that is unknown, characterised by uncertainty and with understandings that change as lessons are learnt, must function in tandem with strong, organisation wide engagement and participation for knowledge creation and innovations in practice, as advocated by Allen (n.d.), Hopkins (2008), Lozano (2006), Tew (2005), Voss et al. (2006) and Wals (2007) amongst others.

2.5.2 The role of participation

In this study, the concept of participation relates to the engagement and involvement of staff in sustainable practice within their professional roles in their employing TEI. In her book on redesigning human systems, Mumford (2003) states that all definitions of participation involve more than one set of interests, with decision-making being a central concern. From Cleaver (2007, pp. 223-224), the participation of individuals in negotiation and decision-making around collective arrangements is seen as instrumentally desirable, assumed to positively influence rule-making, with the potential to renegotiate and transform norms. Further, participation is recognised as a valuable educational experience that provides understanding and knowledge to assist an organisation to realise its objectives (Mumford, 2003).

Participation in multiple domains, and the relationship with leadership, can be thought of as the continuous threads that weave through this study on transitions to sustainability. In the words of Cortese (2003, pp. 17-18), all parts of a higher education system are "critical to achieving a transformative change that can only occur by connecting head, heart and hand". Collaboratively acquiring key competencies for sustainable development has been described as "learning in communities of practice" by Barth et al. (2007, p. 424), where not only knowledge

but also values guiding actions are acquired. As shown in the previous section, engagement in new activities develops new understandings. Establishing this approach throughout an organisation that is learning to be more sustainable therefore coaxes and welcomes creative response from the multiple contexts, domains and perspectives that are an inherent characteristic of the complexity and uncertainty of sustainability.

Some commentary on participation as an element of praxis perceives of people's disengagement, inability or unwillingness to participate in promoting sustainability in TEIs: a potential barrier to institutional action identified by Velazquez et al. (2005). To this end, Lozano (2006, p. 793) asserts that "it is the duty of all of the individuals in the organization to change their attitudes and to work towards [sustainability] and make it part of their culture and system". Similarly Brinkhurst et al. (2011, p. 351) argue that institutional transformation requires the vision and involvement of all staff and students. Whereas an unwillingness to participate may be a very real problem, the overwhelming majority of scholarship in the field of sustainability in higher education appears to focus on the lack of opportunity for people to engage and participate in an area that is increasingly important to all of society.

General and academic staff have been selected as the key informants for this study, with some interview questioning designed specifically to gain insight into their experiences with access to opportunities to participate in sustainable practice within their professional roles. In the context of individual participation and involvement within an institution that is learning to become more sustainable, Brinkhurst et al. (2011) assert that general and academic staff (as distinct from top-level directors and students) are the critical internal leaders of change. Through familiarity with institutional systems and practices, and with greater levels of permanence compared to the more ephemeral student presence, academic and general staff can recognise core realities and work with them, to find effective ways to assist and influence their institution. Even in the absence of supportive conditions, the potential contribution to change from academic and general staff is far from removed. In a study by Kezar, Gallant and Lester (2011), the term 'grassroots leadership' is used to describe the ways in which employees within an academic culture are able to employ tactics "that honour the norms, values and mission of the academy, while simultaneously challenging its enacted practices" (p. 131).

Clearly much potential to progress toward sustainability goals is held by general and academic staff, however the outcomes are contingent on participation in new activities, within new contexts, and with appropriate endorsement and incentives. Barriers to moving sustainability forward on the TEI agenda in this manner include the perceived marginalisation of the issue within an institution, or inequitable opportunities to conceive a legitimate role and shape decisions toward this new paradigm. As discussed in greater depth in the following sections, these factors

are often evidenced by the lack of policy and socio-political processes, or the conservative or prestige-seeking culture of an institution (Shriberg, 2002), both of which frequently fail to endorse transitions activity with official permission, support and incentive structures. The balance between participation, and its inextricable link with leadership, is clearly a fundamental issue for any TEI pursuing sustainability goals. This study uses qualitative methods to gather data from staff in the two case study institutions, in order to gain insight into perspectives and experiences of participation in transitions to sustainability activity.

2.5.3 Policy and socio-political processes for participation

The internal policies and socio-political processes of an institution have significant influence on activity and decision-making. According to Wright (2002), explicit sustainability policies and implementation plans "seem to determine the degree to which a university will attempt institutional change and engage in relevant initiatives" (p. 10). Sharp (2002) furthers this by describing how a strong commitment in an institution translates into official permission and policy that can then be gradually substantiated through action. Similarly Laws et al. (2004, p. 253) point out that policy often serves as a middle-man in the implementation process, translating insights into programmes.

In looking at the dissemination of innovations in higher education against well-established change theory, Elton (2003, p. 210) argues for the need to work with definite power structures, support and incentives in particular, as well as the use of dissuasive measures, to affect major change. By comparison, the 'hearts and minds' strategies of educative awareness-building and reasoning produce a much weaker shift.

Alongside the emphasis on the need for explicit policy, literature on organisational design and management for transitions to sustainability incorporates themes of the characteristic qualities of decision-making processes. These processes must be capable of engaging with the complex challenges and uncertainty of sustainable practice problems. In particular, participative decision-making processes, characterised by deliberation and debate, are frequently upheld as essential to the interconnected, systemic nature of developing sustainable practice, with the decision-making process being a crucial leverage point for reform (e.g. Sterling, 2004; Voss et al., 2006; Wieczorek & Berkhout, 2009). According to de Loë et al. (2009), co-operative management approaches can lead to effective and efficient processes that make mutual dependencies productive, with further strength gained from coordinated and complementary efforts to assist change. The relevance of such an approach to praxis, or taking theory through to action, draws on

social justice imperatives, as well as complexity and systems theories with their emphasis on the quality of emergence as a process for finding a new form.

Provocative and relevant issues are raised by these considerations on the links between leadership and participation, power and voice. From established communications theory and much empirical research it is clear that various facilitation processes through which participants are able to express opinions, explore options and ultimately influence outcomes are valuable for building consensus, enhancing legitimacy and empowering those involved. According to Steinheider, Bayerl and Wuestewald (2006), benefits in a work-place setting can include improved productivity, labour-management relations and social capital in the form of trust and efficient, effective communication. Negotiated and deliberative processes, however, can take considerable time and resources, with significant weakness lying in the power differentials between actors and what the actors represent. In particular, questions are raised as to why some individuals are better placed to shape decision-making, with the enduring dilemma of whose or by what authority collective action is legitimised (Cleaver, 2007). Shove and Walker (2007) caution how participatory and deliberation processes "can be experienced as processes of co-option, the effect of which is to neuter rather than embrace dissent" (p. 765), leading to "tacit assumptions of consensus" (p. 768). While participation optimally delivers pluralistic inputs and a diverse, flexible response to the uncertainty and complexity of the sustainability imperative, decision-making processes will variously constrain and enable all actors, indicating a significant governance challenge.

It is the position of this study that the understanding and integration of sustainability throughout all levels of responsibility and activity within a TEI reflects the commitment of the institution to this responsibility. Explicit policy opens decision-making arenas for engagement with sustainability principles. This is explored in this study in terms of understandings of existing policy, and expectations for change held by general and academic staff interview participants. Socio-political processes are explored through an investigation into participants' direct experiences with governing mechanisms, and through their sense of value, contribution and influence in decision making. This study seeks insight into implications for potential impacts on involvement, innovation and capacity building toward sustainable practice at the individual and institutional levels.

The following discussion branches in two directions from the points made on policy and socio-political processes. In the first section, the economic and accounting barriers to progress are explored in greater depth, given the persistence of this theme in sustainability discourse. The final section of this chapter reviews the 'soft' qualities of culture and norms within a specific

organisation, which may be difficult to measure but which have a significant effect on engagement and the uptake of sustainable practice.

2.5.4 Economic and accounting barriers

The roles and functions of TEIs are strongly contested as operating environments change and external stakeholder expectations exert pressure. Many scholars in higher education have observed TEIs have become increasingly corporatised (Slaughter & Rhoades, 2004; Kezar & Eckel, 2004; Middlehurst, 2004; Rowlands, 2011), with economic performance elevated in importance.

This general trend away from public financing and toward market-based funding has been observed by Stephens et al. (2008) as occurring alongside an increasing demand for higher education worldwide. Kezar and Eckel (2004) discern additional demands to engage business and industry, such as through commercialisation, along with shorter decision time frames in the context of increasing complexity. Innovation is in demand, with tertiary education repositioned to serve global knowledge-based economies (Middlehurst, 2004; Rowlands, 2011). The risk, however, is for education to become a commodity that is increasingly governed by economic forces.

In the context of corporatised governance and manifold demands, costs are almost universally perceived to be a barrier to the pursuit and promotion of sustainable practice, as documented by Newman and Abrams (2005), Ferrer-Balas et al. (2008), Haigh (2005), Shriberg (2002) and Velazquez et al. (2005) amongst others. Newman and Abrams (2005) and Sibbel (2009) surmise that this perception is due to the inherent limitations of traditional economic approaches, with Shriberg (2002) appraising colleges and universities as being "firmly embedded in the dominant paradigm ... which is often antithetical to sustainability" (p. 69).

Clearly, the wider economic structure within which TEIs operate lacks incentives for their uptake of sustainable practice. As examples, the reductionist thinking of specialised research is positioned to attract research funding, not the practical, interdisciplinary, holistic teaching identified as essential to the addressing of complex problems (Haigh, 2005, p. 37). Pressures on top-down leaders in the current operating environment focus more on revenue generation and prestige seeking, leaving "grassroots leaders on campus to act as the conscience for the organization—often bringing up ethical issues" (Kezar et al., 2011, p. 131). To this end, seed funding for a change initiative has been identified as a way to bring people together for collective action (Kezar et al., 2011). As Newman and Abrams (2005) summarise, sustainability often appears to be perceived not as an institutional value or defining factor, but as an agenda

competing with other activities for resources. TEIs, so widely recognised as a microcosm of society, can perhaps better be described as a microcosm of an unsustainable society, with the problematic clash between economic and ecological values governing internal activity.

Alongside the increasing corporatisation of TEIs, changes have taken place within business management since the advent of sustainability discourse. According to Vazquez-Brust and Sarkis (2012a, pp. 4-5), following on from the strategic imperatives of the Brundtland Report for both revived growth along with a changing quality of growth, the merging of environmental economics into decision making has become a dominant approach in corporate policy and management discourse. However, with the driver being economic rather than ecological (Vazquez-Brust & Sarkis, 2012a, p. 8), neoclassical economic theory has prevailed, such that previously unaccounted externalities, such as environmental degradation, have been commoditised for governance by market forces in a problem-solving approach. Vatn (2005) asserts that the institutional environmental policies of today are trying to *correct* instead of *direct* the problematic underlying rationale of continuous growth in a world of limited environmental capacities.

The constraints of the external operating environment are no doubt one of the most negative influences on the development of sustainable practice in TEIs, however, despite this, examples of changed regimes are emerging. The 2008-2009 economic crisis, alongside expectations for increasing energy costs, sparked interest in the potential for evolution toward a different kind of economy which might attempt to focus less on the drivers of consumption and materialist values, and more on a green economy (Lane, 2010, p. 469). Green-economy and green-growth are examples of a group of discourses and policy strategies that attempt to change the structure of current collective industrial processes and adapt economic growth. Activities including energy efficiency, clean production and environmental innovation, and importantly, social development are also encompassed. Green-growth has been described as a "valuable concept to help policy makers keep ahead of industrialisation and de-carbonisation, entrepreneurial incentives and inequity" for public institutions by Glemarec and Puppim de Oliveira (2012, p. 212).

As a concept, green-growth demands new approaches to established economic practices, to support innovation toward sustainability. The economic strategies of the case study TEIs are a vitally important theme under investigation in this study, and potentially offer a very good indicator of commitment to innovation for sustainability. The distinct positioning of each case study TEI within selected aspects of the external operating environment is explored in depth in Chapter Three: Positioning and Context. A level of flexibility is revealed as being available to

individual TEIs within a common external context, in the extent to which sustainability is prioritised within an institution.

One way in which this flexibility in prioritisation is managed, to support and generate innovation in sustainable practice, is in approaches to accounting. Sustainability reporting, or John Elkington's conceptually popular triple bottom line reporting (see Gray and Milne, 2002), potentially brings the competing economic and ecological agendas together by providing guidance for an organisation to comprehensively report on its social and environmental, as well as its due financial performance. Stakeholder involvement in gathering information raises awareness and demands engagement with the issues under assessment, and is a robust means to address accountability toward social, environmental and governance objectives. Lack of knowledge and expertise in management, however, has been identified by Adams and McNicholas (2007) as the primary force opposing improvements in accountability for sustainability performance. While the techniques for full social and environmental reporting now exist, Gray and Milne (2002) observe that their quality remains poor where reporting is voluntary, such as in New Zealand. Social and environmental information tends "to be assertive, partial, and to cherry pick the 'good news'" (Gray and Milne, 2002, p. 3), with financial performance favoured. Sustainability reporting can be seen as a means to manage risk, gain trust in stakeholders, and realise inherent opportunities and efficiencies while being responsive to a changing societal expectations. Achieving these outcomes requires authentic engagement from managers and stakeholders at all levels and in all contexts, to develop knowledge and expertise (Adams & McNicholas, 2007).

It is clear that the accounting practices and the choice of what is measured within the case study TEIs will have a very significant effect on what is valued, pursued and legitimised. This aspect of institutional governance will be scrutinised to the extent possible through the review of public documents and annual reports, with intended potential to gain further insights from interview participants. Given the similar operating environment of the two case study institutions, an innovative approach to the economic bottom line, perhaps through measuring differently to reflect what is actually valued, will potentially present one of the most telling features of commitment to the sustainability vision.

2.5.5 Culture of the organisation

With a recurrent focus in civil society and increasing attention in academic literature on the role of higher education in moving society toward sustainability, many studies have focussed on investigating organisational obstacles to the advancement of sustainability in higher education. For example, in assessing the conditions that influence sustainability initiatives in higher

education in the United States, Shriberg (2002) linked the low priority of environmental issues on the campus agenda to most of the barriers encountered, alongside the prevalence of a conservative culture. A study by Carpenter and Meehan (cited in Shriberg, 2002) reveals that "commitment to sustainability does not offer the immediate prestige that committing to other, more broadly understood, initiatives entails" (p. 71). Velazquez et al. (2005) encountered a key problem in the lack of interdisciplinary research teams capable of providing solutions from economic, environmental and social perspectives. While society looks to higher education to assist in transitions to sustainability, Newman and Abrams (2005) suggest mechanisms to respond to the demands within institutional structures are absent.

A level of professional risk is associated with the pursuit of sustainable practice, in the instance where it is marginalised within an institution. Meyerson (2001) reveals that while academic and general staff may feel at odds with the dominant culture of their organisation, they may not want to jeopardise their credibility or chance for promotion. Institutional recognition, incentive structures and reward are important for legitimising ideas, and their absence is recognized as a significant current barrier to change by many researchers in the field including Brinkhurst et al. (2011) and Ferrer-Balas et al. (2008). Where recognition and incentive structures fail to legitimise activity, individuals may still attempt to work independently toward their values with quiet persistence and conviction, attributes fitting Meyerson's (2001) notion of a tempered radical. An extensive case study by Kezar et al. (2011) found that the tactics for social change used by staff who otherwise lack formal authority are distinctly shaped by and aligned with the culture and character of the organisation of which they are a part, with strategic efforts within research, curriculum, student mentoring, networks and hiring potentially challenging the dominant ways of thinking whilst honouring the norms, values and mission of the institution.

Academic freedom is an argument widely used to resist the broadcast imposition of sustainability. However as Ferrer-Balas et al., (2008, p. 310) notes, "academic freedom can actually have a positive effect on transformation, allowing room for champions to act". The concept of an exemplary 'champion' is pervasive in literature on transitions to sustainability, and may be also be applied to operations, management, and outreach (Clugston & Calder, 1999; Lozano, 2006). An institution that is just beginning to acknowledge the importance of their role in promoting sustainable practice may afford recognition and celebration of a champion in order to stimulate further steps toward sustainability transitions; however, an implication of the lone-wolf innovator or early adopter mentality, is that sustainable practice is not normative within that institution.

Concepts discussed above, such as the tempered radical, add weight to some of the concerns raised in literature on network governance. Sørensen and Torfing (2005) identify that

social action is governed by institutionalised forms of culture, which creates "channels of political influence with restricted and unevenly distributed access" (p. 214), in turn raising questions of legitimacy, authority and contribution to democracy. As articulated by Newman and Abrams (2005), patterns of communication influence the manner in which knowledge is transmitted, power is structured and relationships are built when change toward becoming a sustainable institution is sought. This arrangement will at least in some part be determined by management and leadership style. Drawing on McNay's idealised models of internal governance and associated cultures in higher education, and the shifts in the balance of the actual coexisting mix, Middlehurst (2004, p. 267) describes the steady trend in institutional governance and culture. This trend shows movement away from the collegium model and its associated collegial interaction and informal networks (similar qualities to what Shriberg (2002) identifies as key factors for sustainability success), toward the management layers and executive power of the corporate model. In addition, the enterprise model is variously and increasingly present in individual institutions, characterised by devolved and distributed leadership and with a supportive rather than directive role of central authorities.

Leading on from these brief descriptions of governance style is acknowledgement of the influence of different cultural world-views held by different segments of society. A fascinating piece of research by Kahan et al. (2012), which considers science literacy against perceived risks to human health, safety or prosperity from climate change, stresses the polarisation in position between segments of the public, as each segment is motivated to fit their interpretations of scientific evidence to their competing cultural philosophies. Indeed the gap in position continues to widen as the degree of scientific literacy and technical reasoning increases. The researchers consider their findings to be consistent with previous research showing that climate change, a core issue for transitions to sustainability, has become highly politicised, with cultural-worldview and political-orientation measures modestly correlated (Kahan et al., 2012, p. 732).

Williams (2008) asserts that it may be internal factors within institutions that "present the greatest challenge to sustainability initiatives" (p. 233); "as in all institutions, the expressed and the inherent goals of the governing group and their governance style impact significantly on the way staff and students perceive their opportunities, and the manner in which they 'work' or 'perform'" (p. 228). With this research investigating questions of who and what is served, and under whose authority, models of management style and associated characteristics serve to assist in identifying dynamics in communication and decision making within this comparative study.

Traditional reporting and ranking systems for TEIs are necessarily limited; however, there is a wider picture of an institution's qualities that are relevant to the practice of sustainability and the process of its development. Institutional values and priorities, incentive structures and

recognition, and management and leadership style contribute to the cultural characteristics of an organisation, influencing the ability of processes and activities to deliver an unspoken and nuanced mission. This study considers cultural characteristics of the case study institutions as perceived and experienced by study participants, with the goal of furthering understanding in achieving sustainability outcomes and implications for praxis.

2.6 Conclusion

Scholarship around transitions to sustainability in TEIs is a relatively new and emergent field of inquiry, growing rapidly as international attention looks to the potential for higher education to assist society in its transformation toward sustainability. Earlier research efforts drew together and synthesised traditionally disparate fields of inquiry; however, as the body of parallel scholarship has grown, so too has the availability of distinct and focussed literature.

The literature brought together for this comparative case study suggests that certain approaches to TEI governance can set conditions that support or constrain institutional ability to build relevant capacity and advance knowledge toward a common agenda, through contextually relevant transitions initiatives. A critical survey of this literature has established a foundation from which a qualitative analysis of the two case study TEIs can be made. Themes taken from the literature through to the case study analysis include systems approaches to sustainable practice, which can be correlated with the elevation of sustainability principles within an institutional strategy. By acknowledging the interdependencies of human economies, societies and natural systems, a holistic approach is taken in decision-making. Particular value is perceived in institutional approaches that attempt to innovate and imagine new ways to resolve the persistent conflicts inherent to sustainability. Evidence of new approaches to economic and accounting practices are sought, in recognition of their potential to support innovation toward sustainability. In combining systems approaches with the pioneering of new ideas, deep commitment to sustainable practice institutes a transformative, social learning processes based on innovation and deeper systemic change, rather than a simple incorporation of principles.

Political concepts around power and democratic legitimacy inevitably enter an exploration of sustainability praxis. Participation in multiple domains, and the relationship with leadership, can be thought of as the continuous threads that weave through this study on transitions to sustainability. In conducting the research and analyses, diversity in priorities and definition was expected and anticipated. No attempt has been made to quantify or prove an absolute impact of outcomes toward predefined targets or goals. Instead, evidence of the opportunities to engage with and learn about this complex and contested idea were the focus of attention. Explicit policy is

recognised as moderating decision-making arenas for engagement with sustainability principles. As such, participants' direct experiences with governing mechanisms are a factor for investigation. There is a wider picture of an institution's qualities that is relevant to the practice of sustainability and the process of its development. The cultural characteristics of an organisation can deliver an unspoken and nuanced mission. The qualitative methodology used in this study has been chosen to assist in identifying cultural characteristics that support transitions to sustainability.

The use of data in telling a story aligns with the academic culture of higher education, thus in itself this study is an attempt to make an incremental transition toward sustainability, by furthering understanding for individual and institutional response to the imperative of taking sustainability vision through to action.

Positioning and Context

3.1 Introduction

This chapter brings together relevant international, national and institution-specific frameworks, policies and documents that shape the operating environment for transitions to sustainability in Otago's Tertiary Education Institutions (TEIs).

The purpose of this chapter is twofold. First, the chapter aims to establish the common, wider operating environment in which the two case study institutions function, establishing clear similarities in the factors that influence, shape and regulate expectations and outcomes. A review of selected external agreements, policies and documents at the international, national and regional levels reveals similarities with the social and economic roles, central policy and funding structure within which the case study institutions operate.

Secondly, this chapter sets out to investigate the internal contexts within each individual case study institution, in relation to sustainable practice. This aims to develop understanding on how each institution has positioned itself to operate within the common wider context, and also to appreciate the options for decision-making for study participants. This is pursued through the appraisal of selected documents and publications such as vision and mission statements, strategic plans, reports and public communications resources for each case study institution in turn, pertaining to the point in time (mid-year 2011) in which the interview were conducted. The appraisal of documents and publications both describes and critiques positioning of each institution within the common wider context, by drawing on relevant literature to further build the primary research.

Familiarity with selected institutional documents and publications, and the institutional position within the wider context are crucial in approaching two of the initial research objectives. One aim of this study is to investigate the understandings and expectations of sustainability policy and vision held by academic and general staff within their employing TEI, and how these expectations influenced their decision-making in their professional roles. A second research objective investigates key factors perceived by participants to be the most important and

influential in the implementation of sustainability transitions in their institution, with policies and formalised structures forming a core area of interest. Establishing an appreciation of context is methodologically important for these research objectives. In the practice of qualitative data analysis, findings must take into account their individual context, and cannot be separated from the set of influences and causal flows that uniquely guide experiences and outcomes (Miles & Huberman, 1994). In this study, findings for each TEI are analysed within a detailed understanding of context that exerts influence at various cultural and governance levels.

In a broader sense, knowledge and insight into the interconnections between aspirational vision, binding regulation and tangible action are also essential to understanding the potential and expected roles of TEIs in transitions to sustainability, applicable to this study and beyond.

3.2 External context: agreements, structures and standards

This section introduces the reader to external goals, directives and structures that influence and shape the operating environment of the case study institutions. First, international level commitments, declarations and agreements are briefly overviewed in order to illustrate the vision and aspiration for addressing real world problems through voluntary cooperation and mutual responsibility. Next, important national level funding strategies, guiding policies and legal standards are reviewed to give insight and understanding into the established administrative structures that regulate the operating environment for TEIs in a New Zealand context. The final part of this section considers relevant regional-level planning documents, which are briefly evaluated to further establish the context in which the case study institutions operate.

3.2.1 International level: commitments, declarations, agreements

Declarations and agreements at the international level are usually voluntary and aspirational, representing non-binding commitments typical of multilateral agreements. As observed by the author of this study, much of the literature on sustainability in higher education refers to the aspirational goals embodied in international frameworks and strategies (e.g. Barth, Godemann, Rieckmann & Stoltenberg, 2007; Corcoran, Calder & Clugston, 2002; Haigh, 2005; Leal Filho, 2005a; Shephard, 2010; Van Weenen, 2000; Wright, 2002; Wright, 2004).

Some of the best-known documents and resources around sustainability and sustainable development are associated with the intergovernmental organisation, the United Nations (UN). Formed in 1945 after World War II, the UN aims to facilitate dialogue, cooperation and social

progress with governments around the globe. Various UN subsidiary groups, affiliates and agencies have collaborated and deliberated to create frameworks and principles over the past forty years, with the common intention to develop the elusive concepts that call for a convergence between the three pillars of economic development, social equity and environmental protection (see Drexhage & Murphy, 2010). One example, the World Commission on Environment and Development (WCED), chaired by Norwegian Prime Minister Gro Harlem Brundtland, produced the landmark publication *Our Common Future* (WCED, 1987), commonly referred to as the Brundtland Report. This milestone production in turn provided momentum for the definitive and politically successful 1992 Rio Earth Summit (Drexhage & Murphy, 2010, pp. 7-8). Here, the global plan of action for the twenty-first century, Agenda 21 (UNCED, 1992), was adopted by one hundred and seventy-eight governments, including New Zealand, with education forming a key means of implementation.

A well-known declaration specific to higher education, with a central focus on ecological degradation, is the Talloires Declaration (ULSF, 1990). Following a keynote address by Maurice Strong, secretary general of the then upcoming 1992 Rio Earth Summit, this series of recommendations were developed at a conference of university leaders from around the world, forming a declaration of commitment that now has over four-hundred signatories worldwide (ULSF, 2008). The declaration presents a set of principles for taking vision through to action through education, policy formation, institutional transformation, research and information exchange. The declaration emphasises that leaders must initiate and support mobilisation of internal and external resources so that their institutions respond to this urgent challenge.

Four organisations committed to making sustainability a major focus of higher education joined forces in 2000 to form the Global Higher Education for Sustainability Partnership (GHESP). They are:

- 1.) University Leaders for a Sustainable Future; the secretariat of the Talloires Declaration
- 2.) The United Nations Educational, Scientific and Cultural Organisation (UNESCO)
- 3.) The Conference of European Rectors (CRE) Copernicus Charter
- 4.) The International Association of Universities; developed the Kyoto Declaration

The goal of GHESP is to mobilise higher education institutions to support sustainable development, creating a global learning space for the exchange of good practice between institutions (ULSF, 2002). However progress in reorienting education toward the GHESP goals has been described as slow by Corcoran, Walker and Wals (2004).

UNESCO brings a strong heritage to the GHESP, flowing on from their assignment as task manager for the implementation of chapter thirty-six, 'Education, Public Awareness and

Training', of Agenda 21. However progress with implementing Agenda 21 has also been slow, revealing what the 2002 UN Secretary-General Kofi Annan described as a gap in implementation (UN Economic and Social Council, 2002 in Drexhage & Murphy, 2010, p. 8). Such examples of international level commitments and non-binding multilateral agreements regrettably "do not reflect the processes and realities in countries, where multiple stakeholders—including government, businesses, and non-governmental organisations (NGOs)—need to be engaged in action" (Drexhage and Murphy, 2010, p. 8).

More recently, UNESCO has been the lead agency in the 2005-2014 UN Decade of Education for Sustainable Development (UNDESD); a ten-year period for a renewed focus on the role of education in taking action. In their report on New Zealand's starting point for action and early contribution to the initiative, Chapman, Flaws and Le Heron argue that institutional realities in New Zealand severely constrain any ambitions for becoming a leading world example, with evidence suggesting "that until understanding of the constraints of existing educational frameworks is taken seriously, prospects are slim for anything other than rhetorical and cosmetic adjustments in educational curricula and educational outcomes" (2006, pp. 281-282). With almost zero recognition or commitment to any aspect of the UNDESD agenda revealed in a 2006 email survey of New Zealand's universities (Chapman et al., 2006, p. 289), central recommendations include a realistic assessment of the existing situation and compromises to be faced, and a focus on removing the institutional obstacles and impediments to creating a "sustainability mindset." With the UNDESD coming to a close in 2014, it seems plausible that, again, the complexities of multiple stakeholder engagement will create slow progress and an implementation gap in this initiative.

In summary, there has been a steady development in strategies, frameworks and international declarations on sustainability in higher education over previous decades (Haigh, 2005; Wright, 2004; Corcoran, Calder and Clugston, 2002), in which Wright (2002) identifies a unifying theme of ethical and moral responsibility to promote sustainability. The theme continues in the literature: an example taken from Cortese (2003) identifies that higher education is seen to bear a profound moral responsibility to increase awareness, knowledge, skills and values needed to create a just and sustainable future.

In a review of definitions and frameworks for environmental sustainability in higher education, Wright clarifies that while being a signatory to an international agreement is not necessarily a valid indicator of an institution's commitment to sustainability, signatory status successfully symbolises the prominence of the movement, and implores those with limited commitment to "get on board" (2002, p. 10).

3.2.2 National level: standards, strategies and policies

According to Drexhage and Murphy (2010, p. 2), there is a huge gap between international multilateral processes, with their broad goals and policies, and national action, which reflect domestic political and economic realities. Unlike the characteristically aspirational and noble, yet voluntary qualities of international accords and agreements, the structures affecting the function and operation of TEIs at a national level in New Zealand are regulatory, legislative and binding.

The Education Act 1989 is the overarching legislative document for education in New Zealand, and is the source of the widely quoted role of TEIs as 'conscience and critic of society.' The Act provides a framework for planning, funding and monitoring in the tertiary education sector, and has duly established the Tertiary Education Commission - Te Amorangi Mātauranga Matua (TEC) as the crown entity with whom all TEIs are required to agree to formalised plans for funding and performance monitoring. The TEC is responsible for the allocation of government funding to the sector, guided by the government's current and medium-term priorities described in the Tertiary Education Strategy.

Of significance to this study is that the government's Tertiary Education Strategy (TES) 2010-2015 (Ministry of Education, 2010) establishes a common funding platform for public tertiary education providers in New Zealand. Typically, around fifty percent of total income comes from government, with a significant balance coming from student fees.

On the whole, all tertiary education providers are treated as one under the TES. Some distinction is afforded between universities and polytechnics, along lines that emphasise the academic education and research that helps to drive innovation due from universities, and vocational education that provides skills for employment from polytechnics. However there are no fixed divisions between the types of courses offered in each type of institution. Further, Codling and Meek (2003) identify that alongside the education reforms of the 1990s that saw to deregulation and an elevation of the influence of the market on higher education providers in New Zealand, there has been a progressive convergence of institutional types in practical terms: polytechnics became more like universities, and vice versa (Codling & Meek, 2003, p. 88).

For the purposes of this study, the TES is perceived to place an effectively common set of criteria and expectations on universities and polytechnics, with traditional areas of specialisation (research or vocational training) each having a valuable contribution in the transition toward sustainability. In primarily functioning as a guide for allocating the government's investment in tertiary education, the TES has an overall orientation toward the sector's contribution to a productive and growing economy, with the environment merely seen as something to be "addressed" (Ministry of Education, 2010, p. 7) or "managed" (p. 18).

The lack of emphatic endorsement or promotion of sustainability in the TES, and in the wider central government structural framework, is not without high-level attempts at infusion or alignment. See *Change: Learning and education for sustainability* (PCE, 2004) was published by the Parliamentary Commissioner for the Environment with the purposes of raising understanding of sustainability issues in New Zealand, raising the level of debate about education-for-sustainability (EfS), and stimulating effective action across multiple sectors, so that New Zealanders can learn to live in sustainable ways. Areas for action specific to the tertiary sector include graduates leaving institutes with a core understanding of sustainability and environmental sustainability, institutes supporting learning across the disciplinary boundaries that effectively slice up knowledge, and the government working with the TEC to prioritise EfS as a vision for the tertiary sector (PCE, 2007, p. 8).

A follow-up evaluation, *Outcome evaluation*. See *Change: Learning and education for sustainability* (PCE, 2007) discerns that the central government focus on strengthening the mandate for sustainability has led to various levels of acceptance and implementation across local government, central government, primary and secondary schools, tertiary institutions, community organisations and businesses since the publication of the original document. *Enviroschools* (an environmental education programme operable at primary and secondary school level in New Zealand) has been a particular success. However at tertiary education level, while the TES of 2007-2012 has been revised to incorporate a greater focus on sustainability, the evaluation reports much scope remains for acceptance and implementation across the recommended areas for action in the tertiary sector (PCE, 2007, pp. 13, 21). Further, despite the commendable efforts of some enthusiastic individuals, initiatives for understanding sustainability have largely been ad hoc, isolated, and uncoordinated, and learning about sustainability is not a core, or even a fringe component in most mainstream courses (PCE, 2007, p. 20).

3.2.3 Regional level: governance, plans, campus zone

The site for this study is the city of Dunedin - Ōtepoti, situated in the region of Otago, New Zealand. This common geographic context for the two case study TEIs implies similar region-specific opportunities and challenges for organisations implementing transitions to sustainability, with demographic, infrastructure and local government features being identical.

Te Ara Encyclopedia of New Zealand compares the land area of the region to the Netherlands or Taiwan; whereas Otago has just over one hundred and ninety-five thousand people, these other similar sized areas are home to sixteen million Dutch, or twenty-three million

Taiwanese (McKinnon, 2012a). This low population density is advantageous in contributing to a pure, clean and green image.

The Otago Regional Council (ORC), formed under the legislation of the Local Government Act 2002, exists to promote the sustainable development and enhancement of Otago's natural and physical resources, such as land, water and air, through integrated management at the regional scale. The physical operations of the case study institutions must comply with legislation and bylaws regarding, for example, discharge levels into drains and air particulate emissions from boilers. The ORC conducts activities to educate, consult and encourage community participation, and runs an environmental education programme that works mainly with primary and secondary schools (ORC, 2013).

Almost sixty percent of the population of the greater region live in the Dunedin urban area. The Dunedin City Council (DCC) generates over-arching strategies, guiding plans and implementation policies to manage city resources, infrastructure and development, consistent with plans of the greater region. Various documents have some sustainable management focus on the unique geographical space of the campuses and adjacent residential zones, including the District Plan, prepared under the 1991 Resource Management Act, with objectives, policies and methods to manage the effects of land use activities on the environment. The DCC's Tertiary Precinct Development Plan has the overall mission to "contribute to the creation of a quality, sustainable campus environment and a vibrant tertiary precinct, ensuring Dunedin's place as the Education Capital of New Zealand" (2008, p. 1). Acknowledging competition for space, and future building, housing and transport considerations, the plan is authored from a DCC point of view, and considers amenity value as well as linkage with the CBD and residential areas.

The University campus is described as the hub of a vibrant residential student community that defines the character of the northern part of this university city (University of Otago Charter, 2003, pp. 2-3), with students benefiting from the University's health, social and learning support services. With the Otago Polytechnic campus and services also clustered in North Dunedin, the overall scene is one of a sanguine, youth- and learning-focused community, where education is the dominant industry. While student poverty exists and old, cold flats are a distinct reality, there is a level of privilege, optimism and much intellectual liberty in this centre of higher education. As students and staff from national and international backgrounds are attracted to Dunedin in significant numbers and make an important economic impact, the institutions are a significant consideration for local government. In turn, the institutions and their policies hold much sway in certain aspects of economic development. An essential level of coordination and alliance between city planners and the influential local tertiary sector is exemplified in the imperatives for a vital,

compact yet integrated campus in the University's Campus Master Plan—published in 2010 and the first since 1980, which is briefly reviewed in the next section.

Whether appreciated from a regional, national or international perspective, the two case study institutions, the University of Otago and Otago Polytechnic, hold similar societal roles and expectations, which must be addressed and reconciled within similar funding and operating environments. This chapter now describes the internal context and policy frameworks of each respective case study institution, to further develop a background understanding for the analysis of data.

3.3 Internal context: mandate, instrument, review

Within a similar external context and operating environment, the manner in which each case study institution handles and negotiates the arrangement and integration of often competing priorities will be influenced by institutional identity, strategic priorities and core values. Documents containing statements of positioning and intent for internal guidance and public communication assist in establishing institutional norms, and for clarifying that which is valued and rewarded. This section sets out to critically review the positioning indicated in selected documents from each of the case study institutions in turn.

The review of documents is conducted for each case study institution in turn. Within each, there is further division into three sections. The first considers vision-level statements to develop an understanding of the aspiration and mandate for the pursuit of transitions to sustainability in the professional environment. The second looks into the means for taking action, or the structures, instruments and processes that assist in substantiating vision through to action. Finally, the methods for evaluation and review are considered. Transparent accountability is an important factor in social responsibility, with the potential to separate mere rhetoric from credible, demonstrated commitment. Additionally, the inherent challenge within sustainable practice of an unknown, moving target (Voss, Bauknecht, & Kemp, 2006) demands an adaptive approach based on reflection. Mechanisms for feedback and review provide an opportunity to identify problem areas as well as successes.

As the title of the thesis suggests, integration throughout these levels of practice are of central interest to this study, and form a set of primary findings in themselves. Additionally, the review forms the base from which to interpret the reported experiences and events of study participants, forming the internal context in which decision-making takes place and attempts are made to engage in transitions to sustainability within professional roles.

3.3.1 Case Study: University of Otago - Te Whare Wānanga o Otāgo

The University of Otago (hereafter the University), was New Zealand's first university, founded in 1869. The University serves approximately twenty-one thousand full-time and part-time students per year, one fifth of whom are at the postgraduate level, with eighty percent of new students coming from outside Dunedin. McKinnon (2012b) attributes Dunedin's stable population, unique amongst the falling populations of other southern New Zealand centers, to the University; a public institution that is funded from a national, not a regional nor city, budget.

The institution's intellectual, cultural and economic contributions to the region and beyond are widely recognised. However, recognition of a new dimension receiving global attention for excellence in the tertiary sector, namely the potential contribution to sustainability, is yet to be realised. In order to understand the positioning of the institution within its external operating environment, and to establish a contextual base from which to interpret qualitative data related to taking vision through to action, this section is divided into three parts, focusing in turn on vision, policy and review.

3.3.2 Vision: a reputation for excellence

Objectives that constitute the aspirations and vision of the University relevant to this study have been sought in the Charter, the Strategic Direction, the Campus Master Plan and in the Teaching and Learning Plan. Any changes in the core documents between mid-2011 and publication of this study have been intentionally excluded, to correlate the context with the actual period in which data was collected. The following review of each of these influential documents aims to provide some background in understanding the mandate and sanction extended to decision-makers and executives for undertaking transition activities within their professional roles. Interestingly, this section is somewhat more extensive in its search compared to the counterpart section for the other case study institution. In the absence of a concentrated set of presentations on institutional position on sustainability for the University, a wider search was conducted in the quest for a mandate for action.

The University Charter (2003), (with an expiry of 30 September 2013), brings together the vision and mission statements, core values and a description of the special character of the institution. Many of the intentions and statements hold great promise for transitions toward sustainability, such as the purpose of the mission statement: namely, to enhance the understanding, development and well-being of individuals and society. Throughout the Charter, however, sustainability and environment receive very little emphasis, with preeminence given to the

centrality of specialised research, and on excellence and leadership in numerous fields of academic teaching and enquiry.

Looking to the next document, the 'Strategic Direction to 2012' (published in 2006) is a framework for the development of Otago as a research-led University, based on six strategic imperatives: Achieving Research Excellence, Achieving Excellence in Research-Informed Teaching, Ensuring Outstanding Campus Environments and Student Experience, Contributing to the National Good and to International Progress, Strengthening External Engagement, and Building and Sustaining Capability. The latter three appear particularly promising for providing a mandate for advancing sustainability, and are investigated in the following paragraphs. Goals around the campus environment and subsequent impact on social experience are then examined through a review of the Campus Master Plan, which offers a more substantial document for investigation than the Strategic Direction clauses on Ensuring Outstanding Campus Environments and Student Experience.

First, in embracing a role that includes "contributing to the national good and to international progress", the University intends to deploy resources to encourage research that supports development. In addition, and crucial to New Zealand's sustainable development, Māori and Pacific achievement and support is emphasised in this category. Along with a focus on these central responses, the University also aims to embrace its role as critic and conscience of society, and act in an ethically, socially and environmentally responsible manner (University of Otago, 2006). Striking parallels and alignment exist with Treaty of Waitangi obligations, with the funding priorities laid out in the Tertiary Education Strategy, as well as the strategic direction for tertiary education set out in the Education Act 1989 (see, for example, s.159AA of the Education Act 1989). Based on this comparison between sustainability-promoting internal statements and external policies, it is not possible to assert that the University is seeking to go beyond legal compliance or alignment with funding parameters.

The second of the most promising of the imperatives from the 'Strategic Directions to 2012', strengthening external engagement, emphasises building relationships with key political, business, professional and community leaders, as well as with regional and international communities (University of Otago, 2006). External connection and applied research can involve other facets of society, to deliver transformative impacts that go beyond academic realms.

In stimulating or catalysing wider transitions to sustainability through external engagement, however, the first challenge may be in addressing the advancement of a relevant, interdisciplinary research frontier, based on a holistic approach that considers environmental, social, cultural and economic dimensions as parts of integrated systems. In their research on tertiary education for sustainable development in New Zealand, Stone and Baldoni (2006, p. 14)

broadly observed that institutional support for interdisciplinary research tends to be low, with financial mechanisms—a key indicator of adequate support—designed to favour allocation of resources to single disciplines. Postgraduate research is considered to make a crucial contribution to the University's research. However, in a summary of masters and doctoral theses presented in Chapman, Flaws and Le Heron (2006, p. 289), the University does not stand out for its contribution to sustainability. The Graduate Profile contained in the Teaching and Learning Action Plan 2011-2012, primarily emphasises the possession of a deep, coherent and extensive knowledge of at least one discipline, with an interdisciplinary perspective listed amongst others as an attribute that will be additionally possessed to a varying degree by graduates. Outreach is vital for the University to fulfill its social and moral obligations, however qualities of the body of knowledge such as interdisciplinary perspective and transformative value to systems, remains as a first hurdle.

Finally, the third promising imperative from the Strategic Directions document, 'building and sustaining capability', is squarely focused on economic sustainability, conceptually developed as the securing of sufficient physical, financial and human resources, and the effective and efficient use of those resources. Emphasis is placed on the resilience and diversity of the funding base, including the commercialisation of intellectual property, and on the reduction of unnecessary bureaucracy to enable efficiency in focus on research and teaching (University of Otago, 2006). Identification within this frame of the desirability of a participative and consultative approach to decision-making is promising for sustainable practice, such that members of a diverse and vibrant community are ideally afforded an effective voice within a collegial and vital wider organisation (University of Otago, 2006). This auspicious characteristic is of central interest to this study on taking sustainability vision through to action, given its centrality in the wider literature.

In terms of the built environment and its impact on social experience, the University of Otago Campus Master Plan, produced by international consulting firm DEGW and published in May 2010, offers a comprehensive guide for the development of campuses over the next twenty to twenty-five years. Sustainability is mentioned in the first chapter, both as a means to contribute to national good and international progress, and as a potential driver of change, with the final chapter covering sustainability in depth. In its entirety, the plan holds much promise for modelling sustainability principles. However, the plan does not yet represent University policy, rather, it provides a vision. As then Vice-Chancellor Professor David Skegg points out, the title on the cover, "Options for Future Campus Development", is really more accurate (Skegg, 2010).

The Strategic Direction to 2012 and the Campus Master Plan place emphasis on the institution as role model, with themes including sustainable physical operations, relevant research,

public outreach, and participative decision-making. Such role modelling approaches are just a part of what may be considered an appropriate response for education-for-sustainability (see Shephard, 2010), with the transformation of teaching programmes, or greening the curriculum, being the most significant complementary theme. This is not confined to cognitive learning and knowledge about sustainability; affective learning that pertains to values, attitudes and behaviours, sometimes referred to as the hidden curriculum, can be considered the essence of education-for-sustainability (Shephard, 2008).

The University acknowledged, in the Annual Report of 2011, that graduates educated at the University of Otago may be the greatest contribution from the institution to national good and international progress, because they will take up positions in a wide variety of professions, as well as in the business world. The Committee for the Advancement of Teaching and Learning (CALT) circulated a discussion paper on an amended Teaching and Learning Plan and the associated Graduate Attributes in April 2011 (see CALT, 2011), with responses invited from across departments on whether 'environmental literacy' or similar should be included in the Graduate Profile.

Ultimately the decision was made, approximately six months after the interviews for this study were conducted, to include environmental literacy in the guiding Graduate Profile and Guidelines for Teaching, amongst other attributes that will be possessed by graduates to varying degrees. Notably, the previous instance in which this issue came up for discussion, in 2008, the notion was rejected. This dismissive stance on environmental literacy potentially forms part of the context of the institution at the time this study was conducted, however clearly the issue was not at rest.

A reasonably thorough examination and critique of important guiding documents for the University has produced evidence largely of an incidental and ancillary approach to sustainable practice. A mandate for action is not strong in the University's stated bearing. It is the position of this study that the understanding and integration of sustainability throughout all levels of responsibility and activity within an institution reflects their commitment to this responsibility. Cherry-picking areas for action will deliver isolated project success, whereas transformative, systemic change requires consistent, broad commitment. Tew (2005, p. iii) identifies an indefinite series of choices by knowledgeable and ethical people in different contexts, times and places as ultimately representing the choice to pursue, or ignore, sustainability. Attention now turns to the means and supports for taking action at all levels, and at every decision scale.

3.3.3 Policy and the means for taking action

A review of University policy, and other specific channels for day-to-day decision-making and implementation, are reviewed in this section to give insight into the background context of the explicit means for taking action. According to Wright (2002, p. 10), explicit sustainability policies and implementation plans seem to determine the degree to which a university will attempt institutional change and engage in relevant initiatives. Sharp (2002) furthers this by describing how a strong commitment in an institution translates to official permission and policy that can then be gradually substantiated into action. Similarly Laws et al. (2004, p. 253) point out that policy often serves as a middleman in the implementation process, translating insights into programmes.

