WHAT AFFECTS ENVIRONMENTALLY SUSTAINABLE BEHAVIOUR? A CASE STUDY OF VISITORS TO WHISTLER BC

by

LINDSAY CAROLYN TAMARA NATHANIEL
B.A. Honours, University of Western Ontario, 2006

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

The Faculty of Graduate Studies

(Resource Management and Environmental Studies)

THE UNIVERSITY OF BRITISH COLUMBIA
(Vancouver)

May, 2011

Abstract

Environmental sustainability has increasingly become a global concern and a goal for many communities. The Resort Municipality of Whistler is one such community. While engaged in sustainability-based planning, it has not yet included specific input from its large visitor population. It is useful to understand visitor views and what drives their behaviour before implementing integrated environmental sustainability initiatives. This research investigates what influences environmentally sustainable behaviour of visitors to Whistler. It examines perceptions of environmental sustainability, environmental behaviour norms, and motivators and barriers affecting environmental behaviour of visitors to Whistler. It is grounded in literature on sustainability theory and environmental behaviour. Data from 232 visitors were collected through surveys in winter 2009. The data were analyzed using correlations, analyses of variance, by extent of agreement, and by categorizing respondents' quotes and discussing issues raised. Results show that convenience, values, cost, how local businesses act and the belief that one's behaviour would make a difference most influence environmentally sustainable behaviour at Whistler. It was determined that information provided and social pressures have the least influence. Respondents perceive that maintaining a healthy environment is their responsibility and do not prioritize the environment over human well-being. They engage in recycling and hotel-related environmental behaviours more often than food-related ones. The research concludes with recommendations on improving visitor engagement in Whistler's sustainability initiatives.

Preface

The University of British Columbia's Behavioural Research Ethics Board (BREB) approved of this research. The study's ethics certificate number is BREB H08-03066.

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Acknowledgements

Thank you to everyone who took an interest in my research and to everyone who made this research possible.

First and foremost I would like to thank my supervisory committee: Professors Tony Dorcey and Ralph Hakstian. I could not have asked for a better committee. They were motivating, insightful, and extremely helpful. They saw value in my research and provided excellent guidance. Both have an incredible range of knowledge. Tony, my supervisor, provided much needed advice on the structure and order of my thesis. Ralph always knew which analytical procedure I should follow. They took time out of their busy schedules to address my concerns and had practical solutions to my dilemmas. Tony and Ralph, I am grateful to have had the opportunity to work with and learn from you.

I would sincerely like to thank my parents Angela and Robert Nathaniel. They supported me from beginning to end. They were there for me when I was discouraged, they congratulated me after each success, they believed in me. They kept me motivated and would not let me give up during difficult times. They helped proof read and provided suggestions where needed. Mom and dad, your support and encouragement mean a lot to me.

Thank you very much to the team at Whistler2020 for their support in this project; Shannon Gordon for proposing project ideas; Laura Mackay for emailing me informative documents and providing feedback on early thesis outlines and drafts; Mike Vance, Laura Mackay, Kevin Demaskie and Tourism Whistler for meeting with me and providing feedback on ideas. I would like to particularly acknowledge Kevin Demaskie, who played a large role in making this research possible. Thank you Kevin, for explaining the Whistler2020 vision, for putting me in contact with others conducting related research, for providing the facilities and supplies with which I could conduct my research, for kindly answering my questions and finding a solution to dilemmas. Whistler2020 team, I admire your determination and leadership and wish you all the best in making your sustainability vision a success.

I would like to thank the following partners of Whistler2020's sustainability vision for kindly allowing me to recruit my visitor sample from their venues: Cathie Coyle and Erin, coordinators of the Visitor Information Kiosks; The Longhorn Grill and Saloon; Tapley's Neighbourhood Pub; and the Westin Resort and Spa. I would like to extend particular thanks to Joey Gibbons from Gibbons Hospitality Group and Chris Badyk, manager of The Longhorn Grill and Saloon for going out of their way to make the visitor recruitment process a success. I really appreciate it. I also would like to thank my Whistler visitor sample for their insight and for filling out my survey.

I am grateful to my family, good friends, roommates and work buddies for all their support, encouragement and understanding; Nina Pariser, Veronica Lo, Zekai Murat Killic, Graham Davis, Tasha Nathaniel, Dani Kirschke, Kirsten Harma and Anne Murray. I would like to provide special thanks and recognition to my sisters; Alison Nathaniel for

For my parents Angie & Roby

and for the wellbeing of our planet.

Chapter 1: Introduction

1.1 The Issue

Environmental sustainability has become a global concern. In particular, the fear that accelerating environmental degradation can undermine the long-term ability of the planet and its inhabitants to survive has given strong impetus for people, industries and governments to seek more sustainable alternatives. Environmental sustainability is now on the agenda of many cities and countries worldwide. In "naturistic" tourism-based areas, it is of particular local importance. Though visitors may develop an appreciation for these natural areas, they can also contribute to a potential overuse of resources causing lasting damage (Dolnicar, 2008). Without natural resources and scenic beauty in these areas, a collapse in the economy and community could easily occur. The Resort Municipality of Whistler (henceforth referred to as Whistler) is one such "naturistic" tourist destination, and it is also the location of this research.

1.2 The Case Study Situation of Whistler

Whistler is located in British Columbia, Canada, 120km north of Vancouver and 40km from the Pacific Ocean. It is a scenic area, surrounded by wildlife, mountains and lakes (Resort Municipality of Whistler, 2008). It is best known for offering one of the largest downhill skiing areas in North America and for hosting the 2010 Winter Olympics. Whistler has a population of 10, 200 permanent residents, and in addition, an average seasonal resident population of 1,550 and 2,400 employees who commute daily to Whistler from nearby regions (Whistler2020, 2011, Population and Demographics page). As a popular tourist area year round, Whistler welcomes over 2 million visitors a year, or about 26,000 per night on average (2.56 million in 2009, Whistler2020, 2011, Visitor Number page).

Whistler is engaged in a community-wide sustainability initiative called Whistler2020 (Whistler2020, 2007). Whistler2020 is funded by the local government and has a task force consisting of approximately 175 volunteers from the community in

addition to 37 business partners, educational institutions and NGOs (Whistler2020, 2007). Whistler2020 aims to achieve social and environmental sustainability while encouraging healthy economic development by the year 2060 (Whistler2020, 2007, p. 21). The Whistler2020 sustainability vision, however, has had little input from the influx of over 2 million tourists that visit each year. As there are approximately 200 tourists for every local per year, it is necessary to recognize that visitor engagement is essential in order to successfully implement actions that can lead to the economic, social and environmental sustainability of the town. There is a need for visitors' perspectives to be included in planning. Despite the near impossibility of obtaining a representative sample of visitors, the current study provides an initial assessment of visitor perspectives and behaviour patterns.

1.3 The Main Research Questions and Study Methods

The research seeks to understand how visitors can be engaged in achieving environmental sustainability goals at Whistler by examining what factors affect their environmental behaviour. To discover the determinants of environmentally sustainable behaviour of visitors to Whistler, the following three main research questions are addressed:

a) What environmentally sustainable behaviours are visitors regularly engaging in while at Whistler?
b) What are visitor perceptions of environmental sustainability?
c) What most strongly motivates or discourages visitors' environmentally sustainable behaviour at Whistler?

a) Current environmentally sustainable behaviour norms of visitors at Whistler can be used as an indicator of progress towards environmental sustainability. By researching which environmental behaviours are not currently habitual and why, these can be focused on, to facilitate visitor engagement.

b) Visitor views on environmental sustainability can affect what initiatives they would value and support and what types of communication approaches they would best respond to. More specifically, this research provides a picture of Whistler's visitors

perceptions of: who is responsible for environmental protection; how feasible protection is; how much control they have in the matter; how interested/involved they are in being environmentally responsible and so forth. It also provides information on how visitors prioritize environmental sustainability; how they evaluate it; how concerned they are with environmental protection; what the environment means to them; and how familiar they are with the term sustainability.

c) By researching the motivators and barriers to environmentally sustainable behaviour of visitors at tourist destinations, appropriate steps can be taken to reduce or encourage them. More specifically, this research asks how strongly aspects of the following variables encourage or discourage environmental behaviour at Whistler: social norms, values, cost, convenience, regulations, Whistler's atmosphere, and information provided by Whistler regarding environmental sustainability.

Together, the three principal research questions provide insight into what affects environmentally sustainable behaviour at Whistler and where Whistler and its visitors currently stand on these issues. They also provide insights into what Whistler can do to improve visitor engagement in environmental sustainability at systematic and communicatory levels and ultimately how engaged Whistler visitors can be in local environmental initiatives. These questions are first studied via a literature review of past research as it relates to the Whistler visitor situation. Then, in an effort to include tourists in Whistler's sustainable planning process, a sample of 232 Whistler visitors were surveyed during the winter season of 2009.

1.4 Disciplinary Focus

The focus of the research is on the environmental component of sustainability because it is both a personal interest of mine and because I believe there is a need to understand how people view their relationship to the environment. This research concentrates on how the study of mental processes and behaviour (the field of psychology) can play a role in progress towards environmental sustainability. If "our environmental predicament is largely caused by human behavior" (Winter, 2000, p. 516)

it makes sense to research what drives or hinders environmentally sustainable behaviour. Gifford (2007) argues that: "humanity cannot move far toward the dream of sustainability without understanding how individual citizens think and without understanding their motivations and goals. Understanding sustainability and solving its problems require consideration of individual and social attitudinal and behavioral factors," (p. 205 & p. 207).

The current research does not only study behaviours that would impact environmental sustainability. Gifford (2007) explains that the study of psychology can also be used to understand how individuals would react to proposed structural and regulatory changes towards environmental sustainability by policymakers and how these changes would influence individual behaviour and sense of well-being. Psychology can also help with "understanding and facilitating the public participation process" of environmental sustainability (Gifford, 2007, p. 201). Many barriers towards environmental sustainability occur at the level of individuals (according to Gifford), therefore studying their perceptions, their environmental behaviour and what influences their behaviour is crucial. For findings to be useful both within and outside of academia, current environmental sustainability practitioner and government research is examined in addition to academic research.

1.5 Thesis Structure

Literature relating to the study's three main research questions is discussed next, along with background information on environmental sustainability and drivers of environmental behaviour. Following this, the methods chapter provides details on: how the current research was conducted, the survey and how survey results were analyzed. The quantitative and qualitative results and discussion of the three main research questions are presented next. Lastly, the conclusion discusses strengths and limitations of the research, implications for future research and recommendations for Whistler based on findings and literature.

1.6 Conclusion

The purpose of studying what affects the environmental behaviour of visitors to Whistler is to use this information to better engage them in environmental efforts, and to help Whistler implement successful environmentally sustainable initiatives. In particular, the current research seeks to understand perceptions of environmental sustainability; what drives and inhibits environmental behaviour; and what behaviours visitors at Whistler currently take part in and why. It builds on the premise that achieving environmental sustainability is a global value and is essential for our survival. It is a response to the lack of input from Whistler visitors on this topic. This research can play a role in progress towards environmental sustainability and ultimately its methods can be applied to areas beyond Whistler.

Chapter 2: Literature Review

2.1 Literature Review

This chapter provides literature background for the three main research questions. It reviews where the current study fits into frameworks of progress towards environmental sustainability. This includes an explanation of what is meant by environmentally sustainable behaviour and literature-based indicators of effective environmentally sustainable behaviours. Following this, relevant theory on what drives environmental behaviour is summarized including both situational drivers that can be adjusted by Whistler and internal drivers based on personal beliefs. Lastly, literature on specific variables that can influence behaviour, including perceptions and demographic variables are discussed. The chapter concludes with the applicability of this literature to the current case study at Whistler.

2.2 Environmentally Sustainable Behaviour

2.2.1 Introduction

The following section reviews literature for the first main research question: What environmentally sustainable behaviours are visitors currently engaging in at Whistler. It also provides background literature for a more global picture of sustainability and environmental behaviour. It is necessary to understand what environmental behaviours would most impact progress toward environmental sustainability before studying whether visitors are engaging in them. An examination of the literature goes back to the origins of sustainability and the study of environmental behaviour, their definitions, frameworks and criteria for measuring progress. This section provides an interdisciplinary approach to determining what impacts environmental sustainability and what are impact-based environmentally sustainable behaviours. While Introduction Section 1.4 of the thesis introduced why environmental psychology is useful to the current research, this section adds how other disciplines can interact to better resolve environmental issues. Following this, indicators that measure progress in important environmental sustainability areas are introduced, as they relate to the Whistler situation. Examples of indicators that relate to Whistler visitor environmental behaviour or perceptions are included. Finally, this section

examines past literature on environmental behaviours people engage in regularly, in relation to other factors such as the behaviour's difficulty level and perception of environmental impact.

2.2.2 Sustainability and Environmental Behaviour: Background, Definitions and Interdisciplinary Focus

Before the term sustainability was coined, ideas which formed the underlying foundation for defining what sustainability means today arose as early as 1972 at a United Nations conference on the Human Environment in Sweden (Research Group on the Global Future, 2005; The Presidio Trust, n.d.). There, for the first time, this concept was discussed on a global scale. An interdependence between human beings and the environment was recognized as was the need for a common vision and universal principles. In 1987 the United Nations' Brundtland report defined sustainable development as: "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs," (Brundtland Commission, p. 54). The concept of 'sustainability' continued to gain international popularity in following Earth Summits in 1992 and 2002, (Research Group on the Global Future, 2005).

Current definitions and interpretations of sustainability vary depending on the context and circumstances in which it is used as well as the understandings of the people applying it (Alberti, 1996; Fukai, 2005; Research Group on the Global Future, 2005; University of Reading ECIFM, 2008). Most definitions recognize that human survival is dependent on healthy ecosystems (clean air and water, space for biodiversity to flourish and natural resources from which to produce goods) and that there are limits to what ecosystems can handle. They also recognize the interactions and interdependence between environmental protection, economic development and social development (Alberti, 1996; Edwards, 2007; O'Toole, et al., 2006; Research Group on the Global Future, 2005; The Presidio Trust, n.d.; Whistler2020, 2010). For example, if people do not have equal opportunities and cannot meet their basic needs (such as having enough food) they cannot act sustainably towards their environment, (Cook, 2004). If the economy is doing poorly and there are no stable employment opportunities or enough

supply of goods, both society and the environment will suffer in an unsustainable search to meet such needs. Goods will be produced inefficiently without regard to their long-term environmental or societal effects, (Cook, 2004). Therefore, the long-term viability of all three sustainability components (economic, social and environmental) must be addressed for all stakeholders involved when making decisions (Whistler2020, 2010). For the purpose of this thesis, the terms sustainable development and sustainability are equivalent and interchangeable. Other authors such as Pope, Annandale and Morrison-Saunders (2004) have also used these terms interchangeably. More information on different interpretations of these terms can be found in Section 2.3.3.10: Prioritization and Meaning of Environmental Sustainability.

After the Rio de Janeiro 1992 Earth Summit, there was a move away from top down environmental sustainability policy approaches and an emphasis towards involving individual people in environmentally sustainable actions (Barr, 2003). It was argued that for long term environmental sustainability to take hold, and be rooted into every day life, ordinary people (such as Whistler visitors) needed to be active participants. Environmental behaviour, a field in psychology developed in the 1960s, has contributed to understanding how this might best be achieved (Gifford, 2007; Kollmuss & Agyeman, 2002). There are several ways of evaluating environmental behaviour, depending on the criteria chosen. Two types of criteria for assessing this behaviour are its impact on the environment and the intent of the behaviour. Stern's (2000) impact based definition of environmental behaviour is: "the extent to which it changes the availability of materials or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere itself," p. 408. His intent-based definition is: "behavior that is undertaken with the intention to change (normally, to benefit) the environment," (p. 408). Environmental benefits include reducing negative impacts to the environment. Stern adds that both definitions are important for research purposes. The impact-oriented definition can "identify and target behaviours that can make a large difference to the environment". The intent-based definition "focuses on people's beliefs, motives, and so forth in order to understand and change the target behaviors." Stern (2000) also explains impact-based environmental behaviours include those both resulting in direct environmental change

(such as reducing waste) and indirect environmental change (such as voting a certain way).

Gifford (2007) however explains that despite its potential usefulness, studying the population's environmental behaviour and attitudes has not been central to the study of environmental sustainability due to several impediments. Though much of the current research is based on environmental psychology literature, researching the visitors' behaviours and mental processes alone does not provide sufficient information to progress towards environmental sustainability. Gifford (2007) provides an example of a study where a fishery collapsed from overuse "with most fishers congratulating themselves on their environmental concern" and being proud they fished less than they could have. While environmental psychology can help understand perceptions and predict behaviour, the discipline alone does not "explore biotic and ecological issues," (Gifford, 2007, p. 199). Psychology cannot estimate limits to what fisheries for example can sustain and it does not discriminate what is scientifically true or false about environmental degradation (Gifford, 2007).

It is important to understand how environmental sustainability progress can be made in practice, what environmental behaviours, structural changes and pricing mechanisms significantly impact the environment and what are the threshold estimates that the environment can sustain. Specific disciplines within the natural sciences are generally responsible for collecting factual knowledge of what impacts ecological health. To be able to progress with environmental issues from a psychology perspective, Gifford (2007) suggests that psychologists must keep up with this knowledge. They must not endorse false, fear-enhancing claims, but be well informed about valid environmental concerns, and cater their behaviour change and communication efforts accordingly (Gifford, 2007, p. 208). This section of the literature review examines progress towards environmental sustainability and environmental behaviour from an interdisciplinary perspective. It integrates knowledge from economics, policy and the hard sciences (ecology, biology, chemistry, engineering, etc.; based on environmental sustainability

indicator literature) with psychology. Knowledge from and interactions between disciplines is critical for effective environmental sustainability efforts.

To bring sustainability and environmental behaviour together, environmentally sustainable behaviour is defined here as: "Behaviour which either improves longterm environmental-well being (for both people and the environment), or does not harm the environment past the point in which it can no longer sustain itself, while taking into account the other components of sustainability". Improvement can be measured using present environmental sustainability indicator statistics as a point of reference. For simplicity, the terms environmental behaviour and environmentally sustainable behaviour are used interchangeably within the remainder of the text, and from hereafter both refer to environmentally sustainable behaviour. For further differences in meaning between the terms and potential concerns with using them interchangeably, refer to Sections 4.3.3 and 5.2.

One framework for effective behaviour change is that of Gardner and Stern (1996, from Stern, 2000). The first of four steps in this framework is to "identify environmentally significant target behaviours in terms of their impact." The second step is to analyze these behaviours and "identify the responsible actors and actions". This is followed by considering the variables causing these "behaviours from the actor's standpoint" before coming up with "promising strategies for intervention" (Stern, 2000, p. 420). The current study follows this framework. It identifies which environmental behaviours would impact the environment most, and which of these Whistler visitors can be responsible for. It also researches the causal variables for these behaviours from visitors' own perspectives. It ends with recommendations on improving visitor environmental behaviour.

2.2.3 How to Determine What Impacts Environmental Sustainability and Criteria for Impact-based Environmentally Sustainable Behaviour
Exactly how to bring about environmental sustainability- what actions to take and how to determine if they will be effective - are the questions asked by city planners, industries and governments of countries worldwide. Various theoretical frameworks and

processes for applying and assessing environmental sustainability exist. Assessing progress towards environmental sustainability is most often measured using criteria and specific quantifiable measurement indicators (Alberti, 1996; The University of Reading ECIFM, 2008). There are diverse perspectives of environmental sustainability and not yet one set of agreed upon indicators to assess progress (Dajl,1995; Fricker, 2001; Pope, Annandale & Morrison-Saunders, 2004). Many organizations, academics and communities have developed their own comprehensive set of criteria and indicators (Alberti, 1996; Englund, 2000; Needham & Rollins, 2003; Sustainable Planning Research Group, 2005; etc).

Environmental sustainability indicators also differ because of differences in geography, economies, human-environment interactions and policies in different locations, (Alberti, 1996; Dajl,1995). Thresholds for how much the environment can sustain differ depending on the area. Also each local community has its own measurement needs depending on specific goals, priorities and values of the people living there. Such a large variety of indicators however can be overwhelming and international organizations have tried to harmonize them in order to have a global way of measuring and comparing environmental sustainability progress (Alberti, 1996). There are too many sources of environmental sustainability criteria and measurement indicators to list within the text, but for further reference, examples of sources can be found in Appendix A.

Whistler's criteria for sustainability are derived from a framework called The Natural Step (TNS). The criteria are similar to those proposed by ecological economist Herman Daly (Alberti, 1996, p. 383). According to TNS and the Whistler2020 Vision, the conditions (or criteria) required for a sustainable society are as follows:

1) Nature is not subject to an ongoing build up of concentrations of substances extracted from earths crust (such as oil or copper).

2) Nature is not subject to an ongoing build up of concentrations of substances produced by society (such as plastics or DDT).

3) The ability of nature to run its cycles is not physically inhibited. (Inhibiters could include paving over wetlands or over-harvesting).

4) Barriers are not created which undermine the ability for people to meet their basic needs (Basic needs could include: education, healthcare, freedom of expression, food, protection or shelter).

(Source: Cook, 2004, p.14; Whistler2020, 2007).

Whistler further divides its criteria for achieving sustainability into separate impact areas. Seven of these areas relate to the environmental component of sustainability- Water, Energy, Natural Areas, Built Environment, Food and Materials & Solid Waste (Whistler2020, Explorer page). As can be seen in Appendix A, much environmental sustainability indicator literature also mentions these areas as being critical for evaluating performance (though slightly different area names and methods of grouping indicators are used). Examples of measurement indicators and references for each main environmental sustainability area are listed in Appendix A. Indicators fall under the disciplines of: ecology, technology, architecture, biology, chemistry and so forth. As mentioned earlier, though these disciplines are not the focus of the current research, they do have a place. In order to effectively progress with environmental sustainability, it is important to be aware of what impacts it, how to measure it and how valid are people's perceptions of what deteriorates natural resources. The indicator examples chosen for the table in Appendix A are in line with Whistler2020's goals and criteria. Their selection basis is explained in the Appendix.

Many steps towards environmental sustainability are made at the structural, government, regulatory or business level. Nevertheless, environmental sustainability measurement indicators exist at the individual behaviour level as well, for example: the usage rate of energy, water and materials. One way of monitoring and evaluating these behaviours is to use William Rees' Ecological Footprint metric. It is a measure of the capacity of the Earth to regenerate demanded resources and to decompose waste produced. The assessment can be applied to countries, cities and individuals (Global Footprint Network, 2010). TNS provides criteria to follow and integrates components of sustainability for a more holistic approach while the Ecological Footprint Metric provides

a universal measuring tool of levels of resource use by individuals and countries. The engagement level of Whistler visitors in environmental sustainable behaviours can be compared with the Ecological Footprint Metric to help determine where Whistler stands.

Examples of effective environmental behaviours are included below for each of Whistler2020's environmental impact areas (based on resources of what impacts environmental sustainability included in Appendix A). The importance of each impact area is also explained. For areas that do not directly involve Whistler visitor behaviour, the relevance of visitor perceptions is described. The environmental sustainability impact areas and the behaviours within them that would impact environmental sustainability most were part of the criteria used to determine which environmentally responsible behaviours were asked about in the current study's Whistler visitor survey. Together these questions help answer: What environmental behaviours are visitors currently engaging in at Whistler? For comparison purposes, some consumption statistics from other sources, where available and recent, are mentioned. Comparability however is limited due to time and place differences. Differences in trends, behaviours and perceptions also vary depending on how the economy is doing and by amount of available resources.

2.2.3.1 Environmental Sustainability Impact Areas
Water

Globally, fresh water usage has doubled in the last 40 years (Millennium Ecosystem Assessment, 2005 via Whistler2020, 2010, Water page). A sustainable supply of water is a survival need, therefore responsible water usage is an environmental behaviour goal. In 2009 Whistler's daily water consumption was 584L per person per day (Whistler2020, 2011, Water Use page). This is an increase from 2008. It is higher than recommended targets and above average international water consumption figures. (When calculating the per capita water usage, the average daily visitor population was accounted for. This figure includes water delivered to end users from Whistler's water plants but does not include water used for Whistler's mountain operations, golf courses and other private uses.) To compare the percentage of water individuals are responsible for using

versus that of the industry sector, the UK's Department of Environment, Food and Rural Areas' (DEFRA, 2008) research shows that the household/accommodation sector used 50% of the public water supply in the UK during that period. (Data on the tourism sector was not available, neither was the equivalent, recent Canadian data). DEFRA's 2008 research results are based on a large scope of previous research conducted in the UK between 2006 and 2007. Whistler2020 suspects that a "perception of local abundance of water is a primary contributor to the fact that throughout the community, water resources are often neither being used efficiently, nor for appropriate end-uses," (2010, Water page).

Energy

In 2008, Whistler's total primary energy use was estimated at 3,110,000 GJ (122.6 GJ per capita and costing $74 million), an increase from the previous year, but mainly due to a commercial usage increase. (This figure includes "energy source inputs at points of generation or use", such as "thermal plants, hydro sites, gas stoves, etc." and "intra-community transportation energy", including buses; Whistler2020, 2010, Energy page.) Also in 2008, 45,000 tonnes of emissions were released due to propane use at Whistler, (Whistler2020, 2010, Energy page). Non-renewal energy can have drastic impacts on air quality, the environment and human health, and its supply is limited. The climate change-causing Green House Gases (GHGs) emitted can influence Whistler's snowfall and stability. Renewable energy sources such as hydro-electric dams impact aquatic ecosystems, (Sustainable Planning Research Group, 2005). Pimental, et al. estimate that fossil fuel energy in the food system could be reduced by 50% with changes in production, processing, packaging, transport and consumption (2008, p. 468). (Thinner and lighter packaging materials can save energy because packaging and transportation are energy intensive.) In comparing the percentage of energy usage individuals are responsible for to other sectors, DEFRA UK (2008) found that the household/accommodation sector was responsible for 42% of carbon emissions from energy use, including private car use. (Recent Canadian data for energy use was not available). To become more environmentally sustainable, Whistler aims to reduce its

energy consumption and can only go so far without engaging its visitors in this goal. Indicators include heat and light usage.

Transportation

Transportation is currently the largest source of energy-related GHG emissions at Whistler, despite that emissions decreased by 6% per year over the last three years, (Whistler2020, 2010, Green House Gas Emissions Page). This includes the movement of people and materials within Whistler as well as to and from Whistler, regionally and internationally. At Whistler, 66,000 tonnes of carbon were released into the atmosphere in 2009 from transportation diesel and gasoline (Whistler2020, 2010). To compare, in Canada in 2002, transportation combustion was also the largest source of GHG emissions, followed by fossil fuel sourcing and distributing and heat and power (Environment Canada 2004, from Sustainable Planning Research Group, 2005). Transportation related environmental sustainability indicators also include the impact on natural areas. In 2009, 37% of visitors traveled to Whistler by bus (from Vancouver; Whistler2020, Visitor Bus Travel page, 2011). In 2008, 47% of Whistler locals commuted to work by bus, carpool, bike or by walking (Whistler2020, Commuting Mode page, 2011). Whistler visitors can help identify the barriers towards more environmentally responsible transportation to, from and at Whistler.

Materials and Solid Waste

Materials are needed and used for the production of food, shelter, clothing, leisure and more. Waste occurs during the collection of materials from the earth, the production of goods, their packaging, their transportation and their use and again when the material is disposed of (Whistler2020, 2010, Materials and Solid Waste page). More efficient material cycles involve re-using, composting or recycling waste, reducing the quantity of new materials needed and reducing the negative environmental impacts during all the cycle's stages. To be fully environmentally sustainable, a closed loop system is needed which results in nothing being land-filled and everything being reused (Sustainable Planning Research Group, 2005). This may not be immediately realistic, but it is a target to strive for.

Whistler's criterion regarding environmental sustainability in this area is to have zero land-filled waste. For this to be accomplished, help from its visitors is needed, whether it is by pushing businesses to carry more environmentally sustainable products, through their purchases, or whether it is by reducing their waste. In 2008 at Whistler, 26,470 tonnes of materials (about 1 tonne per person) were used (Whistler2020, Material Use page, 2010). This number has increased by 4% per year over the last three years. It includes materials landfilled, composted, recycled or brought to the re-use center, but not the approximate 900 tonnes of materials from bottle depots, (Whistler2020, 2010). The amount of waste going to landfills decreased from 2007 to 2008, but increased again in 2009 (Whistler2020, Landfilled Waste page). Consistent with the UK, at Whistler, households/accommodations produce 14-15% of controlled waste (DEFRA, 2008; Whistler2020, 2010). (Data on the percentage of waste for which tourists are accountable was not available).

Food

Whistler visitors can play a role in food sustainability by consuming foods with less environmental impact and therefore encouraging more food businesses to carry them. Food waste can also be composted. Whistler aims to produce more local food in the future (from Pemberton and Mt Currie), and to use indigenous knowledge in production (Whistler2020, 2010). In addition to reducing transportation emissions, this would provide local jobs, improve the local economy and can bring people closer and more connected to the food they eat (Pimental, et al., 2008; Whistler2020, 2010). Food production related environmental sustainability indicators include land space, energy and water required. Examining the available literature on food choices in DEFRA's (2007) research, 40% of respondents reported looking at where their food came from before purchasing. Forty-seven percent of respondents stated responsible food choices were too expensive, others mentioned that responsible food choices were simply not available or that there was not enough labeling. DEFRA (2007) interviewed a representative sample of 3,600 people in England during 2007 in order to learn about their environmental attitudes and behaviour. Unfortunately the equivalent Canadian data was not available.

Natural Areas

Whistler's natural environment provides many important regulatory and supporting functions such as preventing erosion, cleaning water, producing food, materials and oxygen, recreation, biodiversity and beauty (Rossing, 2006; Sustainable Planning Research Group, 2005; Whislter2020, 2010). To maintain these areas, Whistler visitors need to keep to paths, not harm surrounding vegetation, and not litter (Rossing, 2006). To examine people's perceptions of involvement in protecting natural areas, in DEFRA's (2007) UK research, 25% of respondents said there was nothing they could personally do to stop the loss of biodiversity. (Representative Canadian opinions were not available.) Indicators relating to natural area protection fall under the environmental sustainability areas of soil, air, marine and freshwater quality, acid deposition, ozone depletion, forest cover, amount of wildlife and habitat (The University of Reading ECIFM, 2008).

Built Environment

The built environment strategy deals with improving and measuring environmental sustainability in the developed areas of Whistler. This includes whether infrastructure is built in a way that encourages environmentally responsible transportation. It examines whether buildings are constructed and designed to minimize heat loss, whether windows are placed strategically to minimize the need for non-natural light, whether roofs collect rainwater to be re-used, and so forth. It also involves limiting the urban sprawl over natural environments. Whistler's developed area increased 1.4% per year since 2001, double the growth rate of .67% per year between 1994 and 1999, (Whistler2020, 2010). Visitors can provide perspectives on how infrastructure can be improved and how it can make environmental behaviour more convenient.

Conclusion

Environmental sustainability initiatives at the government and structural level are essential for progress, however initiatives at the behavioural level are also necessary. Increased demands for water, materials and energy have negatively impacted ecosystems

globally. Two million Whistler visitors per year consuming slightly less resources can reduce negative environmental impacts, and therefore positively affect progress towards environmental sustainability. In addition to Whistler visitors reducing resource usage, there are interactions between the Whistler stakeholders. Visitors can push for certain policies and environmentally sustainable products in stores (such as products made efficiently with re-used materials and no packaging). Whistler and its businesses can pull visitors into environmentally sustainable products and services through incentives, pricing mechanisms, awareness and local norms. Indicators and sustainable thresholds of resource usage help measure the capacity of a system (such as Whistler) to maintain itself indefinitely.

2.2.4 Environmental Behaviours in Relation to Other Factors

DEFRA (2008) studied environmental behaviour tendencies based on: how much impact the behaviour would have on the environment; how willing people are to take part; how able they are to; how common the behaviour is and by the difficulty level of engaging in the behaviours. The findings can help predict where discrepancies exist for engagement in particular environmental behaviours and where a research focus is needed.

On DEFRA's (2008) graph of what behaviours would impact carbon dioxide emissions most versus what environmental behaviours are most common in the UK, it was found that respondents engaged in recycling most, which has only a moderate impact on CO2 emissions. Flying less, using more efficient vehicles, and using cars less for short trips were rated as having the highest emission reductions, but unfortunately, these behaviours were also rated as uncommon among respondents. Only one third of the population reported walking or cycling for trips under 3 miles and avoiding unnecessary flights. DEFRA (2008) also provided a matrix of what environmental behaviours respondents were willing to take part in, versus which they were able to take part in. Wasting less food was ranked as a behaviour people were willing to do and had an ability to do, yet it was only ranked as a moderately common behaviour. Adopting a lower impact diet also ranked as a high-ability behaviour, yet scored a very low "willingness to

engage". More responsible water usage and better energy management were ranked as behaviours people had a high ability to act on and were pretty willing to do.

Stern (1999, 2000) adds that different environmental behaviours can be influenced by different factors and categorizes them by these influencing factors. People with a tendency to engage in one behaviour within the larger category, will be more likely to engage in other behaviours within that category. He discusses evidence for these categorization results from previous studies. The categories are: Private-sphere behaviours (such as purchasing environmentally friendly products); environmental activism (for example organizing an environmental movement) and citizenship behaviours (for example supporting certain policies). Stern specifies that an important feature of all these behaviour categories is that people are aware of environmental concerns (Stern, 2000, p.409).

McDonald and Oates (2006) categorize behaviours by consumer perceptions of effort involved and by perceptions of the difference they would make on the environment. Behaviours such as recycling, turning off lights and tuning down the thermostat were perceived as both easy and as making a lot of difference to the environment. Not driving and reducing packaging were perceived as making a difference to the environment, but as also involving a lot of effort. McDonald and Oates suggest using these results to market these behaviours in a way that would overcome discouraging perceptions. DEFRA (2007) does something similar by asking respondents how much they thought an assortment of behaviours would impact the environment if everyone in the UK engaged in them. DEFRA (2007) also examined perceived social norms regarding various environmental behaviours by asking respondents what percentage of people in the UK they thought were engaging in the given behaviour.

DEFRA (2007) studied behaviour norms as well by examining the number of people engaging in general and more specific environmental behaviours. In the UK, for 2007, general results show that the highest percentage of people reported recycling, followed by wasting less food and reducing gas, electricity and water use at home.

Between 50% and 75% of people reported engaging in these behaviours. Between 25% and 50% of people reported buying food produced locally rather than abroad, using a car less and lastly flying less. In terms of more specific environmental behaviours, in the energy category, about 50% of respondents never left lights on when not in a room, 40% never left heat on while out (DEFRA, 2007). Sixty-five percent reported not leaving their television on standby overnight and not leaving their mobile chargers plugged in when not in use. In terms of water consumption, 20% reported leaving the tap water on when brushing their teeth, (DEFRA, 2008).

DEFRA (2007) also provided statistics on the percentage of people recycling different materials since 1993. The highest percentage of recyclers for almost all types of materials was in 2007 (the most recent year the data was collected). Paper was the material the highest percentage of people recycled (90%) while food waste was the lowest (19%), suggesting that composting is not yet a norm. In addition, only 15% of participants reported never throwing away food (DEFRA, 2008).

The environmental behaviour of Whistler visitors may or may not be similar to these trends, but this literature can be used to make better predictions and be used for comparison purposes. Factors such as perceived difficulty of the environmental behaviour can also be used to better predict reasons for the engagement rate of various behaviours of visitors to Whistler.

To summarize, this section provides information necessary to more appropriately research what are the current environmental sustainable behaviour norms of visitors to Whistler. It provides background on environmentally sustainable behaviour with an interdisciplinary focus. It explains how to measure environmental sustainability. It lists examples of impact areas for progress towards environmental sustainability, and of behaviours that would impact the environment from each area. It also reviews results from other studies on current environmental action norms and perceptions.

2.3 Drivers of Environmentally Sustainable Behaviour: Perceptions, Motivators and Barriers

This section overviews theories and models of environmental behaviour drivers. Relevant environmental influence variables repeated throughout these theories are then examined in more detail.

2.3.1 Theories and Models of Influences on Environmental Behaviour

Environmental behaviour is a psychology field developed in the 1960s in the US and has evolved since (Gifford, 2007; Kollmuss & Agyeman, 2002). A large number of models have been developed to explain what affects environmental behaviour, arising mostly from the fields of psychology, marketing and sociology. None are definitive and many overlap. There is a theoretical research focus on internal (psychological) drivers of behavioural change, as they are said to have the longest lasting impact in individuals and are not as apparent (De Young, 1993, 1996; Lepper, 1988; Nolan, 1988; Pintrich & Garcia, 1991). Due to this, situational (external) drivers are mentioned in models, but are not theorized to a great extent. Arguably however, circumstantial factors may play as large a part in driving behaviour as psychological ones do. In unfamiliar locations and tourist destinations such as Whistler, where people may not follow their regular routines, contextual factors are key behaviour influences (Dahlstrand & Biel, 1997).

Though it is important to understand internal behaviour drivers (through perceptions of environmental sustainability), a focus of the current study is on contextual drivers that Whistler initiatives can actually influence. A select number of models and theories on what influences environmental behaviour are included here, based on their importance in the above fields and their relevance to the current study. Following this, the relevant influence variables are further analyzed, based on results from previous studies. From an economic perspective, regulation and price mechanisms are also strong behaviour influences, and are discussed.

Early frameworks from the 1970s explaining environmental behaviour began with the assumption that if people had knowledge of environmental issues, they would develop an environmental attitude/concern and would then change their behaviour

accordingly. Though these frameworks have since been mostly proven false, they are still used for many campaigns today (Burgess et al., 1998, from Kollmuss & Agyeman, 2002). Discrepancies arising from the gap between concern/attitude and behaviour have been addressed in Ajzen and Fishbein's theories. Their theory of reasoned action (1980) concludes that the determinants of any behavior are the beliefs concerning its consequences and normative beliefs of how others view the behaviour, (Ajzen & Fishbein, 1980, p. 239). Despite limitations, Kollmuss and Agyeman (2002) state this was the most influential attitude-behaviour model in social psychology.

Based on Ajzen and Fishbein's theory of Planned Behaviour (1980) (not discussed here) and a meta-analysis of 128 studies on pro-environmental behaviour, Hines, Hungerford and Tomera (1986) produced a model of responsible behaviour. In this framework situational factors, personality factors (attitudes, control, responsibility), knowledge factors (of issues, of action strategies, of action skills) and intention to act influence environmental behaviour (Kollmuss & Agyeman, 2002). This can be seen in Figure 2.1. While this model omits social normative and evaluative consequences of behaviour variables, it includes new important factors. Hines and colleagues (1987) explained 'situational factors' as "economic constraints, social pressures, and opportunities to choose different actions" (Kollmuss & Agyeman, 2002, p. 244). Kollmuss and Agyeman (2002) claim this model is not sufficient as the relationships between attitude and other relevant variables are weak. Nevertheless, this model is far more complex in terms of influential variables and interactions between these variables than the 1970's models.

Figure 2.1

Models of Predictors of Environmental Behaviour
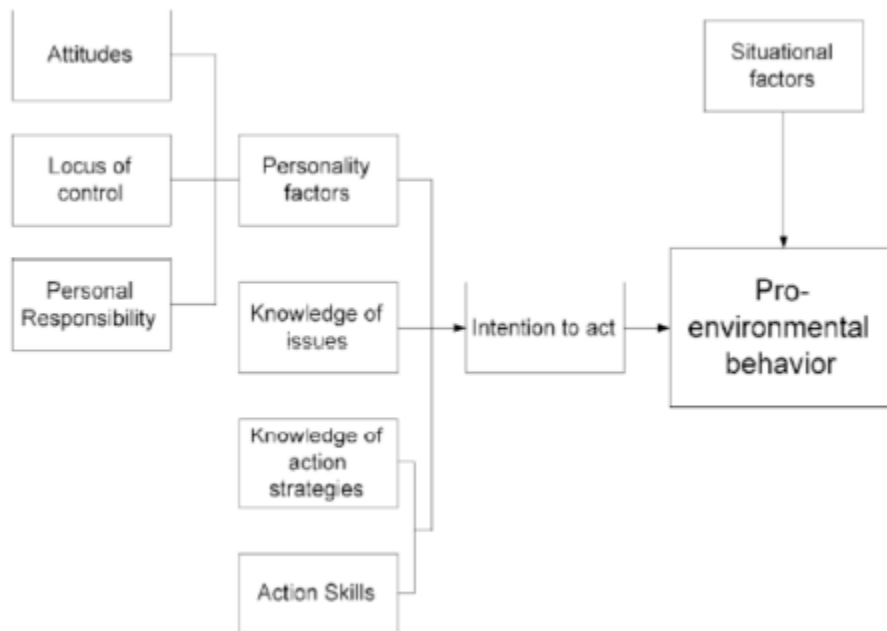
. Models of predictors of environmental behavior (Hines *et al.*, 1986).

