

Sustainable Nature Based Tourism: Planning and Management

Report on Visitation and Use at Barron Falls, Far North Queensland, 2009/2010



Julie Carmody and Bruce Prideaux



Australian Government
Department of the Environment,
Water, Heritage and the Arts



WET TROPICS
MANAGEMENT AUTHORITY



JAMES COOK
UNIVERSITY
AUSTRALIA



Reef &
Rainforest
RESEARCH CENTRE

Sustainable Nature Based Tourism: Planning and Management

Report on Visitation and Use at
Barron Falls, Far North Queensland, 2009/2010

Julie Carmody and Bruce Prideaux
School of Business, James Cook University, Cairns



Australian Government
**Department of the Environment,
Water, Heritage and the Arts**

Supported by the Australian Government's
Marine and Tropical Sciences Research Facility
Project 4.9.2 Sustainable Nature Based Tourism: Planning and Management

© James Cook University

ISBN 978-1-921359-89-7

This report should be cited as:

Carmody, J. and Prideaux, B. (2011) *Sustainable Nature Based Tourism: Planning and Management. Report on Visitation and Use at Barron Falls, Far North Queensland, 2009/2010*. Report to the Marine and Tropical Sciences Research Facility. Published by the Reef and Rainforest Research Centre Limited, Cairns (57pp.).

Published by the Reef and Rainforest Research Centre on behalf of the Australian Government's Marine and Tropical Sciences Research Facility.

The Australian Government's Marine and Tropical Sciences Research Facility (MTSRF) supports world-class, public good research. The MTSRF is a major initiative of the Australian Government, designed to ensure that Australia's environmental challenges are addressed in an innovative, collaborative and sustainable way. The MTSRF investment is managed by the Department of the Environment, Water, Heritage and the Arts (DEWHA), and is supplemented by substantial cash and in-kind investments from research providers and interested third parties. The Reef and Rainforest Research Centre Limited (RRRC) is contracted by DEWHA to provide program management and communications services for the MTSRF.

This publication is copyright. The *Copyright Act 1968* permits fair dealing for study, research, information or educational purposes subject to inclusion of a sufficient acknowledgement of the source.

The views and opinions expressed in this publication are those of the authors and do not necessarily reflect those of the Australian Government or the Minister for the Environment, Water, Heritage and the Arts or Minister for Climate Change and Water.

While reasonable effort has been made to ensure that the contents of this publication are factually correct, the Commonwealth does not accept responsibility for the accuracy or completeness of the contents, and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this publication.

Cover photographs courtesy of Bruce Prideaux (rainforest, main image; Barron Falls walkway; site signage) and Wet Tropics Management Authority (Barron Falls).

This report is available for download from the Reef and Rainforest Research Centre Limited website:
http://www.rrrc.org.au/publications/research_reports.html



March 2011

Contents

List of Tables	ii
List of Figures.....	iii
Acronyms and Abbreviations.....	iii
Acknowledgements	iv
KEY FINDINGS.....	v
1. INTRODUCTION.....	1
1.1 Site Location and Description	1
1.2 Previous Research.....	2
1.3 Traffic Counter Data.....	2
2. METHODOLOGY	3
2.1 Survey Instrument	3
2.2 Survey Collection	4
2.3 Non-response and Observations	5
2.4 Limitations	5
3. FINDINGS	6
3.1 Respondent Profile.....	6
3.2 Perceptions of the Natural Environment	20
3.3 Perceptions and Use of the Site Facilities.....	22
3.4 Visitor Experience	31
3.5 Additional Comments.....	35
4. MANAGEMENT CONSIDERATIONS.....	37
5. REFERENCES	38
APPENDIX 1: SITE SURVEY INSTRUMENT.....	39
APPENDIX 2: SITE PHOTOGRAPHS	48