At the time this study was conducted (mid-2011) there was still no formal sustainability policy at the University. This was despite 'very strong' support for the adoption of an environmental sustainability policy across the University community, according to feedback to a discussion paper circulated throughout the University in 2008 by the Working Party on Environmental Sustainability (hereafter WPES), that was set up in 2007 to advise the Vice-Chancellor (WPES, 2008).

Some former attempts had been made to compose a policy. In 1993, Robert Scott was asked to prepare environmental guidelines with a view to producing an environmental policy to be officially adopted by the University (Peake & Scott, 2006). While the resultant Code for Environmental Protection and Sustainability (CEPS) was confirmed and adopted by the University Council in October 1994, the authors of the 2006 report to the University, *Sustainability in Australian Universities: Implications for the University of Otago*, claim that many staff and students are not even aware of the existence of CEPS, and suggestions for implementation have not always been observed (Peake & Scott, 2006, p. 8).⁵ A review of CEPS in 2004 by Ms Nichola Wheen (Law) was not accepted by Council, and a call for a review by Peake and Scott (*ibid.*) has failed to deliver an updated set of guidelines.

As well as recommending the University adopt an explicit environmental policy, the final Report of WPES (2008) also presented a set of guiding principles and structure for implementation, with some cross-over and reference to Peake and Scott (2006). The successfully actuated aspects have the potential to consolidate alternative, specific processes for taking action within the University. While Peake and Scott's recommendation for a senior committee was not well received at the time (Peake & Scott, 2006, p. 9), the implementation structure put forth by

⁵ As an in-house publication, this report is not always easy to access, therefore a copy is provided as an Appendix to this thesis (Appendix 6).

WPES led to the establishment of the Environmental Sustainability Advisory Committee (ESAC) in June 2009. This advisory committee was conceived as being able to harness the enthusiasm present in the University, acting as a conduit for ideas and providing feedback (WPES, 2008), and potentially embodying the spirit of the collegial decision-making earlier identified in the strategic imperative of 'building and sustaining capability'. The committee includes representatives from across the University. However, a key member, an Environmental Sustainability Coordinator located in Property Services, was not appointed until 2012, eight months after the completion of the interviews for this study and following a very drawn-out recruitment period. ESAC's Annual Report (2011) declares the Committee has been frustrated by the lack of support for its tasks, and states it is difficult to see how the Committee will be able to progress many of its goals and objectives until a dedicated, full-time Coordinator is appointed.

An additional recommendation from WPES for an implementation structure was for a Director of Sustainability, located in the Vice-Chancellor's office to signify high-level support, as a complement the Advisory Committee and Coordinator. This Director was to be responsible for the development of policy and processes, research and communications, however according to ESAC (2011), the position was not progressed in 2009 or 2010, with little expectation that this position and its associated role would eventuate in the foreseeable future.

While much enthusiasm and many individual contributions to transitions to sustainability at the University are clearly identifiable, signs of an institution-wide commitment are fragmented, with the thorough recommendations for an institution-wide approach by Peake and Scott (2006) and the structure to achieve a change of culture by WPES (2008) having been implemented only very selectively at the point in time of this study (mid-2011).

The lack of a clear policy mandate at the University is emphasised in the 'piecemeal and uncoordinated' description given to the various institutional initiatives to develop sustainable practices over the past decade or more (WPES, 2008), with Otago identified in that report as one of just two New Zealand universities still without an explicit environmental policy.

3.3.4 Annual reporting, evaluation and review

Peake and Scott (2006, p. 18) suggested the adoption of triple-bottom-line annual reporting for the institution, that is, financial, social and environmental annual performance. Similarly, WPES (2008, p. 7) suggested benchmarking and reporting processes that measure and report on progress toward sustainable campuses. There is some evidence of some reporting that fits this description in the standard and established University reporting mechanisms.

The format of the University annual report over recent years does include performance indicators for a variety of social parameters, in the section Statement of Service Performance. Up until 2009, this was based on twenty-five objectives, some of which were tick-the-box reporting, for example: "Objective 23: to provide a culture in which staff have the opportunity to participate in university policy development", had the simple requirement of staff representation on the University council, senate and the committees of those bodies, without any further quantification (University of Otago, 2009, p. 54). A shift in the reporting framework of the Statement of Service Performance section was apparent from 2010. From this point, sections were grouped and presented according to the six strategic objectives of the institution, with statistical Key Performance Indicators (KPIs) replacing the checkbox objectives. The presentation of the KPIs as statistical percentages may possibly be perceived as more objective by some stakeholders, with enrollment, funding, Māori and Pacific, community service, and Graduate Opinion Survey measurements amongst those presented. Environmental or ecological footprint KPIs, however, are not included.

Key actions toward Strategic Direction imperatives have been published annually as the Vice-Chancellor's Review in Annual Reports. Much activity within the framework clearly supports sustainability principles or progress. For example the 2006 announcement on the new interdisciplinary Humanities Research Cluster on Poverty, Inequality and Development, or the 2008 engagement with the national, multiple-partner Centre for Sustainable Cities. The attention given to the theme, however, is usually relatively brief; just fifty-two words were afforded to summarising the formation, activity and recommendations of the WPES (see p. 8 of the 2008 Annual Report). A more critical assessment of the reviews of the five year period from 2006-2010, reveals the tendency to cherry-pick good news in order to illustrate progress. This is in line with Gray and Milne's (2002) observation that, while the techniques for full social and environmental reporting now exist, the quality of that reporting remains poor where it is voluntary, such as in New Zealand, with social and environmental information tending to be assertive, partial, and to cherry-pick the 'good news,' with financial performance favoured.

In summary, while the University's intellectual, cultural and economic contributions to the region and beyond are strong, its contribution to sustainability—an increasingly important aspect in measures of tertiary education excellence—appears to be slow to progress. This review of the context in which staff are attempting to initiate and implement transitions to sustainability reveals much in the way of vision and aspiration. However, there is an absence of structures and mechanisms to assist in the processes of substantiating this through to action, and a lack of effective process of evaluation and review towards this goal. This paucity of institutional

commitment provides a background against which to consider responses from study participants from the University.

3.3.5 Case Study: Otago Polytechnic - Te Kura Matatini ki Otago

Otago Polytechnic (hereafter the Polytechnic), is a multiple campus tertiary institution with its base in Dunedin. The Polytechnic serves around six thousand, seven hundred students per year, mainly undergraduate, both full-time and part-time, with around seven hundred staff.

The Polytechnic has a reputation of being a sustainability leader in New Zealand (see NZSSES 2010, Shephard et al., 2009; Shephard, 2010; Shephard et al., 2011), both in learning and teaching, and in institutional role modelling. High praise comes from Dr Morgan Williams, New Zealand Parliamentary Commissioner for the Environment 1997-2007, and Chair of The Natural Step Foundation Aotearoa New Zealand: "Otago Polytechnic is truly a 21st century tertiary education leader, embracing sustainability teaching and learning like no other New Zealand institution" (personal communication, cited in Mann & Ellwood, 2008). A similar assertion states "Otago Polytechnic is taking a clear leadership role" in education-for-sustainability (Shephard, 2010, p. 16).

This study takes the position that the understanding and integration of sustainability throughout all levels of responsibility and activity within an institution will reflect their commitment and the effort to this responsibility. In seeking to substantiate claims and assertions that are appearing in the literature, and to develop a greater depth of comprehension of the context in which Polytechnic study participants pursue transitions to sustainability in their professional roles, this section reviews relevant institutional governance and management plans, policy and communication documents. As with the former case study, this review will be in three parts, focusing in turn on vision, means to implementation, and review processes. In order to remain true to the moment in time in which interviews for this study took place, materials and documents relevant to mid-2011 will be reviewed.

3.3.6 Vision: to do the right thing

In this section, documents and publications that encompass values, vision and goals for both public communication and internal guidance are reviewed, including a communication document A Simple Pledge, management-oriented Strategic Directions, the 2010 Annual Report, and web pages. Unlike the counterpart research process for the other case study institution, the documents

that establish vision for sustainable practice in the Polytechnic are focused, concentrated and coordinated in communicating the institutional position. For this reason, there was no need to review an extended set of documents in the search for a mandate for action.

Consistent with the theme of this section, the documents and publications explicate the aspiration and mandate for institution-wide activity and decision-making, aligned with sustainability principles. However, in all public communications documents, the Polytechnic is very clear that they will communicate what has happened rather than what will, in recognition that the making of promises in the domain of strategic sustainable development often means under delivery (Jackson, 2011). Therefore rather than merely making a series of unsubstantiated and aspirational claims, the Polytechnic believes that a corresponding level of actualisation, achievement and integration is to be found in effect, in learning and teaching or operational activities. As such, documents and materials reviewed for this section on the vision for the institution are revisited in the following sections that acquaint the reader with palpable means to implementation, and evaluative reporting and revision practices.

Since 2005, Polytechnic leadership has actively set out to establish sustainability as a strategic direction toward which all activity responds and is aligned, after discerning that it constituted an important part of a wider set of core values held by staff through a consultation exercise. In essence, staff readily agreed that 'doing the right thing', to attain a degree of social responsibility, ought to be the distinguishing feature of Polytechnic activity (see Mann & Ellwood, 2008).

According to A Simple Pledge (Mann & Ellwood, 2008), the Polytechnic believes that it does have a role to play in the search for answers to pressing social, civic, economic and moral problems, and understands that what is taught, how the organisation behaves, and how influence is extended into the community does have an impact socially, environmentally and economically (Otago Polytechnic, 2011a, p. 8). The institution is committed to serving its community in a socially responsible way, and to providing leadership both locally and nationally for a more sustainable planet (Otago Polytechnic, 2011a, p. 6). This commitment is expanded in the institution's guiding Strategic Directions (Otago Polytechnic, 2011b), as one of four central, strategic goals in place for the pursuit of recognition as New Zealand's leading polytechnic. Within this, "to lead the sector as a socially responsible and sustainable organization" involves ensuring education-for-sustainability (see section 3.2.2 for definition) is embedded in all programmes regardless of level, that operational sustainability is improved, that a research focus which supports sustainable practice is developed, that actions benefit communities wherever possible and that environmental impact is reduced. These practices aim to develop broad and deep

capability, to deliver the institution's transformative sustainability vision (see Otago Polytechnic, n.d.):

"that our graduates, our practitioners and our academics understand the concepts of social, environmental and economic sustainability in order for them to evaluate, question and discuss their role in the world and to enable them to make changes where and when appropriate. Our goal is that every graduate may think and act as a 'sustainable practitioner'."

According to Polytechnic CEO Phil Ker, quoted in Mann and Ellwood (2008), a long term vision is that people will come to the Polytechnic because of its reputation for having a curriculum that engages and prepares them to play leadership roles in whatever they are doing to advance sustainable practice. Given that the skills and values of Polytechnic graduates contribute to every sector of society, curriculum, teaching and learning are perceived as pervasive and influential with global impact (Mann & Ellwood, 2008). Additionally, creating a philosophy of education-for-sustainability is enhanced if undertaken within a context of institutional operational practice (Otago Polytechnic, n.d.). Thus, as well as a long term commitment to becoming a leader in the innovative field of modes of learning and teaching for education-for-sustainability, the institution recognises the essential complementary value of role modelling through sustainable operations and business practice. Engagement with sustainability principles is clearly pervasive across disciplines and activities, with the intention to embed the principles to generate tangible outcomes in practice.

Sustainability is a pivotal component of the widely agreed upon, core value of social responsibility that is central to the Polytechnic vision. Vision-level statements, however, will remain just that unless there is broad engagement and participation in day-to-day activity to support and deliver the development of institution-wide capability. The next section investigates staff participation and access to processes and means for implementation that can translate vision into action.

3.3.7 Policy and the means for taking action

The extent to which sustainability policies and implementation plans are in place is an indicator of the commitment to attempt institutional change, according to Wright (2002). Official permission and active processes for initiating and implementing transitions activities potentially has a flow on effect in the establishment of institutional norms, by communicating that which is valued and

rewarded. With unstated, 'hidden' qualities such as institutional culture also under investigation through qualitative methodologies in this study, insight into decision-making context is essential for interpreting the reported experiences and perceptions of study participants.

The Polytechnic takes the approach of actively trialling new approaches and ideas to implement sustainable practice, whether developing new course content and learning and teaching processes, or identifying operational practice, supply chain and organisational change that addresses sustainable practice (Otago Polytechnic, 2011a, p. 11). Certain frameworks and implementation methodologies are used to this end, with a level of tailoring and adaptation made to suit the localised practices, opportunities and challenges of the Polytechnic. This section reviews public documents and web pages of the Polytechnic and selected key associates and consulting partners, The Natural Step Foundation, The Sustainability Company and the Open Education Resource Foundation, to gain insight into the innovative processes in place to carry vision through to action.

Review is divided between learning and teaching, and operations, however the boundaries of jurisdiction are fluid in the development of an overarching philosophy of education-for-sustainability (see Shephard, 2008, for insight into the essential role of affective learning alongside traditional, cognitive education approaches). As noted in the previous section, some documents which are relevant to vision level activity, and to evaluation and review activity, are also relevant to this section on policy and means to implementation, revealing follow through and integration of vision into action.

Learning and teaching

In the first of the two key areas for change—the integration of sustainable practice into the content and process of curriculum delivery—an embedded, whole of organisation approach has been taken, as opposed to only introducing separate programs. This decision aligned with the recommendations of an independent research report commissioned in 2005 (Mann & Ellwood, 2008). Otago Polytechnic is the inaugural corporate partner of the Natural Step in New Zealand, and has used the Natural Step Framework to underpin its drive to educate graduates who are to become sustainable practitioners, across all one hundred and sixty degree, diploma and certificate courses (The Natural Step, 2008a). The Swedish-developed framework ensures integration through a systems approach. Steve Henry, as senior consultant for The Natural Step Aotearoa NZ, has been a significant early contributor to implementation at the Polytechnic, with more recent leadership by Professor Samuel Mann. An additional set of implementation methodologies have been adopted to facilitate visioning and change, with the Sustainable Practice 360 tools (described

in the following section on operations) used to connect learning and teaching with capability and action competence (Otago Polytechnic, 2011a, p. 17).

In addition to integration across all programmes, the Centre for Sustainable Practice, based in Wanaka in Central Otago, delivers standalone, specialist qualifications in sustainable practice. The Certificate (Level 5) and Graduate Diploma qualifications offer practical and experiential learning along with theory, and business programmes such as applied management are also on offer through distance partnerships with other education providers. The specialist nature of the courses is not a reflection of philosophy of the Centre. Business consultancy services and project implementation, such as the Bio Diesel initiative fueling fleets of vehicles from many businesses in Queenstown, are part of the an applied practice and community outreach holistic composition, with research into sustainable practice also present in the mix.

Another significant step with education resources is the commitment to open education, developing a sharing, philanthropic philosophy and culture. The Open Education Resource Foundation (OER Foundation) is a virtual international organisation, hosted and underwritten by Otago Polytechnic with support from UNESCO (OER Foundation, 2009; Otago Polytechnic, 2011a, p. 19). Knowledge is shared freely using WikiEducator, with the legal permission framework of Creative Commons licenses significantly reducing the transaction costs associated with sharing teaching materials (OER Foundation, 2009). This gifting culture generates far reaching benefit for the social good, offering a striking contrast to the privilege typically associated with modern, user-pays tertiary education.

Operations

The second of the two key areas for change looks at the business practices and operations of the Polytechnic. Dr Barry Law, managing director of Christchurch-based The Sustainability Company, has been assisting the Polytechnic since 2008 to implement sustainable practice. Using the Sustainable Practice 360 (SP360) tools, strategic practice is interwoven into all levels of activity: vision, strategic goals, activities and indicators of success (Otago Polytechnic, 2011a, p. 11). The SP360 process advocates a holistic definition and evaluation of sustainability based on four pillars, with a political component, incorporating governance, added alongside the familiar environmental, social and economic components, with a goal of fundamental behavior change through a systems thinking approach (see The Sustainability Company, 2011).

As well as Annual Reporting and performance indicators undergoing significant change (reviewed in the following section), other notable activities contributing to policy and implementation processes include the commencement of a full review of the supply chain process

in 2010. Subsequently, weightings have been established for consideration of environmental, social, compliance and economic implications, along with life cycle analysis, to provide guidance for all staff working directly with purchase of product and service (Otago Polytechnic, 2011a, p. 27). In this regard, the Polytechnic is an active leader and potential catalyst in the wider business community, communicating standards to suppliers.⁶

Additional activities that have commenced within operations include replacing all coal-fired boilers with renewable-supply wood chip burners (Otago Polytechnic, 2011a, p. 15), the highly visible 'Living Campus' which models permaculture food systems throughout the campus, and the auditing and reduction goals in place for waste going to landfill. Health and wellness is considered a part of the commitment to social responsibility. All Polytechnic sites, including outdoors, became smoke-free on 31 May 2010, and a 10-week staff fitness and wellness programme, Springin2it, runs each spring, with rapidly increasing popularity and participation rates (Otago Polytechnic, 2011a). A contestable fund is available to any staff member for developing bright ideas for transitions to sustainability; a highly visible reward for encouraging creative participation and innovative ideas within the individual contexts of the many different schools and departments. These initiatives are amongst many that illustrate the abundance of action flourishing under institutional policies and processes.

Finally, human resource commitment is significant, with many specialised roles supporting the commitment, including a Director: Sustainability, a Sustainable Operations Manager, Educational Development personnel to assist with integrating education-for-sustainability into programmes, Sustainable Practice Advisors, and external consultants and associates from The Sustainability Company, The Natural Step Foundation and the Open Education Resource Foundation. It is not simply up to the people in these roles to take care of sustainable practice on behalf of the entire institution; there is an expectation that all staff engage and tend to this aspect of their professional development, which is illustrated in Mann and Ellwood (2008). Rather than merely appealing to students in a 'hearts and minds' approach to sustainability by extending reasoning and knowledge, educators at the Polytechnic literally take the lead in providing a transformative context for all learners, in accordance with expectations laid down by leadership for an embedded, institution-wide approach to the core organisational value, to 'do the right thing' (Mann & Ellwood, 2008).

⁶ In its formative stages, a collaborative project on sustainable procurement, driven by Otago Polytechnic and the University of Canterbury, extended an invitation to the University of Otago to participate (Jackson, 2011), however the University declined to become involved.

In summary

Acknowledgment of sustainability as the greatest challenge of the twenty-first century in day-to-day professional practice is normative at the Polytechnic, with much evidence of active policies and processes in place to support action across the institution. Achieving improvements toward sustainable practice demands the acknowledgement of multiple, interconnected and systemic elements; including social factors such as community development, equity and wellness, operations factors such as material flows and ecological footprint metrics, the long-term economic viability of a strategic sustainable practice business plan, and governance influences including both the role of leadership and encouragement and access to participation.

Inevitably, even a high level of commitment will meet the challenge inherent to achieving sustainability; that of the unknown form of a moving target (Voss et al., 2006). An essential part of the process is evaluation and review, such that approaches can be selected, adapted and improved as lessons are learnt.

3.3.8 Annual reporting, evaluation and review

Dr Barry Law, managing director of Christchurch-based The Sustainability Company, has assisted the Polytechnic in the development of an innovative annual reporting framework and associated indicators of success. This emergent reporting process has involved aligning strategic vision, identifying the business case for sustainability, auditing environmental impact, reviewing supply-chain process and collaborating on a new reporting process to demonstrate action-based behavior change (Otago Polytechnic, 2011a, p. 9).

The Otago Polytechnic 2010 Annual Report, published 2011, sets a snapshot in time of the context in which the interviews for this study were conducted. In an interview with Dr. Barry Law in Otago's main local newspaper, the document was presented to the public as a "totally new way" for institutional reporting (Rudd, 2011). In accounting for more than just economic reporting, the article continues, and including accounting for effects on the environment, the manner in which the community is worked with and social impacts, the Annual Report is notable as a first for an educational institution in New Zealand (Rudd, 2011).

Key milestones toward the overall vision of the institution are presented in the body of the report. These include achieving the embedding of education-for-sustainability in every undergraduate programme, as a result of a five-year transformation process. Additionally, the first specialist qualifications in sustainable practice were approved for teaching from 2011. Statistical data is published on operational inputs: energy including coal, electricity, diesel and petrol; on

travel including air kilometres; on paper consumption, and on landfill waste and recycling volumes, with 2009 data compared to that of 2010 to reveal trends (Otago Polytechnic, 2011a). This comparison assists in identifying successes and problem areas, as lessons are learnt through the trialling of new ideas and as capability is grown within the institution and beyond.

Gaining the willing participation, engagement and enthusiasm of staff, who develop and hold institutional knowledge, and have greater permanence than students, assists in harvesting a diversity of creative input and builds momentum to meet strategic goals. The Otago Polytechnic Work Environment Survey (Otago Polytechnic, 2010) published an analysis of overall trends for the period 2004-2010, investigating work place well being, satisfaction and confidence amongst the seven-hundred staff of the institution. Strong positive trends are apparent across many metrics, with ninety percent of staff supporting both the long-term vision, and also the strategic goals and objectives of the institution, ninety-three percent of staff feeling inspired to go the extra mile to help the Polytechnic succeed, and ninety-five percent agreement that overall, the Polytechnic is a "great organisation to work in" (Otago Polytechnic, 2010). This confidence creates and propagates a collegial culture that enhances concerted, cumulative development and innovation toward common goals, and forms the context for this study.

3.4 Conclusion

With regard to sustainable practice, the distinctive positioning of each case study institution within a common wider context has been described and critiqued in this chapter. This supports a detailed understanding of the professional environment that influences the roles and decision-making of study participants as transitions to sustainability are pursued. A core principle of qualitative data analysis determines that findings must take into account their individual context, and cannot be separated from the set of influences and causal flows that uniquely guide experiences and outcomes (Miles & Huberman, 1994).

In addition to supporting the analysis of data generated through interviews with study participants, this chapter further builds evidence of the distinctive differences and contrast in approach to sustainable practice in each of the case study institutions. In summary, a mandate for action toward sustainability was not strong in the University's stated bearing at the time the research was conducted (mid-2011). A reasonably thorough examination and critique of important guiding documents for the University has produced evidence of a largely incidental and ancillary approach to sustainable practice. There was an absence of a formal structures and processes for engagement in action, and a lack of mechanisms for feedback from staff. While much enthusiasm

and many individual contributions to transitions to sustainability at the University are identifiable, there were few signs of a coordinated, institution-wide commitment.

In contrast, sustainability was a pivotal component of the widely agreed upon, core value of social responsibility that was central to the Polytechnic vision. There was evidence of deep commitment to establishing innovative processes in the Polytechnic for carrying vision through to action. These processes recognised the need to treat sustainable practice as an interconnected system, and the approaches were designed to be reviewed and adapted as targets moved and new factors arose. Acknowledging the greatest challenge of the twenty-first century is normative in day-to-day professional practice at the Polytechnic.

Though a comparative approach, the relative differences between the two approaches enable a learning opportunity and potentially a contribution to the literature on the processes involved in pursuing sustainability through higher education.

Research Design and Methodology

4.1 Introduction

As established in Chapter Two of this thesis, education is globally acknowledged as key for moving toward more sustainable worldviews and practices (e.g. Williams, 2008), with tertiary education institutions (TEIs) holding unique and influential roles that resonate with development toward the goal. Many scholars argue for the need for internal change within TEIs to rise to the challenges inherent to sustainable practice, but what is the change required, how can this be attained, and whose opinions matter?

There is no consistent method or blueprint for advancing sustainable practice, however certain key factors influence the process of taking an institutional vision through to action. This study aims to uncover elements of governance structures, social processes and mechanisms that are influential in the transition toward sustainability. The research aims to generate a set of findings that are applicable beyond the context in which they have been founded.

An open, exploratory approach has been applied to researching sustainable practice in two case study TEIs, with a focus on questions of change at a practical level, that is, in day-to-day individual practices and activities that constitute the evolving processes, structures and cultures for transitions to sustainability. Within the methodology applied in this study, way finding has progressed by building understanding across several domains simultaneously, an intentional approach given the complexity and inherently interdisciplinary nature of the subject matter. Through the following distillation of the research process, the value of this approach has been substantiated both for other researchers, and as a reflective learning process for the researcher.

This chapter describes the rationale and philosophical assumptions of the research methodology, and makes explicit the iterative, systematic methods used to draw and test conclusions. Starting with an acknowledgement of the epistemological orientation of the researcher, the implications for the research design are then articulated. The chapter then goes into greater depth on the core elements of methodology, including the comparative case study approach, the use of qualitative data, and the application of grounded theory. In each category,

methods are described. Particular detail is given on the thematic analysis method used for data analysis, in response to the call for developing transparent methods of qualitative data analysis by Miles and Huberman (1994), Corcoran, Walker and Wals (2004) and Filho (2005b), amongst others. Through making these elements transparent, credibility for research practice and policy audiences is enhanced, projects are strengthened and future research questions can be set up.

4.2 Theoretical perspective

Establishing that a reality exists is important for this comparative study, as this implies that some approaches to sustainable practice are potentially better than others. No absolute claim to an objective reality is or can necessarily be made, however, it is the commitment to engaging with the development of sustainable practice that is valued, as a means for acknowledging, better understanding and working with forces that influence socio-ecological dynamism.

In the field of sustainability in higher education, a general lack of theorising about the research methodology or an understanding about the methodology has been identified by Corcoran, Walker and Wals (2004) as a key concern for the research to live up to its potential in improving practice in institutions moving toward sustainability. By demonstrating the relevance of critical realist perspective, much traction is gained toward validating the research design by bringing forth established critical realist positions and linked traditions. The framework of critical realism endorses the research goal of uncovering elements of case study TEI social governance structures, including the cultures, norms and rules for day-to-day activity that affect the advancement of sustainability transitions in each institution.

The theoretical foundations for the research are examined in three thematic groups. First, the relevance of an ontological position of a realist philosophy of science is demonstrated, as is the link with an epistemology of constructionism. The value of a critical realist perspective is then considered in greater depth, with the final section clarifying a set of implications for this study.

4.2.1 Realism and constructionism

Ontology refers to what actually exists—the nature of reality. Epistemology, in contrast, refers to how we gain knowledge of what exists—how we can know anything (Maxwell, 2012, p. vii). In methodologies of social research, the issues for ontology and epistemology tend to emerge together, informing the theoretical perspective (Crotty, 1998, p. 10). Different ontological and epistemological orientations will have different views of what is real and what can be known. As

theories of knowledge have been examined, critiqued and reframed, different perspectives have come to be appreciated as overlapping on a spectrum, with the lines between approaches blurring (Miles & Huberman, 1994).

This study takes the ontological position of realism, which attests that a real world exists independently of our beliefs and constructions; the Earth is indeed round, and anthropomorphic climate change is taking place. Realists researching specifically in human geography are concerned with the investigation of the underlying mechanisms and structures of social relations, and identifying the "building blocks of reality" (Kitchin & Tate, 1999, p. 15).

A realist position can combine with an epistemology of constructionism—a belief that our knowledge of this world is inevitably our own construction. While it is accepted that an object is 'real', that is, it exists outside the cognisant mind, the notion of an inherent objective truth embodied in an object, completely independent of conscious recognition or perception, is rejected. *Meaning* is constructed in the mind through engagement and interaction with the world and the objects in it (Crotty, 1998; Maxwell, 2012).

Construction of meaning is a subjective process, such that different people will construct different meanings through engagement with the same object. This theory on knowing accepts there is no possibility of achieving a purely 'objective' account that is independent of all particular perspectives (Crotty, 1998; Maxwell, 2012). Backgrounding this move toward subjectivity, claims regarding the rational objectivity and absolute truth of positivist science have been revealed to be cultural in character and socio-political in origin by such philosophers of science as Popper, Kuhn and Feyerband (Crotty, 1998). To take the notion of cultural and socio-political subjectivity further would, at its most extreme, conceive that there is no escape from specific viewpoints. However, to reject the notion of a real world would place nature merely as a subcategory of culture, which in Dryzek's (2005) view constitutes "an arrogance that fails to recognise nature's existence prior to human appropriation" (p. 12).

From the foundation that a reality exists, it can be asserted that some approaches to sustainable practice are potentially better than others. It is accepted that this reality is only tendentially (if ever) actualised (Jessop, 2005, p. 41). However, as shown by Dyke and Gallop (2013), the ability to criticise or endorse practices and events can lead to valuable insights and moral progress. As such, it is the act of engagement to find meaning in sustainable practice that is valued. A framework to assist in comprehending the social structures and mechanisms that influence this practice, that are under investigation in this study, can be found in critical realism.

4.2.2 Critical realism

Since the publication of Roy Bhaskar's *A Realist Theory of Science* (1975), critical realism has emerged as one of the most powerful directions in the philosophy of science and social science, offering a real alternative to both positivism and postmodernism (Huckle, 1993; Williams, 1999; Maxwell, 2012; Patomäki & Wight, 2000).

Ontologically, critical realism is a commitment to a structured and differentiated reality which is independent of the mind. Unlike other forms of realism, critical realism posits that the deeper levels of reality are not simply irreducible to events, experience or discourse (Patomäki & Wight, 2000), and are based on a three-tiered ontology or stratification of reality which suggests that we can comprehend the natural and social world at three levels: the real, actual and empirical (Huckle, 1993; Jessop, 2005). Drawing on Huckle (1993), the real domain, or underlying structure, has the elements which make up the natural and social worlds arranged in particular ways, which make possible certain causal powers or processes. While these structures and processes underpin the natural and social worlds at varying levels of abstraction, they cannot be observed directly. The next level, the actual domain, is the observable level of events, where the workings of the underlying structures and processes are realised or put into operation. Finally, the empirical domain is the level of experience: where the events in the actual domain which have been caused by processes in the real domain are experienced by individuals. By asking study participants about their experiences and perceptions of events in taking action toward sustainability in their professional roles, this study aimed to trace the origins of experience through the level of events, to the level of structures and processes.

Huckle (1993, p. 43) anchors the interfaces between education, environmental problems and sustainability within the changing social structures and processes which shape the combined and uneven development of people, environments and societies around the world. Developing insights into structural properties that exercise various external constraints over agents' capacities for action within TEIs, such as aspects of governance, power in decision making, unspoken institutional values and established cultures, aims to further theoretical understanding of the practice of sustainability and the process of its development.

From Giddens' vastly influential theory of structuration, with the dualistic constraining/enabling power of social structures and the reproductive/transformational power of individual agency, it is taken as a given that social actors are knowledgeable of context when exercising agency (see Giddens, 1984). Drawing on the Bhaskar's critical realism (for a key text see Archer & Bhaskar, 1998), Patomäki and Wight (2000, p. 224) simply state that knowledge of underlying structures comes about through a transformation of existing knowledge; theories,

paradigms, models, speculations, linguistic conventions, beliefs, hypotheses and guesses. This knowledge is what makes possible incremental change; from Huckle (1993 p. 48), "in our everyday lives we both reproduce and change the social structures and processes which shape events and experience. Our behaviour is not entirely shaped by prevailing economic, political and cultural realities for we do have some power or agency to interpret and shape our environment in ways which we choose."

Everyday professional activity informed this study, in line with Giddens' (1984, p. 282) assertion that a study of day-to-day life is integral to analysis of the reproduction of institutionalised practices, with routine as the predominant form of day-to-day activity, and a prime expression of the constraining/enabling duality of structure. As a critical investigation into underlying structures realised in day-to-day routines, this study sought to uncover political, cultural and economic elements that influence sustainability transitions in TEIs.

Drawing on Miles and Huberman (1994, p. 4) to summarise; in combining constructionism with critical realism in qualitative research, it can be stated that social phenomena exist not only in the mind but also in the objective world. Social phenomena such as language, decisions, conflicts and hierarchies, exist objectively in the world and exert strong influence over human activities because people construe them in common ways. Things that are believed become real and can be inquired into; patterns emerge with some lawful and reasonably stable relationships to be found among them, from which we can derive constructs that underlie individual and social life, and the institutions, structures, practices and conventions that reproduce and transform them. From this framework, social phenomena that influence day-to-day sustainable practice can be identified. It is methodologically possible to trace the reported experiences of participants through to underlying structures that, because they are commonly construed, exert real influence in the professional lives and decision-making of study participants.

4.2.3 Implications for research design

Amidst the cultural and social norms found at various geographical and historical frames, an individual TEI will have its own culture, mode of operation and priorities, partially shaped through a shared interpretation of the 'rules' for day-to-day routine and decision making. Using the theoretical perspective of critical realism, this study analyses academic and general staff experiences of events related to sustainable practice to discern selected political, cultural and economic structures that constrain and enable incremental progress in the case study institutions toward visions for sustainability.

In making explicit the philosophical basis of this study, the logical fit of the actual methods used in the research design becomes apparent. Qualitative data, gathered by interviewing (discussed in-depth in section 4.4) has allowed investigation into the lived experiences and contextually knowledgeable perspectives of academic and general staff who are actively engaged in the pursuit of transitions to sustainability in their day-to-day professional roles, in each of the two case study TEIs. The main implication of realism for qualitative data collection is well expressed by Maxwell (2012, p. 103):

"The data are usefully seen, not simply as 'texts' to be interpreted, or as 'constructions' of participants (although they are this), but as *evidence* for real phenomena and processes ... that are not available for direct observation. These data are used to make *inferences* about these phenomena, which can then be tested against additional data."

In order to distill the inferences to real phenomenon contained within the data, the research employs a grounded theory approach, that is, a method of analysis that grounds itself in the data. By honoring all participant viewpoints and experiences of events as valid, issues are raised for investigation and critical interpretation, and the imposition of a preconceived theory is avoided. Methods of data analysis allow for the tracing of experience through to the level of underlying social structures, processes and mechanisms that help or hinder the evolution and development of improved practice toward sustainability—an uncovering and explaining of relations endorsed by the theoretical perspective of critical realism.

The remainder of this chapter is committed to examining in greater depth elements of the research design, and methods of data assembly and analysis. The following sections consider the use of a case study approach, followed by an investigation of data collection, and finally the methodical and iterative methods applied to trace experience through to underlying structure.

4.3 Case study

This section briefly defines and makes explicit the pertinence of a case study methodology to this research, before investigating influences on case study selection, and the application of a comparative approach.

For the purposes of this study, the term 'case' refers to "a uniquely bounded phenomenon in a historical or geographical sense", although the term can have a variety of meanings in the social sciences (Kaarbo & Beasley, 1999, p. 372). For this research, two TEIs have been selected as case studies for comparison (see section 4.3.2 for the comparative method). In this research, the

term 'institution' is generally applied in reference to a distinct organisation. While institutions can be broadly defined as rules, habits and values that structure people's actions, according to MacKinnon (2009), distinct organisations have tended to be emphasised in much research. By naturally lending themselves to the concept of a 'case', distinct organisations provide a methodologically useful entry point for research, and have become an important focus of interest in contemporary human geography (Mackinnon, 2009).

The choice of using a case study approach, with any one case framed by time and place, was spurred by the relevance of investigating the contextually dependent implementation of sustainability transitions in a real-life setting, thus breathing life into emerging theories. As Corcoran et al. (2004) point out, contextual studies of sustainability in higher education practice have greater use and transformative value than universal models, with case-study methodology offering a common and appropriate research tool.

The selection of appropriate cases will directly influence the learning and research value, with several pointers for consideration.

4.3.1 Case study selection

Institutionalism in human geography, under either definition given above by MacKinnon (2009), refers to any strand of thought that is centrally concerned with the role of institutions in shaping social life, and often combines a sensitivity to difference and agency with an awareness of broader structural forces (MacKinnon, 2009).

As already emphasised throughout this research, much hope is afforded to the role of education in assisting society in its transition to sustainability, with higher education holding an influential and unique role well suited to the task at hand. The TEIs selected for the case study bring together the important thematic focus of institutionalism, in the sense of a distinct organisation, with the nominal relevance of higher education.

Feasibility and access, such that some group is willing to be the subject of a case study, is a pragmatic criteria put forth by Yin (1993) for case study selection. The author's own University, and the neighbouring Polytechnic, are both located in the university town of Dunedin, where research activities generally enjoy avid support, this study being no exception.

Yin (1993, pp. 12, 34) rationalises that one way to select cases is to select exemplary cases, reflecting positive examples of the phenomenon of interest with topical relevance for the area being studied. However coming from the point of view of an educator in sustainability management and strategy, with emphasis placed on learning potential, Hamschmidt (2007) suggests that "best practice cases are often boring for the reader", preferring to force the audience

"to face the challenges head on" (p. 14). In order to select salient and compelling cases, Hamschmidt puts forth the following nuanced criteria for consideration: an excellent case should be based on a current challenge, provide a learning opportunity on a relevant topic and should fuel the debate through systematically challenging values and goals by reflecting every day dilemmas and decisions. These notions have been juxtaposed in this study, brought together through a comparative approach to analysis that encapsulates opportunities for learning as well as provocative qualities.

4.3.2 The comparative method

A comparative case study methodology, that is a systematic comparison of cases, has been applied to support the aims of this research. By comparing two TEIs, relative differences can be generated for analysis. Certain factors must be considered in applying the method, associated with the levels of similarity and the axis of difference in the cases.

An important consideration for minimising problems associated with having many variables in a small sample is to select 'comparable' cases, taken by Lijphart (1971) to mean that cases are "similar in a large number of important characteristics (variables) which one wants to treat as constants, but dissimilar as far as those variables are concerned which one wants to relate to each other" (p. 687). Comparison is made between the author's own institution, the University of Otago, and the neighbouring institution, Otago Polytechnic. Important characteristics that the two TEIs have in common are either demographic in nature, relate to the institutional role in society, or pertain to the common central government tertiary education policies and funding structures. These elements are explored in-depth in Chapter Three, generating evidence of a significant set of important characteristics that are held in common.

According to external opinion, the Polytechnic shows comprehensive vision and commitment toward sustainability, and is a recognised leader in the Australasian domain (see Shephard et al., 2009; Shephard, 2010; Shephard et al., 2011; Dr Morgan Williams in Mann & Ellwood, 2008; The Natural Step, 2008b). With evidence in the literature that the Polytechnic fits the profile of an exemplary case, sustainability-related variables are potentially somewhat dissimilar. A comparison of the two TEIs ought to bring into relief types of differences that are characteristically accessible through qualitative data analysis (see section 4.4.1), that act as drivers or barriers to the advancement of sustainability.

It is essential to again remind readers that this research represents a snapshot in time, with data gathered mid-2011, just prior to the appointment of a new Vice-Chancellor. Interpretations are limited by the dependence on context, with generalised findings relating to this frame.

However, in uncovering and explaining relevant structures and processes that governed events in terms that have universal relevance, it is hoped this study may also have transformative value outside the case study context.

4.4 Data collection

This section looks into the principles applied to data collection for this study. It begins with an investigation into qualitative data and its characteristics that are of value to study. The section leads on to acknowledge the positionality and personal background of the researcher in relation to topic choice. The initial research objectives that formed a start point for data gathering, and the semi-structured approach are then discussed. The next section considers the criteria and the approach used in the selection of interview participants. Finally the changing use of an interview guide is discussed.

4.4.1 Quantitative and qualitative data

Information and data for research can be generated qualitatively, quantitatively, or through a mix of both methods. Qualitative data accounts for qualities such as words and images, while quantitative data measures statistical and numeric attributes.

Qualitative and quantitative approaches use different methods of analysis to establish the relationship and causality between descriptive observations. While these approaches have much in common, Kitchin and Tate (1999, p. 40) point out that qualitative data analysis can be considered to be subjective and humanistic, as opinions, perceptions and understandings are interpreted. This is in contrast with the more established methodologies used by quantitative researchers, which typically analyse data using statistical, numeric techniques. According to Miles and Huberman (1994, p. 12), quantitative research methodologies are well defined and guided by substantial documentation, with qualitative researchers being in a comparatively more fluid and a pioneering position.

Despite the usefulness of 'normal science' (to use Kuhn's term) in solving many problems, this abstraction of the world is not the world we experience first-hand (Crotty, 1998, p. 28). Everyday lived experiences reveal an uncertain, ambiguous and changeful world (Crotty, 1998). As Miles and Huberman (1994) point out, the focus on ordinary events in qualitative research "gives a handle on what 'real life' is like" (p. 10), with the richness and holism of the data potentially revealing complexity. In particular, qualitative approaches have been advocated as the

best strategy for discovery and exploration of a new area, and for developing hypotheses (Miles & Huberman, p. 10). Increasing respect has been afforded to qualitative methodologies, and the two approaches are now seen as equally valid in many methodological approaches. Kitchin and Tate (1999, p. 40) go on to state that their characteristics are not so separate and contrasting as to form polar opposites, rather, they can be viewed as extremities on a continuum.

The qualitative approach to data used for this research was designed to gather information that would enable an investigation into the practice of sustainability and the process of its development in Otago's TEIs. Grounded theory was applied to both data collection (see section 4.4.4) and data analysis (see section 4.5.1), to accept new ideas and emerging theories through an iterative research process. A semi-structured interview process was developed, allowing opinions, experiences and perceptions to be expressed by the participants. The qualitative data, therefore, took the form of the words and sentences that delivered salient insights into the research themes.

4.4.2 Positionality and personal background in relation to the topic choice

All researchers, and particularly those utilising qualitative methodologies, bring preconceptions to the interpretation of the data. Miles and Huberman (1994) point out that "actions occur in specific situations within a social and historic context, deeply influencing how they are interpreted by both insiders and the researcher as outsider" (p. 10). The resulting complexity requires plenty of care and self-awareness on the part of the researcher.

Given this point, and to ensure transparency for the reader, it is important to acknowledge the author's position and priorities in relation to the topic choice. The research topic emerged from a personal interest in promoting sustainability issues at a local level. Involvement with local sustainability groups such as Sustainable Dunedin City, a local chapter of Transition Towns and Generation Zero, further extended to informal networks, projects and individuals similarly concerned with socio-ecological threats such as peak oil and climate change. In this extensive network, the author strongly perceived a shared desire to see transitions to sustainability in action, along with a level of frustration at a perceived inability to participate in shaping our future. Barriers and restrictions to meaningful initiatives are seen to be continually encountered.

According to Baxter and Eyles (1997), "the practice of being mindful of one's own ethnocentricity and biases has been called 'disciplined subjectivity' (Erickson, 1973) and 'bracketing' (Lincoln & Guba, 1985)" (p. 514). In this thesis, the author recognises and understands the gains to integrity and insight to be had in resisting any tendency to steer participant response during data collection, and in maintaining an open mind to findings. Care

was taken to reflect on personal bias, and to maintain an objective position, however the final results naturally represent an interpretation of the researcher.

4.4.3 Ethical procedures

The ethical procedures adhered to in this research followed three main processes: an application to the University of Otago for the approval of a Human Ethics Application, the distribution of an Information Sheet and Consent Form to potential interview participants prior to the conduct of interviews, and a process that led to written consent of interview participants on the Consent Form at the outset of the interview. The documents associated with these processes are attached to this thesis as Appendix 2.

The first of these processes involved submitting a Human Ethics Application to the host institution of the student researcher, the University of Otago. The Application contained a description of the project and its research questions, a description of the methods used for data collection, and contact information for the student researcher and the two supervising staff. The outcome of that Application was the approval of the study by the Department of Geography.

The second process in the set of ethical procedures was the distribution of two documents, an Information Sheet and a Consent Form, to potential interview participants. All persons interviewed for the study were provided, in advance, with an Information Sheet to advise them of the nature of the research, of what their participation would entail, and that with written consent, the conversations would be recorded for later transcription and analysis. The Information Sheet stated that in the event that interview questioning developed in such a way that the participant felt hesitant or uncomfortable, he or she had the right to decline to answer any particular question(s), and also that he or she may withdraw from the project at any stage without any disadvantage. Participants were also made aware in advance that any professional opinions provided by them on behalf of their institution were likely to be referred to in full or part in the final written output. Permission to link any direct quotations to the participants' professional role or title within the final research output was to be discussed and agreed upon at the outset of the interview, and acknowledged at that time in writing on the Consent Form.

In the instances where contribution to the study was agreed upon, a third ethical procedure was followed. At the beginning of the interview, the participant was asked to read the Consent Form, which denoted the voluntary nature of contribution to the study, and reiterated the right to abstain from answering questions or withdraw from the study at any point. The participant was then asked to indicate in writing on the Consent Form if his or her permission was granted for an audio recording to be made of the interview. Additionally, written indication was made as to

whether he or she wished to receive excerpts from the final thesis where he or she was directly quoted, to provide the participant with the opportunity to state whether he or she was happy to have his or her professional title identified, or if he or she preferred to remain anonymous.

All study participants, but one, opted to receive and review direct quotations. Toward the end of the thesis writing process, each of these participants was contacted and provided with a draft copy of selected chapters. The chapters utilised unique identifiers for each participant, such that individual quotes could be identified for review. Each participant was able to respond as to whether he or she wished to remain anonymous, or whether links to his or her professional title could be retained in the final thesis. In the instance where no response was given, anonymity was afforded by default.

Audio recordings and their transcriptions were held in accordance with strict University of Otago guidelines, and were destroyed at the conclusion of the project. As required by the University's research policy, any raw data on which the results of the project depend will be retained in secure storage for five years (at CSAFE), after which they will be destroyed.

Care was taken throughout the research process to ensure the safety of the participants, in line with health and safety practices. Additionally, participants were able to contact the researcher with queries at any stage of the research process. Any such queries were attended to promptly.

4.4.4 Initial research objectives, grounded theory and a semi-structured approach

Three overarching, initial research objectives served as a starting point for informing the data collection process for this study on sustainable practice. In the process of collecting data, the application of a grounded theory approach supported the iterative reframing of the matters under investigation, allowing new insights to emerge in moving toward an eventual hypothesis. Grounded theory is introduced in this section, before the initial research objectives are discussed. The section is completed with comments on the data collection method of a semi-structured interview approach.

To assist in the search for new ideas and to generate insights in this exploration of sustainable practice, a grounded theory method was applied to data collection. Grounded theory is a term used to describe both a method, and the results of the research process. It is an inductive approach to constructing a theory that is iterative and systematic. Through constant comparison of both data and analysis throughout the research process, the data becomes progressively more focussed and the analysis successively more theoretical (Bryant & Charmaz, 2007, pp. 1-3).