From Kollmuss and Agyeman, 2002, page 244; © 2002 Taylor & Francis Ltd

Fietkau and Kessel (1981) theorized a sociological model, in which five variables influence environmental behaviour. 'Environmental Knowledge' (variable 1) acts as a modifier between 'Attitudes & Values' (variable 2) and Behaviour. These variables overlap with previous theories, providing them with more credibility. 'Possibilities to act pro-environmentally' (variable 3) signifies external factors such as infrastructure and price. 'Perceived consequences of behaviour' and 'Behavioural incentives' (variables 4 and 5) can be both internal or external with social desirability, economic or value-based roots as examples (Kollmuss & Agyeman, 2002).

Subsequently, Blake's (1999) sociological model points out the limits of past frameworks as they fail to take into account "individual, social, and institutional constraints and assume that humans are rational and make systematic use of the information available to them" (Kollmuss & Agyeman, 2002, p. 246). He identifies the following barriers to action: individuality, responsibility, and practicality. They are

illustrated and described in Figure 2.2. Blake's framework is particularly useful to this study as it addresses the influence of practical variables (cost, time, information, facilities and encouragement) that Whistler has some capability of manipulating.

Figure 2.2

Blake's Sociological Model
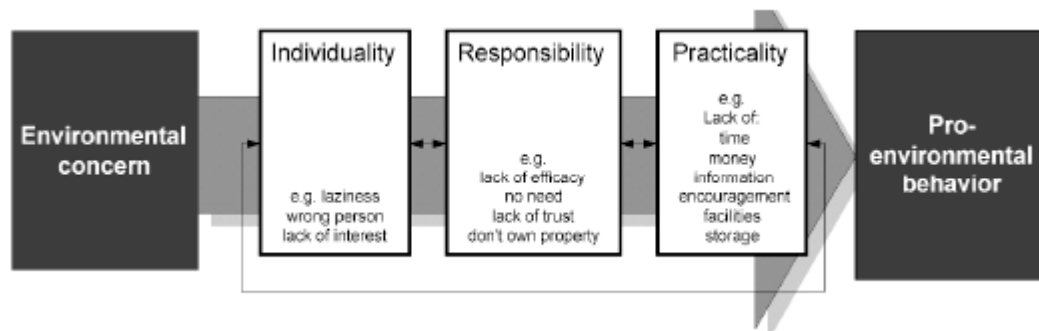
From Kollmuss & Agyeman, 2002, p. 246; © 2002 Taylor & Francis Ltd

Diekmann and Preisendoerfer's (1992) theory is also useful to the current research as it explains "the discrepancy between environmental attitude and pro-environmental behavior by using a low-cost/high-cost model" (Kollmuss & Agyeman, 2002, p. 252). More specifically, people tend to engage in environmental behaviour that demands the least cost. Cost not only refers to money but also to effort and time. As a practical application, if Whistler can reduce costs of a green behaviour, the targeted behaviour would grow. In addition, Diekmann and Preisendoerfer propose that environmental attitude does influence low-cost behaviours such as recycling. Though it may not directly influence high-cost behaviours, those with strong environmental concerns are still more likely to support environmental regulations and policy changes, despite a cost being involved.

Additional theories build on behaviour being interactively influenced by both personal attitudinal variables and contextual factors (Guagnano et al., 1995; Stern, 2000). The ABC theory states that attitude will have little effect on behaviour when contextual factors either highly encourage or discourage environmental behaviour. If they are neutral, then attitude has a stronger relation with behaviour (Stern, 2000).

Further theories, such as Schwartz's (1977) Moral Norm-Activation Theory of Altruism, build on a sense of responsibility in threatening conditions, a sense of control in alleviating the threat and a sense of obligation to do so, as being important variables in determining behaviour (Stern, 2000). Stern's (2000) Value-Belief Norm (VBN) Theory of Environmentalism adds to this by linking it with value theory and the New Ecological Paradigm (explained in Section 2.3.3.9). This VBN approach also states that different types of environmental "behaviours have different causes" and vary across individuals therefore each "should be theorized separately" (Stern, 2000, p. 421).

Hinings and colleagues (2004) research suggests people will participate in an activity if they value it, are interested in it, are capable of it and if the appropriate power structure is in place (Hinings, et. al*., 2004, p.306). This research arose from theories on how change at institutional levels occurs.

Stern (2000) categorizes what drives behaviour into four components:

1) Attitudinal factors (including norms, beliefs, and values),

2) External (contextual) forces (including modeling behaviour, advertisements, regulations, infrastructure, monetary costs, social context)

3) Personal capabilities (Including knowledge, skills, time, income, (e.g., Dietz et. al., 1998)

4) Habit or routine (Dahlstrand & Biel, 1997).

Habits can develop from intent, convenience, values, social pressure or any other reason (Dahlstrand & Biel, 1997; Gifford, 1987, p. 405). As with the ABC theory explained above, it is also important to note that these various causal drivers interact. Without taking this into account, results from studying the effects of one factor can be inconsistent and misleading.

Gardner and Stern (1996) reviewed various types of behaviour intervention strategies, including value appeal, tangible rewards and penalties, educational and

informational, as well as community-wide and social techniques. They conclude however that a combination of various intervention strategies is most effective. Looking at results of one strategy alone, without taking into account interaction effects can skew understanding. McKenzie-Mohr (n.d) agrees in the necessity of multiple types of behaviour intervention for success, but in terms of understanding which intervention causes effective change, one must understand the actor's perspective, adjust programs continually based on it and make "progress with incomplete theories" (Stern, 2000, p. 420).

The current research only goes as far as studying behaviour intention and reported behaviour, not actual behaviour. In terms of addressing the discrepancy between behaviour intent and actual behaviour, according to Stern (2000): "By exploring the possibilities directly with representatives of the population whose behavior is to be changed, it is possible to find promising strategies for intervention without trying them all out experimentally" (p. 420).

As mentioned earlier, no theory of environmental behaviour fully covers everything, though commonalities do exist. Moreover not all samples of theories were described. Longer-term powerful methods of changing behaviour, are not reviewed here, as they cannot be applied to short-term visitors at Whistler. This research does not explore theories on what shapes environmental values such as past direct experiences (which in turn would theoretically impact behaviour). Other highly-rated effective behaviour change techniques such as commitment strategies and goal setting also cannot be applied here, as this research only surveys visitors' perspectives of their behaviour and its influences (De Young, 1993; Gifford, 1987; Passer, et. al., 2003; Werner, et. al., 1995).

2.3.2 Perceptions of Environmental Sustainability (in Relation to One's Self and One's Behaviour)

2.3.2.1 Introduction

Understanding Whistler visitor perceptions of the environment is an essential step to appropriately engaging them in environmental sustainability. It can provide knowledge on their range of views. Visitors' views on environmental sustainability can affect what environmental initiatives they would value and support through their behaviour and what types of communication approaches they would best respond to.

Alberti (1996) explains that progress towards environmental sustainability cannot solely be based on measurements of physical environmental states and level of consumption of resources. People's values and perceptions are an essential part of this process. Cottrell et al. (2004) and O'Toole et al. (2006) have previously studied perceptions of environmental sustainability. Cottrell et al. (2004) however state that: "research into the insights and sensitivities of tourists about sustainability is largely lacking," (p. 410).

According to a report by Statistics Canada (2000) via the Sustainable Planning Research Group (2005), in that year "Nine out of ten Canadians rated the environment as one of their top concerns," (p. 1) (Note that this ranking fluctuates over time, particularly with changes in economic conditions). Despite this, Canada ranked second to last in environmental performance in a study by Boyd during the same year (2001; also via the Sustainable Planning Research Group, 2005). The study used 25 environmental indicators to measure the environmental performance of 29 OECD countries (Organization for Economic Cooperation and Development). A large gap therefore exists between environmental concern and achieving environmental sustainability (as both a country and individually). DEFRA (2008) explains that individuals find it difficult to connect large environmental issues (for example climate change) to their individual environmental behaviours. The size and intangibility of environmental issues can result in a sense of not being able to make a difference and not having control. People can have trouble seeing that their individual environmental actions could have real impact when global

environmental concerns are so great and wide spread. This can result in a barrier to environmental behaviour, despite them having environmental concern.

Reviewing literature on perceptions can further explain the gap between concern and environmental behaviour. Building on the theoretical models from Section 2.3.1, this section reviews more specific literature on perceptions of responsibility and control/capability in making an environmental difference. As well, it examines evaluative beliefs on whether individual behaviours make a difference. Perceptions of feasibility in sustaining a healthy environment and of the effort required to do so are reviewed. According to Hine's model (1987): "If a person has the necessary skill, an internal locus of control, a positive attitude towards the environment and responsible environmental behaviours, as well as a feeling of personal responsibility, he or she is likely to engage in environmentally responsible behaviour, (Fransson & Garling, 1999, p. 376).

2.3.2.2 Perception of Responsibility- Individual and Government

Fransson and Gärling (1999) define responsibility as: "An individual's sense of obligation or duty to take measures against environmental deterioration in general, or against specific environmental problems," (p. 375). Hines and colleagues' (1986) model of responsible behaviour, Blake's (1999) sociological model, Schwartz's (1977) Moral Norm-Activation theory and Stern's (2000) Value-Belief Norm theory build on responsibility playing a role in whether people will behave environmentally or not (Kollmuss & Agyeman, 2002; Stern, 2000). Fransson and Gärling (1999) agree with Hines and colleagues (1986) meta-analysis research that those who assume responsibility for environmental problems are more likely to behave environmentally responsibly.

Gamba and Oskamp (1994) suggest that those who believe environmental sustainability is a government or corporate responsibility are less likely to be engaged than those who believe everyone is personally responsible for making a difference. Miller (2001) surveyed a sample of 74 individuals who had published articles on the subject of sustainability in major tourism journals within three years of his research. He asked these respondents whom they perceived to be primarily responsible for achieving

environmentally sustainable tourism. Respondents rated national government and industry as being the highest primarily responsible groups for achieving environmentally sustainable tourism, and to a lesser extent local government and to a much lesser extent tourists and local residents. Despite this, tourist and local views are important for the primarily responsible groups to facilitate sustainable tourism, and tourists still do have some responsibility.

DEFRA (2008) reported that among the UK population there is skepticism and distrust in government with regard to environmental issues, especially if money is involved. Yet, more than half of their study participants agreed they would do more for the environment if they saw the government doing the same. Barr (2003) reviews literature from MacNaghten and Jacobs (1997) and MacNaghten and Urry (1998) which suggests that an individual's sense of responsibility for the environment arises only for issues in which he or she can directly influence. This brings us to perception of control in influencing issues.

2.3.2.3 Perceptions of Control, Achievability, Effort and Belief One's Behaviour Can Make a Difference
Locus of control and self-efficacy are theorized to be important factors in what determine environmental behaviour (Kollmuss & Agyeman, 2002; Stern, 2000 and as discussed in Hines and colleagues model of responsible behaviour, 1986; Blake's sociological model, Hining's and colleagues institutional model, 2004; Schwartz's 1977 Moral Norm-Activation Theory of Altruism; and Stern's 2000 Value-Belief Norm 'VBN' theory).

Fransson and Garling (1999) describe those with an external locus of control as "Individuals who perceive that changes are due to random events or the behaviour of other more influential individuals" and those with an internal locus of control as "individuals who perceive that their own behaviour makes a difference," (p. 375). Self-efficacy, a concept developed by social-cognitive psychologist Albert Bandura, refers to a belief in one's own capability of success through behaviour, (Cotte & Trudel, 2009; TravelSmart, No date). TravelSmart (a municipal government publication from Victoria,

Australia) adds that self-efficacy influences the amount of energy spent on goals, choice of actions and persistence in the face of adversity. Past literature suggests that individuals who have a high sense of self-efficacy, specifically in problem solving, and those who have an internal locus of control are consistently more likely to engage in environmentally sustainable behavior (Gamba & Oskamp, 1994; Grob, 1995; TravelSmart; Fransson & Garling, 1999- based on research by Hines et al., 1987; Newhouse, 1990; Stern, 1992 and many others).

Cotte and Trudel (2009) strongly agree that a key environmental behaviour influence is the belief that the behaviour would make a difference. In fact, in one study, this was "six times more important than a concern for the environment in predicting environmentally responsible behaviour," (Cotte & Trudel, 2009, p.7, referring to Roberts, 1996). Cotte and Trudel provide an example to clarify the importance of this finding. If an individual does not believe turning off a light will make an environmental difference, despite whether he has pro-environmental attitudes, he would be less likely to engage in such a behaviour. Many other researchers also came to a consensus on this clear and critical behaviour determinant (via Cotte & Trudel: Antil,1984; Berger & Corbin, 1992; Globescan 2007; Lee & Holden, 1999; Kinnear, Taylor & Ahmen, 1974; Roberts 1996, Webster 1975).

As for whether or not people in fact believe their environmental behaviours can make a difference, in DEFRA's (2007) representative UK study, 75% of respondents perceived that if most people in the UK increased recycling rates and flew and drove less, it would make a great impact on climate change. DEFRA (2007) rated this perception for other environmental behaviours as well. Half of respondents in DEFRA's (2008) research perceived that there is reason to behave environmentally sustainably as it can make a difference. This was partially attributed to their perception that many others were behaving environmentally as well.

In terms of the perception that human beings together can achieve a healthy environment, 67% of respondents from DEFRA's (2007) research thought human beings

were capable of resolving environmental problems. Yet 17% of respondents felt that global warming was beyond human control, and could not be stopped at this point. As for perception of individual control, 25% of DEFRA's (2007) respondents judged that "there is nothing they can personally do to help stop the loss of the world's biodiversity," (p. 23; about 40% disagreed). DEFRA (2008) explains that when environmental problems are large and seemingly distant, people tend to not believe they have power to make a positive difference. In terms of perception of effort involved in protecting the planet only 19% believed that scientists could find a solution to global climate change without people having to make a lifestyle changes.

McAllister (an opinion research practitioner studying how to communicate environmental sustainability, 2007) suggests framing problems in such a way that they can be changed. For example instead of stating problems are due to human nature, such as "greed or "laziness", express that they are due to "mismanagement", or "inefficiency". This strategy targets areas to work on without challenging the individual's personality and can increase perceptions that positive changes can be achieved.

2.3.3 Motivators and Barriers to Environmental Behaviour

2.3.3.1 Introduction

While Section 2.3.1 covered theories on the interactions of influence variables, this section discusses more specifically how the more prominent variables from these theories influence behaviour, based on the literature. It examines how and what aspects of these variables can motivate or discourage pro-environmental behaviour, and how strongly.

The first of four steps in Community-based Social Marketing for environmental sustainability (CBSM) is to "identify the barriers and benefits to an activity," (Stern, 2000, p. 420). CBSM is a framework designed to integrate a community in sustainability efforts, (Kollmuss & Agyeman, 2002; McKenzie-Mohr, n.d; Stern, 2000). Before implementing environmental sustainability initiatives that are dependent on the behaviour of many, how these behaviours are adopted, modified and blocked should be understood.

This literature provides more insight on why people behave the way they do. By researching barriers and motivators towards environmentally sustainable behaviours, appropriate steps can be taken to try and reduce or increase them. Costs and efforts can be saved by focusing on making changes that have more influence on behaviour rather than those that do not.

One practitioner study (by Deloitte 2008, reported by Cotte & Trudel, 2009) found that 43% of grocery shoppers who bought green products did so unintentionally. (The finding was based on interviews with these consumers when leaving the shop). This shows many factors besides intention and interest can influence environmentally sustainable behaviour. The review of literature in this section will better explain the roles that these other factors can play.

The environmental behaviour influence variables to be discussed here are: norms, environmental surroundings, type of information provided, convenience of behaviour, cost and trade offs of behaviour, price and regulatory mechanisms and behaviour of businesses. When related to the Whistler situation, these are all variables in which Whistler has some power to manipulate by making changes at the systematic, regulatory and communication levels. Also discussed is the influence of: values, concern, knowledge, prioritization and meaning of sustainability and demographic effects on environmental behaviour. Knowledge of these influences is important for effective communication strategies regarding engagement in environmental sustainability and for baseline research.

2.3.3.2 Convenience: Effort, Time and Infrastructure

Convenience, whether through infrastructure, facilities in place, time or effort involved, plays a role in environmental behaviour. Predictably, in Borgstede and Biel's (2002) study people more often engaged in easier environmental behaviours over more difficult ones, and also cooperated more when fewer obstacles toward environmental behaviour existed. When behavioural conditions were made easy, social and personal norms for cooperation increased, regardless of by how much the behaviour impacted the

environment. In the same study, strong environmental attitudes did not correlate with environmental behaviours that were easy to engage in, but had a significant effect on difficult ones.

Convenience increases environmental behaviour, especially for fairly mindless activities, such as turning off lights, or throwing food in a compost bin, (Gifford, 1987; Werner & Makela, 1998). In terms of building infrastructure, this could mean having one switch near a hotel room door that shuts off all lights, and in terms of urban infrastructure, ensuring that compost and recycling bins are as equally if not more accessible than trash bins. Removing the "mindlessness" from some of these activities, such as by making the environmental option more colourful and apparent, also increases environmental behaviour. In one study, beautiful bird shaped garbage bins attracted 35% more litter than regular garbage cans (Gifford, 1987, p. 404).

Stern (1999) adds that convenience incentives such as road lanes or parking spaces reserved for buses and carpools, increase bus use and carpools. Curbside recycling pick up as opposed to transporting recyclables to centers also significantly increases recycling rates. Barr (2003) refers to studies where "those who have greater access to services, such as recycling schemes, local bus services or the opportunity to purchase 'greener' produce are more likely to be pro-environmental," (p. 229). Not having access to or convenient access to environmentally responsible products or services was a barrier to making pro-environmental behaviour choices (DEFRA annexes, 2008). In DEFRA's (2007) study, barriers to recycling included no doorstep collection, nowhere to store the material and not being able to get to facilities/lack of facilities.

In DEFRA's (2008) study, one of three interviewees stated "time" as a green behaviour barrier. "Sustainable choices were frequently perceived to be time consuming and less convenient," (DEFRA Annex H, 2008, p. iv). Barr (2003) refers to Vining and Ebreo's (1991) research where recycling was influenced by perception of the amount of time it took as well as the convenience of facilities. Debatably, these appeared to be larger influences than how much respondents prioritized environmental issues. In

DEFRA's (2007) study, "a quarter of people agreed with statements such as 'It takes too much effort to do things that are environmentally friendly," (p.1). Personal inconvenience is a limitation for environmentally sustainable behavior. For example, complaints received about household recycling were that it was messy, time consuming, and householders had no space for it (Werner & Makela, 1998). Oskamp et al. (1994) emphasize that when there is high social support and outside help, personal inconvenience becomes much less of a problem.

At the more systematic and regulatory level, in Picherta and Katsikopoulos's (2008) experiment, it was discovered that when green electricity was the default electricity, people tended not to switch carriers. When it was not, people preferred to stick with whatever was already there. In other words, people are more likely to follow the structure or system already in place, regardless of environmental impact.

2.3.3.3 Cost, Contingent Valuation and Trade Offs

The top barrier to environmental sustainability was cost, according to De Vries (2007) survey on local governments in BC (p. 5). DEFRA's (2008) study also revealed cost or perceived cost to be the highest cited barrier to environmental behaviour. DEFRA (2008) moreover mentioned that study respondents perceived environmentally sustainable behaviour to have a higher cost. In some exceptions, such as taking the bus instead of a car, saving money was listed as an environmental behaviour motivator, (DEFRA, 2008). Stern (1999) provides examples of how financial incentives or disincentives have altered environmental behaviour. Paying a per-can fee for disposing trash has reduced garbage volume in numerous US communities. Rebates have increased purchases of environmentally friendly appliances and home insulators. Studies show however that biospheric oriented (or environmentally conscious) people are not as influenced by the financial dimension as people with other value orientations (Axelrod, 1994). This will be further discussed under Values Section 2.3.3.8.

Concern for the environment has increased (Dunlap, et al., 2000), and so has the number of consumers interested in environmentally responsible products (Cotte &

Trudel, 2009). This leads to another concept and method known as contingent valuation, or willingness to pay (WTP). The concept was developed by economists, to measure values by trying to figure out how much people would hypothetically be willing to pay for certain products or services that do not have a market price, (Gregory & Slovic, 1997; National Research Council, 2005; Sagoff, 1998). It is used in the environmental domain, as an attempt to estimate how much ecosystem services, the survival of endangered animals, or environmental protection are worth to people. As the National Research Council states: mentioning something has value does not provide enough information for decisions to be made. Values need a way to be ranked and estimated. For cost benefit analyses, it allows values to be compared with economic impacts using the same measurement scale, (Gregory & Slovic). Surveys are most often used to measure "willingness to pay," (Gregory & Slovic; Sagoff). Results based on large samples of people are used as indicators of "the value placed by society on environmental goods," (Gregory & Slovic, p. 176).

Given that contingent valuation is hypothetical and not based on actual behaviour, there is much criticism regarding its validity (National Research Council, 2005). The accuracy of measurements can be altered by: framing, order, context, embedding effects or the inability or refusal of individuals to place a dollar amount on their values, (Diamond & Hausman, 1994; Gregory & Slovic, 1997; Sagoff, 1998). An example of an embedding effect would be that respondents would be willing to pay the same for one lake to be cleaned up as they would for five lakes, including the one individually asked about, despite that theory suggests that five lakes should be worth more to respondents than one lake (Diamond & Hausman). The magnitude of people's willingness to pay changes depending on how a question is asked and the order it is in (Diamond & Hausman).

Gregory, Brown and Knetsch (1996) explain that what people are willing to pay (WTP) for the use/existence of a resource is not the same as the compensation people are willing to accept (WTA) for losing the same resource (a park for example). Empirical evidence suggests that the monetary compensation people are willing to accept is two to

five times higher than what they are willing to pay (Gregory et al., 1996). Given this, WTP does not properly assess the actual value of protecting resources. Underestimating the resource's value can negatively impact decisions and efforts to maintain it. Despite limitations regarding contingent valuation, it has helped bring environmental impacts into monetary debates, cost benefit analyses and policy decisions, (Gregory & Slovic, 1997). Tradeoffs are another method of revealing values. They do not force individuals to conceptualize their values in monetary terms, (Gregory & Slovic).

In DEFRA's (2007) research, 45% of participants "strongly agreed or tended to agree that they would be prepared to pay more for environmentally friendly products" (p.20), while 25% disagreed. However, in DEFRA's 2008 research, 1 in 5 participants agreed "it was only worth doing environmentally friendly things if it saved money" (p.35). Laroche et al. (2001) mention that three quarters of their North American survey respondents were undecided as to whether they would pay more for green products. Interestingly enough their findings also reveal that the people more likely to support recycling and environmentally sustainable products, are not the same people willing to pay more for them. They do however add that some surveyed consumers were willing to pay up to 40% more for environmentally sustainable products.

Cotte and Trudel (2009) meta-analyzed 30 years of research on what consumers are willing to pay for more environmentally responsible products. They selected 91 articles from 1700 academic and practitioner articles, based on quality, rigorousness of research and relevance. Ninety percent of articles used studied consumers from North America and Europe. From this large analysis, they came up with the following conclusions. On average, consumers are willing to pay 10% extra for environmentally responsible products or services, though there is a large range across studies. There are cultural and regional differences on the percentage of people willing to pay extra for more responsible production, the highest being France with 84% willing, (Cotte & Trudel, 2009, p. 36). Studies that look at actual purchasing behaviour as opposed to purchase intention, found on average fewer people were willing to pay more for environmentally responsible products (44% versus 61% of people, Cotte & Trudel, p.26),

suggesting a flaw in self-reported behaviour methodology. In Trudel and Cotte's (2009) experiment however, subjects did in fact pay a 5-10% premium with their own money for more sustainable products. Findings also suggest that people are more willing to pay a small price premium for socially conscious products, relative to their price, but their willingness drops sharply for higher percentages.

Another strong Cotte & Trudel (2009) finding is that despite a growing number of consumers valuing environmentally sustainable products and services, they do not justify paying more for them. If the responsible product does not have packaging and is made locally (less shipping and material costs), they cannot understand why it would have a higher cost. In these cases the consumer would choose the environmentally responsible option, or company, only if cost was equal and in some cases, performance, functionality and quality as well. Evidence also shows consumers want larger discounts for unsustainable products than the premium they would pay for sustainable products. They consider that these products should be an expected standard, not a luxury. This could explain why attitudes do not correlate that well with consumer behaviour. For more in depth information, including both a summary and a detailed table on each of the 91 reviewed articles' type of experiment/survey, willingness to pay results and sources, consult the Network for Business Sustainability website (nbs.net).

2.3.3.4 Regulatory and Price Mechanisms

From an economic standpoint, regulatory and price mechanisms have been put forward to influence environmentally sustainable behaviour. Regulatory and monetary incentives and disincentives can rapidly change behaviour (Stern, 1999). The purpose of these mechanisms is to encourage sustainable production and consumption, and as well environmental protection, by including the actual cost to the environment in the price of goods and services (Hahn & Stavins, 1991). For example, if trees were cut to make furniture, the true cost of their removal would be accounted for. This could include the cost of the carbon emissions they no longer absorb and the erosion protection they could no longer provide. In the same manner when accounting for the full cost of electricity, the

higher cost to consumers would reduce usage and therefore pollution, and would allow for greener forms of energy power to be more competitive on the market (PPRC, 2008).

Indirect or external costs, known as externalities, are costs not taken into account or paid for by producers and consumers of a good (Baumol & Oates, 1971; Gustafsson, 1998; Hertwich, 2005). These include for example: medical costs arising from cigarette smoking; ecosystem damage caused by fertilizers used in agriculture; and health effects and clean up costs of air pollution from factories. Eventually society as a whole becomes burdened with these costs. While trade markets can successfully distribute resources and determine "prices and quantities of consumer goods," they generally fail to take environmental protection into consideration, (PPRC, 2008, Background and Overview page). The failure to protect the environment is accelerated because environmental resources such as clean air are free to use, hence there is no direct monetary cost attributed to pollution or other forms of environmental degradation. From an economic perspective, if no cost is assigned to these environmental damages, there is no motivation to protect the environment. With no direct monetary obligation, there is less incentive to develop more environmentally sustainable technologies, allocate environmental resources efficiently and reduce the environmental costs society must bear (PPRC, 2008). This results in a decline in social, and environmental welfare as well as in economic efficiency.

In the 1920's economist Arthur Pigou suggested "corrective taxes to discourage activities that generate externalities" (Hahn & Stavins, 1991, p.3). He developed the "polluter pays" principle, a principle signifying that those who degrade the environment should be held accountable for the full cost of their actions, not society, (Baumol & Oates, 1971; PPRC, 2008). Current economic methods of influencing environmental behaviour are based on this principle.

Economic and policy methods for altering behaviour include "command and control" approaches and price/market-based mechanisms, (Gustafsson, 1998; Hahn & Stavins, 1991). Command and control methods encompass regulated quotas, legislations,

prohibitions and fines for inappropriate behaviour. Examples would include forcing cars to have catalytic converters or providing road lanes and parking spots for carpoolers only. Price-based incentives and disincentives include: rebates for responsible purchases, refunds for recycling and taxes on plastic bags and land-filled waste, (Hahn & Stavins, 1991). Market mechanisms are less regulated and allow for more flexibility in developing methods to reduce negative environmental impacts (Hahn & Stavins, 1991). By allowing the price of goods and services to reflect their actual environmental cost, these mechanisms encourage the development of more environmentally sustainable innovations and reduce consumption, (Hahn & Stavins, 1991). The price increase of products with high environmental costs makes alternative innovations more appealing to consumers. Similar to mechanisms that force enterprises to be efficient with labour and capital, paying for the true cost of environmental resources, would force them to find ways to lessen environmental impacts, allocate environmental resources efficiently and stay competitive (PPRC, 2008). Market mechanisms also include carbon emission or pollution trading permits, (Hahn & Stavins, 1991; PPRC, 2008).

How to account for environmental costs, raises several concerns. Estimating their monetary value can be tricky (Baumol & Oates, 1971). It can be difficult to determine and to prove who is accountable for environmental damage. Regulators have limited information when making decisions, and regulatory costs can be high (Hahn & Stavins 1991). In levying green taxes, there is the concern that low-income groups may not be able to pay for them, raising social sustainability and equity issues. As well, increasing production costs can hurt international competitiveness. Moreover, charging consumers for environmentally irresponsible behaviour can provide them with a sense of justification for engaging in that behaviour, as opposed to altering it.

Furthermore, the ability of price and regulatory-based mechanisms to positively influence environmental behaviour, increase environmentally sustainable markets and increase sustainable innovations is controversial. Innovative technology to improve environmental well-being may negatively influence environmental behaviour, according to economic theory and the price rebound effect. For example, when technology allowed

for cars to drive further using less gas, this did not decrease gas usage or amount of driving. More available gas (the unsustainable product) allowed for cheaper prices, which in turn increased demand (Hertwich, 2005). Additionally, disputes exist as to whether large environmentally sustainable markets are possible. Environmental resilience requires biodiversity. On the other hand, a large supply of products at a low cost requires supplying only a few types of products. Only growing one type of resource in an area, such as only corn, or only one type for tree, reduces diversity and may contribute to extinction. Maintaining biodiversity may cause markets for products to spread out thinly, raising costs and accessibility (Gustafsson, 1998).

2.3.3.5 Knowledge and Information

Knowledge and information are a part of nearly every environmental behaviour model examined, despite that they are not very effective influencers on their own (Kollmuss & Agyeman, 2002). Dietz and colleagues (1998) consider knowledge to be a personal capability in acting environmentally (Stern, 2000). Fietkau and Kessel's (1981) sociological model places environmental knowledge (of issues) as a modifier between attitudes/values and behaviour (Kollmuss & Agyeman, 2002). Hines' and colleagues (1986) as well as Schahn and Holzer (1990) debate the most effective types of knowledge relating to environmental action: abstract versus tangible knowledge; awareness of problems versus the knowledge skills on how to fix them (Barr, 2003; Fransson & Gärling,1999). Results on the most effective type of knowledge are inconclusive. Fransson and Gärling (1999) emphasize the importance of knowledge as a part of behaviour motivation.

Detailed or procedural information can eliminate the stress of wanting to solve problems and make a difference, but not knowing how. Scott Gellar (Gifford, 1987, p. 403) found that a flyer containing the following detailed message: "Please help us recycle. Please dispose of your recycling in the green trash can at rear of store" yielded a recycling rate of almost four times higher than the apparently similar message: "Please don't litter. Please dispose of properly." On the other hand, short reminder prompts with larger writing are more likely to be read. A simple prompt would be effective if it is well-

worded, well placed, and evokes repetitive, fairly convenient behavior such as turning off lights. Its purpose would be to allocate attention toward the behaviour. As Gifford (2007) explains via the limited-processing theory, people cannot attend to all aspects of their surroundings, and in the case of the light switch, making it apparent can help. Results are mixed and inconclusive on successful behavior change stemming from prompting and providing information in general (De Young, 1993; Hopper & Nielsen, 1991). Another technique, informational feedback, is useful if, for example, an individual is uncertain as to whether Whistler recycles juice boxes or not, and requires knowing if he is putting correct materials in a recycling bin. Feedback is suggested to be most effective if it is given immediately after the behavior (Gifford, 1987).

Oskamp et al. (1991) note that having friends, neighbours or other family members modeling pro-environmental behavior is a significant predictor of an individual's likelihood to do the same. Hopper and Neilsen (1991) investigated three approaches to increasing recycling behavior. They discovered that the block leader approach (which consisted of a neighbour modeling and demonstrating the behaviour) was most effective, more so than reminder prompts. Oskamp et al. (1994) conclude that knowledge based behavior change techniques can be effective if the information is on specific actions, integrates normative social information and does not go against established beliefs. Modeling or demonstrating pro-environmental behaviour and explaining reasons for it can be a much more effective behaviour change technique than regular information strategies, as it not only increases ones confidence in how to act, but affects the process where norms are shaped, (Schwartz from Hopper & Nielsen 1991).

The source of information can influence how credible people perceive it to be (Barr, 2003). De Vries (2007) study, which surveyed local governments in BC, noted the top 10 most credible sources of information on environmental sustainability based on the number of times they were mentioned. The top results were the provincial government, followed by academics/scientists. Education/advocacy organizations and NGOs came in 9th and 10th, (p.3). Contrary to De Vries (2007) and Stern's (1999) findings regarding higher credibility in government-sourced information, DEFRA (2008) found that

respondents (from the UK) did not trust information they were given, particularly if it came from government or industry. They were also skeptical of the motivations of both. This could be a demographic (country) difference. McAllister's (2007) opinion research on Canadians found that in the public's eye, academics/scientists/universities were not in the top 12 most credible sources on environmental sustainability. "Leaders" on the other hand ranked academics as the second most credible sustainability source. This is something to be mindful of when providing information sources to the general public.

De Vries (2007) also ranked the top barriers towards environmental sustainability based on the number of times mentioned. Lack of financial and human resources came first, while "information overload" came second, interestingly enough, before "Lack of understanding about sustainability" which came in third. The 6th most common barrier was "Lack of simple and clear best practices" and the 9th most common barrier was "Lack of helpful information about sustainability," (p.5). This low ranking is consistent with the previous studies stating information alone is not enough to influence behaviour. Stern (1999) examines studies that present people with information on the benefits of energy conservation, responsible transportation and recycling, again consistently, this information alone does not change behaviour. However, when integrating research on social influence, communication and human decision-making into these information programs, their influence on environmental sustainable behaviour does positively increase.

In DEFRA's study, though information was a motivator for environmental change, lack of it or the wrong type of information was a barrier. "Participants were frequently unaware of the environmental impact of their behaviour and unaware of the best way to reduce their impacts," (Annex H, 2008, p. ii). DEFRA also explains people have trouble forming a direct link between their environmental behaviour and larger environmental problems. Laroche and colleagues (2001) advise that information techniques should make this link more important, by informing people how their behaviour would make a difference. He adds that people should not be told how to behave, but should be informed of the reasons for these behaviours. Lastly he states

providing feedback on how people are doing and the difference they are making is also important in motivating behaviour. In De Young's (1989) study, the main difference between recyclers and non-recyclers was their knowledge level on how and what to recycle, not their environmental attitudes, (Gamba & Oskamp, 1994). Literature predicts that specific knowledge is the best (knowledge) predictor of specific action, while general knowledge and has no correlation with specific behavior (Grob, 1995).

Cotte and Trudel (2009) report that to buy green, customers need to be aware that the option is available and know what it means, for example by having information on the green products and services which businesses offer (based on World Business Council, 2008 and other literature). On the other hand, Cotte and Trudel also refer to a study, Deloitte (2007), where survey results showed 95% of consumers would "buy green" but only 75% of consumers in their survey knew what a green product was (p. 35). This confirms that many other influences are acting on environmental behaviour besides knowledge. (Or it could also point to errors in methodology and over-positive answers, as is discussed in Section 5.2). Environmental behaviour does not need to be intent-based to progress towards environmental sustainability, though for long-term progress it would help.

Stern (1999) summarizes ways for information to be more effective, based on many sources. Information will be more effective: if the information is: a) "presented when and where the target behaviour will occur" (for example daily energy-use and cost feedback systems); b) "If its use is modeled by people similar to the target audience"; c) "If it comes from a trusted source"; d) "if it is accompanied by a request for a public commitment to act accordingly"; and e) If the information "reminds people that there are norms supporting the desired behaviour," (p.467). Stern (1999) adds that "what makes information effective is not so much its accuracy and completeness as the extent to which it captures the attention of the audience, gains their involvement, and overcomes possible skepticism about its credibility and usefulness," (p. 467). Even information strategies that take all this into account, however, only change environmental target behaviours by 10-

20% (Stern, 1999). Furthermore, the environmental behaviours that change tend to be simple, easy behaviours with few external constraints (Stern, 1999).

In conclusion, information does not tend to affect behaviours blocked by larger barriers, but if designed appropriately, information can significantly improve consumer behaviours to a modest extent, (Stern, 1999). The influence of detailed information, simple reminder prompts, modeling or demonstrating how to behave environmentally, and information on what others are doing, on behaviour, were discussed here.

2.3.3.6 Norms: Social and Personal

"A norm is defined as an expectation held by an individual about how he or she ought to act in a particular social situation" (Schwartz, 1977 from Borgstede & Biel, 2002, p.2 and Fransson & Garling, 1999). Borgstede and Biel add that a personal norm "implies feelings of personal obligation" (p.4) and "a rule about proper behaviour" (p.3), while a social norm represents how people in general ought to behave in a given situation.

Stern (2000) and Borgstede and Biel (2002) explain that personal moral norms or the moral imperative are mainly what predispose people to environmental behaviour. This is based on results from Stern's previous 1999 study and five other studies and is consistent with the VBN theory. Situational factors impact how strong a norm is (Borgstede & Biel 2002, suggested by Biel et al.,1999). Fransson and Garling (1999) explain that in Hopper and Nielsen's (1991) study, personal norms correlated strongly with behaviour only when "there was high awareness of consequences". In the same study, social norms were mediated by personal norms.

Literature theorizes that people strive to follow norms in unfamiliar situations. They search for cues in the environment on how to behave and then act accordingly (though cultural differences do exist; Werner, et al., 1995). Borgstede and Biel (2002) describe the relation of norms to behaviour, based on Messick's (1999) conclusions. People first examine a situation and decide what is fitting behaviour. Though this may

vary between cultures, they observe others and infer what should be done, thereby establishing the social rule to govern their behaviour. Lastly, there is a difference in how people behave based on their individual way of interpreting a situation and their personal decisions.

Barr (2003) provides examples from studies where some environmental behaviours (such as curbside recycling and reduction in water sprinkler use) were affected by "the influence of others" as well as by social pressure. He emphasizes that for normative processes to work, people have to be aware of a norm or "social pressure to change behaviour". Having other family members or friends that engage in responsible behaviours, predicts responsible behaviour (Werner & Makela, 1998). Being part of a culture or location that respects and values pro-environmental behavior is also a predictor of responsible environmental behavior (Werner, et al., 1995). In Goldstein and colleagues' (2008) study, social norms of how others behave in immediate surroundings had a greater influence on whether hotel guests reused their towels than environmental appeal did. Respondents were also more influenced by whom they identified with most. They were more likely to follow "fellow citizens" over general guests who were previously in their same hotel room and reused their towel.

One great drawback to acting in an environmentally responsible way, is when others are equally expected to act this way, and are perceived as not doing so (Oskamp, et al., 1991). Sometimes, as Cloud (2008) explains, norms can cause a social trap, where individuals can justify their behaviours based on others doing the same thing. A few people behaving a certain way however does not have the same environmental effect as if everyone were to do the same. Fransson and Garling (1999) speculate (based on past studies; Ajzen & Fisbein, 1977; Newhouse, 1990; Oskamp et al., 1991) that concern and attitudes will not predict environmental behaviour as well if social norms are strong.

2.3.3.7 Physical and Social Surroundings

Physical surroundings influence behaviour and perceived norms. Cone and Parham's study (Gifford, 1987) found that if a physical environment, such as a school

campus, is clean and spotless, people are much less likely to litter than if the physical environment is covered in litter. In the second part of this experiment, it was discovered that if people witnessed someone else litter, they were more likely to do the same. If they witnessed someone else recycle, they would also do the same. People can behave differently depending on where they are. Perceptions of how to behave in a certain location can positively or negatively influence this. Dolnicar and Leisch's (2008) study asked respondents how often they engaged in a set of 30 environmental behaviours at home, and then at a tourist destination, suggesting there could be differences. Also, it has been suggested that having direct experience with nature, such as being outdoors in beautiful areas and/or watching wildlife can more effectively bring about ecosystem appreciation than learning about environmental concerns though books or movies (Kollmuss & Agyeman, 2002).

2.3.3.8 Values

Valuing the environment itself is an important driver for environmental behaviour. Studies consistently rate values as strong drivers of environmentally sustainable behaviour, and thus any influence that is more significant, is certainly something noteworthy. Applied research and reviews state that individuals with different values respond differently to opportunities for environmentally significant behaviour (Barr 2003; Fransson & Garling, 1999; Stern, 2000 from: Cvetkovich & Earle, 1994; Kristiansen & Zanna, 1988; Seligman et al., 1994; Stern et al.,1993, 1995; ThÖgersen & Grunert-Beckman, 1997; Van Liere & Dunlap, 1978). Values often appear under theories and models as drivers of environmentally sustainable behaviour. The following theories (explained under Section 2.3.1) describe values as an influential factor: Stern's (2000) Value-Belief Norm (VBN) theory of environmentalism, Fietkau and Kessel's (1981) sociological model, Hinings and colleagues model (2004), Stern's four components (2000) and Gardner and Stern's (1996) intervention strategies (Kollmuss & Agyeman, 2002; Stern, 2000).