List of Tables

Table 1:	Components of the Barron Falls visitor survey	3
Table 2:	Barron Falls visitor survey collection times and details (N = 294).....	4
Table 3:	Reasons given for not participating in the Barron Falls visitor survey (n = 130).....	5
Table 4:	Origin of Barron Falls survey respondents (n = 285)	6
Table 5:	Respondents' age and education (n = 290)	9
Table 6:	Composition of visitor travel parties to Barron Falls (n = 288)	10
Table 7:	Visitors' reported previous stop before arriving at Barron Falls (n = 263).....	11
Table 8:	Intention of survey respondents to visit other places within the region after Barron Falls (n = 287)	12
Table 9:	Comparative domestic and international visitors' motivations to visit Barron Falls.....	14
Table 10:	Survey respondents' most cited reasons for visiting Barron Falls.....	15
Table 11:	Domestic and international visitors' perceptions of the natural environment and Barron Falls	20
Table 12:	Survey respondents' perceptions of the natural features at Barron Falls	21
Table 13:	Domestic and international visitors' perceptions of the site facilities at Barron Falls.....	22
Table 14:	Survey respondents' perceptions of the site facilities at Barron Falls	23
Table 15:	Facilities expected to be available at Barron Falls by survey respondents (n = 43).....	26
Table 16:	Facilities expected to be available at Barron Falls by survey respondents (n = 43).....	28
Table 17:	Survey respondents' perceptions of on-site tourism information provided at Barron Falls.....	29
Table 18:	Survey respondents' suggested additional visitor information that could be made available at the Barron Falls site (n = 24).....	30
Table 19:	Aspects that visitors considered enhanced or increased their enjoyment of Barron Falls (n = 79)	31
Table 20:	Aspects visitors considered took away or detracted from their enjoyment of Barron Falls (n = 31)	32
Table 21:	Domestic and international visitors' perceptions of other site visitors	33
Table 22:	Perceptions of other visitors at Barron Falls	34

List of Figures

Figure i:	Barron Gorge National Park, showing the Barron Falls lookout visitor site	vi
Figure 1:	Surveys collected at Barron Falls by date and time (N = 294)	4
Figure 2:	Occupations of Barron Falls survey respondents (n = 289)	7
Figure 3:	Age groups of Barron Falls survey respondents (n = 293)	8
Figure 4:	Levels of education attained by Barron Falls survey respondents (n = 294)	9
Figure 5:	Modes of transport used by survey respondents to travel to Barron Falls (n = 254)	10
Figure 6:	Survey respondents' frequency of visitation to protected natural areas (n = 269)	13
Figure 7:	Activities undertaken at Barron Falls as cited by survey respondents (n = 294) in response to a multiple-response survey question	16
Figure 8:	Activities which survey respondents would like to have undertaken at Barron Falls, but could not (n = 34)	17
Figure 9:	Approximate time spent at Barron Falls by both domestic and international visitors (n = 289)	18
Figure 10:	Survey respondents' willingness to pay an access/entrance fee to visit Barron Falls (n = 288)	19
Figure 11:	Survey respondents' suggested uses of an on-site Park Ranger at Barron Falls in response to a multiple-response survey question (n = 161)	24
Figure 12:	Most popular Barron Falls site facilities used by survey respondents, cited in response to a multiple-response survey question (n = 294)	25
Figure 13:	Sources of information consulted by survey respondents prior to visiting Barron Falls (n = 294)	27

Acronyms and Abbreviations

DERM	Queensland Department of Environment and Resource Management
EPA	Queensland Environmental Protection Agency
ILUA	Indigenous Land Use Agreement
MTSRF	Marine and Tropical Sciences Research Facility
N	Entire survey sample
n	Portion of survey sample
QPWS	Queensland Parks and Wildlife Service
WTMA	Wet Tropics Management Authority
WTWHA	Wet Tropics World Heritage Area

Acknowledgements

Funding for this research was provided by the Australian Government's Marine and Tropical Sciences Research Facility (MTRSF) and the Wet Tropics Management Authority.

We would like to thank the following people for their assistance. Those involved in the distribution and collection of surveys were Debbie Cobden, Jonathan Sibtain and Lisa King. Data entry was completed by Debbie Cobden.

We would also like to acknowledge the assistance of Max Chappell of the Wet Tropics Management Authority; and Andrew Millerd and Linden Henry from the Queensland Department of Environment and Resource Management.

Key Findings

The following key findings are based on a visitor survey (N = 294) undertaken at Barron Falls between March and June 2009. Where findings are reported as a mean, 1 represents the lowest level of agreement with given statements by survey respondents, while 6 represents the highest level of agreement.

