

Visitors' and Locals' Views of Environmental Management in Christchurch, New Zealand

John R Fairweather

Principal Research Officer

Agribusiness and Economics Research Unit, Lincoln University.

Fairweat@lincoln.ac.nz

Crystal Maslin

Research Assistant

Agribusiness and Economics Research Unit, Lincoln University.

Maslinc@lincoln.ac.nz

Simon R Swaffield

Professor of Landscape Architecture

Environment, Society and Design Division, Lincoln University.

Swaffies@lincoln.ac.nz

David G Simmons

Professor of Tourism

Environment, Society and Design Division, Lincoln University.

Dsimmons@lincoln.ac.nz

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Summary

The objective of the research presented in this report was to develop an understanding of visitors' and locals' views of environmental management in Christchurch. A total of 63 people were selected in a diverse, non-random sample with roughly equal proportions of men and women, and including 21 overseas visitors, 33 domestic visitors and 22 local people. Each subject sorted a pre selected set of structured photographs into nine piles, ranging from those that represented good environmental management to those that represented poor environmental management, to create their own Q sort. All Q sorts were factor analysed to identify three factors or views on environmental management. Subjects' attitudes, beliefs and expectations in making their selections were recorded in interviews and provide an additional basis for interpreting the three different factors.

The 'Care and Beauty' preference is for environmental management that maintains well-vegetated, clean and tidy urban settings that correspond to traditional notions of design aesthetics. Overall, the factor characterises good environmental management as that which maintains an aesthetically pleasing, cared-for, and essentially cultural urban landscape.

'Untouched Nature' emphasises the maintenance of outwardly unmodified natural settings within the city. Overall, this factor characterises good environmental management as minimising human influence of any kind, irrespective of its design quality or level of care.

'Clean and Green' emphasises the importance of ecological health and integrity as primary indicators of good environmental management. The comments emphasise the importance these respondents place upon the presence of green tall vegetation, clean water, and cared for environments.

The themes distinctive to the factors, and the themes that are common to the factors, are discussed to develop some theoretical implications. Finally, a number of implications for policy are considered, in particular the need to retain a breadth of approaches to environmental management.

Chapter 1

Introduction: Background and Research Objectives

The research presented in this report is part of a long-term programme of research on the social, economic and environmental effects of tourism in New Zealand, being undertaken in order to improve planning for tourism development. The general strategy of the overall programme was to understand the effects of tourism in both breadth and depth, in order to be able to report generally on the effects of tourism as well as upon implications for several case study locations. The first case study for this programme was Kaikoura, a relatively small town with a usually resident population in 1996 of 2,208 persons but with a significant level of tourism activity. The second case study was Rotorua, a larger town with a usually resident population in 1996 of 64,509 persons and also with a significant level of tourist activity. The third case study was located in the lower West Coast of the South Island, that is, in the Westland District Council area. This district had a total population of 8,410 persons in 1996, and the main town is Hokitika, with a population of 3,771 persons in 1996. The fourth case study, reported here, was located in Christchurch, a city of about 300,000 persons which has a significant level of tourist activity but relatively small in relation to the population.

A component of the research in the first two case studies focused on experiences of landscape, in order to develop our understanding of visitors' and locals' overall responses to the tourism setting. This focus was continued on the West Coast but, in addition, there was a greater emphasis on infrastructure, both in general and specifically for tourism. In Christchurch, the focus of attention has turned to environmental management of the urban area and the ecosystems within it. Here we have taken the environment to be a managed entity rather than something that evolves independently of human activity.

Effective environmental management is important to the long-term success of tourism as it constitutes an important dimension of destination image and the tourist experience. In Christchurch, tourists' and locals' perceptions of environmental management are particularly relevant due to the visitor marketing strategies and community ideals which both emphasise quality of environment. The environment of Christchurch - The Garden City - has been a distinctive focus for city planning and promotion for many years, and still retains great potency. More recently, a second slogan "Fresh Each Day" has been adopted as a marketing strategy, which again emphasises environmental quality. At a more generic level, New Zealand as a whole draws heavily upon a 'clean and green' ideal in its tourism marketing and self identity (Bell, 1996), and environmental management is becoming an established component of triple bottom line reporting, and of sustainability certification such as the Green Globe scheme. Christchurch City Council has recently adopted a triple bottom line approach to its overall activities.

The primary objective of the research presented in this report was therefore to develop an understanding of visitors' and locals' views of environmental management in Christchurch. Visitors were defined as any people visiting Christchurch who are normally resident elsewhere, and include both New Zealand and overseas day and overnight visitors, the latter group usually referred to as tourists. We sought to understand as fully as possible how people responded to current approaches to environmental management in Christchurch. The approach adopted used Q method with photographs as stimuli, which is well suited to developing insights into such attitudes. However, while this report describes respondents views of environmental management in depth, it does not attempt to describe or account for

these patterns amongst the visitor or resident population as a whole. In this sense the research is qualitative in its focus, and exploratory and interpretative in its scope. It is also framed in a way that does not specifically address Maori values, as these are the subject of a different objective in the overall programme.

Photographs offer a valid and potentially productive approach to the investigation of landscape experiences. Our earlier report on visitor experiences of Kaikoura (Fairweather *et al.*, 1998) provides a detailed account of tourism, landscape experience and Q method, and the overall advantages and disadvantages of the approach are critically reviewed in Fairweather and Swaffield (2000). The two later case studies in Rotorua and West Coast continue these themes, and a comparison of results across case study sites is provided in Fairweather and Swaffield (2002). Generally, we have argued that whilst there is now an extensive international literature on landscape perception, the majority of empirical work is based within the 'psychophysical' and 'cognitive' paradigms, using quasi-experimental methods to develop predictive models of preference (e.g., scenic beauty estimation). While gaining insight into tourist experiences, this approach still privileges the researcher's knowledge in the way in which the items for assessment are provided to the subject. There is, however, increasing interest in landscape as a phenomenological experience, using a variety of methods, and also in interpretation of the socio-cultural dimensions of landscape. Our case studies to date demonstrate this approach.

The report is organised as follows. In the next chapter we describe in detail both the method of selecting photographs and respondents, and the administration of the Q method. Chapter 3 presents the results of a survey of 63 people who live in or who have visited Christchurch. It includes many pages of detailed quotations and, for readers who wish to focus on the main results, these may be omitted and attention given to the summary of the themes arising from them. Finally, Chapter 4 discusses the salient points of each factor and makes some general observations. It includes a comparison of the results from the three earlier case studies and addresses theoretical and policy implications of the overall findings.

Chapter 2

Method

2.1 Introduction

In this chapter the elements of the method used in this study of visitors' and locals' views about environmental management are described in detail, including: the selection of photographs, the sampling and location of interviews, and the Q sorting procedure.

2.2 Selection of Photographs

Photographs of particular landscape settings are used in this study as surrogates for environmental experience. The use of photographs in this way has been extensively debated in the literature on landscape and environmental perception, and a series of comparative evaluations has confirmed their practical application and validity (Shafer and Brush, 1977; Shuttleworth, 1980; Zube and Pitt, 1981; Coeterier, 1983; Kaplan and Kaplan, 1989). In Q method, the aim is to include in the photographs presented to respondents the widest range of possibilities or situations that are relevant to the issue under investigation. In the Christchurch study, photographs were needed to represent different aspects of environmental quality. The photographs were therefore selected based upon a sampling frame that covered a range of environmental categories, indicators of quality, and conditions.

The base environmental categories were initially derived from the New Zealand Ministry for Environment Environmental Indicators programme (MfE 1996, 1998), which covers both biophysical environment and urban amenity. The categories we selected as most relevant to this study were air, fresh water, estuarine and coastal water, land, land cover (vegetation) and built form/streetscape. For each environmental category, we then selected several quality indicators. The biophysical indicators drew directly upon the MfE programme. Typical indicators in the biophysical environment were clarity of air or water, evidence of erosion or contamination, presence and type of vegetation. In the built form/streetscape category, the indicators selected were green space, heritage value, symbols of care, spatial form, and safety. The indicators in this category drew upon a wider range of theoretical sources: spatial form has been recognised by many authors as an essential component of urban environmental quality (Lynch, 1965; Whyte, 1980; Alexander, 1997). Similarly, green space and heritage values are now widely recognised as dimensions of urban amenity and quality (Hill 1999). Nassauer (1995) identified the presence of symbolic 'cues for care' as important factors in preference and response to both urban and rural environments, and there has been increasing recent attention to the role of actual and perceived safety in urban settings (Doeksen, 1997). The initial sample frame is shown in Appendix 1.

The next step was to identify visual expressions of each of the environmental quality indicators, both positive and negative. For example, the presence of flowers could be a positive indicator of odour, whilst vehicle exhaust could be a negative indicator. Finally, we identified suitable locations within Christchurch that demonstrated each of the expressed indicators.

In selecting locations and directions for the photographs no attempt was made to randomise or standardise viewpoints. This is because the intent of the photographs is to demonstrate as

clearly as possible the particular indicator under investigation. In some cases this required a panoramic view, in others a close up, and this led to a range of focal lengths from 50-70mm. As we have discussed elsewhere (Fairweather and Swaffield, 2000), the design of Q sort does not require experimental consistency in photograph format, but instead requires maximum diversity of relevant content. Nonetheless, to avoid undue complexity in response, all photos were taken on a fine day, during late autumn.

The overall sampling frame resulted in around 40 potential images, whereas we have found that Q sort works better with 30 or less. The selection was therefore edited to remove outwardly similar images. In addition, it proved impossible to find suitable expressions in several indicator categories. The final selection of 25 photos in Table 1 below does not therefore cover all positive and negative indicators, but provides a broad range across the different categories. Each photograph has been given a descriptive working title, which summarises its content.

Table 1
Classification of Photographs

Photo. No.	Working title	Quality Indicator	Environmental Category
1	Factory with smoke	Pollution-point source	Air
2	City with smog	Pollution-poor clarity	Air
3	City view- clear	Non-polluted-clean	Air
4	Cloudy stream	Poor clarity	Fresh water
5	River - low water	Low flow and debris	Fresh water
6	River - exotic trees	Clean, cared for	Fresh water
7	River edge	Stable bank	Salt water
8	Estuary - seaweed	Excessive nutrients	Salt water
9	River - exposed bank	Bank erosion	Salt water
10	Estuary - sparkling water	Clear	Salt water
11	Factory - rough ground	Degraded	Land
12	Factory - landscaped	Cared for	Land
13	Park	Tall trees	Vegetation
14	Mature street trees	Tall trees	Vegetation
15	Bush	Tall trees	Vegetation
16	Footpath – austere	Monotonous	Streetscape
17	Street - shops	Low rise, variety	Built form
18	Buildings - medium	Medium rise, variety	Built form
19	Boulevard with tram	Heritage, vegetation	Streetscape
20	Buildings - derelict	Abandoned-poor care	Built form
21	Buildings - large	High rise, variety	Built form
22	Buildings - small	Heritage	Built form
23	Avenue - blossoms	Vegetation, flowers	Streetscape
24	Avenue - overhanging trees	Tall trees	Streetscape
25	Street - residential	No vegetation	Streetscape

2.3 Selection of People and Location of Interviews

The sampling strategy for selecting respondents was to obtain a diverse, non-random sample of local people, and international and domestic visitors to Christchurch, with roughly even proportions of men and women. To ensure that a variety of people were included in the study, people were approached in popular tourist locations in central Christchurch including: Cathedral Square, the Arts Centre, the Botanic Gardens, Hagley Park and youth hostels. Interviewing occurred from late August 2002 through the end of October 2002.