According to Fransson and Garling (1999), concern shapes values and values form attitudes, shape perceptions and shape how knowledge is acquired. Fransson and

Garling (1999) also refer to Schwartz (1992) when explaining that: "Values refer to a finite number of motivational concerns originating from the requirement to cope with reality: individual needs, social needs, and social institutional needs…. Individuals ascribe different degrees of importance to [these values]," (p.324). Based on Schwartz's work, they define values as: "Beliefs pertaining to desirable end states or modes of conduct that transcend specific situations and guide choices of actions, (Fransson and Garling, 1999, p. 324). Barr (2003) reports that there is considerable confusion on the difference between values, attitudes, beliefs, interests, personal norms and concerns. They are all related. He quotes Schwartz (1992) in arguing that when operationalized they all measure: "criteria people use to select and justify actions" and to make evaluations, (p. 229).

Most research categorizes values as they relate to environmental behavior into three main orientations: Biospheric, Social Altruistic and Egoistic (also known as universal/ecocentric, social/pro-social and economic/pro-self in some literature; Axelrod, 1994; De Groot & Steg, 2008; Fransson & Garling, 1999; Garling et. al., 2001). "Value orientations refer to clusters of prioritized values," (Fransson & Garling, 1999, p. 374: from Stern & Dietz, 1994 and Stern et. al.,1993, 1995). Research demonstrates that people who fall under each of these orientation categories have different concerns and are driven in different ways to behave environmentally responsibly (De Young, 1996). Axelrod's (1994) study showed that individuals who fell under the biospheric orientation were most likely to rank environmental motives as most important when making decisions. Stern (2000) provides examples of studies where altruistic values were more present in those who engaged in pro-environmental behaviour (Dietz et al., 1998; Karp, 1996; Stern & Dietz, 1994; Stern, Dietz, Kalof, & Guagnano, 1995). Alternative theories suggest that everyone has all of the above value orientations but each to different extents and that they can be prioritized depending on the context (Stern, 2000).

Individuals with a biospheric orientation tend to have an intrinsic need to slow down environmental degradation for the sake of the environment itself. They display long-term pro-environmental behavior and are also more likely to encourage others to

behave accordingly (Axelrod, 1994; de Groot & Steg, 2008; Garling, et al., 2001). Dunlap and Van Liere's (1978) New Environmental/ Ecological Paradigm, is a measure of biospheric environmental concern (Fransson & Garling,1999). According to Dunlap and colleagues (2000) and Gardner and Stern (1996, from Fransson & Garling, 1999), there has been an increase in the ecocentric value orientation/pro-ecological worldview in recent years. Though theoretically biospherics look at consequences and costs and benefits to the biosphere (Fransson & Garling, 1999), according to Stern (2000) it is not empirically resolved whether this altruistic behaviour pattern is different from those with a social altruistic orientation. Fransson and Garling (1999) report that Stern and Dietz (1994) and Stern et al. (1995) did not find a divergence between the two orientations in a general population sample.

For those with a social altruistic orientation, "environmental concern is tied to anthropocentric altruism," meaning "people care about environmental quality mainly because they believe that a degraded environment poses a threat to people's health. Thus, it is not the threat to the environment, but the threat to the well-being of people that is of central concern," (de Groot & Steg, 2008; Fransson & Garling, 1999, p.370; Garling, et al., 2001; Hopper & Nielsen, 1991). This category prioritizes values "such as a world at peace and equality," (Fransson and Garling, 1999, p. 374). In addition, Fransson and Garling (1999, based on Stern's 1992 work) also mention concern can be derived from a deeper cause, "such as religious beliefs or post materialistic values", (p. 370). For this category, environmental behavior is indirectly influenced by social norms and directly influenced by personal moral norms of doing what is right (Vining & Ebreo, 1992). In DEFRA's (2008) report, half of the study participants stated they were acting environmentally responsibly because "it is the right thing to do," (p.35).

Garling and colleagues (2001) as well as Barr (2003) explain why people with a social altruistic value orientation are more likely to behave environmentally responsibly over those with an egoistic orientation. Their awareness of environmental consequences provokes a sense of responsibility, which stimulates a personal norm/moral obligation to behave accordingly. This is consistent with Stern's (2000) Value-Belief Norm Theory.

Pro-socials are theorized to be different from pro-selfs in that they perceive social-altruistic consequences more prominently and egoistic consequences, less so (Garling et. al, 2001).

The egoistic category on the other hand is one of self-interest (de Groot & Steg, 2008; Garling, et al., 2001). People under this category are sensitive to extrinsic behavior cues such as providing convenient parking spaces for carpoolers, tax breaks and social recognition (De Young, 1996; Thompson & Barton, 1994). Individuals falling under this orientation would be more likely to act environmentally responsibly if they perceive that inaction may result in a personal threat (Baldassare & Katz,1992; Fransson & Garling, 1999). Cloud (2008) refers to Adam Smith's (1776) Invisible Hand from The Wealth of Nations as a market mechanism supporting self-interest.

Barr (2003) adds that there are also value orientations continuums. (In doing so, he references the work of Dunlap et al., 2000; Schwartz, 1992; Schwartz & Blisky, 1987 and Stern et. al.,1995). First there is the social value dimension where people are placed on a continuum from egoistic to altruistic and from conservative to open to change. Corraliza and Berenguer's (2000) study demonstrates that people who were altruistic and open to change are more likely to behave environmentally responsibly (from Barr, 2003). Second there is a relational value continuum from biocentrism to anthropocentrism. Barr states that a sizeable amount of research concludes that biocentrists are the most pro-environmental and provides Steele's (1996) study as an example.

Third, is the belief-driven value continuum from ecocentrists to technocentrists. "Ecocentrists see the solution to environmental problems as lying in a working relationship with nature to resolve conflicts between society and nature. Technocentrists argue that environmental problems are the result of a lack of technological development and that modernization will resolve environmental dilemmas", (Barr, 2003, p. 229, originally in O'Riordan, 1985). There is no clear conclusion as to whether ecocentrists engage in more pro-environmental action than technocentrists. Olsen and colleagues' (1992) propose a two-way measurement scale ranging from valuing technology greatly to

valuing the environment greatly, though it should be noted that these values are not mutually exclusive. This third value continuum overlaps with parts of the New Ecological Paradigm Scale, specifically with questions relating to human ingenuity's ability to fix environmental problems.

Finally, intrinsic motivation is said to play a large role in environmentally sustainable behaviour. According to De Young (1996) and Barr (2003) "individuals who gain satisfaction," a sense of well-being and self worth from environmental action (such as consuming less) are far more likely to continue the behaviour commitment, (Barr, 2003, p. 230). Note that values such as "curiosity, personal achievement, honesty, obedience and so forth" (Stern, 1999, p. 463; Stern, 2000) are not included in this research. Though they may be important for social sustainability, they were not relevant enough as influences of environmentally sustainable behaviour. Other proposed value orientations include competitive, cooperative or individualistic. Garling and colleagues (2001) suggest these orientations influence whether or not individuals will cooperate with environmental initiatives (more so than social pressure).

2.3.3.9 Ecological Worldview/ Environmental Concern

Ecological worldview has been endorsed as a measure of environmental concern and of pro-environmental orientation (Dunlap 2000). It has been incorporated in theories of what drives people to behave environmentally sustainably, specifically in Stern's Value-Belief Norm theory (Stern, 2000). Environmental concern was an influential factor in early frameworks of behaviour drivers, in Blake's sociological model and in Werner & Makela's (1998) attitudinal models (Kollmuss & Agyeman, 2002). It plays a role in both perception of the environment and sustainability and in what drives environmental behaviour. Fransson and Garling (1999) report Kaiser (1997) and Thögersen's (1996) findings that most people in industrial societies view "ecologically friendly behaviour as part of a moral domain" (p. 374).

Dunlap and colleagues' (2000) New Ecological Paradigm (NEP) scale examines ecological worldviews. The measurement scale consists of 15 questions under the

dimensions of: "the reality of limits to growth, antianthropocentrism, the fragility of nature's balance, rejection of exemptionalism, and the possibility of an ecological crisis," (Dunlap et. al., 2000, p. 432). More clearly, the scale focuses "on beliefs about humanity's ability to upset the balance of nature, the existence of limits to growth for human societies, and humanity's right to rule over the rest of nature," (Dunlap et. al., 2000, p. 427). Results from a 1990 Washington State survey demonstrate that over a 14-year period there has been a growth in pro-ecological worldviews and that the scale has internal consistency. Notwithstanding theories stating the "difficulty in predicting behaviour from general attitudes and beliefs" (Dunlap et al, 2000, p. 429), results from other studies suggest the scale has group validity and predictive validity in determining behaviour.

Borgstede and Biel (2002) propose that those who show more environmental concern are more willing to overcome situational barriers in behaving environmentally sustainably. He bases this on applied research by Oskamp et al. (1998) and Corraliza and Berenguer, (2000). Fransson and Garling (1999) explain that general environmental concern does not necessarily predict specific environmental behaviour, but as the number of environmental behaviours tested increase, concern becomes a better predictor. Specific concern can also predict specific behaviour. DEFRA's (2008) results report that those with higher environmental concern are more likely to engage in environmentally responsible behaviour and are more willing to change their behaviour.

2.3.3.10 Prioritization and Meaning of Environmental Sustainability
Though all sustainability components may be considered in decisions, they are not necessarily equally prioritized. According to Ratner (2004) the goals of sustainability, (environmental protection, economic development, and social equity) in some lines of literature appear as competing interests. He quotes Norgaard (1988) in stating "the environmentalists want the environment sustained, the consumers want consumption sustained, and the workers want jobs sustained," (p. 52). To resolve this, he then goes on to suggest a "multi-dimensional integration" of sustainability objectives, where a unifying ethic, commitment and shared values can guide actions.

Some argue that achieving environmental sustainability means development must stop. Others argue that this is not the case. In this view, natural resources cannot be depleted at a speed faster than they can renew themselves, and waste cannot be produced at a faster rate than it can degrade (Cook, 2004). Cook (2004) adds that the economy can continue to develop without hurting the environment. Products can be more efficient and longer lasting, without generating much waste in their production or consumption. Nevertheless, this is not necessarily how people understand environmental sustainability and it cannot be assumed that people have the same values, ethics and sustainability priorities without studying this.

There has been a shift away from using the term sustainable development and toward the use of the term sustainability partly due to criticism of the word "development". Development was seen to be related to continued economic growth, which raised contradictions (Fricker, 2001; Robinson, 2004). Sustainability alone however focuses "on the ability of humans to live within environmental constraints" (Robinson, 2004, p. 370). Both terms can be looked at as a process and as a non-static goal. Both acknowledge interactions between environmental protection and human needs and the necessity for caution and balance. They both focus on solving poverty and environmental concerns simultaneously (Pope, Annandale & Morrison-Saunders, 2004). Gallopin (2003) suggests sustainable development insinuates change and "a process of improvement," while sustainability may be confused with maintaining "a fixed state of a system" despite that no system is static (p. 19-20).

Some believe that sustainability and sustainable development do not have the same meaning, and the perceived difference between them is explained as follows. Sustainable development involves more of a "managerial and incremental approach" and technological fix to solving issues, with a focus on institutional and policy changes (Robinson, 2004, p.370). Alternatively, sustainability is more value-based, and achievement implies making lifestyle changes. It insinuates the environment has a right to exist in itself. Governments and private businesses tend to use the term sustainable

development while academics and NGOs more often use the term sustainability (Robinson, 2004). Criticisms of these terms include: their vagueness, insufficient definitions, inherent contradictions and their hypocrisy (Robinson, 2004). Again, for the purpose of this thesis, these terms are equivalent in meaning and encompass the challenges and manifestations of both terms. Changes need to be made on all fronts: technological, policy, economic, institutional and lifestyle. Regardless of whether these changes are intended for human benefit or environmental benefit, they are still necessary for the survival of both.

How people prioritize environmental sustainability can influence what environmental initiatives they would accept. What these prioritizations are based on however can be just as important as the degree of prioritization. Prioritizations based on values, play an important role in how people evaluate behaviour choices, (Fransson & Garling, 1999, based on the revised theory of planned behaviour), however, prioritizing is not only based on values. In addition, environmental issues may be prioritized differently in different situations, (TravelSmart, No Date: Theory of Reasoned Action).

Garling and colleagues (2001), explain that environmental problems can become a "conflict between self-interest and the interest of the collective," (p. 3). They refer to these instances as a Social Dilemma, a term coined by Dawes (1980; from Borgstede & Biel, 2002). A social dilemma arises when there is a higher payoff for individuals to act in self-interest as opposed to cooperating. However, this payoff is lower for the whole group if everyone acts this way. They mention Hardin's (1968) Tragedy of the Commons when explaining this and point out Hardin's solution of having the government become environmentally responsible for the well-being of the collective. Fransson and Garling (1999) go on to explain that "norms such as commitment, fairness, and reciprocity" may persuade people to choose the collective environmental interest over immediate self-interest (p. 374). They also discuss structuring the environment in a way where "short-term self-interest coincides with long-term collective interests," (p. 374). This signifies that people can prioritize environmental sustainability for reasons other than placing a large importance or value on it.

In addition, one can prioritize environmental sustainability without necessarily understanding what it means. Jennings and Zanderbergen (1995) warn that as concepts or norms such as sustainability spread and diffuse throughout an organization, they lose some meaning and become a trend. Everyone has an awareness of the general meaning and external motivations for taking part in environmentally sustainable actions but few actually understand it. Groups can be involved in easy environmentally sustainable actions and feel they are making a difference without a paradigm shift ever occurring. If this becomes the case, long-term environmental sustainability would be difficult to achieve. The relevance of prioritizing environmental sustainability may be mediated by the understandings of those prioritizing it.

In McAllister's (2007) opinion research on Canadians, findings were that 15% of people both prioritized environmental sustainability and understood its meaning and implications, 67% percent prioritized it without fully understanding it, 2% understood it but did not prioritize it and finally, 16% were not familiar with and did not prioritize environmental sustainability. Young adults who perceived that the Canadian government or industries were taking care of environmental sustainability issues were "30% less likely to rate this as a top priority". Young adults given facts on "how other countries are doing better than Canada, were 30-50% more likely to rate environmental sustainability as a higher priority," (McAllister, 2007, p. 21). DEFRA's (2008) UK research finding was that only half of study participants did not think the environment was a low priority in their life.

2.3.3.11 The Effect of Businesses' and Government's Environmental Behaviour on Individuals

Results from participants in DEFRA's (2008) research showed people had a tendency to be skeptical and distrusting of the "real" motives behind industry, government and local authorities concerning environmental behaviour. This was especially apparent when money was involved. DEFRA (2008) explains: "industry is perceived as having no reason to act unless environmental issues help them raise profits; and government is suspected of 'using' the environment to increase general tax revenue"

(p.38). Cotte and Trudel (2009) raise the issue of skepticism and suspicion as well, and list sources where this has been an obstacle for businesses (Prothero, Peattie & McDonagh 1997; Roberts, 1996).

Several studies show that negative, irresponsible or unethical behaviour on the part of local businesses has a greater impact on consumers than positive action (from Cotte & Trudel, 2009: Sen & Bhattacharya, 2001; Trudel & Cotte, 2009). People find businesses' lack of social and environmental responsibility more apparent. One negative act on the part of businesses can ruin their environmental or ethical reputation, while one positive act is often not enough to change consumer perspectives. Cotte and Trudel speculate the reason for this is that positive business behaviours are not as attention grabbing, and people either are not aware of them or have not listened.

Consumer expectations and what they already think about a company's competence, can impact how well new environmental practices will influence consumer attitudes and behaviour (Cotte & Trudel, 2009). Knowledgeable consumers, according to Laroche and colleagues (2001) "will not pay more for green products from companies accused of being polluters." The majority of those willing to spend more on green products, will not do so for businesses who do not follow government environmental regulations or who misrepresent merchandise as being green, (p.1 of summary). It then follows that local businesses need to make consumers aware of their environmental actions but at the same time avoid exaggerating or misleading consumers on how responsible their products actually are. A delicate balance must be struck (Cotte & Trudel, 2009). To conclude, based on the above studies, people value business integrity. Whether they perceive the environmental efforts of businesses to be genuine, influences their own behaviour. Also, having too much choice in supermarkets was a barrier towards making environmentally responsible purchases for some people (DEFRA, 2008).

2.3.3.12 Demographic Influences on Environmental Behaviour
Other than for gender, demographic effects on environmental behaviour are conflicting and inconclusive. This includes age, income, education, place of residence

and marital status. Women fairly consistently tend to have more pro-environmental attitudes than men and also tend to behave more environmentally responsibly (Baldassare & Katz, 1992; Barr, 2003; Cotte & Trudel, 2009, p. 36; Dolnicar & Leisch, 2008; Fransson & Garling, 1999; Gamba & Oskamp, 1994; Laroche et al., 2001; Oskamp et al., 1991). Some personality characteristics are also related to environmental behaviour, such as environmental citizenship, (Borgstede & Biel, 2002).

DEFRA (2008) suggests other characteristics besides socio-demographic factors that influence engagement in environmental behaviour. It goes as far as dividing its study population into seven segments based on their attitudes, beliefs, the types of environmental behaviour they would adopt and the conditions required for them to do so. After analyzing each segment's "willingness and ability to act" (p. 46), DEFRA provides separate suggestions on how to engage each segment in environmental sustainability. It provides implications and opportunities for policy by population segment and by behaviour goal, based on each segment's socio-demographic tendencies; ecological worldview; lifestyle; motivators and barriers; "knowledge and engagement;" attitudes to types of behaviours and current behaviours, (Report Supplement, p.i). For each behaviour goal, it examines "acceptability by segment, risks and key actors" (p.61). This is beyond the specificity of the current research, but for more information consult Chapters 5 and 6 of DEFRA (2008).

2.3.3.13 Other Influences on Environmental Behaviour

The focus of the current research is to study environmental behaviour trends, perceptions that could be used to advance environmental sustainability communication and behaviour determinants that could be somewhat influenced by Whistler. Many more psychological influences on environmental behaviour were therefore beyond the scope of this research. These include: "threat" theories, many internal behaviour change models, mental models, personality characteristics, habit and resistance to change. It is also worth mentioning that the current research does not cover how to influence environmental attitudes. Environmental attitudes tend to be strong and long lasting, and are useful in provoking environmental change (Werner et al., 1995; Werner & Makela, 1998).

However, attitudes on their own, are generally passive whereas behavior is active; it is what causes change.

Other relevant and interesting findings that can influence environmental behaviour are outlined below. Perception of quality of environmental sustainable products can be a motivator or barrier for purchasing behaviour. According to DEFRA's (2008) results, there is a prevalent perception that environmentally sustainable products are of inferior quality to regular products, despite that theoretically they should be more durable and longer lasting. An exception is environmentally sustainable food, which some perceived as being of higher quality and were therefore more motivated to purchase those foods.

A motivator towards environmentally sustainable behaviour is that it is sometimes associated with benefits such as "personal well-being, health and enjoyment". This was apparent in behaviour choices regarding food, transport, leisure and tourism (DEFRA Annex H, 2008, p. iv). "Being a part of something," "the feel good factor" and a "sense of altruism" were also large motivators and relate to the social component of sustainability as well (DEFRA, 2008, p.9). In addition, environmentally friendly behaviours can provide social currency.

DEFRA's (2008) found other environmental behaviour motivators and discouragers. Some people's negative image of environmentalism was a barrier towards their environmentally sustainable behaviour. These respondents associated environmentalism with "eccentrics", "hippies", or wealthy people who had the "luxury" to care about the environment. On the other hand, those with more positive images of environmentalism tended to be those more engaged in environmental behaviour. Another barrier DEFRA (2008) uncovered was respondents "sense of entitlement" to continue living a free life with lots of choices and no intervention. "Self identity and lifestyle fit" can also be motivators or barriers towards environmentally friendly behaviours, "depending on where people are starting from," (DEFRA, 2008, p.9). DEFRA's (2008) study participants often related environmentally responsible behaviour with more

sacrifices and higher costs and therefore most did not view these behaviours positively. These findings can be applied to Whistler's communication strategy.

2.4 Literature Relating to the Whistler Case Study

Currently the Whistler community has 17 strategies in place for achieving its sustainability vision (including the seven environmental ones mentioned under Section 2.2.3.1 Environmental Sustainability Impact Areas). It has or is in the process of implementing over 400 initiatives within these strategy areas (Whistler2020, 2010). Some Whistler2020 initiatives already in place are: the green roof on the library, affordable housing for residents, pesticide-free parks, an effective public transportation system, cultural festivals and the attraction of tourists year round so businesses can thrive year-round (Cook, 2004; Whistler2020, 2007). (Affordable housing relates to sustainability because housing is a basic need, and people cannot be expected to act sustainably until their basic needs are fulfilled. It also reduces transportation and greenhouse gas emissions, because locals do not have to travel far to get to work). Detailed Whistler visitor perceptions regarding these initiatives however have not yet been studied.

Engagement in environmental sustainability as applied to Whistler visitors presents a special challenge. Typical strategies cannot be used. Smith's (2007) research suggests that successful engagement in environmental sustainability occurs over a period of time, with the development of social networks, persistence and leadership. (Her thesis topic was "Analyzing the Community Engagement Process in the Development of Whistler's Comprehensive Sustainability Plan"). Visitors are often only at Whistler for a short period of time, are not necessarily aware of Whistler's background and do not necessarily have the time or an interest in engaging themselves in Whistler's environmental sustainability planning.

Visitors also have the greatest adaptive capacity compared to other groups at Whistler (Scott et al., 2008). This means, unlike businesses or government that are set up in one area and must adapt to changing environmental conditions, social values and economic needs, visitors can choose where they would like to vacation without having to

adapt to any restrictions besides their own. It is therefore critical to understand their views and their priorities in order to align environmental changes and communication, engagement strategies accordingly. Without tourist income, and with a small local population, Whistler may have difficulty remaining economically sustainable. Though they may not actively participate in decision-making, visitors are stakeholders, they are not passive and can certainly choose to vacation elsewhere (Hinings, et al., 2004). As is discussed in Section 4.8 some visitors may be attracted to Whistler because of all it represents and has achieved as a sustainable community, while others may not be. Figure 3.5 shows that at the time this study was conducted, less than 1% of visitors selected "Whistler's sustainability initiatives" as one of their top three reasons for visiting Whistler. However, their highest ranked reasons for visiting Whistler do not conflict with Whistler becoming environmentally sustainable.

A previous study at Whistler obtained tourist opinions of various planning scenarios. Kelly and colleagues' (2007) study asked visitors to select which scenarios they preferred at a resort similar to Whistler. The scenarios were of varying eco-efficiency levels. They included choices between compact or dispersed housing development, amount of nature trails, environmental taxes, and more. This provided information on the environmental sustainability initiatives respondents would participate in, those to which they were opposed, and at what levels. In general, findings were that tourists did support eco-efficiency options over "business-as-usual" options and that they would be willing to pay an environmental fee to offset the environmental impact of some of their behaviours. This research was particularly useful for knowing what tourists will support. Though the study cannot fully overcome critique regarding hypothetical scenarios, Kelly et al. (2007) explain that their "discrete choice experiment provided a more comprehensive and realistic assessment of eco-efficiency options than would be possible using traditional survey methods," (p. 377).

In terms of integrating visitor intentions with Whistler2020's environmental sustainability intentions, Hinings and colleagues (2004) theorized the process towards change at an institutional level. The first of five steps they proposed is that there is

pressure for change. Second, alternative practices are available and there is an organization they can follow. Pressure from enough visitors for Whistler to either become more environmentally sustainable or stay how it is, is a powerful influence and determinant of progress towards environmental sustainability. Understanding where visitors currently stand, based on their perceptions can help determine how much pressure there is on the visitor side. Their perceptions can also help determine if in fact they find that alternative practices (more environmentally sustainable options) are readily available at Whistler, and where improvements need to be made.

The third step in Hinings and colleagues (2004) theory is to develop an institutional change model for what is effective (though "theorization, legitimation and dissemination," p. 306). It must be justified for now and for future practices. The ideas and practices must be linked with the values and logic held by the surrounding social context. Fourth, the behavioural change is spread through mimicking, norms and even coercion. The last step is having a strong density of adoption for the behaviour change to the extent that it becomes natural and even spreads past the institution. These steps are beyond the scope of the current research but are useful placing the current research within the larger, long-term goal of environmental sustainability throughout Whistler.

2.5 Conclusion

This literature chapter provided the background research for the current study's three main research questions:

a) What are current environmentally sustainable behaviour norms of visitors while at Whistler?
b) What are visitor perceptions of environmental sustainability?
c) What most strongly motivates or discourages visitors' environmentally sustainable behaviour at Whistler?

The literature overviewed environmental sustainability and environmental behaviour. It explained methods of evaluating environmentally sustainable behaviours based on impact and intent. It investigated common environmental behaviours. It attempted to bridge what is missing from the study of environmental behaviour by

integrating it with natural science-based criteria on how to achieve environmental sustainability.

Environmental views can be important in determining what environmentally sustainable behaviour people may or may not engage in, what environmental changes they would push for and what they would not support. The literature on perception examined understandings of who is responsible for environmental protection, how feasible it is, how much control one has in the matter, one's interest in being environmentally responsible and the likelihood of behaviour making a difference. It also provided findings on how environmental sustainability is prioritized and evaluated. Concern regarding environmental issues and the influence of types of knowledge on environmental behaviour were discussed. The effect of values on environmental behaviour was presented, including biospheric, social altruistic and egoistic values and morals of "doing what is right".

Theories, models and experimental findings on what influences environmental behaviour and how it is influenced were presented. This included the influence of social norms, from general to local to those of close friends. Types of information influences included: reminder prompts, detailed information, demonstrations, practical versus abstract information and the credibility of the source of the information. The effect of convenience-related variables such as time, effort, infrastructure and facilities were explored. The influence of cost, and findings related to contingent valuation and trade offs were explained. The effect of local businesses' environmental behaviour, and local surroundings on consumer behaviour was summarized. Relevant demographic relations to environmental behaviour were also studied.

Based on the literature reviewed, it is clear that desire and interest alone are often not enough to translate into environmental action. There are many other interacting variables that affect behaviour and provide reasons for not following through with behaviour intentions. Some studies show people reporting they waste less, consume less energy and utilize more energy efficient sources than they did in the 1990s. Despite this,

it is not clear that overall energy use has decreased or that the amount of waste land-filled was reduced over these same years. Engagement or belief of engagement in environmental behaviours also will not necessarily lead to environmental sustainability. According to DEFRA (2008) people are widely unaware of the impact of some environmental behaviours relative to others. There is more to environmental communication than persuading people that becoming environmentally sustainable is a good idea. As Schwartz explains, most people verbally approve of this as it is. Alternatively, it is crucial to persuade them to act accordingly (Hopper & Nielsen, 1991).

From this literature review, it can be seen that people do tend to have pro-environmental sustainability views and report making an effort to behave environmentally. However, the range and degree of these pro-environmental behaviours is limited, and people are sometimes skeptical of environmental sustainability initiatives at government levels (such as Whistler municipality). This review on what affects environmentally sustainable behaviour and how to engage people in environmentally sustainability initiatives, provides the groundwork for the remainder of this study. Results from Section 2's literature review are compared with this study's results in Section 4 and they influence concluding recommendations in Section 5.

Chapter 3: Research Methodology

3.1 Introduction

This chapter discusses the survey and analysis methods used to find out how to better engage visitors in environmental sustainability at Whistler, and to answer the study's three main questions. Two hundred and thirty-two visitors to Whistler chose to fill out the survey, 48 completed the print version while 184 completed it online. Not all respondents answered all questions or finished the survey. The survey measured visitors' understandings, environmental efforts, and what influences them from their own perspective. The survey received approval from the Behavioural Research Ethics Board of UBC. Whistler Bylaw Services also approved of the recruiting methods.

3.2 Rational for Study Method

The survey method was chosen as it is difficult to otherwise engage visitors for very long. Surveys are a common way of gathering data and understanding people's views and behaviour (Cotte & Trudel, 2009 and many others). They are particularly useful in giving visitors some representation in planning and decisions by destination communities. As Englund (2005) explained, visitors are often only in an area for a short period of time, they are not necessarily very familiar with the community they are visiting and are not likely willing to spend much time helping with a research project while on holiday. Online surveys are a quick, convenient and practical way of engaging visitors in research. Given how visitors are spread out and difficult to access at Whistler, surveys were thought to be the most feasible research method at this stage in the community's environmental sustainability engagement process. Concerns, however, do exist regarding the accuracy of surveys as opposed to other methods. These will be examined in Section 5.2.

3.3 The Sample

The survey respondents were visitors at Whistler, British Columbia, Canada during February-April 2009. They came from a variety of countries (discussed in Section

3.8). The sample was convenience-based, because of the difficulties of obtaining a random and representative sample. Only people over the age of 18 were permitted to take part due to ethical restrictions. The survey was only available in English, and therefore only those who understood English well could fill it out. (No clear data exists on the proportion of Whistler visitors that come from non-English speaking areas, but 73% of respondents that took part in Tourism Whistler's summer 2008 visitor survey came from Canada or the United States.)

3.4 Recruitment of the Sample

Whistler visitors were recruited to fill out surveys between February and April 2009. They were mainly recruited in person in various outdoor locations at Whistler, primarily around Visitor Information Kiosks. Partner restaurants and hotels (The Longhorn Grill and Saloon, Tapley's Neighbourhood Pub and the Westin Resort and Spa) also recruited some participants via an informative letter left on restaurant tables and in hotel rooms. Interested visitors then had the opportunity to fill out the survey online at their convenience (within a week of the completion of their visit) or on the spot in paper form. Those who wished to fill it out online either provided their email addresses to be sent a link to the survey, or were given a business card with the survey link. The email-link method was used in Kelly and colleagues' (2007) survey at Whistler and it had a 48% response rate. This response rate may have been as high as it was due to gift incentives for filling out the surveys. For the current research, a reusable grocery bag and a restaurant discount were given to those who showed interest in filling out a survey, as a token of appreciation and with the objective of reducing plastic bag use. The current study's response rate was far lower, but an exact percentage cannot be determined because several recruiting methods were used and each had several steps.

3.5 The Survey

The survey was voluntary and respondents were free to withdraw at any time. Before filling out the survey, respondents were given a consent letter, stating the purpose of the survey, the relevant contact information, the privacy of personal information and

the anonymity of the responses. Respondents went on to fill out the survey if they agreed with this letter (Appendix B).

The survey was available online and in print. Online, it was available through esurveycreator.com. The print version was five pages in length (2.5 double-sided), with 8 quantitative question sections, 3 qualitative questions and 1 optional demographic question section. Predominantly, the quantitative questions were answered on a 1-4/5 point rating scale from agree to disagree or from never to always. They measured the direction and strength of respondents' opinions or behaviour. Respondents could elaborate on their quantitative answers or provide new information, if they so wished, in the qualitative questions. The survey was estimated to take 10 minutes to complete, longer for those who inserted qualitative comments. It was kept at this length based on insight from Tourism Whistler (personal communication, October 15, 2008) that those not as interested in environmental sustainability would be unlikely to fill out anything longer. A copy of the survey can be found in Appendix B. Tourism Whistler (an experienced tourist survey distributor and analyzer) advised that when filling out surveys online as opposed to on paper, respondents tend to check off the same answer for everything if many questions are clustered together (personal communication, October 30, 2008). The survey question sections in the online version were therefore broken into smaller sections, while the content remained identical to the paper version.

Following the survey, respondents were given a closing note, which provided them with more information about the study and about environmental sustainability. It included references should they have wished to learn more. This enabled the research project to provide information to respondents about environmental sustainability as opposed to only taking information from them. The survey was a way to communicate and create awareness of environmental sustainability in itself. It was expected to encourage thought on the subject. A copy of the Closing Note is also included in Appendix B. For the most part the paper surveys, consent letters and debriefing forms were on post-consumer, recycled paper and were double-sided.

3.6 Design and Basis for Survey Questions

The study's three main research questions were made up of smaller questions found within the survey. The survey began by asking about respondents' perceptions of environmental sustainability. The first question asked visitors at Whistler how familiar they were with the term sustainability. This was previously done in UBC's (2008) Sustainability Survey (Question 4). Past research demonstrates that people are not necessarily familiar with this term. In O'Toole and colleagues' study (2006), when survey respondents were asked "'What does sustainability mean to you?' 29 percent of respondents were unsure of the term sustainability and were not able to articulate a specific response," (p.7). Cottrell and colleagues (2004) defend defining sustainability as they argue it is "naïve to believe most tourists are able to define sustainability," (p. 412). In the UBC Sustainability Office (2008) survey, sustainability was defined to respondents, before inquiring about how they prioritized it. In addition, the University of Victoria's (2004) Community Member Sustainability Survey defined sustainability before they asked respondents "what ideas come to mind when they hear the term".

Considering that this survey examined opinions from a variety of countries and demographics (described in Section 3.8), it was not assumed visitors were familiar with environmental sustainability. While past research also supports defining sustainability to respondents before inquiring about it, this could bias reported perceptions of it. In addition, there are various definitions of environmental sustainability (University of Reading ECIFM, 2008; Research Group on the Global Future, 2005). Throughout the current research, the words environmental sustainability were replaced with the more well-known word "environment", when possible, instead of defining it early on. This was to ensure that those who did not understand what it meant could still respond to the questions as well as to be more confident the questions were measuring what they were intended to measure. Concerns with using the term "environment" are discussed in Section 5.2. At the conclusion of the survey respondents were given a common definition of sustainable development and links to resources should they have wished to learn more on the topic. If the majority of respondents report being familiar with the term sustainability, future studies can perhaps include the specific term in their surveys for

more accurate results. Respondents do not necessarily have to be familiar with the term sustainability to believe that a healthy economy, society and environment are interdependent; therefore another question (Q1m) asked if respondents agree with this interdependence.

Other questions in Section 1 measured if respondents agreed that maintaining a healthy environment is a government and/or personal responsibility; if protection would take a lot of effort; if it is achievable and if respondents have enough control to make a personal difference. Question 1e looked at the norms of one's hometown in relation to maintaining a healthy environment. Survey Questions 1g, 1h and 1m measured how respondents on average prioritize the three components of sustainability. Further questions measured levels of environmental interest and involvement. All these questions were based on literature previously reviewed in Sections 2.3.1, 2.3.2, 2.3.3.6, 2.3.3.8, and 2.3.3.10. Preliminary research among a small non-representative sample of Whistler locals indicated that they thought the word "sustainability" is overused to the extent that it loses meaning. This same question was therefore also included in the visitor survey (1n). The perception that the word sustainability is overused, however, does not necessarily relate to people's interest in achieving it.

The second survey section was based on Dunlap et al.'s (2000) previously tested New Ecological Paradigm scale. Seven questions were chosen from the original 15 questions in this scale. Using a previously tested scale provides an ability to compare Whistler visitor human-ecological views and concerns to those of a much larger population. While Section 2 measured one construct, Section 1 was not intended to be one measure of "perception of environmental sustainability." It simply explored how the current study's sample understands the environment and sustainability. Answers to survey questions in both Sections 1 and 2 were on a 5-point scale with 1 being "Strongly Agree," 3 being "Unsure" and 5 being "Disagree".

The third survey section asked what environmental behaviours respondents engaged in on their trip to Whistler and how often. People can more accurately report

specific environmental behaviours they engage in (such as not leaving the heater on high while they are not in their hotel room) over general groups of behaviours (such as not wasting energy). Unfortunately however, countless specific environmental behaviours exist. The criteria for selecting which specific environmental behaviour questions were included in the survey were based on:

      a) Visitors' ability to engage in these behaviours while at Whistler;

      b) The impact these behaviours would have on the environment;

      c) Willingness to change levels of these behaviours;

      d) Behaviours falling under different environmental sustainability indicators and covering a variety of relevant environmental sustainability areas: water, energy, food, materials and solid waste;
      e) Past literature. Similar environmental behaviour questions have been previously asked in Dolnicar and Leisch's study (2008, p.674), as well as research by DEFRA (2007), UBC Sustainability Office (2008), McDonald and Oates (2006), and Global Footprint Network (2010).

The seven environmental behaviour questions included in this section were selected from a much larger list, based on the predicted control visitors would have in these behaviours and based on the behaviours falling under a variety of environmental impact areas. In addition, this survey only asked about the environmental protection of resources when respondents were not using them, not about reducing resources they were in the process of using, to avoid conflicts of interest while on holiday. These questions were answered on a four-point engagement level rating scale where 1 was 'Never' and 4 was 'Always'. Following from Dolnicar and Leisch (2008), respondents had the option of checking off "not applicable" to answers, as not all environmental behaviours were necessarily possible for all survey respondents.

A transportation-related question was not included in Section 3 of the survey, but was asked about further on. A vegetarian question was included under environmental behaviours because raising and feeding animals requires a much larger amount of grain, water, energy and land space than an equivalent amount of plant-based food would (Naylor, et al., 2005; Pimentel & Pimentel, 2003; Pimental, et al., 2008). The question's relevance is elaborated upon more than other questions because visitors questioned why it

was related to environmental sustainability (Section 4.2.2). "For every 1kg of animal protein produced, livestock is fed 6kg of plant protein," mainly grain (Pimentel & Pimentel, 2003, p. 661S). Based on US Department of Agriculture statistics, the Pimentels also state "The amount of grains fed to US livestock is sufficient to feed about 840 million people who follow a plant-based diet," (p. 661S) and that "the US livestock population consumes more than 7 times as much grain as is consumed directly by the entire American population," (661S). Producing the necessary amounts of grain and forage for livestock also demands large inputs of water, energy and extensive land. "Agricultural irrigation accounts for 85% of fresh water consumed in the states," (Pimentel & Pimentel, 2003, p. 662S).

In addition, after detailed calculations, Eshel and Martin (2006) determined that a mixed diet produces 1,485kg of carbon dioxide emissions above that of a solely plant based diet per year with equal calorie content in each. The emissions mainly come from the fossil energy used in food production. Intensive animal farming produces extensive amounts of waste, which can be unhealthy for water systems (Naylor, et al., 2005). The land required to cultivate crops for livestock can present consequences to biodiversity, soil and water quality in sensitive areas (Naylor, et al., 2005; Pimentel & Pimentel, 2003). Making an effort to consume more plant-based foods is more sustainable both from an environmental and a world human hunger standpoint. Efforts to eat organic or locally produced food could also have represented food-related environmental behaviours. Vegetarian food was chosen because it was thought to be the easiest for respondents to accurately determine, its benefits to the environment are significant and it has ethical relevance. Vegetarian or meat consumption questions were also asked in other sustainability surveys (Global Footprint Network, 2010; UBC Sustainability Office, 2008).

Section 3 was followed by a qualitative question, allowing respondents to specify other environmental behaviours they engaged in at Whistler or to elaborate on what they previously reported. The purpose of this question was to verify if any pro-environmental behaviours were left out of the survey and to determine what is normal visitor behaviour.

The fifth survey section inquired whether certain factors influenced respondents' environmental behaviour at Whistler (6 items), and if so, whether the influence was positive or negative on their behaviour. Survey Section 6 (9 items) examined what would most discourage respondents from behaving environmentally responsibly at Whistler and to what extent. Question Sections 7 (9 items) and 8 (4 items) invited survey respondents to rate how strongly various influences encouraged or hypothetically would have encouraged them to behave environmentally responsibly at Whistler.

The potential influence variables included in Survey Sections 5, 6, 7 and 8 were based on variables repeated throughout environmental behaviour influence literature in Sections 2.3.1 and 2.3.3. Questions 6a, 6b, 6c, 7a, 7hi, 5a, 5b, 5c and 5e inquired about the influence of social norms on environmental behaviour including: hometown, local, general, family & friends, local business and personal norms while on holiday as well as social pressure. Survey questions 7b, 7c, 7d and 7g asked about the influence of information on environmental behaviour. This included detailed information, large reminder signs, demonstrations and information on Whistler's environmental sustainability initiatives. Questions 6h and 6i researched the influence of monetary cost on environmental behaviour.

The influence of convenience on environmental behaviour (both general and specific behaviours) was studied in Survey Questions 7e, 7f, 6d, 6e, 6f and 6g. This includes the influence of time and effort required for the behaviour. Questions 6d, 6e, 6f, 6g, 6h and 6i were also contingent valuation questions in that they studied how much respondents were willing to give up before being discouraged to behave environmentally responsibly. The value questions (8a, 8c and 8d) measured the influence of valuing the well-being of people, of animals and the environment and of "doing what is right" on environmental behaviour. Survey Question 8b measured the influence of one's environmental surroundings on environmental behaviour, Question 5e potentially did this as well. Survey Question 5d examined how perception of regulations at Whistler

influences environmental behaviour. Question 5f studied the effect of the evaluative belief of whether personal behaviour would make an environmental difference.

Questions for Sections 6, 7, 8 and 9 were measured on a 4-point scale where 1 was "Strongly Agree" and 4 was "Disagree". These questions were answered on a 4-point scale as opposed to 5-point scale to eliminate clusters of neutral answers and therefore increase variance in results. Section 7 examined what could hypothetically influence behaviour while Section 8 asked about actual behaviour influences. Respondents were asked to mark whether Section 5's items "encouraged," "discouraged," or had "no influence" on their behaving environmentally responsibly at Whistler. In a following qualitative question, respondents could then specify more precisely what encouraged or discouraged their behaviour most at Whistler. The main purpose of the qualitative question was to provide details and specificity on exactly what these influences were, to explain how they impact behaviour and to determine what was omitted from the survey. They can show where improvement by Whistler is needed as well as what steps visitors recognize as helpful and successful towards their pro-environmental behaviour.