Respondent Profile

- Barron Falls is visited by both domestic (56.1%) and international (43.9%) visitors.
- The largest group of respondents was aged 20-29 years (37.3%).
- Couples with no children (n = 156) were the largest travel party segment.

Travel Patterns

- Visitors to Barron Falls travelled from Cairns (30.7%), Kuranda (22.8%), Port Douglas (10.6%) and Mareeba (9.9%).
- Respondents leaving Barron Falls were heading to Cairns (34.6%), Kuranda (20.3%) and Port Douglas (9.9%).
- Road signs (39.4%), word-of-mouth (26.4%), tourist maps (26.4%) and travel guide books (25.0%) were the key sources of information used by visitors prior to visiting Barron Falls.

Reasons for Visiting Barron Falls

- The natural features and scenery were the main motivation for visiting Barron Falls.
- Domestic visitors sought to experience tranquility, whereby international visitors were motivated by the natural environment.

Perceptions of the Natural Environment

- The natural environment is considered interesting (mean = 5.68), in good condition (mean = 5.41), well managed (mean = 5.39) and appealing (mean = 5.35).

Perceptions and Use of the Site Facilities

- The site facilities at Barron Falls are considered to be in good condition (mean = 4.93).
- The presence of a ranger at the site was not strongly supported (mean = 3.61).
- The boardwalk (83.2%), viewing platform (80.6%) and walking track (77.7%) were the most popular facilities.

Perceptions of Signage

- The directional signage at Barron Falls is considered easy to find (mean = 5.09) and helpful (mean = 5.01).
- The safety signage is considered easy to understand (mean = 5.18).
- Information about the natural features is considered informative (mean = 5.11).

Satisfaction with the Visitor Experience

- The boardwalk and natural beauty of Barron Falls enhanced visitors' experiences of the site.

1. Introduction

This report is one of a series of ten that examine visitor activity at sites within Wet Tropics rainforests. The aim of the research was to provide a snapshot of visitor activity to inform management on how sites are used and investigate visitors' views on site management. Visitor data was collected using a self-completed visitor survey. Collectively the series of reports will provide an overall understanding of how visitors use the rainforest and provide managers with feedback that can be used for site management and future planning.

Responsibility for the management of the Wet Tropics rainforests is shared by the Wet Tropics Management Authority (WTMA) and the Queensland Department of Environment and Resource Management (DERM). The WTMA was established after listing of the Wet Tropics as a World Heritage site and is responsible for the planning of visitor sites across the Wet Tropics World Heritage Area (WTWHA). The Queensland Parks and Wildlife Service (QPWS), an agency of the DERM, has responsibility for the day to day management of site infrastructure including toilets, car parking, signage, viewing lookouts, boardwalks, walking trails and other recreational facilities. The Wet Tropics has a large number of visitor sites, some of which have high rates of visitation. A number of sites have relatively low visitation rates, but all offer unique nature-based visitor experiences.

1.1 Site Location and Description

Barron Falls is located within the Barron Gorge National Park¹ (Din Din National Park) and was gazetted in 1940 under the provisions of *The State Forests and National Parks Act (1906)*. Prior to this, the Park was known as the Barron Falls Reserve for Park (R167) (Martin, 2008). The park covers an area of 28 km² (2,833 hectares) and is located in the northern section of the WTWHA. The most significant feature of the Park is the Barron Falls. During the wet season, the falls provide spectacular views which can be seen from the nearby railway station viewing platform. The Park has two principle sections – the upper section containing Barron Falls and a lower section accessible via Lake Placid Road. The research discussed in this report was undertaken at the Barron Falls section. A map of Barron Gorge National Park showing the survey site is provided at Figure i.

Access to the waterfall viewing platform is gained via a boardwalk that commences at the visitor car park and finishes at a lookout built near the Barron Falls railway stop. The boardwalk includes elevated sections through the forest and hardened walkways on the forest floor. At the time of the survey, toilets and barbeque facilities were not available at the site. However, toilet facilities were constructed in late 2009 and opened in 2010. Limited seating is provided along the boardwalk and hardened walkway. Interpretative signage installed along the boardwalk and at the railway platform informs visitors on the Park's flora and fauna, European history and Djabugay Traditional Owners.