The sample composition was checked for diversity of participants at regular intervals during the interviewing process. This composition check allowed the interviewer to target specific groups as needed. For example, at one stage it was observed that the sample lacked significant numbers of local people and as a result the interviewer visited Hagley Park and the Botanic Gardens in order to find these people.

Interviews that were conducted in Cathedral Square and the Arts Centre made use of easily accessible café tables to allow the respondent to lay out the photographs in the manner required in a Q sort. Permission was sought and gained from café managers to use these tables in off peak hours. Interviews that took place at youth hostels were conducted at tables in common areas after receiving permission from hostel management to interview guests. The remaining interviews were conducted in either Hagley Park or the Botanic Gardens where some respondents chose to go to picnic tables near the Botanic Gardens car park, and others simply chose to sit down in a grassy area and lay the photographs out on the ground.

Table 2 provides a summary of the demographic profile of subjects who completed the Q sorts. There were a total of 63 persons, including 21 international visitors and 42 New Zealanders. Of the New Zealand respondents, nine were domestic visitors, and 33 local people. Approximately half those interviewed were therefore visitors to Christchurch(30/63). Roughly even proportions of men and women were achieved in each respondent group. We did not specifically endeavour to interview Maori subjects, as there is a separate objective focused upon Maori issues and perspectives. No one who was interviewed in the Q sort specifically identified themselves as Maori. The international visitors who were interviewed came primarily from Europe and North America. A small number of Asian visitors completed Q sorts. Despite many Asian visitors being approached, few responded and this proved to be a difficult group to access primarily due to language barriers and the tight time schedules of Asian tour groups.

In addition to completing the Q sort, respondents were asked several questions designed to ascertain their views on how well the environment is managed in Christchurch and in New Zealand in general. Respondents were also asked several questions about their views of nature as illustrated by their attitudes towards forests (this section cross referenced with related research and is reported separately). Finally, information about the participant's mode of travel, type of accommodation and length of stay in Christchurch was recorded.

Table 2
Characteristics of the Sample

	Male	Female	Total	Per Cent
Overseas:				
UK	3	4	7	33
North America		4	4	19
Other Europe	3		3	14
Asia	1	2	3	14
South America	1	1	2	10
Australia	2		2	10
Subtotal	10	11	21	100
New Zealand:				
Visitors	4	5	9	22
Locals	18	15	33	78
Subtotal	22	20	42	100
Total	32	31	63	

2.4 Q Sorting Procedure

After requesting permission to conduct an interview, the interviewer explained that the focus of research was to investigate people's perceptions of environmental management in Christchurch as illustrated by photographs. Subjects were asked to evaluate the photos in terms of the type of location that the photographs depict rather than the quality or composition of the photographs themselves. Each subject was asked to sort the photos into three piles: those that represented good environmental management, those representing poor environmental management and those that they felt indicated neither good nor poor environmental management. Once the initial sort of photographs was completed respondents were asked to sort through the pile of photos indicating good environmental management and select the photograph that best indicated good environmental management. Once they had made their choice the respondent was asked to select the next two best photos, followed by the next three and so on. Once all of the photos indicating good environmental management were ranked, attention was shifted to the photos indicating poor environmental management where the same procedure was followed. Finally, any pictures in the neutral pile were used to complete the Q sort. Most subjects followed this general procedure.

The resulting Q sort distribution consisted of nine piles of photographs with the number in each pile running in the following sequence, which approximates a normal distribution:

Number of photographs in pile:	1	2	3	4	5	4	3	2	1
Assigned score:	-4	-3	-2	-1	0	1	2	3	4

Each pile was assigned a score, ranging from -4 to +4, and the appropriate score was assigned to each photograph in the pile. Appendix 2 shows the recording sheets in full. Participants

were often shown the normal distribution as it appeared on the recording sheet in order to aid their understanding of the Q sort process.

Most respondents completed the Q sort with relative ease. Some respondents sought the definition of environmental management that we were using. In these cases the respondent was told that we were interested in how they would define environmental management and that they should sort the photographs in such a way as to reflect their own understanding of environmental management.

2.5 Conclusion

In summary, the Q sort method worked well, providing the basis for a detailed interpretation of locals' and visitors' views on environmental management in Christchurch.

Chapter 3 Results

3.1 Introduction

The results are presented as follows: first, the key results of the factor analysis are presented including a demographic profile for each factor. Then attention is given to the consensus photographs, that is, those photographs that were ranked similarly across all factors. Finally, the focus is on factor interpretation which involves a detailed examination of each factor, including distinguishing photographs and comments made on the six highest and lowest ranking photos in the factor. When factor results are presented, we have characterised each factor as distinctive type of viewpoint, based on the Q sorts of the individual respondents loading on it.

3.2 Factor Analysis Results

The 63 Q sorts completed were correlated and rotated using the varimax rotation option in the PQ method computer program (version 2.10) suitable for use on personal computers. As a result of the factor rotations three factors were extracted and they accounted for 68 per cent of the variance in rotated correlation matrix. For the 25 photographs in the Q sort the standard error of the factor loading is $1/\sqrt{n} = 0.20$, and at the 0.01 significance level, a loading has to be at least $0.20 \times 2.58 = 0.516$. Only loadings that were 'pure' in the sense that they were significant on only one factor were used in the specification of the factors.

Using these criteria meant that there were a total of 41 subjects (65%) whose Q sorts were used to define the factors, the others either not having a significant loading or having multiple loadings. Table 3 shows the key results from the factor analysis. Factors 1 and 3 have relatively equal numbers of individual loaders with 17 and 15 respectively. Nine individuals loaded onto Factor 2. The labels that are used to describe each factor have been derived from the qualitative analysis presented later.

Table 3
Key Results from the Factor Analysis

	Factor			Sum
	1 Care and Beauty	2 Untouched Nature	3 Clean and Green	
% Explained Variance	25	20	23	68
No. of Subjects	17	9	15	41

Fairweather (2002) has analysed factor stability in Q sort based upon a range of New Zealand studies. He concluded that factor loadings of 12 and above provide a high degree of stability. That is to say, the characteristics of the factor do not subsequently change in any significant way when additional numbers of respondents are added. So we can be confident that Factors 1 and 3 are highly robust, and express distinctive views that are held within the population as a whole. Factor 2 has only 9 significant loaders, and whilst this provides a reasonable level of

stability, we can be less confident about the finer details of the factor, which could change slightly if additional people loading on that factor were interviewed. Table 4 shows the correlation between factors and indicates that Factors 1 and Factor 3 are somewhat similar, as is demonstrated with a higher correlation coefficient than between the other factors.

Table 4
Correlations Between Factors

Factor	2	3
1	0.61	0.84
2		0.59

Table 5 illustrates demographic information for the subjects loading onto Factors 1, 2, and 3. Bolding is used to highlight individuals over 40 years of age. In general terms it can be observed that Factor 1 has a fairly well-mixed group of individuals loading onto it. Factor 2 has a mix of males and females, however, they tend to be local and quite young with only one person over 40 years of age. Local people dominate Factor 3 with slightly more females than males loading onto the factor. Table 6 summarizes the data in Table 5 and also reports on the proportion of individuals with tertiary qualifications. The highest proportion of tertiary education occurs in Factor 3 'Clean and Green' (60%).

A limitation that emerges from this demographic analysis is that only 11 out of 21 overseas tourists interviewed loaded significantly onto any of the three factors identified. In contrast, 30 out of 42 New Zealanders loaded significantly (including eight out of nine New Zealand visitors). Factor 1 (Care and Beauty) included six overseas tourists out of 17 loaders, but Factor 2 (Untouched nature) and Factor 3 (Clean and Green) had only three and two respectively. Hence the factors identified are more typical of the views of New Zealanders than overseas tourists. The implications of this result will be discussed further in Chapter 4.

Prior to offering detailed analysis of the distinguishing images for each factor it is important to note that some photographs were rated very similarly by all factors. Table 6 shows the photographs listed from consensus to disagreement. The first ten photographs, those above the bolded line in the list, are not statistically significant in distinguishing between factors at the 0.01 level and the photograph numbers marked with an asterisk remain not statistically significant at the 0.05 level. The finding that these photographs are not statistically significant even at the 0.05 level of significance indicates that there was consensus across each of the factors for those photographs.

Table 5
Demographic Profile for Each Factor, Showing Age

	Factor						Total
	1. Care & Beauty		2. Untouched Nature		3. Clean & Green		
	Male	Female	Male	Female	Male	Female	
Overseas:							
UK		49	26				5
England		27		31			
Scotland		23					
France	21						1
Brazil	27						2
Chile		21					
Australia			32		57		2
USA						35	1
Subtotal	2	4	2	1	1	1	11
New Zealand:							
Visitors	44, 62, 51	37, 51				79, 21	7
Locals	36, 83	52, 52, 60, 33	23, 45	19, 34, 20, 30	45, 28, 55, 45	24, 63, 16, 30, 28, 27, 91	23
Subtotal	5	6	2	4	4	9	30
Gender Total	7	10	4	5	5	10	41
Factor Total	17		9		15		41

Note: bolding is used to highlight individuals over 40 years of age.

Table 6
Demographic Characteristics

Factor	General Composition	% > 40 years	% Tertiary Education	% Female
Care and Beauty	Mixed	53	53	59
Untouched Nature	Mixed	11	56	56
Clean and Green	Locals	47	60	67

Table 7
Photographs, with Q Sort Scores, Sorted from Consensus to Disagreement

Photo. No.	Title	Factor		
		1	2	3
24*	Avenue - overhanging trees	2	1	2
6*	River - exotic trees	3	3	3
2*	City with smog	-4	-4	-4
16*	Footpath - austere	-2	-2	-1
20*	Buildings - derelict	-3	-3	-2
14*	Mature street trees	2	1	2
25	Street - residential	0	0	0
11	Factory - rough ground	-2	-3	-1
12	Factory - landscaped	2	1	1
23	Avenue - blossoms	1	0	1
21	Buildings - large	0	-1	0
1	Factory with smoke	-1	0	0
13	Park	4	2	2
5	River - low water	-3	-2	-2
17	Street - shops	0	-2	-1
22	Buildings - small	0	-1	0
18	Buildings - medium	1	-1	0
9	River - exposed bank	-1	0	-2
3	City view- clear	1	-1	1
15	Bush	1	4	3
19	Boulevard with tram	3	0	1
10	Estuary - sparkling water	0	2	4
7	River edge	-1	2	-1
4	Cloudy stream	-2	1	-3
8	Estuary - seaweed	-1	3	-3

Note: While Q sort scores (-4 to +4) are presented in this table, the basis of the distinction between factors for the distinguishing photographs is the Z score taken to two decimal places. Thus two similar Q sort scores may in fact be statistically different.