Grounded theory is referred to in this section in relation to data collection, and later in section 4.5.1 in relation to data analysis.

The presentation of the three research objectives as 'initial' implies some development or change, a salient point in regard to the grounded theory method applied to data collection. The general themes within each objective are summarised below. In each instance, the themes served as a start point for data collection. The focus of some elements within these themes changed across the course of the data collection process. Some indication of these changes are given here, with further definition and detail given in section 4.4.6 which looks into the changing use of the interview guide.

The first objective explored the understandings and expectations of sustainability policy and vision held by academic and general staff within their employing TEI, and how these expectations influenced their decision-making in their professional roles. Initially, the project aim was stated as seeking to develop a better understanding of the implementation of sustainability policy within TEIs in a New Zealand context. However, as it became evident that substantial sustainability policy did not exist at the University, the emphasis in the category was generalised and expanded to admit other key structures and mechanisms, such as management or administrative systems, that guide day-to-day activity and assist in substantiating vision through to action.

Expectations for change were explored in terms of the assurance and anticipation afforded to these structures and mechanisms, and experiences with the management processes or administrative systems that guide and facilitate role-based activity. The resulting influence of these expectations, understandings and experiences on day-to-day action was explored as the extent to which social actors in the case study institutions perceived they were able to contribute, integrate and implement role-relevant sustainability responses to influence agenda and action in day-to-day decision making.

The second objective investigated participants' perceptions of and attitudes toward institutional achievements to date. Initially, the research aim considered *what* had been achieved to date in terms of policy and vision implementation. Any initial desire to quantify and evaluate these achievements was subsumed by the richness and depth of data on why these actions were implemented, the benefits of the practices and the level of commitment required. As a result, the emphasis in questioning moved toward investigating *how* sustainable practice develops, with a focus on the influence of organisational governance and cultural factors on the opportunities for engagement and participation in multiple contexts. As data collection continued, it became apparent that this area of questioning supported investigation into the depth of the institutional response to the sustainability imperative, and into the distinctive approaches of each TEI as

evaluated in Chapter Three. In particular, evidence of systems approaches, or of one-off project approaches, started to emerge. Participants' accounts of achievements to date provided an understanding of institutional commitment and day-to-day alignment with the held vision.

Finally, the third objective examined the key factors perceived by participants to be the most important and influential in the implementation of sustainability transitions in their institution. Participants were questioned on the critical resources and supports for facilitation, on challenges or compromises to the process, and on models engaged or developed through the implementation process. Additionally, participants were asked about unpredicted outcomes, the use of adaptive strategies, and on insights and lessons learnt. These themes for interview questioning were inspired by an array of readings in the area of the development of sustainable practice in higher education and in large organisations. They were designed to stimulate open-ended conversation such that participants shared thoughts and ideas that had potential to add new insights to existing theory. Some modifications were made to generalise the terminology used in the interview questions (see section 4.4.6), however the themes within the objective were broad enough to embrace a diverse set of responses and concepts.

The interview questioning around the initial research objectives was designed to investigate the processes for taking vision through to action, and the factors that support or constrain transitions to sustainability in the case study TEIs. A semi-structured interview method was the means employed to address each research objective. By asking open-ended questions, the semi-structured approach was flexible, allowing participants to share thoughts and ideas without being constrained by format. Observations were made regarding the participant's own thinking and perspective. This opened the potential to discover new insights to add to the existing theory. In order to maintain focus on the topics at hand, a branching framework of potential questions was assembled into an interview guide, attached as Appendix 1. Core questions from the guide served as a framework for the reporting of raw findings in Chapter Five. The actual and changing use of this guide and its themes is discussed in section 4.4.6, after the following summary of the process of interview participant selection.

4.4.5 Interview participant selection

The executives and decision-makers who participated in this study are academic and general (administrative) staff at the University of Otago and the Otago Polytechnic, selected through purposeful sampling procedure. This is a common sampling strategy used by qualitative researchers and stresses the search for 'information rich cases'. According to Baxter and Eyles (1997), such respondents are "at ease and talk freely with the researcher such that a great deal can

be learned about the research question" (p. 513). People were approached based on their position, not their views, such that it was anticipated that they had the capacity to best represent perspectives in the institutions.

Informal initial interviews with two personal contacts occupying relevant professional positions within each institution assisted in identifying engaged and informed potential interview participants. In addition, professional and personal networks, as well as professional web profiles, served to identify participants. As individuals were contacted, further potential participants were recommended for approach in a strategy commonly referred to as snowball sampling. Sixteen interviews were conducted in total, with eight participants from each institution. As data from the interviews became repetitive, a level of saturation indicated sampling was adequate.

The interview duration was typically one and one quarter hours, varying between forty-five minutes and one and three quarter hours. Fifteen interviews were recorded with prior permission from participants, for later transcription, coding and analysis. Shorthand notes were produced by the interviewer for one interview, in line with the participant's preference. Fourteen interviews were conducted in a face-to-face setting, and two via Skype. Field notes indicate that Skype conversations lost a lot of the 'personal introduction' quality that was often found in a face-to-face conversation, resulting in a more pragmatic, focussed discussion. The data gathered was adequate for the research, however the interview process itself was occasionally awkward, particularly where image quality was defective and the nuance of meaning through body language was lost. In the case of interviewing, there are potential implications when using Skype for the development of rapport and trust, which are important factors when it comes to revealing opinions and understandings.

4.4.6 Changing use of the interview guide

Inline with the semi-structured interview method, an interview guide was used by the interviewer (see Appendix 1), offering branching lines of questioning grouped in accordance with the initial research objectives. By having several core questions, and an array of follow-up questions, the interviewer was able to keep the conversation based around the themes and topics relevant to the research. The interview guide was used slightly differently over the entire duration of interview conduct.

The changes to the use of the interview guide typically occurred for three reasons. The first of these related to the initial research objectives being influenced or informed by the qualities of earlier response to the interview content (see section 4.4.4). Changing use of the interview guide in these instances was consistent with a grounded theory method, whereby an iterative

approach to data collection took place alongside simultaneous data analysis. The ongoing comparison of the data with the emerging, provisional theories helped to orient the research. As Miles and Huberman (1994) point out, "the first experiences of data collection nearly always have reflexive qualities, checking back and reconsidering the sampling and instrumentation, and also the conceptual framework itself. Initial processing leads to interim summaries of various kinds, which have effects back to the framework and research questions" (p. 307). An example of the use of the interview guide changing as an initial research objective changed can be found in the set of questions related to understanding sustainability policy implementation. The question 'which aspects of policy are most open to flexibility?' became obsolete, as the theme broadened, with greater emphasis placed on stimulating conversation that helped to gain insight into the other governance mechanisms and processes that influenced day-to-day practice and decision-making.

A second reason for some change to the use of the interview guide related to the tailoring of the content to match the context and expertise of the participant. Usually this simply involved the addition of specific lines of questioning. For example, specific areas were researched in greater depth in preparation for each interview, to ensure adequate background or contextual information was known to the interviewer about the participants' role or field of specialty. An example was familiarising with the heat-supply for the University (the most significant consumer of energy on campus), supplied by coal-based, central Dunedin city located, Energy for Industry, in preparation for an interview with the Energy Manger. It was useful to annotate directly onto a printout of the interview guide any relevant adaptations or additions to the general line of questioning, in preparation for a particular interviewee. In all cases, once engaged in the interview process, some topics were pursued with greater or lesser avidity than others, as the individual interview unfolded through open-ended questioning.

Finally, the use of some specific terminology within the guide changed due to engagement with the literature. For example, the term 'reflexive governance' was initially included in a subset line of inquiry in the questioning on key factors (see question 3.3 on the interview guide). The term came directly from a text on Dutch transition management literature by Voss, Bauknecht and Kemp (2006). The general concept of an intentionally reflective, iterative and adaptive approach to governance recurs widely in other literatures, in association with more ordinary, everyday terminology. As reading on theory and practice moved in new directions, the terminology used in the line of questioning was modified to better communicate the core concept under investigation.

4.4.7 Additional contextual information

Qualitative research acknowledges the inseparable nature and crucial importance of context to a person's experience of events. In addition to the interviews, further information was sourced to increase contextual understanding of the individual case study institutions, and their broader operating environment.

Case study institution-specific documents, such as strategic directions, plans and vision statements, annual reports, committee reports, marketing documents including websites, and occasional non-public documents supplied by interviewees, served to increase contextual understanding. These documents are selectively reviewed in Chapter Three of this thesis, along with selected external agreements and international declarations, and extracts from national level policies, such as the New Zealand Government's Tertiary Education Strategy, and Education Act 1989. The purpose of the summative exercise encapsulated in Chapter Three is to establish, for both researcher and reader, some appreciation of similarities between and a common wider operating environment for TEIs in New Zealand, and how each case study institution has shaped or aligned itself within this.

The research method employed for document review and analysis was based on the selection of extracts in order to provide evidence of policies and standards, norms and aspirations that inform the operating environment for transitions to sustainability in Otago's TEIs.

4.5 Data analysis

This section investigates the theoretical underpinnings of grounded theory, the application of thematic analysis to the qualitative data, and an in-depth look into a sample of actual coding activity.

According to Miles and Huberman, (1994), the analysis of qualitative data looks for "an individual or social process, a mechanism or structure at the core of events that can be captured to provide a causal description of the forces at work" (p. 4). Through an iterative and methodical approach, this research aims to distill descriptive explanations of causes of events related to transitions to sustainability the case study TEIs from the reported experiences, opinions and perspectives of interview participants.

4.5.1 Grounded theory

Grounded theory is a term used to describe both a method, and the results of the research process. It is an inductive approach to constructing a theory that is iterative and systematic. Through constant comparison of both data and emergent analysis toward a theory throughout the research process, the data becomes progressively more focussed and the analysis successively more theoretical (Bryant & Charmaz, 2007, pp. 1-3).

Grounded theory is a most widely used and popular qualitative research method, and has elicited a variety of descriptions that have developed since the publication of *The Discovery of Grounded Theory* (1967) by its originators Glaser and Strauss. In each of the various schools of thought, emphasis is placed on the primacy of observation that is grounded in the data, rather than preconceptions of what theory ought to emerge.

The realisation of the strength of grounded theory, which lies in the development of new insights, requires an open mind to emergent categories. So while a researcher needs a good working knowledge of previous research on the topic, Coven (2007) adds that it is "desirable to avoid premature use of theory or prior conceptual categories" (p. 62).

The strength of the method is, however, often criticised as its principal weakness. The sheer flexibility of guiding heuristics and rules of thumb that in turn invite the use of practical research practices and conceptual tools, also draws criticism for lack of rigor and cognitive effort, potentially leading to syncretic and limited applications that undermine its integrity (Bryant & Charmaz, 2007, pp. 4-9).

With these strengths and weaknesses in mind, the application of grounded theory methodology provided a basis from which to look beyond verbatim transcriptions of the interviews, without a predetermined outcome. Through a dynamic and iterative process, thematic patterns emerged from the data that gave an understanding of the raw data.

4.5.2 Thematic analysis

Thematic analysis involves the creation and application of themes or 'codes' to research data. By picturing an 'original' technology for the analysis of qualitative data—hard copy snippets of data being shifted between piles that represent probable, possible and related categories—one can better conceive of the computer software that has been designed to facilitate qualitative analysis through thematic coding. This research utilised the qualitative research software NVivo, which enabled sections from the interview transcripts to be collected, duplicated, shifted, grouped and regrouped in a process of searching, researching and ongoing analysis.

From the beginning of the interviewing process, data was assigned into categories through this process. The initial coding scheme was founded on the initial research questions from the interview guide, but developed in an iterative process as further coding was conducted. To the initial set of descriptive categories, new categories were added that had explanatory potential, providing concepts or themes that could reveal something characteristic of the data set.

As coding continued, the categories were continually reappraised and sometimes redefined, divided or merged in the search for clear, verifiable, credible meanings. This process is in line with the selecting, focussing, simplifying of data and analytic choices described by Miles and Huberman (1994), who add that the "process is not mechanical, and pragmatically, any method that works is worthy of consideration" (p. 3). In order to produce clear, verifiable and credible meanings from a set of data, however, Miles and Huberman (1994) also assert that it is of the highest priority for a qualitative researcher to be explicit about what they actually do when they assemble and analyse data from the field. In the next section, an example of coding activity is presented that exemplifies and demonstrates the researcher's coding process, meeting further criteria for credibility and being of use to others, by being "workably replicable" (Miles & Huberman, 1994, p. 309).

4.5.3. Example of coding activity

The pair of tables in this section represent two moments in the process of data analysis. The first table, Table 1, presents a section of the initial coding scheme, along with field notes and comments that guided the creation of new, divided or merged categories. Following a section of discussion, the second table, Table 2, then illustrates a stage in the iterative process of breaking up the data, identifying salient factors, and working toward presenting clear, compelling explanations for events and experiences offered by study participants. By comparing the initial coding categories and guiding notes of the first table, with the contingent and emergent categories in the second table, the reader can gain insight into a stage of the process of searching, sorting and focussing data.

Initial coding categories: example from Q.1	Comments as coding continued
1.1. Working definition of sustainability.	Diverse response. Confirms sustainability means different things to different people. Useful as interview opener to set the scene.
1.1.1 Sustainability transitions as liability, and as opportunity.	Individuals reporting balance of both. Opportunity framed as ethical.
1.2 Understandings of the existing sustainability policy and vision, and expectations for implementation.	Data on attitudes, 'faith' in TEI. Discussion on importance of policy 'handles'. Lack of policy in the Uni: use terms 'vision' and 'aspiration' instead. Relates well to 'key factors' categories.
1.2.1 Aspects of policy most open to flexibility in interpretation.	'Follow-up prompt' used in only a few interviews, did not yield significant further response. Question poorly worded/doesn't quite make sense.
1.2.2 Why expectations are realistic and achievable.	Limited response from participants.
1.3 How expectations and understandings are brought into decision-making.	Rich response; experience of practical, day-to-day activity. Illustrative examples of bureaucratic drivers/ barriers, autonomy.
1.3.1 How you rank your expectations.	Limited response from participants; n/a.
1.3.2 How do you integrate with competing priorities?	Limited response from participants.

Table 1. Section of the initial coding scheme, and field notes indicating direction.

The initial coding scheme section presented above is wholly derived from the first branching set of research questions contained in the interview guide (Appendix 1), however, within the semi-structured approach, participants were able to introduce additional themes and ideas that did not necessarily fit these categories. For this reason, and to make sense of the data, coding activity was initiated simultaneous to its generation. This is in line with Kitchin and Tate's (1999, p. 230) description of an inductive, open-ended process whereby the researcher starts to describe, classify and connect data before obtaining a full data set. This approach both makes sense of the data generated, and guides further data generation.

The researcher maintained an iterative cycle of review, going back through the data set to see if compelling, credible analyses could be inferred from the interview excerpts. In order to clarify and deepen understanding, codes were refined, redefined, divided, or merged, guided by

the researcher's annotations and insights. As Miles and Huberman (1994) point out, there are many ways to find trustworthy, compelling and credible analysis from often complex, ambiguous and sometimes contradictory data, and qualitative analysis can be considered a craft.

In this research, iterative and contingent coding concepts (examples presented in column one, Table 2) emerged from the data, often through illumination by simultaneous literature or theory review. In some instances it is possible to indicate a trigger or marker that catalysed the creation of a new code, or the refining, merging or splitting of an existing category. In other instances, themes emerged through a more gradual and systematic analysis of the data that took place throughout the process of collection. This sense-making is neither pre-determined nor steered, and demands thoughtful and active engagement in recognising a fit between collected data and relevant, meaningful themes. Examples of sources or triggers that illuminated prototypical emergent themes are presented in column two, Table 2.

In column three, Table 2, the researcher's annotations and insights again guided further refining, redefining, dividing, or merging of codes in order to clarify and deepen understanding, and move closer toward clear and compelling explanations.

Interim explanatory codes	Source of emergent theme	Comments as coding continued
Autonomy in role (able to bring measures into professional role, across institution).	Explicit examples from participants. Data resonates with Giddens' structure and agency, questioning what is normative.	Strong theme, but too broad, data replicated in too many codes; overlap with 'participation' categories.
Participation: in transitions initiatives; niche development, innovation, action.	Resonance with literature on organisational change, sustainability praxis, including Dutch 'Transition Management' (T.M.).	Illustrative examples of day-to-day actions in multiple contexts. Drop T.M., problematic (Shove & Walker, 2007). Consider [literature on] capacity and competence building.
Participation- in decision making; boards, committees, as stakeholder.	Interesting data. Resonates with literature on democratic participation e.g. Baird (2006), Blair (2000).	Eminent potential theme for future research. Too late!!! [Didn't pursue specific line of inquiry using this definition].
Accountability (of institution to its claims/ aspirations).	Consider claims in Strategic Direction(s). Data resonates with literature on corporate social responsibility (CSR).	Hard to substantiate with actual examples; macro theme. Try 'commitment'.

Costs as barrier.	Repetition in 'Key Factor' responses. Consistent theme in literature.	Central issue. Divide, refine, explore, inc. corporatisation, risk management.
Cherry picking or selective address.	Data: questioning of division between action & inaction. Also relates to systems approaches vs. projects e.g. Sharp (2002); Sterling (2004); Tilbury (2004).	Note: avoid problematic evaluation, quantifying, qualifying <i>what</i> activities, focus instead on <i>how</i> . Similar to Williams (2008).
Networks (self-organising)	Recurrent in literature. Interest in Network Governance theory (e.g. Sørensen and Torfing, 2005)	Didn't actively pursue themes in interviews incomplete data set. Relate data to communication, coordination.
Leadership	Unmistakable, immediate and universal orientation toward leadership themes by participants. Simultaneous deepening engagement with literature; highly relevant.	Dominant theme. Note similarity to emergence of leadership theme in Williams (2008, p. 2-3) research journey.
Power	Catch-all category for responses on organizational structure e.g. hierarchical? Inclusive?	Include?? Too woolly. Redefine, divide data for clarity.
Institutionalised forms of culture.	Data on 'get a sense that...' Trying to put a finger on 'intangible quality' that impacts on decision-making processes, priorities.	Again concepts on power, voice, what is valued and prioritised, social norms, autonomy.
Contextual socio- political processes.	Processes, bureaucratic drivers and barriers described in responses.	Also coded with autonomy, agency, power. Single out for clarity.

Table 2. Prototypical interim explanatory codes, their sources and directions.

An issue with the interim coding scheme presented in Table 2 was the level of overlap between categories, indicating the codes or categories were not defined in a way that enabled a clear presentation of the data. Miles and Huberman (1994, p. 309) identify two challenges of qualitative methods; that the data is usually complex, ambiguous and sometimes contradictory, and that analysis means living for as long as possible with that complexity and ambiguity, coming to terms with it, and passing on conclusions to the reader in a form that clarifies and deepens

understanding. Progressing toward compelling, coherent and lucid findings on the whole required observation of such patterns of overlap and replication, along with possible configurations for relating categories. Throughout this process, there was a temptation to grasp on to discreet, particular theoretical concepts as 'the' central explanation: however, it was essential to hold propositions lightly and openly, even with skepticism—a process for conclusion drawing advocated by Miles and Huberman (1994).

The detailed example of the process of data analysis presented in this section illustrates the challenge of synthesising and integrating multiple ideas and theories, while maintaining integrity toward the data. This process of searching aims to produce findings that are at once grounded in a real context, and presented in terms with universal relevance.

4.6 Conclusion

Advancing sustainability in TEIs is widely seen to be increasingly important, yet there is no consistent method or blueprint for taking vision through to action. This study aims to uncover elements of governance structures, social processes and mechanisms that are influential in the case study TEIs for transitions toward sustainability. The study maintains a focus on questions of change at a practical level, that is, in day-to-day, individual practices and activities that constitute the evolving processes, structures and cultures for sustainable practice.

The choice of using a case study approach, with any one case framed by time and place, was spurred by the relevance of investigating the contextually dependent implementation of sustainability transitions in a real-life setting, thus breathing life into the emerging theories. Qualitative data, gathered by interviewing, allowed investigation into the lived experiences and contextually knowledgeable perspectives of academic and general staff, who are actively engaged in the pursuit of transitions to sustainability.

Qualitative research acknowledges the inseparable nature and crucial importance of context to a person's experience of events. In addition to the interviews, further information was sourced through a process of document review and analysis, in Chapter Three, to increase contextual understanding of the individual case study institutions, and their broader operating environment. By comparing two case study TEIs, relative differences were generated for analysis.

The framework of critical realism endorses the research goal of uncovering elements of case study social governance structures, including the cultures, norms and rules for day-to-day activity, that affect the advancement of sustainable practice in each institution. By gathering data from study participants about their experiences and perceptions of events in taking action toward

sustainability in their professional roles, this study aimed to trace the origins of experience through the level of events, to the level of structures and processes.

Grounded theory was applied to both data collection and data analysis, to embrace new ideas and emerging theories through a dynamic and iterative research process. A semi-structured interview process was used for data collection, allowing the opinions, experiences and perceptions of participants to be expressed without the constraints of reframed categories. In analysis, a grounded theory methodology provided a basis from which to look beyond verbatim transcriptions, again without a predetermined outcome. Thematic analysis involved the creation and application of themes to research data in a systematic and iterative process of searching, researching and ongoing analysis.

The central challenge in producing clear and credible final outcomes in this research was in the process of synthesising and integrating the multiple ideas and theories that each made some sense of the data, in order to develop a unique explanation that maintained integrity toward the data, while drawing on the rich and coherent resource of past scholarly work. By linking emergent themes with relevant theory and literature on sustainability transitions, organisational governance and social change, the findings of this study have been related to and situated with the moving, changing, growing wisdom on sustainability praxis.

Research Findings

5.1 Introduction

The imperative for tertiary education institutions (TEIs) to use their influential position to assist society in their transition toward sustainability is keenly felt in the public sphere, as the global environmental crisis looms ever higher. In order to effectively utilise their significant role in society's transition toward a more sustainable future, TEIs have been identified by many scholars as requiring internal change in multiple domains of their activities (Lozano (2006), Shriberg (2002), Sterling (2004), Van Weenen (2000), and Velazquez et al. (2005)).

Given that sustainability has different meanings for different people and in different contexts, the insights, ideas and energy for transitions activity within a TEI will potentially come from people with different roles and areas of expertise, whether researching, building sustainability literacy and capacity in students and staff, or approaching objectives around role modelling or 'walking the talk' in campus operations and management. A participative approach for realising internal change toward an institutional response to the challenge of sustainability can be thought of as a series of incremental steps or transitions in different domains, which may eventually find new order and synergy to generate deeper, transformative changes inside the institution, and with potential to catalyse external change.

The experiences and observations of staff involved in transitions to sustainability in each of the two case study TEIs have been investigated in this study, with the aim of furthering understanding in sustainability praxis. This chapter presents a synopsis of qualitative research findings, using explanatory narrative and representative participant statements to reveal the experiences and perspectives of study participants as they attempted sustainable practice within their employing institution.

The qualitative data collection used a semi-structured interview approach, with open-ended questioning permitting a frank reporting of experiences and observations from study participants. Respondents' views to a range of key questions and issues are explored in this chapter. Three initial research objectives shaped the approach to interview questioning. The first

objective explored the understandings and expectations of sustainability policy and vision held by academic and general staff within their employing TEI, and how these expectations influenced their decision-making in their professional roles. The second objective investigated participants' perceptions of and attitudes toward achievements to date. Finally, the third objective examined the key factors perceived by participants to be the most important and influential in the implementation of sustainability transitions in their institution. The three initial research objectives are described more fully in Chapter One. They are deemed worthy of examination due to their focus on *processes* to respond to the complex, contested and unprecedented global environmental crisis, with potential transferrable insights for other areas of sustainability research.

An interview guide, attached as Appendix 1: Question Sheet, contains ten interview questions and their fourteen follow-up prompts, which expand on and frame the initial research objectives. The detailed contents of this chapter are organised into sections that correspond to the initial research objectives, and the core questions associated with each. This chapter records and presents data in its primary form, with limited interpretation and analysis. Responses that best correspond to the initial intent of the actual interview question and the related research objectives are presented in this chapter as paraphrased summaries, with selected direct transcriptions from interview recordings serving to illustrate the ways in which opinions have been expressed.

A deeper analysis of the data is presented in the following chapter, Research Synthesis. In line with the qualitative methodology applied to this study, emergent themes often ring loud and true within data sets, perhaps in unexpected domains, or characterising generic concepts such as 'culture'. It is anticipated that the distilled and clarified themes emerging from the raw findings will allow important factors to be discerned and conditions for transitions to sustainability to be identified, that would be difficult to derive through empirical methods. In order to advance qualitative research methodologies, and to be useful to other researchers, transparency in this process of analysis is widely advocated. For this reason, where responses to initial lines of questioning have been highly influential in the final analyses, appendixes containing full sets of coded responses in their raw form of direct transcription have been included at the end of the thesis for independent perusal (see Appendix 3: How expectations and understandings are brought into decision-making, Appendix 4: Achievements to date, and Appendix 5: Key factors for transitions to sustainability). The rigour of the methodology and process for deriving and illuminating embedded themes is discussed more fully in Chapter Four of this thesis.

With qualitative data collection, where questioning is open ended and conversational in nature, and preformed categories for answers are not imposed, it is not always possible to aggregate participant responses, as raw data, into tidy categories and statistics. For this reason, generating tabulated results is not deemed to be the clearest way to present the primary findings in

this study. Rather, the salient and representative responses can be considered a first layer of findings in the process of searching, with the running narrative clarifying the initial intentions of the author. It is acknowledged that presentation in this manner can impact on the potential to generalise.

Verbatim quotes of participants have been identified as either from a University of Otago professional ('Uni'), or Otago Polytechnic professional ('Poly') to distinguish between the two groups, and therefore provide evidence of the contrast in the approach of each institution to the sustainability imperative. The similarities and differences in the approaches of the two institutions are profiled in greater depth in a review of public documents in Chapter Three: Positioning and Context. As established in that chapter, the two case study institutions, the University of Otago and Otago Polytechnic, have similar societal roles, as well as operating and funding environments, and local sustainability challenges. Differences between the institutions, however, are apparent in current approaches to integrating sustainability principles. Otago Polytechnic leadership has actively set out to establish sustainability as the strategic direction toward which all activity responds and is aligned, after establishing it was part of a collective and general definition of excellence held by staff through a consultation exercise in 2005. In contrast, the signs of an institution-wide commitment at the University of Otago appear to be relatively fragmented; while many individual contributions are clearly identifiable, and the Campus Master Plan (2010) provides a campus vision, more thorough recommendations for an institution-wide approach by Peake and Scott (2006) and the Working Party for Environmental Sustainability (2008) have been implemented only very selectively at the point in time in which interviews were conducted for this study (mid-2011). It is important to remind readers that this research represents a snapshot in time, with a change of leadership imminent at the time the research was conducted. A comparative approach has been instigated in this study to bring key points of relative difference into relief, in order to generate a learning opportunity.

Verbatim quotes of participants have been attributed to an individual's professional role or title to add further texture to the context. Permission to identify the participant in this manner has been gained through mutually accepted, ethically approved procedures, as indicated on the Information Sheet, Consent Form and Ethics Application, combined as Appendix 2. Each participant has reviewed excerpts from the thesis where they are being quoted. Where they indicated a wish to remain anonymous for professional protection, an identifying number is used in place of professional title, which simply relates to the chronological order in which interviews took place.

The following sections of this chapter are summaries of the three initial research objectives and their corresponding interview questions. Section 5.2 examines 'Expectations for

change and influence on approach'; Section 5.3 looks at 'Attitudes toward achievement to date'; and Section 5.4 considers 'Key factors for transitions to sustainability'.

5.2 Expectations for change and influence on approach

The overarching research objective relevant to this section was 'what understandings and expectations of sustainability policy and vision are held by academic and general staff within Otago's significant tertiary education institutions, and how do these influence the decisions they make?' Expectations for change are explored in terms of assurance and anticipation afforded to sustainability oriented vision and policy, and experiences with management or administrative systems that facilitate role-based activity. The resulting influence of these expectations, understandings and experiences on day-to-day action is explored as the extent to which social actors in the case study institutions perceive they are able to contribute, integrate and implement role-relevant sustainability responses to influence agenda and action in day-to-day decision-making, with a view to investigating implications for optimal environmental and social outcomes.

5.2.1 What is your working definition of sustainability?

Interviewing usually opened with the question 'what is your working definition of sustainability?' This apparently simple, yet deceptively challenging question served to set the scene for each interview.

There was significant breadth and diversity in definition across the sixteen interview subjects. The majority of participants (twelve of sixteen) presented a broad and open-ended definition, emphasising that any attempt at definition must maintain an openness and flexibility to accommodate diverse viewpoints. For example:

"It's complicated, and it's interrelated to practically everything you do. And that's complex. And if you start off with understanding sustainability is complex, and that is ok [*sic*]." (Poly, Educational Development Centre, 2011).

The emphasis in the literature—that sustainability means different things to different people—is ratified by such flexible descriptions. Four of the participants explicitly acknowledged that the angle from which they discuss, approach or address sustainability is varied to be appropriate to the situation, topic of engagement or expectations of other parties, and three participants applied their understandings to generate role specific conceptualisations as a working

definition. Diversity in definition suggests that attempting to integrate and implement sustainability transitions institution-wide would implicate an array of approaches and priorities. A practical *modus operandi* is reflected upon by one professional, who supplements her Resource Management Act (RMA) working definition with the idea of a series of actions:

"I read an opinion that sustainability should be thought of as a series of actions, that are broken down, on how to save energy, water, how to buy from the right sources, broken into a series of elements, rather than 'managing our resources so we can meet the needs of future generations'." (Uni 4, 2011).

This reflection readily relates to the idea of discreet, incremental transitions initiatives introduced in the first two chapters of this thesis.

Following the typical chronological interview structure, participants were then prompted to 'discuss sustainability transitions as a liability, and as an opportunity'. There was a definite tendency in the majority of participants to swiftly acknowledge transitions to sustainability as an opportunity, with participants variously emphasising opportunities to think about and reflect on how things are done, to find a more effective way, as an investment and/or to find an economic opportunity. Over half of the professionals responding to this prompt also suggested the opportunity was ethical in nature—an opportunity to contribute to a greater social good or respond to a moral imperative:

"I think in a way there is a moral duty, really, to be modelling what we hope our students would pick up." (Uni 7, 2011).

The initial optimism participants expressed regarding inherent opportunities was often tempered by an acknowledgment of accompanying challenges and constraints, particularly when aspects of active implementation, changes to the concept of investment or habitual behaviours were considered. It was not possible to discern any significant distinction between the two institutional groups of interview participants at this early point in the interviewing, however the line of questioning did establish that the majority perceived sustainability as a genuine opportunity for investment.

5.2.2 What are your understandings of the existing sustainability policy here, and what expectations for implementation does this give you?

Interview questioning turned next to the key question 'what are your understandings of the existing sustainability policy here, and what expectations for implementation does this give you?', where opinions expressing confidence, certitude and prediction for alignment with sustainability principles were sought. Additional prompts such as 'why are your expectations realistic?' sought to elicit explanations and justifications of position, and also drew out tangible, illustrative examples. Clear differences started to emerge in the types of responses given by study participants from each of the two case study institutions.

Most University interviewees specifically commented on the absence of policy, formalised structures and processes to back up their professional decision-making as a significant barrier to attempt engagement with transitions initiatives:

"Nothing is officially signed when it comes to sustainability. The University has a commitment to sustainability but that's basically it. It's not policy, and since it's not policy we can't refer to that." (Uni, Energy Manager, 2011).

Sustainability is perceived as being acknowledged only very recently within the institution, with one participant suggesting acknowledgement has occurred only within the last five years. While general statements of commitment are recognised as having become evident in that time, there is a keen awareness that these have not, in turn, been substantiated into policies, directives or formal targets. The commitment of the institution is widely perceived to manifest only as a soft focus aspiration. One participant spoke of the potential of the Campus Master Plan, and its associated non-public working documents, for advancing sustainability principles in the built environment on campus. The plan has, however, only been acknowledged, and not yet endorsed by the University Council, which is a source of frustration for the staff member in their related professional role.

In terms of progress in the institution, it was apparent from the line of questioning on expectations for implementation that overall, most participants at the University were disappointed, with low expectations for implementation. Responses revealed that the majority of interview participants at the University perceived sustainability as having low priority within institution, treated as a competing agenda rather than an institutional value:

"Sustainability may be one of those things that people see as a nice-to-have." (Uni 8, 2011).

Many interview participants felt they had no opportunity for contributing to the institutional vision, but indicated that others within the institution may be better positioned to make a difference because of the nature or defining parameters of their roles. In this sense, activity was perceived as fragmented and belonging only within certain areas of institutional practice, such as energy efficiency. Within this generalised summary position, two of the eight individuals interviewed at the University simultaneously and consistently held some very positive expectations for action throughout the interview, with justifications that the imperative was relatively new, and needed time to develop. Also, particular types of projects were identified as appropriate for development under the institutional vision, because they provided a marketing opportunity, or saved money:

"I think that senior management at the University think of sustainability in terms of the bottom line." (Uni 4, 2011).

Some staff members recognised that their roles did permit some moderate contribution through isolated or independent activities:

"I do what I can in my own little bit—I'm lucky. But there's no way for some." (Uni 3, 2011).

Again emphasis tended toward recognising that sustainable practice within the institution is fragmented, with projects defined that fit within the existing framework of priorities.

Finally, unfavourable comparison was drawn between Otago University and other universities, both within New Zealand and internationally. It appears that interview participants perceive their employing institution as lagging behind other institutions in moving toward an increasingly important standard, a position that stands in sharp contrast with Otago Polytechnic.

While questioning in the interviews invited response on personal understandings of the existing sustainability policy, Polytechnic professionals barely referred to formalised policy, relating instead the array of established practices that are central in shaping day-to-day decision-making within professional roles. All interview participants spoke confidently and knowledgeably on the practices and areas of activity in which they were involved, with many commenting on the positive gains they felt they had made:

"Really it was moving back to purchasing where the greatest gains could be made immediately. We put in place a purchasing policy. Each time a contract came up, I was asked to comment on it and put sustainable criteria for each contract, we were suddenly assessing each contract in a different way, which was a big opportunity for change." (Poly, Sustainable Operations Manager, 2011).

At the Polytechnic, all staff are expected to contribute to the institutional strategic vision. Various formalised management practices are in place within which staff demonstrate competence through reporting and feedback processes. Resources including professional development programmes, external consultants and mentoring staff are available, both in learning and teaching activities, and in operations. Engagement in sustainable practice is encouraged and supported, and is rewarded with both official recognition and a definite sense of pride and achievement:

"We have a process where every school has a review by the leadership team every year; that's like a five-hour meeting that happens once a year. We look at the outcomes, the metrics, the data we've got, the success rates of the students, student feedback, what's happening with sustainability in the programme and in the school. We're building more and more expertise from the bottom up. Every year, I would say, more and more expertise and stronger commitment amongst our staff." (Poly, Group Manager, Health and Community, 2011).

Overall, high expectations for implementation and certitude prevail in the professional setting at the Polytechnic for the manifestation of sustainable practice. The somewhat lengthier responses put forth by Polytechnic participants suggest that they have more experience to draw on compared to the University participants, with some responses additionally reflecting on the changes observed within their own and others thinking. Staff who participated in interviews for this study are learning about sustainability by engaging in pragmatic and applied practice.

The chronological interview structure moved on from questions around understandings of policy and expectations for change, to find out how sustainable practice is brought into professional roles.

5.2.3 How do you bring your expectations and understandings into your decision-making?

Questions around 'how do you bring your expectations and understandings into your decision-making?' were open ended and conversational, and along with prompts such as 'how do you

integrate this with competing priorities?', looked at processes and options open to decision makers. Leading on from the priming questioning, covered in the former section on expectations for change, this questioning further attempted to uncover the day-to-day means for bringing theoretical understanding into the applied activity of sustainable practice.

A divergence is apparent in staff approaches to implementation and decision-making at each institution, based on perceptions of options, opportunities, challenges and barriers. The approach to bringing sustainable practice into decision-making at the Polytechnic, in the context of high expectations for change and sanctioned opportunities to contribute to accepted, supported and encouraged institutional norms, was characterised by a striking sense of ownership, pride and autonomy that was experienced by interview participants. Generally they felt they had a great deal of freedom in determining how they approached sustainable practice:

"I feel like I can do whatever I want, to help people gain a better understanding. I have free rein of how I'm going to do that. I feel very supported in what I want to do." (Poly, Educational Development Centre, 2011).

Reflection by one participant acknowledged the importance of this ownership for developing deeper change in how a person thinks and feels. Another participant additionally discussed how reading trains his understanding and instinct, such that decision-making is based on a deep trust in his understanding, rather than merely applying an imposed checklist.

The sense of ownership and autonomy that characterised the approaches described by many participants was a good match to the institutional strategy. That strategy was asserted by another participant; that sustainable practice was not to be executed by experts or consultants on behalf of the institution, rather, the ownership for building of capability and capacity was to be held and developed within. The CEO of the institution celebrated this approach with the following interview statement:

"Everyone has done it differently here, fantastic, they own it." (Poly, CEO, 2011).

This approach is in stark contrast with that of the University. The relatively low expectations for action and the lack of policy and formalised structures has developed a different mentality, characterised by fragmented, isolated and uncoordinated action:

"People really want to do it, but nobody's assuming responsibility. I'm just following my own initiative." (Uni 4, 2011).

In many cases, activity was perceived to be taking place over and above everyday work, rather than as a complement to it. In some instances, activity was even perceived to be clandestine in nature.

Action toward initiatives in what was widely perceived as a marginalised issue comes with costs for the individual, and ultimately for the development of capacity in sustainable practice within the institution. Perceived barriers included professional risk, such that an individual felt they must put themselves in an isolated or disadvantaged position in order to work toward sustainable practice within a professional environment that neither recognises nor rewards the advancement of practice. Some individuals who followed such an approach described situations where they felt professionally isolated and vulnerable.

Additionally, hierarchical barriers were widely perceived to prevent contribution to claimed institutional aspirations:

"Since sustainability is not a top priority for those who make decisions about expenditures, I don't get approved necessarily what I think is meaningful, believing in climate change and believing in a restructuring of our campus toward more sustainable options." (Uni, Energy Manager, 2011).

Interview participants described the sense of having all responsibility and no power, of the compelling expectations from higher authorities for all decision-making to go through them, and of formal decision-making structures that are perceived as preventing certain sectors, such as early career staff members, from having a voice. One participant described her perception that committee nominees and chairpersons were selected primarily because of seniority or status rather than aptitude or enthusiasm for the area at hand. A compounding issue was raised by several interview participants, related to the sense of having to do what one is told without any sense of the objective or strategic direction. For these staff members, there was a sense of performing tasks on demand that diminished the sense of ownership in contributing to a project or idea. This lack of strategic insight would potentially limit the two-way information flows so necessary for taking a systems approach, as illustrated by the following example:

"I've got this idea, I really think we should go for it for this, this and that reason, and then it gets nowhere. You finish a report that someone's asked you to do, and you don't get any feedback, or it doesn't get endorsed." (Uni 4, 2011).

Overall, perceptions of the marginalisation of sustainable practice and the associated professional risk, the hierarchical barriers and lack of transparency have combined to produce a professional environment and set of circumstances that are likely in many instances to prove a barrier for transitions to sustainability.

Responses to the above lines of questioning on how understandings and expectations are brought into decision-making within professional roles were highly influential in the final, in-depth analyses presented in the following chapter, on *how* the case study institutions are taking vision through to action in developing sustainable practice, and the potential implications for sustainability transitions in these institutions given their current approach. For reasons of methodological transparency, interview responses to this line of questioning, as raw data, are attached to this thesis as Appendix 3: 'How expectations and understandings are brought into decision-making', for independent perusal.

The chronological flow of interview questioning shifted theme at this point, from the influence of expectations on practice and decision-making, to look into attitudes toward achievements to date and what these can tell us about institutional governance and culture.

5.3 Attitudes toward achievement to date

The second research objective considers participants' perceptions of achievements to date in implementing sustainability transitions in the case study institutions. The initial research objective was concerned with 'what has been achieved to date in terms of policy and vision implementation?'; however this study does not attempt to quantify or qualify every initiative and activity within the case study institutions. Rather, this study has been concerned with *how* sustainable practice develops, with a focus on the influence of organisational governance and cultural factors on engagement and participation in multiple contexts.

In providing another angle from which to further understand the overarching topic, findings of the research objective presented in this section also offer insight into the depths of institutional response to the sustainability imperative, providing evidence of the different approaches described and established in Chapter Three: Positioning and Context. As important stakeholders in their employing institutions, staff perceptions of an implementation gap, between institutional aspirations and tangible action, has conspicuous implications for institutional accountability and credibility. Their accounts of achievements to date provide an understanding of institutional commitment and day-to-day alignment with the held vision.

5.3.1 What tangible sustainability transitions have been put in place here?

The series of interview questions and additional prompts that attempted to gain insight into attitudes toward achievements to date typically opened with the question 'what tangible sustainability transitions have been put in place here?' This opening question established a focus on tangible transitions initiatives, with a vast array of responses relating to activities at the personal through to the institutional level, with much 'cherry picking' of successful projects. The focus of this research was not on *what* has been achieved, so therefore a full and detailed inventory was not pursued with interview participants. The focus instead remained on finding further evidence of systems approaches, or by way of contrast, evidence of an isolated project mode. As described above, systems approaches are considered to have greater transformative value for transitions to sustainability than project approaches, with some relative distinction between the two institutions already apparent in the public documents reviewed in Chapter Three: Positioning and Context. Examples have been selected from participant responses for illustrative purposes.

Most Polytechnic participant responses gave evidence of principles of holistic thinking and systems approaches being applied to meet institutional objectives and to generate change outside the institution.

This reflects the intended strategy introduced by the external consultant with leadership team, whereby approximately fifty holistic thinking tools have reportedly been employed right across the institution, including in operations, learning and teaching, in how the community is worked with, and throughout the supply chain. According to one interview participant, these adaptable tools and resources, with names like 'the 360 process' and 'the DNA model', aim to weave sustainable practice throughout the institution.

In terms of curriculum, one professional related to an institution-wide debate on whether sustainability should be a complementary programme, or integrated into all courses, in order to meet the objective of having every graduate capable to act as a sustainable practitioner in their field. Again a sense of ownership was apparent, with various schools reportedly choosing to pursue the strategic focus from a blend of the possible options. Most notable in this response, however, was that no school opted to pursue sustainable practice solely through a stand-alone programme, revealing institution-wide recognition of the need to take a systemic, holistic approach rather than a 'bolt on' approach to learning and teaching sustainable practice.

Another participant spoke of the credited course work in education-for-sustainability, and of the highly trained mentor available to all teaching staff. These resources and supports were designed to assist in engaging with and reflecting on the meaning of sustainability in the context

of each programme or school. Alongside this formalised professional development, a high degree of people coming together, to share generic concepts and to develop locally-generated templates was described. In systems approaches, information flows between groups or units of activity are essential for the approach of considering all factors.

The modelling of a systems approach was also evident in operations on campus, as this example clearly shows:

"[Staff were asking] how come the rubbish bins are full of styrene, how come we aren't recycling and so on, and we had some sage advice right in the early stages, which is don't surrender to people who want you to greenwash. It's easy to put in all that stuff, but unless you deal with the systems, if you spend energy doing that, it'll divert you from dealing with the real issues. So we resisted, I wrote back to staff and said, we'll get there, we're working on the fundamentals, we're working on the systems, the best approach to waste is not to have it in the first place rather than visibly disposing of it well. That means we've got to work with suppliers So we stuck to our guns. It took eight months before we put in a recycling system, and we just wore it; people were impatient, because they wanted to see those visible things, whereas we dealt with the invisible; change systems, change attitudes." (Poly CEO, 2011).

In applying a systems approach to operations, changes were made not only internally within the organisation, but also externally. For example, the Sustainable Operations Manager discussed how a decision had been made to encourage and assist suppliers in making changes toward more sustainable practices, including the offer of training at the Polytechnic's Central Otago-based Centre for Sustainable Practice. Several other interview participants perceived the institution as acting as a catalyst for external change in business practice. The community outreach and business coaching activities of the Centre for Sustainable Practice were described by two other participants as also having an influence that extended beyond the institution, with changes made to networks of activity.

At the University of Otago, there was less evidence of systems approaches, and more evidence of a fragmented approach, apparent in a lack of continuity with initiatives, a selective institutional approach to endorsement and isolated individuals or projects.

Several participants based in Property Services commented on the newly constructed Unipol Plaza building, and the lack of consistency in applying the Green Star Rating Tool of the New Zealand Green Building Council. The tool, which evaluates environmental attributes for commercial buildings in New Zealand, had previously been applied to achieve high standards of

best practice with the Psychology and Hunter buildings, which are regularly upheld for marketing purposes:

"It's funny, they do [Green Star Rating] on a building-by-building basis, so Hunter they ticked off, Psychology they ticked off, but the Plaza building, Unipol building, not." (Uni 8, 2011).

The lack of continuity was also perceived in the selective approach to endorsement in sustainable practices at the University. While recycling is appreciated as a highly visible, 'feel good' activity, its introduction on campus had not been coupled with a deeper or broader interrogation of practice. In particular, procurement was identified by one participant as being fraught with sensitivity, and likely to prove to be the most difficult issue to tackle.

A further issue was raised by several participants that also relates to the selective, fragmented approach within the institution. There was a tendency for participants to identify tangible transitions to sustainability as taking place elsewhere, or by someone else, within the institution. Certain individuals, programmes or departments were picked out, where some aspect of sustainability was perceived as being taught, researched or otherwise 'taken care of'. While participants generally expressed admiration for the efforts in these domains, the observation of 'otherness' gave the impression that transitions to sustainability may be regarded as an additional or separate agenda within the institution, and which may be someone else's responsibility. For example:

"Some of it comes down to just one guy at property services, who seems particularly keen on sustainability." (Uni 2, 2011).