Section 9 of the survey presented contingent valuation questions regarding staying in an environmentally responsible hotel and included both monetary and hotel quality tradeoff options. It also inquired about perceptions of how genuine Whistler businesses are with their environmental sustainability initiatives, such as perceptions of genuine reasons for asking guests to reuse hotel towels. Looking at what Whistler can do to positively impact the environment, other questions examined the perceived effectiveness of various Whistler environmental sustainability initiatives (relating to the built environment, materials & solid waste and transportation). The initiatives selected were based on the positive impact they would have on the environment if successful. In DEFRA's (2007) study, few people reported not purchasing food because it was over-packaged. Yet, no question inquired whether consumers thought businesses attempted to only sell foods with minimized packaging. Businesses can play as large a role in reducing packaging for consumers. By making environmentally responsible transportation safe and convenient, municipalities can also play a large role in reducing carbon emissions.

Additional questions examined the influence of environmental concern on choices made at Whistler. Finally, one question asked if one's overall experience at Whistler encouraged environmental responsibility.

The demographic survey section asked about respondents' gender, age range, place of residence, education level, income level and reasons for staying at Whistler. Reasons for vacationing were previously asked about in Dolnicar and Leisch (2008) and in Englund (2005). In Dolnicar and Leisch, these reasons were related to environmental behaviour. For example those who went on holiday to play sports, enjoy nature, be in good company and be in a romantic atmosphere were more likely to engage in environmental behaviour. Those who went on holiday looking for luxury, entertainment and wanting to be pampered overall had lower environmental behaviour engagement scores. Filling out the Demographic Section was optional for further privacy assurance. For more sensitive questions such as age and income, respondents chose from five annual household income ranges and six age ranges as opposed to inserting an exact number. They wrote out their place of residence and education level. Place of residence was then categorized by country. It includes Canada, the US, the UK, elsewhere in Europe, Australia and "Other". The "Other" category was included to preserve anonymity for respondents from the remaining countries. Only three respondents fell under this category. Education level was categorized on a 5-point scale from "High school" to "PhD/two Masters/Doctor/Lawyer/or higher". Exact categorizations for demographic variables can be seen in Section 3.8.

The final survey question offered respondents the opportunity to add any other comments relating to the survey, sustainability, the environment or Whistler. This information allowed for recognition of what is important to respondents, detailed visitor perceptions, discrepancies in facilities at Whistler, successful environmental sustainability initiatives and particularly how Whistler can make improvements. It also provided a way to note concerns and gain feedback on the survey.

3.7 Empirical Questions and Analysis Methods

3.7.1 Research Question A): What are Current Environmentally Sustainable Behaviour Norms of Visitors while at Whistler?

The aim of this analysis was to determine which environmental behaviours Whistler visitors engage in habitually and which they do not. Data were analyzed based on the results from Survey Sections 3 and 4. The seven environmental behaviours included in Section 3 were measured by the percentage of people who reported engaging in them and by significant differences in their mean reported engagement level. Question 3c was reverse-coded in order to vary in the same direction as the other questions. A between-within analysis of variance (ANOVA) and Tukey multiple comparisons were used to compare behaviours (the "within" variable) for significant engagement level differences. Respondents had the option of checking off "not applicable" for behaviours in this section causing a large discrepancy between the number of usable responses per question. Because of this and in order to add more power to the repeated measures ANOVA, gender was added as the "between" variable. Sixty-eight male respondents and 52 female respondents (120 respondents) were included in this ANOVA, as these were the people that answered every question without selecting "NA".

Categories of environmental behaviour (food, hotel and recycling) were also compared across each other. Categories were supported empirically by calculation of Cronbach's alpha coefficient, a measure of internal consistency or reliability. High alphas mean that inter-item correlations are high, implying that a single thread runs through the items. A high alpha would help establish that all variables in a category measure one single construct. A Cronbach's alpha above 0.7 suggests reasonable homogeneity, and the higher the better, (DeVellis, 2003). Together, the environmental behaviours researched had a low Cronbach alpha of .548. Therefore, for further analyses, these behaviours were divided into two main categories. The first category was "food-related environmental behaviour," consisting of Survey Questions 3a (composting) and 3g (vegetarian food) (r =.23, $p<.01$). The second category was "hotel-related environmental behaviour" (α =.65), which consisted of Questions 3b (lights), 3d (heat), 3e (towel reuse) and 3f (recycling). Question 3f can also be left on its own and be termed "recycling behaviour". Question 3c

(water waste) did not fit into either category of behaviour well, possibly because it was misread. It was therefore left out of most result analyses.

Section 4 comments were categorized by types of environmental behaviour and more generally, by how the behaviour would help the environment. They were ranked by the number of times mentioned.

3.7.2 Research Question B): What are Visitor Perceptions of Environmental Sustainability?

The aim of this analysis was to shed light on how visitors understand environmental sustainability. It encompassed data from Survey Sections 1 and 2. Section 1 questions were analyzed by examining people's views per question (by mean rating and by percentage of respondents agreeing with each statement). Note that when analyzing results, applicable questions were reverse coded in order for all answers to be varying in the same direction. Correlated *t*-tests were conducted between some related questions to determine any significant differences in mean perceptions. An example of a correlated t-test research question is: Do respondents believe maintaining a healthy environment is an individual responsibility significantly more so than a government responsibility? Correlations determined if there was a strong association between some views. Examples of correlation questions addressed are: Are those who agree they are familiar with the term sustainability also more likely to agree that an interdependence exists between the economy, social well-being and the environment? Are they more likely to be actively involved in environmental protection? The significance of the correlated *t*-tests and correlations were adjusted using a Bonferroni type correction to control Type I error rates.

Answers to the ecological worldview questions in Section 2 were compared with equivalent questions in Dunlap and colleagues' Washington study (2000) using a Kolmogorov-Smirnov large two-sample two-tailed test (Siegel & Castellan, 1988). The The Kolmogorov-Smirnov procedure tests the equivalence of the distributional shape of the two distributions. The number of Washington respondents that answered each comparison question ranged from 663 to 667 while the response frequency in the current

study was 221-223. In addition, Cronbach's alphas were calculated for Sections 1 and 2 to determine if they were measuring the same construct and to determine if any questions from Section 1 were highly associated with Section 2.

3.7.3 Research Question C): What Most Strongly Motivates or Discourages Visitors' Environmentally Sustainable Behaviour at Whistler?

This question examined what Whistler visitors report most strongly motivates, blocks or has no influence on their environmental behaviour at Whistler. It also includes what visitors are willing to trade for environmental responsibility and where Whistler and its visitors stand with respect to environmental sustainability.

Section 5 results were calculated by percentage of respondents who checked off "encourage" versus "discourage" or "no influence" for each of the 6 questions. Significant differences in results were tested across some questions using McNemar's (1947) Two Samples Test of Two Dependent Proportions.

Repeated-measures analyses of variance (ANOVA) were performed on Sections 7 and 8 encouragers of environmental behaviour variables to determine if there were significant differences between their levels of encouragement. If there were differences, Tukey multiple comparison tests were preformed to determine what would encourage environmental behaviour most and least for all questions per section. A repeated-measures analysis of variance and Tukey multiple comparison tests were also performed on Section 6 questions to determine which potential environmental behaviour discouragers were significantly more or less discouraging from others. In addition, the result analysis examined whether there were more effective categories of environmental behaviour drivers and blockers than others. To determine which environmental behaviour encourager categories were significantly more or less encouraging than others, a repeated-measures ANOVA and Tukey multiple comparison tests were performed on mean answers by category. The same analyses were conducted for Section 6's potential environmental discourager categories. Examples of categories include: Values, Social Norms, Information, etc.

Examples of the research questions answered from these analyses are: How do 'Types of Convenience', 'Different Values', 'Location', 'Types of Information' and 'Different Social Norms' rate on strength in encouraging respondents to behave environmentally responsibly at Whistler? Do some categories motivate pro-environmental behaviour significantly more than others? Do some items within each category motivate environmental behaviour significantly more than others? For example: What type of information is most effective in encouraging environmental behaviour of visitors at Whistler? How do 'Social Norms', 'Effort Involved', 'Time Involved' and 'Monetary Cost' rate on strength in discouraging respondents from (hypothetically) behaving environmentally responsibly at Whistler? Do some categories discourage pro-environmental behaviour significantly more than others? The null hypothesis for all these questions is: All treatment (influence) effects received the same mean response. The alternative hypothesis is at least one treatment had a significantly different mean than the others.

For the qualitative question on what encourages and discourages visitor environmental behaviour most at Whistler, answers were categorized by types of influences. The number of times each influence was mentioned was listed. Some explanatory quotes were also included. Suggestions on improvements were listed based on results from the final comment question (Question 12). This information can be used to analyze: What changes can Whistler make to improve the environmental behaviour of its visitors?

Survey Section 9 measured a variety of environmental behaviour choices and views at Whistler. Questions in this section, as well as the contingent valuation questions in Section 6, were analyzed using percentages of respondents agreeing and strongly agreeing with the statements made. Specific contingent valuation research questions are as follows. What percentage of visitors are willing to trade money, time or effort in order to protect the environment? What percentage of visitors are willing to trade money or amenities to stay in a more environmentally responsible hotel?

3.7.4 Demographic Differences

Multi-factorial ANOVAs were used to analyze: How do demographic variables influence visitor perceptions of environment, their environmental behaviour at Whistler and their behaviour motivators and blockers? The influence and interactions between gender, age, income, education and place of residence were studied. Because filling out the demographic section of the survey was optional, research questions involving demographic comparisons were not representative of the entire survey sample. To mitigate this problem, ANOVAs were first conducted as repeated-measures, without eliminating respondents based on whether or not they filled out the demographic section. Then, demographic influences (the between factors) and interactions were examined afterwards using 2 and 3-way between-within ANOVAs, adding more power to the results, but only for the people who actually completed the survey. Where no interactions between demographic variables and the "treatment" effect occurred, only collapsed "treatment-variable" between ANOVAs are explained and reported.

3.7.4.1 Demographic Differences in Environmental Behaviour

Hotel-related environmental behaviours (including recycling; 3bdef) and food-related environmental behaviours (3ag) generally were compared with demographic variables separately. This raised the number of survey respondents included in demographic analyses, as only respondents who answered each question are included in repeated-measures ANOVAs and answering questions in Section 3 was optional. A 2-way between subjects ANOVA with gender and age as independent variables was conducted for food-related environmental behaviour and then hotel-related environmental behaviour. A between-within design was used to analyze how education (the "between" variable) influences food and hotel-related environmental behaviour (the "within" variables). Another between-within ANOVA was conducted to determine how one's country of residence (the "between" variable) influences level of engagement in food and hotel environmental behaviours. Countries included were Canada, the US, Europe and Australia. (UK was combined with Europe and "other country" was excluded, as too few people were part of these categories). A two-way ANOVA was also conducted to

determine the influence of and any interactions between income and country of residence on hotel-related environmental behaviour. An ANOVA to study the influence of income on food-related environmental behaviour was studied as well.

3.7.4.2 Demographic Differences in Perceptions

A 2x2 between-subject ANOVA was used to test if there is an age and/or gender difference in Survey Section 1's perceptions of environmental sustainability. With all 14 items in Section 1 coded to measure in the same direction, its Cronbach's alpha was .67. This allowed for all 14 items to be collapsed into one for demographic comparison purposes. To add more meaning to demographic differences in environmental perceptions, correlations were conducted between age, gender, income, education and some of the specific perception questions. A one-way ANOVA was performed to determine if country of residence (11c) influences perception of whether one's hometown would take drastic actions to maintain a healthy environment (Q1e). Countries included in this analysis were Canada, the US, the UK and Australia. Tukey's post hoc test followed this to determine which country perceived that their hometown would take drastic actions to maintain a healthy environment significantly more than another. An ANOVA was conducted to determine if there is an age or gender difference in ecological worldview. With a Cronbach alpha of .71, Section 2's 7-item ecological worldview scale was also collapsed into one construct. Another ANOVA examined education and income's influence on ecological worldview. Tukey post hoc comparisons were performed where significant differences existed.

3.7.4.3 Demographic Differences in What Influences Environmental Behaviour

For demographic comparison purposes, all environmental influence variables within sections measuring the same higher construct were collapsed into one variable if they had a high Cronbach alpha. The 9 items in Section 6 together had a high alpha of .87. The 9 items in Section 7 had a high alpha of .88. The 4 items in Section 8 had a reasonable alpha of .75. The 6 items in Section 5 together had an alpha of .70. Each of these sections was therefore collapsed into one variable: Section 6 Discouragers, Section 7 Hypothetical Encouragers, Section 8 Encouragers and Section 5 Influences. Four 2x2

between-subject ANOVAs with age and gender (the 'between' factors) and each of the collapsed influence variables were used to test if there is an age and/or gender difference on how influenced respondents are in behaving environmentally responsibly at Whistler. Age and gender were considered fixed effects.

3.7.5 Associations Between Research Questions

Other research questions combined data from the previous three main research questions to help further determine reasons for environmental behaviour at Whistler. Past literature concludes that attitudes/perceptions and situational influences often interact to form behaviour. The relationship between general environmental sustainability perceptions was compared with reported environmental behaviour at Whistler to determine which internal variables might have an influence on visitor behaviour at Whistler. Other questions examined if respondents' environmental perceptions have a mediating effect on how external variables influence behaviour. Additional questions examined if certain behaviour motivators or blockers have different effects on people with different environmental interest levels, or differences in other related perceptions. Further questions were asked to provide a better indication of how hypothetical influences on behaviour relate to visitors' reported environmental behaviour at Whistler. These relations can help determine which environmental sustainability initiatives Whistler should focus on, and what is already fairly successful. Questions were mainly analyzed using Pearson correlations.

Examples of studied association questions are as follows. They were chosen because they were of interest to the researcher.

1. Are respondents who act the most environmentally responsibly, as opposed to the least, significantly more likely to think maintaining a healthy environment is their responsibility? (Section 3 was correlated with Q1c.)

2. Do certain blockers/motivators influence people of different environmental interest levels and sustainability familiarity levels differently? (Sections 5, 6, 7, 8 were correlated with Q1jkl as one dimension and also with Q1a. – For example, a negative correlation between 1a and Section 7 would indicate that those already familiar with sustainability are not as influenced to behave environmentally responsibly by situational variables.)

3. Do some values affect behaviour more positively than other values? (Each value question in Section 8 was correlated with Section 3 and the strongest correlation was found.)

4. Is there any difference in environmental behaviour of respondents who believe the word "sustainability" is overused to the extent that it loses meaning, and those who do not? (Section 3 was correlated with Q1n. –No correlation signifies no difference.)

5. Is there a relationship between level of personal interest in improving the environment and environmental behaviour? (Q1jkl as one dimension was correlated with Section 3.) If environmental behaviour becomes the more appealing and easy behaviour at Whistler, there need not be a large relationship.

6. Do pro-environmental views positively relate to willingness-to-pay for environmental responsibility? (Various questions from Sections 1 and 2 were correlated with Questions 9ijk.)

3.8 Generalizability of the Sample

Given that the survey sample was not necessarily representative of any population, the research results are not necessarily generalizable to visitors of other 'naturistic' destinations or to any other population. This section, however, determines if the visitor research sample is representative of Tourism Whistler's much larger sample of 2009 Whistler winter visitors. The visitor sample was compared with statistics from Tourism Whistler to determine whether the sample mirrors that of Whistler's general 2009 winter tourist population. It may not mirror that of the summer population. In this section statistical comparisons are made between the gender, age, income and place of residence of the survey sample with Tourism Whistler's winter 2009 survey sample. The education level of the sample and their reasons for visiting Whistler are graphed. Comparisons are also made with Canadian population census data.

Figure 3.1 presents the age and gender of visitors surveyed at Whistler in winter, 2009. Two hundred and eight respondents are included in this graph and 24 are missing. Of those respondents who chose to answer the demographic section, 119 (57.2%) were men and 89 (42.8%) were women. Of the respondents, 15.5% were 19-24 years of age, 38% were 25-34, 13.6% were 35-44, 17.8% were 45-54, 10.8% were 55-64 and finally 4.2% were 65 years of age or older. This graph demonstrates that Whistler attracts a

generally younger visitor crowd with a higher male-to-female ratio. This is consistent with Whistler's local population (Mustel Group Market Research, 2006, p.11 and 49). As with typical census Canada data, as age increases the male-to-female population ratio lessens (Statistics Canada, 2010).

Figure 3.1

Age and Gender of Whistler Visitor Survey Respondents
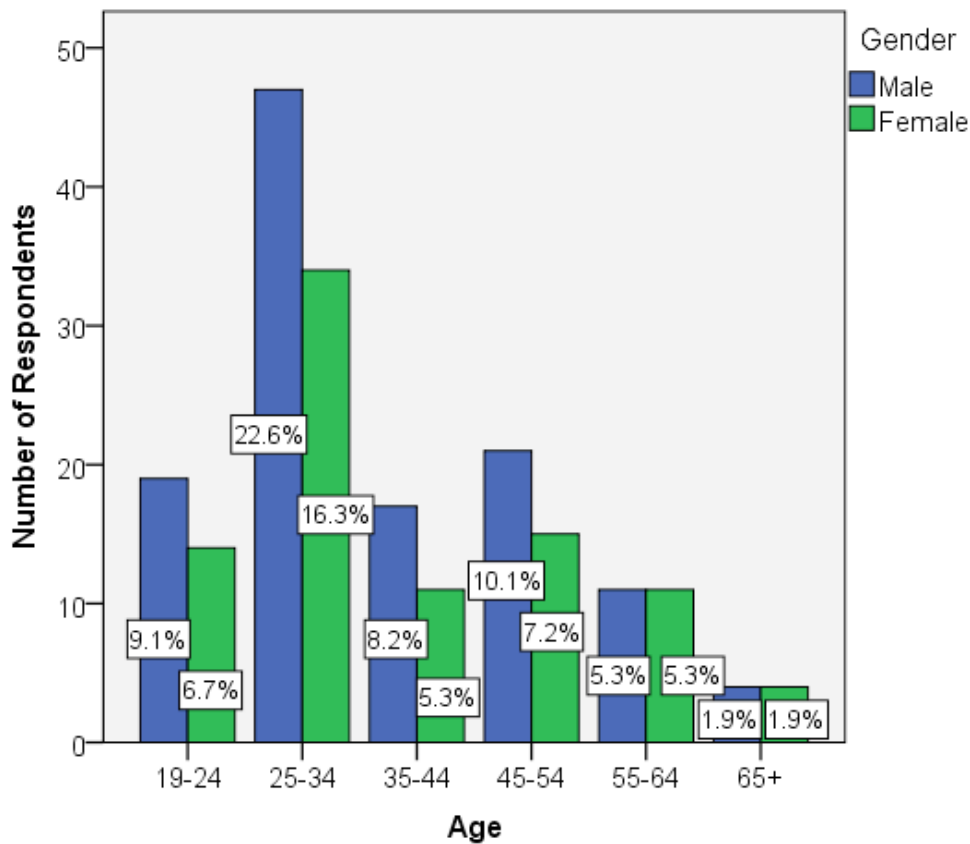
Using a two sample test of independent proportions, it was determined that the gender ratio of the current Whistler visitor sample ($n = 208$) is statistically representative of Tourism Whistler's larger sample ($n = 2872$) of 2009 winter visitors ($z = .25$, $p = .80$; Tourism Whistler, 2009). A Kolmogorov-Smirnov large two-sample two-tailed test revealed that the distribution of the current sample's age categories ($n = 213$) is significantly different from that of Tourism Whistler's 2009 winter visitor sample ($n = 2872$), $D(213, 2872) = .141$, $p < .05$ (Siegel & Castellan, 1988). The mean age of Tourism Whistler's sample is 40, (SD not available; Tourism Whistler, 2009). The

current survey did not ask for exact ages, it asked for respondents to check off the category their age fell under out of the 6 displayed above $M = 2.83$, $SD = 1.4$. From this it was predicted that surveyed visitors' average age was a little less than 35. The current sample's age is lower overall than Tourism Whistler's sample.

Figure 3.2 illustrates the annual household income range of the current study's winter 2009 Whistler visitor sample. This includes data from 195 respondents, with 37 missing.

Figure 3.2

Income of Whistler Visitor Survey Respondents
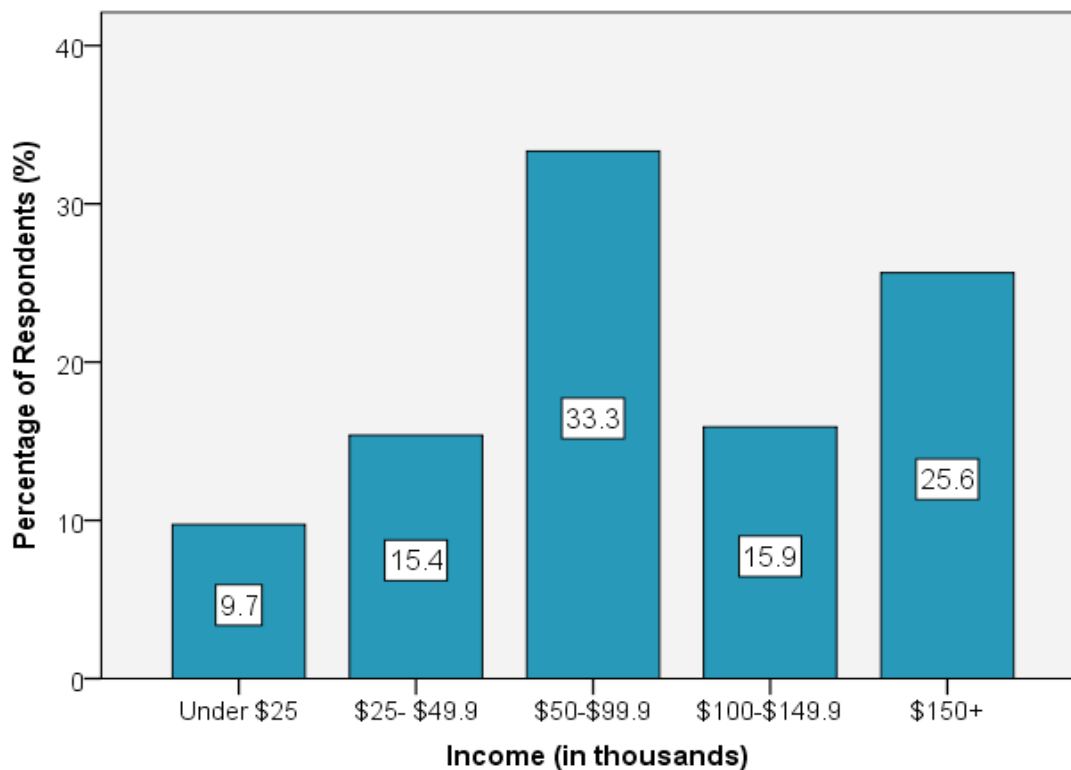
Based on results from the Kolmogorov-Smirnov large two-sample two-tailed test, the distribution of income categories differs significantly from that of Tourism Whistler's larger winter 2009 sample ($n = 960$), $D(195,960) = .17$, $p < .05$. Tourism Whistler's sample's mean income and standard deviation were not available, though 58% reported having an annual household income of above $100, 000 (Tourism Whistler, 2009). The current sample was asked which category their annual household income fell under (out

of the 5 categories appearing in the graph above, M =3.32, SD =1.28), so an exact mean is not available in this case either. It is likely around $100, 000. Overall, the current sample has a lower income than Tourism Whistler's sample.

Figure 3.3 examines the education level of the current study's visitor sample. Two hundred and one respondents are included in the graph while 31 are missing. Education of the current sample appears to have a symmetric, nearly normal distribution. Tourism Whistler did not ask its sample about education, so results cannot be compared.

Figure 3.3

Education of Whistler Visitor Survey Respondents
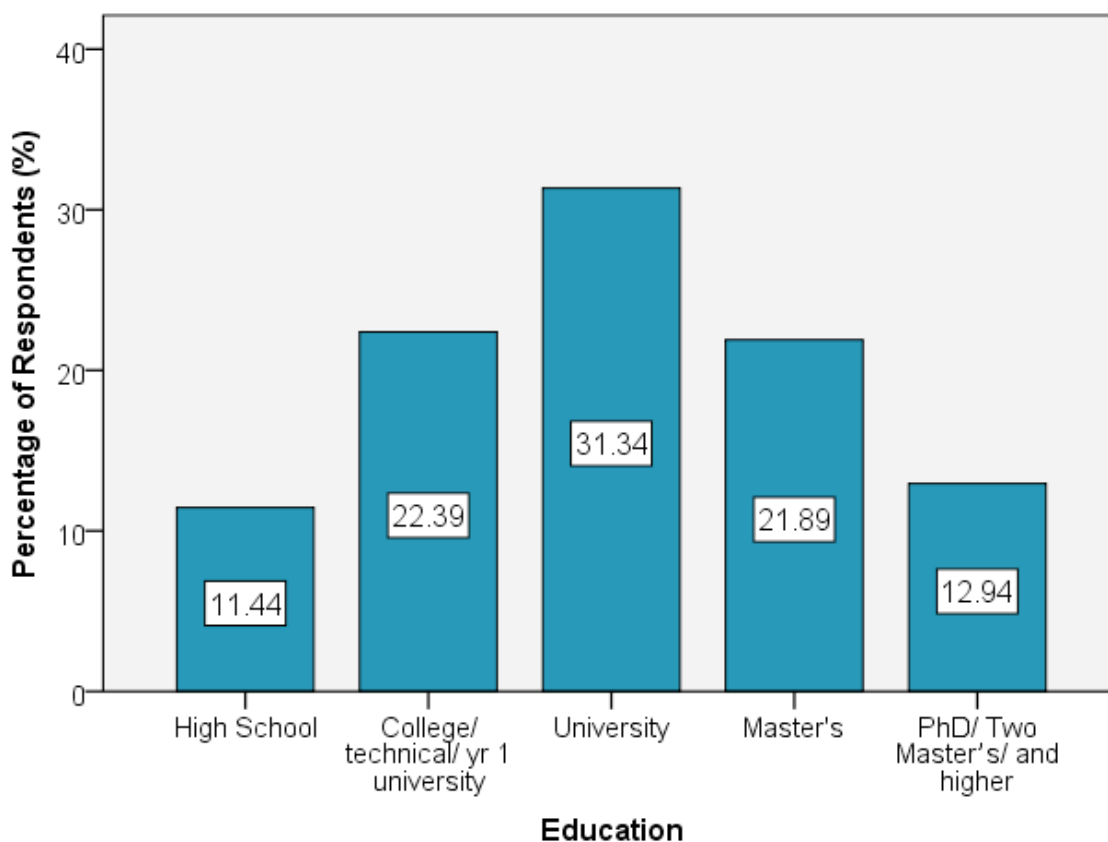
Overall, results show that Whistler visitors have a higher income and education level than the average Canadian population. Statistics Canada (2010) data show that 49% of the Canadian population have a high school diploma or less, while only 4% have a Master's degree or higher (including degrees in medicine, etc.). Statistics Canada (2010) data also show that in constant 2005 dollars, 46% of the Canadian population have an

annual household income under $50,000, while 7% have an income over $150, 000. Significant positive correlations were found between the current sample's income and age ($r = .33, p < .01$); income and education ($r = .20, p < .01$) but not age and education ($r = .07, p > .05$).

Figure 3.4 below is a pie chart representing the most recent place of residence of the current sample's winter 2009 Whistler visitors. Data from 211 respondents are included here with 21 missing.

Figure 3.4
Recent Place of Residence of Surveyed Whistler Visitors
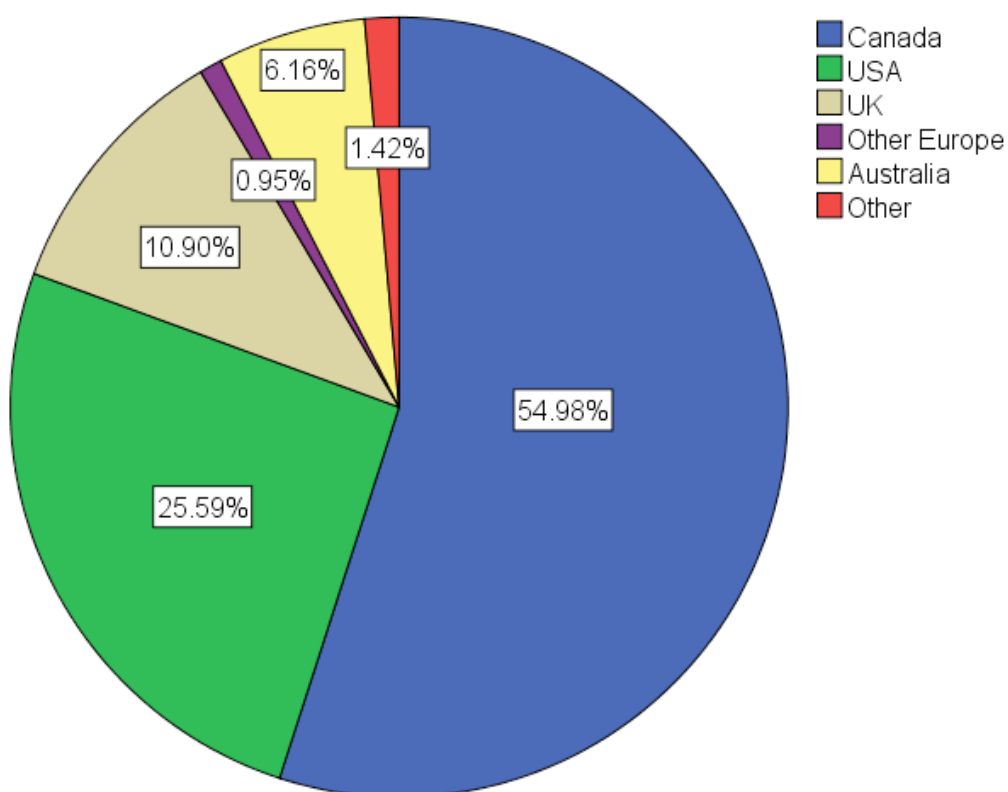
One hundred and sixteen respondents had most recently been living in Canada (55%), while 54 respondents' place of residence was in the United States (26%). Twenty-three had most recently been living in the United Kingdom (11%), 13 had been living in

Australia (6%) and 5 were from other countries. As the survey was only available in English, results may over-represent English speaking countries. In terms of most recent place of residence, this sample ($n = 211$) is representative of Tourism Whistler's summer 2008 visitor sample ($n = 2004$), $D(211, 2004)=.076$, $p > .05$, (Kolmogorov-Smirnov large two-sample two-tailed test; Tourism Whistler, 2009). Tourism Whistler's 2009 winter 'Place of Residence' data was not available for comparison. In Tourism Whistler's summer 2008 sample 4% of visitors were from countries outside of Canada, the United States, Europe and the Asia Pacific.

Reasons for visiting Whistler were also asked. Respondents could choose up to 3 reasons. Results from this question are shown in Figure 3.5 below. One thing to note is that only 4 respondents marked "Whistler's sustainability initiatives" as a reason for visiting Whistler. This could either mean that these initiatives are not yet well known, or that they are not valued as a reason to visit Whistler.

Figure 3.5

Reasons for Visiting Whistler

Respondents were allowed to check off 3 reasons

Number of Times Checked Off

Reason	Value
For Winter sports	167
To enjoy nature's beauty	78
To spend time with friends	73
For relaxation	68
For the adventure	63
To spend time with the family	58
For fresh air	46
A romantic getaway	25
For the nightclubs/live music/Whistler village life	18
Other, please list	18
I'm on business	11
For an arts/cultural festival	5
For its sustainability initiatives	4

n=634

To conclude, the current study's sample is only representative of Tourism Whistler's larger sample in terms of gender and place of residence. Tourism Whistler's sample is not necessarily representative of Whistler's entire Winter 2009 visitor population, but it is the closest indicator available. The current sample also does not necessarily have a similar ecological worldview to overall Whistler visitors.

Chapter 4: Results and Discussion

4.1 Introduction

Chapter 4 presents quantitative and qualitative results from the 232 Whistler visitors who completed the survey, as well as a discussion and comparison with literature findings from Section 2. The three main research questions are answered, followed by associations between these research questions, demographic comparisons and a discussion of further issues visitors addressed.

Though it is not always emphasized, it should be stated explicitly that the findings reported in the result sections are directly applicable to only those 2009 winter visitors who answered the survey questions. As the survey sample was not random, results cannot necessarily be generalized beyond the sample. It is their views, understandings and environmental efforts, from their own perspective, that are studied. It should also be noted that the behaviour and influences reported by visitors does not necessarily reflect their actual behaviour or what actually influences them. The reasons for and the advantages and disadvantages of this discrepancy are discussed in Sections 5.2 and 5.3. The qualitative comments consist of what visitors thought of during the short time they were filling out the current study's survey, and they may not have included everything.

4.2 Research Question A: What are the Environmental Behaviour Norms of Whistler Visitors? Results and Discussion

4.2.1 Quantitative Results and Discussion

This section examines what environmental behaviours visitors reported taking part in at Whistler (Survey Section 3). Graphs display the regularity of visitors' environmental behaviour by category (food, recycling and hotel behaviours) as well as by specific behaviours. The section explains results from repeated measures ANOVAs, conducted to determine significant environmental behaviour engagement level differences. It also presents the percentage of respondents engaging in each behaviour,

compares findings to literature results and addresses related issues. An analysis of variance (ANOVA) is a statistical test that examines whether any significant differences in means are present between two or more groups/behaviours/influencers, whereas Tukey's Honestly Significant Difference Test focuses on which particular pairwise differences are significant.

Figure 4.1 illustrates that engaging in food related environmental behaviour is not an overall norm at Whistler. More details on the categorization of environmental behaviours can be found in Methods Section 3.7.1.

Figure 4.1

Environmental Behaviour Categories

Mean Levels of Engagement in Types of Environmental Behaviour by Visitors at Whistler
Where 1=Never Engaged in and 4=Always
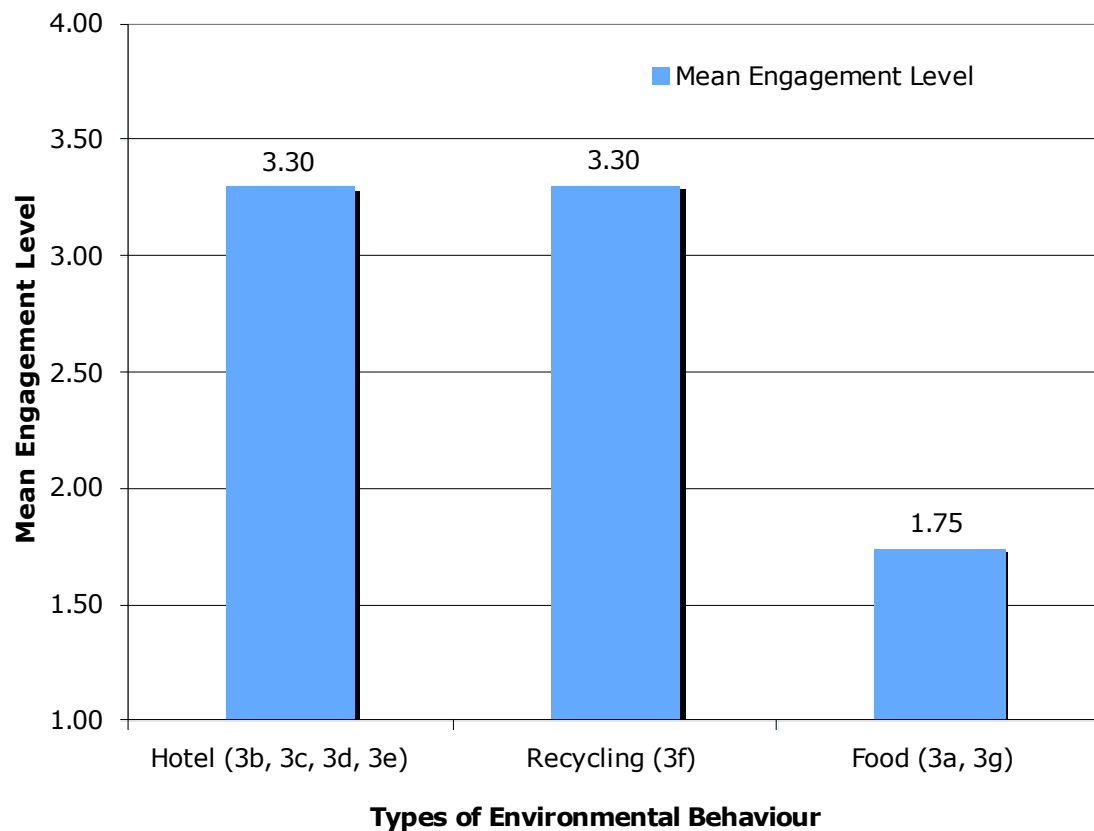
N= 128-170 depending on the category

A repeated-measures ANOVA was conducted to determine whether there was a significant difference in the reported engagement level of food, hotel or recycling behaviour. Mauchly's test indicated that the assumption of sphericity was not met, $\chi^2(2) = 12.19$, $p < .05$ so the degrees of freedom were corrected using Huynh-Feldt estimates ($\varepsilon = .928$). At least one behaviour category was engaged in significantly more often than another, $F(1.86, 233.8) = 209.73$, $p < 0.001$. Tukey multiple comparisons were then performed to determine significant pairwise differences in behaviours, using the application of this method for repeated-measures data displaying nonsphericity. By category, food-related environmental behaviour ($M = 1.75$, $SD = .79$) was engaged in significantly less often than hotel ($M = 3.30$, $SD = .55$) or recycling-related environmental behaviour ($M = 3.30$, $SD = .90$), $q(3, 127) = 27.76$ and $q(3, 155) = 25.63$, $p<.05$.

More specifically, Figure 4.2 presents the mean engagement level of all tested environmental behaviours, with behaviours most engaged in at the top. For example, an average rating of 3.62 for Question 3b signifies respondents report almost always turning off the lights when leaving their hotel room at Whistler. Figure 4.2 also suggests that female respondents engage in environmental behaviour more often than male respondents. (Statistical results on gender differences in behaviour are found in Section 4.7.1.)

Figure 4.2

Environmental Behaviours

Section 3 Environmental Behaviours

Average Engagement Level
1=Never   4=Always

- 3b) I turned off the lights off when leaving my room. — 3.62
- 3e) I reused my towel. — 3.48
- 3f) I recycled, reused or returned all recyclables. — 3.30
- 3c) I left water running when I wasn't using it at that exact moment. (Reverse Coded) — 3.25
- 3d) I turned down the heater when I wasn't in the hotel room. — 2.84
- 3g) I made an effort to eat vegetarian food. — 1.79
- 3a) I composted leftover food that no one wanted to eat. — 1.7

Male · Mean · Female

The number of respondents per behaviour question range from 133 to 207.

To determine which of the seven environmental behaviours the sample of visitors reported engaging in significantly more than others, a between-within subjects two-way factorial ANOVA (with gender as the between factor) was conducted, followed by Tukey multiple comparisons (using the formula for repeated-measures data displaying nonsphericity). Levene's test indicated that the variances were homogeneous for all behaviours except composting and consuming vegetarian food. The Bartlett-Box test for homogeneity of covariance matrices indicated that the data were heterogeneous, $F(28, 41960.78) = 1.71$, $p<.05$ and Mauchly's test indicated that the data were not spherical, $\chi^2(20) = 65.16$, $p < .001$. Degrees of freedom were therefore corrected using Huynh-Feldt estimates ($\varepsilon = .91$). There was no significant interaction between gender and environmental behaviours engaged in, $F(5.48, 647.14) = 1.52$, $p >.05$. Consistent with the

demographic analyses in Section 4.7.1 (which do have homogeneous variances), females in this sample engaged in environmental behaviours at Whistler more often than males, $F(1, 118) = 8.11$, $p<.01$. The ANOVA also confirmed that at least one environmental behaviour was engaged in significantly more often than another, $F(5.48, 647.14) = 94.7$, $p < 0.001$. For further statistical analyses on demographic differences in environmental behaviour, refer to Section 4.7.1.