This Q sorting process yielded a relatively high number of consensus photographs with agreement on photos even at the extreme negative and positive ends of the scale. For example, photograph No. 2, City with smog, was ranked at -4 across all three factors, indicating a very high degree of consensus that this photograph depicted poor environmental management. Likewise, photograph No. 6, River - exotic trees, was universally ranked at +3 across all three factors indicating a high degree of consensus in defining this photograph as depicting good environmental management. In a similar sense, photographs No. 24, Avenue - overhanging trees, No. 16, Footpath - austere, No. 20 Buildings - derelict, and No. 14, Mature street trees, had a high degree of consensus in their respective scores with a maximum difference of one point, and remaining statistically not significant at the 0.05 level.

The remaining photographs, those that appear in the list after the bolded line, are photographs with some level of disagreement amongst the factors. In other words, they are evaluated differently by the different factors. Importantly, these photographs become disagreement

statements because they are statistically distinct from each other on the basis of their Z score. Photographs appearing at the bottom of the list have the highest degree of disagreement in Z score between the factors.

Figures 1 to 3 presented in the following sections show the arrays of photographs for each factor in the Q sort. The figure also identifies the distinguishing photographs by highlighting the background in colour. Red is used to show photographs that have a statistically higher position than the other two factors and green is used to show photographs that have a statistically lower position than the other two factors. Yellow shows photographs that have a position in between that of the other two factors but are still statistically different in position.

3.3 Factor 1: 'Care and Beauty'

Factor 1, which we describe as 'Care and Beauty', accounts for 25 per cent of the total variance among the rotated factors, and comprises 17 subjects. The individuals loading onto this factor are a mix of the three types of people that completed the Q sort: international visitors (United Kingdom, France, and South America), domestic visitors, and local people. There are a slightly higher proportion of females loading onto this factor (59%). Roughly half (53%) of the individuals loading onto Factor 1 were over 40 years of age, and similarly, 53 per cent were tertiary-educated.

Figure 1 shows the array for Factor 1. The array in overview shows that all the photographs liked, that is, those that receive a score of one to four, are photographs that either show people enjoying nature or show well designed and cared for areas. Photographs of buildings in an urban environment dominate the neutral column. Photograph No. 10, Estuary - sparkling water, was also ranked neutrally in this factor. The disliked photographs include images of air and water pollution, along with untidy and rundown urban environments. Compared with the other two factors, Factor 1 has photograph No. 13, Park, No. 19, Boulevard with tram, and No. 12, Factory - landscaped, in a higher position. This is in keeping with the emphasis on people's enjoyment of a well cared for, picturesque environment. Photograph No. 5, River - low water, was in a lower position than in the other factors, presumably because the enjoyment of an otherwise picturesque site is reduced by a high level of rubbish in the water, low water levels, and a lack of air clarity.

The six top-ranking photographs in Factor 1 and their respective scores were:

13	Parks	(+4)
19	Boulevard with tram	(+3)
6	River - exotic trees	(+3)
12	Factory - landscaped	(+2)
26	Coastline - beach	(+2)
14	Mature street trees	(+2)
24	Avenue – overhanging trees	(+2)

Figure 1
Array of Photographs for Factor 1 – Care and Beauty

Key

	Higher Position than in all other factors
	Intermediate Position
	Lower Position than in all other factors



As indicted by the title descriptors, these six photographs show a combination of picturesque, well cared for public spaces within the city with a high level of explicit human involvement as a common element. Comments made by those people with high loading¹ on Factor 1 are presented on the following pages.

3.3.1 Factor 1 Statements

+4 Photograph No. 13 Park

Subject 10 Park land in residential area well looked after and used
IVF23

Subject 12 Hagley Park recreation area – well kept
DVM44

Subject 21 Sports grounds in the middle of the city
IVM21

Subject 29 Lots of trees, well cared for sports field
LF52

Subject 37 Park – very well managed
IVF49

Subject 43 Clean area – activity in the park
DVM62

Subject 48 Green spaces for people to use and play in. (Photos 12,19,6,24,15,14 all
DVM51 depict lovely green places, peaceful places that are clean. Nice for people)

Subject 54 Park – well looked after, a place for people to play
LM36

+3 Photograph No. 19 Boulevard with tram

Subject 4 Wow, old fashioned – very tidy and clean – balance between old and new –
IVM27 tram and cathedral are old – a balance – very beautiful

Subject 21 The street scene is nice
IVM21

Subject 29 Inner city areas – attractive, a lot of consideration for public use (seating,
LF52 safe walkways, tidy buildings and provisions for tourists) also rubbish bins

Subject 37 Well managed city street with greenery
IVF49

1 A loading of 0.65 or above was used to select the high loaders for Factors 1, and 2. A slightly lower loading of 0.64 or above was selected as high loaders for Factor 3. We expect that factors with higher loadings will have more consistent quotations.

Subject 43 DVM62 Streets are clean - trams are an asset for transportation – it's simply a pleasant place

Subject 48 DVM51 Green spaces in the city – the tram is a touch of the past and public transport

Subject 52 LF52 It's pretty with the tram – real improvement to this area

Subject 54 LM36 This is a popular street - it's kept up

+3 Photograph No. 6 River - exotic trees

Subject 4 IVM27 Lots of green – ducks – very clean water, very beautiful. Shows respect for nature

Subject 10 IVF23 Water is clear, no litter. Gardens are well looked after

Subject 12 DVM44 Avon - well maintained section

Subject 21 IVM21 River bank looks well cared for

Subject 37 IVF49 Suburban "natural" environment

Subject 43 DVM62 Very environmental – it's clean and the landscape is pleasing

Subject 48 DVM51 Peaceful green spot – you could sit here and enjoy nature and the ducks

Subject 52 LF52 It's pretty, picturesque

Subject 54 LM36 Again it's well cared for and pretty

+2 Photograph No. 12 Factory - landscaped

Subject 12 DVM44 Industrial but good design, loads of plants and grass

Subject 21 IVM21 Some trees around a modern building

- Subject 29 Industrial building but good grounds around it – low maintenance
LF52 grounds
- Subject 43 Good landscape – made an effort to take care of it
DVM62
- Subject 52 Well planned and maintained landscape
LF52
- Subject 54 Cared for and planned
LM36

+2 Photograph No. 14 Mature street trees

- Subject 10 No cars – well landscaped – houses look tidy
IVF23
- Subject 12 Near the Avon River and well maintained
DVM44
- Subject 21 Here's a lot of trees in a residential area
IVM21
- Subject 29 Residential area with tree lined street. Lawns are mowed but no
LF52 parking
- Subject 43 Same as 24 (well cared for street – maintenance of trees and street)
DVM62
- Subject 48 Another tree lined street – even with the few cars on it, it looks quiet
DVM51

+2 Photograph No. 24 Avenue - overhanging trees

- Subject 4 Quiet place to live – very cool in summer. Beautiful, again respect
IVM27 for nature but there should be more rubbish bins on the footpath
- Subject 10 No cars – clean wide street tidy with tidy trees and nice gardens
IVF23
- Subject 12 Tree lined street
DVM44
- Subject 43 Well cared for street – maintenance of trees and street
DVM62
- Subject 48 Quiet tree lined street – no cars and the shade would be cool in
DVM51 summer

Subject 54 Quiet street with large trees – it's just a good place to live
LM36

The six bottom-ranking photographs in Factor 1 and their scores:

2	City with smog	(-4)
5	River – low water	(-3)
20	Buildings – derelict	(-3)
16	Footpath – austere	(-2)
11	Factory – rough ground	(-2)
4	Cloudy stream	(-2)

Four of these photographs are of industrial and rundown urban locations, and two depict cloudy and polluted water. Comments made by subjects loading highly onto the factor are listed below.

-4 Photograph No. 2 City with smog

Subject 4 Very polluted – scary airless place
IVM27

Subject 10 Industrial fumes in environment
IVF23

Subject 12 Smog. Christchurch's never ending problem
DVM44

Subject 21 Smog
IVM21

Subject 29 Smoking chimney – so much pollution – need to manage emissions to air
LF52

Subject 37 Bad air pollution
IVF49

Subject 43 Biggest problem in Canterbury – been a problem in Canterbury for 100 years
DVM62

Subject 48 Smoke, smog, fog – I'm not sure what it is but it looks bad
DVM51

Subject 52 Smog, smoke, air pollution
LF52

Subject 54 Smog, city looks dreary
LM36

-3 Photograph No. 5 River - low water

Subject 4 Dirty - not enough water in the pond
IVM27

Subject 10 Litter and pollution in the stream – just the river looks bad
IVF23

Subject 12 Litter in the Avon
DVM44

Subject 21 Scenery is good but lots of rubbish
IVM21

Subject 29 Rubbish in the stream, stream not flowing well
LF52

Subject 37 River with rubbish
IVF49

Subject 43 Litter in the creek – river is pathetic – need to work on cleaning it up – Man is
DVM62 nature's worst enemy, we need to look after nature for future generations

Subject 48 So much pollution in the water – I can't believe they let it get so grotty - Photos
DVM51 5, 8, 4, 9, 7 all of these photos show horrible water quality, pollution

Subject 52 Low water, litter
LF52

Subject 54 Rubbish in the river and low water – needs to be cared for
LM36

-3 Photograph No. 20 Buildings – derelict

Subject 10 Lots of cars, graffiti, fly posters, untidy building
IVF23

Subject 12 Derelict building
DVM44

Subject 21 Aspect of building
IVM21

Subject 29 Total eyesore – dilapidated building with a lot of graffiti
LF52

Subject 37 City building awaiting restoration
IVF49

Subject 52 Knock it down! It's an eyesore and a hazard
LF52

Subject 54 Looks abandoned – not kept care of
LM36

-2 Photograph No. 16 Footpath - austere

Subject 10 Lots of parked cars – pavement has been dug up and a bottle on the street. Lots
IVF23 of traffic and the pollution is not good for people walking

Subject 12 Crappy footpath, bare concrete
DVM44

Subject 21 General aspect of the street
IVM21

Subject 29 Minor things that could be tidied up – rubbish, and the footpath is a hazard
LF52

Subject 52 Broken footpath, cars, rubbish
LF52

-2 Photograph No. 11 Factory - rough ground

Subject 10 Doesn't look very nice – disorganized
IVF23

Subject 12 Crappy industrial site
DVM44

Subject 21 Nothing there, looks like a factory
IVM21

Subject 37 Truck yard – no greenery
IVF49

Subject 52 Industrial site – aesthetic qualities ignored
LF52

Subject 54 Not tended – just left to grow weeds
LM36

-2 Photograph No. 4 Cloudy stream

Subject 4 Pollution in pond
IVM27

Subject 12 Poorly maintained section of the Avon
DVM44

Subject 21 Colour of the water
IVM21

Subject 29 A lot of effluent / algae
LF52

Subject 37 River pollution –green algae
IVF49

Subject 43 Dirty water - Same as photograph 9 (soil erosion – vegetation should be looked
DVM62 after)

Subject 48 Green water (same as photograph 8)
DVM51

3.3.2 Summary for Factor 1: 'Care and Beauty'

The main themes from the comments listed above about Factor 1 are presented below, followed by a synthesis of the themes and other data. This synthesis, whilst based on comments generated in individual Q sorts, necessarily goes beyond these individual comments. This is because the comments were extracted only from the highest loading subjects. The overall factor array is based on the Q sorts of all subjects loading onto the factor and is therefore important in its own right. Thus, synthesis focuses on overall factor interpretation rather than individual subject comments, and makes reference back to the figure presented earlier and uses other information about the factor. This approach applies to the presentation of all factors for the Q-sort.