The separate agenda conception was borne out in the feedback to a circulated proposal, just some months before the interviews took place, of a proposed graduate attribute related to environmental literacy. One participant spoke of the negative feedback to the proposal received from some academic staff, who expressed their evaluation that sustainability was not appropriate for their disciplines. In the University, sustainability remains as an optional project that someone else addresses in their own time. While this may suit the status quo of academic practice and corporatised governance, it does not meet the increasing expectations in society for TEIs to be exemplary leaders and change-makers toward a more sustainable future.

Interview questioning turned next to exploring the perceived reasons why these particular transitions to sustainability have been put in place.

5.3.2. Why were these particular things chosen for implementation?

The implementation of particular sustainability transitions will be influenced by institutional justifications of the benefits returned for the commitment involved, with some actions relatively easily achieved and accepted, while other initiatives will be more challenging to achieve. The next set of interview questions in this section asked 'why were these particular things chosen for implementation?', with prompts such as 'what are the core benefits of these actions?' and 'what level of commitment was required?'

University responses revealed progress has been driven foremost through economic returns, and from reputation or marketing benefits:

"Sustainability is pursued to minimum requirements for kudos and economic reasons. A lot of the new energy stuff is not driven from sustainability, but purely from economics. And then it's a marketing tool." (Uni 3, 2011).

Additional reasons for undertaking activities like recycling and energy saving include the relative ease with which they can be achieved, and the perception that their value is widely understood.

In comparison, typical Polytechnic responses related the reasons for actions and their benefits to the strategic direction of the organisation ('to do the right thing'), and to the higher philosophical reasoning behind it:

"The 'how' we go about practically everything is informed by 'is this sustainable?' Even teaching method. We've adopted significant use of technology; I think we're probably way out in front within the New Zealand context in the use of open education resources, again coming at it from a sustainability perspective." (Poly, CEO, 2011).

In this same philosophical vein, another participant identified the likelihood of imminent changes to 'business as usual' practices, such as in the transport system. From this position, sustainability was seen as a driver of a new and smart form of innovation, both pre-empting the actions needed, and reducing risk.

Many Polytechnic participants also saw the marketing potential for the institution in sustainable practice, but understand the importance of thoroughly 'walking the talk' and modelling holistic concepts in management, curriculum and campus operations:

"There's an opportunity around your brand enhancement. But you don't want to end up in the position where there's a rhetoric/reality gap: we say one thing and do another. It's absolutely critical in terms of your brand reputation." (Poly 2, 2011).

Market research delivered the message of the absolute necessity of doing the things that are taught, shared or advised to students and the wider community. As such, understanding, planning and action were variously identified as key means to attain a level of achievement in sustainable practice, before making any attempt to capitalise on the strong marketing potential.

Participants were next asked to relate the level and qualities of activity to the intentions and stated claims of the institution.

5.3.3 How well does actual practice align with the intentions of the institution?

Asking 'how well does this align with the intentions of the institution?' with prompts such as 'do you think the intentions of the institution are being met? Or Surpassed? Why?', sought opinions and perceptions on the relationship between institutional vision and action.

Responses from University participants again revealed a perception of the low priority afforded to sustainability. Occasionally cynicism was expressed at the absence of institutional intentions against which action could be evaluated, or disillusionment at the implementation gap between rhetoric and reality:

"There is big gap between what the organisation says, the council and committees, and what is done. The processes to facilitate, to go from idea to implementation, are no good; there is no cascade." (Uni 3, 2011).

Just two participants rationalised more positive conceptions, suggesting that even though action is slow, time is the essential ingredient, and change, when it comes, will be permanent. Responses on the whole provided evidence of limited faith amongst staff participants that the current actions of the institution meet the aspiration or stated intentions of the institution.

Respondents at the Polytechnic perceive practices have been chosen for implementation because they align with the target that every graduate will be capable of operating as a sustainable practitioner. Innovation in the approach to learning and teaching is one aspect mentioned by half of participants. Commentary focussed somewhat on the reorientation of curriculum content, describing how courses now consider a full spectrum of dimensions including social and

economic sustainability, with different emphases in each programme. Other participants described the balance between knowledge-based learning and action competence, the assessment in place to work with this, and the importance of experiential learning to the strategic goal:

"The Graduate Diploma and Certificate programmes we have put in place are assessed on action competence. Knowledge is important, we need knowledge. But you also need to tie that knowledge with experience. And those experiences shape how you apply the knowledge anyway." (Poly, Director, Centre for Sustainable Practice, 2011).

Additionally, positive influence in the wider community was mentioned as another strategic goal with which activity is well aligned:

"With an institution like the Polytechnic, which is one of the top five of big employers in Dunedin, when our letter goes out to the supply chain with the requirements for all suppliers to report on sustainability, that is going to have a big impact on the community here." (Poly 2, 2011).

Overall, Polytechnic participants were able to readily relate institutional activity to the intentions and vision of the institution. This provided evidence of a perception amongst staff of a measurable level of accountability toward stated claims.

Questioning moved next to a closer investigation of the important factors required for successful implementation of sustainable practice.

5.4 Key factors for transitions to sustainability

Participants were asked to comment on key factors they perceived to be most important and influential in the implementation of sustainability transitions in their institutions to date. As the conversation developed, participants were questioned on the critical resources and supports for facilitation, as well as challenges or compromises to the process. Questions were also asked on lessons learnt, and on insights, processes and models developed because of the implementation process. Additionally, participants were asked about unpredicted outcomes, and the use of adaptive strategies, such as an iterative, reflexive approach to governance. These questions were inspired by themes from readings in the area of the development of sustainable practice in higher education and in large organisations. They were designed to stimulate open-ended conversation

such that participants shared thoughts and ideas that had potential to add new insights to existing theory.

The line of interview questioning started with 'which key factors have been most useful in achieving these outcomes?'. Direct responses to this question, and other anecdotes which could be construed as key factors for implementation, were extremely diverse, with approximately 150 interview excerpts coded in the analysis software. The raw data are appended to this thesis as Appendix 4, to support methodological transparency.

This section first considers the barriers encountered in the two case study institutions, both those which were distinct to each organisation and those which were held in common, followed by an appraisal of reported critical resources and supports. From the opening question on key factors, some greater definition and distinction between the two case study groups of participants became apparent when directing the conversation with prompts. When asked 'what were the main compromises or challenges you had to overcome?', interview participants gave responses that conveyed common themes, which in some instances divided neatly between the two institutions; resistance around preconceived ideas in the Polytechnic, and barriers in financial accounting and poor internal communication in the University. Problems around eschewing a systems approach, external barriers and time were also prevalent in responses from both institutions. Examples for each theme follow.

In the Polytechnic, resistance to preconceived ideas was identified as a challenge by half of the participants. One participant reflected that there would always be some staff thinking it is a fad or just a nice thing to do, as may be the case in any tertiary institution that attempts to align with a sustainable practice strategy. Another described some qualities of the preconceived ideas she has encountered in her professional role:

"Some departments, the business school or engineering, they already have an idea of what sustainability is, an environmentalist movement they don't want to be part of. That it's left wing, political; they're focussed on what this thing has been, and not what it could be."
(Poly, Educational Development Centre, 2011).

Two participants described their approach to the situation in the instance where resistance was encountered. In one case, a focus on pertinent objectives such as better quality housing served to allow the parties to find common emotions and values. In another case, the participant spoke of meeting people at their level, and of taking care with the negative angle that has coloured the science in much discussion and discourse. Rather than launching into discussion with culturally polarised themes, a more nuanced approach is applied to evolve understanding. It would seem

these participants seek common ground, and see the potential for sustainable practice to complement and evolve existing practice in order to contribute to a better future.

At the University, the barriers encountered in taking vision through to action tended to group around two main issues: financial accounting and poor internal communication.

In the first of these central issues, three participants readily described the focus of the institution on the cost-benefit appraisal of any initiative, which was central to any report prepared for senior management. One participant described a perception common to many other staff, that senior management saw sustainability as something they have to do, or a marketing tool, rather than an approach that can ultimately save money in the long term. Another participant seemed to struggle to afford priority to sustainable options in her own decision-making, perhaps due to being bound to a business-as-usual approach based on short term, cost-benefit analyses:

"It probably comes down to a cost basis, I mean are we saving anything or not, and at the moment from what I see some of these things don't stack up financially, at least not at the outset." (Uni 1, 2011).

The second central theme raised repeatedly by participants considered problems presented by poor internal communication and systems of coordination. These issues were cited only in relation to the University, and present a challenge for the information flows essential for achieving the synergies of a systems approach:

"There is a lot of well-meaning people, but also a lack of structure and processes. It's not intentional, but people are made impotent. It's not just sustainability that suffers from this". (Uni 3)

One participant described a requested report on a central sustainability issue that remained unread. Another described attempts to set up meetings with senior management. When a meeting finally eventuated with the Chief Operating Officer, the staff member felt 'blown off', because it did not fit the agenda or the budget. Attempts to meet with the Vice-Chancellor were not possible to arrange, perceived by the staff member as being due to hierarchy, lack of importance, and the head of the institution being too busy and not wanting to know. This experience, of not being able to share ideas and strategic insights with top-level management, contrasts dramatically with the reported 'open door' policy of the head of the Polytechnic. One participant, who has worked in both institutions, felt heard and valued at the Polytechnic, whereas options for communication at the University were perceived as transactional and perfunctory.

Patterns of communication were the theme of further examples from participants. Communication via email as a committee representative needed to be formalised through the correct channels, with endorsement from a higher authority perceived as necessary for an idea or request to be taken seriously. Because of this, the participant felt communication was, again, hampered by University structure. One participant discussed the lack of any sort of significant institutional discussion on the moral imperative, and another described the 'silo' mentality between departments, with duplication of lectures and a lack of sharing of resources. In summary, there is a sense from participants that communication on the topic of sustainability is somewhat choked at the University, with few channels for genuine discussion. In response, people moderate what they do or say in order to avoid problems.

Certain barriers to advancing transitions to sustainability were identified by participants from both institutions. Problems around eschewing a systems approach featured in the responses of over half of all participants, with external barriers outside of the institutions also discussed. The lack of external impetus was mentioned in relation to the compulsory reporting taking place in Australian universities, the Tertiary Education Strategy of the New Zealand government, and professional bodies:

"We can quite honestly talk about there has been real struggle. What happens when a department defines what sustainable practice is to them, but their professional body still hasn't even started to clue up on that stuff ... the professional model in the real world, and its lack of movement toward sustainable practice." (Poly, Sustainable Practice Advisor & Research Manager, Centre for Sustainable Practice, 2011).

For some, the issue of systems approaches arose due to the lack of conceptual understanding held by colleagues within the institution of a bigger picture based on interrelatedness. Quantified checklists, which perhaps represent the antithesis of a sustainable approach, exemplified their preferred approach. Academic staff from certain disciplines failed to see how sustainable practice could be relevant to their students, or perceived their role as solely concerned with teaching their students disciplinary knowledge. In each instance, a narrow, specialised position prevented a more holistic appreciation that is essential for a sustainable worldview:

"To dismiss an integrated approach to environmental, social and economic well being will come back and bite people in the bum. I have no time for silos, they don't occur in nature,

they are one of the biggest barriers." (Poly, Director, Centre for Sustainable Practice, 2011).

After following through discussion on barriers to sustainable practice, the interview moved on to another prompt: 'what were the critical resources and supports?' Further key factors were identified, with some significant distinction between the two institutions.

At the Polytechnic, the need for a compelling vision was identified by over half of the participants as a critical element:

"Developing a good vision that other people are quite keen on, helping people engage." (Poly, Project Manager at Otago Institute of Design/SHAC initiative, 2011).

Vision that was appropriate to the industry was identified as essential because of the long time-frame required to ultimately achieve the challenging objective of every graduate as a sustainable practitioner. As the primary strategic platform, this vision shapes and influences every action and decision. It was described as an easy vision for a lot of people to buy in to.

The importance of dedicated leadership either within the institution, or within external businesses where consultancy services are undertaken, was raised at some point by most participants, including all from the Polytechnic:

"Top down buy-in is crucial, we don't work with anyone in our centre unless the most senior decision maker in an organisation is prepared to engage in the conversation." (Poly, Director, Centre for Sustainable Practice, 2011).

From all accounts it was clear that the CEO of the Polytechnic is a committed protagonist for sustainable practice. However according to one participant, he is also a remarkably talented leader in general:

"The culture developed by our CEO, and he's brilliant, he's enable people to move forward in lots of different ways, and not just in sustainability. (Poly, Sustainable Operations Manager, 2011).

A distinct contrast with the Polytechnic emerged in the responses given by University staff. The lack of dedication toward sustainability from leadership (as at mid-2011, just prior to a new Vice-Chancellor being appointed), was noted as a negative by most University participants:

"It would take real will from the top to drive it, certainly haven't seen any evidence of it yet." (Uni 7, 2011).

The absence of an overarching direction and the lack of political will from the council and Vice-Chancellor were typical points made by study participants. Sustainability was perceived to be a low priority for leadership, merely referred to in passing or added on to projects if there is no cost involved. Some hope was afforded to the imminent change (at the time interviews were conducted) to a new Vice-Chancellor, and the reappraisal of sustainability that this could bring.

The role of leadership emerged as a one of the most important core themes in this study, with repeat references made by participants in multiple lines of inquiry. A second vitally important core theme in this study related to broad engagement and participation. This was considered by the majority of participants to be critically important for taking vision through to action.

At the Polytechnic, there was a definite tendency in participants to identify the need to work together, to generate change from the bottom up and to take responsibility and ownership for change:

"You get success when you can bring everyone along with you. I think it's been successful here, because staff created it together, and we are very clear on the benefits to us." (Poly, Group Manager, Health and Community, 2011).

One participant made the point that people must be involved and comfortable in order to pursue sustainable practice at all. With processes and structures for enabling capacity building now well established, the CEO described an evolved institutional strategy that aims to harvest sustainable practice ideas from the staff. According to a longitudinal Work Environment survey, there was a high level of consensus and support amongst staff toward the strategy, suggesting engagement and participation would be met with enthusiasm by most staff. Overall there is a strong awareness amongst participants of the need for all to be involved.

A distinct difference in attitude emerged from the responses given by University participants. When questioned on key factors for the progress of the institution in taking vision through to action, there was a definite tendency amongst some participants to identify particular projects conducted by others, or to look toward other people in more closely designated professional roles, to take or have the responsibility to implement sustainable practice:

"People like Hans Pietsch, and Katrina Roos, and Barry McKay are really quite critical figures, and Sue Larkins; they are all crucial, they are the ones who will be doing the implementation." (Uni 6, 2011).

It was generally recognised that progress toward the institutional aspiration was driven by passionate individuals.

Another theme—time—was mentioned by many participants as a critical ingredient for transition. One participant described how compromises had to be made due to the slow rate in which infrastructure could be changed. Another described how the conflict of interest around other projects had the effect of limiting the ability to do things quickly. Many initiatives in themselves required long-term time scales to come to fruition:

"A time factor needs to be built into some of these things, because of the complexity of weaving these things together, and then across all these departments. (Poly 2, 2011).

The most significant distinction on the theme of time between the University and the Polytechnic was a perception in the latter that the application of sustainability principles actually had the effect of freeing up time, due, for example, to greater resource sharing or reduced doubling up of efforts. By comparison, several University participants made explicit statements on the lack of time with which to engage:

"Can you please tell the Uni there is not enough time to meet sustainability?" (Uni 3, 2011).

Time and engagement brought to the surface another notable point. As interview prompts and their corresponding coding categories became more probing and nuanced, University responses started to drop off in frequency. For questions on 'what main lessons were learnt in bringing about these actions?', and 'what insights, approaches or models have developed because of the implementation process?', the sum of coded responses for the Polytechnic was three times greater than those of the University.

Examples of responses to the prompt on lessons learnt included the insight into the importance of learning by doing, expressed by approximately half of Polytechnic participants:

"You can only find things out by doing, you can only learn stuff by experiencing; I can't say to you that's a dead end, so don't bother." (Poly, Educational Development Centre, 2011).

A variety of other lessons learnt within the Polytechnic related to the goal of an individual or to the context of a professional role. The CEO was pleased to learn that staff *wanted* to be more sustainable, diminishing the anticipated need to train and develop staff. An example within procurement was founded in the struggle in deciding how much to pay to make a sustainable purchase. While the move was made toward more expensive, highly rated paper, the actual volume of paper used was reduced by two thirds, leading to a significant overall saving through the application of sustainability principles. Several participants discussed how to approach others, and related to the need to have the best, persuasive people driving the ideas, and to address issues pertinent to the situation. A lesson similarly related to approach was described by a University professional, on the need to focus the issue on aspects that matter to people who are concerned about image and money, in order to gain traction. There was perhaps less pride and pleasure coming through in the University responses, in comparison with the confident reflections coming from Polytechnic participants.

The final line of questioning in the section focussed on key factors asked 'how useful is an iterative, reflexive approach in addressing the complexity of the transition to sustainability?' and 'how are these processes facilitated and supported?'. This approach sought to identify adaptive strategies that utilise a deliberative, revisiting process; a core concept for optimising transitions to sustainability, variously emphasised in relevant bodies of literature. Responses again divided neatly between the institutions.

Several Polytechnic participants identified reflective mechanisms operating, and their value in moving the institution toward its vision:

"That's why this is a customised approach, working *with* someone, not doing it *to* them. You learn as you go forward We're always being quite reflective on what we do, and we are redesigning and redeveloping things as we go; that's part of the process." (Poly 2, 2011).

Another Polytechnic professional described a recent, whole institution process, designed to reflect on how progress was going in accomplishing and realising the strategic objectives. Staff were invited to give feedback. The process was recognised by the participant as being very

important for the adaptive development of the institution. An adaptive approach can be seen as supporting a holistic viewpoint and a systems approach to moving forward.

In contrast, some negative responses came from University participants, who expressed the need for improved means to communicate with senior management, for mechanisms for giving feedback, and the need for greater Energy Manager reflection:

"We're not revisiting [practices, processes] enough. The University, as a whole, for an institution that is about teaching, research and innovation, it's incredibly staid, conservative and difficult to move." (Uni 8, 2011).

With the overarching research goal of gaining insight and developing an understanding of implications for sustainability transitions in the case study TEIs and beyond, through current approaches, one final, closing interview question was asked: 'what fundamental roles and responsibilities toward sustainability can be expected of tertiary education institutions in wider society?'

Nine of sixteen participants built on the broadly accepted role of 'critic and conscience of society', to give an expanded and more nuanced description of responsibilities. Supplementary concepts referred to by two or more participants from the total pool related to educating every student in every discipline about sustainability, role modelling through 'walking the talk', setting an example to wider community, and providing independent insight. Some interesting reflections were presented, that seemed to capture the relative and distinctive position of each institution.

From the Polytechnic:

"Education is paramount; that's how we provide our innovation, our capability, our research for the future. When we've got major issues like global climate change, financial meltdowns, consumers making new choices about things, education cannot afford to be a laggard. Education has to be innovative, at the front end, making sure that research and development is not just out securing funds for business to do what business wants, but actually shifting business forward." (Poly 2, 2011).

And from the University:

"Universities have a responsibility to walk the talk. We talk the talk a lot. You would be really amazed if you started looking at who's involved in climate change research, climate

change stuff, at this University, a lot of people doing a lot of stuff. But we're not reflecting that in our actions as a wider University." (Uni 8, 2011).

5.5 Summary of findings and next steps

Salient points have been drawn together from the detailed findings above to generate summary statements of findings for each institution. Following the summary statements, emergent themes of particular relevance to sustainable practice are identified, and next steps with the data are considered.

At the University of Otago, sustainability was perceived to have low priority within institution, and to be treated as a competing agenda rather than an institutional value. The lack of policy and formalised structures for taking vision through to action in the transition to sustainability was a significant source of frustration for study participants. It also contributed to low expectations both for finding opportunities to contribute within professional roles, and for institutional capacity building and progress.

As detailed in this chapter, there was little indication of systems approaches to sustainable practice. Instead, the institutional approach was characterised by fragmented, isolated and uncoordinated action. Participant responses revealed a general perception that where progress has been made, it was driven foremost through economic returns, the pursuit of reputation or marketing benefits. This was evidenced in the lack of continuity with initiatives, a selective institutional approach to endorsement and isolated projects that were perceived as being defined to fit within the existing framework of priorities. In some cases, narrow, specialised positioning in professional roles, especially those related to learning and teaching, prevented a holistic cognition that is essential for cultivating sustainable world-views.

At Otago Polytechnic, engagement in sustainable practice was encouraged and supported, and was rewarded with both official recognition and a definite sense of pride and achievement. Interview participants spoke confidently and knowledgeably on the practices and areas of activity in which they were involved, and the positive gains they felt they had made. Most Polytechnic participant responses gave evidence of principles of holistic thinking and systems approaches being applied to meet institutional objectives and to generate change outside the institution. The reasons for actions and their benefits were perceived to be related to the strategic direction of the organisation, that is, aligned with the target that every graduate will be capable of operating as a sustainable practitioner. To this end, there was evidence of a perception amongst staff of a high level of institutional accountability toward stated claims in sustainable practice. Many participants could see the marketing potential for the institution, but understood the importance of thoroughly

'walking the talk' and modelling holistic concepts in management, learning and teaching and campus operations before promoting its realisation.

Findings to the three initial research objectives, comprising the main sections of this chapter, held greater insight into implications for the transition to sustainability than a simple face-value rendition has delivered. In addition to augmenting and reinforcing the evidence of different institutional approaches to developing sustainable practice, apparent in public documents and outlined in Chapter Three, further conspicuous and relevant themes emerged from the data through the application of thematic analysis methodologies. These were: commitment from leadership, processes for participation and institutional capacity development, information flows and feedback for systemic transformation, the local culture of the institution, and economics and risk.

The first of these—commitment from leadership—emerged as a one of the most important core themes in this study. Study participants from the University of Otago repeatedly referred to a perceived absence of dedication from leadership (as at mid-2011, just prior to change), and to the lack of overarching direction and absence of political will. By contrast, participants from Otago Polytechnic readily identified commitment from leadership and the compelling institutional vision as vital to progress.

The second vitally important core theme emerging in this study was related to processes for participation and institutional capacity development. At Otago Polytechnic, processes, supports and incentives were in place to encourage broad participation, and study participants were learning about sustainability by engaging in pragmatic and applied practice. There was also a strong awareness amongst participants of the need for all to be involved. In contrast, there was a paucity of processes for institutional capacity development at the University of Otago. There was a definite tendency amongst some participants to identify particular projects, conducted by others, or to look toward other people perceived to be in more appropriate roles, to take or have the responsibility to implement sustainable practice on behalf of the institution.

The third theme of significant contrast was concerned with information flows and feedback for systemic transformation. Otago Polytechnic participants identified reflective mechanisms operating, and valued the opportunity to be heard and to contribute to adaptive processes in moving the institution toward its vision. University of Otago participants, on the other hand, were dissatisfied with poor internal communication and systems of coordination. The need for improved means to communicate with senior management, for mechanisms for giving feedback, and for greater reflection on processes and projects were identified.

The fourth issue can be described as the local cultures of each institution. Within the University of Otago, the marginalisation of sustainable practice and the associated professional

risk, the hierarchical barriers and the lack of transparency have combined to produce a professional environment and set of circumstances that are likely in many instances to prove a barrier for transitions to sustainability. In contrast, a striking sense of ownership, pride and autonomy was experienced by interview participants at Otago Polytechnic, in the context of high expectations for change and sanctioned opportunities to contribute to accepted, supported and encouraged institutional norms.

The final salient theme relates to economics and risk, which was shown in Chapter Two to be a fundamental axis of debate in sustainability discourse. Financial accounting was regularly identified as a barrier by study participants at the University of Otago, whereas Otago Polytechnic responses gave evidence of sustainability principles being applied to drive a new kind of innovation.

Implications for the set of themes emerging from the findings of this chapter are investigated and elucidated in the following chapter, Research Synthesis. An in-depth, interpretative analysis of the findings aims to deliver a cultivated and considered set of concepts that is situated within the current literature.

Synthesis of Emergent Themes

6.1 Introduction

This thesis has at its core an examination of sustainability praxis—the taking of theoretical vision through to practical action, in two case study tertiary education institutions (TEIs). This chapter serves to confirm the primacy of broadly social and cultural factors that contribute to shaping the norms and 'rules' of human systems and their characteristic behaviours. In particular, core themes associated with social architecture and related practices, and localised culture, assist with understanding and explaining the uptake or development of sustainable practice in higher education.

The emergent themes from this study can be considered as both potential barriers and as potential leverage points for change in the social and cultural systems and the structures in higher education institutions, and beyond. The themes are grouped into five sections. The first section, 6.2, examines 'commitment from leadership and top-level support through institutional strategies, processes and mechanisms for change'. The findings of this study corroborate the literature on the critical importance of these factors. A final statement is made, based on the relative findings from the two case study institutions. The next section, 6.3, looks at 'processes for staff participation and institutional capacity development'. Perceived opportunities to engage with sustainable practice and participate in decision-making are investigated. The implications of the differences between the case study institutions are discussed in terms of institutional capacity in sustainable practice. The next section, 6.4, considers 'information flows and feedback for systemic transformation'. A barrier to sustainable practice, based on a principle from systems theory, is identified. This barrier is then related to literature on ingrained problems in higher education institutions, associated with a corporatised structure, the associated bureaucratised functioning, and disciplinary division. Section 6.5 investigates relative findings associated with the 'local culture of each institution'. Themes around (dis)empowerment, and certain problematic traditions associated with academic culture, are discussed in relation to the findings. Finally, section 6.6 considers aspects of 'economics, innovation and risk'. From the relative findings of the cases, the viability of pursuing

a business case based on sustainability is considered, as is the importance of investing in innovation. The potential significance of each of these themes will be discussed in relation to the central aim of the research, namely, to investigate processes for taking vision through to action in the transition toward sustainability.

A qualitative methodology underlay an investigation into the experiences of academic and general staff within each of two case study institutions, as transitions to sustainability are pursued. Leading on from the findings presented in Chapter Five, further analysis of the data was facilitated through the application of thematic analysis; a method described more fully in Chapter Four and briefly reiterated here as an approach to dealing with data that involves the regrouping of different instances of datum, enabling a reappraisal of the research findings. A central challenge to the process of thematic data analysis was to synthesise and integrate the multiple ideas and theories that each make some sense of the data, while remaining heedful of the associated context of the operating environments. As such, Chapters Two and Three also informed this chapter on emergent themes. Chapter Three of this thesis is a descriptive and critical investigation of international, national and institution-specific frameworks, policies and documents that shape the operating environment for transitions to sustainability, and reveal differences in approach, in each of the case study institutions. It serves as a complement to Chapter Two, which is an exclusively academic and thematically broader review of relevant literature. Sections from both of these chapters are referred to in this synthesising chapter, which relates emergent themes from the findings to both their contexts and the broader literature in order to develop a unique explanation that remains grounded the data. The source of recognition or illumination of emergent themes has been included within the narration where possible, in keeping with the pursuit of methodological transparency; rather than a singular 'eureka' moment, however, this interpretive process has typically been the result of attentive reading, analysis and ongoing reflection. The emergent themes draw on and attempt to synthesise literature from broader fields of sustainability research.

Relative differences between the case study institutions are utilised to advance understanding of sustainability in tertiary education. Experiences of academic and general staff in the University of Otago have been compared against that of Otago Polytechnic, the latter institution being a recognised leader in sustainable practice in a higher education setting in Australasia (see Shephard et al., 2009; NZSSES, 2010; Shephard, 2010; Shephard et al., 2011). In each of the chapter sections, introduced below, representative statements are presented to illustrate how embedded themes have been expressed by participants. Continuing with the protocol established in Chapter Five, verbatim quotes of participants have been identified as either from a University of Otago professional ('Uni'), or Otago Polytechnic professional ('Poly') to indicate to the reader some of the similarities and differences between the two groups. Quotes are attributed

to an individual's professional role or title to add further texture to the context, where permission to identify the participant was given through previously described procedures.

6.2 Commitment from leadership and top-level support through institutional strategies, processes and mechanisms for change

Strong commitment from leadership and top-level support through institutional strategies, processes and mechanisms is a pivotal factor for transitions to sustainability. This theme emerged consistently in the interviews, with distinctive differences between the two institutions corroborating the findings of the critical review of selected governance and management documents in Chapter Three. The theme is also pervasive in the literature on the development of sustainable practice in TEIs. Institutional structures and mechanisms are recognised to serve in taking vision through to action in the day-to-day practices and decisions of staff in their professional roles. A strong institutional commitment and policies that can translate insights into action have been observed by many authors, including Sharp (2002), Shriberg (2002), Williams (2008), Wright (2002) and ULSF (2002), as a requirement for making sustainability a central organisational and academic focus. Distinct differences in the relative levels of the integration of sustainability into all levels of institutional responsibility and practice was observed between the two case study institutions. The theme has been distilled and presented as the first core theme of this chapter in acknowledgement of its critical importance to organisational transformation.

Otago Polytechnic

A very strong commitment from leadership at the Polytechnic has been demonstrated in multiple, key domains of activity. Polytechnic participants perceived that the high level of commitment from leadership has manifested as institutional strategies, processes and mechanisms that assist in day-to-day decision making for transitions to sustainability. This is backed up by the review of documents in Chapter Three, which established that acknowledgment of sustainability in day-to-day professional practice is normative at the Polytechnic, with much evidence of active policies and processes in place to support action across the institution.

"It's not just ethical, it's the practical process. There is a critical issue between rhetoric and reality." (Poly 2, 2011).

Much reference was made in interviews to leadership-led activity in domains including: programmes to embed a level of sustainability throughout learning and teaching, policies to establish a high standard of role modelling throughout operations systems such as procurement, the availability of dedicated human resources to progress long-term strategic planning and process reform, the availability of relevant professional development programmes for all staff, and an institutional orientation toward sharing (rather than marketing or protecting) knowledge through adherence to a pioneering open-source education forum. In each of these instances, the guidance, resources and endorsement for engaging with sustainable practice at the day-to-day level was attributed to the commitment of Polytechnic leadership.

University of Otago

At the time of this study, University of Otago participants perceived a lack of commitment from leadership to sustainability in the forms of tangible policies and resource allocation. While aspirational claims and vision level statements exist, the absence of a comprehensive sustainability policy in particular continues to impede activity. This absence of firm strategies, processes and mechanisms is felt keenly by the majority of University participants, in their attempts to implement sustainable practice initiatives. This was typically expressed in simple terms:

"It's about policy, it's about leadership, it's about 'I want this to be the way it is!'" (Uni 8, 2011).

An infrequently referenced, soft focus vision has failed to deliver a set of strategic objectives to which academic and general staff participants can refer in their day-to-day activities, whether developing curriculum objectives, making procurement decisions, or developing role and performance objectives. This viewpoint was further supported through the critical review of institutional strategic documents in Chapter Three. According to these documents, a mandate for action toward sustainability was not strong in the University's stated bearing at the time the research was conducted (mid-2011). Chapter Three also demonstrates that slow progress has been made toward achieving the recommendations of the final report to the Vice-Chancellor by the Working Party on Environmental Sustainability (WPES, 2008). Certain aspects of those recommendations that have not come to fruition featured frequently in interview participant statements, in particular with regard to the long-term, high-level human resource allocation that was proposed as part of the institutional implementation structure. Clearly, participants hold keen

observation and interest in this area. Slow progress with multiple, pivotal aspects of implementation of the institutional vision, including formation of policy and allocation of human resources, appears to have sent out a message to academic and general staff participants that sustainability is a low priority.

In summary

The theme of an all-encompassing commitment from leadership and top-level support emerged in this study as a most crucial factor for transitions to sustainability. Commitment from leadership and top-level support in the form of institutional strategies, processes and mechanisms take vision through to action in day-to-day practice, and "seem to determine the degree to which a university will attempt institutional change and engage in relevant initiatives" (Wright, 2002, p. 10). With reference to the distinctions found in each case study institution, it can be stated that commitment at the top level can elevate or marginalise transitions to sustainability.

It is recognised elsewhere that leadership that is committed to progressing toward a goal which has a final form that is unknown, and which is characterised by uncertainty and the understanding that change must occur as lessons are learnt, must function in tandem with strong, organization-wide engagement and participation for knowledge creation and innovations in practice, as advocated by Allen (n.d.), Hopkins (2008), Lozano (2006), Sterling (2004), Tew (2005), Tilbury (2004), Voss et al. (2006) and Wals (2007) amongst others. The following section discusses this vital complement to committed leadership.

6.3 Processes for staff participation and institutional capacity development

Wide engagement and participation in applied innovation, knowledge creation and decision making is important for systemic institutional reforms toward achieving a sustainability vision. Additionally, the educational experience delivered through engagement with sustainable practice advances understanding and capacity at both individual and institutional levels.

As shown in the literature reviewed in sections 2.5.2 to 2.5.5 of this thesis, the burden of responsibility to develop capacity in sustainable practice can be regarded in two ways, that ideally work in unison: first, as a personal responsibility for each and every individual needing to become informed and to act on this. Viewed from a different perspective, institutional capacity can be arrived at through official permission, professional recognition and incentives originating from the institution. While an unwillingness to participate in integrating transitions to sustainability within a professional setting may be a very real problem, findings in this study generally reveal

immense enthusiasm for bringing important personal concerns into day-to-day professional life, reflecting the focus of the overwhelming majority of scholarship on the need for opportunities to engage and participate in an area that is increasingly important to all of society.

In comparing the two case study institutions, distinct differences were identified in the relative extent to which participants perceived they had opportunities to engage with sustainable practice and participate in decision making. This has significant implications for institutional capacity development. Processes for staff participation and institutional capacity development formed a second strong, emergent theme in this study.

Otago Polytechnic

The types of strategies put in place by leadership at the Otago Polytechnic were defined in response to a full-staff consultation exercise conducted in 2005, whereby sustainability was discerned to constitute an important part of a wider set of core values held by staff. In essence, staff readily agreed that 'doing the right thing', to attain a degree of social responsibility, ought to be the distinguishing feature of Polytechnic activity (see Mann & Elwood, 2008). Over time, actual consensus on engagement with the institutional strategy has proven to be very high, as gauged through internal mechanisms for feedback from staff to leadership (Otago Polytechnic, 2010). The level of consensus about the holistic strategy constitutes what Elton (2003) describes as an "unlocking of pent up enthusiasm" (p. 208), illustrated by this telling quote:

"We didn't have to sell anything. We thought we're going to have to train staff, develop them around issues. We didn't have to—staff got it, they wanted to be more sustainable." (Poly, CEO, 2011).

The policies, programmes and human resources developed under the strategic direction of the Polytechnic have assisted in generating a collective institutional response. Insight, innovation and tangible action toward institutional sustainability goals have emerged as a result of staff participation in new activities, and within new contexts. Innovations toward the vision and policy objectives of the institution are accommodated and promoted with positive expectation and professional recognition, and resources including human resources support and funding. A tangible example of legitimisation of participation was presented by this interview participant:

"Empowering staff to make that change, making it easy—in order to do that they set up a fund for any bright ideas, and staff were able to apply to that to get that thread underway ... so really it was a culture of empowerment." (Poly, Sustainable Operations Manager, 2011).

The overall impression gained through this study was one of the timely professionalisation of sustainable practice, characterised by widespread support, authentic engagement and resulting integrity. This study confirms that the adaptation of the institution toward its vision was achieved through active participation, amounting to a holistic, systems approach.

The University of Otago

An equivalent level of enthusiasm for transitioning toward sustainability appears to be held by staff at the University of Otago. The Vice-Chancellor's Working Party distributed a discussion paper throughout the University and to its stakeholders, requesting feedback on the adoption of an environmental sustainability policy. This resulted in a set of responses that confirmed support was 'very strong' (WPES, 2008). Despite this enthusiasm, there was at the time of this research a shared perception amongst participants of a lack opportunities for engagement in learning by doing and participation in decision making. Perceived barriers to moving sustainability forward in a participative manner included the marginalisation of the issue, professional risk associated with that marginalisation, a lack of decision-making transparency at senior levels, hierarchical barriers and inequitable opportunities to conceive a legitimate role and shape decisions:

"Here, no one has power to make decisions except the VC." (Uni 3, 2011).

Regardless of the relative absence of supportive conditions, professional acknowledgment or reward for active innovation toward the institutional vision at the University of Otago, much activity amongst academic and general staff is recognised to have taken place, characterised by independent, isolated and even clandestine action. Such activity corroborates Meyerson's (2001) descriptions of the 'tempered radical' and Kezar, Gallant and Lester's (2011) proposal of 'grassroots leadership'. Both accounts accentuate how the tactics used to challenge established practices are modified to fit the organisational setting. Academic and general staff who feel at odds with the dominant culture of their organisation, and who do not want to jeopardise their

credibility or chance for promotion, attempt to work independently toward their values with quiet persistence and conviction.

Unfortunately, this study reveals that the politicised 'must do' of saving the planet in one's own time (see Malecki, 2012), was typically eroded by time and productivity pressures, with there being evidence of alienation, frustration and disquiet amongst staff. Participant comments further intimated that it was perceived that 'someone else' in the institution was taking care of sustainability, someone else whose role or job description was understood to deliver influence in areas of practice perceived as particularly relevant. Within this, much specialised, sustainability-related research is produced within the institution. Both academic and general staff commented on this research, in some instances expressed perplexity or even irony on the failure of that knowledge to go any way beyond academic journals: to influence the functioning of the institution, to impact on national-level policy, or to link back to education.

On the whole, the picture is one of lost opportunities for coordinated, collaborative action, systemic approaches and for engagement in learning by doing.

In summary

Different approaches to developing sustainable practice have emerged in each case study institution, reflecting interview participants' perceptions of authentic and legitimate opportunities for participation. Where incentives such as professional recognition, and resources including human resources support and funding were available, engagement and participation in new activities, and within new contexts, led to the generation of insights, innovations and tangible action toward institutional sustainability goals. In the absence of such incentives, there was a tendency to modify engagement and participation, often to the point that 'someone else' could take responsibility 'somewhere else' in the institution.

It is not possible for a few isolated individuals at any level of an institution to progress sustainability on behalf of an entire institution. According to Sterling (2004), Tilbury (2004) and Wals (2007), amongst others, a networked, systems approach is required to work toward an aspiration of such complexity. The concept of social (or collaborative) learning refers to learning processes among a group of people who seek to improve a common situation and take action collectively (Allen, n.d.). Peer learning is an essential means for any organisation seeking to further understand their relationship with their environments.

6.4 Information flows and feedback for systemic transformation

In order to make gains in the development of institutional capacity in sustainable practice through participative approaches, competent mechanisms for information flows, communication and feedback are required. Distinctive differences in the processes for feedback and information flows emerged in the comparison of interview findings from the two case study institutions. In each case, communication between management layers and departments was identified as a critical factor that supported, or constrained, progress toward sustainable practice.

Processes to facilitate communication and feedback are critical for a diversity of voices to participate in shaping and transforming institutional goals toward sustainability. The qualities of the processes for internal communication and feedback between management layers and departments will determine outcomes at a range of levels. As articulated by Newman and Abrams (2005), patterns of communication influence the manner in which knowledge is transmitted, power is structured and relationships are built when change toward becoming a sustainable institution is sought. From a systems theory viewpoint, taken from Meadows (2008), access to information flows and feedback is an essential function for ongoing stability in dynamic equilibrium, with long-term resilience of the whole improved by diversity. It is from the frame of mutual benefit, across all groups within an organisation, that the emergent themes of information flows and feedback for systemic transformation is appraised.

Otago Polytechnic

The Polytechnic appears to support fluid, informal, interpersonal communication, supplementary to formalised reporting requirements. Additional comments made by interview participants included feeling listened to and valued by the institution, with a preference for the outcomes from personal communication in informal contexts. Attention to transparency in communication was stated as an important factor in honouring external partnerships.

Additionally, most participants identified the process of 'learning as we go'. Risks were taken, mistakes were made, and through reflection, lessons were integrated back into activity. Reflective feedback was implied at the individual though to institutional level, with several participants commented on feeling listened to and valued for their contribution. Participants perceived they had a role to play in contributing to building capacity in sustainable practice within their professional roles, with insights and ideas welcomed by an approachable senior management at any time. The approachable 'open door' style of the CEO was noted. One participant described a process for encouraging anonymous feedback to management:

"The opportunities for feedback are very well embedded in the Polytech; it's by far and away the best organisation I have worked in. There's an internal website where you can make anonymous suggestions if you wish to, all of these will be addressed." (Poly, Sustainable Operations Manager, 2011).

More formalised processes for reflection and feedback were established around central themes within sustainable practice. Innovation in teaching and learning is a core aspect of sustainable practice at the Polytechnic, with an approach that encompasses transformative learning for all students (see Shephard, 2010). A strategy developed in response to the staff-values consultation exercise of 2005 has been the requirement of teaching staff at Otago Polytechnic to engage in reflective self-review and reporting procedures on curricula innovation for transformative learning, developed with an appreciation of holistic interconnectedness. In making progress toward an uncertain goal, there was evidence of collaboration amongst participants, with new ideas and resources shared in order to learn from each other and progress understanding:

"There's been a lot of sharing, a lot of staff training, bringing people together." (Poly, Group Manager, Health and Community, 2011).

Processes for information flows and feedback at the Polytechnic support the holistic, systemic development of sustainable practice in the organisation, and support the recognition of a diversity of voices. These process include fluid, informal communication that supports the sharing of insights and ideas between individuals, the unconstrained feedback mechanisms to management, and the sharing of resources and ideas across departments.

The University of Otago

An emergent finding from the interviews of this comparative study revealed a perceived lack of effective communication and information flow across the University of Otago. Themes that related to corporate structure and disciplinary 'silos' were noted.

Within this study, participants reported poor communication with senior management. In particular, a lack of opportunity to give fluid, strategic feedback to management, outside of formalised and infrequent reporting, was identified. This is not a problem that is unique to the University. According to Greenwood (2012), the current structures in higher education determine that "each worker and workstation is a world unto itself" (p. 116). Further, within the authoritarian

and hierarchical systems of these structures, the problems with social dynamics and lack of communication are well known (pp. 116-117).

Much of the data reflects themes that can be readily related to Middlehurst's (2004) discussion on changing internal University governance in the UK, which identifies a steady trend away from collegial interaction and informal networks, toward the management layers and executive power of a corporatised university management model. The quality of collegial interaction was identified by Shriberg (2002) as a key factor for sustainability success. The absence of processes for collegial discussion, reflection and feedback on institutional practice toward sustainability was criticised by interview participants; practices that are vitally important in the institutional learning process:

"I've yet to meet anybody who is able to say 'my department had this discussion', or 'this email circulated', or whatever. I would be so disappointed if all we got was an email circulating and nobody even listened to it; it wouldn't surprise me but would be immensely disappointing." (Uni 2, 2011).

Corporatised management models tend to encourage bureaucratised functioning and transaction-style communication. While the University does have a commendable desire to reduce unnecessary bureaucratisation wherever possible (University of Otago, 2006; as discussed in Chapter Three), this appears to have the unfortunate side effect of further removing opportunities for more frequent feedback and communication.

Participants also commented on a lack of resource sharing across departments. At a pragmatic level of day-to-day teaching and administration, some participants identified a doubling up of lectures and poor sharing of teaching resources. In itself, this represents a potential source of inefficiency, as similar work is repeated in departments. The separation of divisions and departments due to disciplinary division is another ingrained and recognised problem in many universities around the world (e.g. Cortese, 2003; Haigh, 2005). Disciplines have "vied with each other for resources and guarded their boundaries with care" (Greenwood, 2012, p. 116).

Developing a holistic outlook in the domain of research maps well onto the promising practice of interdisciplinary research. Ferrer-Balas et al. (2009) substantiate that many authors agree that one of the major challenges for higher education's contribution to sustainability is to address complexity and develop systems thinking by overcoming the ingrained problem of traditional disciplinary division. While some truly impressive interdisciplinary research is taking place amongst the sum of research outputs at the University of Otago, the enduring culture of

disciplinary division, sometimes referred to as the 'silo effect', was observed by several participants to be problematically ingrained.

In summary

This study observed significant differences in information flows and feedback within the cases study institutions. In the Polytechnic, communication was perceived to be relatively fluid, informal and interpersonal. Formal and informal systems were identified that supported the flow of information and reflective feedback across schools and departments, and with management. However, in the University, communication was more transactional in style, which could restrict the information flows across departments and the feedback between management layers. These restrictions could be related to a corporatised structure, the associated bureaucratised functioning, and disciplinary division—problems that are ingrained in universities around the world (Cortese, 2003; Greenwood, 2012; Haigh, 2005; Middlehurst, 2004). A principal of systems theory would indicate that communication styles that supports information flows and feedback are essential for systemic transformation (Meadows, 2008). Systemic transformation is critical for moving toward institutional sustainability goals through approaches that are participative and holistic, which is an approach widely advocated by many authors including Ferrer-Balas et al. (2009), Sterling (2004) and Tilbury (2004).

Additionally, disciplinary division has further implications. For sustainability research practice, another barrier is presented to the interdisciplinary approaches that are widely advocated in the literature (e.g. Ferrer-Balas et al., 2008; Kates et al., 2000; Laws et al., 2004; Yarime et al., 2012). Further, a lack of resource sharing across departments is a source of institutional inefficiency.

6.5 Local culture of the institution

Normative, unstated, shared assumptions and sets of beliefs about how social structures and mechanisms work influence organisational culture and behaviour. The systems approach discussed in section 2.2.6 of this thesis considers how informal social agreements shape the 'rules' that define the scope, boundaries and degrees of freedom of a system, and the elements within it. By drawing on the literature reviewed on organisational culture in section 2.5.5 of this thesis, it can be stated that the tactics for social change used by staff who otherwise lack formal authority are distinctly shaped by and aligned with the culture and character of the organisation of which they are a part, with the expressed and the inherent goals of a governing group and their

governance style impacting significantly on the way staff perceive their opportunities and the manner in which they 'work' or 'perform' (e.g. Ferrer-Balas et al., 2008; Kezar et al., 2011; Meyerson, 2001; Williams, 2008).

Conspicuous differences in findings between the two groups of interview participants from each of the case study institution were described in section 5.2.3 of this thesis. Further analyses of these findings are presented here, deepening discussion and revealing categories of persistent concern in the published literature.