Tukey pairwise comparisons showed that respondents reported turning off lights in their hotel room (3b: $M = 3.62$, $SD = .65$) significantly more often than engaging in any other behaviour besides reusing their towel, $q(7, 132\text{-}206) = 7.32\text{-}28.3$, $p<.05$. It is a habitual behaviour as 95% of respondents reported turning off all lights at least "more often than not". The next most common behaviours at Whistler were reusing towels (3e: $M = 3.48$, $SD = .86$), recycling (3f: $M = 3.30$, $SD = .90$), and not wasting water (3c: $M = 3.25$, $SD = .96$), (with no meaningful engagement difference between the three). Following this, respondents were next most likely to turn down the thermostat when they were not in their hotel room at Whistler (3d: $M = 2.84$, $SD = 1.11$). Lastly, composting (3a: $M = 1.70$, $SD = 1.04$) and consuming vegetarian food (3g: $M = 1.79$, $SD = .98$) were engaged in significantly less than every other variable, $q(7, 132\text{-}206) = 12.7\text{-}33.9$, $p<.05$, somewhere between "less often than not" and "never" on average. They were not norms of Whistler visitors, but qualitative comments suggest that there is a group of people, different from the rest that did consistently engage in these behaviours. For a diagram showing significant differences in these environmental behaviours, refer to Appendix C.

Alternatively, Table 4.1 lists the percentage of respondents that reported engaging in the given environmental behaviours while at Whistler.

Table 4.1

Percentage of Respondents Engaging in Environmental Behaviours at Whistler

At least more often than not:	Always:	Behaviour
95%	70%	Turned off the lights off when leaving their room (3b).
88.6%	66%	Reused their towel (3e).
85.8%	52%	Recycled, reused or returned all recyclables (3f).
82%	52%	Did not leave water running when they weren't using it at that exact moment (3c).
65%	37%	Turned down the heater when they were not in their hotel room (3d).
23%	10%	Composted leftover food that no one wanted to eat (3a).
22%	8%	Made an effort to eat vegetarian food (3g).

In comparison to Table 4.1, in DEFRA's (2007) study, 71% of UK respondents reported recycling more often than throwing away, 77% did not waste water while brushing their teeth, 50% never left lights on when not in use, and 40% never left the heater on when not in use. Surveyed Whistler visitors' lack of engagement with food related environmental behaviours was consistent with DEFRA's (2007 and 2008) results. In the UK, composting was not yet a norm either with only 19% of respondents stating they composted regularly (DEFRA, 2007) and 15% stating they never threw away food (DEFRA, 2008). Nevertheless, over half of these respondents did say they were "wasting less food," (DEFRA, 2007, p. 8). DEFRA (2008) describes wasting less food as something people can do and are willing to do, but they just do not. At Whistler, accessible facilities for composting are part of the barrier and this is further discussed under Section 5.5. DEFRA (2008) also reports that people have a high ability but low willingness to partake in a lower environmental impact diet. Visitor perceptions regarding plant-based diets are elaborated upon in Section 4.2.2.

Hotel related environmental behaviours were mostly habitual (other than turning the heater down when leaving the room), though there is room for improvement. McDonald and Oates (2006) and DEFRA (2008) explained that people are very willing to

turn the heater down and that they perceived it to be an easy behaviour that would make a difference to the environment.

4.2.1.1 Issues to Consider

Respondents may not be fully aware of their own consumption behaviour. Despite a higher percentage of people reporting that they have made more efforts to be environmentally responsible, use less water, recycle, etc., there is not considerable evidence that consumption is decreasing. Eighty-two percent of visitors to Whistler responding that more often than not, they do not leave water running when not in use, should not amount to a per capita water usage of 584 liters per day at Whistler (Whistler2020, 2011, Water Use page). Environmental behaviour reports should be compared with city-wide consumption results across a period of time to better determine accuracy. Water usage beyond the control of visitors was included in the above statistic, and a better breakdown of usage would allow for better indications on where to place focus.

As for perceptions, according to DEFRA (Annex H, 2008, p. ii), their participants were unaware of the "relative impact of different behaviours on the environment". They perceived daily behaviours, such as recycling and no daily linen change as having a larger impact overall than event-driven behaviours, such as taking a plane, though this is actually not the case (at least regarding green-house gas emissions). Another thing to be mindful of is that desires and intents do not always translate into actions. To properly measure levels of environmental behaviour, one must study this directly. In addition one must monitor the actual impacts on the environment of these collective behaviours (which this study has not done.)

4.2.1.2 Summary

To summarize, respondents most often reported turning lights off when leaving their hotel room and reusing their towels. They least often composted, made efforts to consume vegetarian food or turned the down the thermostat when leaving their hotel

room. Half of respondents reported always recycling and not leaving water running when not in use.

4.2.2 Qualitative Results and Discussion

This section considers Survey Question 4, by categorizing and tabulating other environmentally sustainable behaviours respondents engaged in at Whistler. Thirty percent of the sample (70 respondents) answered Question 4. Comments relating to environmental behaviours at Whistler from Question 12 are also included here. Results show more specific environmental behaviours engaged in at Whistler, what was left out of the survey, and reasons for non-habitual behaviours.

Table 4.2 lists respondents' behaviours by types of environmental behaviour and more generally, by how the behaviour would help the environment. It indicates the number of times the behaviour was mentioned, if more than once.

Table 4.2

Qualitative Results for Environmental Behaviours Respondents Engaged in at Whistler

Categories of Environmental Behaviour and Times Mentioned (Note that categories are not mutually exclusive)	
Reducing Vehicle Emission	
Traveled by foot or bike	x12
Carpooled/bused to Whistler	x11
Took public transit within Whistler	x10
Did not leave vehicle idling	x2
Used electric vehicle	
Ate locally (sustainable from other fronts too)	
Bought items made locally (sustainable from other fronts too)	

Categories of Environmental Behaviour and Times Mentioned

Reducing Materials/Food
       Food Related: food utensils (no disposables)   x7
       Reduced napkin use
       No food waste (cooked own food, shared, etc)   x5
       Bought food with no packaging
       Reusable shopping bags   x8
       Reused soap
       Read book from Whistler library (bought less paper)
       Bought clothing from Re-use center
       Consumed less in general   x3

Supporting Environmental Businesses
       Ate at environmentally friendly restaurants (which compost, reduce, recycle) x3
       Sought out environmentally friendly businesses
       Supported enviro. companies with no packaging/respectable policies   x2

Water Reduction
       Consumed tap water not bottled   x5
       Hand washed dishes
       Short showers (<5 min)   x2
       Did not flush when not necessary

Recycling Materials /Reusing
       Bought food with recyclable packaging   x2
       Recycled carefully   x4
       Bought (searched for) postcards made with recycled content
       Recycled and re-used when highly inconvenient (plastic)   x6

Trash Reduction
       Picked up trash   x5
       Did not litter even when inconvenient (cigarette butts)   x3
       Created as little waste as possible

Heat
       Kept room temperature normal   x2
       Took measures to reduce heat loss   x2

Electricity
       Unplugged computer/TV before leaving, turned off when not using   x2
       Took part in Earth Hour
       Did not use ski lift (hiked up)   x2

Nature
       Viewed nature   x3

Categories of Environmental Behaviour and Times Mentioned

Learning
        Learned about native plants and peoples
        Learned about sustainability from Eco-tour
        Learned new things, what is recyclable, etc   x2

Helping/Educating
        Filled out environmental survey   x2
        Planted trees
        Helped to inform others
        Encouraged others
        Educated others, promoted biodiversity
        Worked towards composting, public transport, environmental monitoring
        Donated $ towards animals

Space Saving
        Shared rooms

Table 4.2 demonstrates that behaviours resulting in a reduction of vehicle emissions were the most common qualitative environmental behaviours reported (with 38 responses mentioning it). This is consistent with the result of Survey Question 9f, where 94% of respondents agreed it is easy to get around Whistler by walking or using public transportation. Though a few comments suggest otherwise, environmentally friendly transportation for people within Whistler can therefore be considered a successful environmental sustainability initiative by Whistler. A "vehicle emission reduction" question and a "purchasing over-packaged materials" question had not already been asked at this point in the survey, as these behaviours were deemed to be more influenced by Whistler's facilities than by people themselves.

Table 4.2 also shows that, among other things, 28 comments expressed a reduction in food or materials used. There were 13 comments reporting specific types of recycling behaviour, even when inconvenient. Other comments included reducing heat and electricity used, reducing trash, reducing water waste, supporting environmental businesses, educating people on environmental sustainability, learning about sustainability and becoming more environmentally responsible. Several respondents

included information on how they were environmentally responsible in their hometowns. This was not included in the results.

There were a number of comments from Survey Question 12 addressing Question 3f (I made an effort to eat vegetarian food at Whistler). Question 3f raised emotions, criticism, and polar opposite perspectives and is therefore discussed further. Four respondents exclaimed that the vegetarian question was irrelevant to environmental behaviour and/or disagreed with it. One was appalled that it was in the survey and did not understand how it related to environmental sustainability. As was explained in Section 3.6, it does relate to environmental sustainability and does reduce negative environmental impacts. Four other respondents expressed difficulty in finding vegan/vegetarian options and/or disappointment that Whistler did not offer more organic and gourmet vegetarian options.

As noted in the quantitative results, consuming vegetarian food is not mainstream and was one of the behaviours least engaged in. This is both due to facilities and awareness of options, as well as the norms, values and desires of respondents themselves. Responses indicate both a lack of awareness of the relation between a plant-based diet and environmental impact as well as a lack of awareness that many Whistler restaurants are willing to make some meals vegetarian (personal observation). The latter is easy enough to advertise. The former however is a more challenging issue to tackle as it raises controversy and may be perceived as an intrusion into personal lifestyles. DEFRA (2008) suggests it would be more effective to frame food-related environmental behaviours as health-related, not environmental sustainability-related.

4.3 Research Question B: How Do Whistler Visitors View Environmental Sustainability? Results and Discussion

Section 4.3 explores how the visitor sample understands environmental sustainability. It begins by presenting respondents' mean agreement level on various perceptions graphically in Figure 4.3. This is followed by comparisons and associations between perceptions as well as literature. It includes visitor comments from Survey

Question 12, to provide more insight on visitor perceptions of worldwide environmental sustainability issues and the human role in making improvements. Ecological worldview results are compared with previous literature findings. The relevance of findings is explained throughout.

4.3.1 Environmental Sustainability Perceptions from Survey Section 1

In Figure 4.3 applicable perception questions were reverse coded in order for all answers to be varying in the same direction. Respondents most strongly agreed that maintaining a healthy environment is their responsibility and least strongly agreed that environmental well-being should be prioritized over human well-being. Figure 4.3 also suggests that for all perception questions, female visitors tended to have a more pro-environmental view than male visitors. Demographic differences in perceptions are analyzed statistically in Section 4.7.2.

Figure 4.3

Environmental Perceptions by Gender
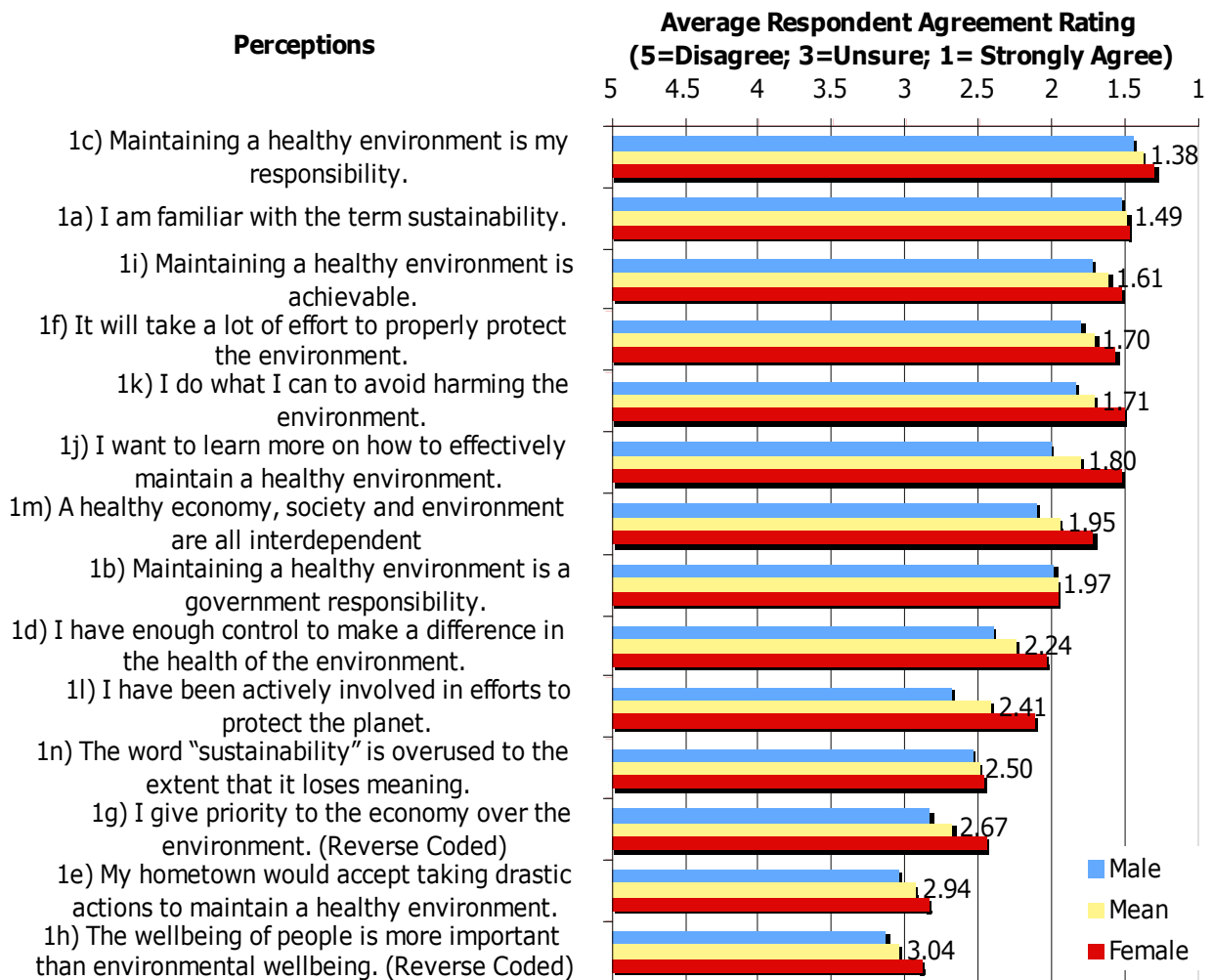
In Figure 4.3 the mean agreement level for each perception ranges from 1.38-3.04, indicating that Section 1 results were skewed towards respondents having environmentally sustainable perceptions and that the sample generally consists of people with an interest in the environment and sustainability.

The following subsections present more detailed findings from Survey Section 1. Associations between certain perceptions are tested using Pearson's correlations and applicable perceptions are compared across each other using correlated *t* tests. The significance of the correlated *t*-test results and Pearson correlations was adjusted using

Bonferroni type corrections to control Type I error rates. Five dependent paired-comparisons were made, so to be significant at the overall .05 level, each individual significance needed to be less than .05/5 =.01. For the 19 correlations to be significant at the overall .10 level, each individual significance needed to be less than .10/19 ≈ .005. Tables 4.3 - 4.7 compare the percentage of respondents strongly to somewhat agreeing with related perceptions in the areas of: responsibility, knowledge, control, environmental interest & action, and sustainability prioritization. The percentage of respondents who selected "unsure", "somewhat disagree" or "disagree" are not included.

4.3.1.1 Responsibility

Many theories mention a sense of responsibility as an environmental behaviour influencer (Fransson & Gärling, 1999; Hines, Hungerford & Tomera, 1986; Schwartz, 1977), and survey results show that respondents' strongest perception is that maintaining a healthy environment is their responsibility. Table 4.3 illustrates that almost all survey respondents agreed that protecting the environment is their responsibility, while less (but still 4 out of 5) thought it was a government responsibility.

Table 4.3

Responsibility

Percentage of	Respondents who somewhat to strongly agreed that:
97%	1c) Maintaining a healthy environment is my responsibility.
81%	1b) Maintaining a healthy environment is a government responsibility.

A correlated *t*-test demonstrated that visitors considered maintaining a healthy environment to be their responsibility (1c, $M = 1.38$, $SD = .59$) significantly more than a government one (1b, $M = 1.97$, $SD = 1.10$), $t(230)=8.39$, $p<.001$. In addition, a correlation demonstrated that respondents who believe environmental protection is their responsibility are also more likely to believe it is a government one, $r(231)=.35$, $p<.001$. In other words, respondents think responsibility can be both governmental and personal,

as opposed to one or the other. Furthermore, personal environmental behaviour is influenced by how the government and industry act. One survey respondent believed that:

> *Many people are ignorant of their personal responsibility to protect the environment in every way they can. People generally do not act environmentally responsible because industry does not act responsibly, but instead acts in the interests of monetary gain. Industries send out 'all is well in the world' messages which people love to buy into as it makes it easier (for individuals) to then act irresponsible as 'the government' and 'big industries' are doing the 'work' to protect the environment. Yet increased production continues to negatively impact the environment.*

In DEFRA'S (2008) study, more than half agreed they would do more for the environment if they saw the government doing the same.

Agreement in being personally responsible for making an environmental difference (1c) was positively associated with many of the other perception variables including; Control (1d) $r(229)=.30$, Achievability (1i) $r(225)=.33$, Effort (1f) $r(230)=.30$, Familiarity with the term (1a) $r(231)=.37$, Environmental Behaviour (1k) $r(228)=.36$ and Interest (1j) $r(226)=.44$, ($p < .001$ for all).

4.3.1.2 Knowledge

Table 4.4

Knowledge

Percentage of	Respondents who somewhat to strongly agreed that:
90%	1a) I am familiar with the term sustainability.
76%	1m) A healthy economy, society and environment are all interdependent.
57%	1n) The word "sustainability" is overused to the extent that it loses meaning.

On average, respondents strongly rated themselves as being familiar with the term sustainability (1a $M = 1.49$, $SD = .79$), but just somewhat agreed that maintaining a healthy economy, society and environment are all interdependent (1m $M = 1.95$, $SD = 1.21$). A correlated t test indicated that this difference is significant, $t(227)=-5.92$, $p<.001$. Alternatively, Table 4.4 shows this result by percentage of respondents. Interdependence

is a common part of most definitions of sustainability (Cook, 2004), indicating a possible respondent bias in thinking they are more familiar with the term than they actually are. Results could also indicate that familiarity with sustainability does not automatically mean agreement with it.

A correlation revealed that as familiarity with sustainability (1a) increased, agreement with its definition (1m) increased but weakly, $r(228)=.20$, $p<.005$. Familiarity with the term sustainability did not highly relate to many of the other environmental perception items, except personal responsibility $r(231)=.37$, $p<.001$. As was explained in Literature Section 2.3.1, knowledge has an indirect relationship with influencing opinions and behaviour in that alone it does not have much influence, yet it is a part of most theories on behaviour drivers. Familiarity with sustainability was positively associated with an interest in learning more on how to maintain a healthy environment (1j), $r(227)=.26$, $p< .001$, suggesting that people who are familiar with sustainability are not opposed to learning more. The fear of burdening visitors with too much information therefore may not be a concern at this point.

Respondents slightly agreed the word 'sustainability' was overused to the extent that it lost meaning (1n). This item was independent of most other perception variables, implying that respondents' agreement level on sustainability becoming a "meaningless buzzword", did not relate to their views of the term or their willingness to maintain a healthy environment. In the qualitative comments, two respondents mentioned that "*sustainability is the most over-used word*". The issue of overuse is further discussed in Section 5.6.6.

4.3.1.3 Control

Respondents on average strongly agreed that maintaining a healthy environment is achievable (1i) but that doing so would take a lot of effort (1f). They less strongly agreed that they themselves had enough control to make a difference (1d). They were on average unsure if their hometown would take drastic actions to maintain a healthy environment. One survey respondent communicated that: "*People don't realize how much*

power they have to make changes. All it takes is to get involved in communities." Another explained that: "*If we really wanted to fix our environment, we as a community would need to stop thinking individually.*" Table 4.5 presents perception of control results by percentage of respondents.

Table 4.5

Control

Percentage of	Respondents who somewhat to strongly agreed that:
91%	1i) Maintaining a healthy environment is achievable.
86%	1f) It will take a lot of effort to properly protect the environment.
70%	1d) I have enough control to make a difference in the health of the environment.
32%	1e) My hometown would accept taking drastic actions to maintain a healthy environment relative to everything else.

To compare, 67% of respondents in DEFRA's (2007) UK study thought human beings were capable of resolving environmental problems, while in the current study, a strong 91% agreed this was the case (see Table 4.5). Whistler visitors were very optimistic comparatively. Results from a one-way ANOVA and Tukey multiple comparison tests determined that UK visitors perceived that their hometown would take drastic actions to maintain a healthy environment significantly less often than Canadian ($p<.005$) or Australian visitors did ($p<.05$), which could explain the previous finding. (Further statistical details can be found in Demographic Section 4.7.2). There was a positive correlation of $r(230)=.35$, $p < .01$ between those who agreed they had enough control to make a difference in the environment (1d) and those whose hometown's would take drastic environmental actions (1e). This suggests that the norms of where one comes from may influence perception of control in making an environmental difference.

4.3.1.4 Environmental Interest and Action

Most respondents (92%) perceived that they "do what they can to not harm the environment", slightly fewer (86%) showed "an interest in learning how to maintain a

healthy environment" and over half reported having "been actively involved in efforts to protect the planet," (refer to Table 4.6). This is a high percentage.

Table 4.6

Environmental Interest and Action

Percentage of	Respondents who somewhat to strongly agreed that:
92	1k) I do what I can to avoid harming the environment.
86	1j) I want to learn more on how to effectively maintain a healthy environment.
64	1l) I have been actively involved in efforts to protect the planet.

There was a significant difference between the number of respondents actively involved in efforts to protect the planet (1l $M = 2.41$, $SD = 1.17$) and those who "do what they can to avoid harming the environment" (1k $M = 1.71$, $SD = .74$) $t(226)=10.81$, $p<.001$, based on a correlated t test. Together, these three variables correlated well with each other (up to $r(227)=.51$, $p<.001$) and had a Cronbach alpha of .67. They were grouped together to form a measure of "Environmental Interest (1jkl)". The strength of the correlations could also insinuate that those already actively involved in efforts to protect the planet were not as interested in learning more on how to do so (1l &1j $r(226)=.35$, $p<.001$), as compared with those more passively doing what they can to help out (1k & 1j $r(227)= .43$, $p<.001$).

These results demonstrate Whistler visitors are interested in protecting the environment, consistent with Kelly and colleagues' (2007) results. According to Hinings and colleagues (2004) model, this is the first step required for change to occur at an institutional level. Environmental interest and general environmental behaviour (1jkl) also correlated well with many of the perceptions items Section 1, (up to $r =.44$) indicating that these perceptions are positively related to general behaviour and interest.

4.3.1.5 Sustainability Prioritization
Table 4.7 examines how visitors prioritize the components of sustainability, by displaying the percentage of respondents strongly to somewhat agreeing to statements.

Those disagreeing with or unsure of their opinion regarding the sustainability prioritization statements are not included in these percentages, but 20% of respondents were undecided as to whether the wellbeing of people is more important than environmental wellbeing.

Table 4.7

Sustainability Prioritization

Percentage of	Respondents at least somewhat agreeing that:
76	1m) A healthy economy, society and environment are all interdependent.
43	1h) The wellbeing of people is more important than environmental wellbeing.
27	1g) I give priority to the economy over the environment.

Respondents prioritized the environment over the economy (1g $M = 2.67$, $SD = 1.13$) significantly more than the environment over human well-being (1h $M = 3.04$, $SD = 1.18$), $t(224)=4.42$, $p<.001$. Yet, those who prioritized human well-being over environmental well-being were also more likely to prioritize the economy. These two items have a correlation of $r(225)=.46$, $p<.001$. They were grouped into a measure called Environmental Prioritization (1gh). Survey responses suggest that human well-being and environmental well-being are prioritized about equally as respondents were on average unsure of their opinion with this item (1h), but leaned slightly towards somewhat prioritizing human well-being (refer to Figure 4.3). This could signify that these respondents overall have sustainable views, as common definitions of the sustainability encompass all three components (the economy, environment and human well-being), not one over another (Cook, 2004). The "interdependence of sustainability components" item (1m) received an average agreement rating of 1.95 (somewhat agree), while "not prioritizing the economy's" (1g) rating was 2.67 (unsure to slightly agree) and "not prioritizing human well-being's" rating was (1h) 3.04 (unsure), further confirming this.

4.3.1.6 Associations within Section 1 Perceptions of Environmental Sustainability

Many perception items in Section 1 were positively related to one another. All of Section 1 together had a borderline alpha of .67. Though it was not intended for this

section to measure one larger perception construct, it can be grouped as one, for general comparisons with other variables. When removing the following items: How people prioritize the environment compared to the economy and human well-being (1g and 1h), whether people think the word sustainability is overused (1n) and how respondents' hometown acts towards the environment (1e), the Cronbach alpha becomes .74, which is acceptable.

4.3.2 Ecological Worldview

The seven items in Survey Section 2 formed one measure of ecological worldview (α =.71). Results indicate that these Whistler visitors had a pro-ecological worldview (M = 2.13). Whistler visitors' ecological worldview was compared with the ecological worldview of Dunlap and colleagues' (2000) representative Washington resident sample with Kolmogorov-Smirnov large two-sample two-tailed tests. The current study's responses did not significantly differ from the Washington sample for 5 of the 7 questions being compared, $D(222, 664\text{-}667)$=.02-.09, p<.05. Dunlap, et al.'s sample disagreed significantly more for questions 2a [$D(223, 663)$= .12, p<.05] and 2d [$D(221, 664)$=.13, p<.05], meaning for those two questions Dunlap's 1990 sample had a more pro-ecological worldview than the current sample did. This finding indicates that despite the skew toward respondents having a pro-ecological worldview, in this regard they were representative of a larger population. It suggests that perhaps there was no pro-environmental view bias in responses.

Of the ecological worldview questions, visitors at Whistler most strongly agreed that "Despite our special abilities humans are still subject to the laws of nature" (2e M = 1.55, SD = .78). They least strongly agreed (yet still were on the agreement side) "Human ingenuity will NOT insure that we do not make the earth unlivable" (2b M = 2.79, SD = 1.41). (The capitalized NOT was inserted afterwards to show that this question's scale was reverse-coded for comparison purposes). This indicates that to an extent people believe technology can solve environmental problems, that one can perhaps both be technocentric and ecocentric, but that for the most part visitors were ecocentric. Relating to ecological worldview, one respondent suggested "*global environmental models look at*

far too short a timespan… to be able to readily understand the system we are trying to anticipate/predict/save" and that "*We are not on the verge of ecological catastrophe, only ecological change*".

4.3.3 Relations Between Perceptions in Section 1 and Ecological Worldview

Environmental perception questions in Section 1 were not based on a previously tested scale. Comparing these perception questions to the previously tested and validated Ecological Worldview measurement scale provides insight on what Section 1 is actually measuring. When correlating data from Section 1's environmental sustainability perceptions and Section 2 Ecological Worldview, associations were mostly low to non-existent. The exceptions were the two environmental prioritization questions. Prioritizing the environment over the economy or human well-being (1gh) was positively correlated with having an ecological worldview $r(218)=.48$, $p<.01$. Furthermore, environmental prioritization (1gh) did not relate well to other items in Section 1, and when it was removed, Section 1's Cronbach alpha went up. There was no significant association between ecological worldview (2) and agreement level in the interdependence of the economy, society and the environment (1m). These findings suggest that, though they overlap, perceptions of environmental sustainability and ecological worldview are not the same. Ecological worldview is a measure of concern for the environment or prioritizing the environment over human freedoms, while most of Section 1 perceptions may be a sustainability measure, valuing both the environment and human wellbeing.

4.3.4 Summary

Respondents agreed with nearly every perception question asked. In spite of potential over-positive responses, examining the differences between responses per question still provides useful information. Concerns regarding the tendency to answer questions in a socially desirable way are discussed in Section 5.2. Respondents most strongly agreed that maintaining a healthy environment was their responsibility and least strongly agreed that environmental well-being should be prioritized over human well-being. Seventy percent at least somewhat agreed that they had control to make a

difference in the health of the environment. Respondents showed interest in environmental sustainability.

4.4 Research Question C: What Influences Environmentally Responsible Behaviour at Whistler? Quantitative Results and Discussion

This section examines what most motivates, blocks or has no influence on visitors' environmental behaviour at Whistler based on data from Survey Sections 5, 6, 7 and 8. It graphs, analyses and explains significant differences between extents of influences on environmental behaviour by category and specifically. Repeated-measures ANOVAs, followed by Tukey post hoc comparisons were conducted to compare the effects of different influences on behaviour. Results on what visitors are willing to trade in order to increase environmental responsibility and information as to where Whistler and its visitors stand with respect to environmental sustainability are also presented, based on data from Survey Sections 6 and 9.

4.4.1 Environmental Behaviour Motivators for Visitors at Whistler

All potential encouragers towards pro-environmental behaviour in Sections 7 and 8 were rated to be more encouraging than not by respondents. Categories of environmental behaviour encouragers and their mean level of encouragement are illustrated in Figure 4.4.

Figure 4.4

Mean Encouragement Levels of Behaviour Motivator Categories

Agreement Rating

The following would/did ENCOURAGE me to behave environmentally responsibly at Whistler:

1= Strongly Agree — 1.00

2=Somewhat Agree — 2.00

3=Somewhat Disagree — 3.00

4= Disagree — 4.00

■ Mean Respondent Agreement Level

1.57 — Convenience (7e, 7f)
1.68 — Values (8a, 8c, 8d)
1.73 — Location (8b)
1.95 — Social Norms (7a, 7h, 7i)
1.98 — Information (7b, 7c, 7d, 7g)

Categories of Behaviour Motivators

N= 211, k=5

A repeated measures ANOVA tested whether any categories of encouragers were significantly more influential at motivating environmental behaviours than others. The behaviour encouragement categories compared were: convenience, social norms, values, place and information. Mauchly's test indicated that the data were not spherical $\chi^2(9) = 198.35$, $p < .001$, therefore and the degrees of freedom were corrected using Greenhouse-Geisser estimates ($\varepsilon = .65$). At least one category was significantly more encouraging than another, $F(2.58, 541.80) = 18.45$, $p < 0.001$. Tukey multiple comparisons were performed using the application of this method for repeated-measures data displaying nonsphericity.

Tukey multiple comparison results showed that by category, convenience ($M =$ 1.58, $SD = .70$), values ($M = 1.68$, $SD = .66$), and Whistler's physical surroundings ($M =$ 1.73, $SD = .92$) encouraged the survey sample to behave environmentally responsibly significantly more than social norms ($M = 1.95$, $SD = .74$), or information ($M = 1.98$, $SD = .79$), $p<.05$. Based on these results, a focus on improving the convenience level would be more effective at encouraging environmentally responsible behaviour than improving information. Convenience being a strong influence on behaviour is consistent with the literature (Section 2.3.3.2). Convenience is especially influential on fairly mindless activities (Borgstede & Biel, 2002). Despite the many approaches the literature mentions on how to best present information, information is said to effectively change behaviour only 10-20% of the time (Stern, 1999). Kollmuss and Agyeman (2002) state that having knowledge on environmental issues or on how to behave is not enough to change behaviour. Nevertheless, despite results, it cannot be ignored that most theories on behaviour influence do mention knowledge.

Figure 4.5 illustrates the influence level of more specific environmental behaviour motivators from Survey Sections 7 and 8. It shows that according to respondents, "conveniently located recycling bins (7f)" would highly motivate visitors to behave environmentally responsibly, while "Being looked down upon for not behaving environmentally responsibly (7i)" would have less influence on their environmental behaviour. Figure 4.5 also illustrates that female respondents were more encouraged to behave environmentally responsibly than male respondents. Statistically significant gender differences were not analyzed in this section, but results can be found in Demographic Section 4.7.3.

Figure 4.5

Environmental Behaviour Encouragers at Whistler

The following would/did ENCOURAGE me to behave environmentally responsibly at Whistler:

Mean Respondent Agreement Rating
4=Disagree   1=Strongly Agree

- 7f) Conveniently located recycling bins — 1.39
- 8d) A concern for the well-being of animals and the environment — 1.55
- 8a) An opportunity to do something right — 1.66
- 7a) Others at Whistler being pro-environmental — 1.69
- 8b) Being surrounded by stunning views at Whistler — 1.73
- 7e) A convenient way to turn off all light switches — 1.77
- 8c) A concern for the well-being of people — 1.77
- 7h) Knowing people around the world were becoming more environmentally responsible — 1.9
- 7g) More information on Whistler's sustainability initiatives — 1.93
- 7d) Detailed informative pro-environmental behaviour signs — 1.95
- 7c) Large pro-environmental behaviour reminder signs — 2.00
- 7b) Demonstrations on how to be pro-environmental at Whistler — 2.05
- 7i) Being looked down upon if I weren't environmentally responsible — 2.27

Legend: Females, Mean, Males

N= 212-214. A mean lower than 2.5 signifies respondents on average would be encouraged by the item and a rating above 2.5 signifies respondents would be less influenced by the item.

Repeated-measures ANOVAs compared the level of encouragement from motivators in Sections 7 and 8 on environmental behaviours. Nine behaviour motivators were tested from for Section 7 and in a second ANOVA, four from Section 8. They can be seen in Figure 4.5. For both ANOVAs, Mauchly's test indicated that the assumption of sphericity was not met, Section 7: $\chi^2(35) = 238.13$, $p < .001$; Section 8: $\chi^2(5) = 45.41$, $p < .001$. The degrees of freedom were therefore corrected, for Section 7 using Greenhouse-

Geisser estimates ($\varepsilon = .78$) and Section 8 using Huynh-Feldt estimates ($\varepsilon = .89$). In both ANOVAs, at least one behaviour motivator was significantly more encouraging than another, Section 7: $F(6.21, 1316.48) = 28.41$, $p < 0.001$; Section 8: $F(2.67, 563.15) = 5.04$, $p < 0.005$. To determine which environmental behaviour motivators were significantly more or less encouraging than others, Tukey multiple comparison tests were performed on all motivators per section using the application of this method for repeated-measures data displaying nonsphericity.

"Conveniently located recycling bins (7f)" ($M = 1.34$, $SD = .69$) most encouraged respondents to behave environmentally responsibly, significantly more so than any other Section 7 item, $q(9, 213) = 7.8$-16.79, $p < .05$. "A concern for the well-being of animals and the environment (8d)" ($M = 1.55$, $SD = .75$) was also a strong behaviour encourager as was witnessing "other people behaving environmentally responsibly at Whistler" (7a: $M = 1.69$, $SD = .83$). "Being looked down upon for not behaving environmentally responsibly (7i)" ($M = 2.27$, $SD = 1.07$) had the least reported influence on behaviour, significantly less than every item in Section 7 except for "demonstrations on how to be pro-environmental (7b)" ($M = 2.05$, $SD = 9.8$), $q(9, 213) = 4.57$-16.79, $p < .05$.

When examining influence levels of different values, Tukey multiple comparisons found that respondents were significantly more encouraged to behave environmentally responsibly out of "concern for the well-being of animals and the environment (8d)" ($M = 1.55$, $SD = .75$), over "concern for the well-being of people (8c)" ($M = 1.77$, $SD = .84$), $q(4, 212) = 6.54$, $p < .05$. This shows that there is a difference between social altruistic and biospheric values (or that respondents may not perceive environmental actions as making a difference to the well-being of people). Being influenced to behave environmentally responsibly because "it's the right thing to do (8a)" was one of the top encouraging variables in the study ($M = 1.66$, $SD = .83$). Borgstede and Biel (2002) explain that moral imperatives are mainly what predispose people to environmental behaviour. In DEFRA's (2008) report, half of study participants stated they were acting environmentally responsible because "it is the right thing to do."

In terms of convenience, "conveniently located recycling bins (7f)" ($M = 1.34$, $SD = .69$) was a significantly stronger environmental behaviour encourager than "a convenient way to turn off all light switches (7e)" ($M = 1.77$, $SD = .95$), $q(9, 213) = 8.86$, $p < .05$. This is understandable because not having recycling facilities nearby requires a greater pro-environmental effort than not having one light switch by the door that turns out all lights and lamps.

As for social norms, other people behaving environmentally responsibly in one's direct surroundings at Whistler (7a: $M = 1.69$, $SD = .83$) was significantly more encouraging towards positive behaviour than knowing people in general are behaving environmentally responsibly (7h: $M = 1.90$, $SD = .89$), $q(9, 213) = 5.44$, $p < .05$. This is consistent with Goldstein and colleagues' (2008) findings where respondents were more likely to follow people they identified with, rather than people in general, regarding whether they reused hotel towels. Both of these social norm items are significantly more encouraging than the social pressure item "being looked down upon if I were not environmentally responsible 7i" ($M = 2.27$, $SD = 1.07$), $q(9, 213) = 7.09$-11.30, $p < .05$. De Young (1993) explains that negative social pressure motivates behaviour change very well in the short term, but does not permanently alter behaviour and can have other repercussions.

Whistler's scenery (8b) as an encourager of environmentally responsible behaviour ($M = 1.73$, $SD = .92$) rated in the top half of all of Survey Sections 7 and 8's potential encouragers. In this study, no type of information was rated as being significantly more encouraging than another. Respondents do not respond well to information, but also according to DEFRA (2008) are not conscious of the impact of their behaviour or how to decrease negative environmental impacts. This challenge is discussed in Sections 4.2.1.1 and 5.5.6. For a diagram on Tukey pairwise comparisons for significant differences between environmental behaviour encouragers, please refer to Appendix C.

4.4.2 Environmental Behaviour Discouragers for Visitors at Whistler

All tested discouragers towards behaving environmentally responsibly at Whistler averaged closer to having no influence on behaviour over being strong discouragers. "Environmental alternatives which cost 20% more" ($M = 2.50$, $SD = 1.18$) was the only item that averaged right in the middle, discouraging slightly over half of respondents' environmental behaviour. Results are explained by influence category and then more specifically.

Figure 4.6 presents the strengths of behaviour discouragers by category. It illustrates that mean differences between categories are not large, but that by category cost appears to be the strongest discourager tested.

Figure 4.6

Mean Influence Level of Behaviour Discourager Categories
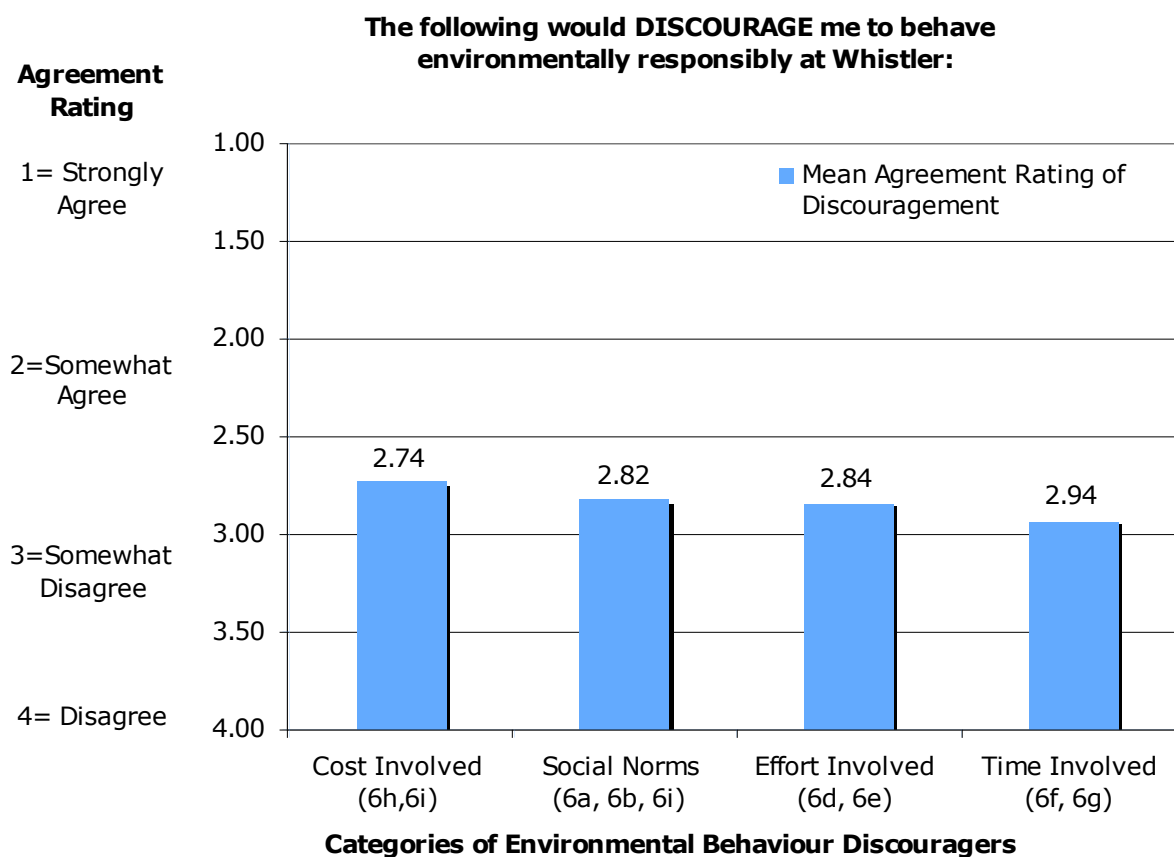
A repeated measures ANOVA compared the effect (by category) of cost, time involved, effort involved and social norms on level of discouragement towards behaving environmentally responsible. Mauchly's test indicated that the assumption of sphericity was not met, $\chi^2(5) = 46.60$, $p < .001$. The degrees of freedom were therefore corrected using Huynh-Feldt estimates ($\varepsilon = .907$). At least one category was significantly more discouraging than another, $F(2.72, 582.09) = 3.28$, $p < 0.05$. Tukey post hoc tests followed this, using the procedure for non-spherical repeated measures data. Cost ($M = 2.74$, $SD = .99$) discouraged environmental behaviour significantly more than time involved ($M = 2.94$, $SD = .86$), which had the least influence on behaviour $q(4, 214) = 4.54$, $p < .05$. This could be because people have more time on vacation. Also, what respondents rate most discourages their environmental behaviour, may not accurately reflect what discourages their behaviour in practice. There were no other significant categorical differences.