Positive:

Character (qualities of the settings):

- Beautiful, attractive, pleasant, pretty, popular, picturesque, nice.
- Old fashioned, touch of the past, a balance.
- Peaceful, quiet street, quiet place, quiet tree-lined.
- Very cool in summer, shade.
- Well used, activity, play, public use.
- Very clean and tidy, kept up, cared for, well cared for, tidy, well maintained, well planned.

Elements (physical and tangible qualities of the settings):

- Park land, Hagley Park, sports grounds, sports field, park, green spaces for people
- Tram and cathedral, nice street scene, tidy buildings, pretty with the tram, streets are clean, real improvement to this area, a popular street

- Lots of green, natural, very environmental, loads of plants and grass, some trees, low maintenance grounds, good landscape, lots of trees, tree lined, maintenance of trees and street, lovely green places, clear water.
- Seating, safe walkways, rubbish bins
- Absence of cars.

Evoking (feelings, sensations, memories associated with the qualities of the setting):

- Sense of caring
- Community
- Good place to live.

Activities (what subjects would do in those subjects):

- Spaces for people to use and play in, a place for people to play, you could sit here and enjoy nature and the ducks
- It's a good place to live, quiet place to live.

Negative:

Character and elements (qualities of the setting):

- Very polluted, industrial fumes, smog, smoking chimney, bad air, for, air pollution
- Scary airless place, city looks dreary
- Dirty, litter, pollution, rubbish
- Need to work on cleaning it up, needs to be cared for, crappy footpath, could be tidied up, a hazard, broken footpath, aesthetic qualities ignored, not tended – just left to grow weeds
- Derelict, untidy, total eyesore, awaiting restoration, knock it down, hazard abandoned
- Factory, truck yard, industrial site, crappy industrial site
- Low water, colour of water, pollution in pond, effluent, algae, dirty water, green water, not enough water in the pond, stream not flowing well

Evaluation (of the qualities of the setting):

- Christchurch's never ending problem, so much pollution – need to manage emissions to air, biggest problem in Canterbury - been a problem in Canterbury for 100 years, I'm not sure what it is but it looks bad
- River is pathetic, needs cleaning up, Man is nature's worst enemy, we need to look after it for future generations, I can't believe they let it get so grotty, needs to be cared for
- Minor things could be tidied up.

Management (implications of the settings):

- Need to manage emissions to air
- Need to work to clean river up, to care for it
- Restore building, knock it down
- Tidy minor things
- Look after vegetation.

The positive themes show that Factor 1 is responding to attractive locations that are well maintained. The most liked environments show public use. The areas are well landscaped with large trees visible in nearly every photograph. The presence of people in built environments is an important aspect of the photographs, as is the absence of litter and the well-kept appearance of the locations. Thus Factor 1 is sensitive to the attractive, quiet and well-cared for elements of the environment. Activities that would be engaged in these areas would include play, and enjoying nature. The area was also considered a nice, quiet place to live.

The negative themes show that Factor 1 rejects images of dirty and polluted environments, perhaps because it reduced the public enjoyment of the areas. These photographs further depict environments that have in some way experienced detrimental effects as a result of having human interaction. Photographs that distinguish Factor 1 suggest that these individuals are concerned with water quality and perceived pollution of the water as is demonstrated by the negative ranking of the following photographs: River - low water (5), Cloudy stream (4), Estuary - seaweed (8), River edge (7), and River - exposed bank (9). Strong words are used to express distaste for the environments that do not invite human interaction. It's a scary airless place, polluted, dirty, and derelict. In evaluating these negative images, Factor 1 describes air pollution as one of Christchurch's biggest problems. Suggestions for remedying the problems include reducing emissions and cleaning things up.

The themes fit well with other information already presented on Factor 1. The overall array shows that the top six photographs are all green and well-maintained, attractive public places designed for people to enjoy. Buildings or built structures are included in four of the top six photographs because Factor 1 emphasises humans in the environment. Photograph 10, showing an old building, receives a positive score unlike the other two factors because it shows people. Photographs showing primarily bland urban environments were ranked neutrally because these areas are less aesthetically pleasing and do not represent environments in which people can seek enjoyment and relaxation. Photograph No. 10, Estuary - sparkling water, was less popular in Factor 1 than in the other factors, presumably because there is no human element in the photograph. Overall, Factor 1 emphasises has the highest proportion (53%) of people over 40 years of age and the lowest proportion (53%) of tertiary educated individuals. The important feature of Factor 1 is human use of attractive and well cared-for city spaces, and this is reflected in our choice of title as 'Care and Beauty'. The factor appears to draw upon the concept of the City Beautiful which has been fundamental to Christchurch's self identity and urban design throughout the 20th century. The City Beautiful emphasises the importance of the city as a garden, designed for human use. The key aspects of character among the top-ranked photographs were beautiful, old, quiet, cool, use and care, and among the elements were parks, ground, trams, streets and natural landscapes, all of which are consistent with the City Beautiful.

3.4 Factor 2: 'Untouched Nature'

Factor 2, which we describe as 'Untouched Nature', accounts for 20 per cent of the total variance among rotated factors and comprises nine subjects. The individuals loading onto this factor were primarily younger locals with the exception of three international visitors (Australia and the United Kingdom). There were a slightly higher proportion of females loading onto this factor (56%). Only one of the individuals (11%) loading onto this Factor

was over 40 years of age. Fifty-six per cent of individuals loading onto this factor were tertiary educated.

Figure 2 shows the array for Factor 2. The array in overview shows that most of the photographs liked, that is, those that receive a score of one to four, are photographs that are liked for their naturalness or their appearance of being undisturbed. When photographs of landscaped or planned settings were ranked highly, comments recorded suggest that they are liked for the large trees and natural elements. Photographs of urban environments dominate the neutral column. Photograph No. 9, River - low water, was also ranked neutrally in this factor and is in a significantly higher position than in the array for Factors 1 or 3. The disliked photographs include images of air pollution, and images of buildings in the urban environment with a lack of trees or landscaping. Compared with the other two factors, Factor 2 has photograph No. 8 Estuary - seaweed, No. 7 River edge, No. 4 Cloudy stream, and No. 9 River - exposed bank in a higher position. This is in keeping with the emphasis on apparently undisturbed nature and naturalness. Photograph No. 17, Street - shops, No. 22 Buildings - small, No. 18 Buildings - medium, No. 3 City - clear, and No. 19 Boulevard with tram are lower than in other factors and the comments suggest that this is probably because the environments show urbanization and modification of the environment by people

The six top-ranking photographs in Factor 2 and their scores were:

15	Bush	(+4)
8	Estuary – seaweed	(+3)
6	River – exotic tree	(+3)
13	Park	(+2)
7	River edge	(+2)
10	Estuary – sparkling water	(+2)

Figure 2
Array of Photographs for Factor 2 – Untouched Nature

Key

	Higher Position than in all other factors
	Intermediate Position
	Lower Position than in all other factors



Many of these photographs show environments that appear to have been conserved in a natural state. There are several liked photographs that depict well-landscaped environments. Comments recorded about these photographs suggest that it is large trees and other plant life shown in the photographs that are liked rather than the specific design elements. Water is a common feature in many of the liked photographs. There is a notable absence of people, buildings and cars in all but one of the top ranked photographs. Comments made by subjects loading highly on the factor are listed below.

Factor No. 2 Statements

+4 Photograph No. 15 Bush

Subject 6 Untouched – left alone
LM23

Subject 9 Trees – all alive – managed park
IVM26

Subject 16 Looks healthy
IVM32

Subject 30 Natural – looks undisturbed native bush
LF19

Subject 31 Big tall trees left to grow – not an open expanse of nothing
LF34

Subject 46 Unkempt but still exists – rural area
LF20

Subject 55 Thick growth, natural
LM45

Subject 62 Regenerated native bush – full scale
LF30

+3 Photograph No 8 Estuary - seaweed

Subject 9 Wildlife, no evidence of management – but that doesn't indicate bad
IVM26 management

Subject 16 Healthy waterway, wildlife, a good wetland – natural
IVM32

Subject 30 Has been left to its own devices – clean because of bird life
LF19

Subject 31 No obvious interference by people – weeds and ducks are natural
LF34

Subject 55 Beautiful natural spot – left to its own
LM45

+3 Photograph No. 6 River - exotic trees

Subject 9 Clean waterway, healthy living environment – wildlife, recycle bins not
IVM26 overgrown

Subject 16 Waterway – development is off the water
IVM32

Subject 30 Same as 7 (natural form of bank stabilization)
LF19

Subject 31 Clean and tidy, well looked after, a bit of interference but it's looked after
LF34

Subject 55 Lovely spot on a fine day
LM45

Subject 62 Exotic species but rehabilitation of riparian zones with native species
LF30

+2 Photograph No. 13 Park

Subject 9 Well managed and used park – recreation, healthy, parks equal healthy people
IVM26

Subject 31 Big tall tree, clean, people get a place to relax in nature
LF34

Subject 46 People and nature co-existing – people enjoying the outdoors
LF20

Subject 55 Tree lined park – a place to enjoy nature
LM45

Subject 62 Variety of indigenous species - green space in middle of built environment but
LF30 more could be done – a corridor for birds and animals

+2 Photograph No. 7 River edge

Subject 6 Untouched – not developed
LM23

Subject 9 Diverse range of aquatic plants – looks in order good habitat for species
IVM26

- Subject 16 Healthy – just a bit of crud
IVM32
- Subject 30 Natural form of bank stabilization
LF19
- Subject 62 Riparian zone all native – biodiversity
LF30

+2 Photograph No. 10 Estuary - sparkling water

- Subject 9 Wetlands – birds – always a good thing
IVM26
- Subject 30 Like photograph 8 (been left to its own devices, clean because of bird life)
LF19
- Subject 31 Clean and natural
LF34
- Subject 46 Pretty ocean, no litter/crap – reminds me of a place I once lived
LF20
- Subject 55 Beautiful and again a natural spot – undisturbed
LM45

The six bottom-ranking photographs in Factor 2 and their scores were:

2	City with smog	(-4)
20	Buildings – derelict	(-3)
11	Factory – rough ground	(-3)
5	River – low water	(-2)
17	Street – shops	(-2)
16	Footpath – austere	(-2)

All these photographs show virtually treeless urban environments with smog visible in several photographs. All of the lowest ranking photographs show built environments. People, cars, smog or litter are visible in many of the photographs. Comments made by subjects loading highly on the factors are listed below.