Otago Polytechnic

Perhaps the most striking finding related to staff participation in the development of institutional capacity at Otago Polytechnic was the extent of the sense of trust, ownership and high autonomy held by staff. In the supportive and encouraging environment of the institution, there was a distinct mood of enthusiasm from participants in this study, who felt liberated and empowered to further develop their creative and informed insights in sustainable practice within the contexts of their professional lives. An exemplary quote captures this tone:

"One of [the CEO's] favorite sayings is just do it, ask for forgiveness later. That is our culture. People can do whatever they want; we would rather they did. They will get it wrong but as long as there is learning, we will back them." (Poly, Group Manager, Health and Community, 2011).

Staff were perceived to be engaging with and pursuing sustainable practice through their own, personal approaches within the contexts of their professional roles. The sense of ownership was attributed with having capacity to generate deeper change, at the levels of how a person thinks and feels.

Within the general set of responses confirming the aspects of empowerment and autonomy in the organisational culture, several participants directly acknowledged the importance of leadership and institutional strategies. According to Williams (2008, p. 226), transformative leadership can articulate a vision for wide-spread institutional change, supporting 'collectives' of distributed leaders to enable 'collective vision' to be heard. It would appear that the culture cultivated under the current leadership intends to allow precisely that:

"I surround myself with people who are more intelligent than me." (Poly, CEO, 2011).

The culture of high trust and shared responsibility is in turn generating innovation and the building of expertise from the bottom up. Findings from participants suggested that engagement by staff in sustainable practice has increased both commitment and capacity. Individual understanding has developed, with changes in the way people actually think. In this regard, rather than a bureaucratic addition or competing workload priority, sustainable practice had become a meaningful tool with which to gauge value in their work, with one participant describing a reduction in workloads through application of sustainability principles. This living experiment in the institutionalisation of sustainable practice in a learning organisation has potential to deliver transformative outcomes.

University of Otago

Findings on participants' perceived barriers to action, presented in previous chapter of this thesis, include marginalisation of the issue, and the associated professional risk stemming from that marginalisation. Governance style that is perceived as hierarchical presents further barriers to professionalising contextual sustainable practice. Specific comments about this were made by half of participants, such as:

"Otago is very hierarchical. The culture here, I've found quite unbelievable. In terms of committee structure, it is often people of higher rank who are getting onto those key University committees, and I find that very disempowering for more junior academics."
(Uni 7, 2011).

Such perceptions echo concerns raised in section 2.5.5 of this thesis from literature on network governance, whereby channels of political influence with restricted and unevenly distributed access, raise pointed questions on legitimacy, authority and contribution to democracy (Sørensen & Torfing, 2005). This research is sensitised to questions of who and what is served, and under whose authority. Characteristics associated with institutional management style are identified as key influences on ways forward with transitions to sustainability.

The full set of issues raised in the emergent theme of local cultural relate to wider discussions in the literature on a research industry steeped in issues of the so-called silo effect, lack of application and questions of relevance. Reflection on participants' comments revealed further perceived barriers for day-to-day participation, in line with such literature. These included the perception of unstated institutional priorities, the perception of staff roles that are focussed only on transmitting disciplinary knowledge, and the tendency for knowledge to remain separated

by disciplinary boundaries. Such findings corroborate literature that suggests that appropriate approaches to sustainability are a poor fit with current normative institutional priorities, culture and governance style. Recognition by the Organisation for Economic Co-operation and Development (OECD, 1995), that research universities are very slow to address social problems, especially those that do not fit disciplinary structures, relates to several participant comments on the 'disappearing' nature of the otherwise outstanding, often world-leading research in the area. Much deserved pride, celebratory focus and reward is afforded within the University of Otago toward outstanding strength in research, however like other research institutions, measurable production has become an increasing priority, encouraging outputs in shorter timeframes within defined areas of specialisation. By considering the findings against the literature, the quality of academic freedom resulting from the current context of specialised knowledge production could be described as constrained by disciplinary boundaries that fail to consider the interconnected nature of systems, or the application, impact and value in the day-to-day world we live in.

Findings reveal that learning and teaching were perceived as having lesser importance or prestige than research at the University of Otago, however in terms of creating ripples of change into the wider world, the potential is recognised: from the Vice-Chancellor's Review (University of Otago, 2010, p. 15) comes the observation, "Of course the graduates educated at the University of Otago may well be our greatest contribution to the national good and international progress, because these people will take up positions in a wide variety of professions, as well as in the business world." A proposal in 2008 to advance environmental literacy as a graduate attribute was not ratified. At the time this study was conducted, this dismissive stance on making environmental literacy a required graduate attribute formed part of the context of norms and values of the institution. Clearly, however, the issue had not been forgotten, and the decision has since been made, approximately six months after the interviews for this study were conducted, to include environmental literacy amongst attributes that will be possessed by Otago graduates to varying degrees, in the guiding Graduate Profile and Guidelines for Teaching.

In summary

Significant differences were evident in the local cultures of the two case study institutions. In the atmosphere of endorsement and official permission at the Polytechnic, a distinct sense of ownership and high autonomy prevailed in participants. With regard to sustainable practice, the participants described feeling liberated and empowered to further develop their creative and informed insights within the contexts of their professional lives. Such enthusiasm reflected the

importance of sustainability issues in the personal lives of participants, in tandem with a professional opportunity to engage and contribute.

However, relative findings show that the channels to take action toward sustainability were diminished in the professional lives of many of the participants at the University of Otago. Findings revealed a perceived hierarchical culture, which limited the opportunities to engage in decision making that affected sustainability-related outcomes. Additionally, questions of relevance and application in research emerged. These factors are due at least in part to the local culture of the institution, at once unique to the context, and also reflective of certain established traditions associated with academic culture. Barth et al. (2007) put forward that new cultures of practice in higher education should examine the potential for a sustainable future in an open-minded and participative process, without confirming academic tradition. At a broad scale, the many adherents to the view of a crisis *of* education relate the sentiment to the need for radical internal change within TEIs to fulfill changing roles and expectations, and to maximise the potential to create change toward sustainability within society (e.g. Cortese, 2003; Orr, 1992; Sterling, 2004; Tilbury, 2004; Van Weenen, 2000).

6.6 Economics, innovation and risk

This research has taken each case study TEI as a representative, and influential, microcosm of society, and maintained a focus on internal organisational change, in line with growing stakeholder expectations for catalysing wider change for transitions to sustainability.

In terms of economics, and investment in innovation and risk, context is inseparable when drawing conclusions from findings. While international aspirations for increased sustainability in higher education are characteristically voluntary, the structures and economic realities affecting the function and operation of TEIs at a national level in New Zealand are legislative, regulatory and binding. Under the frameworks for planning, funding and monitoring in the tertiary education sector established by the Education Act (1989), all TEIs are now required to agree to a formalised plan, such that central funding goes toward meeting government priorities. Significant conclusions that have come from analysis of the funding criteria include the effectively common set of central funding criteria and expectations placed on both universities and polytechnics. According to the Tertiary Education Strategy 2010-2015 (Ministry of Education, 2010), the overall orientation is toward the sector's contribution to a productive and growing economy, with the environment seen as something to be "addressed" (p. 7) or "managed" (p. 18). Layers of context are explored in greater depth in Chapter Three of this thesis, with national-level standards, strategies and policies covered in section 3.2.2.

Additionally, it is widely recognised that TEIs are increasingly becoming corporatised. While typically around fifty percent of total income comes from central government, diversifying income has become a priority for management. Financial sustainability has become a ubiquitous concept that fails to recognise a more holistic approach to economics. Under this orientation, the characteristics of sustainability debate (discussed in section 2.2.3 of this thesis), centering on the development of new approaches that deliver both economic and environmental goals to form a meaningful common agenda for policy-makers and industry stakeholders, are elevated. Each case study TEI has responded differently to this economic operating environment.

Otago Polytechnic

Sustainability is pursued at Otago Polytechnic under the guidance of Strategic Directions 2011-2013 (Otago Polytechnic 2011b), within which economic sustainability is a core pillar of a holistic approach. Under this strategy, the Polytechnic has made significant progress towards their strategic goal of being financially sustainable, and in 2010 recorded their best financial result in a decade (Otago Polytechnic 2011a, p. 6), alongside exceptionally high student retention and completion rates.

From a marketing perspective, it could be said the Polytechnic has taken sustainability as smart market opportunity, given the mobility of tertiary students, and the emergence of sustainability rating systems for TEIs (for example, www.aashe.org/stars). Importantly, any potential for a marketing advantage has not been treated simply as a set of additional projects for marketing purposes; according to two participants at a senior executive level, 'greenwash'-type approaches were recognised to deliver an unacceptable gap between rhetoric and reality. A fully embedded approach, with innovation in learning and teaching, and in operations, is acknowledged as essential for laying claim to advancing sustainable practice.

In the absence of strong external incentives to pursue sustainability across all activity, investment in risk for innovation has emerged as a significant theme in this study. The Polytechnic claims to take the approach of actively trialling new approaches and ideas to make transitions toward sustainability, whether developing new course content and teaching and learning processes, or identifying operational practice, supply chain and organisational change that addresses sustainable practice (Otago Polytechnic, 2011b, p. 11). In order to do this, externally developed frameworks and implementation methodologies have been adopted to facilitate change in each of these two main areas, the Sustainable Practice 360 tools being particularly relevant to operations, governance and the business practices of the institution, and the Natural Step Framework being particularly relevant to embedding sustainability into every

education programme. The latter appears to be especially enlightening for some interview participants, who were comfortable in sharing a simplified description of the tool, adopted as their approach to way finding and visioning. Interview responses in some instances discussed the financial viability of applying principles of sustainability to institutional activity, revealing a shift away from the universally prevalent attitude evidenced in the literature of costs as a main barrier, and toward the conception of a new approach, namely, that sustainable practice is cost reducing and not enhancing:

"Already the Polytech's made enormous savings in dollars, and it's really improved the way people feel working here. The opportunities are real, and they're coming to fruition."
(Poly, Sustainable Operations Manager, 2011).

An innovative annual reporting and accounting framework and associated indicators of success have been developed within the institution, described more fully in section 3.3.8 of this thesis. Identifying the business case for sustainability, transparent accountability, demonstrated commitment, and an opportunity to identify problem areas as well as successes are central considerations.

6.6.2 Economics and risk at the University of Otago

At the time this study was conducted, findings revealed costs were widely regarded as a barrier to sustainable practice at the University of Otago. While isolated projects were perceived as having value for marketing purposes, there was an overall aversion to the costs and risks of investment in innovation, identified by many participants across a diversity of professional contexts. Additionally, hierarchical decision-making is perceived as being based solely on the financial bottom line, with staff recommendations failing to make traction in the absence of economic data that explicates a return. Such positions are indeed prevalent across the sector, and as Newman and Abrams (2005) summarised, sustainability often appears to be perceived not as an institutional value or defining factor, but as an agenda competing with other activities for resources. As one participant who has worked at both institutions put it:

"When I worked at the University, I had all these ideas about setting up a group to work with people on sustainability and see what we could do. We eventually got a meeting with the guy in charge of the budget, and he just blew us off. He said, 'what a waste of time;

stop wasting my time'. It didn't fit his agenda, and I couldn't get to see the VC because I'm not important enough." (Poly, Educational Development Centre, 2011).

Much relevant activity is recognised as identifiably taking place at an institutional level, however as evidenced in section 3.2.2 of this thesis, strong parallels and alignment exists between the University's sustainability oriented activities, and external policies and structures including Treaty of Waitangi obligations, funding priorities laid out in the Tertiary Education Strategy, as well as the strategic direction for tertiary education set out in the Education Act 1989. Based on the comparison between internal activity and external policies, it was not possible to assert that the University was seeking to go beyond legal compliance and/or alignment with funding parameters. In addition, annual reporting, evaluation and review at the University of Otago has the usual tendency to favour financial performance, and cherry-pick good news in order to illustrate progress, as revealed in section 3.3.4 of this thesis.

In summary

The wider economic structure within which the case study TEIs operate lacks incentives for the uptake of key transitions initiatives, with a lack of emphatic endorsement or promotion of sustainability from central government funding, long payback periods and substantial upfront capital required for many initiatives in operations, and, according to Haigh (2005), the reductionist thinking of specialised research positioned to attract funding. Despite the constraints of the external context, there is ample opportunity to pursue a business case based on sustainability, and align activity with it, as shown in this comparative study.

Sustainability is increasingly seen from an economic perspective as risk management, both in terms of current and forward-looking social needs, and expectations of stakeholders including staff, students and the industries receiving them. Activities need to change to minimise the risk of being unsustainable in the long term. As shown in this comparative case study, to take the lead to respond to the unknown final form of sustainability, investment in innovation is required. An aversion to investment in innovation can be interpreted as amounting to a perpetuation of 'business as usual', with sustainability merely seen as another agenda competing for resources.

Additional benefits can be found by measuring more of what is valued. Sustainability reporting, conceptually popularised through John Elkington's triple bottom line reporting (see Gray and Milne, 2002), provides guidance for an organisation to report on its social and environmental performance, as well as the due financial performance. The key is in the level of

comprehension of the report, differentiating between a cherry-picking approach, and an in-depth analysis. As was made explicit in Chapter Three, there is distinction between the two case study institutions along these lines. According to Adams and McNicholas (2007), stakeholder involvement in gathering information having potential to raise awareness, sustainability reporting is a further means for learning and engagement and with the issues, as well as being a robust means to address accountability toward social, environmental and governance objectives.

6.7 Conclusion

The emergent themes derived in this study can be considered as both potential barriers and as potential leverage points for change in the social and cultural systems in higher education institutions, in a transition toward sustainable practice. The themes include commitment from leadership and top-level support through institutional strategies, processes and mechanisms. Additionally, the processes for staff participation and institutional capacity development were recognised as critical to sustainable practice, as were information flows and feedback for systemic transformation. Further, themes pertaining to the local culture of each institution, and to economics, innovation and risk were identified as critical factors as TEIs promote sustainability.

The theme of commitment from leadership and top-level support through institutional strategies, processes and mechanisms emerged in this study as a most crucial factor for transitions to sustainability. These strategies, processes and mechanisms take vision through to action in day-to-day practice. With reference to the distinctions found in each case study institution, it can be stated that commitment at the top-level can serve to elevate or marginalise transitions to sustainability.

It is widely recognised in the literature that leadership that is committed to progressing toward sustainability must function in tandem with strong, organization-wide engagement and participation (e.g. Hopkins, 2008; Lozano, 2006; Voss et al., 2006; Wals, 2007). Further, for reasons associated with complexity and contextual practice, knowledge creation and innovations must come from the bottom up (Meadows, 2008; Sterling, 2004; Tew, 2005; Tilbury, 2004). In this study, the presence of incentives such as professional recognition, and the availability of resources including human resources support and funding, influenced staff perceptions of authentic and legitimate opportunities for participation. Where these incentives were available, engagement and participation in new activities, and within new contexts, led to the generation of insights, innovations and tangible action toward institutional sustainability goals. In the absence of such incentives, there was a tendency to call attention to 'someone else' who could take responsibility for advancing sustainability 'somewhere else' in the institution. Other authors recognise, however, that it is not possible for a few isolated individuals to progress sustainability on behalf of an entire institution. According to Sterling (2004), Tilbury (2004) and Wals (2007), amongst others, a networked, systems approach is required to work toward an aspiration of such complexity.

This study observed a potential barrier to systemic transformation where information flows and feedback are restricted within an institution. Constraints on communication across the departments and between the management layers can be related to a corporatised structure, the

associated bureaucratised functioning, and disciplinary division, problems that are ingrained in universities around the world (Cortese, 2003; Greenwood, 2012; Haigh, 2005; Middlehurst, 2004). Fluid, informal communication, resource sharing and reflective feedback were identified as supportive for institutional transitions toward sustainability goals.

Within any one TEI, normative, unstated, shared assumptions and sets of beliefs about how social structures and mechanisms work influence local culture and behaviour. In an atmosphere of endorsement and official permission for advancing sustainable practice, a distinct sense of ownership and autonomy prevailed in study participants. Staff were seen to feel liberated and empowered to develop their creative and informed insights within the contexts of their professional lives. Such enthusiasm reflected the importance of sustainability issues in the personal lives of participants, in tandem with a professional opportunity to engage and contribute.

The wider economic structure within which the case study TEIs operate lacks incentives for the uptake of key transitions initiatives, including a lack of emphatic endorsement of sustainability associated with central government funding. Despite the constraints of the external context, this comparative study shows there is ample opportunity to pursue a business case based on sustainability, and to align TEI activity with it. Sustainability is increasingly seen from an economic perspective as risk management. In taking the lead to respond to the unknown final form of sustainability, investment in innovation is required. An aversion to investment in innovation, however, results in sustainability merely competing for resources as another TEI agenda.

Additional benefits can be found by making changes in accounting practices. According to Adams and McNicholas (2007), sustainability reporting can be a robust means to address accountability toward social, environmental and governance objectives. A key determinant in realising its potential, applicable to the findings in this study, relates to the level of comprehension in reporting, that is, between a cherry-picking approach, and an in-depth analysis. Opportunities for engagement and learning are an intrinsic advantage.

Conclusion

7.1 Introduction

In the rapidly changing global ecologies of which we all are a part, education has a key role to play in assisting society in the transition toward more systemically sustainable worldviews and practices. In taking theoretical vision through to practical action, the central question for many has shifted from why we need to change, to *how* sustainable practice can become a driver of innovation for the benefit of all.

As the global environmental crisis looms ever higher, there is an increasing level of expectation in the public sphere for tertiary education institutions (TEIs) to use their unique and influential positions to assist society in a transition toward sustainability. The sustainability movement in higher education has become a major focus of academic research, however actual progress in reorienting education has been identified as slow by Corcoran, Walker and Wals (2004). A global attempt to focus attention, embodied in the United Nations Decade of Education for Sustainable Development (UNDESD) (2005-2014), is due to culminate, and as such, another cycle for review of progress is imminent.

Individual tertiary education institutions (TEIs) have acknowledged and approached the development of sustainable practice in various ways. Amidst the cultural and social norms found in various geographical and historical frames, an individual TEI will have its own culture, mode of operation and priorities, partially shaped through a shared interpretation of the 'rules' for day-to-day routine and decision making. This research was grounded in a case study of two TEIs located in Dunedin, New Zealand: the University of Otago - Te Whare Wānanga o Otāgo, and Otago Polytechnic - Te Kura Matatini ki Otāgo. The choice of using a case study approach was spurred by the relevance of investigating sustainability transitions in a real-life setting, thus breathing life into emerging theories. According to Stephens et al. (2008), institutions of higher education can be viewed in two ways: either heralded as unique and potent change agents, or they can be perceived as needing significant internal change. In line with the differences in institutional approach presented in Chapter Three of this thesis, insights and understandings have been derived

from the comparison of an institution that is beginning to catalyse change in the wider social systems in which it is embedded, and an institution that, like many others, appears to require significant internal change before it can make progress in contributing to an increasingly important imperative. The learning opportunity resulting from this comparison makes use of relative differences between the two institutions.

This study has progressed the field of enquiry beyond the established areas of published research, such as best practice examples of campus greening initiatives and assessment, to address critical priorities (see Wright, 2007) emerging around consequential questions of organisational governance and social change. The qualitative methodological framework detailed in Chapter Four of this thesis supported the research goal of uncovering elements of governance structures, social processes and mechanisms that affect the advancement of sustainability transitions. Findings are necessarily limited by the context from which they were derived. However, the process of searching, researching and framing has progressed by building understanding across several themes in the literature simultaneously; an intentional approach given the complexity and inherently interdisciplinary nature of the subject matter. In uncovering and explaining relevant structures and processes that govern events in terms with universal relevance, it is hoped this study may also have transformative value outside the context in which it was formed.

The following sections of this final chapter serve to close this thesis with a summary of its most significant content, along with some concluding remarks for going forward. The first section contains a statement of the core achievements of this study. The subsequent four sections then detail each of these achievements with relation to the content of the thesis. The final three sections go on to explore further research opportunities, followed by a comment on changes in the University since the research was conducted, and some pointed lessons for other TEIs.

7.2 Achievements of this study

This study has made valuable gains beyond the initial set of objectives. The following list identifies the specific areas in which important advances have been made, with a more in-depth discussion on each area contained in the subsequent sections.

A critical assessment of the wider context in which Otago's TEIs pursue sustainable practice was made in Chapter Three. Through document review, it was established that there is an essentially common environment in which the case study institutions can align their strategies for sustainable practice. This is a critical point, given the evidence in this study that a TEI business model based on sustainability principles is indeed viable. It is also recognised that internal barriers

may be the greater hindrance to advancing sustainable practice.

Key emergent themes from the divergent approaches of the two case study TEIs, and their implications for sustainable practice, were identified. This comparative study generated a detailed set of insights into how the key elements of governance and culture support or constrain transitions to sustainability in the settings. These potentially universal elements are critical leverage points for institutional transformation.

In examining the contrasts in the professional decision-making environments of each case study institution, this study found evidence of the impact of these institutional foundations on the expectations and attitudes of the participating staff. In turn, promising findings were made in terms of institutional transformation and systems approaches to sustainable practice.

Finally, some reflective insights were gained into the approaches used for research of sustainability in higher education. Each of these statements of achievement are detailed in turn in the following sections, in relation to the content of the thesis.

7.2.1 Sustainability as a viable institutional model within the wider context

The wider context for advancing sustainable practice in Otago's TEIs was described and critiqued in this study. Clear similarities in the factors that influenced, shaped and regulated the operating environment were established. A tension was identified; between the aspirations and expectations at the international level that seek answers to the global sustainability crisis through higher education, and the binding legal requirements and the funding priorities at the national level. At the national level, external barriers such as in the lack of explicit endorsements and incentives in higher education policies and funding structures, can readily be identified as an impediment to progress. This corroborates research by Chapman, Flaws and Le Heron (2006), who argue that institutional realities in New Zealand severely constrain any ambitions for becoming a leading world example in education for sustainable development.

This is a crucial point, as these external barriers could readily be used by a TEI in New Zealand as a justification for the low prioritisation of sustainability. However, evidence of the viability of sustainability as a strategic direction and as a business model was found in the study. Such evidence includes anticipated and unanticipated efficiencies in operations and with workloads as described by participants. Additionally, the Otago Polytechnic Work Environment Survey (Otago Polytechnic, 2010) showed strong positive trends across many metrics associated with work place well being, satisfaction and confidence amongst the seven-hundred staff of the institution. The institution also recorded their best financial result in a decade (Otago Polytechnic

2011a, p.6), alongside exceptionally high student retention and completion rates. This study agrees with Williams' (2008) assertion that it is the internal barriers within an institution that potentially have the greater significance in advancing sustainability in a higher education setting.

7.2.2 Key emergent themes and the implications for sustainable practice

The emergent themes found in this study can be considered as both potential barriers and as potential leverage points for change in the social and cultural systems in higher education institutions, in a transition toward sustainable practice. The emergent themes are necessarily linked to the context in which they were found, however the comparative findings may have universal relevance for transitions to sustainability.

The theme of commitment from leadership and top-level support through institutional strategies, processes and mechanisms emerged in this study as a crucial factor for transitions to sustainability. With reference to the distinctions found in each case study institution, it can be stated that commitment and top-level support served to elevate sustainable practice at the Polytechnic, whereas its relative absence served to marginalise transitions to sustainability at the University.

In this study, the presence of incentives such as professional recognition, and the availability of resources including human resources support and funding, influenced staff perceptions of authentic and legitimate opportunities for participation. These incentives were available in the Polytechnic, and led to broad scale engagement and participation in new activities and within new contexts. This in turn led to the generation of insights, innovations and tangible action toward institutional sustainability goals. However at the University, in the relative absence of such incentives, there was a tendency to call attention to 'someone else' who could take responsibility for advancing sustainability 'somewhere else' in the institution.

This study observed a barrier to systemic transformation in the University, where information flows and feedback were restricted across departments and between management layers, due at least in part to the presence of widely recognised and ingrained problems which appear in universities globally (see Cortese, 2003; Greenwood, 2012; Haigh, 2007; Middlehurst, 2004). In the Polytechnic, fluid, informal communication, the sharing of new knowledge and unconstrained opportunities to give reflective feedback to senior management were identified as supportive for systemic institutional transformation toward sustainability.

Further, the local culture of an institution, which can include the governance style and the unstated institutional priorities, were found to impact on the perceived opportunities to engage

with transitions to sustainability across professional contexts. In an atmosphere of endorsement and official permission for advancing sustainable practice in the Polytechnic, activity was action based, learning was internalised, and diverse, contextual responses emerged. In the University, the professional risk associated with the marginalisation of sustainability, and hierarchical structures served to diminish engagement and subsequent learning and innovation.

Finally, in taking the lead to respond to the unknown final form of sustainability, investment in innovation is required. There was significant evidence of innovation across a diversity professional contexts in the Polytechnic, Additionally, deep changes in accounting practices assisted in stimulating engagement and measuring accountability toward social, environmental and governance objectives in the Polytechnic. In contrast, the University was found to approve previously proven or established transitions practices, with the goals of attaining marketing benefits or financial savings. A cherry-picking approach was taken to social and environmental sustainability reporting, offering a limited account of practice based on the selection of 'good news'.

7.2.3 Real opportunities for participation, and the impact on institutional transformation

Through an analysis of the perceived opportunities for contextual engagement and participation in transitions to sustainability, evidence has been found in this study on the impact of institutional decision-making environment on the expectations and the attitudes of participants. Expectations for change are brought into day-to-day decision making within professional roles, ultimately influencing the aggregate institutional response to sustainability goals.

Different approaches were identified as having been taken by participants in each of the case study institutions. A sense of ownership, pride and autonomy at the Polytechnic was found to result from a context of high expectations for change and sanctioned opportunities to contribute to accepted, supported and encouraged institutional norms. Staff were seen to feel liberated and empowered to develop their creative and informed insights within the contexts of their professional lives. This was in contrast to the isolated, independent activity and sense of professional risk associated with relatively low expectations for action and a lack of formalised structures at the University.

Leverage points for transitions toward sustainability in higher education institutions include explicit policies, dedicated institutional resources and incentives including professional recognition. Such tangible mechanisms communicate importance, and are essential for liberating the widely held enthusiasm for taking vision through to action. Systemic approaches at the

Polytechnic demanded individual response and reflection right across the institution. A very high level of consensus on the institutional strategy has been met with real opportunities to participate.⁷ Engagement with the principles throughout the institution has generated new knowledge, new understandings and new ways of thinking. Institutional innovations and commitment to transformative outcomes, that are potentially significant for catalysing change in the wider social systems outside of the institution, can be identified, such as in the fields of open source education (see Open Education Resource Foundation, 2009) and a commitment to affective learning (see Shephard et al., 2011). Sustainability has effectively been a driver of systemic change, action based learning and contextual innovation, and the normalising of practice.

This contrasts with a more selective institutional approach at the University, where sustainable practice appeared to be perceived by senior management as just another agenda competing for resources. Contrast was evident in the sense of individual responsibility. Academic and general staff participants had a tendency to look to 'another' to engage with and implement relevant practices. As such, contextual, professional experience and associated learning was limited. Engagement and innovation toward the institutional vision failed to flourish.

7.2.4 Insights into approaching sustainability research

Problems around the definition of sustainability continue to be a persistent feature of discourse, despite ongoing attempts to dissolve the conflicts between environmental and economic values (see Dryzek, 2005). Within a co-evolutionary or participative management approach, there will be a diversity of knowledge and experiences, of guiding images and ideals, and of influences in the network of people making decisions within and/ or on behalf of any institution. It has been shown that perceptions of risk are culturally informed and adopted according to an individual's self-defining values, in the instance of highly polarising topics such as climate change (Kahan et al., 2012). Attempts at sustainability praxis are, therefore, innately controversial as disruptive, transformative change is sought by different people in different directions in a complex decision-making environment.

This study moved beyond the established descriptive style of much case study research in the area (see Corcoran et al., 2004), to generate a critical approach that utilised relative differences between two institutions that otherwise have much in common. This comparative case study, of an acknowledged leading institution in the field and an institution taking its first steps, was able to

⁷ In line with the critical realist philosophy applied to this study, it can be stated that things that are commonly construed exist objectively in the world. Refer to section 4.2.2 for further discussion.

throw into relief some of the unspoken sentiments of the general and academic staff of the institutions, to investigate potentially universal phenomena in a real-life setting. This approach to sustainability research in higher education, which uses 'data to tell a story', is a 'tempered radical' approach that aligns with the academic culture of the higher education climate (see Adrianna Kezar et al., 2011, Meyerson, 2001). For this reason, the approach has inherent potential to leverage change in TEIs.

Personal reflection by the author, previously unfamiliar with social science approaches, has offers an insight for others in a similar position who are approaching sustainability research. It was found that a main turning point in making use of the data, and in the thesis in general, came about only through gaining an adequate understanding of the methodology. For this reason, familiarity with methodologies when crossing disciplines is advocated as a first step for any researcher seeking to cross, or blend, boundaries.

Finally, despite the level of hope afforded, the higher education sector as a whole, and research universities in particular, do not necessarily offer a good fit to the task of evolving and disseminating new world views based on real-world problems. There are inherent industry issues, including the so called 'silo effect' of disciplinary separation, lack of application of research outputs, and the slow address of social problems outside of disciplinary structures. These issues are discussed in Chapter Six of this thesis.

7.3 Further research opportunities

Several opportunities for future research were identified throughout the research process for this study. The examples presented here include a participatory action research approach, research from a planner's perspective utilising the same case study selection, and research into the application of theory to practice in the formalised decision-making mechanisms of boards, committees and advisory groups.

Published research reveals participatory action research as an approach that holds much promise for transitions to sustainability in higher education. Action research is a reflective process for progressive problem solving and mutual learning. Expertise and insight is contributed by both researcher(s) and participants, and, according to Greenwood (2012), it is "based on a holistic, systems understanding of the complexity and dynamism of society's problems, and on the premise that all relevant actors have key knowledge and actions to contribute to the analysis of and solutions to problems" (p. 121). In May 2012, the author of this thesis had a taste of the potential of action research, through an opportunity to address mutually interested stakeholders at the

University of Otago. The dialogue-based forum on carbon reduction, organised by Generation Zero, included students, University councillors including the Vice-Chancellor. A first step was taken toward identifying a problem as a group, and establishing engagement for future actions. The forum helped to orient some emphasis in this thesis, with much potential seen for further mutual informing. Action research in its full form involves informed action that is followed by reflection for personal, organisational or societal transformation. As an engaged, rather than abstract, form of social research, new networks can develop through which mutual learning can reach past typical disciplinary and hierarchical boundaries (Greenwood, 2012). Such an approach to research could benefit the researcher, the institution and beyond.

Another research opportunity was identified that could be modified to fit a planners perspective, with a focus on the implementation of the Resource Management Act (RMA). Local and national government resource management objectives for land use, natural resource protection, economic development and social cohesion could provide an interesting learning opportunity for the same case study selection, given the juxtaposition of the campuses adjacent to significant waterways, state highways, the central business district and the residential suburbs characterised by their student populations.

Further research opportunities exist in deepening the understanding of the application of theory to practice. Questions are inevitably raised in discussions on sustainability praxis regarding what action is valid, and under whose authority (e.g. Shove & Walker, 2007). A more structured approach to the study of governance and culture could be approached in the same case study group through a qualitative investigation of the formalised decision-making mechanisms of boards, committees and advisory groups. With significant background work often undertaken within these groups for guiding governing heads and providing recommendations on key themes and activities, the processes, outcomes and experiences of members of these groups are an obvious frame for an analysis of power.

7.4 Changes within the University since the conduct of this research

In the feedback process undertaken to gain permission to identify participants by their professional titles in this study, many participants from the University described the significant changes they had observed within the institution in the period between interviews taking place and the final outputs of this research. While this research can be appreciated as a benchmark against which future progress toward the institutional vision can be evaluated, it is appropriate in these concluding remarks to both acknowledge the perceptions that many participants have of

significant change, and also to note some of the tangible changes within the internal institutional context and mandate (that was previously evaluated in section 3.3.2 of this thesis).

Examples that illustrate positive activity have been included here, in areas including the Strategic Direction of the institution, changes in the Graduate Profile and Guidelines for Teaching, the appointment of an Environmental Sustainability Coordinator, and the launch of the Sustainability at Otago website. In many instances these can be attributed to long-term efforts coming to fruition. Additionally, some participants report a potentially stronger commitment to sustainability from the new Vice-Chancellor at the University of Otago, appointed in August 2011.

Perhaps the most significant changes are those incorporated in the University's lead strategic document, the Strategic Direction to 2020 (University of Otago, 2013). The incorporation of new terminology introduces new emphasis on the *application* of knowledge, critical thinking and intellectual independence, with the *environment* standing alongside individuals and society as a recipient for enhancement. Change is apparent in the strategic imperatives, particularly the acknowledgment of climate and wider environmental change in the institutional commitment to local, national and global citizenship (University of Otago, 2013, p. 8). Additionally, the University now seeks to develop national leadership and be genuinely world-class in embedding sustainability into campus development and operations

Approximately six months after interviews for this study were conducted, 'environmental literacy' was added into the guiding Graduate Profile and Guidelines for Teaching, amongst attributes that will be possessed by Otago graduates to varying degrees. This addition signals official endorsement to teaching staff in particular, and recognises the increasing importance and relevance of this focus.

The much-anticipated Environmental Sustainability Coordinator, located in Property Services, was appointed in February 2012. According to an interview-based article in Otago's main local newspaper (Elder, 2012), a major function of the role is to strengthen and coordinate the projects that are already happening in a piecemeal fashion. A full time, committed staff member is a significant investment by the University, with potential to coordinate communities of practice to facilitate communication across departments and with institutional senior management.

A valuable communication resource, the Sustainability at Otago website (www.otago.ac.nz/sustainability/index.html), has been launched after long-term efforts within Property Services. It is described on the home page as a portal for all information relating to sustainable management of the University's land, buildings, energy, transport, waste and all matters related to the day-to-day running of the University. The site brings together relevant information, documents and links, describes areas in which initiatives are underway, and acknowledges where there is room for improvement. In this sense, it maintains a reflective

approach, tempering the selective cherry-picking of good news.

Recent changes within the University will provide significant opportunity for individual and organisational learning. While small, incremental innovations can achieve a lot in particular areas, a combined institutional effort has potential over time to lead to an overall transformation or systemic shift. Engaging in the process of taking vision through to action demonstrates excellence that is of relevance to the twenty-first century, proving that moving toward a sustainable future is possible.

7.5 Lessons for other TEIs

While sustainability issues are highly significant in the personal lives of staff, and global civil society is looking to the influence of higher education to assist in making transitions, the means to take action at a professional level are highly dependent on institutional priorities, normative culture and governance style. The following lessons for other TEIs have been derived from the findings in this study.

There is clear evidence of the viability of sustainability as a strategic direction and as a business model for a TEI in the study. Within this, the level of commitment at the top-level can serve to elevate or marginalise transitions to sustainability. The presence of incentives such as professional recognition in an institution leads to innovations and tangible action toward institutional sustainability goals. Finally, communication is essential, ensuring information flows, feedback and the cultivation of trust across traditional disciplinary divisions and between management layers. The pursuit of sustainable practice in an institution can serve as a bridge, creating links within the institution and out in wider social systems of which it is a part. Sustainability is undefined and complex, and can be expressed in a systems appreciation of human-nature relationships; as such, we all have a part to play.

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Appendix 1: Interview guide

Research Questions	Core Interview Questions	Potential Follow-up Questions
<p>1. What understandings and expectations of sustainability policy and vision are held by academic and general staff within Otago's significant tertiary education institutions, and how do these influence the decisions they make?</p>	<p>1.1 What is your working definition of sustainability?</p> <p>1.2 What are your understandings of the existing sustainability policy and vision here, and what expectations for implementation does this give you?</p> <p>1.3 How do you bring your expectations and understandings into your decision making?</p>	<p>1.1.1 Discuss sustainability transitions as a liability, and as an opportunity.</p> <p>1.2.1 Which aspects of policy are most open to flexibility in interpretation?</p> <p>1.2.2 Why are your expectations realistic and achievable?</p> <p>1.3.1 How do you rank the importance of sustainability expectations?</p> <p>1.3.2 How do you integrate this with competing priorities?</p>
<p>2. What has been achieved to date in terms of policy and vision implementation?</p>	<p>2.1 What tangible sustainability transitions have been put in place here?</p> <p>2.2 Why were these particular things chosen for implementation?</p> <p>2.3 How well does this align with the intentions of the institution?</p>	<p>2.2.1 What are the core benefits of these actions?</p> <p>2.2.2 What level of commitment was required?</p> <p>2.3.1 Do you think the intentions of the institution are being met? surpassed? Why?</p>
<p>3. Which key factors are most influential in the effective implementation of sustainability policy and vision within these institutions?</p>	<p>3.1 Which key factors were most useful in achieving these outcomes? (People, agendas, resources, external models, top-down or bottom-up pressure, etc)</p>	<p>3.1.1 What were the main compromises or challenges you had to overcome?</p> <p>3.1.2 What were the critical resources and supports?</p>

	<p>3.2 What main lessons were learnt in bringing about these actions?</p> <p>3.3 How useful is an iterative/ participatory/ reflexive governance approach in addressing the complexity of the transition to sustainability?</p>	<p>3.2.1 What insights/ approaches/ models have developed because of the implementation process?</p> <p>3.2.2 Tell me about any unpredicted outcomes or results?</p> <p>3.3.1 How are these processes facilitated and supported?</p>
<p>4. What are the potential implications for sustainability transitions in the institutions, given the current approach?</p>	<p>(Further analysis of above results with consideration of current discourse and global best practice.)</p> <p>4.2 What fundamental roles and responsibilities toward sustainability can be expected of tertiary education institutions in wider society?</p>	<p>4.2.1 How could these be achieved?</p>

Appendix 2: Ethical procedures

Human Ethics Application: Category B

HUMAN ETHICS APPLICATION: CATEGORY B (Departmental Approval)

University of Otago staff member responsible for project:

Rosin, Christopher. Dr.
Nel, Etienne. Prof.

2. Department:

CSAFE (Christopher Rosin); Geography (Etienne Nel)

3. Contact details of staff members responsible:

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4. Title of project:

‘From Policy to Action: Sustainability Transitions in Otago’s Tertiary Education Institutions.’

5. Indicate type of project and names of other investigators and students:

Masters. Student: Felicity Topp

6. When will recruitment and data collection commence?

9 May 2011

When will data collection be completed?

10 July 2011

7. Brief description in lay terms of the aim of the project, and outline of research questions:

This research project aims to identify and investigate key elements and challenges associated with the implementation of sustainability policy in tertiary institutions New Zealand.

The University of Otago and Otago Polytechnic will be investigated as case studies and the manner in which executives relate and respond to sustainability policy will be a primary focus of the research.

The emerging and complex process of sustainability transitions in both on-campus operations and in disseminated educational material will be analysed in the context of

current discourse on sustainability policy, implementation and governance.

Research Questions:

What interpretations and expectations of sustainability policy do executives within Otago's significant tertiary education institutions hold, and how do these influence the decisions they make?

Which key factors are most influential in the effective implementation of sustainability policy within these institutions?

What has been achieved to date in terms of policy development and implementation?

What are the potential implications for transition governance in the institutions, given the current approach?

8. Brief description of the method:

A set of semi structured in-depth interviews will be conducted with executives and decision makers associated with the University of Otago and Otago Polytechnic.

People will be invited to participate in the interviews on the basis of the relevance of their institutional position / responsibilities to the core topic of sustainability policy implementation. A target number of 15- 20 interviews are desired. Flexibility will be maintained for adding further interviews as needed, likewise this number will be reduced if longer or repeat interviews prove more productive to the study. The majority of desired participants have already been identified, based on the nature of their professional positions. It is anticipated that a snowball or networking strategy will introduce further potential participants.

The information sought will relate to the professional stance the individual holds on behalf of the institution, and will not seek personal viewpoints. Written consents will be obtained from each participant prior to the interview.

The attached Interview Guide gives the basic structure and type of questions proposed for the in-depth interviews. As this is a semi-structured, qualitatively-driven research study, it is expected that the suggested questions will be tailored to suit the participant as necessary, with core interview questions consistently addressing the main issues across all participants.

9. Please disclose and discuss any potential problems:

All persons interviewed during the study will be provided, in advance, with an information sheet to advise them of the nature of the research, what their participation will entail, and that with written consent, their conversations will be recorded for later transcription and analysis.

Participants will be made aware in advance that any professional opinions provided by them on behalf of their institution are likely to be referred to in full or part in the final written output, with possible linkage to their role or title. Anonymity will be afforded should more personal/ critical opinions or confidential material surface during the interview process; a way to indicate the difference between professional and personal opinions will be discussed and agreed upon at the outset of the interview, and acknowledged in writing on the consent form.

The participant can choose to receive excerpts from the thesis where they are being quoted, to state whether they are being afforded adequate protection.

Audio recordings and their transcriptions will be held in accordance with strict University of Otago guidelines, and will be destroyed at the conclusion of the project. As required by the Universities research policy, any raw data on which the results of the project depend will be retained in secure storage for five years (at CSAFE), after which they will be destroyed.

The utmost care will be taken to ensure the safety of the researcher and participants whilst undertaking the interviews.

DATE OF CONSIDERATION:

Signed (Head of Department):

Name of Signatory (please print):

IMPORTANT: The completed form, **together with copies of any Information Sheet, Consent Form and any recruitment advertisement for participants**, should be forwarded to the Manager Academic Committees or the Academic Committees Assistant, Registry, **as soon as the proposal as been considered and signed at departmental level.**

Information Sheet

[Reference Number *as allocated upon approval by the Ethics Committee*]

8 May 2011

From Policy to Action: Sustainability Transitions in Otago's Tertiary Education Institutions.

INFORMATION SHEET FOR PARTICIPANTS

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate I thank you. If you decide not to take part there will be no disadvantage to you and I thank you for considering my request.

What is the Aim of the Project?

This project aims to develop a better understanding of the implementation of sustainability policy in New Zealand.

By taking significant tertiary education institutions in Otago as case studies, it is intended that key factors and influences in transition management will be identified for academic discussion, and insights gained into the challenges and achievements of various approaches in this emerging and complex field.

This project is being undertaken as part of the requirements for the Master of Arts Degree of the University of Otago.

What Types of Participants are being sought?

In-depth interview participants are being sought, based on the nature of their professional position or responsibilities within their institution of association. Specifically, individuals with relevant decision-making or executive responsibilities are being contacted.

Potential participants have been identified either through public information such as the websites of the institutions, or via networking through key contacts. A total of 15-20 interview participants are anticipated for the study.

What will Participants be Asked to Do?

Should you agree to take part in this study, you will be asked to talk about your professional stance and opinions in relation to sustainability policy implementation and associated topics in an in-depth interview of approximately 1-1.5 hours duration. Interviews will be held at a time and location convenient to you.

This project involves a semi-structured questioning technique. The precise nature of the questions which will be asked have not been determined in advance, but will depend on the way in which the interview develops. In the event that the line of questioning does develop in such a way that you feel hesitant or uncomfortable, you are reminded of your right to decline to answer any particular question(s) and also that you may withdraw from the project at any stage without any disadvantage to yourself of any kind.

You may be contacted again and invited to participate in a follow-up interview, should this be deemed useful or necessary by the researcher.

What Data or Information will be Collected and What Use will be Made of it?

The information collected will attempt to cover perspectives, insights and approaches to sustainability transitions and the implementation of related policy. Should you give your permission, the interview will be recorded to allow the researcher to transcribe the content to facilitate analysis. It is intended that the analysis of this content will contribute to current academic understanding and discourse on transition management and policy implementation.

Due to the nature of the research, you should be aware that any professional opinions provided are likely to be referred to in full or part, with possible linkage to your role or professional title. Anonymity will be afforded at your request should more personal/ critical opinions surface during the interview process. You will be given the opportunity to request the provision of excerpts from the thesis where you are being quoted, such that you may respond as to whether you are being afforded sufficient protection in those instances.

Personal details, audio recordings and their transcriptions will be treated in the strictest confidence and stored in accordance with the University's protocol for storing confidential data. The only persons having access to the data will be the student researcher (Felicity Topp) and two academic supervisors, Prof. Etienne Nel and Dr. Christopher Rosin. At the end of the project any personal or confidential information will be destroyed immediately except that, as required by the University's research policy, any raw data on which the results of the project depend will be retained in secure storage for five years, after which it will be destroyed.

You are most welcome to request a copy of the results of the project should you wish. Alternatively the results of the study may be published as a Masters thesis, which will be available in the University of Otago Library (Dunedin, New Zealand).

Can Participants Change their Mind and Withdraw from the Project?

You may withdraw from participation in the project at any time and without any disadvantage to yourself of any kind.

What if Participants have any Questions?

If you have any questions about the project, either now or in the future, please feel free to contact either:

Felicity Topp
University Telephone Number +64 3 4799243
Email Address [HYPERLINK "mailto:felicity.topp@geography.otago.ac.nz"](mailto:felicity.topp@geography.otago.ac.nz)
felicity.topp@geography.otago.ac.nz

and/or:
Prof. Etienne Nel
Department of Geography
University Telephone Number +64 3 4798548
Email Address [HYPERLINK "mailto:eln@geography.otago.ac.nz"](mailto:eln@geography.otago.ac.nz) eln@geography.otago.ac.nz

and/or:

Dr. Christopher Rosin
Department of CSAFE
University Telephone Number +64 3 4795230
Email Address HYPERLINK "mailto:chris.rosin@otago.ac.nz" chris.rosin@otago.ac.nz

This study has been approved by the Department of Geography, University of Otago. If you have any concerns about the ethical conduct of the research you may contact the Committee through the Human Ethics Committee Administrator (ph 03 479-8256). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.