More specifically, Figure 4.7 shows the discouragement level of all Survey Section 6 items for all respondents, as well as for men and women separately.

Figure 4.7

Potential Discouragers towards Environmental Behaviour at Whistler

N=215-217
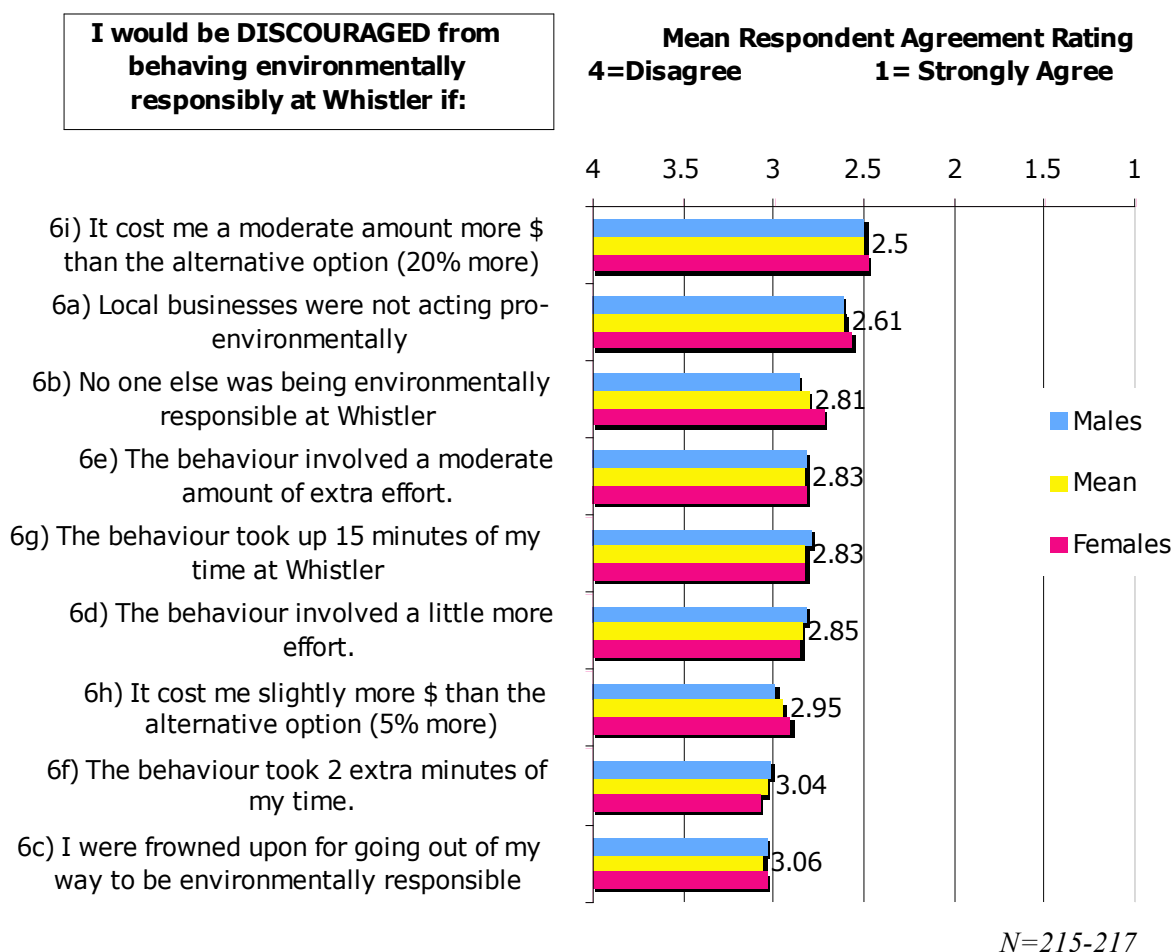
A repeated-measures ANOVA was performed on the nine potential discouragers (listed in Figure 4.7) to determine if there was a significant difference between any of their reported levels of discouragement on behaviour. Mauchly's test indicated that data displayed nonsphericity, $\chi^2(35) = 412.25$, $p < .001$, so the degrees of freedom were corrected using Greenhouse-Geisser estimates ($\varepsilon = .632$). At least one potential discourager was found to be significantly more discouraging than another, $F(5.06, 1082.46) = 11.61$, $p < 0.001$. To determine which potential environmental behaviour discouragers were significantly more or less discouraging from others, Tukey multiple comparison tests were performed between all Survey Section 6 items (using the application of this method for repeated-measures data displaying nonsphericity).

Tukey multiple comparisons found that cost (at 20% more, 6i: $M = 2.50$, $SD =$ 1.18) was the greatest tested discourager on environmental behaviour. It was significantly more discouraging than all Section 6 items, $q(9, 216) = 5.17\text{-}10.15$, $p < .05$; except for "local businesses not acting pro-environmentally (6a: $M = 2.61$, $SD = 1.07$)," which was the second greatest discourager. Consistent with environmental behaviour encouragers, the item with the least reported influence on behaviour was the social pressure variable. Being frowned upon for going out of one's way to be environmentally responsible (6c: $M = 3.06$, $SD = 1.09$), was significantly less discouraging than all items except for the behaviour taking two extra minutes of time (6f), involving a little more effort (6d) or costing 5% more (6h), $q(9, 216) = 4.57\text{-}10.15$, $p < .05$.

The three social norm items are significantly different from one another. Local businesses not acting environmentally responsibly (6a: $M = 2.61$, $SD = 1.07$) was more discouraging than no one else being environmentally responsible at Whistler (6b: $M = 2.81$, $SD = 1.10$), $q(9, 215) = 5.42$, $p < .05$. Both of these were more discouraging than being frowned upon for being environmentally responsible (6c: $M = 3.06$, $SD = 1.09$), $q(9, 215) = 6.08\text{-}10.11$, $p < .05$. This suggests that the sample had expectations of locals to act a certain way if visitors were expected to follow. As Cotte and Trudel (2009) explain, negative, irresponsible or unethical behaviour on the part of local businesses has a great impact on consumers. They value business integrity. Oskamp et al. (1991) also explain people become discouraged from behaving environmentally responsibly when others expected to act the same way are perceived as not doing so. So long as the businesses at Whistler are more influential on environmental behaviour than other people at Whistler, change is within Whistler's control. Respondents were least influenced by social pressure, indicating Whistler should stick with positive motivational techniques. They are not only more appealing to visitors but are also longer lasting influencers (De Young, 1993).

A 20% increase in cost (6i) for behaving environmentally responsibly ($M = 2.50$, $SD = 1.18$) is significantly more discouraging than a 5% increase (6h: $M = 2.95$, $SD =$

.96), $q(9, 216) = 11.34$, $p < .05$. A 20% cost increase would discourage half respondents but a slight cost increase (5%) did not strongly influence people. Consistent with Cotte and Trudel's (2009) meta-analysis, consumers are willing to pay a little more, but willingness quickly drops if they are asked to pay a lot more. This research provides a better idea of what would be too high a price increase for environmentally sustainable purchases at Whistler.

No significant difference in discouragement was found between the amounts of effort involved in the environmental behaviour, nor between the amounts of time the environmental behaviour requires. Time was the least influential variable on behaviour, with between 28-40% of respondents being discouraged by it. This is consistent with DEFRA's (2008) results, where 33% of interviewees stated "time" as a green behaviour barrier, though DEFRA does not study people on holiday. Section 4.4.4 provides further analyses.

4.4.3 Influences on Environmental Behaviour from Survey Section 5

Results from Section 5 were calculated by the percentage of respondents encouraged, discouraged or not influenced to behave environmentally responsibly by each of its six items. They are presented in Figure 4.8. For most respondents, the items in this section either had no influence on environmental behaviour or they encouraged it. Only a low percentage of people found them discouraging.

Figure 4.8

Section 5 Potential Influences on Behaviour

**Percentage of Respondents Encouraged, Discouraged and Not Influenced
to Behave Environmentally Sustainably by the Following Factors**
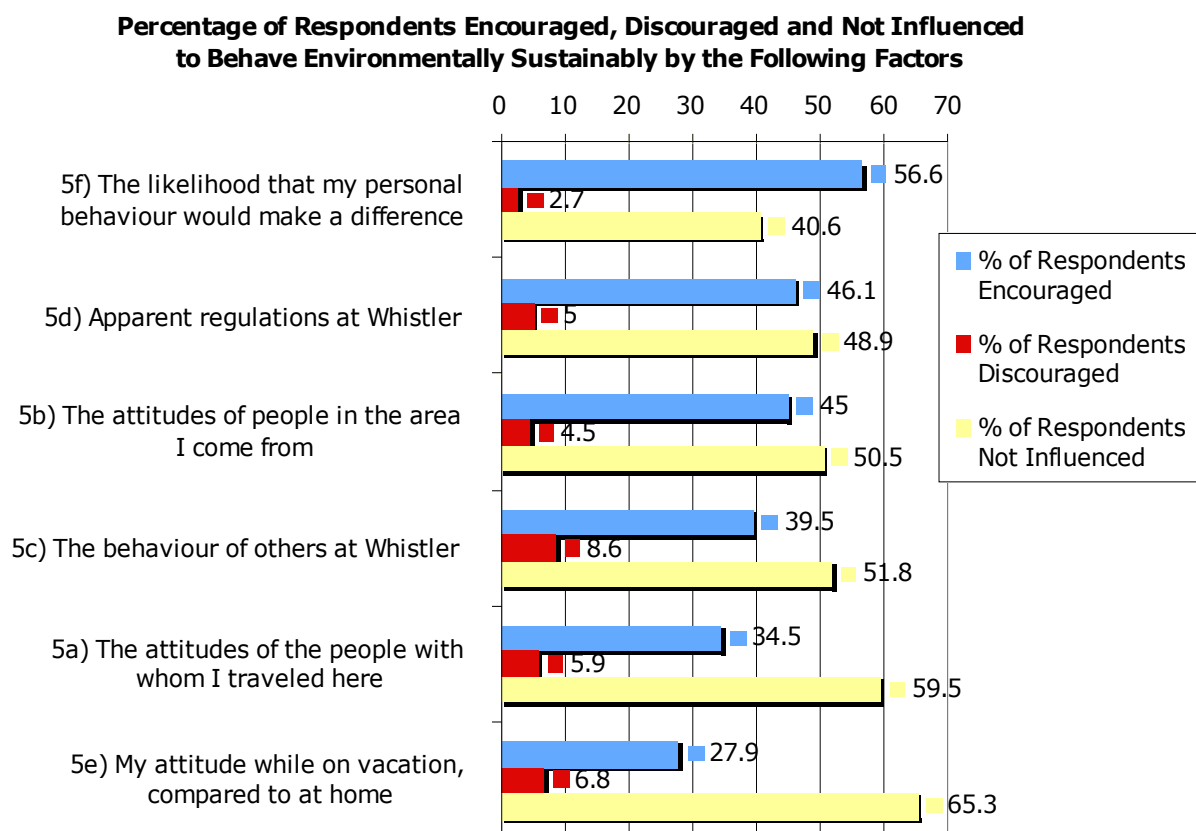
N= 218-220

The sample of visitors at Whistler was most encouraged to behave environmentally responsibly if they believed "their personal behaviour would make a difference" (57%). The strong influence of perception of behaviour making a difference is consistent with literature findings (Cotte & Trudel, 2009). Given respondents were encouraged by this, not discouraged, they do believe their environmental behaviour makes a difference at Whistler. "Regulations at Whistler" encouraged the second largest number of people (46%) to behave environmentally. This indicates apparent rules (such not being allowed cars in certain areas) are effective at motivating behaviour. In comparison, social norms and attitudes of others did not play as large a role in motivating behaviour. Over half of respondents marked them as having no influence on environmental behaviour. Results show that 65% of survey respondents have a consistent attitude regardless of whether they are on holiday.

To test for significant differences in behaviour encouragement, five two-sample tests of two dependent proportions (McNemar, 1947) were conducted on the Section 5 variables. For each pair-wise comparison, the "discouraged" and "no influence" proportions were combined. The critical result significance for each comparison was adjusted with a Bonferroni correction (05/5 = .01). Result highlights include that the likelihood one's personal behaviour would make a difference (5f) significantly encouraged environmental behaviour more than apparent regulations at Whistler (5d) $p<.01$, No significant difference was found between the influence of others' behaviour at Whistler and the people with whom one came to Whistler.

4.4.4 Contingent Valuation/ Trade offs

The trade-offs visitors at Whistler were willing to make for environmental responsibility are presented in Table 4.8. The trade-off variables in question are: monetary cost, effort, time, and quality of hotel. Note that respondents answering these questions overall had a higher than average income and, for the most part, were on holiday.

Table 4.8

Contingent Valuation

Percentage of Respondents who Agreed	On their next holiday, they would stay in a more environmentally responsible hotel even if:
75%	-Slightly fewer services were offered but the price and all other factors were equal (Q9k).
65%	-It were $25 more expensive, and all other factors were equal (Q9i).
39%	-It were $50 more expensive, and all other factors were equal (Q9j).

Percentage of respondents who agreed	They would be discouraged from behaving environmentally responsibly at Whistler if:
28%	-The behaviour took 2 extra minutes of time (Q9f).
40%	-The behaviour involved a little more or moderate amount more effort or took up 15 minutes of time (Q 9d, 9e, 9g).
35%	-The behaviour cost slightly more $ than the alternative option (5% more, Q9h).
52%	-The behaviour cost a moderate amount more $ than the alternative option (20% more, Q9i).

210 visitors responded to Survey Questions 9i, 9j and 9k. 217 visitors responded to Survey Questions 6d -6i (216 responded to 6e). Results were calculated by combining the percentage of respondents who answered "strongly agree" and "somewhat agree" together and combining those who responded "somewhat disagree" and "disagree" together for all applicable questions.

Results can help Whistler planners distinguish how far out of their way visitors would go to be environmentally responsible. In terms of trade-offs, survey respondents overall would choose to stay in an environmentally responsible hotel over a hotel with more services and comforts at Whistler. Money is of higher value to these respondents than quality of hotel. Environmental protection is of highest value to respondents as long as the monetary trade off is not high. Consistent with literature increasing the price by 10% would be acceptable to most people (Cotte & Trudel, 2009). Respondents were more willing to make quality sacrifices over monetary sacrifices for environmental responsibility.

4.4.5 Influences on Environmental Behaviour from Survey Section 9

The remaining results from Section 9 are summarized in Table 4.9

Table 4.9

Percentage of Respondents Agreeing to Items in Survey Section 9

Percentage of respondents who agreed (Strongly to Somewhat)	With the statements below
57%	My experience in Whistler has encouraged me to become more environmentally responsible (9a).
94%	It is easy to get around Whistler by walking or using public transportation (9f).
52%	The merchandise sold at Whistler is generally not harmful to people or the environment (9g).
75%	Efforts from businesses to become environmentally responsible at Whistler are genuine (9h).
Percentage of respondents who DISAGREED ("Somewhat Disagreed" to "Disagreed")	**With the statements below**
54%	Not too much over packaged food is sold at Whistler (9e).
82%	My choice to visit Whistler was influenced by Whistler's sustainability initiatives (9b).
73%	Concern for the environment impacted my travel method of getting to Whistler (9c).
85%	Concern for the environment impacted the length of my stay in Whistler (9d).

Results were based on a 4-point scale from Strongly Agree to Disagree.

Three quarters of respondents thought "efforts from businesses to become environmentally responsible at Whistler are genuine". This is important, as these same respondents rated "businesses not being genuine" as the second largest discourager towards their own pro-environmental behaviour. Just half of respondents rated that the merchandise sold at Whistler is generally not harmful to people or the environment. This could suggest that more environmentally sustainable merchandise should be offered. For most respondents, concern for the environment did not impact their length of stay at Whistler or their travel method of getting there. Choosing to come to Whistler was not influenced by Whistler's sustainability initiatives. Over half of respondents agreed that

their experience in Whistler encouraged them to become more environmentally responsible.

Fifty-four percent of survey respondents agreed that too much over-packaged food is sold at Whistler. This stands out as something Whistler can work on improving. An impressive 94% of respondents at least somewhat agreed "It is easy to get around Whistler by walking or using public transportation." This appears to have a very positive influence on transportation-related environmental behaviour at Whistler. In fact, when asked if there were other pro-environmental behaviour respondents engaged in, 30% of comments mentioned they traveled by foot, bike or public transportation within Whistler. These answers directly influence environmental behaviour (transportation behaviour, purchasing behaviour patterns and food-related behaviour). In McDonald and Oates's research, not driving and reducing packaging were perceived as making a difference to the environment, but also as involving a lot of effort (2006). As over-packaged food would be hard to avoid while on holiday, more alternatives should be offered. In DEFRA's (2008) study using cars for short trips was common, but this does not appear to be the case at Whistler. This, along with the current results suggests that Whistler was successful in creating a pedestrian friendly village and reducing visitor vehicle emissions within its boundaries.

4.4.6 Summary

Respondents were most encouraged to behave environmentally responsibly if the behaviours were convenient, if they valued the environment and an opportunity to do something right, if they believed the behaviour would make a difference and if others around them were behaving similarly. They were most discouraged by cost. Social pressure and information least influenced their environmental behaviour, but regulations had a positive influence. Stated or perceptions of environmental behaviour influences by respondents, do not necessarily reflect their actual influences. This is further discussed in Sections 5.2 and 5.3.

4.5 Research Question C: What Influences Environmentally Responsible Behaviour at Whistler? Qualitative Results and Discussion

This section reports results from Qualitative Survey Question 10, which asked respondents what most encouraged and discouraged them from taking part in environmental behaviours at Whistler. Thirty percent of survey respondents (69 respondents) chose to answer Question 10. Responses have been categorized under the headings of: Social Norms, Values, Information, Monetary Cost, Convenience, Local Businesses, Whistler's Atmosphere and Other.

A table of condensed comments was made for each of these "influence" categories. The tables also list the number of times an encourager or discourager was mentioned, if more than once. Categories are not always mutually exclusive. To better understand respondent opinions, a small selection of informative, non-condensed quotes is included for each category of environmental behaviour influences. In addition, some results from qualitative Question 12 are presented under the influence categories, mainly suggestions for improvements. (Question 12 asked if there was anything else respondents would like to add about sustainability, the environment, Whistler or about this survey.)

While the Section 4.4 rated the strength of general encouragers and discouragers on behaviour, these qualitative comments provide specification on exactly what these influences were and explain in more detail how they impacted behaviour. These results show where Whistler improvements are needed as well as what steps visitors recognized as being successful and helpful towards their pro-environmental behaviour. The suggestions provided in these responses can be passed on to Whistler's planning committee. In order to remain impartial, all reported behaviour influences from respondents were included in the tables. This is regardless of whether these influences were based on facts, and regardless of how well these influences were explained by respondents.

4.5.1 The Influence of Social Norms on Visitor Environmental Behaviour at Whistler

As Section 4.4 suggested, local and general social norms do influence behaviour at Whistler. The qualitative results elaborate on which specific social expectations were strong behavioral influences. Respondents' comments are summarized in Table 4.10.

Table 4.10

Social Norm Related Encouragers and Discouragers of Pro-Environmental Behaviour at Whistler

Encouragers	Discouragers
At Whistler: • Not seeing trash anywhere on the streets and mountain x2 • Having friends with the same environmental beliefs General: • More communities becoming environmentally responsible • Countries which act positively towards environmental issues • Being conscious of others' efforts	At Whistler: • Others littering x6 • Others not caring • Others with no knowledge of wildlife • The quantity of oversized almost empty pickup trucks • Hoards of consumer tourists

"x2" and "x6" refer to the number of times those comments were mentioned

Table 4.10 suggests that a norm of others littering is very discouraging. However, this is not necessarily always a norm at Whistler, as two respondents were most encouraged by not seeing litter anywhere at Whistler. An example of littering being a mild discourager is as follows: "*It always discourages me when I see a pop can in the bushes right next to a recycle bin, but not enough to make me quit recycling!*" This quote does not make it sound as though littering is a norm at Whistler, but just discouraging when it is found. Littering, after an extent, can inhibit nature from running its cycles. It is a move away from a closed loop system and can potentially harm sensitive species. One respondent also suggested that there should be more local encouragement to act responsibly, but did not specify further.

4.5.2 The Influence of Values on Visitor Environmental Behaviour at Whistler

Six respondents expressed that their values most encouraged their environmentally responsible behaviour. Habit, which was not an influence previously asked about, was also mentioned twice as a reason for environmental behaviour. An elaboration of encouraging values can be seen in Table 4.11, based on respondents' comments.

Table 4.11

Values/ The Individual; Encouragers of Pro-Environmental Behaviour at Whistler

Encouragers
Values:
• One's own beliefs x2
• Existing intrinsic motivation
• Sense of moral responsibility to contribute to the wellbeing of life and the environment x2
• Concern for sustainability of our planet and future generations
Habit:
• Ingrained routines x2

"x2" indicates those comments were mentioned by 2 respondents

To further emphasize the strength of values on environmental behaviour, here is one respondent's answer to what encourages his/her environmental behaviour most: "*Knowing I am contributing somewhat to the general well being of environment and life and trying to leave things in a state as good or better than they were before I arrived...*" Another respondent expressed that: "*Knowledge and respect for the environment has to be valued in all aspects of life and if Whistler makes an effort to minimize it's footprint and educate the public it would encourage people with my values to visit more often.*" This suggests there is a push from at least some visitors for Whistler to continue its environmental sustainability initiatives.

4.5.3 The Influence of Information on Visitor Environmental Behaviour at Whistler

For some respondents, information through signage, education and awareness of Whistler's sustainability initiatives influenced environmental behaviour at Whistler. Results are categorized in Table 4.12 below based on respondent comments. Note that

simple improvements can be made on the part of Whistler to reduce the discouragers listed.

Table 4.12

Education/Information/Awareness Related Encouragers and Discouragers of Pro-Environmental Behaviour at Whistler

Encouragers	Discouragers
Whistler sustainability initiatives: • Whistler's improvements made over years x3 Signage: • Clearly marked recycling bins • Reminder signs Education/Direct Experience: • Lesson on environmental responsibility from Zip Line Eco-tours x2	• Not enough educational material on the environment for visitors • Unclear whether tissues go in the garbage or recycling bins on the mountain • No literature on how to separate organics for composting in accommodations • Lack of signs in accommodation facility showing that there was an option to compost and the bin's location

"x2" and "x3" refer to the number of times those comments were mentioned

The following comment is one example of how awareness keeps respondents wanting to behave environmentally responsibly: "*Knowing that the municipality of Whistler is trying to move forward and make legislation for being more sustainable, such as banning bus idling and at least discussing eliminating plastic bags in town (not sure why they haven't though).*" Not expressed as a behaviour encourager per say, but an example of a positive comment regarding information is: "*There is good information regarding the impact of skiing in wild habitat on the environment.*"

Additionally, some respondents provided feedback on how information can further improve environmental sustainability at Whistler. One suggestion was:

> *Reaching out to customers to make them understand that the only reason they can enjoy one of the most beautiful places on earth is by taking care of it. That means individual responsibility by buying the right materials (or not buying them at all), turning off lights, turning down the heat, closing the door, ending conspicuous consumption and leaving ***(car brand) at home.*

Table 4.13 summarizes other suggestions on what types of information and education respondents would like to see at Whistler.

Table 4.13

Suggestions from Whistler Visitors on Improving Information Relating to Environmental Sustainability and Behaviour

Information
- Provide more information about the impact of ski resorts on the environment
- Focus on education, particularly show and tell examples of best practice
- Provide more mention of how the restaurants on the hills are recycling and composting
- Provide more literature and materials that link the environment to individual actions.
- Publish results of research in local papers to raise awareness
- Provide more information on environmental perils and benefits of pro-environmental behaviour
- Model a sustainable lifestyle so people can see for themselves
- Provide a little note in the hotel room to be mindful of reducing water usage and reusing towels
- More clearly define recycling and trash bins
- Provide more information in hotel rooms on how to help the environment and what actions the hotel is taking to do so
- Provide more signage

4.5.4 The Influence of Cost on Visitor Environmental Behaviour at Whistler

Monetary cost was mentioned various times as the most encouraging/discouraging influence on environmental behaviour. Respondents' comments are detailed in Table 4.14 below.

Table 4.14

Monetary Cost Related Encouragers and Discouragers of Pro-Environmental Behaviour at Whistler

Encouragers	Discouragers
• Organic food costing ~ same as regular food • A charge for bags with proceeds going to eco-friendly charities • Great bus deals to Whistler • Monetary incentives for environmental actions	• The initial high cost of things at Whistler makes paying more for enviro. improvements harder • Money speaks- if taking environmental actions have a cost, they won't happen x2 • A meal ordered with the meat removed was same price as with meat. (In a restaurant with no vegetarian options)

"x2" indicates that the applicable comment was made by 2 respondents

An example of cost as an encourager to reduce vehicle emissions is as follows:

Bus deals to Whistler are excellent and a great way to discourage people from driving up which is both dangerous and not ideal for the environment. I think if more people knew how cheap and convenient the bus specials were they might consider taking transit rather than driving up in separate vehicles. My friends and I always take the Greyhound deal which includes a lift ticket.

Being influenced by these bus deals however is also dependent on knowing about them. As Stern (1999) suggests, often types of influences must interact before together changing behaviour.

4.5.5 The Influence of Convenience on Visitor Environmental Behaviour at Whistler

Convenience was mentioned many times in the qualitative comments as being most influential on respondents' environmental behaviour at Whistler. As the quantitative results in the Section 4.4.1 show, "convenience" was also rated to be the strongest encourager towards pro-environmental behaviour at Whistler. Table 4.15 demonstrates that there were a wide variety of convenience-related influences not covered in the quantitative survey questions. Influences, based on respondent comments are placed in appropriate categories in Table 4.15 below. In some cases, respondents expressed

convenience as being the result of the actions of local businesses. In these cases, applicable comments were only included in the Local Business Influence Table 4.17.

Table 4.15

Convenience/Availability/Accessibility Related Encouragers and Discouragers of Pro-Environmental Behaviour at Whistler

Encouragers	Discouragers
General: • If you make it easy/convenient, people will help the environment x2 **Transportation:** • Buses/shuttles were readily available, on time and had helpful drivers • The walkability of the town **Recycling:** • Easy access to (large) recycling bins in hotels/the village/the mountaintop/ businesses x12 • If there were recyclable containers, we'd use them **Water:** • Public fresh non-bottled water available	**General** • The inconvenience x2 **Transportation:** • The difficulty of getting to Whistler without a car **Whistler facilities:** • No paper recycling bins in village x3 • No recycling bins or pick up in lodging areas outside the village x4 • Not enough trash containers • More trash containers than recycling bins **Food options** • Difficulty finding vegan food options at restaurants • Not many vegetarian options **Lodging facilities:** • Inability to adjust heat • Inability to adjust water pressure x2 • Garbage and recycling room inconveniently located

"x2," "x3," "x4" and "x12" refer to the number of times those comments were mentioned

Table 4.15 shows that the convenience of recycling was mentioned many times (13 times as a behaviour encourager and 9 times as a behaviour discourager). In addition, it is also mentioned various times in the Influence of Local Businesses Table 4.17, following this section. This indicates that having conveniently located recycling bins is very important for eliciting visitor environmental behaviour at Whistler. In many quotes respondents stated they were very impressed with recycling facilities, meaning that in some areas Whistler is clearly doing a noticeably good job. Yet, based on the discourager comments, they are not doing a good job with every aspect of this. For example, more

paper recycling bins are needed in the village and perhaps a shuttle bus (or awareness of a shuttle bus) to recycling facilities for those staying outside the main village. It is also quite possible that visitors' perceptions vary as to what are acceptable recycling measures or facilities.

In one comment, an encouraged respondent stated: "*I was pleasantly surprised to find a recycling can in my condo and places to put the recyclables by the garbage bins.*" In another, an inconvenienced respondent writes:

> *It isn't encouraged to recycle at *** lodge. The garbage room at *** lodge is inconveniently located in the parking garage… The garbage room was dirty. Anyone who would be uneasy about touching the bins would be completely turned off from recycling or composting.*

Respondents also expressed many suggestions on improving convenience, which are summarized in Table 4.16 below. They fell under the categories of improving environmentally responsible transportation and making it easier to recycle and reduce waste at Whistler. The suggestions below are particularly useful, as specific improvements from visitor perspectives were not addressed elsewhere in the survey. For example, based on survey results, environmentally responsible transportation at Whistler seemed very successful, but these comments provide insight that it is not successful in every regard and ideas for improvement are given.

Table 4.16

Suggestions from Whistler Visitors on Improving Transportation and Recycling

Transportation:	Recycling/Re-Use:
• There should be efficient rail access to Whistler. • Frequent public transportation should connect Whistler Village with the Olympic Nordic Center - in the years following the Olympics too. • Walking and cycling paths to Function Junction from Whistler Creek could be improved, as there is high road traffic (safety issue). • There should be buses that take people to more cross-country ski trails.	• Beer bottles should be able to be recycled more easily • Recycling and composting needs to be clean and convenient - particularly for visitors who may not have the opportunity to do this at home • Reusable containers should be accessible (in hotel rooms/restaurants…)

4.5.6 The Influence of Local Businesses on Visitor Environmental Behaviour at Whistler

Local businesses' environmental efforts have a large impact on how environmentally responsible visitors at Whistler can or will behave. In the quantitative result section, "how local businesses behaved" was considered a type of social norm, that could encourage or discourage environmental behaviour. Based on qualitative results the environmental behaviour of local businesses does not just have the power to motivate visitor behaviour, it also influences visitors' capability to act environmentally responsibly. Table 4.17 demonstrates both these types of local business influences on behaviour, based on respondents' comments.

Table 4.17

Local Businesses' Related Encouragers and Discouragers of Pro-Environmental Behaviour at Whistler

Encouragers	Discouragers
General Businesses: • Businesses' environmental efforts x2 • The re-use it centre • Seeing businesses that make it easier for me to be environmentally responsible (with recycling bins, less packaging and more biodegradable packaging) Restaurants: • Segregated trash, recycling and composting areas on mountain restaurants x4 • Real forks and knives available (waste reduction) • Environmentally friendly food choices • Eco friendly take out containers Lodging facilities: • Recycling bins in condo • Electric baseboard heater • Hotel did great job saving water	General: • Businesses with no recycling facilities • Stores that sell non-sustainable products • Stores that leave their doors open so heat goes out x2 • Usage of lots of plastic bags • Too much over-packaging Food Business: • No recycling bins for paper cups provided by coffee shops • Usage of paper cups as opposed to mugs in coffee shops • Grocery food sold in non-recyclable packaging • Restaurant not recycling Lodging facilities: • No compost bins • No recycling bins x5 • No known plastic recycling bins, just glass and paper • Hotel garbage and recycling room very dirty and unappealing

"x2," "x4," and "x5" refer to the number of times those comments were mentioned

Many respondents were impressed with recycling and composting in the mountain restaurants. Here is an example of one such comment: "*At all mountain restaurants they are trying to eliminate waste and tying to recycle as much as possible and have people employed to clean tables and recycle all items that can be recycled.*" Nevertheless, this was not the case at all restaurants. One respondent was discouraged by "*seeing how much recyclable items were hitting the garbage everyday at a large high volume restaurant in Whistler. When I asked why they couldn't recycle, the restaurant manager huffed and gave me some half assed 'we've tried' answer.*"

Another respondent explains why he or she was so discouraged by businesses leaving their doors open:

> *I was completely amazed and rather disgusted at the number of businesses that held their front doors open all day and night long. They see this as a means to attract customers. However, this is such a waste of energy. Why, why, why does Whistler allow this extremely wasteful practice. This is not a sustainable option.*

Some businesses are more environmentally responsible than others, which can explain some inconsistencies in the comments. The names of businesses encouraging or discouraging environmental behaviour were left anonymous. The municipality of Whistler may not have the control or the desire to ask businesses to behave a certain way. Nevertheless, witnessing multiple businesses at Whistler behave the same way can influence visitors' perceptions of Whistler as a whole, as well as encourage or discourage environmental behaviour at Whistler.

In Survey Question 4, which asked what pro-environmental behaviours visitors engaged in at Whistler, six respondents mentioned they supported environmentally responsible businesses at Whistler. This is an encourager in itself for businesses to make an effort to be environmentally responsible. However, other factors such as cost are also at play. Customers may only want Whistler businesses to prioritize environmental responsibility if there is no major tradeoff involved. As is discussed in Section 4.8, several comments refer to Whistler as a place that caters to those with a highly consumptive lifestyle.

Some respondents provided constructive ideas on how local businesses could help visitors behave environmentally responsibly and improve environmental sustainability at Whistler. For example: "*Condo hotels could provide guests with re-usable shopping bags to use for grocery shopping when they are here. They could be a promotional product for the hotel/condo company that the guest may even take home.*" Another idea which would be easy for local supermarkets to implement is: "*I wish re-useable shopping bags were more heavily promoted at supermarkets, even if it were just as simple as the cashier asking if you had your own bag instead of assuming you don't and beginning to pack in a disposable bag.*" More suggestions from respondents for businesses to become environmentally responsible are outlined in Table 4.18 by category. These suggestions focus on reducing packaging and bags, and improving recycling programs.

Table 4.18

Environmental Suggestions for Local Businesses from Visitors at Whistler

General:	Accommodations/Lodging:
• All businesses need to adopt full recycling and composting options for their packaging. • All businesses should simply ban plastic bags. • There are too many packaged goods that don't need to exist. • Provide biodegradable plastic bags x2 • Provide cheap or free cloth bags and offer no bags for small items	• Hotels need to make more of an effort in recycling programs. • Separate recycling bins should be provided in accommodations for different materials. • Have temperature settings on laundry machines • Provide assistance with recyclables, where pick up is not available (reduce car dependency)
Coffee Shops:	Restaurants:
• Refrain from giving out milk, creamers, and other packaging that can't be recycled or composted. This can be served in 'bulk' with 100% recyclable packaging. • Pioneer a compostable cup and lid • Lightweight coffee cups should be used.	• Provide recyclable take out containers, not Styrofoam x2

"x2" indicates those comments were mentioned by 2 respondents

4.5.7 The Influence of Whistler's Atmosphere on Visitor Environmental Behaviour

Whistler as a whole both encouraged and discouraged respondents from behaving environmentally responsibly. Below is what responders had to say about this topic. Based on results presented in Table 4.19, the beauty of the natural surroundings and some green innovations were evidently environmental behaviour encouragers. The people at Whistler and its economy appear to be more discouraging.

Table 4.19

Whistler Place/Atmosphere Encouragers and Discouragers of Pro-Environmental Behaviour at Whistler

Encouragers	Discouragers
• The beauty of the place (stunning environment and earth friendly architecture) x5 • Cleanliness of town and environs • Bear proof garbage cans (demonstrates goal of human/animal co-habitation) • An Aboriginal owned and operated cultural centre • The overall atmosphere	• Consume atmosphere • Inconsistent regarding sustainability initiatives • Whistler insensitive and disconnected from the beautiful natural environment which it inhabits. • No sense of a respect or consciousness for the environment • Whistler's economy is largely based on luxury and excess- harmful to environment • Heated walkways- a waste of energy

"x5" indicates that 5 respondents made the applicable comment

The following quote emphasizes and explains the positive environmental influence of Whistler's beauty on behaviour: "*The scenery and how nice and polished the village looked made me think I was in a provincial or national park, where littering would look more terrible and sad and where there are huge fines for littering*". Another quote also expresses a positive opinion of Whistler's atmosphere: "*The overall atmosphere encourages environmental responsibility in a way I have not seen anywhere else. We also got a more in depth lesson on it from the zip line company.*"

This next quote explains why Whistler's atmosphere is discouraging towards behaviour: "*...the fact that Whistler's economy is largely based on luxury and excess. It's hard to take a town's efforts seriously when this large part of their economy is harmful to*

the environment, and celebrates living beyond our needs." The variation found in visitors' comments may be due to their different personal experiences at Whistler. As one comment in Table 4.19 states, Whistler can be inconsistent regarding environmental sustainability initiatives. Some environmental sustainability initiatives or lack of them will be more visible to visitors engaging in some activities over others. Differences in comments may also be due to visitors' opinions and awareness formed prior to their Whistler arrival. Note that respondents filling out the current survey are a mix of first time visitors and repeated visitors. The survey is therefore examining both apparent first impressions of Whistler as well as impressions based on more in depth experiences at Whistler.

Some respondents offered suggestions on how Whistler could improve environmental sustainability and encourage visitors to do the same. These are listed below:

> -Use more solar and geothermal systems at Whistler to reduce the non-environmentally friendly energy consumption of downhill skiing.
> -Provide opportunities for visitors to do something unique like some reforesting or erosion control.
> -Cut down on plastics, for example, quit producing bottled water, instead make water filtration available free of charge.

One respondent conveyed his or her feedback regarding proposed hydrogen buses at Whistler: *"... unless the hydrogen comes from a renewable source, it makes no sense from an economical or environmental position. Things must be viewed from the energy balance standpoint."* These comments all relate to planning at Whistler. To remain impartial suggestions were not discriminated against based on potential feasibility.

4.5.8 Other Influences on Visitor Environmental Behaviour at Whistler

Other encouragers and discouragers towards environmental behaviour at Whistler were mentioned as well, but not often enough to have their own separate category. Two respondents mentioned that they were encouraged to behave environmentally responsibly because this current research was being carried out. For example, one wrote: *"I am*

encouraged that this research is being carried out and sincerely hope that such an effort will influence future operations and development at Whistler and other destinations".
"Lack of time" was brought up as a discourager towards behaving environmentally responsibly. More specifically, this respondent stated: "*Not here for very long so we are eating at restaurants but usually I would cook at the condo I'm staying at so as not to waste food*".

Regulation was mentioned both as an encourager and a discourager towards behaviour at Whistler. To elaborate on what is meant by regulation, one respondent stated:

> *Government regulation works. We can't trust most people to act on their own. For example the Canadian government could make it law for businesses to recycle (as a general term)...then all the 'I don't care' businesses would have to follow suit. Or even Whistler could mandate something like this on their businesses. Then they can stop trying to encourage it, because everyone must do it.*

As encouragers towards environmental behaviours, regulation related quotes mentioned "having fines for littering" and knowing Whistler is making legislation to ban bus idling. Regulation as an environmental behaviour discourager, was brought up as follows: "*Sharing meals and rooms in local hostels was shunned by pro-development so called lodges here. Local law enforcement makes the simple low impact travel business difficult for owners*".

One comment also mentions the influence of one's home area on environmental behaviour: "*...We have huge water restrictions in Australia and so I always take short showers.*" A few more respondents compare their homeland's environmental actions to Whistler's: "*Coming from another country, I'm impressed to see the importance placed on environmental sustainability and responsibility at Whistler,*" and "*I wish we would do the same in my homeland*".

This section provided more insight on what influences visitor environmental behaviour at Whistler. It recognized discrepancies in facilities at Whistler, what is

important to visitors, successful environmental sustainability initiatives and particularly how Whistler can make improvements.

4.6 Associations between Research Questions

This section combines data from the previous three main research questions to further determine motivation for environmental behaviour at Whistler. It examines which perceptions influence environmental behaviour at Whistler and what mediates environmental behaviour influences. Associations between research questions were mainly analyzed using Pearson correlations. A Bonferonni type adjustment was made to reduce Type I error for the 30 correlations included (.1/30=.003). To be significant, correlations needed to have a *p* value under .003. The highest absolute value a correlation can be is 1. Though some correlations found in this section appear low in strength, research in the social sciences does not often result in high correlations.

4.6.1 Associations between Visitors' Environmental Perceptions and their Specific Behaviour at Whistler

Familiarity with the term sustainability (1a) and belief in the interdependence of its three components (1m) did not relate to whether visitors behaved environmentally sustainably at Whistler (3S), suggesting that knowledge alone will not lead to desired environmental behaviour. This is consistent with recent theories (Kollmuss & Agyeman, 2002). Inconsistent with Hines, Hungerford and Tomera's (1986) model of responsible behaviour, a correlation showed that one's perception of personal control in making an environmental difference (1d) did not relate to the behaviours studied (3S). Whether respondents thought protecting the environment was their responsibility also was not associated with most environmental behaviours studied. There was no significant relationship between engagement in environmental behaviour (3S) and whether one believed the word "sustainability" is overused to the extent it loses meaning (1n).