-4 Photograph 2 City with smog

- Subject 6 Air pollution
LM23
- Subject 9 Heavy industry, smog, unsustainable development
IVM26

- Subject 16 Terrible smog, pollution
IVM32
- Subject 30 Unnatural human environment increased smog in the industrial landscape
LF19
- Subject 31 Plain nasty
LF34
- Subject 46 Scummy, not looked after, no greenery, no nature
LF20
- Subject 55 Horrible smog
LM45
- Subject 62 Smog, has an impact on a wide area, chimney puke, no control, hazy and dirty
LF30

-3 Photograph No. 20 Buildings - derelict

- Subject 9 Derelict – eyesore – needs urban regeneration
IVM26
- Subject 16 No life there
IVM32
- Subject 30 Not natural, run down building not aesthetically pleasing
LF19
- Subject 31 When are they gonna knock it over?
LF34
- Subject 46 Scummy, not looked after – no greenery – no nature
LF20
- Subject 55 An eyesore – simply an eyesore
LM45
- Subject 62 It's a built environment like in picture no. 22 but worse not aesthetically
LF30 pleasing

-3 Photograph No. 11 Factory - rough ground

- Subject 9 Barren wasteland
IVM26
- Subject 16 Nothing growing, barren – bad land management
IVM32

Subject 30 Obviously been adjusted by humans, oil tankers in background
LF19

Subject 31 Uncared for – it exists but a lot could be done with it
LF34

Subject 46 Industrial – unkempt nature – just taking picture of industrial side not nature
LF20

Subject 55 Needs to be cleaned up and cared for
LM45

-2 Photograph No. 5 River - low water

Subject 9 Hell of a lot of litter/rubbish but it wouldn't take much to clean it up
IVM26

Subject 16 Way too much litter/ rubbish
IVM32

Subject 30 Rubbish, water not clean
LF19

Subject 31 Major looking after is required, needs a clean up to get the crap out of the river
LF34

Subject 46 Rubbish in river – smog
LF20

Subject 55 Eyesore – simply an eyesore
LM45

-2 Photograph No. 17 Street - shops

Subject 6 Same as photograph 25 (suburbia, pavement, not natural)
LM23

Subject 31 Not pleasant to look at no trees
LF34

Subject 55 Very urban and ugly
LM45

Subject 62 Some green space makes it more attractive
LF30

-2 Photograph No. 16 Footpath – austere

Subject 6 Pavement
LM23

Subject 9 Litter, and traffic congestions
IVM26

Subject 16 Concrete
IVM32

Subject 31 It's the cop shop and there's a bottle on the footpath
LF34

Subject 46 People don't care about rubbish on the sidewalk, someone should pick that up
LF20

Subject 55 No aesthetic quality – simply concrete
LM45

Subject 62 Needs more greenery - same as photograph 18 (built environment with very
LF30 small green space)

Summary for Factor 2: 'Untouched Nature'

The main themes from the comments listed above about Factor 2 are presented below, followed by a synthesis of the themes and other data.

Positive:

Character (qualities of the setting):

- Untouched, left alone, all alive, healthy, natural, unkempt, thick growth, regenerated native bush, co-existing, no evidence of management, left to its own devices, no obvious interference by people, beautiful natural spot, left to its own
- Diversity, healthy, natural
- Pretty, beautiful, clean, tidy, lovely

Elements (physical and tangible qualities of the settings):

- Clean waterway, wetlands, birds, wildlife, ocean
- Big tall tree, tree-lined park, green space
- Variety of indigenous species, diverse range of aquatic plants, natural form of bank stabilization, riparian zone all native, biodiversity, regeneration

Evoking (feelings, sensations, memories associated with the qualities of the setting):

- Reminds me of a place I lived once
- Healthy parks equal healthy people

Activities (what the subject would do in those settings):

- Place to relax in nature, enjoying the outdoors, enjoying nature

Negative:

Character (qualities and settings):

- Air pollution, smog, pollution
- Heavy industry, industrial landscape, unsustainable development
- No greenery, no nature, nothing growing, barren, no life
- Eyesore, derelict
- Uncared for, unkempt nature
- Litter, rubbish
- Suburbia, pavement, not natural, very urban, traffic congestion, concrete

Evaluation (of the qualities of the setting):

- Not aesthetically pleasing, obviously adjusted by humans, ugly
- Unnatural human environment, plain nasty, scummy, horrible, chimney puke, hazy, dirty
- Barren waste land, bad management, needs more greenery
- A lot of litter

Management (implications of the settings):

- Needs to be cleaned up and cared for, wouldn't take much to clean it up, major looking after is required
- Someone should pick rubbish up

The positive themes show that Factor 2 defines good environmental management as the conservation of natural environments and waterways within the city. The photographs most liked depict nature in an apparently undisturbed state. The presence of water is a common element in four of the six most liked photographs. Respondents demonstrate an appreciation for the natural elements of the photographs with words like untouched, healthy, natural and beautiful. The respondents were primarily interested in the large trees, untouched waterways and variety in the photographs. Respondents identified some of these locations as spots where they could go to relax, or enjoy nature.

The negative themes show dislike for air pollution, heavy industry and urban areas lacking natural elements. They used strong language to describe their dislike of the settings; unnatural, nasty, scummy, chimney puke, horrible. These individuals commented on the need for people to take it upon themselves to clean up litter and take care of the environments in the photographs.

Six out of nine (67%) of the respondents loading on Factor 2 were local. All except one person were under 40 years of age. Five out of nine (56%) were women, and five out of nine had tertiary education. The factor array shows a general dislike of urbanisation, traffic congestion, industrial development and air pollution. Factor 2 values the conservation of natural environments and waterways. The individuals loading onto this factor seem relatively disinterested in environments that are pleasant for people to use and very few of their comments mention people at all, except for the ways in which they feel people harm the environment. The emphasis given to undisturbed natural environments including waterways supports our choice of title as 'Untouched Nature'. This title emphasises what people believe about what they were seeing, not actual degree of human influence on the environment.

However, there is an unexpected finding. Photograph no. 8, Estuary - seaweed receives a score of +3 and is interpreted as being healthy and undisturbed, when in fact it shows vigorous growth of algae which indicates water pollution in the form of high nutrient levels due to discharge from the city sewage plant. Similarly photograph no. 4, Cloudy stream, receives a score of +1 yet it also shows poor water quality (which Factor 1 and 3 scored -2 and -3 respectively). These results suggest that Factor 2's view of conservation is somewhat poorly informed despite most of the people loading onto Factor 2 being local. Whilst the overall title of 'Untouched Nature' expresses the dominant focus upon apparently undisturbed environments, this is clearly also a somewhat naïve perspective.

3.5 Factor 3: 'Clean and Green'

Factor 3, which we describe as 'Clean and Green', accounts for 23 per cent of the total variance among the rotated factors, and comprises 15 subjects. The individuals loading onto this factor were primarily local people. However two international visitors (an Australian and an American) also loaded onto this factor. There were a higher proportion of females (67%) than males, and sixty per cent were tertiary educated.

Figure 3 shows the array for Factor 3. The array in overview shows that the photographs most liked, that is, those that received a score of one to four, are of natural settings that include tall trees and water. There is a limited human element in the photographs ranked +2 to +4 however all photographs ranking +1 have some human elements. The neutrally ranked photographs are all of urban settings. The most negatively ranked photographs depict air and water pollution while the others show images of degraded urban environments. Compared with the other factors, Factor 3 rates photograph No. 10, Estuary - sparkling water, higher than the other factors. Likewise photograph No. 23, Avenue - blossoms, and No. 1, Factory with smoke, higher than in other factors. Photograph No. 8, Estuary - seaweed, and No. 4, Cloudy stream, are ranked more negatively in Factor 3 than in the other factors. These characteristics of the array suggest that the people loading onto Factor 3 are interested in conserving the ecological quality of the urban environment, as expressed by tall vegetation and water, and that they are knowledgeable about the health of waterways shown in the various photographs. Whilst they recognise and value indigenous vegetation, they also value exotic species when they are part of an apparently healthy and functional ecosystem.

The six-top ranking photographs in Factor 3 and their scores:

10	Estuary – sparkling water	(+4)
15	Bush	(+3)
6	River – exotic trees	(+3)
13	Park	(+2)
14	Mature street trees	(+2)
24	Avenue – overhanging trees	(+2)

Two of the top rated photographs show predominantly natural environments. A human element is visible in several of the top ranked photographed but it is described by the subjects as ancillary to the natural elements. Comments made by those people loading high on Factor 3 are presented below.

Figure 3
Array of Photographs for Factor 3 – Clean and Green

Key

	Higher Position than in all other factors
	Intermediate Position
	Lower Position than in all other factors



Factor No.3 Statements

+4 Photograph No. 10 Estuary - sparkling water

Subject 13 Nice estuary looks good from the picture. Nice and clean and natural looking
LF27

Subject 20 Beautiful beach
DVF21

Subject 27 Blue water, wildlife and greenery
LF24

Subject 33 Good clean water
LM53

Subject 39 Sparkling water and birds – this looks natural
IVF35

Subject 49 This spot is clean and natural – look at all the birds
LM28

Subject 50 Glistening water at the estuary
LF63

Subject 60 Water is blue and clean
LF16

+3 Photograph No. 15 Bush

Subject 13 Native forest
LF27

Subject 20 Nice and green
DVF21

Subject 27 Forest green and lush
LF24

Subject 33 Nice greenery
LM53

Subject 39 This is awesome big trees left alone
IVF35

Subject 49 Thick native trees – cleans up the pollution in the air
LM28

Subject 50 Good dense bush
LF63

Subject 60 Big trees – lots of big trees
LF16

+3 Photograph No. 6 River - exotic trees

Subject 13 Well looked after and planted out nicely – ducks
LF27

Subject 27 Healthy trees, water looks clean, ducks
LF24

Subject 33 Good greenery and clean water
LM53

Subject 39 This one (photograph) is nice but it's man made – it looks like a postcard
IVF35

Subject 49 Is this the Botanic gardens? Looks green – sparkling/reflective water – nice spot
LM28

Subject 50 Beautiful – not entirely natural but beautiful
LF63

Subject 60 Pretty, lots of greenery and water looks clean
LF16

+2 Photograph No. 13 Park

Subject 5 Playing fields surrounded by nature
DVF79

Subject 20 Sports and social environment
DVF21

Subject 33 Greenery, clean and tidy
LM53

Subject 50 Lots of good bush in the garden with open spaces too
LF63

+2 Photograph No. 14 Mature street trees

Subject 5 Same as 24 (kept trees looked after)
DVF79

Subject 13 Streets planted out to hide horrible houses and people making bad things look
LF27 good.