Consent Form

CONSENT FORM FOR PARTICIPANTS

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:

1. My participation in the project is entirely voluntary;
 2. I am free to withdraw from the project at any time without any disadvantage;
 3. This project involves a semi-structured interview technique. The general line of questioning includes sustainability implementation and transition management. The precise nature of the questions which will be asked have not been determined in advance, but will depend on the way in which the interview develops. In the event that the line of questioning develops in such a way that I feel hesitant or uncomfortable I may decline to answer any particular question(s) and/or may withdraw from the project without any disadvantage of any kind;
 4. Due to the nature of the research, any professional opinions provided are likely to be referred to in full or part, with possible linkage to my role or professional title;
 5. Anonymity will be afforded at my request should more personal/ critical opinions surface during the interview process; I can identify these verbally during the interview.
 6. I can request the provision of excerpts from the thesis where I am being quoted, such that I may respond as to whether I am being afforded sufficient protection;
 7. Personal identifying information including audio files, and any confidential information supplied, will be destroyed at the conclusion of the project but any raw data on which the results of the project depend will be retained in secure storage for at least five years;
 8. I may be contacted again and invited to participate in a follow-up interview, if this is deemed necessary or useful by the researcher;
 9. I grant/ do not grant * permission to allow the research to audio record my interview;
 10. I request/ do not request * the provision of excerpts from the thesis where I am being quoted, such that I may respond as to whether I am being afforded sufficient protection;
- * Please indicate by circling.

The results of the project may be published and available in the University of Otago Library (Dunedin, New Zealand). This proposal has been reviewed and approved by the Department of Geography, University of Otago.

I agree to take part in this project.

.....
(Signature of participant)

.....
(Date)

Appendix 3

Raw data—coded interview responses: how expectations and understandings are brought into decision making

Otago Polytechnic coded responses:

I remember the polytechnic identified this need for change internally when they were having a discussion with their staff around 'what is excellence', and sustainability was a key to excellence.

You believe this is a gain for sustainability, based on your understanding. We're not telling you what that is, but based on yours, we'll support you and get out of the way.

Some people would see it as chaotic. Some would say that chaotic perspective provides a lot of openness for creativity. But as we've become more refined, we've had to put more and more in terms of what we hope to achieve for our own future, so we've developed our own long term vision, out 40 years, and a short term vision, how we relate to the Polytech, what's going to benefit our students and clients and our communities in the future.

Our partners are what make us. Without them, we couldn't do the work we do.

The graduate diploma and certificate programmes we have put in place are assessed on action competence. Knowledge is an important strand, we need knowledge. But you also need to tie that knowledge with experience. And those experiences shape how you apply the knowledge anyway. And reflection is an incredibly important tool we have used.

It's been a whole number of things. Aligning their strategic thinking. I've taken their strategic goals and aligned them with sustainability aspirations, so that they can identify what their KPIs are. So we've done that as a business case—what do we need to do, how do we do that. Right across the institution, operationally, teaching and learning, how they work with their community, supply chain, everything. Not just teaching and learning- the whole process.

We don't actually spend a lot of time talking at that level, recycling. It's more the strategic, how is this going to work, who needs to be in the room, how do we ensure people have the right information, that higher level of awareness.

My manager gave me the mandate of going out and getting on with the work immediately. Whilst the policy is being developed in the background, it's very clear operationally what needs to happen around the Polytech, it's not hard to nail what needs done next. I don't have to delve into the policy, it's already a field I've been working in for many years, so I know which way we need to go. There are plenty of examples from overseas Universities and other institutions that have done this work, so that has been my yardstick for how the Polytech is doing.

I feel like I can do whatever I want. To help people gain a better understanding. I have free rein of how I'm going to do that. I feel very supported in what I want to do.

Sustainable practice is not just about what you do, it's about how you think and feel, unless people have ownership of that, there's no way that they're going to make the changes with out kicking up a really big stink! And feeling really disempowered, that's the last thing you want to happen, the community has to have empowerment to make it happen. We don't want to be there forever, we want to give some great understanding, and bring the right people into the room, that's the most important, and facilitating those conversations, then they get to go off and do it.

It is about people but it's also as I say to go back to systems thinking approach, you know you've got that opportunity to embed that systems thinking approach, you know that there's a capacity for the institution to weave a DNA model together, otherwise it's a bolt-on or a nice thing to do on a day when we've got a bit of extra cash. When an institution said to me recently, we'll see what our financial position is like, and I'm thinking, don't worry about it, if that's your view, then that's something that's not actually embedded, it's something you want to see as a project.

First of all, I'm not here to do sustainability to the institution, I made that very clear when I started with Phil. My job is here as a consultant to provide recommendations, to provide support, and show them how they might do it. So it's not about telling them why they need to do it, they've already made that decision. My role is to provide enough support so that I can exit, my job is to build capability and capacity for them to take ownership of the transformation. The institution can stand up and say we did this collectively. One person coming in as a consultant is not going to make the difference, but one person can be a catalyst to allow people to think in a different way.

Really it was moving back to purchasing where the greatest gains could be made immediately. We put in place a purchasing policy. Each time a contract came up, I was asked to comment on it and put in sustainable criteria for each contract, we were suddenly assessing each contract in a different way, which was a big opportunity for change.

Everything is a little bit unpredictable, which departments will move rapidly, that often comes down to individuals in departments. I guess everything is a bit unpredictable by it's nature and we have to wait and see what works and what doesn't.

With regard to the Centre, what it allows us to do is, it provides us with an awesome avenue to say, look, here is actually a good example, particularly of how some of the strategic level has worked, but also just speak really honestly about some of the challenges as well. We can give examples of what the Polytech has done, some of the amazing things that have happened, at that top level with regard to what sustainable practice is, bringing it into the various policy parts, including procurement, management, financial reporting.

I support them with the resources and materials. We have 50 tools that we use, part of the 360 process that we use. This is what my business is; it provides both the systems thinking approach, the DNA model where you actually weave sustainable practice through the institution. If we look at what the Polytech have done, they've woven their own model together, looking at 'Untouched World', Perri Drysdale has developed here own way of weaving sustainability together. What they're all committed to is not having sustainability as a bolt on, not something we add on a nice day when we find we have a bit of extra cash that we might spend on sustainability. It's actually embedded in the institution.

There's only one issue left, it's common to most tertiary institutions, which is the volume of work people do. It's still an issue, but it's an issue with much fewer people than five years ago. I think our efforts to eliminate work ... applying sustainability principles ... not do work you don't need to do, don't waste your time. We've put in a lot of tools to help that.

We've identified some low hanging fruit, easy to deal with. Also some high hanging fruit, fairly tricky, I'd say we've made some fairly gung ho decisions to start with, we've backed off, made some mistakes and moved on, that's all part of the process, that's why this is a customised approach, working with someone, not doing it to them. You learn as you go forward. And also too, there's new fruit, things we have not even considered, things that have opened our eyes. How do we deal with that? We haven't got the solutions to some things, and we see some new opportunities for someone else to pick up, we're going to have to work with local community, we're going to have to work with others, we may have to get some research done on how to deal with some particular issue. So we're always being quite reflective on what we do, and we are redesigning and redeveloping things as we go, that's part of the process. It's a pretty reflexive process, otherwise it just becomes something that's very mechanised.

With an institution like the Polytech, which is in the top five of big employers in Dunedin, when our letter goes out to the supply chain with the requirements for all suppliers to report on sustainability, that is going to have a big impact on the community here. We've got people who took it seriously, and others who just put some waffle in, we are good at seeing the difference, and so we were able to make choices on that basis going forward. It may mean we won't have local suppliers if they can't meet what we need.

You've got to have buy-in with your senior management team. We don't work with people if there is no commitment from the CEO. We've turned down two major jobs, one on an ethical basis, and one where we didn't have a commitment from the CEO, but a commitment from one level down, and it's just not ok. If you've got things working against what you're trying to achieve.

I wouldn't have worked here if it was just Phil working with a top down model. For the first six months I was here, with a short-term contract at that time, looking for me to determine what was the capacity for this institution to actually change. Not only did we have a very switched on CEO and some very supportive people in the top management team, we've also had some very strong drivers in lecturing staff and people who are committed to making this work. We've seen some savvy appointments made. My view, is if anyone wants to work here in the future, unless you can demonstrate you are committed to sustainable practice, forget applying, that's my view.

One of the things we did very early was look at the key tipping points of triangulation, to see what we needed to do in this institution to make a difference. We were looking at it from the institutions over arching perspective, qualifications, courses, we needed to make sure all this was in place to make sure this whole thing occurred from a teaching and learning perspective. We've put in place what needed to happen to provide students that are work ready graduates. How do we unlock student potential? What are the key factors to unlock, to inspire capability? The final thing is we also looked at the balance between what we call action competence. This the difference between being weighed down by knowledge, or being weighed down by activity, have we got this balance? We looked, if we spent too much time just on activity we're going to end up with empty headed freneticism, if we spend too much time just on knowledge, which is often what universities do, we end up with swell-headed inertia. So we needed to look at how we were going to put that in balance.

I think how you use this definition in your organisation provides an opportunity. Yes there can be times when it becomes a hindrance to business as usual. However in the greater scheme of things

if you use that in a long-term perspective, it's often very obvious that this is actually very opportunistic rather than creating any hindrance. It's still the issue with sustainable practice, I think people realise it is a long-term decision-making framework, in that, yes, all of these things are great, but what are the initial steps to getting there? That's where the hindrance comes in. The long-term view, people see it as being reasonably opportunistic ... it's that transition ... that's where people have issues, talking about the detail, people are troubled by sustainable practice, changing habits.

In regard to finding those first steps, it's totally reliant on ensuring you do have a long-term perspective, it requires a vision. As with the Polytech, with every graduate as a sustainable practitioner, is not something we aspire to do tomorrow, even though that would be lovely. How do we prioritise the actions we see need to happen? Again using the framework for Strategic Sustainable Development. The strategic guidelines for prioritising actions: three prioritising questions, again another decision-making tool. This process needs to be seen in totality. Once you've got your vision, and brain stormed some actions on how to move toward that, going from brainstormed actions to actually how do we make a strategic plan? Does the action guide you towards your vision? With a definition surrounding it. Secondly is it a flexible platform? If we just spend a billion dollars on providing infrastructure, how long is it going to pay off? It means we're stuck in that infrastructure for so long, How flexible can we make it. And is it a good return on our investment.

Evaluation is by referring back to the plan—it's just like minutes, have you done this! That's the simplified version.

Defining the role, my colleague, [name], her role keeps changing, so does mine. That's the beauty of being in a small dynamic team, you can do that. As long as we've all got that common vision to start with.

You may not see immediate benefits of the work you're doing, but when I talk about the opportunities to work together, or for a business to become a better business partner, then that is a small change I hope. Enticing people to think more about that is a good thing.

We have tackled to some extent social sustainability, such as fair-trade purchasing, we've tackled that early on for the easy items like coffee and so forth. However, we are only now revisiting that policy and embedding the social side of sustainability somewhat more, for example our banking is not in my opinion as good as it could be, and it has the potential to make an enormous difference ... The policy has been broadened to really look at all aspects, not just the simple ones like recycling.

I guess the chief expectation for me is a continual improvement in our operational sustainability. In reality that involves pursuing many different threads of work, and sometimes putting energy into some, and leaving others to run ... I'm very conscious of setting up systems that are robust and sustainable in themselves, for example if we can get our different staff to take ownership of a thread of work around sustainability, that's of much greater benefit than me having a continuous input into that thread.

I'm conscious people have different expectations from me, and I need to sound out who I'm dealing with then address the issue of sustainability in a way that makes sense to them, and meets their values. I try to make my point in many different ways. It depends on the situation, and the people.

I use a sustainable management group meeting as a sounding board for new ideas, it's important to me that we don't upset people with sustainable change they're not comfortable with.

We got involved with government initiatives like EECA and used subsidies for our feasibility studies.

The other thing I look at is identifying training opportunities for staff. All our builders go through a green star training course, the head of that department is now able to assess green star buildings.

Key factors are Robin Day and his leadership team, empowering people to take this step. That's the absolute key, creating this leadership model to make this sustainable change.

Empowering the staff to make that change, making it easy, in order to do that set up a fund for any bright ideas, and staff were able to apply to that to get that thread underway. If they had a good idea, they could get funded up to \$5000 to achieve it, so really it was a culture of empowerment.

People need a support even to able to feel confident in doing stuff, just a sounding board or a mentor.

On the communications side, that strategic platform requires us to do our utmost to operate in a sustainable way, practice what we preach, so to speak, and that pervades every area. So with our schools, we say we can't teach this, if you're visibly and noticeably unsustainable in what you do.

That strategic platform is where it starts. That flows through. We monitor and evaluate whether or not this is happening, we are just at the conclusion of our annual review process. That involves a review of every school, every programme and every service team every year. It's part of our quality processes, an internal annual review.

This is an example of, how does this affect me personally? Well, I could be on the plane every day. This (video conferencing screen) is now in here. Yesterday, for example, my regular meeting with TEC which would normally see them fly here, 2 of them, we just sat here and chatted away for an hour, it was as good as being there to be honest.

We take this (Strategic Direction 2011-2013) quite seriously, it's not a bottom drawer thing. This is probably the single most important document we've got, it's 4 pages that tells you what we're trying to achieve, our priorities ... we set out to have a balanced approach each year to advancing what we're trying to achieve in the long term. So every year we review these priorities, some drop off because they've been achieved.

The bottom line is, we prioritise through planning. No one person does everything, good old division of labour is alive and well. Over the years, we've honed this (Strategic Direction), so there's just four things that we concentrate on, and so they're easy to keep my head around, and for staff to understand what we're trying to do.

The operational changes have been driven from the senior team, and it would be fair to say staff have been asked to respond to ... we thought the context required urgency, where that approach was reasonable. Where we're at now, we've made a conscious decision to turn it around, the processes, is we want a whole lot more to originate from grass roots now. We feel we've attended to the basics, we've built a high level of consensus around this strategy, we ask about that in our Work Environment survey. Our staff feedback, we get very high feedback from staff saying they

understand this and they support this. (note: The Work Environment survey has been run since 2004, seeks feedback on 80 dimensions, measured social sustainability from staff perspective).

We didn't have to sell anything. We thought we're going to have to train staff, develop them around the issues. We didn't have to- staff got it, they wanted to be more sustainable.

We're trying to build a model of education that builds self esteem, that teaches students how to be self directed and make decisions for themselves without a lot of intervention, it's about building capacity, really.

We've had some of the smartest in the business help us, we've had Barry Law from Christchurch, whose one of the best in the world in terms of action competence. And we're learning as we go.

You do the best you can in the current situation, and you do it in a way that you are continually evolving and learning so you can step forward to your vision of a sustainable future. You need to be able to articulate that vision for your industry.

How to engage with academic teaching in sectors, what do you say? And one of the key things is the outcome statement, what are the learning outcomes. If people agree that futures focus is a good idea, it's a conversation about a future that you want. People will agree about the future much more easily than about the details of now. Most people agree we want a future with genuine wealth, and human needs. The nine human needs in the Natural Step.

I work from the heart. I just have to trust my understanding is a useful one, for the Polytech and for the world. When I read, it is training my instinct, so when I later make a decision, it is a good one. Applying a checklist is too difficult.

Challenge is developing a good vision that other people are quite keen on, helping people engage.

University of Otago coded responses:

Energy prices go up, and my personal strategy is, and that's part of my brief role at the University, I have to look at long-term solutions, it's part of my job brief. And I consider the only long-term solution we have is going towards renewable fuel options. Long-term option would be also coal, I don't consider that to be acceptable, but that's not just up to me. Climate change—I believe in that, and other people don't.

The one that has created the most fed back is the Environmental Literacy one—and quite negative. The feedback that has come in seems to be 'we don't think this is appropriate for our discipline'.

We tend to use things we know work, e.g. sustainable power solutions, rain water harvesting. The costs and risks are too high to consider trying new innovations.

It probably comes down to a cost basis, I mean are we saving anything or not, and at the moment from what I see some of these things don't stack up financially, at least not at the outset, but they might further on, energy saving devices, it's expensive to put them in at the outset, it increases the cost of the project—but over a lifetime it reduces the cost of operation, so we need to be doing education from the outset of the project, to all instigators. It's on a project-by-project basis.

Since sustainability is not a top priority for those who make decisions about expenditures, I don't get approved necessarily what I think is meaningful, believing in climate change and believing in a restructuring of our campus toward more sustainable options.

It was a very interesting academic debate about introducing sustainability into the curriculum, as a compulsory part of the curriculum, and at the end of the day, the committee didn't recommend it, I think we should have. We had a delightful submission from a senior academic saying it was all stupid, it was all wrong, that we are a serious academic institution, why should we be filling our students heads with mumbo jumbo.

If you've got any idea that you want to bring to fruition, I think what you need is a very sound proposal, evidence based, and then going through the appropriate channels... so it might be to CALT, or the Research Committee, and then often I suspect it also needs to make it somehow to that V.C.'s advisory group, because I suspect that is where a lot of the power actually lies in terms of decision making. So there are the formal committees structures, and then there is this other group.

If they want to make it a rule, that would be quite handy, that we aim for 5 stars with every new building. But that rule would need to be part of University policy. Nothing is officially signed when it come to sustainability. The University has a commitment to sustainability but that's basically it. It's not policy, and since it's not policy we can't refer to that. If it was policy to aim for a green star rated building, or a building that is as good as a 5 star building and not care about the rating, that would be a commitment, a start we could live with.

I don't get to implement much, because I don't get to, I'm just a senior lecturer.

And the Green Star tool, we had a project, we wanted to do it, I convince council we should try and get it, so we got some money in the project to try to do it, same with Psychology. It's funny, they do it on a building-by-building basis, so Hunter they ticked off, Psychology they ticked off, but the Plaza building, Unipol building, not. We did go to them with yes, we need to do a 5 star, and council said no, which is up to them to do, basically cost because it's a huge project.

Oh—it has to be formal, I can't just send an email out, because I'm a representative, so it has to go through divisional office. So this is where you're hampered by the University structure. My email goes to divisional office, then it gets supported by [the Dean], so people take it seriously, cause a professor will not necessarily respect what a senior lecturer, professor in another department will not necessarily take any notice of a senior lecturers email. Isn't that sad. But they will if it comes from the office of the Dean, saying, here is information from [Uni 6] with a request for in put, oh, ok, this is serious, we have to do it. It's not just [Uni 6] saying you should recycle your glass bottles.

I achieved a lot with introducing new fuels, and they are now appearing to be cheaper than the old fuels, so it's accepted. But in the beginning, I was laughed at of course, because I said we could burn wood in a commercial building, and New Zealanders didn't do that. We will get further wood chip boilers, because the price is now equal to coal, and definitely cheaper than electricity, gas or oil, so it is a no brainer now, fortunately, but I started six years ago.

I think you have to go through the proper—you can't go over anyone's head, because it would not go down well. Like I could never ever bypass the Dean of the school—it has to go through divisional office, and it's actually to our benefit that it does, because I've, he will support it, I've never come across an instance when it hasn't supported something.

We look at adapting the use of buildings, we look at waste stream management. We're relatively focussed on energy, we have an energy manager. We've just embarked on an energy savings campaign, given the cost of energy is going to go up somewhere between 50 and 100% over the next 10 years. We're quite focussed on that. Although we don't do formal lifecycle costings at the moment, a lot of it is looking at things and saying, ok, if we do this and it costs this, but over the life time. We don't have anything formal at the moment.

I was on the working party that recommended the establishment of ESAC, and I quietly said, well actually the sustainability coordinator will be the member, and I won't have to be on it. Well, we don't have a sustainability coordinator, [name] is just acting, so I'm on it.

I have to prepare reports, and I make clear what I want to have, when it comes to heating options, the most environmentally friendly option. Renewable fuels is for me top priority. If I don't get it approved, there is not much I can do about it.

In terms of education, it's interesting from a property services point of view, it's about people that are interested.

I've got this idea, I really think we should go for it for this, this and that reason, and then it gets nowhere. You finish a report that someone's asked you to do, and you don't get any feed back, or it doesn't ever get endorsed. The Master Plan hasn't been endorsed by the university council; it's been acknowledged, but it hasn't been endorsed. As a professional, that's quite frustrating.

Because we lack that formal policy and structure, we've now got ESAC starting to do that work, there's a whole lot of people doing that guerilla stuff out there, over and above their normal jobs. I've got a couple of people here who should be doing other things, and we're diverting funds from other things so that they can do sustainability things, basically. There's a tacit agreement that it's done, there are informal things.

The key factors are bottom up pressure, and a series of champions. Individuals in the network.

The change in my attitude to needing the (green star), we've come to the point where we can say we can do the right thing without spending all this money in terms of consultants putting bits of paper together to get a certificate. Remembering if you build a code compliant building, (NZ Building Code), it'll be somewhere between 3-3.5 stars, because of all the requirements built into the code. The move from code to 5 star is about 5-7% of capital cost. However the move to code compliant to 6 star could be 15-20%. The economics are not robust enough I don't believe at the moment to prove the value over the life cycle.

The problem with guidelines is that you end up replicating the green building council, you get a point for having a bus stop outside your building, well we've got no control over that, and you get a point for having a shower for cyclists. Whereas the big ticket costs for your building are energy, water, waste, and I supposed embodied energy too ...

I read an opinion that sustainability should be thought of as a series of actions, that are broken down, on how to save energy, water, how to buy from the right sources, broken into a series of elements, rather than 'managing our resources so we can meet the needs of future generations'.

I think the committee as an idea [ESAC] a brilliant idea, because I really think that there needs to be more communication between the academic and general management sides of the University, and if I didn't go to ESAC meetings, I wouldn't know anything about what academics are doing in the field of sustainability, or if they're even interested.

When it comes to other means, to improve energy efficiency, changing equipment, they come with paybacks and that's how it's approved, because it usually comes with spending.

The accounting bottom line is the challenge. Preparing reports always considers the fact that it is always coming down to cost-benefit, if not other legal requirements that make us do things. But it always comes down to cost-benefit. Potentially reputation at times.

It's very muddled at the moment, because I'm not the Sustainability Co-ordinator, I'm just doing the work. And because ESAC don't have a co-ordinator, they're frustrated because the system's not working properly, it's cut up into little pieces.

The Master Plan document that's out there in the public is only a tip of the iceberg. There is almost 20 different working papers that go with the Master Plan that are only used in-house, and most of them have some aspect of sustainability built into them The sustainability analysis report, which I don't think was released to public, was fairly comprehensive It's not part of formal reporting, we don't have any formal targets, although we may have actual energy savings targets.

You have to be very good at selling something, you've got to be practical, you can't be a righteous ranter, because it won't get you anywhere. You've got to find the selling point for these issues so people sign up. If you say, we have to do it because I want to save the world, you're not going to get yourself taken seriously. You've got to keep your lefty greeny flag waving tempered by professionalism, practicality, an understanding of the bottom line, which is marketing and money.

It's particularly difficult to communicate with the students, but the new website will have facebook and twitter, so we'll be able to get feedback and inform people real time ... at the moment, it's a bit primitive, but we know how we need to do it.

Another aspect from an educational perspective is not the campus and the nature of the services, it's us, by us I mean the academics, the VC, the cleaners, everybody associated with the institution, through their behaviours, through their stance on issues, their public appearances, their presence within lectures, they almost inevitably become role models for people who are susceptible to role models In terms of categorising what's happening, I would put members of the University as role models right up there, as something we need to look at in great detail.

Sustainability is embedded in what we do, a building must be compliant. But there's no policy environment to work in here.

I do what I can in my own little bit—I'm lucky. But there's no way for some.

One of the recommendations of that report was to create the committee, ESAC, and then as a consequence they needed somebody full time as sustainability co-ordinator to report back to ESAC. It was originally meant to be in the VC's office, then it was decided that it would probably work better at Property Services, because most of the coordinators work is practical day-to-day application of sustainability principles, operations management is where I personally think it works better. I imagine somebody based in Clock tower might feel quite isolated, and be dealing with high-level policy that may not actually turn into anything practical in the long run.

Heads of Department need to be facilitating across the board conversations for their teachers so there's a coordinated curriculum mapping to find out if, for example, if Environmental Literacy were to become an Attribute, for example, ok where might our students pick this up? Are we

teaching this at all? Which papers? How is it assessed? And so forth. Now not many departments go through this process. It's better in the more vocational professional areas, mainly because their accrediting bodies are insisting that they show evidence of the students meeting a set of attributes, which may be slightly different from the Otago attributes.

Appendix 4

Raw data—coded interview responses: achievements to date

University of Otago coded responses:

There was a period when [ESAC] didn't meet at all, then it started up again last year. Now it meets regularly again every two months.

The lack of a formal policy and a formal target hinders what we do.

Some of it comes down to just one guy over at property services, who seems particularly keen on sustainability. I've talked to University architects, and they've been very supportive I think. The sort of things I'm thinking are low-energy electricity, low-energy light bulbs and that sort of thing, a certain amount of recycling, a certain amount of composting, a certain amount of energy efficiency in the modern buildings, some commitment to sustainable materials. But in every respect I'm sure it would be possible to interrogate the details and do much better.

Universities have a role or a responsibility to walk the talk. We talk the talk a lot. You would be really amazed if you started looking at who's involved in climate change research, climate change stuff, at this University, a lot of people doing a lot of stuff. But not reflecting that in our actions as a wider University. We do have a responsibility to walk the talk, control our emissions, our waste streams, all act as guardians for the future.

The biggest issue we really have is sustainable public transport, which is of course outside of the Universities hands.

I'm constantly amazed at the number of academics working in the area of sustainability, but there's not a great connection between academic output and the actual organisation and how it responds to issues.

The sustainability group, the Advisory group has been working hard on its webpage and annual report, they've sent them to the VC. I'm not sure if the new VC will be any different.

Policies ... still getting there. We need an environmental policy Something like the University of Waikato Calendar's environmental policy—this is what we'd like to see, this is what we'd like to see. I'd give it a two-year frame work, because it's something that will have to go by Council, potentially will have to go to Senate. At ESAC, we want to have a policy like this. It will go through Property Services, potentially through HR, through the policy division at the University, it will be looked at with fine tooth combs by lawyers.

I think it's at different levels, and different places, from what I can gather, you go into these separate departments, zoology, botany, physics with bob Lloyd, Health Sciences—the person who looks at healthy housing, Phillipa Tooker? They're already looking at environmental health issues. This is where UO in Wellington and Canterbury are good to look at, environmental health and urban planning, from a public health perspective. Bob Lloyd in physics, research groups like CSAFE and NERI, centre for peace and conflict, studies for social well being, centre for poverty alleviation with Tony Binns, all those.

I think the university will look after things once the seismic strengthening of things like the Clock Tower building are done.

So there's a distinct lack of policy, we are way behind Australian Universities, and a lot of that is to do with reporting criteria, in Australia they've got NABERS, which is all about emissions reporting, they've got targets to reduce to 1990 levels by 2022. They are required to report, they have to do it, there's a lot more focus on it in Australia.

I think they have made a lot of progress, considering it has only been the last few years that it's been happening.

That's definitely an HR thing. They have created it, and advertised it, and they will re-advertise it. They were disappointed at the standard of applicants, and they want to get it right. I know ESAC is hoping we'll get the standard of applicant like Dr Kate at Canterbury University, when she was in that role.

The vision is only that, a vision, not a policy, and they're aware of that, and that's why they want to have things like the travel policy and an environmental policy, but they don't want to just go and copy everything that other institutions have done. They are very aware if they look as if they're just copy-catting, they want to be really genuine about it too.

I'm not going to agree it has been acknowledged ... only very recently. Five years ago I think you'd be hard pressed to find that it was acknowledged, but maybe now, maybe there is something that is actually in some forms of statement there.

In terms of implementation, it's about a clear policy. It's about somebody standing up and saying- I mean, we do a lot of stuff, there's a lot of people are doing a lot of stuff, and it's very much guerilla stuff. A number of departments run food composting, and we now run the recycling, at that level there's that feel good stuff.

It comes from all those things, but I actually think perhaps it's more practical than that, it actually comes from a particular building project, for instance the Hunter Centre. When we started developing it, there wasn't a green building tool for educational buildings in New Zealand. We were part of the pilot along with Canterbury, Waikato and Auckland. We spent quite a bit of time working with the Green Building Council developing that, and we used the Australian Office Tool as a sort of guide. We had hoped, looking at it on paper, we would get a 5, and we believed we would get a 5. But a considerable amount of money later, and we contributed to the costs of developing the tool, we ended up with a marginal 4. And the costs, we decided not to pursue that. And subsequent to that, when the tool was approved, and we used that for Psychology (building). Psychology, we would get a 5, from a design point of view, not from a built point of view. So we spent a lot of time thinking about it, and we won't go down the line of going for accreditation, or the starrng, on our buildings. However what we will do is apply sustainable design concepts around energy, around water, transport and the recycling of materials, and those sorts, construction waste.

Low-hanging fruit are things like recycling and energy savings, both save the University money, are easily promoted and understood by staff and students. Something like procurement is fraught with sensitivity ... anything that has a political connotation that involves criticizing central government policy or big business is something the University doesn't want to look at at the moment. I think when we do start fiddling with the procurement policy, that will be the most difficult. Recycling, energy management, water, even [the] landscaping concept plan for the

campus with awesome ESD principles ... that stuff is all easy, but procurement, and anything political, nup, definitely not.

The Plaza building is around energy efficiency, water conservation and reuse, those are the main things. The things around transport weren't really, people walk there. You get 440,00 visits to Unipol annually, we believe you'll get more than that with the new Plaza. There were some other issues with the stadium site, it was a contaminated industrial site, there's things like encapsulating the waste, treating it or moving it offsite.

The university has a sustainability policy, I suppose you could call it, in terms of the Environmental Sustainability Advisory group, we have a kind of draft policy we're trying to get formalised. The Masterplan, sustainability was very high in terms of the masterplan, quite substantial.

There are a number of people interested in sustainability, for instance Sarah Walton. Sarah's 400-level management paper do a project each year. CSAFE do quite a bit in terms of that.

I did a lot of improvements already by changing and improving the Building Management System, the control equipment here on campus. It didn't come cheap, probably 1.5 million over the past 6 years, just to have the software, hardware up to scratch, to improve the performance of buildings gradually. My background is electrical engineering, and I've dealt a lot with heating, ventilation, air conditioning, so I know this gear is required. I had to improve it, because otherwise we would have been struggling in the near future, because the old system was just not maintainable It was a very old infrastructure, and we had to replace a lot of controllers, which were not working reliably, and that's where the costs came from. It's a big campus, and we can basically control all major buildings from our terminals We are reducing energy waste.

The big issue universities worldwide refuse to deal with is academic travel. I understand that as an academic, you need to be out there, publishing, presenting. We're almost being dishonest about it, looking at water use and the easy stuff, without acknowledging travel is a big issue for us. Whether we do off-sets, and the accountants will say, we're in a constrained fiscal environment, why would you pay for a few trees to be planted? And then, you can't guarantee whether they've been planted.

I'm trying a 'lessons learnt' document for post-occupancy review, to look at a project and improve what we do. This is important for sustainability stuff.

Kerry runs workshops on Education for Sustainability through our professional development programme.

There is history behind it, the hospital was facing a very expensive infrastructure upgrade, and the hospital said, no, our core business is treating patients, we don't run boiler houses. So one state entity, the Hospital, and Meridian, another state entity, and the University, another kind of state entity, came together and said how can we make this work? So Meridian took on that responsibility, to retrofit the boiler house and make sure they could recover the costs and run the operation, that's why they took over. We at the same time connected to it. Before we had coal boilers on campus that were due for replacement, so it was a very meaningful step at the time, not to retrofit the campus boiler system. Since they put in the bag house in their emissions are very minimal, they burn coal as good as it gets. It still has carbon dioxide emissions, but in terms of particulate emissions (FT: 93%) reduction, they have enormously improved on the previous setup. But we paid for it, and Cadburys pays for it, and the hospital pays.

For TEFMA, we produce the guidelines for the benchmark survey. How you get those figures ... the survey itself, there's a lot more to the survey, and our number changes each year. We do the survey each year with Otago, for TEFMA. We answer the questions. You don't have to fill in all the areas, it talks about liability, it talks about cleaning and waste, energy consumption, carbon emissions, grounds maintenance, security, water consumption. And out of that I extract the information and benchmark Otago against Melbourne, Auckland, University of Tasmania, University of Adelaide, Hong Kong. They range in size from 12,000 efts to 60,000 efts, they all have medical schools, all research intensive, and all CBD campuses, embedded in a city. It's a self assessment tool: 'not implemented', 'partially implemented', 'fully implemented'; strategic insight planning, and you come up with a score. Concept design, construction management, resources, energy and water.

Because we lack that formal policy and structure, we've now got ESAC starting to do that work, there's a whole lot of people doing that guerilla stuff out there, over and above their normal jobs. I've got a couple of people here who should be doing other things, and we're diverting funds from other things so that they can do sustainability things, basically. There's a tacit agreement that it's done, there are informal things.

The [coordinator's role] was advertised last year, but were dissatisfied with the calibre of applicants that they got, because the job is not sufficiently valued on a general staff pay scale to attract somebody who has sufficient experience and clout to do the job properly. It's not that Property Services have given up on the idea, they're just struggling with HR to get that job afforded a salary which is representative of the seriousness of the position, and that has taken some time.

Some of the things I've seen happening here that are very positive relate to primarily to camps sustainability. I get the impression that over the past decade, this institution has progressively engaged in its need to make the campus more sustainable, and it has made a series of quite important decisions on how to do it. That's not to say it can't get better in all sorts of ways.

The change in my attitude to needing the (green star), we've come to the point where we can say we can do the right thing without spending all this money in terms of consultants putting bits of paper together to get a certificate. Remembering if you build a code compliant building, (NZ Building Code), it'll be somewhere between 3-3.5 stars, because of all the requirements built into the code. The move from code to 5 star is about 5-7% of capital cost. However the move to code compliant to 6 star could be 15-20%. The economics are not robust enough I don't believe at the moment to prove the value over the life cycle.

We've moved to a point of saying we'll build code compliant buildings, with a focus on water, energy, waste, transportation.

If you follow the guidelines, it doesn't really matter whether you call it green star, if you just use the tool and build buildings according to their ideas, you have higher productivity for staff, lower energy consumption, a better performing building, and you use different materials.

It's about policy, it's about leadership, it's about I want this to be the way it is. In the States, they have the Universities Presidents Compact on Climate Change, where universities are signing up to this particular standard. Inside their own Universities, and as a group, they are demonstrating that there is a commitment, they are reporting and bench marking.

ETS is already added to our charges, whenever we burn coal, ETS is put onto the fuel. It is part of the customers. We pay the ETS charges. 50% is charged onto the customer, 50% is paid for by the

tax payer, it will change again next year when the other 50% comes on top of that. It's still a small proportion, but it makes a difference. Wood fuel is now very competitive with coal, since coal prices went up. But it's not the only reason why coal prices went up, Ohai mine closed here, it was a local mine. We get now a blend of coal, and Energy for Industry (Efi) is in the same situation, gets it from the west coast, which comes with higher transport costs, it came with 70% higher costs for us on campus getting heat supplied by them. All this together makes wood chips for us very competitive.

Efi burn wood chips as well, they did a wood chips trial, and they will introduce more wood, and they have a subsidiary who deals with wood (FT: WoodeNZ) We actually buy wood from them currently, because they won the tender for our two wood chip sites on campus.

I feel like the University has tried to address the lack of coverage and the lack of meaningfulness by appointing the resource planner first, and hoping they can expand their empire at a later date. I mean, because these new positions as planner, sustainability coordinator, strategic architect, they're all brand new positions for the University, it's very difficult for HR to grasp that these positions need to be paid at the top end of the general staff pay scale, these people have masters degrees and extensive experience, and they're the kind of people they want, but because it's a new concept, getting the money behind that side of strategic operations management has been slow.

I think the committee as an idea [ESAC] a brilliant idea, because I really think that there needs to be more communication between the academic and general management sides of the University, and if I didn't go to ESAC meetings, I wouldn't know anything about what academics are doing in the field of sustainability, or if they're even interested.

The Master Plan document that's out there in the public is only a tip of the iceberg. There is almost 20 different working papers that go with the Master Plan that are only used in-house, and most of them have some aspect of sustainability built into them.... The sustainability analysis report, which I don't think was released to public, was fairly comprehensive.... It's not part of formal reporting, we don't have any formal targets, although we may have actual energy savings targets.

Otago Polytechnic coded responses:

If I was talking about it from a polytechnic-wide perspective, this is the direction we are heading in for all our programmes. A leading area would be this school, midwifery. Since 2006 we have completely redesigned our programme. We used an idea used elsewhere—a satellite course, online, with intensive block courses to get to know each other, and small groups in different areas to teach skills. And because it's collaborative, there are more people putting effort into the resources.

Already the Polytech's made enormous savings in both dollars, and it's really improved the way people feel working for the polytechnic. The opportunities are real, and they're coming to fruition.

The old education models of pouring stuff down people's necks are on the way out. It's an engagement—I'm coming to the table because I need to understand more.

One of the big challenges is to walk the talk. We talk to businesses about being innovative, having a more flexible working environment, ensuring those policies are reflected in our own centre is a day-to-day struggle. Even recycling, in our own building! Which seems so insignificant in the scheme of things, makes us all feel like we're doing our part. From those hands on things, through

to ensuring we have created a very clear strategy in the centre, ensuring we are very transparent in our communication, our partnerships are being honoured, those are all very important.

In other cases you get instant satisfaction, by seeing the biodiesel up and running, and businesses loving it, and hearing that their vehicles are actually running better on it, and more efficiency so they're saving on fuel, and it's great for the brand, so that's immediate feedback.

If we can encourage our staff to not reinvent wheels, to make use and re-use an adapt teaching and learning resources, we're making very powerful statements about sustainable practice. Of course that parallels exactly what we're suggesting with respect to use of products at the end of their life, can you re-use them, adapt them and so on.

With the Annual Report, there is a transformation in the whole process. From last year's 37 pages of financials, with a bit more information packed around it, to a report where we're reporting on 4 dimensions equally, still a lot of financials for Audit New Zealand, but what we want to see is Audit New Zealand reconsidering the way they in which they audit, in fact what we're saying is the wellness of this institution is not just based on what it's doing financially, you must consider what it's doing in the environment, you must consider it's educational excellence. What we're seeing here is a 93% staff survey positive response, and 78 % completion rate which is one of the highest in a NZ tertiary institution. That with a profit this year, the first in 10 years. When you work in a sustainable way, and do it well, sustainability equals profitability, if you want to look at it in that context. A lot of businesses, first off, will it make me money? Constantly we've been trained to think, economics first. And yet we live in a boom and bust society, where one year's good and the next year's bad, and that's not a sustainable model either.

The Polytech has gone through an interesting process recently, about how are we moving towards being an adaptive, sustainable institution, I've fed back into it. It was a process chaired by Phil Kerr, regarding how are we doing right now, with regard to where we want to be, with regard to where we've come from. How are we shaping up, and that was a whole institution process. These processes are so important, and 90% of the time forgotten about. If you can't celebrate what you've done, we are achieving small steps, and reconfirm where we're trying to go, and whether or not those actions align with our vision, are still flexible, viable, then we're going to struggle. Everyone needs to be heading in the same direction. And celebration, it all seems like hard work unless we can say, we've done really well so far, lets celebrate what we've done.

With an institution like the Polytech, which is in the top five of big employers in Dunedin, when our letter goes out to the supply chain with the requirements for all suppliers to report on sustainability, that is going to have a big impact on the community here. We've got people who took it seriously, and others who just put some waffle in, we are good at seeing the difference, and so we were able to make choices on that basis going forward. It may mean we won't have local suppliers if they can't meet what we need.

We've been conscious to walk the talk before we market this I see in the future when we really have it embedded in all our academic courses, it will be a huge marketing opportunity, and that's been identified overseas.

We struggled with how much we were prepared to pay to make a sustainable purchase. We moved to more expensive 4 or 5 star paper, but we reduced paper use by two thirds, so we saved a lot of money.

Just running interviews with individuals about their footprint, and hearing people say, well just doing that questionnaire has really made me think about what I use. It may not mean they will do anything about it, but they might.

The Polytech is a good one, in terms of it's gradual move towards more and more departments picking up sustainable practice, and actually the physical expression of that in terms of the campus environment, edible gardens and things like that, and how they're being used by cookery and O.T. and things like that.

We've never had any opposition, instead quite the opposite ... how come the rubbish bins are full of styrene, how come we aren't recycling and so on, and we had some sage advice right in the early stages, which is don't surrender to people who want you to greenwash. It's easy to put in all that stuff, but unless you deal with the systems, if you spend energy doing that, it'll divert you from dealing with the real issues. So we resisted, I wrote back to staff and said, we'll get there, we're working on the fundamentals, we're working on the systems, the best approach to waste is not to have it in the first place rather than visibly disposing of it well. That means we've got to work with suppliers So we stuck to our guns. It took eight months before we put in a recycling system, and we just wore it; people were impatient, because they wanted to see those visible things, whereas we dealt with the invisible, change systems, change attitudes.

The other thing I look at is identifying training opportunities for staff. All our builders go through a green star training course, the head of that department is now able to assess green star buildings.

I assisted with the programme reviews, and I can confidently say it's in the curriculum, it is there, and it's not an add-on. With some of the departments it is still possibly a bit of an add-on, but in most of the programmes it's there in the way academic staff think.

It's been a whole number of things. Aligning their strategic thinking. I've taken their strategic goals and aligned them with sustainability aspirations, so that they can identify what their KPI's are. So we've done that as a business case- what do we need to do, how do we do that. Right across the institution, operationally, teaching and learning, how they work with their community, supply chain, everything. Not just teaching and learning—the whole process. I support them with the resources and materials. We have 50 tools that we use, part of the 360 process that we use. This is what my business is, it provides both the systems thinking approach, the DNA model where you actually weave sustainable practice through the institution. If we look at what the polytech have done, they've woven their own model together, looking at 'Untouched World', Perri Drysdale has developed here own way of weaving sustainability together. What they're all committed to is not having sustainability as a bolt on, not something we add on a nice day when we find we have a bit of extra cash that we might spend on sustainability. It's actually embedded in the institution.

All the different disciplines have a different idea of what sustainability means to them. And the different departments are looking at the nitty gritty of what they do, vet nursing is completely different from sports and adventure.

We have tackled to some extent social sustainability, such as fair-trade purchasing, we've tackled that early on for the easy items like coffee and so forth. However, we are only now revisiting that policy and embedding the social side of sustainability somewhat more, for example our banking is not in my opinion as good as it could be, and it has the potential to make an enormous difference The policy has been broadened to really look at all aspects, not just the simple ones like recycling.

Also looked at how do we align, how do you unlock potential. You can't unlock potential unless you know what all the bits are. We spent a lot of time lining up the different bits and pieces. We know if we bring it into the teaching and learning programme, it's not going to happen in six months. The academic board is on a three-year cycle. Plenty of warning, we provide professional development for all of them, we tell them sustainable practice is something we have agreed to, yes, right, then if you've agreed to it it becomes part of the curriculum. Either integrated into course, or as separate course Then you're saying, every three years throughout the academic cycle, and renewal and approval of courses, you must demonstrate that you're teaching education for sustainability, you have staff capable of teaching that, or your courses won't be approved. So you've lined things up so you know at the end of a three-year cycle, and this has taken four years to produce, now we can tell people what we've done, not what we're going to do.

In regard to finding those first steps, it's totally reliant on ensuring you do have a long-term perspective, it requires a vision. As with the Polytech, with every graduate as a sustainable practitioner, is not something we aspire to do tomorrow, even though that would be lovely. How do we prioritise the actions we see need to happen? Again using the framework for Strategic Sustainable Development. The strategic guidelines for prioritising actions: 3 prioritizing questions, again another decision-making tool. This process needs to be seen in totality. Once you've got your vision, and brain stormed some actions on how to move toward that, going from brainstormed actions to actually how do we make a strategic plan: 'Does the action guide you towards your vision? With a definition surrounding it. Secondly is it a flexible platform? If we just spend a billion dollars on providing infrastructure, how long is it going to pay off? It means we're stuck in that infrastructure for so long; how flexible can we make it. And is it a good return on our investment.

Some people would see it as chaotic. Some would say that chaotic perspective provides a lot of openness for creativity. But as we've become more refined, we've had to put more and more in terms of what we hope to achieve for our own future, so we've developed our own long term vision, out 40 years, and a short term vision, how we relate to the Polytech, what's going to benefit our students and clients and our communities in the future.

I'm helping to integrate sustainability throughout all the programme documents, and I was working to ensure the people running the programmes new what sustainability meant, so they could articulate sustainability confidently. I currently work on the education for sustainability wiki, part of Graduate teaching and learning, with a course on education for sustainability, so teachers can get credit for doing this course and again so they feel more confident.

Defining the role, my colleague, [name], her role keeps changing, so does mine. That's the beauty of being in a small dynamic team, you can do that. As long as we've all got that common vision to start with.

We can quite honestly talk about there has been real struggle. What happens when a department defines what sustainable practice is to them, but their professional body still hasn't even started to clue up on that stuff. The professional model in the real world, and it's lack of movement toward sustainable practice, and what the polytech is striving for.

Really it was moving back to purchasing where the greatest gains could be made immediately. We put in place a purchasing policy. Each time a contract came up, I was asked to comment on it and put in sustainable criteria for each contract, we were suddenly assessing each contract in a different way, which was a big opportunity for change.

The complexity increases. For all of us in the centre, we haven't had to deal with that before, creating our own centre we have just had to forge ahead. There was no good examples of how that has worked here in NZ, we have just had to forge ahead. You're thinking you're doing a great job, then an opportunity comes along to try a new project, so you stretch yourself, take on a new partnership, the communication becomes a bit more complex. And time constraints, going for funding.

The Centre has just had a review, and I think the intentions have been surpassed. Because we're a small, aspiring team, we're quite hard on ourselves, but the Polytech see that we have done some really great things in that time, and are very happy with their expectations of what we do, and the projects we've created, and our potential for the future.

We run an annual spring well-being programme, for 10 weeks, in it's third year this year A third of the staff are now participating. They have their personal metrics done, blood tests, weight and all that stuff, blood pressure, all sorted out before they start, then commit to whatever is the set of activities they want to do.