The Traditional Owners of the region surrounding the falls are the Djabugandgi Bama people, who call the area Djirri Nyundu Nyrrumba (DERM, 2010). The Aboriginal name for the Barron River was 'Buna' and 'Din Din' for the Falls. The area in which the Park is located is called Djirri Nyundu Nyrrumba and includes the Barron Gorge National Park. A Federal Court of Australia determination handed down on 17 December 2004 gave the Djabugay people native title over Barron Gorge National Park, the first Queensland Park to have a native title determination. Native title recognises the interests and rights of Traditional Owners under customary law and tradition. To ensure native title interests and the needs of

¹ <http://www.derm.qld.gov.au/parks/barron-gorge/index.html>

park management are effectively integrated, a formal Indigenous Land Use Agreement (ILUA) has been registered (DERM, 2010).

The European history of the site is closely connected to the construction of the Cairns to Kuranda railway and building of the Barron Gorge Hydroelectric Power Station on the lower section of the Barron River. The railway was a major engineering feat for its time and was designed to open up agriculture and mining on the Atherton Tablelands. The first sod of soil for the construction of the railway was turned by Sir Samuel Griffith, Premier of Queensland, on 10 May 1884. The Kuranda to Cairns section of the railway line is 75.1 km in length and includes fifteen tunnels, 93 curves and dozens of bridges above ravines and waterfalls. This formidable task was undertaken between 1886 and 1891 by some 1,500 men working in steep, rocky terrain, dense forest and seasonal wet weather conditions. Much of the original construction work was done by hand. In 1891, the Cairns to Kuranda Railway line was opened to passenger travel. Today the Queensland Railway owned line is primarily operated as a tourism attraction and the Kuranda Scenic Railway train travels between Cairns and Kuranda twice daily. The train stops for a short period at the Barron Falls station on each trip to allow passengers to disembark and view the Barron Falls.

1.2 Previous Research

Previous research into visitor use of the Barron Falls site was undertaken by Manadis Roberts Consultants who conducted visitor surveys at 56 sites within the WTWHA during 1993/1994, and more recently by Bentrupperbäumer (2002) in 2001/2002. The Manadis Roberts research was based on visitor interviews, traffic counts and site observations. The study by Bentrupperbäumer (2002) included traffic counter data, site observations and visitor surveys.

In 1993, the total number of vehicles recorded at the Barron Falls visitor site was 54,507. Visitor numbers were estimated to be 165,633 at the same time. Respondents travelled to the site as couples (35.9%), as a family (30.6%) or with friends (19.0%). The average vehicle occupancy was 2.8 persons. Time spent at the site was relatively short with 92.2% of independent travellers indicating they spent less than half an hour at the site. Motivations for visiting the site on a six-point scale, with 1 being 'Not important' and 5 being 'Very important', were to view the scenery (mean = 4.5), visit a World Heritage Area (mean = 3.9), be close to nature (mean = 3.8), give the mind a rest (mean = 3.5) and experience new and different things (mean = 3.4). Scenic viewing, the short walk and photography were the main activities undertaken at the site.

1.3 Traffic Counter Data

Entry to the site is not monitored on a regular basis and so only limited information about current visitor numbers exists. Bentrupperbäumer (2002) estimated that annual visitation was 97,000 visitors. Traffic counters maintained by the DERM indicated that the lowest level of visitation occurred in March 2001 (1,766 vehicles), while the highest level was recorded in August 2001 (7,125 vehicles), with visitation spread evenly across weekdays and a slight increase on weekends (Bentrupperbäumer, 2002).

2. Methodology

The aims of this report are to:

- Investigate visitor activities undertaken at Barron Falls; and
- Identify visitors' views about aspects of the site including its management.

Specific objectives of the research were to:

- Provide a snapshot profile of visitors to the Barron Falls site;
- Understand visitors' perceptions of the management of the site;
- Understand visitors' perceptions of the natural environment at the site;
- Gain an understanding of visitors' travel patterns within the Wet Tropics region; and
- Assess the suitability of the interpretative information provided at the site.

A convenience sampling technique was used and data was analysed with the SPSS v17 statistical package.

This research complements earlier research (Carmody and Prideaux, 2008) that investigated how local residents used the Wet Tropics and their views on its management.