Subject 39 Nice big trees and grass – only a couple of cars – looks nice
IVF35

Subject 49 Mature trees – residential spot
LM28

Subject 60 Another street with trees
LF16

+2 Photograph No. 24 Avenue - overhanging trees

Subject 5 Kept trees looked after
DVF79

Subject 13 Same as 14 (Streets planted out to hide horrible houses and people making bad
LF27 things look good)

Subject 20 Nice and green with lots of trees
DVF21

Subject 39 This is an urban area but there are lots of trees and a wide street
IVF35

Subject 60 Little street with trees everywhere – lots of trees
LF16

The six bottom-ranking photographs in Factor 3 and their scores:

2	City with smog	(-4)
8	Estuary – seaweed	(-3)
4	Cloudy stream	(-3)
9	River – exposed bank	(-2)
5	River – low water	(-2)
20	Buildings – derelict	(-2)

The five of the six bottom ranked photographs reveal a distinct dislike of pollution, either of the air or the water. There is a very strong water theme in these photographs with four of the six most negatively ranked photographs focusing primarily on water. This group of individuals has a significant concern with water quality. The two photographs that do not contain water are of heavily polluted and run-down urban sites and the commentary on these photographs suggests that this level of neglect is unacceptable in a city like Christchurch. Comments made about the negatively ranked photographs from Factor 3 are presented below.

-4 Photograph No. 2 City with smog

Subject 5 Smog causes health problems
DVF79

Subject 13 Smog from factories and cars
LF27

Subject 20 Smog
DVF21

Subject 27 Heavy pollution, which blocks the view. The crane is an eyesore, cell phone
LF24 tower in a populated area. Chimney emissions

Subject 33 Smog
LM53

Subject 39 Smog – lots of smog
IVF35

Subject 49 Typical winter day in Christchurch – the air quality is bad
LM28

Subject 50 Smog
LF63

Subject 60 Smog everywhere
LF16

-3 Photograph No. 8 Estuary – seaweed

Subject 5 This is a disaster
DVF79

Subject 13 Over-enrichment. Total pollution. Not a clean waterway
LF27

Subject 20 Slime
DVF21

Subject 27 Gross algae means its probably smelly
LF24

Subject 33 Growth in water – water not clear
LM53

Subject 39 I think this is algae – it's gross stagnant water
IVF35

Subject 49 Slime, dead tree and it probably smells
LM28

Subject 50 Water pollution, algae
LF63

Subject 60 Swamps, I don't know what's wrong with them but I know it's not good
LF16

-3 Photograph No. 4 Cloudy stream

Subject 5 The whole river is dirty
DVF79

Subject 13 Polluted. Same as Photograph 8 (Over-enrichment. Total pollution. Not a
LF27 clean waterway)

Subject 20 Dirty Water
DVF21

Subject 27 Polluted water – it looks murky
LF24

Subject 33 Not a good clear water
LM53

Subject 39 More stagnant water looks green
IVF35

Subject 49 Water is really brownish-green
LM28

Subject 50 Cloudy water
LF63

-2 Photograph No. 9 River - exposed bank

Subject 5 Needs to be tidied up – weeds
DVF79

Subject 13 Polluted waterway
LF27

Subject 20 Dirty look of the water
DVF21

Subject 27 Water is murky, embankment is a bit of a mess
LF24

Subject 49 Just an eyesore – needs some attention, so does the area in the background
LM28

Subject 50 Low water and an eroding riverbank
LF63

-2 Photograph No. 5 River - low water

Subject 5 Needs to be cleaned – rubbish (photos 2,4,5,7,8,9 all show images where the
DVF79 health of people is at risk)

Subject 20 Rubbish in the creek
DVF21

Subject 39 Smog and garbage plus low water – this needs to be cleaned up
IVF35

Subject 49 Yuck – rubbish needs to be cleaned up – air looks grey
LM28

Subject 50 Smog, low water, rubbish
LF63

Subject 60 Smog everywhere
LF16

-2 Photograph No. 20 Buildings – derelict

Subject 20 Building looks tattered
DVF21

Subject 27 Ugly building – not in a good state, ugly posters and graffiti
LF24

Subject 49 Knock it down – right now it's just a spot for trouble
LM28

Subject 50 Derelict building – an eyesore
LF63

Subject 60 Buildings – windows broken, not clean
LF16

Summary for Factor 3: 'Clean and Green'

The main themes from the comments listed above about environmental management are listed below.

Positive:

Character (qualities of the setting):

- Left alone, looks natural, clean and natural, lush, surrounded by nature, grass
- Good, clean, nice, man-made, nice spot
- Beautiful, pretty
- Looked after, kept

Elements (physical and tangible qualities of the setting):

- Water, blue water, clean water, sparkling, reflective, glistening, blue and clean
- Green and lush, greenery, green
- Wildlife, birds, ducks
- Forest, big trees, native trees, bush, lots of big trees, healthy trees, mature trees, lots of trees, native forest
- Wide streets, residential, street, urban, open spaces, streets planted out

Evoking (feelings sensations, memories associated with the qualities of the settings):

- This is awesome, looks nice

Activities (what subjects would do in those settings)

- Recreation, playing fields, sports and social environment

Negative:

Character (qualities of the setting):

- Smog, heavy pollution, lots of smog, smog everywhere, smog from factories and cars
- Gross algae, growth in water, algae, gross stagnant water, slime, dead tree, water pollution, swamp, over-enrichment, total pollution
- River is dirty, polluted, murky, not good clear water, brownish-green, cloudy, low water, eroding embankment, not a clean waterway, dirty water
- Garbage, rubbish

Evaluation (of the qualities of the setting):

- Causes health problems, blocks the view, typical winter day in Christchurch, everywhere, the health of the people is at risk
- A disaster, probably smelly, I don't know what's wrong with them but I know it's not good, yuck
- Ugly building, knock it down, an eyesore, not clean

Management (of the qualities of the settings):

- Needs to be tidied up, embankment is a bit of a mess, an eyesore – needs some attention, needs to be cleaned

The positive themes show that Factor 3 is responding to clean water and tall vegetation. Words used to describe the liked photographs include lush, clean, sparkling and glistening, and healthy. There is a moderate liking of photographs depicting human involvement with the environment and the value of playing fields in the park was recognized. The negative themes show that for Factor 3 show a dislike for lack of care towards environmental management. They were disturbed by the poor air and water quality that was depicted in nearly all of the negatively ranked photographs. Commentary on these photographs referred to the likely smell of the water, which was described as gross, stagnant, and slimy. Factor 3 respondents identified a need for areas to be well kept, cleaned up and taken care of.

The themes fit well with other information already presented on Factor 3. The overall array shows that respondents were concerned with conserving the vegetation and water in a pollution free state. Factor 3 has some similarities to Factor 2 in that individuals loading onto both factors define good environmental management as conserving nature in the environment. However, they displayed different levels of knowledge about the settings that were depicted in the photographs. As a result the two factors are distinguished from each other by the ranking of photographs like No. 8, Estuary - seaweed, and No. 4, Cloudy stream. Factor 3 is comprised of primarily local people. The age composition of this group is mixed with 47 per cent of individuals over 40 years of age. Factor 3 has the highest proportion of tertiary educated individuals (60%) and a higher proportion of females (67%) than the other. Factor 3 has a more informed conservation viewpoint than Factor 2 and takes water quality and tall vegetation as the primary indicator of environmental health. The key aspects of character among the six top-ranked photographs were natural, clean and beauty, and among the elements were water, wildlife, green and forest. These features suggest that an appropriate title is 'Clean and Green'.

3.6 Conclusion

The results identify three factors or ways of defining environmental management. Factor 1 'City Beautiful' defines good environmental management as management for the public enjoyment or use. Factor 2 'Untouched Nature' defines environmental management in terms of preservation of natural-looking sites within the city. Factor 3 'Clean and Green' views good environmental management as conserving the health and quality of water and vegetation, and to a lesser extent creating environments that have a public use.

There was some degree of overlap, as is indicated by a number of consensus photographs. Some of the distinctions between the factors can be attributed to the differential knowledge and experience of the individuals loading onto each factor. For example, we would expect that local people would more readily recognize the indigenous species depicted in some of the photographs and rate them more positively as a result, as was demonstrated in Factor 3.

Chapter 4

Discussion and Conclusion

4.1 Introduction

The research reported here aimed to determine locals' and visitors' responses to environmental management in Christchurch. It achieved this by identifying their preferences for different styles of environmental management. Clearly different and distinctive categories of response have been identified and interpreted, each of which represents a different way of defining environmental management.

The concluding discussion is in three sections. First we summarise and discuss these different perspectives on environmental management in Christchurch as shown by the Q sort survey of visitors and locals. The distinctive characteristics of each viewpoint are discussed in relationship to previous research, and some theoretical implications explored. Second, we identify several underlying themes which span the different factors, and again comment upon their theoretical significance. Finally, we discuss the implications of the findings for environmental policy and management in Christchurch, and in New Zealand.

4.2 Distinctive Factors

Three different ways of defining environmental management within the city have been identified, which we have described as 'Care and Beauty' (Factor 1), 'Untouched Nature' (Factor 2), and 'Clean and Green' (Factor 3). The 'Care and Beauty' perspective was expressed by a range of respondents, including locals, New Zealand visitors, and overseas tourists, with a mixed demographic profile. The distinguishing feature of this viewpoint is a preference for environmental management that creates well vegetated, clean and tidy urban settings that correspond to traditional notions of design aesthetics. The highly-ranked photographs included parks, boulevard, avenues and tree lined streets, a picturesque riverscape and a well-maintained and diverse commercial frontage. The negatively ranked photographs feature dirty, polluted, neglected and monotonous grey environments. The neutral photographs include riverscapes that show evidence of degradation as well as clean estuarine settings, and streetscapes with a range of building types but few trees. Overall, the factor characterises good environmental management as that which maintains an aesthetically pleasing, well-vegetated, well cared-for, and essentially cultural urban landscape.

The descriptor 'Care and Beauty' is appropriate because of the way it expresses the factor themes and links the values expressed in the factor with long-established themes of urban design and management. The City Beautiful movement was a major influence upon Christchurch in the early part of the 20th century, and has been maintained through the Garden City ideal to the present. It is also an aesthetic tradition which is familiar to many overseas tourists, as it has been reproduced throughout North America and Europe, and in selected Australasian cities. The 'New Urbanism' movement, which is gaining influence in North America and New Zealand, seeks to reassert and reinvigorate many of these ideals of urbanity and urban nature, in which nature is expressed as a utopian garden, and as a design element and resource (Hill, 1999). What our Factor 1 respondents are saying, in effect, is that good environmental management in Christchurch comprises maintenance and care of the beauty of the established Garden City.

The second factor, 'Untouched Nature' is quite different in orientation. It emphasises the management of outwardly unmodified natural settings within the city. The positively ranked photographs included tall indigenous bush, estuary and water margins, as well as a picturesque riverscape and park. The most negatively ranked photographs were largely similar to those poorly rated in the 'Care and Beauty' factor: air pollution, derelict building, degraded land and streams, and monotonous grey hard environments. Significantly, most streetscapes, including those that were well tended and with heritage features, were rated lower than in the other two factors. Overall, this factor characterises good environmental management as the apparent absence of human influence of any kind, irrespective of its design quality or level of care.

One feature of this factor is that the judgements of what is 'untouched' were not particularly well informed: several of the higher ranked photos show settings which express quite a high level of (indirect) human influence, both positive and negative, to those that can interpret the signs. But the comments by respondents emphasised their apparently 'untouched' character. This factor had the smallest number of significant loaders and the interpretation may be slightly less robust than Factors 1 and 3. The respondents were typically younger, and included both overseas visitors and locals. It appears to express a somewhat romantic view of nature, and places little value upon symbols of culture. For these respondents, good environmental management minimises human presence.