Ajzen and Fishbein (1980) explain that it is difficult to predict specific behaviours from general attitudes. General attitudes tend to better predict general behaviour while specific attitudes can predict specific behaviour.

There was a positive relationship between engaging in environmental behaviours at Whistler (hotel, recycling and food related behaviours) and being interested in protecting the environment (1j), being actively involved in environmental efforts (1l) and doing what one can to improve the environment (1k). This relationship was strongest between 1kl and hotel/recycling (3bdef) related environmental behaviours $r(171)=.23$, $p<.003$. Having a pro-ecological worldview (S2) was also positively correlated with making an effort to consume vegetarian food (3g), $r(209)=.30$, $p<.003$.

4.6.2 Associations between Blockers/Motivators of Environmental Behaviour and Visitor Environmental Behaviour at Whistler

Food-related environmental behaviours (3ag) positively correlated with values (8a, 8d), but for the most part, not with situational behaviour encouragers and discouragers (S6, S7). A concern for animals and the environmental (8d) was more strongly associated with making an effort to eat vegetarian food (3g) than any of the other behaviours $r(207)=.25$, $p<.003$. On the other hand, hotel-related environmental behaviours (3bdef) did not correlate with values (S8) but instead with discouragers towards environmental behaviour in Section 6 (norms, time, effort). Those more discouraged to behave environmentally responsibly by the items in Section 6 were less likely to engage in hotel related environmental behaviours $r(169)=-.31$, $p<.003$. The strongest individual association was between time and recycling behaviour: the more strongly respondents agreed time discouraged their behaviour (6fg), the less likely they were to recycle (3f) $r(209)=-.27$, $p<.003$. "Time involved" was rated as the least discouraging factor towards behaving environmentally responsibly in Results and Discussion Section 4.4.2, however when examining its influence on specific environmental behaviours (such as recycling) this changed. Convenience (7f) was the only situational behaviour encourager (from Section 7) that was positively associated with a behaviour engaged in at Whistler (turning down the heater 3d) at the $p < .003$ level, $r(173)=.21$.

These results suggest that food-related environmental behaviour is more value-based and hotel/recycling-related environmental behaviour is more norm and convenience based. The stronger correlations between environmental behaviour and discouragers for hotel-related environmental behaviours could indicate that these discouragers (S6) have a greater influence on these specific hotel-related environmental behaviours (3bdef) than encouragers do (S7, S8).

4.6.3 Associations between Environmental Perceptions and Other Influences on Environmental Behaviour at Whistler

Interest and activeness in maintaining a healthy environment (1jkl) positively correlated with encouragement to behave environmentally responsibly (both situational and internal encouragent). Those more interested in maintaining a healthy environment (1jkl) tended to be more encouraged to behave environmentally responsibly by all measures of behaviour encouragers (Section 7 $r(212)=.41, p<.003$; Section 8 $r(212)=.53, p<.003$; Section 5; $r(217)=.26, p<.003$). Interest in protecting the environment (1jkl) most strongly related to being encouraged by a concern for animals and the environment to behave environmentally responsibly (8d), $r(212)=.54, p<.003$. Being discouraged by the influence factors in Section 6 (convenience, norms, cost) was not related to level of interest in the environment.

Prioritizing the economy and human wellbeing over environmental wellbeing (1gh) was associated with being discouraged to behave environmentally responsibly by the variables in Section 6 $r(213)=.27, p<.003$. This also signifies that as respondents gave higher priority to the environment, they tended to be less discouraged by external factors to behave environmentally responsibly. Prioritizing the environment over the economy (1g) was most strongly associated with behaving environmentally responsibly out of concern for animals and the environment (8d) $r(213)=.34, p<.003$. Familiarity with the term sustainability (1a) was positively correlated with being encouraged to behave environmentally responsibly by the situational behaviour influences in Section 7 $r(213)=.31, p<.003$. Being familiar with sustainability (1a) and "being encouraged by information to behave environmentally (7c, 7d, 7g)" had a positive association $r(213-$

214)= .22-.28, *p*<.003, but did not correlate as strongly as familiarity did with other Section 7 behaviour influencers.

Those with a more ecological worldview (S2) were more encouraged to behave environmentally responsibly by both situational factors (S7 *r*=(210)=.27, *p*<.003) and by values (S8). Ecological worldview was most strongly related to behaving out of concern for the environment and animals (8d) *r*(210)=.40, *p*<.003 but also positively related to behaving out of concern for human beings, *r*(210)=.21, p<.003. The stronger the ecological worldview (S2), the more willing respondents were to give up more to stay in an environmentally responsible hotel (9ijk) *r*(208)=.24, p<.003. Ecological worldview can be considered a measure of concern for the environment (Dunlap, et al., 2000). Respondents more driven by values (for human beings 8c, for the environment & animals 8d, and to do something right 8a) were more likely to make tradeoffs to stay in an environmentally responsible hotel (9ijk). The correlations were strongest for those encouraged by a concern for the environment, *r*(210)=.42, *p*<.003 and for those encouraged by an opportunity to do something right, *r*(210)=.38, p<.003.

4.6.4 Summary

Results suggest interest in environmental sustainability and environmental activities may arise from a concern for animals and the environment. Interest and being actively involved in environmental efforts are related to positive environmental behaviour at Whistler. Those who did not often engage in hotel-related environmental behaviours, tended to be discouraged by the time and effort involved, and by how others around them were behaving. Consuming vegetarian food and composting are mainly value based, and also relate to ecological worldview.

4.7 Demographic Differences in Results
4.7.1 Demographic Differences in Environmental Behaviour

Demographic influences on environmental behaviour were explored using multi-factorial analyses of variance. Hotel-related environmental behaviours including recycling (3bdef), and food-related environmental behaviours (3ag) were generally

analyzed as separate categories in order to raise the number of survey respondents included in the resulting analysis. (Only respondents who answered each question can be included in repeated-measures ANOVAs, and answering Survey Section 3 was optional). The following ANOVAs determined if gender, age, income, education or place of residence influenced the frequency of environmental behaviour at Whistler.

A 2-way between subjects ANOVA was performed, with gender and age categories as the independent variables and food behaviour as the dependent variable. Levene's test indicated that the variances between these groups were homogeneous, $F(11,139)=1.17$, $p>.05$. There was no significant age and gender interaction and no significant age effect. There was a significant gender effect, with female respondents ($M = 1.98$, $SD = .88$) engaging in food related environmental behaviours more often than male respondents ($M = 1.53$, $SD = .65$), $F(1,139)= 4.72$, $p<.05$. Exactly the same outcome was found with hotel related behaviours as the dependent variable. Here too the variances were homogeneous, $F(11,151)=.95$, $p>.05$, and only the gender effect was significant $F(1,151)=4.59$, $p<.05$. Female respondents ($M = 3.42$, $SD = .61$) reported engaging in hotel-related environmental behaviours more often than male respondents ($M = 3.20$, $SD = .66$). Less of a gender difference existed for convenient (hotel-related) environmental behaviours over food-related behaviours. The strong gender difference in recycling behaviour (3f) likely raised the gender difference in hotel-related behaviours to significance.

A between-within ANOVA determined whether level of education (the between factor) influenced hotel or food related environmental behaviour at Whistler (the within factor). Levene's test for equality of variance determined that variances were homogeneous. The Bartlett-Box test demonstrated that covariance matrices were equal, $F(12, 35129.5)=.893$, $p>.05$ and the data were automatically spherical as only two "within" categories were included. A significant interaction was found between education and types of environmental behaviour, $F(4,114)=2.63$, $p<.05$. High school ($M = 2.13$, $SD = .97$) and college levels ($M = 2.04$, $SD = .85$) engaged in food-related environmental behaviours more so than university ($M = 1.50$, $SD = .57$), Master's ($M = 1.63$, $SD = .81$)

and PhD levels ($M = 1.67$, $SD = .70$), but no difference was found between levels of education for hotel-related environmental behaviours.

A two-way ANOVA was conducted to determine whether income or where respondents came from impacted whether they engaged in hotel-related environmental behavior. Countries included in this analysis were Canada, the US, Europe and Australia. There were six income categories, ranging from "under $25,000" to "over $150,000". Levene's test showed that variances were homogeneous $F(19,136)=1.35$, $p>.05$. There was no significant income-place interaction effect $F(10, 136)=1.8$, $p>.05$. Where respondents came from had no significant main effect on whether they engaged in hotel-related environmental behaviour $F(5,136)=.86$, $p>.05$, and neither did their income $F(4,136)=.50$, $p>.05$. Income also did not significantly influence respondents' food-related environmental behaviour at Whistler according to a one-way ANOVA, $F(4,140)= .924$, $p>.05$, with homogeneous variances, $F(4,140)=1.92$, $p>.05$.

A between-within ANOVA examined whether place of residence influenced level of engagement in food or hotel related environmental behaviours. The levels of the between factor were Canada, the US, Europe and Australia. Variances were homogeneous and covariance matrices were equal. There were only two within group categories (food and hotel-related environmental behaviour), so results were automatically spherical. A significant interaction was found between one's place of residence and type of environmental behaviour most often engaged in, $F(3,121)= 4.63$, $p<.005$. Australian respondents ($M = 2.13$, $SD = .79$) engaged in food-related environmental behaviours more often than any other country (total $M = 1.74$, $SD = .78$), followed by Canada ($M = 1.83$, $SD = .83$). Australians ($M = 2.88$, $SD = .69$) however engaged in hotel-related environmental behaviours less often than any other country (total $M = 3.30$, $SD = .62$), again followed by Canada ($M = 3.26$, $SD = .68$).

4.7.2 Demographic Differences in Environmental Perceptions

A 2x2 between-subject ANOVA tested whether there was an age and/or gender effect on perceptions of environmental sustainability. Section 1's 14 perception items

were collapsed into one measure for demographic comparison purposes (α = .67). Figure 4.3 illustrates them separately. The assumption of homogeneity of variances was met $F_{(11,191)}=1.08$, $p>.05$. There was no significant interaction effect $F_{(5,191)}=1.72$, $p>.05$ or age effect $F_{(5,191)}=1.75$, $p>.05$. Results showed that female visitors (M = 27.41, SD = 5.07) had significantly stronger environmental perceptions than male visitors (M = 30.97, SD = 6.49) $F_{(1,191)}$ = 18.55, $p<.001$.

A one-way ANOVA was performed to determine if Place of Residence (11c; Canada, US, UK, Australia) influenced perception of whether one's hometown would take drastic actions to maintain a healthy environment (Q1e). Variances were homogeneous $F_{(3,204)}=.46$, $p>.05$ and at least one place of residence influenced this perception significantly more than another, $F_{(3,204)}=4.71$, $p<.005$. Tukey's post hoc tests revealed that residents of the UK (M = 3.56, SD = .92) perceived that their hometown would take drastic actions to maintain a healthy environment significantly less so than Canada (M = 2.78, SD = 1.04, $p<.005$) or Australia (M = 2.61, SD = .87, $p<.05$).

Another 2x2 between-subject ANOVA was conducted to determine if there was an age or gender influence on survey Section 2's ecological worldview (α = .71). Variances were homogeneous, $F_{(11,193)}$= .64, $p>.05$. There was no significant interaction effect between age and gender $F_{(5,193)}=1.8$, $p>.05$ and no age effect $F_{(5,193)}=.4$, $p>.05$. There was a significant gender effect. Female respondents (M = 1.93, SD = .56) had a significantly more pro-ecological worldview than male respondents (M = 2.47, SD = .66) in this study, $F_{(1,193)}$= 37.4, $p<.001$. (In all cases in this section, a lower mean indicates a stronger environmental perception.)

4.7.3 Demographic Differences in Environmental Influences

Items within each "behaviour influence" survey section were collapsed into one measure per section for demographic comparison purposes (Section 5 α = .70; Section 6 α = .87; Section 7 α = .88; Section 8 α = .75). Four 2x2 between-subject factorial ANOVAs tested if there was an age and/or gender difference on how influenced respondents were to behave environmentally responsibly at Whistler. Age (6 categories)

and gender were the two independent variables, while the dependent variable was the environmental influence at stake (encourager for Sections 5, 7, 8 or discourager for Section 6). Variances of the dependent variable were homogeneous for each of the four ANOVAs, F (11,194-195) = .55-1.28, p >.05. There were no age and gender interactions $F(5,194-195) = .33-.62, p > .05$ or age effects $F(5,194-195) = .75-1.5, p>.05$ on what influences environmental behaviour. There was no gender effect on discouragement level of environmental behaviours, Section 6: $F(1,194) = .02, p > .05$. As shown below, for Sections 5, 7 and 8 encouragers there was a significant gender effect. Female visitors were significantly more encouraged to behave environmentally responsibly than male visitors by encouragers in Sections 5, 7, and 8 (regulations, social norms, convenience, concerns, location, etc.).

Sec. 5: $F(1,194)=4.71, p<.05$, Women $M = 9.41, SD = 2.19$, Men $M = 10.08, SD =2.17$
Where a mean of 6= Encouraged and one of 12= Not influenced

Sec. 7: $F(1,195)=13.85, p < .001$, Women $M = 1.69, SD = .62$, Men $M = 2.02, SD = .64$
Sec. 8: $F(1, 195)=14.72, p < .001$, Women $M = 1.50, SD = .50$, Men $M = 1.82, SD =.70$
Where a mean of 1= Strongly encouraged and one of 4= Not influenced

There was also no gender difference (11a) on the amount of money respondents were willing to pay to stay in an environmentally responsible hotel (9jk), $p>.05$.

4.7.4 Summary and Discussion

The main finding from the demographic results is that female visitors report engaging in environmental behaviour more often than male visitors. They also have stronger environmental perceptions and are more easily encouraged to behave environmentally responsibly than male visitors. This finding is very consistent with that of past studies (Barr, 2003; Fransson & Garling, 1999; Dolnicar & Leisch, 2008; Baldassare & Katz, 1992, Gamba & Oskamp, 1994; Oskamp et al., 1991; Laroche et al., 2001; Cotte & Trudel, 2009, p. 36). Yet, male visitors did not report being more discouraged by external factors to behave environmentally responsibly than the female visitors. There was also no gender difference regarding willingness-to-pay for environmental responsibility. A surprising finding was that those with less education

were more likely to engage in food-related environmental behaviours. No income or age effects were found.

4.8 Further Qualitative Comments and Issues for Whistler to Consider

Based on respondents' comments, there are further issues for Whistler planners to consider when engaging visitors in environmental sustainability and becoming sustainable. This section includes respondents' quotes from Survey Question 12 that express both positive and negative views of Whistler's environmental sustainability initiatives. It discusses the ability and willingness of people to make lifestyle changes to increase environmental sustainability. It examines challenges in balancing economic well-being with environmental well-being (when needed), catering to clientele with diverse interests, and to Whistler becoming sustainable. It raises issues of genuineness and image. It provides insight on visitor perceptions of Whistler's role in making improvements. Twenty-two percent of the sample replied to Question 12 (50 comments). Simple answers such as "*No*", "*Not at this time*" and "*Thank you*" are not included in these numbers.

There were several positive comments regarding Whistler's actions. Two respondents mentioned finding Zip Trek Eco-Tours' teaching on environmental sustainability very useful. Another admired the creativity of bear proof garbage bins in the village. Others mentioned that Whistler was doing a good job and moving in the right direction. They were particularly pleased with the importance placed on environmental responsibility. Several respondents were impressed with the recycling and composting systems on the mountain restaurants and by the chairlifts. Other visitors reported barely seeing any environmental initiatives. One was "*suspicious of 'sustainable' advocates that have not demonstrated sufficient sustainability themselves*".

Some respondents agreed Whistler and its visitors were interested in becoming environmentally sustainable, but did not think they were willing to make the trade-offs necessary to follow it through. One respondent expressed that: "*Downhill skiing isn't environmentally friendly, nor is all the gear that goes with it and the gas-guzzling cars*

needed to drive up to the mountain to enjoy it. Whistler culture is favoured by people with highly consumptive lifestyles". Though this type of perception can be discouraging, it can serve as a motive for Whistler to try harder to become more environmentally sustainable. Whistler can address this negative image by setting clear goals and by providing information on the impacts of skiing and on available transportation options.

A consideration worth discussing is the ability and willingness of people to make lifestyle changes to increase environmental sustainability. Even those very interested in environmental sustainability may not be ready to limit flying times or make the amount of changes required. They may value sustainability but at the same time either enjoy unsustainable activities or be dependent on them. Increasing awareness of unsustainable activities may not be the solution in this case. Making the appropriate lifestyle changes is a challenge. Whistler can make some of these changes easier for visitors while at Whistler, but at the same time Whistler is dependent on economic sustainability and must be wary of not turning away visitors.

Visitors are essential to Whistler's economic and social well-being. Without tourist revenue, Whistler would have a difficult time achieving its sustainability vision. Several respondents expressed opinions regarding balancing the components of sustainability. One respondent agreed that "going green has long term economic benefits" and highly appreciated Whistler's sustainability vision. Another explained that in order for the resort to exist there needs to be "a balance and coordinated effort between environmental sustainability and economic sustainability". One respondent criticized social sustainability at Whistler, stating homes were either empty or overcrowded. Some challenged how genuine they thought Whistler's environmental sustainability initiatives were and were skeptical of Whistler's true intentions:

> *Raising costs/taxes points out the real profit motive behind the environmental issues. Suggesting a 20% increase shows how little thought has been given to the economic sustainability required to support an over zealous position. It amazes me how well meaning environmentalists are played as pawns by industry and expanding government.*

The tendency to be skeptical and doubt government sincerity is consistent with Cotte and Trudel (2009) and DEFRA's (2008) findings (Section 2.3.3.11). Respondents' comments demonstrate that visitors value transparency in Whistler's planning, and do not think environmental sustainability should come ahead of the other sustainability components. While many visitors who filled out the quantitative portion of the survey showed interest in taking environmentally sustainable action, some who answered the qualitative comments portrayed Whistler and its visitors as being overly 'consumptive'.

Survey responses demonstrate that Whistler is dealing with a variety of clientele and appears to be attempting to cater to both 'environmental' and 'consumptive' visitors. Research has been conducted on which types of tourists leave the least environmental footprint. It tends to be those who spend little and often stay in campgrounds (Dolnicar, 2008). De Young's (1990) research related what intrinsically satisfies people to their type of lifestyle. Deriving satisfaction from being frugal had a .44 correlation with having an "ecological lifestyle". Those who prefer luxurious and less environmentally sustainable vacations however bring far more income into communities such as Whistler. The current results showed respondents had a much higher than average income, and were also generally interested in becoming more environmentally sustainable. In Kelly and colleagues' (2007) Whistler study, tourists also supported eco-efficiency options over "business-as-usual" options and reported they would be willing to pay an environmental fee to offset their environmental impact. These samples may not be representative of all tourists to Whistler.

The way that Whistler portrays itself may appeal to each type of visitor differently. Some wish to enjoy a luxury vacation, while only engaging in fairly effortless environmental behaviours. Their comfort takes priority over environmental responsibility and they are not willing to cut back on amenities like a hot room or daily linen change. Other visitors may want Whistler businesses to prioritize environmental responsibility only if there is no major tradeoff involved. Those very willing to behave environmentally sustainably expect Whistler to do the same. Each type of visitor has a different expectation from Whistler and would respond with a different degree of engagement in

Whistler's sustainability plan. A challenge is for Whistler to portray itself as being both luxurious and environmentally sustainable without the two conflicting. When short-term trade offs between sustainability components are necessary, Whistler should be clear regarding the balance it wants to strike – both for its image and its progress towards sustainability.

Some visitor comments expressed that Whistler was inconsistent regarding environmental sustainability initiatives and has at times moved in the opposite direction:

> *Whistler does fairly well trying to promote sustainability, however it is not consistent (e.g. - spending funds for a green library but letting a snowmobile company pollute the environment by operating their machines for the tourists). I am sick and tired of the word 'sustainability' because of these inconsistencies, and there are many. Money seems to speak.*

Perhaps to be more fair, Whistler can move towards partially taxing based on what causes the most pollution and environmental degradation, and explain this to visitors (Polluter pays principle, Section 2.3.3.4).

Because Whistler attracts international and out of province visitors, a further issue addressed is transportation. Some visitors challenged Whistler's ability to become fully environmentally sustainable because of this issue. They commented negatively on the environmental impact of planes and cars transporting people and products to Whistler. Of the respondents who indicated where they came from, 53% were from outside British Columbia and Washington. According to DEFRA's (2008) study, taking an airplane has the highest level of carbon dioxide emissions of all behaviours researched, while taking a car has the next highest. Flying therefore is a much greater barrier to environmental sustainability than, for example, not having enough bike paths. Therefore, the environmental impact of visitors traveling back and forth to Whistler and the transport of non-local products may, unfortunately, undermine the positive impact of other environmental efforts.

Although transportation emissions have actually decreased at Whistler over the past few years, they still make up its largest category of emissions (not including planes;

Whistler2020, 2010, Green House Gas Emissions page). In an effort to progress towards environmental sustainability, Whistler signed an agreement with the BC climate action charter (Resort Municipality of Whistler, 2009) committing itself to becoming a carbon neutral municipality. Its plan is extensive, and includes purchasing carbon offsets for municipal emissions that cannot be eliminated. Visitor transportation emissions are not currently addressed in this plan. In 2009, 37% of visitors traveled to whistler by bus (from Vancouver/Vancouver airport, Whistler2020, 2011). Although this is not a permanent solution, visitors can move towards offsetting their carbon emissions when traveling to Whistler. In addition, part of the revenue received from visitors at Whistler can be used to improve the efficiency of water or energy systems. In terms of reducing global transportation emissions, if international visitors did not travel to Whistler, it cannot be assumed they would not choose to vacation somewhere else, equally as far. Emissions arising from air travel are an extremely important issue to address, but are only partially within Whistler's current control.

Some visitors provided reasons why they thought becoming fully environmentally sustainable is not possible based on all the changes Whistler would be required to make. For example one respondent stated:

> *It is not possible to have a zero impact ski resort. The methods used to both create and to cater to the resort are environmentally harmful in themselves (trucking in of all food, products etc...). There appears to be little use of local produce and it is unlikely that the mountain environment could sustain the resort without massive fossil fuel and other non-replenishable resources.*

Despite receiving some criticism regarding its initiatives, Whistler2020's view is that if they try and make some positive changes now, it will be easier to make more later, and this is far better than doing nothing. Zero waste and zero emissions are still goals worth striving for. A positive and optimistic viewpoint comes from a respondent who concludes that:

> *Whistler is in an enviable position to influence people when they go back to their own homes. Done right, Whistler can teach people how to be good environmental stewards who will make a difference around the world. Remembering that the people who go to Whistler are upper middle class and sometimes extremely wealthy, these are the leaders and decision makers around the world. If Whistler*

does it right, these people will see it and maybe do more when they go home. Further, they will come back again and again because of Whistler's beauty. Finally, Whistler has to do it if it wishes to survive climate change.

4.8.1 Comments Relating to the Survey

Survey Question 12 also asked respondents if they had any comments on the survey, and some did. One respondent unfortunately did not understand the full purpose of the survey, suggesting a possible lack of clarity. He/she states: "The implied opposite of pro-environmental is anti-environmental. Bad question to ask! Nobody wants to be 'anti-environmental' and the extent to which their behaviours can be deemed to be pro-environmental depends upon the facilities provided by the resort as well as individual choices." Pro-environmental behaviour and people themselves being pro-environmental are not the same thing. It is fully acknowledged that the extent to which people's behaviour can be deemed to be pro-environmental depends both upon the resort's facilities and individual choices. The survey was intended to determine which resort facilities are environmentally supportive and which need improvement.

Overall however, the respondents filling out the survey were pleased with it and appreciated that this research was being conducted. Fifteen respondents expressed such positive comments.

4.9 Summary of Results

The main findings from the results of the Whistler visitor winter 2009 survey are as follows. Female visitors are more likely to behave environmentally responsibly than male visitors. Survey respondents state they are generally very familiar with the term sustainability and believe protecting the environment is their responsibility and also a government responsibility. They show an interest in maintaining a healthy environment. They prioritize the environment, human well-being and the economy approximately equally, and 75% agree that these components are interdependent. Survey respondents' ecological worldview is representative of people in general.

'Turning off lights' is the environmental behaviour most engaged in by Whistler visitors, followed by 'towel reuse'. Whistler visitors rated 'Getting around Whistler by walking or using public transportation' to be very easy. Half of visitors agreed that too much over-packaged food is sold in Whistler. While the merchandise sold could be more environmentally sustainable, they do feel efforts from Whistler businesses to become environmentally responsible are genuine. Consuming vegetarian food and composting are not generally habitual behaviours for visitors at Whistler. Visitors only sometimes 'turned the thermostat down' before leaving their hotel rooms. Respondents would be more willing to trade having hotel amenities than pay extra, to stay in an environmentally responsible hotel. Nonetheless, 65% reported being willing to pay $25 more to stay in an environmentally responsible hotel.

From the qualitative results, the most common pro-environmental behaviours reported were those resulting in vehicle emission reductions and waste reduction (via reducing consumption of materials, avoiding food waste, recycling and reusing). Environmentally responsible and convenient transportation options in Whistler were deemed fairly successful, yet respondents provided a variety of suggestions on how they could be improved.

Respondents would be most influenced to behave environmentally responsible if Whistler had conveniently located recycling bins and if respondents valued animals and the environment. A high monetary cost to participate in environmental behaviours would most discourage the behaviours. Social pressure had the least influence on self-perceived behaviour. Respondents were encouraged to behave environmentally sustainably if they believed their personal behaviour would make a difference, and were also highly encouraged by the opportunity to do something right.

The most common theme that immerged from the qualitative comments is that convenience is important. If being environmentally pro-active were made easy and convenient, respondents would be encouraged to behave environmentally responsibly (especially regarding recycling). Respondents particularly appreciated the segregated

trash, recycling and composting areas on mountain restaurants. Visitors provided suggestions on what types of environmental information Whistler could present to improve communication between Whistler planners and visitors. Respondents were pleased when local businesses recycled, provided access to recycling bins, composted, offered vegan meal choices and free fresh water, but noted that this was not always the case.

It was an important encourager for visitors to see Whistler and its local businesses promoting and engaging in environmentally friendly practices. Several were impressed with the measures and green innovations that have already been implemented by Whistler. Others gave suggestions for improvement or noted what was lacking. The suggestions focused on reducing packaging and bags and improving recycling programs. Respondents did not appreciate shops, hotels and restaurants that engaged in careless practices such as giving out Styrofoam cups, and generally producing needless waste. Some perceived inconsistencies regarding environmental sustainability initiatives. When this occurred, Whistler's sincerity was questioned.

Many respondents appreciated Whistler's environmental sustainability efforts and agreed they were making significant environmental improvements. Some respondents questioned how Whistler could become a zero impact resort. Yet, they generally thought Whistler has great potential to become more environmentally sustainable and to influence others inside and outside of Whistler to become so as well. Some visitors reported being inspired by the beauty of the Whistler area to make an effort to keep it that way. They felt a moral responsibility to be environmentally pro-active. Findings were generally consistent with the literature. Many respondents valued this research. Implications from these results for improving environmental sustainability at Whistler are discussed next.

Chapter 5: Conclusions and Recommendations

5.1 Introduction

The final thesis chapter addresses methodological concerns and mitigating strategies as well as limitations of this research. It highlights strengths and implications of this study and points to possibilities for future research. In addition, based on findings and the literature cited, it discusses where Whistler is already successful and provides recommendations for Whistler to better engage its visitors in environmental sustainability. Finally, it reviews what this research strived to accomplish.

5.2 Research Limitations, Concerns and Mitigating Strategies

Conducting research using surveys has the advantage of gathering data from a variety of people without highly inconveniencing them. The main concern with surveys is the discrepancy between intended or self-reported behaviour and actual behaviour, (Cotte & Trudel, 2009). According to six meta-analyzed studies from Hines et al. (1987) there is .49 correlation between behaviour intent and behaviour engagement (Fransson & Gärling, 1999). Survey results therefore do not necessarily reflect reality. Cotte and Trudel explain people have a tendency to answer in a socially desirable way. This is more the case in face-to-face and phone interviews, but it also occurs in written surveys. This tendency increases when respondents think acting environmentally responsibly is expected of them. For monetary tradeoff questions, respondents do not actually have to pay, so they would be more likely to select options they would ideally like to pay (Cotte & Trudel). Another explanation for the discrepancy is the "psychological force towards consistency," and "common response profiles" (Cotte & Trudel, p.19) meaning that those who report having positive environmental attitudes early in the survey, would feel more obliged to report acting accordingly later in the survey.

Respondents knew the survey topic before participating, which potentially attracted a larger number of environmentally conscious respondents than is representative of the Whistler visitor population. In an attempt to avoid a biased sample, when recruiting

survey participants, it was emphasized that their perspective was valued regardless of what it was. A particular effort was made to recruit visitors who responded that the environment was not their priority. Respondents did not have a more ecological worldview than those from Dunlap and colleagues' (2000) Washington study.

According to Cotte and Trudel (2009), knowing this was an environmental sustainability survey before filling it out, alone, would increase respondents' likelihood to answer questions pro-environmentally. With the intention of avoiding this bias, respondents were advised that the survey was anonymous and that they should answer questions as honestly and accurately as possible. For more accurate results, Cotte and Trudel recommend listing several general behaviours to respondents, including some environmental ones, and ask which they remember engaging in recently. The trade off however is that this would significantly increase the length of the survey, or severely narrow its scope. The current study method balances scrutiny with scope. Further reason for the discrepancy between self-reported answers and reality could be that people have a hard time determining answers to hypothetical scenarios.

The meaning of environmentally sustainable or environmentally responsible behaviour lacks precision for both respondents and researchers. There is no common definition and no one measurement guideline. Because of this, in comparing this study to others, results may not be consistent. As well, environmental protection and environmental sustainability do not mean the same thing. The former does not take into account the well-being of people or the economy while the latter does. A weakness in the methodology is that the survey did not mention that. Those with higher environmental concern tended to have a higher ecological worldview score and prioritized the environment over other aspects of sustainability.

Some research questions were not previously used in other studies and therefore their measurement may lack reliability or validity. The benefit, however, is the possibility of uncovering new information. To mitigate this concern, survey pre-tests were conducted for survey clarity, timing and interest. The survey was also designed so that

any issues with the quantitative questions could be highlighted through the qualitative questions as well as through the data analysis. Survey respondents were encouraged to add comments if anything was unclear, or if they did not think the survey fairly represented their views. The qualitative opinion questions provided a way to verify that the survey was accurately measuring what it was supposed to be measuring and to determine if anything critical was left out.

One concern revealed through the data analysis of Sections 5 and 6 is that respondents may not have been clear on the difference between something that has no influence on their environmental behaviour and something that discourages (reduces) it. Another concern is that a substantial percentage of respondents may not have noticed that the direction of measurement for the water-related environmental behaviour question (3c) was opposite to that of the other environmental behaviour questions. Though this was done to test if respondents were paying careful attention, it had to be eliminated from much of the analyses.

Survey responses were analyzed as if their rating scales were interval-scale and not ordinal. Yet, the amount of difference between "Strongly Agree" and "Somewhat Agree" may not be the same as between "Somewhat Agree" and "Somewhat Disagree". Data arising from Likert-scale items are usually treated as quasi-interval scale, and thus use of parametric tests like the analysis of variance is very common. Potential order effects may have reduced the survey's reliability as all survey questions were in the same order for everyone filling out the survey. Stronger toned questions early on, such as those regarding ecological worldview, may have primed respondents to respond differently than they otherwise would have for later questions. If future research is conducted using this survey, it should be pre-tested using a variety of question orders to determine if the same answers would be obtained regardless of order.

As the sample was voluntary and not random, results cannot necessarily be generalized beyond the sample. In addition, the research studies perceptions of behaviour and influences, not actual behaviour or influences. Furthermore, an interesting finding

discovered by Cotte and Trudel (2009; from an experimental study by Chandon, Morwitz & Reinartz, 2005) is that measuring behaviour intentions and attitudes increases actual behaviour. Though useful in engaging visitors in environmental sustainability, this finding can make survey results less generalizable to the non-surveyed population.

The limitations discussed above should be noted when reviewing the survey result analyses and can be reduced in future research. Nevertheless, they are not unusual and significant utility from the data can still been obtained.

5.3 Strengths, Importance and Implications of this Research

This research was undertaken to gain a better understanding of where Whistler visitors currently stand in terms of environmental behaviour norms, environmental sustainability perceptions and environmental behaviour influences. The survey results and literature analysis provide guidance on which environmental initiatives would make a difference and these findings can be implemented in Whistler. The study recommends steps Whistler can take to better engage its visitors in environmental sustainability, and it puts forward issues to address.

Whistler previously had limited input from visitors on its environmental sustainability initiatives. This research tackles a new area by making visitor perspectives the prime research focus. Researching tourists also allowed for perspectives across several nationalities. The use of self-reported data is advantageous because communication to visitors on environmental sustainability engagement would likely be more effective if it addresses how visitors perceive their behaviour. As Stern explains, behaviour "interventions are most effective when designed from the consumer's perspective … because it is from that perspective that the chief barriers to behavioral change are most easily seen," (1999, p. 475). Direct observational research would be more accurate at monitoring actual environmental behaviour, but would not provide information on visitors' perspectives.

This research provides a detailed review of relevant research across many fields. It bridges the study of environmental sustainability from various disciplines and adds to sustainability and environmental psychology literature. Though environmental influences have been studied and theorized before, this study examines them in a novel way by comparing the extent of these influences. By understanding what influences environmental behaviour most and least, an appropriate focus can be made when communicating to visitors and when implementing changes. Environmental behaviours can also be targeted based on what is currently least engaged in, and respondents' reasons for why.

This study is situational to Whistler, but the methodology can be applied to other areas. Few studies exist on what influences environmental behaviour at 'naturistic' destinations, and this is Whistler's first. A Canadian study, similar to DEFRA's (2008) on environmental attitudes and behaviours has also not previously existed. The current research provides a new and integrated approach to learning what affects visitors' behaviour at Whistler and is a stepping stone for future research. Results bring into focus what needs to be done and how best to do it.

5.4 Future Research

Future research can build upon this study by using other study methods such as forced-choice experiments, participatory methods or field research (observing environmental behaviour with various manipulations). Environmental behaviours and perspectives at Whistler can also be monitored for changes, alongside annual city-wide water/energy/waste/etc. usage results. It might also be interesting to have multilingual surveys available to obtain data from tourists who are not fluent in English thereby understanding more about culturally based differences on what affects environmental behaviour. A larger sample size can be studied. Furthermore, a similar survey methodology could be used to study what affects the environmental behaviour of tourists in other natural areas, which could add reliability to this research.

This research reviewed the impacts environmentally sustainable behaviours would have on the environment in Section 2.2.3, but did not analyze them in great depth. Since actual impacts on the environment should be guiding recommendations (in addition to perceptions and psychology), it is suggested that future research place a larger focus on this area. In some cases, recommendations are provided based on visitor suggestions and perceptions of what impacts the environment. Further analysis is needed to more accurately determine which environmental behaviours and products should be recommended and promoted. For example, when deciding whether it is environmentally beneficial for coffee shops to provide real mugs instead of paper cups (as per visitor recommendations), the following questions should be addressed:

> *"How much energy is used in the production of mugs versus paper cups?"*
> *"How many paper cups need to be replaced by one mug, before the mug is the more energy efficient option?"*
> *"How much waste do they each generate in their production and disposal?"*
> *"How long does it take for each to decompose (if not recycled)?"*
> *"How much water and detergent is used to clean the mugs, and what is a sustainable amount of water that can be used for this purpose at Whistler, given its surrounding geography?"*

Similar questions can be asked and researched before recommending that Whistler promote cloth bags over plastic bags, and so forth.

5.5 Encouraging Environmentally Sustainable Behaviour-Recommendations for Whistler to Consider

5.5.1 Introduction

While many ways for Whistler to become more environmentally sustainable exist at the structural, government and regulatory level, the role that visitors play can also has a large impact. This section provides recommendations on how Whistler can better engage visitors in environmental sustainability, based on results and literature. It provides recommendations on how to encourage environmental behaviour through convenience, cost, regulation, the actions of Whistler and local businesses, norms and communication. It also outlines where Whistler is currently successful. (Recommendations with a * next to them indicate they are partially based on visitor perceptions of what impacts the

environment. As mentioned in Section 5.4, further research on the impact suggested changes would have on the environment, is needed before implementation.)

5.5.2 Convenience and Infrastructure

Based on survey results, increasing the convenience of environmental behaviours would be a powerful way to encourage visitors to behave accordingly. Convenience was rated as one of the top behaviour influences. Borgstede and Biel (2002) found that people more often engaged in environmental behaviours that were simpler to carry out. In Picherta and Katsikopoulos's (2008) study, people were more likely to follow the structure or system already in place, regardless of whether it was environmentally responsible or not, because change was perceived to involve more effort. This finding can be applied to Whistler.

A large focus should be placed on making environmental behaviours as convenient as possible. Attitude changing and value-based techniques will not appeal to all Whistler visitors, but making the environmental behaviour the easiest will. This is especially applicable to mindless activities such as such as turning off lights or using a compost bin. One goal can be to make the environmental behaviour so easy that visitors may not even realize they are taking part. In DEFRA's (2008) study, one of three interviewees stated "time" was a green behaviour barrier. Though not a large environmental behaviour influence compared to other influences in the current study, time still discouraged 28%-40% of respondents from behaving environmentally. By making facilities and infrastructure more readily available for positive behaviours, the "time" barrier can be reduced. Below are some recommendations regarding convenience:

-While in DEFRA's (2007) study paper recycling was one of the most common environmental behaviours engaged in, only 52% of respondents in the current study reported always recycling all recyclables. In DEFRA's (2008) study, barriers to recycling included lack of ease in getting to facilities and having nowhere to store recyclables. These could be barriers in Whistler as well. The availability of paper recycling bins, as well as their more convenient placement in the village, would help to increase paper recycling. Three respondents mentioned they were difficult to find.

-Where applicable, compost facilities should be readily accessible, easy to use and hygienic.

-* Reusable containers (Tupperware) should be more readably available for food to go, perhaps with the Whistler logo on them (or restaurant or hotel logo as a promotion).

-For longer-term visitors staying in areas without recycling pick-up, a walkable drop off location, or a shuttle bus (and awareness of it) should be available for easy access to facilities.

-Safer pedestrian and bike paths or shuttle buses should be available to areas outside the village such as to the Olympic Nordic Center.

-Hotel rooms could have a main switch by the door that turns off all lights.

-An apparent and adjustable thermostat could be at hotel room entrances, with perhaps a small reminder note to turn it down when leaving. Turning down the heat when leaving one's hotel room was the least regular hotel related environmental behaviour tested.

One of Whistler's current strengths regarding convenience is the segregated trash, recycling and composting areas on mountain restaurants (four respondents mentioned this). The pedestrian village and pleasant trail between Whistler and Blackcomb, also makes walking, rather than driving, the appealing option. Respondents on average strongly agreed that maintaining a healthy environment is achievable (1i) but that doing so would take a lot of effort (1f). However, they much less strongly agreed that they themselves had enough control to make a difference (1d). Whistler working together with its visitors can make a large difference by building appropriate infrastructure, and supplying the products and facilities to enable easy and convenient opportunities for environmentally sustainable behaviour. By making environmental sustainability an easy option many more visitors can play a role in Whistler's effort.

5.5.3 Cost and Regulation

Cost greatly influences environmentally sustainable behaviour. It was the strongest discourager tested and people were more willing to make quality sacrifices over monetary sacrifices for environmental responsibility at hotels. Whistler can therefore encourage environmental behaviour by increasing price based incentives and disincentives such as rebates for responsible purchases and usage. While it is clear that

incentives can be integrated with other drivers, disincentives can be a two edged sword. A balance needs to be struck so that over regulation and excess cost do not drive away visitors to Whistler. Consistent with literature increasing the price by 10% would be acceptable to most people, given a perceived good reason for it (Cotte & Trudel, 2009). Awareness/information, though not a direct influence on behaviour, is an interacting factor. When explanatory information or awareness of options is combined with the influence of cost, the influence on environmental behaviour can be greater. Results also showed that visible regulations at Whistler encouraged 46% of people to be environmentally responsible. Monetary and regulation related recommendations are as follows:

-Hotel rebates such as a $5 gift certificate to spend at the hotel can be used as incentive for guests who forgo daily change of linen.

-An itemized breakdown of charges for accommodation (such as water usage fee, heat and electricity fee, trash disposal fee, washing towel fee) could be an effective way of drawing guests' awareness to environmental costs. If daily measurements are feasible, incentives could be offered for low usage.

-Charging extra for an environmentally responsible hotel or product would not be acceptable without a breakdown or explanation of what these charges are going towards. As Cotte and Trudel (2009) note, people do not necessarily understand why an environmentally responsible product should have a higher cost, and appropriate explanation can minimize skepticism as to where environmental sustainability money is going.