2.1 Survey Instrument

To collect data on a range of issues related to visitor expectations and experiences, a survey (Appendix 1) was developed in conjunction with officers from the WTMA. The survey instrument was based on a previous survey used in 2001/2002 which enabled some general comparisons to be made with earlier research. The self-completed survey contained 29 closed and open-ended questions and provided space for respondents to write additional comments. Open-ended questions were used because they can test specificity of knowledge more effectively (as shown by Whitmarsh, 2009), provide richer responses (Altinay and Paraskevas, 2008) and can minimise social desirability bias (Budeanu, 2007). Survey questions were grouped into eight sections commencing with demographic data. Table 1 outlines the components of the survey. Survey staff recorded site details including location, date, time of collection and weather conditions on the front cover of the survey instrument.

Table 1: Components of the Barron Falls visitor survey.

Section A	Background information	Place of residence, occupation, education, age, gender
Section B	Travel and transport	Organised tour or free and independent traveller, travel party, mode of transport, pre- and post-visit of site, experience of protected natural areas
Section C	Reasons for visiting	Motivations, activities, time spent at site, willingness to pay
Section D	Natural environment	Perceptions of the natural environment
Section E	Site facilities	Use of site facilities, expectations of facilities, perceptions of facilities, ranger presence
Section F	Information	Prior information search, perceptions of on-site information, additional information required
Section G	Visitor experience	Aspects of visit that enhanced and detracted from experience, perceptions of crowding
Additional comments		Open-ended to allow for any comments and feedback

2.2 Survey Collection

Research assistants were stationed at a small shelter about one-third of the way along the walking track that leads from the car park to the railway viewing platform. Using a convenience sampling technique, visitors returning from the viewing platform were approached and asked to complete the survey. The researcher explained the purpose of the survey and informed potential respondents that the survey would take approximately ten minutes to complete. On completion, a postcard or WTMA cassowary sticker was offered as a token of appreciation. Table 2 outlines details of times, weather and frequency of collection activities at the Barron Falls site.

Table 2: Barron Falls visitor survey collection times and details (N = 294).

Date	Day	Weather	Visitor Frequency	Percent of Total
23 March 2009	Monday	Overcast	25	8.5
24 March 2009	Tuesday	Sunny	59	20.1
23 April 2009	Thursday	Sunny	42	14.3
27 April 2009	Monday	Overcast	70	23.8
16 May 2009	Saturday	Warm	42	14.3
15 June 2009	Monday	Overcast	56	19.0
Total			294	100.0

Surveys were collected during the shoulder and peak tourist seasons, between 10:00 am and 3:00 pm on various days of the week (Figure 1). Visitation levels peaked between 12:30 pm and 1:30 pm.