The third factor is labelled 'Clean and Green'. It emphasises the importance of ecological health and integrity as primary indicators of good environmental management. The positively ranked photographs all featured clean water and/or tall vegetation, both indigenous and exotic. The negatively ranked photographs include the images of air pollution and derelict buildings, in common with the other factors, but placed more emphasis upon degraded and polluted waterways, than land. Photograph 8, of sea lettuce in the estuary, naively ranked +3 by the 'Untouched Nature' respondents, was ranked -3 in this factor. The comments emphasise the importance these respondents place upon the presence of green and tall vegetation, clean water, and cared for environments.

'Clean and Green' is now a widely expressed symbol of environmental integrity within New Zealand, and is widely used in both marketing and in policy. It is also a myth (Bell, 1996), in that it is frequently based more upon appearance than upon ecological condition. For the respondents in this study, the 'Clean and Green' factor implied a better-informed evaluation than the 'Untouched Nature' perspective, but the inclusion of exotic species (and an exotic grassland monoculture) in the highly ranked photographs suggests that their view of good environmental management accepts humanly modified ecosystems. In essence, it says that good environmental management is good stewardship of environmental resources, both indigenous and exotic.

There are significant parallels between the factors documented in this study, and the attitudes towards nature identified in previous research. On the basis of a series of studies within New Zealand, Newton *et al.* (2002) have argued that there are two fundamental views of nature within contemporary society: 'Wild Nature' and 'Cultured Nature'. 'Wild Nature' defines natural character as exclusive of humans: it is the absence of human presence or influence that is the primary distinguishing quality of nature, which is valued for its pristine and untouched quality. 'Cultured Nature' accepts humans as part of nature and hence natural character, and values nature as an opportunity for human recreation and enjoyment. Newton *et al.* note the identification of similar themes within North American literature, suggesting that the dual

categories are a common feature across post-colonial cultures. They appear to provide an explanation for the values which underpin the environmental management factors.

Factor 1, Care and Beauty, appears to express a 'Cultured Nature' position. Good environmental management is that which creates and maintains an environment characterised by elements of nature embedded within an essentially cultural landscape. The primary measure is the value of that environment for humans. The ideal of the City Beautiful to which this factor relates is a cultural landscape which incorporates powerful symbols of nature. In contrast, Factor 2, 'Untouched Nature' clearly expresses the 'Wild Nature' position. Here, good environmental management is that which successfully excludes humans, and minimises their influence. In an urban context, it is expressed by remnants of apparently pristine nature within the city.

Factor 3 'Clean and Green' is more ambivalent, and expresses aspects of both positions on nature. However its ideological underpinnings become clearer when placed within a more complex model of natural character. Swaffield (2001) has argued that there are four, rather than two fundamental categories of natural character. The argument is conceptual rather than empirical, although examples of all four categories can be identified within New Zealand practice. The categories proposed are *Pristine*, *Picturesque*, *Functional*, and *Traditional*.

- *Pristine* natural character is measured by reference to a pre-human imagined past. It takes pre-human ecosystems as a baseline against which human modifications can be set. Management based upon this model tends to maintain a separation between humans and nature.
- *Picturesque* natural character focuses upon the familiar state of nature. Natural character in these terms is that which has picturesque natural appearance, and is familiar and unchanging. It relates primarily to the present and recent past, and assumes this to be the 'natural' state. Management tends to focus upon the status quo.
- *Functional* natural character is focused upon the health of nature and its ability to support human needs into the future. It is forward looking, being more concerned with system resilience and human survival. Humans and nature are functionally interdependent and interlinked. There are strong links to Lyle's (1986) concept of human ecosystems. Management is directed at system integrity and adaptation.
- *Traditional* natural character is that expressed in traditional Maori knowledge. It looks back to the common genesis of humans and other dimensions of the environment, all of which are 'nature'. There is no distinction, and so future management must deal with both as an integrated system. Although there are fundamental differences in origins between the functional and traditional models, there are considerable convergences in their practical management approach.

These models relate well to the factors identified here. *Pristine* natural character corresponds to Newton *et al.*'s 'Wild nature', and with Factor 2 'Untouched Nature'. Here the parallels are clear and unambiguous. *Picturesque* natural character overlaps with Newton *et al.*'s 'Cultured nature', and corresponds directly to Factor 1 'Care and Beauty'. *Functional* natural character also overlaps with 'Cultured nature', but corresponds directly with Factor 3 'Clean and Green'. The fourth category, *traditional*, corresponds with Maori concepts of stewardship, a view that was not identified here because a Maori viewpoint was not explicitly included in the study.

In general, the three factors identified in this study of environmental management appear to provide good support for the conceptual categories of nature and natural character identified by Newton *et al.* (2002) and proposed by Swaffield (2001). Or, to put it another way, the results from this study are consistent with results from other empirical and conceptual investigations into ideals of nature. These observations are summarised in Table 8. The implications will be reconsidered in the section on policy (4.4).

Table 8
Comparison of Results Across three Studies

Swaffield 2001 Categories of natural character	Newton <i>et al.</i> 2002 Perspectives upon nature	Christchurch Q Sort 2003 Approaches to environmental management
Pristine	Wild Nature	Factor 2. Untouched Nature
Picturesque	Cultured Nature	Factor 1 Care and Beauty
Functional	Cultured Nature	Factor 3. Clean and Green
Traditional	Cultured Nature	

4.3 Consistencies Across Factors

Whilst the main output of the Q sort factor analysis is the identification and characterisation of different factors, the analysis also allows identification of consistent views that are common across these factors. Three important aspects can be highlighted.

First, whilst there were clearly different factor arrays, as Chapter 2 noted there were also a number of photographs that were evaluated similarly by all three factors. Table 7 (page 12) identified ten consensus photographs, five of which remained in agreement across all three factors at the 0.05 level. In other words, all the respondents that loaded on any of the 3 factors agreed about the evaluation of these photographs. They were three negative photographs upon which all loading respondents agreed: No. 2, City with smog, which was rated worst indicator of good environmental management by all 3 factors; No. 20, Buildings - derelict, rated -3/-3/-2, and No. 16, Footpath - austere, rated -2/-2/-1. Interestingly, two of these are entirely constructed artefacts. No. 11 Factory - rough ground is also a consensus negative photograph.

The consensus upon No. 2 City with smog is no surprise but reinforces the negative impact which the problem of air pollution has upon people's perceptions of environmental management in Christchurch. This remains the primary indicator of poor environmental management in the City. The consensus about negative photos featuring poorly maintained or ugly buildings, paths and factories indicate that respondents believe that the design and maintenance of urban artefacts are critical aspects of urban environmental management. Their evaluation of environmental management is not limited to consideration of 'natural' resources such as rivers and air, but includes the cultural systems and artefacts in the city. Furthermore, environmental management extends to and includes the design of these cultural settings, as well as their maintenance. This is a rather wider conception of urban environmental management than has been promoted by some sectors over recent years (Memon and Perkins 2002). However it is consistent with the more inclusive approach to urban governance expressed in earlier ideals of town planning, and in contemporary ideals of New Urbanism and sustainable cities.

The consensus positive photographs are also informative. Photos No. 24 Avenue - overhanging trees, and No. 14 Mature street trees both include tall exotic trees, overhanging either residential roads or water. No. 13 Park and No. 15 Bush were also positively rated in all factors, although not with statistically quite such a consensus. There is an extensive literature which shows the importance of tall vegetation as an important factor in preference for natural environments (Kaplan and Kaplan, 1989). However there were also photographs of tall trees rated negatively when associated with some other indicator of environmental degradation (e.g., Photo 5 River - low water). The results here suggest that people associate the presence and retention of tall vegetation with good environmental management provided that there are no other negative management attributes. Three other consensus photos (25, 12, 23) are largely neutral in the arrays.

A second area of consistency is less obvious from the results, but potentially important for policy. There were surprisingly few overseas visitors amongst those loading onto any factor. The total was only 11 out of 21, and of these, six loaded onto Factor 1. One explanation is that the views of overseas visitors are diverse. With the exception of Factor 1 'Care and Beauty', there is no real indication of any distinctive 'overseas visitor' perspective upon urban environmental management. In terms of the wider tourism context, this contrasts with studies of overseas visitor's perceptions of natural environments (Newton *et al.*, 2002) and destination image (Kearsley *et al.*, 1998). While overseas visitors appear to have distinctive expectations about the scenic landscapes and attractions they visit, and the wider rural landscape through which they travel, they do not appear to express a consistent view or views about environmental management of urban areas. One possible explanation is that overseas visitors are not sufficiently familiar with the local urban environment to be able to make consistent judgements about its condition. Consequently, they express diverse responses that do not congeal around one view and thereby form a factor, nor associate strongly with Factors 1 or 2.

The lack of a distinct view or views associated with international visitors is important, as it suggests that there is no consensus upon environmental management priorities for this particular sector. At best, there is some support from international visitors for the 'Care and Beauty' factor. In contrast, New Zealanders loaded heavily across the three factors, with locals particularly dominant in Factors 2 (Untouched nature) and Factor 3 (Clean and Green). This indicates that New Zealanders have clear expectations of environmental management of urban areas.

Third, although the factor analysis has distinguished between three factors, the analysis also shows that there is some similarity between them. Factors 1 'Care and Beauty' and Factor 3 'Clean and Green' have a correlation coefficient of 0.84, which shows that whilst there are statistically significant differences between them (hence the different factor designation) there is also a reasonable level of consensus across the two factors. Given that Factors 1 and 3 account between them for 71 per cent of the explained variance across all respondents, and 78 per cent of all significantly loading respondents, it is pertinent to examine, in the next section, what is common between the two factors. From a policy perspective, any common ground would appear to express close to a majority view of the respondents, and whilst projections cannot be made to a wider population, the diversity of sampling suggests any consensus that does emerge would be reasonably widely supported.

4.4 Implications for Policy and Management

There are three sets of policy and management implications deriving from these results: those that follow from the areas of agreement across factors, those that follow from the differences between factors, and those that follow from the pattern of respondents loading onto the factors.

The consensus areas indicate directions and priorities for policy and management. The consensus photos across all three factors, and between the two closest and dominant factors (Factors 1 and 3), show that the key indicators of environmental management for locals and visitors taken as a whole are clean air, clean water in urban streams and waterways, well designed and cared for public environments (including buildings that adjoin public spaces), and the presence of tall trees. All these areas currently receive policy and management attention, with varying degrees of emphasis and success.

The problems and challenges of managing winter air pollution in Christchurch are well known and debated. This study confirms and reinforces the significance of this aspect of environmental quality in locals' and visitors' perceptions of environmental management. The comments from respondents highlight the negative impact that air pollution has upon overall perceptions of environmental management in the City. While it can be argued that this would only apply to those people who actually experience the air pollution, a case can equally be made that people dislike air pollution in principle. That is, while they may not actually experience it (most visitors are at Christchurch in the warmer months) those respondents are saying that knowing that it exists in winter is a sign of poor environment management.