-Regulations encouraging environmental sustainability at Whistler should be clear. For example, fines for littering and environmental desecration can be posted and enforced in order to dissuade such activities. Explanations for these regulations should be provided.

-A motivational incentive would be to publicize and award a free lift ticket or a free hotel night each month when an "environmental scout" observes a random visitor behaving in an environmentally responsible fashion.

-To more accurately research willingness to make trade-offs for environmental sustainability, Whistler could temporarily revamp one of their partner hotels and call it The Whistler Environmental Experience. The hotel could designate a section where water taps automatically switch off. The lights and heater could automatically turn off (or down) when no one is in the room. Lights can be energy efficient. There can be a maximum temperature the heat can be set to when people are in the room and windows can be well insulated. Towels and linens would not be changed as often, etc. Whistler can

then monitor what happens. They can more accurately study visitors' interest level and their willingness to pay for this type of option. They can also monitor the hotel's appeal, popularity and status derived from "The Whistler Environmental Experience."

Positive measures regarding price incentives and regulation at Whistler include grocery stores charging similar prices for organic products versus regular products. To discourage private transport and encourage carpooling, parking fees are imposed in some areas of Whistler and alternatively, reasonably priced buses and bus packages are provided for visitors. There are also areas where cars are simply not permitted. (Findings for current positive measures are based on visitor comments and personal observation).

5.5.4 Whistler's and Local Businesses' Role

Results show some visitors have expectations of locals and businesses to act environmentally sustainably if visitors are expected to act the same way. The integrity of environmental sustainability initiatives by Whistler and its businesses is important to visitors. According to one survey respondent, Whistler and its businesses need to demonstrate the steps they are taking to become more environmentally sustainable, to encourage visitors to reciprocate.

As Cotte and Trudel (2009) explain, negative, irresponsible or deceitful behaviour on the part of local businesses has a greater impact on consumers than positive behaviour. DEFRA's (2008) and the current qualitative results show some are skeptical and distrusting of the motives of government and industry, especially where money is involved. When presenting initiatives, and promoting awareness, Whistler and its businesses should avoid exaggerating or misleading people. This is not to say they cannot be optimistic and set high goals and dreams, they just must present them as such, along with action plans on how they can become a reality. Below are recommendations for Whistler and its businesses to consider:

-Businesses can explain why green purchases will make a difference to the environment, because the likelihood behaviour will make a difference is key to behaviour motivation (Results from Survey Section 5 and Cotte & Trudel, 2009).

-Whistler's information should not be contradictory or evoke perceptions of hypocrisy. It should be honest and transparent about the balance that must be met and the issues it

must overcome in order to become more environmentally sustainable. Based on the issues brought up in Section 4.8 regarding genuineness and balancing economic, social and environmental sustainability, Whistler should be aware of the image it would like to portray and the balance to strike where necessary.

-An environmental sustainability logo display can be made for restaurants, shops and hotels meeting certain environmental sustainability standards.

-Recycling within hotels should be convenient, clean and easy to access. Instructions should be provided near the bins on what can be recycled. If bins are not located within hotel rooms, a note as to their location should be provided by the garbage bin. If possible, bins can be made from reused plastic.

-Food packaging should be kept to a minimum. Retail stores should also reduce unnecessary product packaging (especially non-recyclable packaging). Visual appeal can be increased using other creative methods.

-*Coffee shops should provide mugs as opposed to paper or styrofoam cups for sit-in customers.

-*To reduce plastic bag usage, hotels could provide guests with re-usable shopping bags to use for grocery and other shopping while at Whistler. These could be a promotional product that the guest could take home.

-Beginning with discussion at town and Chamber of Commerce meetings, there could be an initiative to encourage all businesses to adopt full recycling, reusing (where possible) and composting options for their product packaging. Whistler can seek minimum environmental sustainability standards from its businesses. Less environmentally sustainable products can be taxed.

-A list of businesses engaging in environmentally sustainable practices could be posted at the Whistler Visitor Center or as an advertisement in a "What to do in Whistler" magazine.

Qualitative comments suggest Whistler's Eco-Tour does a good job promoting environmental sustainability through direct experience with nature and information. Visitors were impressed by the many restaurants offering real cutlery and compostable take-out containers. Whistler also put forward an initiative to commit all hotels to offering visitors the option of reusing their towels. (Whistler2020, 2011)

5.5.5 Norms

People follow norms in unfamiliar situations. Norms such as fairness, and reciprocity appeal to people (Croson, 2007). Whistler's actions to become environmentally sustainable must be apparent in order for visitors to reciprocate. The current research suggests environmental sustainability efforts are apparent in mountain restaurants and in some hotels but not as apparent in other areas. When this research was conducted, many were not aware that Whistler was engaged in a sustainability plan. In the quantitative results, most norms had a moderate influence on environmental behaviour at Whistler in comparison with other influences tested. Respondents were influenced by local business norms, the norms of surrounding people and personal moral norms. In DEFRA's (2008) study half of people behaved environmentally responsibly because they believed it was the right thing to do. In the current study respondents agreed that "an opportunity to do something right" was a strong motivation for their behaviour. According to Barr (2003) awareness of environmental consequences provokes a sense of responsibility, which stimulates a personal norm/moral obligation to behave accordingly. Below are some environmental sustainability recommendations relating to norms at Whistler.

-To create a norm, Whistler can insure the village is litter-free. In Cone and Parham's study (Gifford, 1987), subjects were more likely to litter in an area filled with litter, and less likely to littler in an area with little or no litter.

-Based on qualitative comments, and quantitative results, visitors were influenced by how Whistler- its locals and businesses- behave. They would be encouraged to behave responsibly by seeing Whistler doing the same. Therefore information on Whistler's efforts and actions should be available, perhaps right before visitors themselves have the opportunity to act environmentally. It can first describe what Whistler has done and this can be followed by an explanation that Whistler cannot do it all on its own and "here is how visitors can help".

-According to Stern (1999) and Goldstein, Cialdini and Griskevicius, (2008), people's environmental behaviour will increase if it is modeled by others they can relate to or others perceived to be similar to themselves. Communication strategies can take this into account.

5.5.6 Communication Approaches

Providing the facilities and means for visitors to become environmentally responsible is only useful if visitors are aware these means exist. Quantitative results did not allow for guidance on which types of communication would be most effective at influencing behaviour. Whistler visitors also ranked communication as having the least influence on environmental behaviour. Nevertheless, in DEFRA's (2008) study, despite the lack of a reported communication influence on environmental behaviour, respondents were often not aware of the environmental impact of their behaviour or best ways of reducing the impact. A gap in awareness combined with a lack of response to information presents a challenge. Information alone does not sufficiently influence behaviour, but it is an interacting factor and it is needed on some level. To combat the low impact of communication strategies on environmental behaviour, information needs to be combined with more effective behaviour influences (Stern, 1999). To address this issue and based on other findings, here are some communication strategy recommendations:

-To reinforce belief that visitors have control to make an environmental difference and to make environmental concerns less abstract, target environmental issues should be framed in a way that they can be changed. Behavioural goals can be explained. Belief in the likelihood that one's behaviour would make a difference was the highest ranked influence in Survey Section 5. In addition, more literature and materials that link the environment to individual actions should be made available. Concern for the environment alone is not always enough to change behaviour. While it ranked as a strong behaviour influence, various correlations showed it did not directly relate to reported environmental behaviour of visitors at Whistler.

-Communication techniques should appeal to a sense of responsibility, given that respondents most highly perceived that they were responsible for the health of the environment. They should also appeal to the "doing what is right" value and environmental values as these were strong influences.

-While relevant information can be made available, it should be limited. People can become immune to or stressed by too much information while on holiday. Information on environmental sustainability initiatives by Whistler and its businesses could be made available in places where visitors will have time to read them if they so choose, such as in a hotel-room binder, on the back of a restaurant menu, on buses to Whistler and in the Whistler gondola. "How-to" information should be conveniently available where it is applicable. For example, an explanation of what is recyclable at Whistler should be indicated on recycling bins.

-Awareness information should be available where visitor environmental behaviour opportunities exist. For example, information on great bus deals to Whistler could be made available in car parking lots, or on/near the shuttle bus that goes from car lots to the lifts.

-If visitors do not want to be "bothered" with information, they have that choice. The social atmosphere and surroundings of Whistler itself should promote the type of place Whistler would like to be seen as.

-Communication suggesting environmental behaviours visitors can take part in should be positive, not overbearing or forceful and not provoke any sense of inadequacy. Survey respondents were least influenced by social pressure. Social pressure alters behaviour for the wrong reasons and can have other repercussions (De Young, 1993; Gamba & Oskamp, 1994).

-Visitors generally already perceive themselves as being knowledgeable about environmental sustainability. They will tune out if communication is made at a level that is too simplified for them and if it is repetitive to what they already know or believe to know.

-The term "sustainability" is at risk of becoming an overused term. Where possible, Whistler should provide explanations without using the term sustainability. Explanations increase transparency and are more likely to be perceived as genuine. Respondents overall slightly agreed the word 'sustainability' was overused to the extent that it lost meaning (1n).

-As values have a strong influence on behaviour, communication should appeal to what visitors value and can relate to. For example, respondents value and enjoy the beauty of Whistler and as one respondent explained- the only way people can continue to enjoy one of the most beautiful places on earth (Whistler) is by taking care of it. Note however, according to literature and research results, value appeal may provoke thought, agreement and possibly attitude change, but alone, will not change behaviour. In addition to this, "how-to" messages, or applicable messages that relate specific behaviour to larger environmental issues should be presented where the appropriate behaviour takes place. An example of such a message could be "if everyone at Whistler used napkins made from recycled paper for one day 80* trees would be saved," (*This figure is hypothetical and used for example purposes).

-The Whistler Visitor Center, or the Whistler Center for Sustainability could provide a short 5-10 minute movie that people can watch. Those who watch can get free cookies and coffee or a 5 dollar coupon. The movie could show what Whistler has done and what others can do to help preserve beauty and environmental sustainability at Whistler.

-Stern (1999) explains that the impact is enhanced if information is presented when the environmental behaviour will take place or from a trusted source and if it reminds people

"that there are norms supporting the desired behaviour," (p.467). Though at most he adds, these strategies will increase the behaviour by 10%.

-McDonald and Oates suggest marketing environmental behaviours in a way that would overcome discouraging perceptions. For example, in their study, not driving and reducing packaging were perceived as making a difference to the environment, but also as measures involving a lot of effort. Advertisements can therefore focus on reversing these discouraging perceptions at Whistler by showing that these behaviour do not involve much effort (and that visitors do have control to make a difference).

-Laroche and colleagues (2001) suggest that people should not be told how to behave, but instead be informed of reasons for the behaviour and how it would make a difference to the environment. They recommend providing feedback on how people are doing and the difference they are making. For example: "Thanks to your help, together we reduced water usage by ** percent in the last year, preventing *** damage to **** habitat".

-According to Grob (1995) and consistent with the current results, specific knowledge is the best knowledge predictor of specific action, while general knowledge does not correlate well with specific actions. Therefore to increase effectiveness, information should be specifically related to the specific environmental behaviour desired.

-Visitors would be more likely to behave environmentally sustainably if they make a public commitment to do so, preferably in writing, and if goal setting is involved (Stern, 2000; Werner, et al., 1995). Whistler can seek visitors' commitment to engage in certain behaviours and have people sign a giant wall if they agree they will do so (while keeping track of the number of signatures on the wall for later advertisement). In addition, according to the foot-in-the-door theory (Burger, 1999; McKenzie-Mohr, n.d.), to remain consistent, visitors would be more likely to engage in a more difficult environmental behaviour if they first engage in a related simpler behaviour. Therefore, if Whistler or its businesses can convince visitors to engage in a simple environmental behaviour, they are a step closer to making progress towards more difficult behaviours.

-Awareness of meal options can be increased by labeling on menus what can be made vegan or vegetarian and their new price. What is locally produced, organic or sustainably produced is often already mentioned.

-In the current study, respondents prioritized human well-being slightly more than environmental well-being. Given this, environmental sustainability can be framed as something that enhances human well-being, health and enjoyment. According to DEFRA (2008), this approach applies well to choices involving food, transport, leisure and tourism. Positive, feel-good associations can be made from behaving environmentally sustainably. DEFRA (2008) also explains that people respond better to consuming food with lower environmental and health impacts if consequences are framed as health issues, not environmental issues.

- If further research is needed regarding effective communication strategies at Whistler, an observation study can be conducted. Each week, in one area of Whistler, the same target environmental behaviour can be advertised using a different method. Methods could include a large sign, a detailed informational sign, a "doom and gloom" sign, a positive sign, a "purpose of the behaviour" sign, etc. Afterwards, for each method, the amount of people who behaved accordingly could be measured and those who engaged in the target environmental behaviour can be asked why they did so.

5.5.7 Conclusion Regarding Recommendations

To encourage environmentally sustainable behaviour, Whistler should continue to lead by example by demonstrating that it is doing its part for environmental sustainability and by facilitating ways for visitors to contribute. Stern (1999, p. 475) and DEFRA (2008, p. 21) explain, the best behaviour interventions combine multiple strategies: "information, incentives, social influences, capacity building, institutional supports and infrastructure provision." In particular, interventions should explain how the given environmentally sustainable behaviour makes a difference to the environment, the behaviour should be convenient and should appeal to values.

5.6 Conclusion

To summarize, this research investigated:

a) What environmental behaviours visitors report regularly engaging in at Whistler, what is not habitual for them and why.
b) How visitors perceive environmental sustainability, the environment and their relationship to it.
c) What variables most strongly motivate or discourage visitor environmental behaviour at Whistler (from their own perspective).

Correlations examined the effect of perceptions on behaviour and what influences behaviour. Demographic influences were studied and comments from visitors relating to Whistler and environmental sustainability were addressed. Based on survey results and an interdisciplinary literature analysis, recommendations on how to engage visitors in environmental sustainability at Whistler were provided. For a review of the literature topics examined, refer to Section 2.5.

Visitors considered it their responsibility to maintain a healthy environment. Consistent with literature in Section 2, convenience, environmental values and belief that their behaviour would make a difference, most encouraged their environmental behaviour. Echoing previous literature findings (Section 2), cost and witnessing businesses at Whistler not behaving environmentally sustainably most discouraged visitors from engaging in environmental behaviour. Information and social pressure least influenced visitors. Visitors strongly agreed it was easy to get around Whistler by walking, cycling or taking public transportation. Women engaged in environmental behaviours more often than men. The least common environmental behaviours engaged in at Whistler were composting and making an effort to consume vegetarian food. This too is consistent with literature (Section 2). Balancing the components of sustainability was a concern.

The purpose of this research was to gain insight from visitors on what affects their environmental behaviour at Whistler. This in turn can be used to implement appropriate initiatives to better engage visitors in environmental sustainability and ultimately play a role in making the planet more sustainable. The Natural Step emphasizes that as population size, inequality, poverty and social demands increase, and environmental resources decrease, our maneuvering ability to become sustainable will lessen (Cook, 2004, The Funnel Metaphor). By taking action now, and increasing the contribution from individuals and communities such as Whistler, there is a greater probability essential resources such as water, air quality and biodiversity can be sustained.

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Appendices

Appendix A
Environmental Sustainability Indicators and References

For further reference, sources of global, national, city-wide and 'naturistic" tourist destination measurement indicators of environmental sustainability are listed in Appendix A, Part 1. Sources are from government, academics, international organizations, practitioners and combinations of the above. Common environmental sustainability impact areas and examples of indicators in each area are presented in Appendix A, Part 2, along with more references.

Appendix A, Part 1
References to General Environmental Sustainability Indicators

From Alberti (1996, p. 381):
<u>Community Sustainability Indicators</u>: Alberti & Bettini (1996); Beatley (1995); MacLaren (1996).
<u>International Organizations of Sustainability Indicators</u>: "United Nations Centre for Human Settlements (UNCHS), the UN Commission on Sustainable Development, the Organization for Economic Cooperation and Development (OECD), the European Environment Agency (EEA), and the World Health Organization (WHO)".
* Much elaboration and examination of specific indicators are included within Alberti (1996).

From O'Toole, et al. (2006, p.26):
<u>Examples of studies developing and using of sustainability indicators</u>:
"Bell & Morse, 2003; Bossel, 2001; Gustavson, Lonergan *&* Ruitenbeek, 1999; Schultink, 2000; Walker & Reuter, 1996".
<u>Examples including assessment of "the interactions between the three domains of sustainability"</u>: Gustavson *et.al.* (1999); Phillis & Andriantiatsaholiniaina (2001).

From Rebollo & Baidal (2003, p.186):
<u>Sustainability Indicators from International, National and Non-governmental Organizations</u>: "The Organization for Economic Cooperation and Development (OECD), the United Nations Organization (Environment and Development Programs and the Commission for Sustainable Development), the European Union's General Directorate XI, the European Environmental Agency, The International Council for Local Environmental Initiatives, The World Watch Institute, The International Institute of Sustainable Development (Canada), The World Tourism Organization, The World Wide Fund."

From The University of Reading ECIFM (2008):
<u>Organizations Involved with Sustainability Indicators</u>:
Commission for Sustainable Development http://www.sd-commission.org.uk/

Dow Jones Sustainability Indices http://www.sustainability-index.com/
Food and Agriculture Organization http://www.fao.org/
Food Standards Agency http://www.foodstandards.gov.uk/
FTSE 4 GOOD http://www.ftse4good.com/Indices/index.jsp
International Institute for Environment and Development http://www.iied.org/
International Institute for Sustainable Development http://www.iisd.org/default.asp
Organization for Economic Co-operation and Development http://www.oecd.org/

Environmental sustainability assessment criteria:
Pope, Annandale & Morrison-Saunders, 2004
Ecological footprint:
Global Footprint Network, 2010
Characteristics of Effective Indicators
Fricker, 2001
Sustainability Indicators 101, n.d.

Appendix A, Part 2
Environmental Sustainability Indicator Table and References

The following table provides examples of environmental sustainability criteria and
measurement indicators by category and provides references for further information.
References measure: environmental sustainability in natural-area tourist destinations
(including Whistler), the eco-efficiency of the destination, the sustainability of eco-
tourism activities, sustainability impact assessments and people's perceptions. There is no
shortage of possible indicators or references that could have been used. The ones
included in this table were chosen based on relevance to Whistler2020's goals and
criteria. The tables includes indicators relating to environmental sustainability from the
fields of: ecology, technology, architecture, biology, chemistry and so forth.

Environmental Sustainability Indicator Table and References

Sustainability Impact Areas	Examples of Criteria and Measurable Indicators towards Progress
Water	-Healthy streams/rivers that support abundant wildlife -Responsible sourcing, treatment, distribution, usage rate, and disposal of water -Responsible watershed management and intensity of wastewater treatment -Effective flood control and management practices
References	**Water:** Alberti (1996), Barr (2003), Cottrell, et al. (2006), DEFRA* (2007), DEFRA* (2008), De Vries (2007), Dolnicar & Leisch (2008), Global Footprint Network (2010), National Round Table on the Environment and the Economy (NRTEE, 2008), O'Toole, et al. (2006), Rebollo & Baidal (2003), Rossing (2006), Sustainable Planning Research Group (2005), The Presidio Trust (n.d.), The University of Reading ECIFM (2008), Whistler2020 (2010).
Energy	-Amount of local/regionally sourced energy and renewable energy sources -Amount of waste, toxins and green house gases emitted -Physical impact on land and water ecosystems -Efficiency in energy generation, design, distribution and usage -Yearly energy usage rate for travel and stationary uses -Resident, business and visitor understandings of energy issues

Sustainability Impact Areas	Examples of Criteria and Measurable Indicators towards Progress
References	**Energy (including heat, light and renewable energy):** Alberti (1996), Barr (2003), NRTEE (2008), Cottrell, et al. (2006), DEFRA (2007), DEFRA (2008), De Vries (2007), Dolnicar & Leisch (2008), Englund (2005), Global Footprint Network (2010), Kelly, et al. (2008), Rebollo & Baidal (2003), Sustainable Planning Research Group (2005), The Presidio Trust (n.d.), The University of Reading ECIFM (2008), Whistler2020 (2010).
Transportation	-Amount of green house gas emissions and air pollution released, and energy usage -Amount of renewable energy sources, of pedestrian, bicycle and other non-motorized travel and of carpooling and low polluting vehicles. -Usage of public transportation system -Attention and avoidance of roads going through critical natural areas -Convenience, affordability, safety (Social and economic sustainability components)
References	**Transport: Travel patterns (including flights):** Alberti (1996), DEFRA (2007), DEFRA (2008), The Presidio Trust (n.d.).
References	**Emissions/Pollution (from energy, transport and to environment, water, air):** Alberti (1996), Cottrell, et al. (2006), Global Footprint Network (2010), NRTEE (2008), Sustainable Planning Research Group (2005).
Materials and Solid Waste	-Amount of recycled, natural, abundantly available, locally sourced or sustainably harvested materials used in material production -Durability and quality of materials, including whether they are harmful (toxic) to people or the environment -Production efficiency (ie equal quality goods with less materials used in their production and re-use of excess production materials) -Sustainable purchase patterns and replacement rate of purchases -Consumer reduction, re-use and recycling rates and their awareness -Amount of yearly waste generated throughout material cycles, relevant green house gases emitted, land-filled waste and materials sent for recycling -Partnerships with likeminded, waste-reducing businesses
References	**Materials: Purchase of Merchandise/ Consumption (Including durable, efficient):** Alberti (1996), DEFRA (2007), DEFRA (2008), Dolnicar & Leisch (2008), Global Footprint Network (2010), Stern (1999), Whistler2020 (2010).
References	**Materials: Over-packaging, Cloth bags:** DEFRA (2007), DEFRA (2008), Dolnicar & Leisch (2008).
References	**Materials: Reusing:** DEFRA (2008), Dolnicar & Leisch (2008), The Presidio Trust (n.d.).
References	**Materials: Recycling:** Alberti (1996), DEFRA (2007), DEFRA (2008), Dolnicar & Leisch (2008), Englund (2005), Sustainable Planning Research Group (2005), The Presidio Trust (n.d.), The University of Reading ECIFM (2008), Whistler2020 (2010).
References	**Solid Waste:** Alberti (1996), Barr, 2003, DEFRA (2007), DEFRA (2008), De Vries (2007), O'Toole, et al. (2006), Englund (2005), Global Footprint Network (2010), Kelly, et al. (2008), Rebollo & Baidal (2003), Sustainable Planning Research Group (2005), The University of Reading ECIFM (2008), Whistler2020 (2010).
Food	-Amount of organic, ethically produced and locally produced food and maintenance of biodiversity on land -Contamination of water, from fertilizers, manure -Amount of energy, water and land used in food production -Efficiency (energy-wise, labour-wise and waste wise) in food production -Amount of food packaging, persistent compounds used in production and food waste throughout the system and emissions released in food transportation and disposal -Awareness of food options (labeling) and food disposal options -Healthiness and cost (Indicators for other components of sustainable food)

Sustainability Impact Areas	Examples of Criteria and Measurable Indicators towards Progress
References	**Food (source, including local food, organic, lower impact diet, animal welfare):** Alberti (1996), DEFRA (2007), DEFRA (2008), Eshel & Martin (2006), Global Footprint Network (2010), Naylor, et al. (2005), Pimental & Pimental (2003), Pimental, et al. (2008), Sustainable Planning Research Group (2005), Whistler2020 (2010).
References	**Food (use, waste and composting):** DEFRA (2007), DEFRA (2008), Dolnicar & Leisch (2008), Englund (2005), Pimental, et al. (2008), The Presidio Trust (n.d.), Whistler2020 (2010).
Natural Areas	-Amount of indigenous biodiversity present, reduction or gain in wildlife habitats, local ecosystem integrity -Area of buffer zones between sensitive ecosystems and urban areas, -Effective corridor of protected areas (in partnership with other regions for wildlife to be able to migrate) -Human pressure on critical natural areas- amount of harvesting, roads and buildings and human recreation nearby (ie measuring trampling of vegetation) - Level of resident and visitor education and involvement in ecosystem protection and restoration efforts -Amount of invasive species, water, land, air and noise pollution -Soil, air, marine and freshwater quality, forest cover and amount of acid deposition and ozone depletion
References	**Protected areas/Green Space**: Alberti (1996), DEFRA (2007), Englund (2005), Kelly, et al. (2008), Needham & Rollins (2003), NRTEE (2008), Rossing (2006), Sustainable Planning Research Group (2005), The University of Reading ECIFM (2008), Whistler2020 (2010).
References	**Litter/Pollution:** Needham & Rollins (2003), Rossing (2006).
Built Environment	-Urban villages' access to green areas, amenities, transit and trails -Durability and energy efficiency of buildings, their flexibility for long-term use -Amount of native plant species in landscaped areas (this reduces a need for chemicals and watering) -Percentage and rate of forest or agricultural land lost to urbanization per year and its environmental impacts -Convenience of recycling bins, re-use donation bins, compost bins, etc. -In accommodations, convenience of light switches, adjustable shower heads, insulation of walls, etc. -Amount of environmentally responsible material and energy sources used in building construction -Amount of material waste during building construction and gh gases emitted -Existence of policies, regulations, economic incentives and available options to encourage future green building development
References	**Infrastructure/developed areas/land-use/built environment**: Alberti (1996), De Vries (2007), O'Toole, et al. (2006), Rebollo & Baidal (2003), Sustainable construction (2010), The Presidio Trust (n.d.), The University of Reading ECIFM (2008), Whistler2020 (2010).
Environmental initiatives of people & businesses	DEFRA (2007), Dolnicar & Leisch (2008), Kelly, et al. (2008).

*DEFRA stands for Department for Environment, Food and Rural Affairs

Appendix B –Survey, Including Consent* and Closing Note

Survey Consent Form

Environmental Protection and Sustainability at
Whistler from a Visitor's Perspective

Institute for Resources, Environment
& Sustainability
4th Floor, 2202 Main Mall

Vancouver, BC Canada V6T 1Z3

Tel: (604) 822-0067
Fax: (604) 822-9250

Website: www.ires.ubc.ca

      The purpose of this survey is to understand
visitor perspectives of sustainability and environmental
protection in general and at Whistler. It is also to
discover what actions on the part of Whistler encourage environmental action by visitors. The survey should take approximately 10 minutes to fill out. It is voluntary and you are free to withdraw at any time. Your views will be helpful for academic research and for Whistler's future planning.

      To fill out this survey you must be 19 years of age or over and have visited Whistler in 2009. Residents of Whistler are not eligible to participate. All information you provide will be kept anonymous and nothing personally identifying will be asked.

      This survey is part of Lindsay Nathaniel's thesis research project for her Environmental Studies Master's program at UBC. If you have any questions, or are interested in learning the general findings of the research, please contact her at [████████████████████]. Her supervisory committee consists of Dr. Ralph Matthews (Primary Investigator, ████████████████████) and Dr. Penny Gurstein.

      This research may benefit you by allowing your views to be included in Whistler's planning. In addition, after filling out the survey, you will be offered a page with resources should you wish to learn more about the topic.

      Your participation is greatly appreciated. If you agree to the above, please begin the survey.

*Please note the principal investigator of this research is Professor Tony Dorcey, however, during the data collection stage of this research Dr. Ralph Matthews had that role.

Survey
Please answer the following questions as accurately as you can.

1. Please indicate the degree to which you agree or disagree with the following statements.

1= Strongly agree, 2= Somewhat agree, 3= Unsure, 4= Somewhat disagree, 5= Disagree

Agree ➔ Disagree

a) I am familiar with the term sustainability.   1 2 3 4 5

b) Maintaining a healthy environment is a government responsibility.   1 2 3 4 5

c) Maintaining a healthy environment is my responsibility.   1 2 3 4 5

d) I have enough control to make a difference in the health of the environment.   1 2 3 4 5

e) My hometown would accept taking drastic actions to maintain
   a healthy environment relative to everything else.   1 2 3 4 5

f) It will take a lot of effort to properly protect the environment.   1 2 3 4 5

g) I give priority to the economy over the environment.   1 2 3 4 5

h) The wellbeing of people is more important than environmental wellbeing.   1 2 3 4 5

i) Maintaining a healthy environment is achievable.   1 2 3 4 5

j) I want to learn more on how to effectively maintain a healthy environment.   1 2 3 4 5

k) I do what I can to avoid harming the environment.   1 2 3 4 5

l) I have been actively involved in efforts to protect the planet.   1 2 3 4 5

m) A healthy economy, society and environment are all interdependent
   on one another.   1 2 3 4 5

n) The word "sustainability" is overused to the extent that it loses meaning.   1 2 3 4 5

2. Please indicate the degree to which you agree or disagree with the following statements.

1= Strongly agree, 2= Somewhat agree, 3= Unsure, 4= Somewhat disagree, 5= Disagree

Agree ➔ Disagree

a) Humans have the right to modify the natural environment to suit their needs.   1 2 3 4 5

b) Human ingenuity will insure that we do NOT make the earth unlivable.   1 2 3 4 5

c) Plants and animals have as much right as humans to exist.   1 2 3 4 5

d) The balance of nature is strong enough to cope with the
   impacts of modern industrial nations.   1 2 3 4 5

e) Despite our special abilities humans are still subject to the laws of nature. 1 2 3 4 5

f) If things continue on their present course, we
   will soon experience a major ecological catastrophe.   1 2 3 4 5

g) The so-called "ecological crisis" facing humankind has been greatly exaggerated. 1 2 3 4 5

3. Please indicate the degree to which you have taken part in the following on your trip to Whistler.

1= Never, 2= Less often than not, 3= More often than not, 4= Always,   NA= Not applicable

Never ➔ Always

At Whistler,

a) I composted leftover food that no one wanted to eat.	1	2	3	4	NA
b) I turned off the lights off when leaving my room.	1	2	3	4	NA
c) I left water running when I wasn't using it at that exact moment.	1	2	3	4	NA
d) I turned down the heater when I wasn't in the hotel room.	1	2	3	4	NA
e) I reused my towel.	1	2	3	4	NA
f) I recycled, reused or returned all recyclables.	1	2	3	4	NA
g) I made an effort to eat vegetarian food.	1	2	3	4	NA

4. Are there other pro-environmental behaviours which you have engaged in at Whistler? If so, please specify.

_____
_____
_____

5. Did the following influence whether you behaved environmentally responsibly while at Whistler?

1= Yes, it **ENCOURAGED** my pro-environmental behaviour
2= Yes, it **DISCOURAGED** my pro-environmental behaviour
3= It had **NO** influence

	E	D	N
a) The attitudes of the people with whom I traveled here	1	2	3
b) The attitudes of people in the area I come from	1	2	3
c) The behaviour of others at Whistler	1	2	3
d) Apparent regulations at Whistler	1	2	3
e) My attitude while on vacation, compared to at home	1	2	3
f) The likelihood that my personal behaviour would make a difference	1	2	3

6. Please indicate the degree to which you agree or disagree with the following statements.

1= Strongly agree, 2= Somewhat agree, 3= Somewhat disagree, 4= Disagree

Agree ➔ Disagree

I would be DISCOURAGED from behaving environmentally responsibly at Whistler if:

a) Local businesses were not acting pro-environmentally.   1 2 3 4

b) No one else was being environmentally responsible at Whistler.   1 2 3 4

c) I were frowned upon for going out of
  my way to be environmentally responsible.   1 2 3 4

d) The behaviour involved a little more effort.   1 2 3 4

e) The behaviour involved a moderate amount of extra effort.   1 2 3 4

f) The behaviour took 2 extra minutes of my time.   1 2 3 4

g) The behaviour took up 15 minutes of my time at Whistler.   1 2 3 4

h) It cost me slightly more $ than the alternative option (5% more).   1 2 3 4

i) It cost me a moderate amount more $ than the alternative option (20% more).   1 2 3 4

7. Please indicate the degree to which you agree or disagree with the following statements.

1= Strongly agree, 2= Somewhat agree, 3= Somewhat disagree, 4= Disagree

Agree ➔ Disagree

The following would ENCOURAGE me to behave environmentally responsibly at Whistler:

a) Other people I'm surrounded with at Whistler being visibly pro-environmental   1 2 3 4

b) Demonstrations on how to be pro-environmental at Whistler   1 2 3 4

c) Large pro-environmental behaviour reminder signs   1 2 3 4

d) Detailed informative pro-environmental behaviour signs   1 2 3 4

e) A convenient way to turn off all light switches   1 2 3 4

f) Conveniently located recycling bins   1 2 3 4

g) More information on Whistler's sustainability initiatives   1 2 3 4

h) Knowing people around the world were becoming more
  environmentally responsible   1 2 3 4

i) Being looked down upon if I weren't environmentally responsible   1 2 3 4

8. Please indicate the degree to which you agree or disagree with the following statements.

1= Strongly agree, 2= Somewhat agree, 3= Somewhat disagree, 4= Disagree

Agree ➔ Disagree

The following ENCOURAGED me to behave environmentally responsibly at Whistler:

a) An opportunity to do something right   1 2 3 4

b) Being surrounded by stunning views at Whistler   1 2 3 4

c) A concern for the well-being of people   1 2 3 4

d) A concern for the well-being of animals and the environment   1 2 3 4

9. Please indicate the degree to which you agree or disagree with the following statements.

1= Strongly agree, 2= Somewhat agree, 3= Somewhat disagree, 4= Disagree

Agree ➔ Disagree

a) My experience in Whistler (besides participating in this survey)
has encouraged me to become more environmentally responsible.   1 2 3 4

b) My choice to visit Whistler was influenced by
Whistler's sustainability initiatives.   1 2 3 4

c) Concern for the environment impacted my
travel method of getting to Whistler.   1 2 3 4

d) Concern for the environment impacted the length of
my stay in Whistler.   1 2 3 4

e) Too much over packaged food is sold at Whistler.   1 2 3 4

f) It is easy to get around Whistler by walking or using public transportation.   1 2 3 4

g) The merchandise sold at Whistler is generally not harmful
to people or the environment.   1 2 3 4

h) Efforts from businesses to become environmentally responsible
at Whistler are genuine.   1 2 3 4

i) On my next holiday, I would stay in a more environmentally
responsible hotel even if it were $25 more expensive, and all
other factors were equal.   1 2 3 4

j) On my next holiday, I would stay in a more environmentally
responsible hotel even if it were $50 more expensive, and all
other factors were equal.   1 2 3 4

k) On my next holiday, I would stay in a more environmentally
responsible hotel even if slightly fewer services were offered
but the price and all other factors were equal.   1 2 3 4

10. If applicable and not included above please list the greatest encouragement and discouragement to you behaving environmentally responsibly at Whistler.

a) Encouragement: _____

b) Discouragement: _____

11. a) Are you   ⭘Male or ⭘Female?

b) What is your age range?

⭘19-24   ⭘25-34   ⭘35-44   ⭘45-54   ⭘55-64   ⭘65+

c) Where is your most recent place of residence? (defined as living there for 24 months or more).

⭘ Canada (Which province? _____ If in BC, what city? _____)

⭘ Internationally (Which country? _____ If in the US, which state? _____)

d) What is your highest level of formal education? _____

e) What is your annual household income?

⭘Under $25,000   ⭘$25,000- $49,999   ⭘$50,000-$99,999

⭘$100,000-$149,999   ⭘$150,000 +

f) What are the main reasons for your stay at Whistler? Number your top 3 choices if more than 1 applies. It's:

⭘For Winter sports   ⭘To spend time with friends
⭘For fresh air   ⭘For the nightclubs/live music/Whistler
⭘For an arts/cultural festival   village life
⭘I'm on business   ⭘For relaxation
⭘To enjoy nature's beauty   ⭘For the adventure
⭘A romantic getaway   ⭘For its sustainability initiatives
⭘To spend time with the family   ⭘Other, please list _____

12. Is there anything else you would like to add about sustainability, the environment, Whistler or about this survey?

_____
_____
_____
_____

Thank you very much for your participation

Sustainability at Whistler from A Visitor Perspective
Closing Note

Dear Whistler Visitors,

Thank you very much for taking the time to participate in my survey. Your responses are extremely helpful for my research. Incase you would like to know more about sustainability (my thesis topic), I have included some resources below.

The most common definition of sustainability (when applied to human communities) is that given by the United Nations Brundtland Commission in 1987: "Meeting the needs of the present without compromising the ability of future generations to meet their own needs". This far from fully covers its meaning. Interpretations of sustainability vary depending on the context and circumstances in which it is used as well as the understandings of the people applying it.

If you would like more information about sustainability and planning at Whistler, it can be found here:

Cook, D. (2004). *The Natural Step Towards a Sustainable Society*. Green Books Ltd. Foxhole U.K.

McKenzie-Mohr, D. (2009). Fostering Sustainable Behaviour. *McKenzie-Mohr and Associates: Providing Expertise in Community-based Social Marketing*. {http://www.cbsm.com/}.

Whistler Community and Resort Municipality. (2009). Whistler 2020: Moving Toward a Sustainable Future. {http://www.whistler2020.ca}.

I would sincerely like to thank the managers of the Westin Resort and Spa, Tapley's Neighbourhood Pub and The Longhorn Grill and Saloon for their interest in sustainability and for allowing me to conduct my research in their venues. In addition, the support from the team at Whister2020 is greatly appreciated.

If you have any further questions or comments, do not hesitate to contact me.
I hope you enjoyed your trip to Whistler,

Lindsay Nathaniel
lnathani@interchange.ubc.ca
http://www.ires.ubc.ca/

ASUSTAINABLEFUTURE
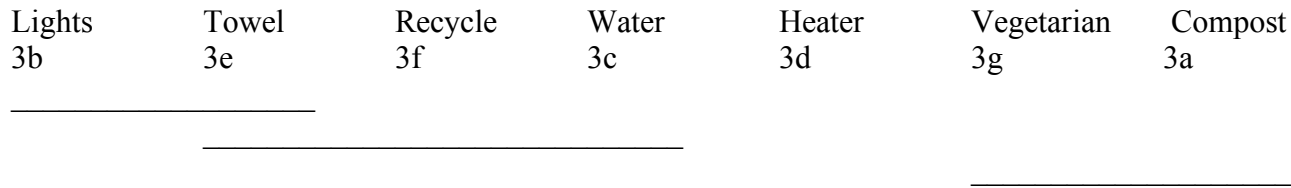
Appendix C
Tukey Diagrams

The Appendix C diagrams provide more details on significant differences between the items in Sections 3, 7 and 8.

Based on Tukey's multiple comparison tests, lines connecting the items indicate no significant differences between them, while spaces indicate a difference. All respondents were included in Tukey's multiple comparisons so long as they answered both questions in the pair-wise comparison at stake, raising the "n".

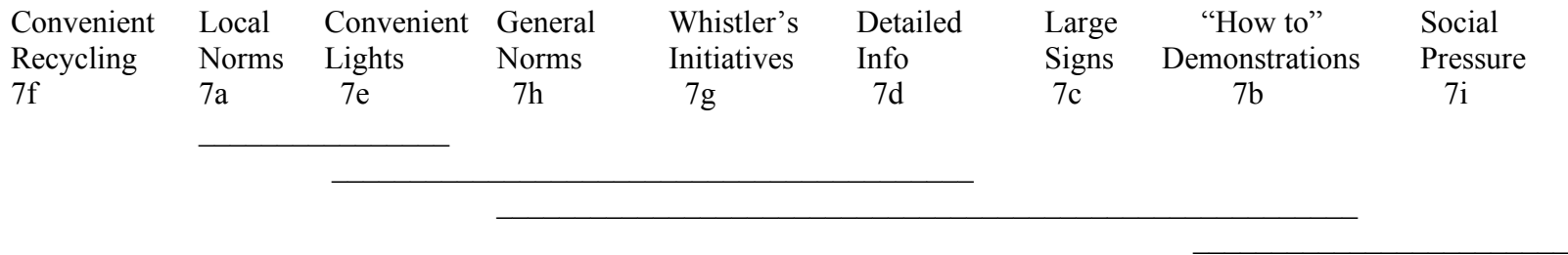A similar diagram cannot be presented for Section 6's 9 items, to illustrate significant differences between how much each item would discourage environmental behaviour at Whistler. Tukey multiple comparisons were performed using the application of this method for repeated-measures data displaying nonsphericity, and in this case significant differences between behaviour discouragers did not follow an exact order.

Tukey Diagrams

Section 3. Environmental behaviours from most engaged in to least:

Lights	Towel	Recycle	Water	Heater	Vegetarian	Compost
3b	3e	3f	3c	3d	3g	3a

_____

 _____

 _____

Section 7. Influences, from most encouraging to least, on environmental behaviour:

Convenient Recycling	Local Norms	Convenient Lights	General Norms	Whistler's Initiatives	Detailed Info	Large Signs	"How to" Demonstrations	Social Pressure
7f	7a	7e	7h	7g	7d	7c	7b	7i

 _____

 _____

 _____

 _____

Section 8. Influences, from most encouraging to least on environmental behaviour:

Valuing Environment	Doing What's Right	Scenic Location	Valuing People
8d	8a	8b	8c

_____

 _____