As far as the policy goes, a really good part of the Polytech's policy is they're embedding it within the academic side ... it's potentially a far bigger one, preparing people for a different world.

That strategic platform is where it starts. That flows through. We monitor and evaluate whether or not this is happening, we are just at the conclusion of our annual review process. That involves a review of every school, every programme and every service team every year. It's part of our quality processes, an internal annual review.

Because the polytech considers itself as a community organisation, we are very conscious that anything we do is available to the public. Some of the changes we're making, the information is available to the public, we encourage various groups to be involved. We have a few unique avenues to do this—the SHaC green building challenge, the Centre for Sustainable Practice in Central Otago which is offering the first higher level courses in sustainability, we undertake industry training, we have trained a lot of councils in NZ around the Natural Step process.

I think our way of operating is a pretty inclusive way. The opportunities for staff to participate in our decision-making processes are quite significant. Having said that, historically, we've driven a lot of development and change out of the senior team, and so, to be fair, a lot of participation has been reactive participation, although again to be fair, the stuff in here has been stable over 6-7 years, it's been refined. We had eight priorities three years ago. Those priorities came out of a significant staff consultation process. The values came from many workshops run with staff. The division that we set was a participatory one in it's own rights.

Key factors are Robin Day and his leadership team, empowering people to take this step. That's the absolute key, creating this leadership model to make this sustainable change. I remember the polytechnic identified this need for change internally when they were having a discussion with their staff around what is excellence, sustainability was a key to excellence. Second to that is empowering the staff to make that change, making it easy, in order to do that set up a fund for any bright ideas, and staff were able to apply to that to get that thread underway. If they had a good idea, they could get funded up to \$5000 to achieve it, so really it was a culture of empowerment.

Having the will to go and employ someone to look at the work, and identifying the people in NZ who could help, many people here have been head hunted. They are coming into an environment where we want to change.

We've had a requirement that every programme, in terms of graduate profile, is a sustainability practitioner in that particular discipline. There is a different emphasis in each programme, in the health programmes it is more about social sustainability. Nevertheless, our students will be learning about the other dimensions as well, economic, life cycle of the material we're using.

We made a decision with our suppliers, not necessarily to move away, but to hold their hands and drag them into the sustainable space, including offering training through the Centre for Sustainable practice, and encouraging them to undertake that. In some cases they were already receiving that message through their industry magazines, so they know change is afoot. It's a pull strategy.

That's the key to the Polytech's change, it's the key, having that mature discussion within itself, and saying we do have a responsibility to society, we can't sit back and tell our lecturers they have the academic freedom to do what ever they want to do. As a polytechnic, which is slightly more practically focussed than a University, despite all our degree courses, it enabled us to quickly identify that we have a moral obligation and a responsibility to prepare students and young people for a very different world to the one we're living in at the moment. Perhaps because of that close relationship we consider ourselves to have with our communities, we were quick to identify what is needed.

I have a champion in each department—half of them are awesome, the other half I need to work with more closely. People need support to feel confident in doing stuff. Maybe I'm not doing more than being a sounding board. But it also nee to be at the forefront of their minds.

You can only find things out by doing, you can only learn stuff by experiencing, I can't say to you that's a dead end, so don't bother.

For the Polytech, sustainability is a platform for everything that we do, it's a strategic imperative, it is part of how we are defining ourselves and would like to be known, so in that sense, it shapes everything we do. So when we take that into the curriculum, we have a set of underpinning curriculum values that are built into every programme that we offer, and sustainability is one of those values. That means in every programme we offer students are engaged with the notion of sustainable practice, the realities of sustainable practice, again coming at it from the 3 angles. Some areas naturally fall to one of the other, so if you look at the health sciences, the notion of social sustainability is integrated with what they do, but what they appreciate is that if you talk about sustainability, you've got to have a bit of understanding about systems, and ecosystems, and the environment, and that helps put into context what they take for granted as part of their normal practice. We are getting very close to every programme covering all three dimensions, people are appreciating there is a holistic concept here that needs to be understood. You can't just teach students tools and techniques- teach a builder how to dispose of hazardous materials, but taught in isolation, it sort of misses the point, why create the waste in the first place? So that under pinning strategic platform flows through into our core business, which is teaching and learning and qualifications. And what we set out to achieve, it's carefully worded because we can't guarantee that people will do what they've been taught and what they're capable of doing, but every graduate that leaves here will be capable of operating as a sustainable practitioner within their context, so they will know what that means, they will know what the issues are, and they will be equipped to do the right thing. And I think it extends further, because part of the curriculum is the notion of capable graduates. It's not knowing how, or what, it's all of those things but it's actually, we call it the power to perform. Our curriculum intent is to send out graduates who are confident to act. If you want to translate that to a practical situation, it's a carpentry student who's confident to say to his boss, do you realise that that's no good, and you could do it this way, which is a pretty tall order. We won't send every student out that confident, but that's what we set out to do, and that's

what we ask our staff to attend to, processes that build that confidence. And we're seeing that happening every where. It's heartening to see it happening.

The *how* we go about practically everything, is informed by 'is this sustainable?'. Even teaching method. We've adopted significant use of technology, again coming at it from a sustainability perspective. I think we're probably way out front within the New Zealand context in the use of open-education resources.

This is an example of, how does this affect me personally? Well, I could be on the plane every day. This (video conferencing screen) is now in here. Yesterday, for example, my regular meeting with TEC which would normally see them fly here, two of them, we just sat here and chatted away for an hour, it was as good as being there to be honest.

The bottom line is, we prioritise through planning. No one person does everything, good old division of labour is alive and well. Over the years, we've honed this (Strategic Direction), so there's just four things that we concentrate on, and so they're easy to keep my head around, and for staff to understand what we're trying to do.

We had a debate whether to go for 'sustainability 101', or whether to go for 'sustainability integrated' [into the curriculum]. Most have gone for an integrated model, a significant minority for 101 and integrated; no-one's gone for 101 on its own. No one has said, here it is, we deal with it in this course, and then we forget it A bolt-on doesn't work.

We're trying to build a model of education that builds self esteem, that teaches students how to be self directed and make decisions for themselves without a lot of intervention, it's about building capacity, really.

Concentrating on what we know as financial accounting- is like only looking at income statement, forgetting about balance sheet, profit and loss ... a small part of the larger picture.

The message we got back was, don't dare preach this to anyone unless you have your own house in order. So we made the decision back then that we'd get our own house in order, we understood the issues and we cleaned up the worst of our practices, and had a planned way to go forward, and in parallel started to work on this notion of capable practitioners.

Appendix 5

Raw data—coded interview responses: key factors for transitions to sustainability

University of Otago coded responses:

If other universities are kicking our butt when it comes to sustainability, then that is a great weapon for the staff members who all want sustainability to get more action on campus.

That's a VC thing, I think the VC underestimated the level of interest in sustainability. I wouldn't say he's a doubter, but I don't think he's a believer. My personal view, in general, VC's from a medical background, tend to be doubters. My colleagues share that general conception, it's where they come from.

Recommendation making, not decision making, because the final decision when it comes to big expenditures is not up to me unfortunately, it's up to the Chief Operating officer.

We just get staff, through our staff development role, more junior academics who are really frustrated by this system, they can't get into those committees, they feel they haven't got a voice in key matters, that's quite unfortunate.

There are similar courses, departments running similar series of lectures, but they don't share. It's sad, there is no social cohesion.

People really want to do it [contribute something to sustainability], but nobody's assuming responsibility. I'm just following my own initiative.

The energy manager has made a big difference, but this is one facet. There is not a huge amount of political will in the University to go after these processes. It takes a lot of money, a lot of time. We do what we can.

Sustainability is pursued to minimum requirements for kudos and economic reasons. A lot of the new energy stuff is not driven from sustainability, but purely from economics. And then it's a marketing tool.

When an organisation is not well organised, you get a lot of noise, a lot said, but little done. It's very reactionary, with no clear way ahead.

I think initially it's people, it's people who are passionate about the subject and who can articulate it, so they can get people on board. And then, it's what other Universities are doing, especially on the international stage. It's quite often influenced by senior management, because they want to know how far they can get up the ranking table internationally, because international students are very important money-wise, because they don't need any government funding. And for research,

to attract research grants, the University is really strong on research. And then it's the bottom line issues, can this save money if we do this and that. And then at the bottom is, we want to do it because we want to make Dunedin a nice place to live and work.

My understanding from what I see is that it's really driven by passionate individuals. I haven't come across an overall, overarching direction from the council or the VC or anybody like that. It's something that's referred to and it's a nice add on if it doesn't cost anything. that's probably a bit unfair, but ... there is no policy in place or directive that we can run with.

We can't be backed up if we say we want to reuse the materials, the existing materials onsite. I'll go back to that one, somebody challenges that, it would be nice to have something in place, a policy saying basically the University recognises that ... something along those lines.

It is about people, it's about all of us, it's not about any one key driver, although that does help. It's about everyone trying to make change. It's about education of us all too. It would help to have an overarching policy there too.

Pressure from the students, and from the academic staff. I think there's a bit of top-down pressure too, from the VC. We can express our desire to have it to our HOD, then it might go to an HOD's meeting, then it might go to an undergraduate advisory committee meeting, or a postgraduate advisory committee, so you've got these avenues. This is what the environmental studies working party's role is.

There is not a good feedback process, it's poor and disparate. It seems to all be on the whim of the VC, 'do this now', with no real strategy, we don't know what their intentions are.

There is a lot of well-meaning people, but also a lack of structure and processes. It's not intentional, but people are made impotent. It's not just sustainability that suffers from this.

We're not revisiting them enough. The University as a whole, for a institution that is about teaching, research and innovation, it's incredible staid, conservative and difficult to move. There is academic freedom to deal with, [an] academic's role in life is to challenge everything. I couldn't believe how academics talk to each other, they get quite abrupt, rude, aggressive with one another.

I think that communication at the University between the different sectors has always been problematic, there is definitely room for improvement.

Definitely resources, but I think it's more inclusive than that. I think there's a lot of staff and students, like students for environmental action (SEA), when they're mobilised, who do get noticed. I think it's within the Universities mandate and vision. Within that, under that vision, there's always going to be like the travel policy being developed, the campus master plan.

The amount of time afforded to develop new projects is not huge. You need design time for a good building. We only had 10 months for Unipol, you would normally allow a couple of years. They say—don't do it [sustainability integration], so it's low commitment.

It seems absolutely clear (in the States) that some students are choosing which institution to go to. I've seen data on student choice, and the impact that it's having on the institutions in terms of their adherence to sustainability rating systems, their adherence to sustainable investment. So, from the student perspective, or rather the institutional perspective about what the student perspective is, in the States these things are having a substantial impact.

There is no mechanism to say, you chose to do this but it didn't work. You say to the council we don't support this, but they are not receptive, they say we don't care we are doing it anyway.

The accounting bottom line is the challenge. Preparing reports always considers the fact that it is always coming down to cost-benefit, if not other legal requirements that make us do things. But it always comes down to cost-benefit. Potentially reputation at times.

The key factors are bottom up pressure, and a series of champions. Individuals in the network. And the Green Star tool, we had a project, we wanted to do it, I convince council we should try and get it, so we got some money in the project to try to do it, same with Psychology. It's funny, they do it on a building by building basis, so Hunter they ticked off, Psychology they ticked off, but the Plaza building, Unipol building, not. We did go to them with yes, we need to do a 5 star, and council said no, which is up to them to do, basically cost because it's a huge project.

I'm sure certain people who are in charge of money think it's a liability, but most staff don't, they think it's a genuine investment, and it's a plus point in the long run. Unfortunately the people with the awesome ideas are not in charge of the money.

I think [the Dean] also knows that the VC wants this stuff to happen, and he knows ESAC is in a position to really influence change. The thing I have learned, is it is an advisory committee, but it can be quite influential. If we had funding, oh my gosh, we would probably be doing a lot more in the way of having departmental staff advocates in each department, having student advocates, having competitions, that reward students for initiatives, not just with actions but for research. Having a symposium that would highlight this kind of research, publications outlets, forums.

This University is poor in social responsibilities. It's introverted, they care mainly about academic goals. We're dominant here [Dunedin], but we don't give a lot back to improve the city as a whole. Other Universities do community liaison, external relationships well, it becomes a local resource. It's sad.

It's all interpretations of one person's [V.C.] vision, it's inherent in universities, decision-making structures are quite poor.

In terms of implementation, it's about a clear policy. It's about somebody standing up and saying—I mean, we do a lot of stuff, there's a lot of people are doing a lot of stuff, and it's very much guerilla stuff. A number of departments run food composting, and we now run the recycling, at that level there's that feel good stuff. But the big issue Universities world wide refuse to deal with is academic travel. I understand that as an academic, you need to be out there, publishing, presenting. We're almost being dishonest about it, looking at water use and the easy stuff, without acknowledging travel is a big issue for us. Whether we do off sets, and the accountants will say, we're in a constrained fiscal environment, why would you pay for a few trees to be planted? And then, you can't guarantee whether they've been planted.

Can you please tell the Uni there is not enough time to meet sustainability?

Some of it comes down to just one guy over at property services, who seems particularly keen on sustainability. I've talked to University architects, and they've been very supportive I think. The sort of things I'm thinking are low energy electricity, low energy light bulbs and that sort of thing, a certain amount of recycling, a certain amount of composting, a certain amount of energy efficiency in the modern buildings, some commitment to sustainable materials. But in every respect I'm sure it would be possible to interrogate the details and do much better.

How you get those figures ... the survey itself, there's a lot more to the survey, and our number changes each year. We do the survey each year with Otago, for TEFMA. We have to answer the questions. You don't have to fill in all the areas, it talks about liability, it talks about cleaning and waste, energy consumption, carbon emissions, grounds maintenance, security, water consumption. And out of that I extract the information and benchmark Otago against Melbourne, Auckland, University of Tasmania, University of Adelaide, Hong Kong. They range in size from 12,000 efts to 60,000 efts, they all have medical schools, all research intensive, and all CBD campuses, embedded in a city. It's a self assessment tool: 'not implemented', 'partially implemented', 'fully implemented', strategic insight planning, and you come up with a score. Concept design, construction management, resources, energy and water.

Because we lack that formal policy and structure, we've now got ESAC starting to do that work, there's a whole lot of people doing that guerilla stuff out there, over and above their normal jobs. I've got a couple of people here who should be doing other things, and we're diverting funds from other things so that they can do sustainability things, basically. There's a tacit agreement that it's done, there are informal things.

Since sustainability is not a top priority for those who make decisions about expenditures, I don't get approved necessarily what I think is meaningful, believing in climate change and believing in a restructuring of our campus toward more sustainable options.

If they want to make it a rule, that would be quite handy that we aim for 5 stars with every new building, but that rule would need to be part of University policy. Nothing is officially signed when it come to sustainability. The University has a commitment to sustainability but that's basically it. It's not policy, and since it's not policy we can't refer to that. If it was policy to aim for a green star rated building, or a building that is as good as a 5 star building and not care about the rating, that would be a commitment, a start we could live with.

I feel like the University has tried to address the lack of coverage and the lack of meaningfulness by appointing the resource planner first, and hoping they can expand their empire at a later date. I mean, because these new positions as planner, sustainability coordinator, strategic architect, they're all brand new positions for the University, it's very difficult for HR to grasp that these positions need to be paid at the top end of the general staff pay scale, these people have masters degrees and extensive experience, and they're the kind of people they want, but because it's a new concept, getting the money behind that side of strategic operations management has been slow. I think they have made a lot of progress, considering it has only been the last few years that it's been happening. [In tandem with Campus Master Plan]

I think the committee as an idea [ESAC] a brilliant idea, because I really think that there needs to be more communication between the academic and general management sides of the University, and if I didn't go to ESAC meetings, I wouldn't know anything about what academics are doing in the field of sustainability, or if they're even interested.

You have to be very good at selling something, you've got to be practical, you can't be a righteous ranter, because it won't get you anywhere. You've got to find the selling point for these issues so people sign up. If you say, we have to do it because I want to save the world, you're not going to get yourself taken seriously. You've got to keep your lefty greeny flag waving tempered by professionalism, practicality, an understanding of the bottom line, which is marketing and money.

It's particularly difficult to communicate with the students, but the new website will have facebook and twitter, so we'll be able to get feedback and inform people real time... at the moment, it's a bit primitive, but we know how we need to do it.

It's all about people, if you've got the right people driving the ideas who are silver tongued enough to persuade people into doing stuff then you're fine, but if you don't it will remain a low priority on the totem pole. You need to focus the issue on aspects that matter to people who are concerned about image and money, you'll get traction. If you focus too much on we must save the world, you're probably not going to get very far.

The range of ways that the University could respond to whatever we would describe as the current dilemma, certainly I would categorize to one side the role model implications of what we do. The notion here is that we have large numbers of relatively young people coming into the institution, and I think there is no doubt that we do want to have impact or influence over them in all sorts of ways. Probably also no doubt that the major influence in the disciplinary areas, so we want to have influence over the way they interpret English texts. But there is probably a broad acceptance that we would have broader influence over them, and a certain element of that broader influence relates to the institution and the members of the institution as role models for young people.

We tend to use things we know work, e.g. sustainable power solutions, rain water harvesting. The costs and risks are too high to consider trying new innovations.

Sustainability is embedded in what we do, a building must be compliant. But there's no policy environment to work in here.

We make a planning document, but nobody looks at it.

Otago Polytechnic coded responses:

You get the best success when you can bring everyone along with you. I think it's been successful here, because staff created it together, and we are very clear on the benefits to us.

Major practical issues there as well as moral. Those practical issues are simply why are you teaching it in the first place, what is the basis of teaching that, and if you're not modelling that, how are you expecting behaviour change or a transformation to occur? It's not just ethical, it's the practical process. There is a critical issue between the rhetoric and reality. Same issue around the green wash model, as a way of marketing to get business. There is an issue around transparency and authenticity.

There's so many experts now, and so many who I don't think are talking about it the right kind of way, totally closing down other people. To me that's the biggest thing I would like to get around, is don't close down other people because you think you're right.

Our partners are what make us. Without them, we couldn't do the work we do.

One of Phil's favourite saying is just do it, ask for forgiveness later. That is our culture. People can do whatever they want, we would rather they did, they will get it wrong but as long as there is learning, we will back them.

Shared beliefs about goals, but not methods.

I've learnt one really important key piece of learning, the accountant in any institution is both the problem and the solution. They drive things very much from a financial position, and in this institution Phil Cullen has been the opportunity and not necessarily the problem. But there are

other clients where in most cases the accountant is the problem, and that is because of their particular worldview, that nothing matters other than the bottom line. What you have to understand is that the bottom line is impacted on by a whole range of factors, including the environment, society, and unless you take those into consideration, you actually take cuts from areas that help you to be successful long term. If there's a failure in tertiary education, it's in the business schools, in taking a more holistic approach to governance, management and accounting.

Because the Polytech considers itself as a community organization, we are very conscious that anything we do is available to the public. Some of the changes we're making, the information is available to the public, we encourage various groups to be involved. We have a few unique avenues to do this- the SHaC green building challenge, the Centre for Sustainable Practice in Central Otago which is offering the first higher level courses in sustainability, we undertake industry training, we have trained a lot of councils in NZ around the Natural Step process.

We made a decision with our suppliers, not necessarily to move away, but to hold their hands and drag them into the sustainable space, including offering training through the Centre for Sustainable practice, and encouraging them to undertake that. In some cases they were already receiving that message through their industry magazines, so they know change is afoot. It's a pull strategy.

Top down and bottom up coming together. If you're doing bottom up all the time it is so hard, cause you're constantly fighting. And if you're coming from the top down, and you're putting pressure on people and you're telling them what to do and you have to do this, giving them policies, you have to do this, and people then go 'what, I don't want to be told, I already have a million other things to do, and now I'm under all this pressure', and I don't think it works. But when you've got top and bottom coming together, that's when it starts working.

If you can demonstrate something, it is far more powerful than cheering the idea. Here is where we come to a moment of importance. The Polytech is an applied university, essentially, a lot of the programmes are degree level, we have a real mixing of academic rigour with applied practice, that is a key, from my observation around the world, very few theoretical courses in this space which actually work. A lot of people are still theorising about sustainable practice instead of getting on delivering some outcomes.

All the tools that we've got have been customised. We have some set templates that we use. For example, Phil's initial model of how his governance operated. You know, you see in most businesses, the CEO at the top, or the VC at the top, and everything flows down from that. What we've done here is, you're the hub, central to a lot of decision making, but the collective wheel of the organisation, the sustainable model that makes this work, is a collective process of all of that.

Definitely people, people who are interested, keen on the project. You need inspired people. That's a real resource.

It is about people but it's also as I say to go back to systems-thinking approach, you know you've got that opportunity to embed that systems-thinking approach, you know that there's a capacity for the institution to weave a DNA model together, otherwise it's a bolt-on or a nice thing to do on a day when we've got a bit of extra cash. When an institution said to me recently, we'll see what our financial position is like, and I'm thinking, don't worry about it, if that's your view, then that's something that's not actually embedded, it's something you want to see as a project.

For me the hardest thing is when people want to quantify things, give us a set list of what to do and have tick boxes. The barriers I have encountered are less about, well, it's too hard because it's

expensive. The barriers are more about understanding what it is, the interrelatedness, they are missing the bigger point or understanding. Just rattling off a list of the material they have reused or whatever.

That's the key to the Polytech's change, it's the key, having that mature discussion within itself, and saying we do have a responsibility to society, we can't sit back and tell our lecturers they have the academic freedom to do what ever they want to do. As a polytechnic, which is slightly more practically focussed than a University, despite all our degree courses, it enabled us to quickly identify that we have a moral obligation and a responsibility to prepare students and young people for a very different world to the one we're living in at the moment. Perhaps because of that close relationship we consider ourselves to have with our communities, we were quick to identify what is needed.

There's an opportunity around your brand enhancement. You don't want to end up in the position where there's rhetoric/reality gap, we say one thing and do another. It's absolutely critical in terms of your brand reputation. Certainly for any tertiary institution, if you teach one thing and do another, another words we teach courses in sustainable practice but we don't model it, then I think you've got some serious issues.

I'm going to force you to address it, which you might not have wanted to do before, but I'm not going to tell you what it is because I don't really know, I'm learning, we don't really know where we're going with this foggy vision.

I have a lot of freedom to pursue whatever avenues I think is important. I need to make a reasonable case if large sums of money are involved.

The real benefit for a tertiary institution is when we've got a green operational process with a green curriculum.

When you look at what the Ivy League universities have done in the states, Harvard, Columbia, Brown, they've all made significant moves not only towards greening their curriculum, but also greening their operational practices. And what we're seeing now is a massive increase in alumni funds going into green-tech investment. So what we're seeing now is people now is people seeing green as the new black.

First of all, I'm not here to do sustainability to the institution, I made that very clear when I started with Phil. My job is here as a consultant to provide recommendations, to provide support, and show them how they might do it. So it's not about telling them why they need to do it, they've already made that decision. My role is to provide enough support so that I can exit, my job is to build capability and capacity for them to take ownership of the transformation. The institution can stand up and say we did this collectively. One person coming in as a consultant is not going to make the difference, but one person can be a catalyst to allow people to think in a different way.

It's been a whole number of things. Aligning their strategic thinking. I've taken their strategic goals and aligned them with sustainability aspirations, so that they can identify what their KPIs are. So we've done that as a business case—what do we need to do, how do we do that. Right across the institution, operationally, teaching and learning, how they work with their community, supply chain, everything. Not just teaching and learning—the whole process. I support them with the resources and materials. We have 50 tools that we use, part of the 360 process that we use. This is what my business is; it provides both the systems thinking approach, the DNA model where you actually weave sustainable practice through the institution. If we look at what the polytech have done, they've woven their own model together, looking at 'Untouched World', Perri

Drysdale has developed here own way of weaving sustainability together. What they're all committed to is not having sustainability as a bolt-on, not something we add on a nice day when we find we have a bit of extra cash that we might spend on sustainability. It's actually embedded in the institution.

I'd say we've made some fairly gung-ho decisions to start with, we've backed off, made some mistakes and moved on, that's all part of the process, that's why this is a customised approach, working with someone, not doing it to them. You learn as you go forward.

When passionate people have ideas about what they think might help, they say, go it. No-one says, give me a theoretical model that proves it will work, or show us how we're going to get value for money.

They need to have ownership around the changes they make, to make it seem worthwhile.

So we're always being quite reflective on what we do, and we are redesigning and redeveloping things as we go, that's part of the process. It's a pretty reflexive process, otherwise it just becomes something that's very mechanised.

Connectedness is part of the culture. You could say hospitality is so different to arts, but if you connect to ideas of permaculture, these are creative careers, you can connect them all together.

If you have an organisation that makes a commitment to embed sustainable practice across every aspect of its business, like OP has, and chose in 2005 to take that approach, then the support is there. The challenges might be hard, different form business as usual. But if you have a leadership team in an organisation of that size, there's about 700 staff and approximately 12,000 students a year at OP, it's not a small place, we have alignment and people can speak a common language, and this isn't gobbledegook, and people buy into that across 19 different faculties, you get a lot of synergy happening, and a lot of cooperation and collaboration about how to solve these complex problems.

I'm absolutely gob smacked at the lack of uptake of sustainability in New Zealand tertiary institutions, compared to some institutions globally. When we have the audacity to put ourselves out there as clean and green and 100% pure when in actual fact we are neither. I think we've got a major marketing issue in New Zealand with our ability to match our rhetoric with our practice. Unless we actually change things very fast, we're going to have students, international students in particular, will go elsewhere, people will start to make choices, it will have an effect on the bottom line for Universities. We won't have the people who think and act that way. New Zealand has a choice—if it's going to be profitable, make a value proposition around sustainable practice, the Scandinavia of the southern hemisphere.

He's assembled a really passionate group of people, and has pursued lots of different avenues to improve the Polytechnic, he's affected a big change to the culture in a pretty short time frame, and we're benefitting from that, having just released our annual report, we are now leading the world in some education metrics, and definitely in New Zealand, and this is metrics around number of people passing degree courses and retention rate of students. So the Polytechnic is enjoying a huge success, good numbers of students, and still pursuing lots of different avenues. It's all about the culture that Phil has created.

You've got to have buy-in with your senior management team. We don't work with people if there is no commitment from the CEO. We've turned down two major jobs, one on an ethical basis, and

one where we didn't have a commitment from the CEO, but a commitment from one level down, and it's just not ok. If you've got things working against what you're trying to achieve.

Sustainable practice is not just about what you do, it's about how you think and feel, unless people have ownership of that, there's no way that they're going to make the changes with out kicking up a really big stink! And feeling really disempowered, that's the last thing you want to happen, the community has to have empowerment to make it happen. We don't want to be there forever, we want to give some great understanding, and bring the right people into the room, that's the most important, and facilitating those conversations, then they get to go off and do it.

I wouldn't have worked here if it was just Phil working with a top-down model. For the first six months I was here, with a short-term contract at that time, looking for me to determine what was the capacity for this institution to actually change. Not only did we have a very switched-on CEO and some very supportive people in the top management team, we've also had some very strong drivers in lecturing staff and people who are committed to making this work. We've seen some savvy appointments made. My view, is if anyone wants to work here in the future, unless you can demonstrate you are committed to sustainable practice, forget applying, that's my view. FT: it's created its own snowball. BL: that's the key you've got to look for. Find the businesses that are already committed and drivers in this field.

There's all sorts. There wouldn't be a tertiary institution where there hasn't been issues with some staff objecting, or thinking it's just a fad or a just a nice thing to do. It would be fair to say there's also been some conflicts of interest around other projects, which has limited our ability to do things as quickly as we'd like, looking at the huge shift that has to occur to get some things to happen. A time factor needs to be built into some of these things. Because of the complexity of weaving these things together, and then across all these departments.

With the Ecological Footprint project, we have a steering group that provides constant feedback. We'll bring people to the table, with ideas or thoughts, and encouraging them to put their ideas and thoughts on the table, and also a reflective process as to how we've done, that helps. That's Victoria University, Auckland City, Otago Polytechnic, and Central Otago District Council, and their communities, and every individual there! A similar model is used with all our programmes. Not just feedback, but buy in, what does our community need right now? It has to be a shared ownership model. No one really likes being told what to do!

Like any institution, there were early adopters, others who waited to see what others would do, and others who needed a prod, and a couple of laggards. Carrot and stick approach, no different from any other client that we've worked with. The percentages are different depending on the industry, the institution, the level of management support, and the ability of that institution to be able to implement things fairly quickly. And to be fair, tertiary institutions are rather difficult beasts to move. Perhaps because of the power base and the power pods that emerge. Sometimes I wonder how much power the VC's have when they sit around with their PVC's and actually provide a vehicle for decision making, I think that in actual fact unless you've got a collective will and spirit there. You might hear a VC with some wonderful aspirations, but not being able to implement or achieve what they want because of a collective democracy. My view is the VC's do have some power, but in the end it's a democratic approach, you have to be able to convince, cajole. If we didn't have the people committed, you could put out all the memos you like, but it would be a hard road.

We don't actually spend a lot of time talking at that level, recycling. It's more the strategic, how is this going to work, who needs to be in the room, how do we ensure people have the right information, that higher level of awareness.

The opportunities for feedback are very well embedded in the polytech. It's by far and away the best organization I have worked in. There's an internal website where you can make anonymous suggestions if you wish to, all of these will be addressed.

We've just undergone a self-assessment process, where all staff are required to assess their performance in a large number of different variable and report back to the leadership team in a 3-4 hour meeting, that self assessment process is embedded in the polytech and runs each year.

In regard to finding those first steps, it's totally reliant on ensuring you do have a long-term perspective, it requires a vision. As with the Polytech, with every graduate as a sustainable practitioner, is not something we aspire to do tomorrow, even though that would be lovely. How do we prioritise the actions we see need to happen? Again using the framework for Strategic Sustainable Development. The strategic guidelines for prioritising actions: 3 prioritising questions, again another decision-making tool. This process needs to be seen in totality. Once you've got your vision, and brainstormed some actions on how to move toward that, going from brainstormed actions to actually how do we make a strategic plan: 'Does the action guide you towards your vision? With a definition surrounding it. Secondly is it a flexible platform? If we just spend a billion dollars on providing infrastructure, how long is it going to pay off? It means we're stuck in that infrastructure for so long, How flexible can we make it. And is it a good return on our investment?'

HEDC [at the Uni] I don't think it is valued, they are seen as excess to requirements, there as nice to haves. They run workshops all the time, and the same bunch of people attend them, always.

Educational institutions have a huge responsibility, if you're looking at behaviour change, we've got 3 key factors: a rational factor around knowledge, you're emotional engagement, your values base, and you've also got your regulatory framework. And regulatory framework goes in place when things go wrong, so we put rules in place to control and manage society. We've got to be careful that we're not always operating at the bottom of the cliff. Education has a very strong role at the top of the cliff, before we have to get into punishment or consequences, What we've got to do is bridge the gap between having less regulation because we've got an educated populace that actually understands what the issues are. And what we also need to do in education is get away from this disciplinary model of teaching and learning, I'm an accountant, here's my blinkers, I'm a farmer, here's my blinkers. What we've got to do is have a look at more collaboration across learning disciplines. We need to understand the different roles. Understand a variety of roles, and be able to stand back and ask, why do that? Then you reflect back and look at different ways of doing things. Education is paramount, that's how we provide our innovation, our capability, our research for the future. When we've got major issues like global climate change, financial meltdowns, consumers making new choices about things, education cannot afford to be a laggard. Education has to be innovative, at the front end, making sure the research and development is not just about securing funds for business to do what business wants, but actually shifting business forward. I think it has a role in a whole range of areas.

My role changes so often. There are times when I'm thinking, hmm, I'm probably not getting paid for that. I also feel empowered to say, I actually can't take this on at the moment. So that's really lucky. Obviously also funding is always going to be a big one. We're standing on our own feet in terms of the budget.

I think how you use this definition in your organisation provides an opportunity. Yes there can be times when it becomes a hindrance to business as usual. However in the greater scheme of things if you use that in a long term perspective, it's often very obvious that this is actually very

opportunistic rather than creating any hindrance. It's still the issue with sustainable practice, I think people realise it is a long-term decision-making framework, in that, yes, all of these things are great, but what are the initial steps to getting there? That's where the hindrance comes in. The long term view, people see it as being reasonably opportunistic ... it's that transition ... that's where people have issues, talking about the detail, people are troubled by sustainable practice, changing habits.

If it's economically viable, and that's one of the principles of the institution, economically viable in the long term, and it doesn't gel, then, it needs to tie in.

The Polytech has gone through an interesting process recently, about how are we moving towards being an adaptive, sustainable institution, I've fed back into it. It was a process chaired by Phil Kerr, regarding how are we doing right now, with regard to where we want to be, with regard to where we've come from. How are we shaping up, and that was a whole institution process. These processes are so important, and 90% of the time forgotten about. If you can't celebrate what you've done, we are achieving small steps, and reconfirm where we're trying to go, and whether or not those actions align with our vision, are still flexible, viable, then we're going to struggle. Everyone needs to be heading in the same direction. And celebration, it all seems like hard work unless we can say, we've done really well so far, let's celebrate what we've done.

We have weekly meetings that all staff are invited too, on all different things, some of those are sustainability themed. We also have staff training days over one of two days twice a year, and we've focussed on sustainability in some of those, with a wide range of speakers.

A lack of arrogance is key, the Polytech has always been "the little cuz" to universities, and they're very grounded because of that. This idea of doing, connecting your hands to your head.

Evaluation is by referring back to the plan—it's just like minutes, have you done this! That's the simplified version.

On the communications side, that strategic platform requires us to do our utmost to operate in a sustainable way, practice what we preach, so to speak, and that pervades every area.

Some people would see it as chaotic. Some would say that chaotic perspective provides a lot of openness for creativity. But as we've become more refined, we've had to put more and more in terms of what we hope to achieve for our own future, so we've developed our own long term vision, out 40 years, and a short term vision, how we relate to the Polytech, what's going to benefit our students and clients and our communities in the future.

One of the big challenges is to walk the talk. We talk to businesses about being innovative, having a more flexible working environment, ensuring those policies are reflected in our own centre is a day to day struggle. Even recycling, in our own building! Which seems so insignificant in the scheme of things, makes us all feel like we're doing our part. From those hands on things, through to ensuring we have created a very clear strategy in the centre, ensuring we are very transparent in our communication, our partnerships are being honoured, those are all very important.

We have to (laughs), we don't really have a lot of choice. Humanity, and financial, and social. An example of financial is the likeliness of us having a transport system that looks like business as usual in 10-15 years time is pretty marginal. People are seeing they have to change behaviour on financial constraints. Some people, organisations, communities are seeing that pre-empting the action needed, reducing risk. Unfortunately, when any of these big things happen, like the temperature has been 3-4 degrees higher across the country than it's ever been in record, those are

things that help our work! As much as you cringe... The more personalised it becomes for people, without using 'what about your kids' ... for some people that will push them over.

The *how* we go about practically everything, is informed by 'is this sustainable?' Even teaching method. We've adopted significant use of technology, again coming at it from a sustainability perspective. I think we're probably way out front within the New Zealand context in the use of open education resources. Again, coming at it from a sustainable perspective, with a strong social sustainability perspective there. If we can encourage our staff to not reinvent wheels, to make use and re-use and adapt teaching and learning resources, we're making very powerful statements about sustainable practice. Of course that parallels exactly what we're suggesting with respect to use of products at the end of their life, can you re-use them, adapt them and so on.

You may not see immediate benefits of the work you're doing, but when I talk about the opportunities to work together, or for a business to become a better business partner, then that is a small change I hope. Enticing people to think more about that is a good thing. But I may not see immediate action, it may not happen for a long time.

I guess the chief expectation for me is a continual improvement in our operational sustainability. In reality that involves pursuing many different threads of work, and sometimes putting energy into some, and leaving others to run ... I'm very conscious of setting up systems that are robust and sustainable in themselves, for example if we can get our different staff to take ownership of a thread of work around sustainability, that's of much greater benefit than me having a continuous input into that thread.

I use a sustainable management group meeting as a sounding board for new ideas, it's important to me that we don't upset people with sustainable change they're not comfortable with.

We got involved with government initiatives like EECA and used subsidies for our feasibility studies.

That strategic platform is where it starts. That flows through. We monitor and evaluate whether or not this is happening, we are just at the conclusion of our annual review process. That involves a review of every school, every programme and every service team every year. It's part of our quality processes, an internal annual review.

The other thing I look at is identifying training opportunities for staff. All our builders go through a green star training course, the head of that department is now able to assess green star buildings.

The point here is that if you take this sustainable practice area, that's an explicit focus of the review, and sustainable education is a specific focus of the school and programme reviews. We're delving into what are you doing, what are you doing this year that's different from last year, tell us about the projects you're setting your students, tell us how you're assessing this capability, because the ability to practice sustainably is a capability in it's own right. We're pretty thorough about monitoring.

We've had a requirement that every programme, in terms of graduate profile, is a sustainability practitioner in that particular discipline. There is a different emphasis in each programme, in the health programmes it is more about social sustainability. Nevertheless, our students will be learning about the other dimensions as well, economic, life cycle of the material we're using.

The more people you have, the slower it is. There are multiple, independent strands happening toward sustainability.

Key factors are Robin Day and his leadership team, empowering people to take this step. That's the absolute key, creating this leadership model to make this sustainable change. I remember the polytechnic identified this need for change internally when they were having a discussion with their staff around what is excellence, sustainability was a key to excellence. Second to that is empowering the staff to make that change, making it easy, in order to do that set up a fund for any bright ideas, and staff were able to apply to that to get that thread underway. If they had a good idea, they could get funded up to \$5000 to achieve it, so really it was a culture of empowerment.

We don't pretend to have zero footprint. But to have a few feel good policies around recycling? The core business for polytechs and universities is curriculum. Most institutions have been focussed on green campuses, and they've ignored teaching processes. It's just green wash of a very high form.

At annual plan time, which we've just produced, we have an opportunity to reflect on priorities. I realised we hadn't tackled banking, and I worked with Barry [Law]. It's tough, because the government requires us to bank with a certain type of bank, in some cases we're pushing the boundaries.

I'm helping to integrate sustainability throughout all the programme documents, and I was working to ensure the people running the programs new what sustainability meant, so they could articulate sustainability confidently. I currently work on the education for sustainability wiki, part of Graduate teaching and learning, with a course on education for sustainability, so teachers can get credit for doing this course and again so they feel more confident.

I feel like I can do whatever I want. To help people gain a better understanding. I have free rein of how I'm going to do that. I feel very supported in what I want to do.

I assisted with the programme reviews, and I can confidently say it's in the curriculum, it is there, and it's not an add-on. With some of the departments it is still possibly a bit of an add-on, but in most of the programmes it's there in the way academic staff think.

For the Polytech, sustainability is a platform for everything that we do, it's a strategic imperative, it is part of how we are defining ourselves and would like to be known, so in that sense, it shapes everything we do. So when we take that into the curriculum, we have a set of underpinning curriculum values that are built into every programme that we offer, and sustainability is one of those values. that means in every programme we offer students are engaged with the notion of sustainable practice, the realities of sustainable practice, again coming at it from the 3 angles. Some areas naturally fall to one of the other, so if you look at the health sciences, the emotion of social sustainability is integrated with what they do, but what they appreciate is that if you talk about sustainability, you've got to have a bit of understanding about systems, and ecosystems, and the environment, and that helps put into context what they take for granted as part of their normal practice. We are getting very close to every programme covering all 3 dimensions, people are appreciating there is a holistic concept here that needs to be understood. You can't just teach students tools and techniques- teach a builder how to dispose of hazardous materials, but taught in isolation, it sort of misses the point, why create the waste in the first place? So that underpinning strategic platform flows through into our core business, which is teaching and learning and qualifications. And what we set out to achieve, it's carefully worded because we can't guarantee that people will do what they've been taught and what they're capable of doing, but every graduate that leaves here will be capable of operating as a sustainable practitioner within their context, so they will know what that means, they will know what the issues are, and they will be equipped to do the right thing. And I think it extends further, because part of the curriculum is the notion of

capable graduates. It's not knowing how, or what, it's all of those things but it's actually, we call it the power to perform. Our curriculum intent is to send out graduates who are confident to act. If you want to translate that to a practical situation, it's a carpentry student who's confident to say to his boss, do you realise that that's no good, and you could do it this way, which is a pretty tall order. We won't send every student out that confident, but that's what we set out to do, and that's what we ask our staff to attend to, processes that build that confidence. And we're seeing that happening everywhere. It's heartening to see it happening.

With our schools, we say we can't teach this, if you're visibly and noticeably unsustainable in what you do.

We were slow off the mark getting good metrics in place, we were just too busy doing it, I suppose, to worry about measuring it. But we've started now to collect decent metrics, they're not by a long shot complete yet, but we've got stakes in the ground now, we're able to see what's happening to key areas of energy use, travel is our big one, of course.

The message we got back was, don't dare preach this to anyone unless you have your own house in order. So we made the decision back then that we'd get our own house in order, we understood the issues and we cleaned up the worst of our practices, and had a planned way to go forward, and in parallel started to work on this notion of capable practitioners.

I think the really good thing about the curriculum side was that the champion was one of staff, Sam Mann ... he drove the notion of the sustainable practitioner, and provided good leadership at the right level.

We had a debate whether to go for 'sustainability 101', or whether to go for 'sustainability integrated' [into the curriculum]. Most have gone for an integrated model, a significant minority for 101 and integrated; no-one's gone for 101 on its own. No one has said, here it is, we deal with it in this course, and then we forget it A bolt-on doesn't work.

It's reported every year, we have a process where every school has a review by the leadership team every year, that's like a 5 hour meeting that happens once a year. We look at the outcomes, the metrics, the data we've got, the success rates of the students, student feed back, what's happening with sustainability in the programme and the school. We're building more and more expertise from the bottom up. Every year, I would say, more and more expertise and stronger commitment amongst our staff.

We've had a big expectation of staff development, a lot of opportunities for staff development, all our programme managers, and an expectation to run programmes in each school.

We're about high trust, high accountability, that is the culture we are trying to establish here.

The graduate diploma and certificate programmes we have put in place are assessed on action competence. Knowledge is an important strand, we need knowledge. But you also need to tie that knowledge with experience. And those experiences shape how you apply the knowledge anyway. And reflection is an incredibly important tool we have used.

We've had some of the smartest in the business help us, we've had Barry Law from Christchurch, whose one of the best in the world in terms of action competence. And we're learning as we go.

Top-down buy in is crucial, we don't work with anyone in our centre unless the most senior decision maker in an organisation is prepared to engage in the conversation.

Concentrating on what we know as financial accounting—is like only looking at income statement, forgetting about balance sheet, profit and loss.... a small part of the larger picture.

To pitch an idea, my way is less formal, I've sent out mass emails and newsletters, but probably the more successful communication has happened personally, in an informal context.

I would say the Poly has a medium level of commitment, that's because, it's as fast as it can be achieved, when you're bringing everyone along in the whole Polytech, you can't just smash things through.

I see it more as a social process, a tribal process.

Challenge is developing a good vision that other people are quite keen on, helping people engage.

Sustainability in Australian Universities : Implications for the University of Otago

"We, the presidents, rectors, and vice chancellors of universities from all regions of the world are deeply concerned about the unprecedented scale and speed of environmental pollution and degradation, and the depletion of natural resources."

We, therefore, agree to take the following actions:



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- 1 increase awareness of environmentally sustainable development;
- 2 create an institutional culture of sustainability;
- 3 educate for environmentally responsible citizenship;
- 4 foster environmental literacy for all;
- 5 practice institutional ecology;
- 6 involve all stakeholders;
- 7 collaborate for interdisciplinary approaches;
- 8 enhance capacity of primary and secondary schools;
- 9 service and outreach nationally and internationally; and
- 10 maintain the movement.

B. M. Peake & R. Scott
September 2006

(Front piece: copy of part of the Talliores Declaration as signed by the University of Melbourne in 2002)

Disclaimer: The views expressed in this report are solely those of the authors (Barrie Peake and Robert Scott) and do not necessarily represent those of any other person or institution.

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Executive Summary

1. Review the existing OU Code for Environmental Protection and Sustainability (CEPS) and update where appropriate in line with the sustainability policies of Australian universities.
2. Incorporate ‘research and learning in a sustainable environment’ on the front page of the OU web site and in official university documents such as the university’s Vision and Mission, and statements of Special Character, Core Values , Contributions to New Zealand and the Tertiary Sector, and Strategic Directions.
3. Incorporate the updated CEPS in a Sustainability Plan with comparable standing to the other University principal planning documents.
4. Consider signing the Talloires Declaration of University Leaders for a Sustainable Future and /or one or more other appropriate international education environmental agreements and initiatives.
5. Any Environmental Sustainability (ES) policy should be strongly supported by senior university officers starting with the Vice-Chancellor and University Council
6. Establish a senior committee within the University to oversee all aspects of the campus-wide implementation of sustainability.
7. Establish a group within Property Services to implement more practical aspects of sustainability on the campus.
8. Occupational Safety and Health issues are probably best dealt with by a separate committee from any proposed to administer an environmental sustainability policy.
9. Adopt triple bottom line reporting procedures in preparing the University Annual Report.
10. Encourage students to adopt ES practice in all their campus activities beginning with their first experience of university life in a hall of residence.
11. Encourage the further development of academic courses dealing with elements of ES and Environmental Development (ED) which can be taken as part of as wide a number of degree programmes as possible.
12. There is considerable research potential in developing a more environmentally sustainable OU campus.
13. Explore the provision of either new papers, or the modification of existing papers to take into account specific aspects of ES and SD.