Water quality is also becoming increasingly recognised as a key environmental indicator. There were some consistent results: the freshwater stream with low water and human debris (No. 5) was consistently rated negatively, whilst the clear water in the riverscape with exotic trees (No. 6) was consistently positive. However assessments of other waterways in differing states varied widely. The Cloudy stream (No. 4) River edge, (No. 7), and Estuary - seaweed (No. 8) were each negatively and positively assessed by different respondents. This appears to highlight two issues. First, they show that levels of awareness and knowledge about what constitutes 'clean' water vary. For example, Factor 2 respondents did not recognise the effects of high nutrient levels in the estuary, and confused the vivid green of the algae with healthy ecosystems. Second, there is a range of acceptance of the waterways that do not fit with conventional urban aesthetics. The River edge (No. 7) is well vegetated compared with River - exposed bank (No. 9), yet they are both rated the same (-1) by Factor 1 'Care and Beauty', but differently (neutral and +2) by Factor 2 Untouched Nature. In this case, Factor 2 respondents appear to recognise the positive environmental effect of river edge vegetation, whereas Factor 1 respondents dislike its muddy appearance which does not fit with a picturesque aesthetic. There appears to be a case for the City Council to undertake continuing educational programmes that communicate the signs of good quality in diverse types of waterway.

The importance attached by all respondents to the design and care of urban artefacts and public spaces is noteworthy. It emphasises that good urban environmental management is not limited to 'natural resources', as some political interests have argued over the past decade. In the minds of our respondents, environmental management includes design and maintenance of the cultural cityscape. They place particular importance upon the positive contribution of parks and well designed and planted streetscapes. They view built form for the most part

neutrally (i.e., do not distinguish between low, medium or high rise in terms of environmental management), but see abandoned, monotonous or degraded built environments as negative indicators. From a perspective of environmental management therefore, the priorities are to clean up and avoid degraded sites and artefacts, and to maintain the presence of trees and vegetation in parks and streets. Building scale and age has not emerged as a significant factor.

The importance attached to tall trees by respondents is also highly significant. The presence of tall trees is the most consistent positive indicator of good environmental management across all three factors. However it is probably the aspect most at risk under current urban development policies. This is because of the effect of intensification of building density and the increasing pressure upon streets from rising traffic volumes, both of which reduce opportunities for mature trees within the urban fabric. The responses to this study suggest that whilst many local advocates of the Garden City ideal continue to emphasise the traditional focus upon flowers and 'domestic' scale plantings in public spaces, the locals and visitors that we interviewed regard tall street trees, trees in urban parks and a generally well treed city as the main indicators of good environmental management. Strategic planning to ensure a long term tree cover in public spaces, parks and streets, and the design of performance standards for new development in order to create opportunities for large forest type trees on private land, are therefore critical priorities for future environmental management in the City.

The second set of policy implications flow from the differences between factors. Whilst the preceding discussion has noted points of consensus about particular features of the city, the factor analysis itself identified three distinctly different overall perspectives upon environmental management: 'Care and Beauty', 'Untouched Nature', and 'Clean and Green'. Each placed different weighting upon different parts of the overall array of quality indicators. We have argued that this reflects different ideological approaches to nature. The factors all relate closely to perspectives identified in other empirical and theoretical studies. The policy implication is that it will be necessary to recognise and attend to a range of indicators, if a broad level of satisfaction with environmental management is desired. The presence of three factors reinforces the point that it is important to attend to different aspects of environmental management in parallel. The 'Care and Beauty' factor emphasises good urban design and maintenance within a picturesque tradition. The 'Untouched Nature' factor seeks evidence of protected natural areas within the city, whilst the 'Clean and Green' factor emphasises the need for clean and healthy ecosystems within the city. These require an interlinked set of policy and management strategies. In effect, the findings confirm the current multi-faceted approach to urban environmental management in Christchurch, and caution against any suggestions of adopting a narrower approach.

The final set of implications flow from the profile of respondents loading on each factor, and overall. Locals and New Zealand visitors appear to have relatively clear and consistent expectations about environmental management, as expressed in the three factors. Of the three, 'Untouched Nature' is characteristic of a younger age group. This raises the question of whether their focus upon the absence of human influence can be expected to increase in significance over time, as that cohort becomes more mature and possibly more politically influential. On the other hand, there is some evidence from landscape perception studies that peoples' views become more tolerant of diversity in middle age, which could offset the cohort effect. International visitors in this study are much more diverse in their expectations, although there is significant support for the 'Care and Beauty' perspective, which emphasises picturesque aesthetics and care. This diverse profile of response reinforces the conclusion of the preceding discussion, that a range of indicators need to be managed.

Based upon the results of this study, therefore, we recommend the following priorities for environmental management in Christchurch:

1. A focus upon clean air, clean water and well-designed public spaces that include tall trees.
2. The goal of clean water needs to be supplemented by continued public education about the signs that indicate clean water.
3. Equal attention needs to be given to the cultured landscape (buildings, streets, parks), as to natural areas in the city.
4. Cleaning up degraded industrial and commercial sites and artefacts.
5. Increasing the presence of trees (especially tall trees) and vegetation in parks and streets to maintain the city character in the face of intensification of development.
6. That the cared for Garden City Beautiful ideal is continued, along with the additional ideals of the Untouched Natural City and the Clean Green, ecologically healthy City.

4.5 Conclusion

We have identified amongst locals and visitors three distinctive ways of thinking about environmental management in Christchurch. Each focuses upon particular environmental qualities and indicators as being most significant in determining good environmental management. We have described these three perspectives as 'Care and Beauty', 'Untouched Nature', and 'Clean and Green'. 'Care and Beauty' emphasises picturesque urban design and care, 'Untouched Nature' emphasises the presence of 'natural' areas uninfluenced by humans, and 'Clean and Green' emphasises healthy functional ecosystems.

However, whilst there are differences in emphasis between these perspectives, there are also significant areas of consensus. Clean air, clean water in streams and waterways, good urban design and maintenance of public spaces and streets, and presence of tall trees throughout the city are key indicators identified by all respondents who loaded upon any of the three factors

Locals and New Zealand visitors had clearer and more consistent expectations than international visitors. The most favoured perspective by international visitors was 'Care and Beauty'.

The main policy implication is the need to retain a breadth of approach to environmental management, attending to the range of indicators identified. These extend beyond 'natural resources' and include exotic trees and good urban design of public spaces and streets, and upkeep of buildings and sites which are visible to the public. The indicator identified as important by all factors, but most at risk from current policies, is the presence of tall trees within the City, which was the most consistently selected feature of good environmental management. This finding endorses and reinforces current attention being paid to an urban tree strategy.

The differences in knowledge and awareness identified in the study suggest that a continuing education programme is needed, with particular focus upon broadening public understanding about the constituents of good waterway quality and management.

However, the highest priority that emerges from the study is the need to resolve the problem of air pollution, which was unanimously identified as being the most negative indicator of environmental management by all respondents in all three factors.

Some limitations of the results must be noted. The sampling approach does not attempt to provide a statistically representative sample, hence no predictions can be made from these results to the whole population. Also, the relatively small number of international visitors who loaded significantly upon any of the factors suggests that the results reflect New Zealander's views more than overseas visitors. More research is needed to clarify whether this reflects a fundamental diversity of opinion amongst overseas visitors, or was a product of the exploratory sampling strategy.

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Appendix 1

Sample Frame for Photographs

Category	Quality Indicator	Visual Expression
Air	Pollution	- point source of smoke
	Visibility/clarity	+ clear views
		- smog
	Odour	+ flowers
		- exhaust fumes
Water-fresh	Visibility/clarity	+ clear stream
		- opaque stream
	Human Debris	- floating litter
	Riparian conditions	- bank erosion
		+ vegetated banks
Water -estuarine	Visibility	+ clean
	Human Debris	- floating litter
	Nutrient levels	- sea lettuce
Land	Soil condition	+ good vegetation growth
		- compacted/degraded
	Erosion	- slips
	Contamination	- dumped materials
Vegetation Cover	Tall vegetation	+ mixed exotic/indigenous trees
	Indigenous	+ 100% indigen shrubs and trees
		-
	Exotic	+ multi layered
		- monoculture
- weed species		
Built Form and Streetscape	Green	+ street trees and open space
		- no vegetation
	Heritage	+ heritage buildings
		- 'international'
	Cues for Care	+ mown grass and plantings
		- abandoned building
	Spatial structure	+ human scale
		+ degree of enclosure
		+ variety
		- monotony
		- overwhelming scale
	Safety	+ pedestrian scale footpaths and cycle ways
+ social ownership		
- hidden and dark		

Using a **5 point Scale** where 1 is Strongly Disagree, 2 is Disagree, 3 is Neither agree nor disagree, 4 is Agree, and 5 is Strongly Agree Please score the following statement.

New Zealand's environment is 'clean and green'. _____

1. Using a **5 point Scale** where 1 is Very Bad, 2 is Bad, 3 is Adequate, 4 is Good, and 5 is Very Good. Please score the following statements.

The condition (quality) of New Zealand's

natural environments in towns and cities is	
other natural environments are	
air quality is	
natural environments compared to other developed countries is	

2. We are interested in your **views of nature as illustrated by your attitudes to forests.** (If asked, say that we mean forests in New Zealand although international visitors will no doubt be thinking about forests back home. That is OK.)

Using a 5-point scale where 1 is Strongly Disagree, 2 is Disagree, 3 is Neither agree nor disagree, 4 is Agree, and 5 is Strongly Agree. What is your opinion about each statement?	Native / Old Growth Forest	Exotic / Planted
(a) The primary value of forests is to generate money and economic self reliance for communities. (If in doubt we mean <u>both</u> money and self reliance)		
(b) Forests let us feel close to nature.		
(c) Forests have value, whether people are present or not.		
(d) The primary value of forests is to provide products useful for people.		
(e) Forests have as much right to exist as people.		
(f) The value of forests exists only in the human mind. Without people, forests have no value.		

3. **Using a ten point scale** (10 is highly important), how important to you is it that Christchurch manages its environment in a sustainable way? If respondent asks: Why should I have a say? then circle the box but record the answer as well.

4. **Using a ten point scale** (10 is high quality)
How would you rate actual environmental management in Christchurch?

Background Data

International Visitors:

Which country are you from? _____ City _____
Town _____
Rural Place _____

Domestic Visitor:

What city are you from? _____
Town _____
Rural Place _____

All Visitors:

Are you traveling through New Zealand?
Or Just visiting Christchurch

If traveling, how many days are you traveling in New Zealand for? _____ (days)
What day of your trip is it? _____ (No.)
Direction of Travel _____
Mode of travel _____

What is the total number of days you have spent in Christchurch? _____
And will spend? _____

Type of accommodation _____

Gender: _____ Age: _____ Occupation: _____

What is your highest educational qualification (broad categories)? _____

Locals:

How long have you lived in Christchurch? _____

Gender: _____ Age: _____ Occupation: _____

What is your highest educational qualification (broad categories)? _____

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Michelle Collings
Research Administrator
Tourism, Recreation Research and Education Centre
PO Box 84
Lincoln University
Canterbury
New Zealand

Phone: 64(3) 325-3838 x 8744
Fax: 64(3) 325-3857
Email: collingm@lincoln.ac.nz