14. Coordinate academic courses at the University in all areas of environmental studies including ES and SD topics, through a formal academic structure such as an Institute or Centre of Environmental Studies which would span across all academic divisions.
15. Consider putting forward a claim to set up a National Centre For Environmental Sustainability (NCES) at the University.
16. Take up membership in a number of Australian organizations which have been established to cover ES issues in tertiary educational institutions.
17. Investigate setting up a Green Steps programme at the University.
18. Undertake a full environmental audit of campus activities particularly the supply and consumption of energy and materials to develop energy conservation measures, make better use of materials from renewable sources and minimise waste.
19. Consider using an increasing proportion of renewable energy sources (eg. electricity generated from wind generation) for campus activities
20. Initiate a campaign to use less paper , recycle paper and cardboard and purchase new paper with recycled content and from more renewable sources.
21. Investigate recycling of organic material such as food waste generated on the campus.
22. Investigate improved ways of recycling or disposing of surplus/defunct computer equipment, batteries and telephones.
23. Enhance recycling and waste minimisation in individual departments by appointing an interested staff member and student to promote these activities.
24. Enhance the awareness of appropriate staff involved in the design and construction of new buildings and the refurbishment of existing buildings on campus to optimize energy consumption and incorporate materials from sustainable and renewable resources.
25. Extend the concept of ES on the campus to heritage aspects of sustainability in relation to the older buildings.
26. Investigate how ES activities on the campus can be more effectively publicized among all staff and students.
27. Environment policies developed by the University should include all campuses (Dunedin, Christchurch, Wellington and Auckland).
28. Investigate further links with the Otago Polytechnic with respect to the development of sustainable activities on the two campuses.

29. The unique relationship of the University with Dunedin City and the size of the city provides the opportunity to extend any OU environmental sustainability policies to the wider city through liaison with the Dunedin City Council and the Otago Regional Council.
30. Encourage the exchange of academic and non-academic staff involved with any aspect of ES at the University with their counterpart(s) in an Australian university.
31. Investigate outside sources of funding such as the MfE Sustainable Management Fund (SMF) for money to support the implementation of the suggested initiatives to make the campus more environmentally sustainable and as a model for other tertiary New Zealand educational institutions.

Background

The concept of **environmental sustainability** (ES) was first brought into global prominence in 1987 by the then Prime Minister of Norway, Mrs Gro Harlem Brundtland who, as Chairperson of the World Commission on Environment and Development, published a report 'Our Common Future' (The Brundtland Report) in which **sustainable development** (SD) was described as

“Development which meets the needs of the present without compromising the ability of future generations to meet their own needs”

Seven strategic imperatives were described in the report for SD: reviving growth; changing the quality of growth; meeting essential jobs, food, energy, water and sanitation; ensuring a sustainable population; conserving and enhancing the resource base; reorienting technology and managing risk; merging environmental and economics in decision-making.

ES and SD have since become the cornerstones of many global and national policies. For example, the principle of SD has been incorporated into the Maastricht and Amsterdam Treaties of the European Union, as well as the 1992 Rio Declaration and Agenda 21, adopted by the United Nations Conference on Environment and Development. In New Zealand, it is the basis of the Resource Management Act (RMA 1991) which now controls all of the nation's activities involving all resources and the environment.

Otago University (hereafter referred to as 'the University') began energy conservation measures and the monitoring of energy consumption in the mid 1980's. At the same time the University began to reduce some of its more adverse effects on the environment and in 1989 commenced the disposal of hazardous waste through high temperature incineration. Prior to this hazardous waste, including animal carcasses sharps and other undesirables was disposed of along with general waste in a skip system which went to the general landfill area.

In 1993 the University joined the Green Business Challenge which was a project initiated and supported by the Dunedin City Council to promote action for the environment in workplaces throughout the city. The University was among the 11 initial participants who each received a Challenge Pack, the core of which was a ten-point Action Plan for improving environmental performance. Each point was covered by a separate sheet which included information on relevant issues practical steps to take, and examples of good environmental practice in organisations around New Zealand and overseas. The pack was meant to act as a catalyst and was intended to help people look at how their own particular organisation impacted on the environment and encourage them to develop creative solutions.

One of the authors (RS) was asked to prepare environmental guidelines with a view to producing an environmental policy to be officially adopted by the University. At that stage, few if any New Zealand universities had prepared detailed environmental policies although Lincoln University had initiated an official environmental charter in 1990 which was adopted "in principle" in 1993 and the implementation strategies finalised in 1994. Using a draft policy prepared by Griffith University in Brisbane, Australia as a guide and with the help of a leading member of the Green Business Challenge, RS drafted the Code for Environmental Protection and Sustainability (hereafter referred

to as ‘the Code’) listed in Appendix 1. Staff and student input was sought during the preparation of the Code but little interest was shown at the time. The Environment Policy and Management Centre was also consulted but was unable to provide any assistance. The Code was confirmed and adopted by the University Council in October 1994. It was reviewed in 2004 by Ms Nichola Wheen but this revision has not been accepted by Council.

Although the Code covers all aspects of sustainability encountered during the present visit to Australian university campuses and includes a number of suggestions on how to implement them, this has not always occurred during the 12 years since its adoption by the University Council and many staff and students are unaware of its existence.

In 2003 a group of academic staff involved in teaching various environment topics formed a group called the Environmental Studies Academic Advisory Group (ESAAG) under the initial chairmanship of Prof Blair Fitzharris to try and coordinate all of the environmentally-related courses in the University and present a more coherent picture of environmental studies at the University to prospective students.

This committee has organised two workshops on sustainability issues on campus. The first of these was held in Dec. 2004 with Dr Morgan Williams, Parliamentary Commissioner for the Environment as the key note speaker. In his talk ‘Learning to be a more sustainable citizen – but learning what?’ he challenged the University to be a leader among New Zealand tertiary institutions in incorporating sustainability in all of its academic courses and campus activities. He also noted that many Australian universities were considerably in advance of any in New Zealand in this respect.

One of the present authors (BMP), as Director of the University Postgraduate Environmental Science programme, decided it would be helpful to visit some Australian universities to view first hand how they are implementing ES and ED in their courses and in their campus activities as a guide to an enhanced implementation of ES on the University campus. He was able to secure a small travel grant from residual funds of the now defunct Green Business Challenge (since called the Dunedin Environment Business Network Inc.) together with a grants from the University Division of Sciences and from Property Services to assist he and Mr Scott (the originator of the University CEPS) to visit a range of Australian university campuses over the period July 7 – 25, 2006.

The Present State of Sustainability at Otago University

As noted above the University Council adopted the Code for Environmental Protection and Sustainability in Oct 1994. In one of the subsequent brief reviews of the Code, which was more in the nature of a progress report rather than any dramatic change of wording or emphasis, one of the author (RS) suggested that some type of environment committee could be established to implement and oversee the Code but this suggestion was not well received at the time. Since then, progress on implementing some aspects of the Code has been limited.

An energy audit and the implementation of energy conservation measures are being undertaken by Mr Hans Peitsch (Energy Manager) of Property Services. The university is currently reducing energy consumption by introducing more efficient lighting and heating systems whenever a building upgrade occurs. The installation of solar domestic hot water systems is being considered and suitable installation sites are being investigated. Wherever possible, passive measures to increase comfort are chosen such as double glazing or insulation. The University is switching to renewable fuels for heating such as wood pellets or wood chips and two pellet boilers have been commissioned on campus with more to follow.

A number of effective waste minimisation operations were been introduced early on and one of the more successful of these operations has been the recycling programme. White paper recycling currently involves 90 wheelie bins located throughout the campus: 40 240 litre bins and 50 120 litre bins, and 12, 1 or 2 cubic metre wire edged or metal bins for the collection of cardboard. These are usually placed adjacent to, or as near as possible to the general waste skips to encourage people to stream the waste with a minimum of effort. Property Services operates an in-house cardboard collection scheme from a number of campus locations. Recycling of aluminium cans is taken care of with four purpose-built metal bins painted yellow and blue and located in building foyers near the food and drink dispensing machines which, in recent years have proliferated around our campus.

The University is considered as a commercial operation by the Dunedin City Council and was excluded from the city kerbside recycling programme. However a modified programme was introduced on campus with the University meeting the cost. Presently there are 35 Handy bins around campus for recycling glass, plastics and cans. These are serviced by a contractor on a weekly basis.

The recycling of computer and ink cartridge operates independently through the off-campus Toner Recycling Centre. Cardboard boxes are located in about 20 departments for the collection of empty cartridges and when full, the Centre is advised and arranges collection.

Some years ago the City council introduced bottle banks, cardboard bins and igloos for recycling cans at various city locations, including the University. These facilities were available to the general public as well as the students living in the area. However, with the introduction of kerbside recycling, the council removed the bottle bank, although the cardboard bins remain at the request of the University.

By far the greatest problem with any or all recycling is correct streaming at source, or more precisely, incorrect streaming at source. It seems that people have the greatest difficulty in distinguishing between white and coloured paper, in comprehending simple and obvious signs which indicate **‘cans only’**, or following simple instructions to the effect, **‘flatten cardboard boxes before placing in bin’**.

On the academic front there appear to be no degrees or certificates currently available at the University specifically labelled as being related to ES although there is a BAppSci offered in Environmental Management which clearly covers many ES and SD issues. Students taking either the BA or BSc Geography degrees can specialise in Environmental Management. The Geography Department also offers a Postgraduate Master of Regional and Resource Planning programme which has a strong environmental flavour. The PGDipSci and MSc Environmental Science and the Ecology courses include many papers concerned with ES and SD issues.

Other specific papers at undergraduate and graduate levels which include aspects of ES include:

ACCT 411	Social and Environmental Reporting
ECON 207	Environmental Economics
ECON 440	Global Environmental Problems
ENVI 111	Environment and Society
ENVI 211	Environmental History of New Zealand
EMAN 204	Energy resources
EMAN 306	Energy Efficient Buildings
EMAN 410	Energy Policy
LAWS 440	Environmental Law
MANT 443	Organisations and the Natural Environment
PHSI 234	Environmental Physics
POLS 207	Environmental Politics
PUBH 703	Health and Environment
TOUR 306	Ecotourism Operations
TOUR 412	Impacts of Tourism

(For more details on these and other environmentally-related papers and courses see the Environmental Studies section of the University Web site developed by ESAAG:

http://www.otago.ac.nz/subjects/env_studies/progs_papers.html).

Ms Nicola Bould, a Senior Teaching Fellow in Graphic Design in the Faculty of Consumer and Applied Sciences is involving her students in this year’s DESI 301 class in the design of environmentally sustainable consumable items such as recycling bins for use in individual offices and a recyclable office chair.

Dr Claire Freeman (Geography) is teaching the PLAN 412 Evaluation in Planning in which 10 students are working on a project with Dunedin City Council staff looking at the campus zone structure plan. In particular, they are assessing the current campus (including the College of Education and Otago Polytechnic) and coming up with improvements, most of which relate to SD and ES issues. Dr Janet Stephenson (Geography) has this year offered third year medical students the

opportunity to take an five week (two hours a week) elective on the 'Politics of Sustainability' in which she introduces the concept of sustainability at global and local levels, and illustrate this by examining the societal implications of climate change and peak oil.

In addition to the Dec 2004 workshop on sustainability issues addressed by Dr Morgan Williams, ESAAG organised a second workshop on aspects of sustainability in Nov 2005 which was addressed by Dr Kathryn Hewson (PhD tropical forest ecology). She has a full-time position as sustainability advocate in the Facilities Management section of Canterbury University where she acts as 'a catalyst in the University's pursuit of socio-ecological sustainability' (Filho and Carpenter, 2006, p285) as well working with the Canterbury University student environment group (Kakariki).

ESAAG has recently (2006) received a small grant through the Deputy Vice Chancellor Academic to fund the part time services of an administrative assistant and currently has a small sub-committee led by Ms Nicola Wheen (Law) to examine the present Code and suggest appropriate changes.

There is presently a small but very active and enthusiastic group of students called Sustainable Campus Initiatives (SCI). This was formed at the beginning of this year (2006) by enthusiastic Planning Studies graduate student, Kimberley Cleland, who was inspired by Australian university practices outlined at the 2005 Australian Campuses Towards Sustainability conference. This group is currently working on a sustainable flatting workshop, the design of an educational sustainable lifestyles poster in an attempt to raise the awareness of students to this issue, and circulating a petition among students to gain support for a sustainable campus. A member of the group is presently discussing sustainable practices with a number of halls of residence. A number of contenders for positions in the Otago University Students Association campaigned on tickets advocating sustainable campus practices.

Finally, a Tertiary Sector Steering group was established in August 2005 consisting of the Dunedin City Mayor and Chief Executive and their counterparts in the three Dunedin tertiary institutions to discuss long term planning and coordination for the joint campus area and the tertiary sector. A subset of this group is the Tertiary Sector Planning Group with membership of senior staff from the tertiary institutions and DCC. One of the key initiatives of this group is to create a development plan to guide future development and integration of the campus area with the surrounding central city.

Details of the Visit

Visits were conducted to eleven Australian universities (hereafter referred to as ‘the Australian universities’) over the period July 8 – 25, 2006:

<i>Melbourne</i>	University of Melbourne La Trobe University (Bundoora campus) Monash University (Carlton campus) Swinburne University of Technology (Hawthorne campus)
<i>Canberra</i>	Australian National University
<i>Sydney</i>	University of New South Wales Macquarie University University of Sydney
<i>Newcastle</i>	University of Newcastle (Ourimbah and Callaghan campuses)
<i>Brisbane</i>	University of Queensland (St Lucia campus) Griffith University (Nathan Campus)

Prior to the visit, staff involved with academic and practical aspects of ES and SD were identified from the Web sites for each of the above university campuses and an email sent to each of them enquiring of a suitable time for the authors to meet with them to discuss ES on their campuses. Almost without exception, enthusiastic and encouraging responses were received and the authors typically spent between a half and a full day at each campus, meeting over thirty different staff in total (see Appendix 11 for details).

During these meetings the authors received an enormous amount of information including much written and computer material. It would be impossible to include all of this information even in a summary form in the present report. Instead, what follows is a series of recommendations with supporting material which the authors believe should be considered by appropriate personnel at the University in order to better establish and implement aspects of ES in all academic and non-academic aspects of the University. They would also help establish the University as a leader among New Zealand tertiary educational institutions in the matter of sustainability in education as proposed in 2004 by Dr Morgan Williams, Parliamentary Commissioner for the Environment.

Recommendations

The concepts of living in an environmentally sustainable manner and sustainable development have been widely accepted as critical to the future survival of the global community (eg. Agenda 21 of the 1992 Rio Declaration). Given the role that a university such as Otago should play in the wider community, it is essential that all its activities should ideally be undertaken in the context of sustainability.

Before making any specific recommendations, it must be said that when all staff interviewed during the present visit were asked if they felt that a student graduating at their [Australian] university would consider they had had a 'sustainable experience' during their time at the university, they all responded 'No'. This view is reinforced with the comment by Kaufman *et al.* from Monash University in the recent book "Sustainability in the Australasian University Context" (ed. Filho & Carpenter 2006):

'Despite some significant developments in a growing number of Australian universities, no university in Australia can be said to have adopted sustainability as its core rationale'

However, the present authors consider that in spite of the University Council adopting in 1994 a Code for Environmental Protection and Sustainability, progress implementing some aspects of this Code has been slower than expected and the University is behind Australian universities in some aspects of the implementation of ES and SD. For the University to catch up with current academic and non-academic sustainability initiatives at these Australian universities and become a leader in the New Zealand tertiary education sector, we make the following recommendations.

- 1. Review the existing OU Code for Environmental Protection and Sustainability (CEPS) and update where appropriate in line with the sustainability policies of Australian universities.**

As noted above, the original 1994 CEPS (Appendix 1) contains all of the essential features of comparable codes of the Australian universities. However, parts of it could be reworded and updated to make them more effective. In particular, this code should address the integration of research and teaching aspects of ES and SD as well as their practical implementation across the whole of the University.

Six months ago, a small sub-group of ESAAG started this task of reviewing the 1994 CEPS but there is no specific date for completion of this task. If sustainability is to become a key part of the goals and rationale of the University, it would be important to obtain a wide input of views into any revision of the present CEPS.

2. **Incorporate ‘research and learning in a sustainable environment’ on the front page of the OU web site and in official university documents such as the university’s Vision and Mission, and statements of Special Character, Core Values, Contributions to New Zealand and the Tertiary Sector, and Strategic Directions.**

Many comments were made to the authors that the only way that any significant progress can be made to ensure a sustainability policy is widely accepted among *all* sections of a university, is to get it incorporated in official university policy statements. For example, Ms Belinda Towns, Sustainability Reporting Manager at the Monash Environment Institute, Monash University (considered to be ‘unambiguously amongst the most progressive of Australian universities in applying the principles of sustainability to its operations’ (p 92 Filho & Carpenter 2006)) commented:

‘The smartest thing that Monash University has done with respect to environmental sustainability is to include mention of it in the ‘Statement of Purpose’ on the front page of our Web page (<http://www.monash.edu.au/>) :

Monash University seeks to improve the human condition by advancing knowledge and fostering creativity. It does so through research and education and a commitment to social justice, human rights and a sustainable environment.

This was achieved largely through the advent of a new Vice Chancellor 3 years ago’.

Many of the Official University of Otago documents could be easily modified to include mention of sustainability. For example, the Vision and Mission Statement could be changed:

1.1 Vision

A research-led University with an international reputation for excellence .

1.2 Mission

The University of Otago will advance, preserve and promote knowledge, critical thinking and intellectual independence to enhance the understanding, development and well-being of individuals and society *in a sustainable manner* . It will achieve this by building on foundations of broad research and teaching capabilities, unique *and sustainable* campus learning environments, its nationwide presence and mana, and international links.

Similarly there are parts of the Special Character which could be modified:

Excellence in research and research-led teaching *in a sustainable environment* together with a tradition of innovation define New Zealand’s first University, the University of Otago.

and a section included in the Core Values on a sustainable environment.

3. Incorporate the updated CEPS in a Sustainability Plan with comparable standing to the other University principal planning documents

The present CEPS would seem not to have been adequately publicized around the campus among academic, non-academic and student bodies and nor has it been included in any official university policy statements.

An updated CEPS could form the basis of a Sustainability Plan which should become an Official University Document.

An example of such an official document concerning environmental sustainability is provided by the recent draft statement by the Vice-Chancellor of Monash University (Appendix 2).

Mention of the sustainable environment to be fostered in all aspects of life at the University should also be included in the welcoming letter by the Chancellor on the OU web site as supporting the strategic plan along with the Research Management Plan, the Teaching and Learning Plan, the International Activities Management Plan and the Quality Portfolio.

4. Consider signing the Talloires Declaration of University Leaders for a Sustainable Future and /or one or more other appropriate international education environmental agreements and initiatives

Australian universities have signed one or more international agreements concerning sustainability issues in universities. The most common of these agreements is the Talloires Declaration (see front piece of this report and further details in Appendix 3). It was felt that being a signatory to such agreements imposes a requirement on a university to regularly review all aspects of its environmental sustainability practices.

The University of Melbourne has also obtained international ISO 14001 accreditation for non-academic aspects of its environmental programme. It is hoped that this accreditation will soon be extended to the academic components relating to all aspects of environmental sustainability. However, some other Australian universities considered that meeting the audit requirements of ISO14001 accreditation was too restrictive and time consuming.

Swinburne University of Technology has not signed any international agreement but instead, has entered into a Sustainability Covenant with the Environmental Protection Agency of the State of Victoria which they feel fulfills many of the same environmental outcomes and requires the same annual accountability for environmental matters. There is no EPA Agency in New Zealand but it would be interesting to explore whether any similar type of covenant could be negotiated between the Ministry for the Environment and the University.

5. Any ES policy should be strongly supported by senior university officers starting with the Vice-Chancellor and University Council

This message was clearly conveyed to the authors in discussions with many staff on the various campuses. For example, the Monash staff were adamant that many environmental issues at Monash had only really progressed in recent times with the appointment of a new Vice Chancellor and his strong support for all aspects of ES (see quote given above under Recommendation 2). Part of the UNSW Environment Policy specifically states: 'The Vice Chancellor is accountable to University Council for achieving the goals and objectives of the Policy, including allocation of sufficient resources to enable implementation. The Deputy Vice-Chancellor (Resources) is accountable to the Vice-Chancellor for developing and reviewing of the Environment Policy, preparation and implementation of their Environment Management Plan, and the annual reporting on progress towards achieving agreed objectives.'

It was frequently stated that senior university administration staff need to be regularly lobbied to remind them what is in their university policy on environmental sustainability.

6. Establish a senior committee of Council to oversee all aspects of the campus-wide implementation of sustainability.

In order to ensure adequate academic and non-academic (eg. financial and physical) resources, all the Australian universities have established high level committees for a number of years which report directly to their university councils. These committees typically have a wide representation from academic and non-academic staff and students. For example, the University of New South Wales established in the early 90's an Environment Policy Advisory Committee (EPAC) consisting of:

- Deputy Vice Chancellor (Resources) (Chairperson)
- Chief Operating Officer
- Representative of Academic Deans
- Representative of Staff Unions
- Representatives (2) from Student Bodies (Students Union, Students Guild)
- Representative from Facilities Management
- Representative from Occupational Health and Safety
- Representative from Institute of Environmental Studies
- Representative from Academic Studies Board
- Representative from Public Affairs / Publicity
- Representative from Chief Financial Officer

This committee meets regularly and reports directly to the UNSW Council.

A number of further sub-committees could be established each covering specific aspects such as the practical implementation of ES (eg. energy use, recycling, transport, purchasing from renewable

sources, sustainable building design) and academic matters (eg. coordination of papers involving sustainability into a more coherent structure). The present ESAAG committee could form the basis for the latter sub-committee.

The overall committee structure used to oversee all aspects of ES at the University of Queensland is given in Appendix 4 and could be the basis for a committee structure at the University.

7. Establish a group within Property Services to implement more practical aspects of sustainability on the campus

At present, the author of the CEPS (RS) and Grounds Officer spends time overseeing a number of environmental issues on the campus while Mr Hans Peitsch (Energy Coordinator in Property Services) is involved in energy audits and conservation measures. However, there are many other areas covered in the CEPS that would need additional staff time to oversee their effective implementation.

It was widely recognized that it is unreasonable to expect academic staff members with a research and/or teaching interest in ES and SD to also necessarily be actively involved in the practical implementation of a university's policy on sustainability. Instead each of the Australian universities had at least one full time staff member attached to their office equivalent to the University Property Services (Facilities Office) whose responsibility was to oversee these practical aspects. These staff members typically had formal qualifications in an area related to ES and/or previous work experience for an organization involved in the implementation of ES. For example, at the University of Sydney a number of the staff presently overseeing different aspects of ES and SD within a group associated with their Facilities Management Office, had been previously been employed in environmental sections of local bodies in the greater Sydney area.

The employment of one or more extra staff members in such a proposed unit, possibly attached to Property Services, would have obvious financial implications for the University but this dependence on central funding could be reduced in time as exemplified by the University of New South Wales Green Office. This unit was established in 1995 to implement the UNSW Environment Policy and has since become self-funding through 'the provision of products and services to UNSW staff, savings resulting from reduced energy costs delivered by switching off electrical appliances when not in use, external grants and consulting' (see Appendix 5).

8. Occupational Safety and Health issues are probably best dealt with by a separate committee from that proposed to administer the environmental sustainability policy.

While some Australian universities in the present study (eg. University of Melbourne) had a single committee administering both occupational safety and health (OSH) and environmental issues, senior managers interviewed at other universities such as ANU considered that OSH issues involve a more regulatory approach than environmental sustainability issues and therefore the two areas should be administered separately.

9. Adopt triple bottom line reporting procedures in preparing the University Annual Report

There is a significant move in many parts of the Australian economy to report not only the financial but also the social and environmental annual performance of an organization. Such an approach is used by many Australian universities in their annual reports and particularly at Monash where there is also a significant initiative in the Faculty of Business to both teach and research this accounting procedure.

The Annual Report submitted by Monash University to the Victorian parliament has four major sections: core business activities (research and teaching), social issues (occupational safety and health, equity, community service), finance performance, and environmental aspects. The latter section is then further divided into reports of the money spent on environmental matters, the committees involved in its administration, the people employed, the projects that have been undertaken (eg. emissions control, water and energy usage) and new environmental initiatives.

10. Encourage students to adopt ES practice in all their campus activities beginning with their first experience of life in a hall of residence.

Halls of Residence can play a very important part in the life of a student particularly if they stay in one in their early years at university. Hence it is important to extend the implementation of ES and SD to halls of residence as well as activities on the main campus.

Already the authors have been approached by the warden of Arana Hall, Mr Jamie Gilbertson, to discuss the implementation of various sustainability initiatives in his hall such as recycling of rubbish. Contacts were also made during the trip with wardens of halls of residence at the University of Melbourne and the Australian National University which could be useful in forming links with other interested halls of residence management staff at Otago.

11. Encourage the further development of academic courses dealing with elements of ES and ED which can be taken as part of as wide a number of degree programmes as possible.

There is probably no other topic than sustainability which can potentially span *every* academic division, faculty and department as well as include all non-academic activities on the campus.

As noted above in the section on the current status of ES at the University, there are already a number of academic papers and several specific degrees (eg. BAppSci in Environmental Management) at Otago which cover various aspects of sustainability. However many of the papers could be better coordinated into cohesive units such as a certificate, diploma or degree structures specifically relating to ES or ED and made available to as wide a section of the university as possible. This coordination role would be best undertaken through an academic advisory group such as the present ESAAG or a future Institute of Environmental Studies.

The authors were particularly impressed with the initiatives currently being undertaken by staff in the National Centre for Sustainability at Swinburne University of Technology, Melbourne who are actively developing individual papers on ES and SD that can be taken as part of a wide range of other courses.

Apparently many employers, at least in the State of Victoria, are now asking for university graduates who have included one or more formal courses in ES and SD in their degree structure. To meet this need, Swinburne University of Technology has introduced a popular Graduate Certificate in Sustainability which is taught in a flexible manner to any holders of a Bachelor Degree or Advanced Diploma from a recognised tertiary institution or to approved applicants with at least five years experience in a relevant field. Such a certificate will meet the needs of the Australian Engineering Society and the Australian Accountants Society who are contemplating making inclusion of such courses on aspects of sustainability as mandatory for professional membership of those organisations.

12. There is considerable research potential in developing a more environmentally sustainable OU campus.

With the present drive to increase the research output of the University which was also a trend emphasized in all of the Australian universities, the inevitable question arises as to ‘How will implementing environmental sustainability practices enhance the research activities including the publication output and hence the PBRF rating of Otago University?’

It was clear from the present visit, that *all* of the universities had sections of their academic staff involved not only in teaching of ES and SD, but also in research on these topics. Often this was through a formal environmental studies academic structure such as the Monash Environment Institute (Monash University) , the School of Resources, Environment and Society (ANU), the Institute of Environmental Studies (UNSW) and the Faculty of Environmental Sciences (Griffith University). There are also now a number of international journals publishing papers specific papers related to sustainability issues such as the *International Journal of Environmental, Cultural, Economic and Social Sustainability* and the *International Journal of Sustainability in Higher Education*.

The potential to undertake research and publish in the area of ES was particularly apparent at Macquarie University which has established the Australian Research Institute in Education for Sustainability (ARIES). This federally-funded centre has generated a lot of research activity involving a wide range of aspects of ES and SD which has attracted funding from outside sources such as the Commonwealth, the State, the City (Sydney) and a number of businesses. The Director of ARIES Assoc Prof Daniella Tilbury has published widely on ES particularly in relation to education (eg. Tilbury & Wortman 2004) and actively contributes to United Nations programmes such as the World Conservation Union (IUCN) Commission on Education and Communication (CEC).

There are a number of academic staff at the University already involved in research on aspects of sustainability particularly in the Geography Department and the interdisciplinary Centre for the Study of Agriculture, Food and the Environment (CSAFE). These research efforts in sustainability matters should be encouraged at the highest level of the University administration.

13. Explore the provision of either new papers or the modification of existing papers to take into account specific aspects of ES and SD.

The authors were impressed with the large number of undergraduate and graduate papers offered by all of the Australian Universities which involved elements of ES and SD (eg. University of New South Wales and Griffith (see Appendix 10) . To some extent this breadth reflects the wide range of disciplines available at the bigger of these universities (eg. University of Melbourne, University of Sydney, University of Queensland and) with some of the disciplines such as Agriculture, Architecture and Engineering not available at Otago University. However there still seems to be an opportunity to review the present content of University courses with respect to ES and SD and make appropriate changes.

14. Coordinate academic courses at the University in all areas of environmental studies including environmental sustainability and sustainable development topics, through a formal academic structure such as an Institute or Centre of Environmental Studies which would span across all academic divisions.

Many of the Australian universities had some formal structure to coordinate courses on ES and SD. Typically these are headed up by an academic director with appropriate administrative support. The University of Melbourne has the Office of Environmental programs which coordinates the environmental teaching activities of more than 100 academics in 10 faculties (Music was apparently the *only* department that couldn't see any connection with ES!). The University of New South Wales has the Institute of Environmental Studies and the Australian National University has a Centre for Resource and Environmental Studies to help coordinate environmental activities across all faculties in their universities.

The University presently has an Environmental Academic Advisory Group (ESAAG) with membership from a number of different disciplines across the campus which was set up to oversee all courses and papers at OU with any environmental content. However' ESAAG meets only sporadically and has no real academic 'clout' or influence compared to a more formal institute such as the Office for Environmental programs at Melbourne and the IES at UNCW.

Such an institute may well offer the opportunity to coordinate a number of existing programmes related to sustainability at the University which are currently taught as part of different degrees (eg. BSc. BA, BAppSci, MSc in Environmental Science) and in this way ,offer a much coherent structure to students interested in obtaining qualifications related to ES and ED.

15. Consider putting forward a claim to set up a national Centre For Environmental Sustainability (NCES) at the University.

Almost all of the Australian universities visited, had set up specific centres or institutes to cover research and teaching aspects of sustainability in addition to any ES groups in their Property and Facilities Management sections which were more concerned with the practical implication of sustainability. For example:

<i>Monash University</i>	Monash Environment Institute
<i>Swinburne University of Technology</i>	National Centre for Sustainability (NCS)
<i>Australian National University</i>	Centre for Resource and Environmental Studies
<i>Macquarie University</i>	Australian Research Institute for Environmental Sustainability (ARIES)
<i>Griffith University</i>	Australian School of Environmental Studies (ASES)

As noted above, the university already has the very successful CSAFE unit and so this proposed new centre would build on the existing strengths of that unit and coordinate all research relating to sustainability across all of the university campuses.

One of the present authors (BMP) has made the recent suggestion of establishing a core research centre for zero waste studies in the University and solicited interest from staff in a number of departments across the whole campus. In fact, zero waste can be viewed as the ultimate aim of recycling activities and hence is just one of many parts of the broad area of sustainable management and development. Therefore any research initiative concerning zero waste should be just one part (albeit, likely to be an important one) of a larger research center for sustainability envisaged in this recommendation.

16. Investigate setting up a Green Steps programme at the University

This is an environmental training programme originally set up in 2000 at Monash University but now extending to many other Australian universities. It was developed for students ‘who were approaching the end of a diversity of degrees and felt that they had been taught a great deal about society’s ‘unsustainability’, but less concerning what to do about it’ (Kaufman *et al.*, 2006). It is run by full time staff and provides graduates with the opportunity to attend a number of intensive workshops and undertake 30 hours of voluntary training in an organisation (often the university) involved in ES or SD issues.

The Green Steps programme Monash University remains the most successful of the Australian operations of this type and Monash staff involved in this programme offered to help the University set up a similar type of programme.

17. Take up membership in a number of Australian organizations which have been established to cover ES issues in tertiary educational institutions.

The University is presently an active member of the Tertiary Education Facilities Management Association (TEFMA) which has raised the profile of ES through newsletter articles as well as organised workshops and seminars. There are also a number of other groups such as the Australian Campus Sustainability (ACTS) and the Environmental Network (EN) (hosted by the UNSW) which the University could usefully join to share information on ES activities and developments on other campuses. Some of these groups are student-based and so it would also be beneficial to encourage and assist interested students at the University (such as selected SCI members) to participate in these organisations and their activities such as conferences.

18. Undertake a full environmental audit of campus activities particularly the supply and consumption of energy and materials to develop energy conservation measures make better use of materials from renewable sources and minimise waste.

Many key environmental personnel interviewed in the present study indicated that significant progress in implementing their environmental sustainability policy only occurred after a full audit was undertaken. The primary responsibility of several staff of the Green Offices of the Australian National University and the University of New South Wales Green Office is to undertake such an on going audit on their campuses. In the case of the UNSW staff, they also teach courses and undertake research on this topic.

Such an audit is particularly helpful in identifying areas of wastage (eg. electricity and water) and the extent of facilities required to enhance recycling (eg. optimal number and locations on campus of bins for disposal of paper).

As part of the overall campus audit, individual departments are often audited by staff within those departments who have been appointed as representatives of their university's Green Office (Appendix 6). The University of Queensland Office of Environment Assessment form used to gather such data on environmental performance and gauge environmental awareness in individual departments is shown in Appendix 7.

A number of Green Office staff at Monash, ANU, University of Sydney and UNSW offered to assist Otago University in setting up environmental audit procedures.

19. Consider using an increasing proportion of renewable energy sources (eg. electricity generated from wind generation) for campus activities

Most of the Australian universities purchase a proportion of their electricity needs from renewable resources (eg. the University of Melbourne currently uses 10 % green electricity (hydro, wind, solar) and 90 % brown electricity (thermal generation using lignite). It is the intention of all

environmental managers concerned with energy policies to try and increase this proportion of green energy even although it is more expensive than brown or other energy sources. An interesting option is being considered at the University of Melbourne to fund this extra financial sum by *savings* in overall energy use.

Although such a distinction in the type of electricity sources at least available on the national grid is not presently made in NZ, it would be a bold initiative by the University to investigate this aspect particularly with the present national proposals for significant wind generation.

20. Initiate a campaign to use less paper, recycle paper and cardboard and purchase new paper with recycled content and from more renewable sources.

Paper is one of the biggest consumable items on any university campus. All universities had widely advertised policies to encourage less paper usage, to dispose of more paper in recycling bins and increase the amount of new paper purchased from recycled/renewable sources. Some of the publicity material used to promote these causes at the University of New South Wales and the University of Queensland is shown in Appendix 8.

The increases in use of recycled paper in some sections of the Australian universities are impressive. 100% of the paper used in the Monash University Library is now purchased from recycled sources. The Australian National University has increased its use of recycled paper from around 5% in 2001 to near 50% in 2005. The staff member in the ANU Green Office responsible for his aspect of sustainable practice, commented that initially there was resistance from both university staff and their suppliers of such paper but this has since disappeared particularly when the ANU Printer clearly demonstrated that there was no difference in the quality of any printing task when undertaken with paper from recyclable sources.

21. Investigate recycling of organic material such as food waste generated on the campus

The University of Newcastle recycles up to 90% of organic waste produced on their campus mainly via a large worm farm and then reuses the resulting humus material for horticulture. The University of New South Wales also has an extensive organic recycling unit which is involved in recycling much of the organic waste on campus. Similarly the University of Newcastle has a large scale worm farm which takes between 80 – 90% of the campus organic waste and uses the resulting vermicast as a rich organic soil on the campus grounds.

The University is very limited in the spare space it has for locating any such recycling facilities compared to the large area of campuses such as the Australian National University and the University of Newcastle. However consideration should still be given to this issue.

22. Investigate improved ways of recycling or disposing of surplus/defunct computer equipment, batteries and telephones

This area was recognized by all the Australian universities to be of significant environmental concern and many have set up detailed procedures to deal with this matter. The University of Sydney offers departments the opportunity to either sell old computers via the Internet or arranges for them to be sent the Sydney Salvation Army who have a group of volunteers that prepares them for free distribution to local schools or strips them down for shipping overseas for waste disposal. Disposal of the often voluminous cardboard packaging in which new equipment is delivered was also considered an issue which the University of Sydney has addressed by requiring all computer suppliers to take back their own packaging. They are also addressing the disposal problem by starting to recommend renting rather than purchasing computer equipment which then requires the renter to take back old equipment at no direct expense to the university. The University of Melbourne makes provision for polystyrene recycling.

The notices circulated by the University of Queensland Environmental Office to departments detailing procedures for disposal of computer equipment and batteries are given in Appendix 9.

Some procedures already exist for such equipment disposal at the University they could be improved in line with the practices of the Australian universities.

The New Zealand subsidiary of the international Ricoh photocopier manufacturing company has just announced (ODT, Aug 21, 2006) a policy of recycling photocopier machines and toner bottles. In the same article, it was noted that Dell are also offering free recycling of any Dell-branded product to consumers in Australia and New Zealand. Presumably, these recycling policies of both companies would apply to their present or future equipment in the University.

23. Enhance recycling and waste minimisation in individual departments by appointing an interested staff member and student to promote these activities.

The existing recycling and waste minimization efforts on campus should be extended to all departments. The Australian university experience would indicate the most effective way of implementing such practices at the departmental level is to appoint an interested staff member and a student from each department to promote the activity and to liaise with any implementation staff in Property Services.

See 66 for the programme established by the University of Queensland for their Green Office departmental representatives.

24. Enhance the awareness of appropriate staff involved in the design and construction of new buildings and the refurbishment of existing buildings on campus to optimize energy consumption and incorporate materials from sustainable and renewable resources.

Many new buildings on the Australian campuses incorporate specific features to minimise the consumption of energy and water for such activities as air-conditioning and lighting and to incorporate natural materials as much as possible. This was particularly apparent at the University of Newcastle where a number of the new buildings have won Australian architectural competitions for their environmentally sustainable design features. For example, they have either built new buildings or renovated older ones that have used more natural light for open working spaces, made extensive use of solar heating, and they sited new buildings to optimize sun for natural heating and installed rainwater collections systems.

Monash University staff considered that the lack of sustainable design features and use of materials from renewable resources particularly in refurbishing existing buildings, was perhaps the biggest environmental issue affecting their campus – ‘the biggest barrier to building sustainable buildings on [the Monash] campus is the short term view of saving money on the purchase of materials and construction’ (Townes, Personal communication).

Although water in New Zealand is in nothing like the short supply that is in Australia, energy supply is an increasingly important issue in New Zealand and hence for the University. Apart from the direct financial savings from using less energy, the adoption of sustainable building design on the campus would set a very good example for the rest of the community to follow.

25. Extend the concept of ES on the campus to heritage aspects of sustainability in relation to the older buildings.

Australian National University has a full time Heritage Project officer associated with their Sustainability Office whose job is to assist in the development and implementation of the ANU Heritage Strategy and associated heritage policies and plans, and to undertake research into the indigenous, natural and built heritage of the ANU campuses. The University has many older buildings with heritage status and so this issue should be included in any broader plans for sustainability of the campus.

26. Investigate how ES activities on the campus can be more effectively publicized among all staff and students

All the Australian universities highlighted the importance of this aspect in order to get ES widely accepted on their campuses. A variety of written material had been produced and displayed with varying success in various parts of the campus. For example, staff at ANU commented that in their experience, an ideal site was inside the door of toilets (!). At UNSW a bookmark and a range of postcards have been prepared on specific ES issues particularly relating to energy and water

conservation, and recycling. Stickers promoting the switching off of lights placed over all light switches. At present most light switches in the University Property Services building have stickers promoting energy saving.

The publicity material can include incentives to adopt sustainability activities. The UNSW Green office promotes the reward of a free cup of coffee at the student union to anybody reporting a genuine case of energy or water wastage on the campus.

A wide variety of media are possible including using the University Web site, and so it would be an interesting challenge for the students enrolled in some papers at the University such as DESI 301 and DESI 501 to design appropriate material publicizing ES activities on the campus and how best to communicate this information to as wide a range of staff and students as possible.

27. Environment policies developed by the University should include all campuses (Dunedin, Christchurch, Wellington and Auckland).

The relative importance of some issues covered in the University CEPS will vary with each of the present OU campuses. For example, there are no significant grounds associated with the Christchurch Clinical School. However there are many other areas such as energy conservation, recycling, purchasing from renewable sources and sustainable building design which are common to all campuses.

28. Investigate further links with the Otago Polytechnic with respect to the development of sustainable activities on the two campuses.

There are already some joint ES activities shared between the two organisations such as the purchase of energy and toilet consumables. However many of the above recommendations concerning the University could equally apply to the Otago Polytechnic and there may well be the opportunity to further share in some of these initiatives. Any facilities set up to recycle organic waste, the purchase of consumables such as printing and writing paper from renewable sources supplies and the disposal of used computer equipment could be well be more efficient when they span across both campuses.

In terms of sharing academic courses related to sustainability between the University and the Otago Polytechnic, Swinburne University of Technology could well provide a good example to follow as it caters for research and teaching responsibilities at a university level as well as TAFE (Technical and Further Education) courses on the one campus.

29. The unique relationship of the University with Dunedin City and the size of the city provides the opportunity to extend any OU environmental sustainability policies to the wider city through liaison with the Dunedin City Council and the Otago Regional Council.

Almost all the Australian universities were located in large cities often with multiple university campuses eg. Melbourne (pop. approx 4 million) with University of Melbourne, La Trobe, Monash University, Swinburne University of Technology etc.) and although some discussions had occurred with local bodies (typically with respect to transportation issues to and from each campus), the size of the cities and diverse nature of each campus meant there was little opportunity to develop any significant campus environmental sustainability policies in conjunction with the local authorities.

There was agreement with the present authors that the University is in a unique position to develop campus environmental sustainability policies in conjunction with Dunedin City authorities. The most obvious area is the provision of environmentally sustainable transportation policies which might also solve some of the present difficulties of providing enough parking spaces on campus. It might be possible for the university to arrange to exchange the cost of meeting the city requirement for provision of parking spaces in any new building on campus with the cost of offering subsidized transport for staff and students to and from the campus on Dunedin buses. The DCC presently assists with a rid share programme providing reserved spaces close to the campus.

The University of Newcastle has gone some way down this path by recently investing A\$3.85 M on transport infrastructure and cycle way improvements on the campus.

As noted earlier, progress has already been made in terms of setting up a Tertiary Sector Steering group involving senior officers of the Dunedin City and the three Dunedin tertiary institutions to discuss long term planning and coordination for the joint campus area and the tertiary sector. This group should be encouraged to incorporate concepts of ES and SD in all of their planning and coordination.

30. Encourage the exchange of academic and non-academic staff involved with any aspect of ES at the University with their counterpart(s) in an Australian university.

A number of staff indicated their interest in exchange visits with the University to assist in the development and implementation of ES and SD policies on the University campus. The possibility of exchange of Australian and New Zealand students enrolled in a variety of environmental courses for undertaking work placements (comparable to the University ENV5 402 paper) in the other country was also suggested.

31. Investigate outside sources of funding such as the MfE Sustainable Management Fund (SMF) for money to support the implementation of the suggested initiatives to make the campus more environmentally sustainable and as a model for other tertiary New Zealand educational institutions.

The purpose of the Sustainable Management Fund is to support the community, industry, iwi and local government in practically focused action that produces long-term environmental benefit. Its objective is to make a positive difference to the environment by funding projects:

- that fit under one of the .. topic areas
 -
 - 3. urban sustainability.
 - 4. waste minimisation and resource recovery.
 - 5. practical action to address climate change.
 - 6. that strengthen partnerships between the community, industry, iwi and local government.
 - 7. that can demonstrate buy-in and support from stakeholders.

It would appear that any ES and SD initiatives undertaken by the University particularly in conjunction with the Dunedin City Council, may well fall into the above topic areas (3), (4), (5), (6) and (7).

Benefits to Otago University

There are potential benefits to the staff and students of the University by adopting more environmentally sustainable practices including:

1. Reduced costs through reduced energy consumption , less waste and more recycling.
2. Reduced impact on the environment by more efficient transport, better building design and more use of materials with a higher renewable source content.
3. By educating students in a broad range of sustainable practices, the University will be equipping them with life skills that will enhance their employment prospects.
4. By becoming a signatory to an international agreement such as the Talloires Declaration, achieve local, national and international exposure to the world-wide movement towards a more environmentally-sustainable global society.
5. Enhanced research opportunities in the broad area of sustainability.
6. Enhancement of existing links with the Dunedin City Council and Otago Regional council to make Dunedin City a more sustainable environment.
7. Enhanced collaboration with the Otago Polytechnic.
8. More comprehensive assessment of the performance of the university through the use of Triple Bottom Line reporting procedures.

There will be costs in implementing the recommendations outlined in this report with the most obvious and direct one being salary costs of staff employed in the suggested unit that could be set up in Property Services to oversee the practical aspects required to implement an updated Code for Environmental Protection and Sustainability. However, as noted above in the case of the University of New South Wales Green Office, the financial cost of running that unit could be partly, if not completely met, through financial savings from improved energy consumption and campus recycling.

Conclusions

This visit to Australian universities was undertaken in an environmental ‘climate’ which has recently been described in terms of (Flannery, 2003):

‘Australia ..is labouring under the burden of a profound environmental crisis for which there is no solution in sight ..[we] are losing the battle against the severe environmental problems that confront us as we try to maintain the most basic elements of life – our air, or soil, the quality of our water – and to conserve the biodiversity that is the continent’s gifts to its inhabitants.’

The authors believe similar comments could be also be made about aspects of the New Zealand environment. From the visit it is clear that there is more that Otago University could do to enhance research, teaching and implementation of environmental sustainability and sustainable development practices. It has a good basis in the 1994 Code of Environmental Protection and Sustainability but the priority actions listed in an updated version of this Code, in conjunction with the present recommendations, should be put into practice.

Two leading staff involved in implementing environmental sustainability issues at Australian National University have noted (Carpenter & Meehan, 2002):

‘ if environmental programs are to succeed, they must be mainstreamed into university operations rather than be sidelined as soft management options ’.

Boulet from Environment Victoria (2006) has also noted:

‘ within an organisation sustainability is not only about changing the physical working environment, it is also about changing those who actually do the work. Adequate recycling infrastructure, sustainable building design and energy efficient equipment are important, however, it is as necessary to work with the people who use the offices, the classrooms, the equipment and the waste bins, to ensure that their behavior and actions compliment environmental infrastructure and institutional policies ’.

If the University was to adopt a number of recommendations made in this report, then it would be moving towards becoming a leader among tertiary institutions within New Zealand in all aspects of education for sustainability and fulfilling the challenge issued by Dr Morgan Williams, The NZ Parliamentary Commissioner for the Environment in his address to the University in 2004.

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