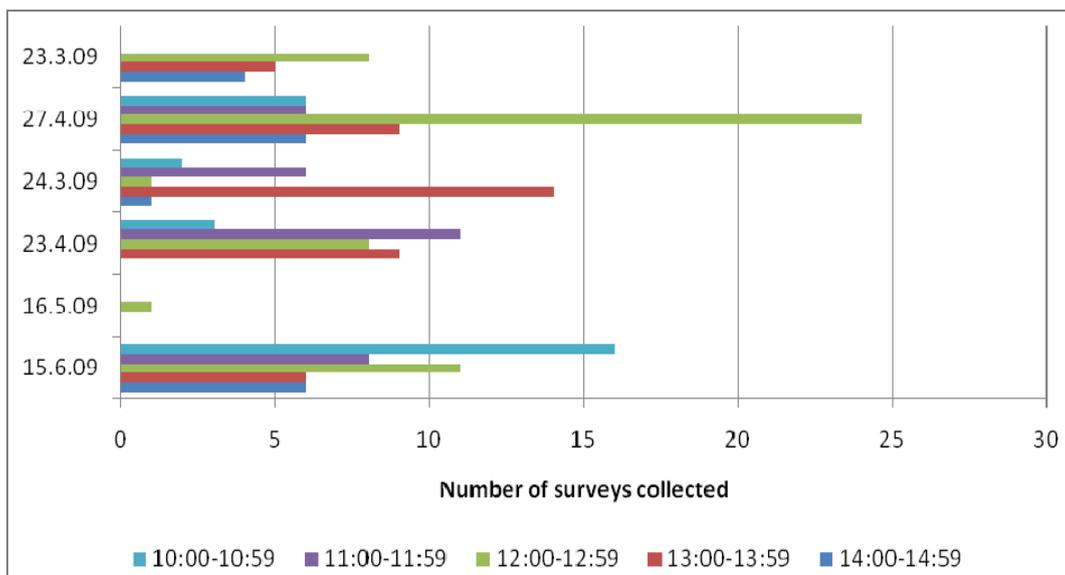


Figure 1: Surveys collected at Barron Falls by date and time (N = 294).

2.3 Non-response and Observations

Refusals to complete the survey were recorded on-site and are presented in Table 3. Of the 424 people approached to complete the survey, 30.7% refused (n = 130). Lack of time to complete the survey was the main reason given for not participating (15.1%).

Table 3: Reasons given for not participating in the Barron Falls visitor survey (n = 130).

Reason for not participating in survey	Frequency (n)	Percentage of total number of people approached (n = 424)
Not enough time to participate	64	15.1
Language difficulties	24	5.7
Not interested in participating	20	4.7
Children – impatient/ upset	16	3.8
Took part in the survey at another Wet Tropics	3	0.7
No reading glasses	2	0.5
Not returning this way	1	0.2
Non-Response	130	30.7%

2.4 Limitations

There were some limitations associated with the research that should be considered prior to generalising the results:

- First, the survey was conducted using a convenience sampling approach and may not be representative of all visitor segments using the site;
- Second, the sample size was limited by time and budget constraints;
- Third, the survey was only available in English, resulting in a possible under-reporting of some nationalities visiting the site;
- Fourth, there was potential for social desirability bias occurring where respondents offered answers that are seen to be desirable or acceptable but may not reflect their true opinions. In most cases it is difficult to determine the level of social desirability for any given question; and
- Finally while there are commercial tour operators holding permits for Barron Falls, no tour group members were sighted during the collection period.

Understanding the Results

Both closed questions with specific response options and open-ended questions were used in the visitor survey. The advantage of closed questions is that it allows the researcher to investigate specific issues of interest while open-ended questions provide a good indication of top-of-mind responses and concerns of interviewees. Closed response questions generally asked respondents to use a six-point Likert scale. In the following discussion, the results of closed questions are reported as means and as the percentage breakdown by the six items on the Likert scale. Means are useful for ranking in order of importance while percentage breakdown gives a clearer indication of the strength of agreement or disagreement with a particular given statement. The following discussion should be read with these considerations in mind. It should also be noted that not every question was answered by all respondents, thus the 'n' values of tables and figures may vary. The 'n' value reports valid responses. The 'N' value reports the entire sample.

3. Findings

The results presented in this report are from the Wet Tropics Visitor Site Level Survey distributed at the Barron Falls visitor site in 2009.

3.1 Respondent Profile

Slightly more males (51.4%) than females (48.6%) completed the survey (N = 294).

Place of Residence

Respondents' places of residence are provided in Table 4. More domestic visitors (56.1%) than international visitors (43.9%) were interviewed. Visitors from Queensland constituted the largest group of respondents (24.2%). The largest group of international visitors were from Europe (16.1%), followed by the United Kingdom (13.7%).

Table 4: Origin of Barron Falls survey respondents (n = 285).

	Frequency (n)	Percent (%)
DOMESTIC		
Other Queensland	46	16.1
New South Wales	38	13.3
Far North Queensland	23	8.1
Victoria	18	6.3
South Australia	16	5.6
Western Australia	14	4.9
Northern Territory	5	1.8
Domestic Total	160	56.1
INTERNATIONAL		
Europe	46	16.1
England/ UK	39	13.7
North America	19	6.7
Other country	10	3.5
Asia-Pacific	7	2.5
New Zealand	4	1.4
International Total	125	43.9
Total Domestic and International	285	100.0

Occupation

The occupation of respondents is provided in Figure 2. The largest group was professionals (25.2%), followed by retired or semi-retired visitors (17.2%) and students (16.2%). There were no significant differences between domestic and international respondents and their occupation. More international students (10.0%) than domestic students (6.2%) completed the survey.

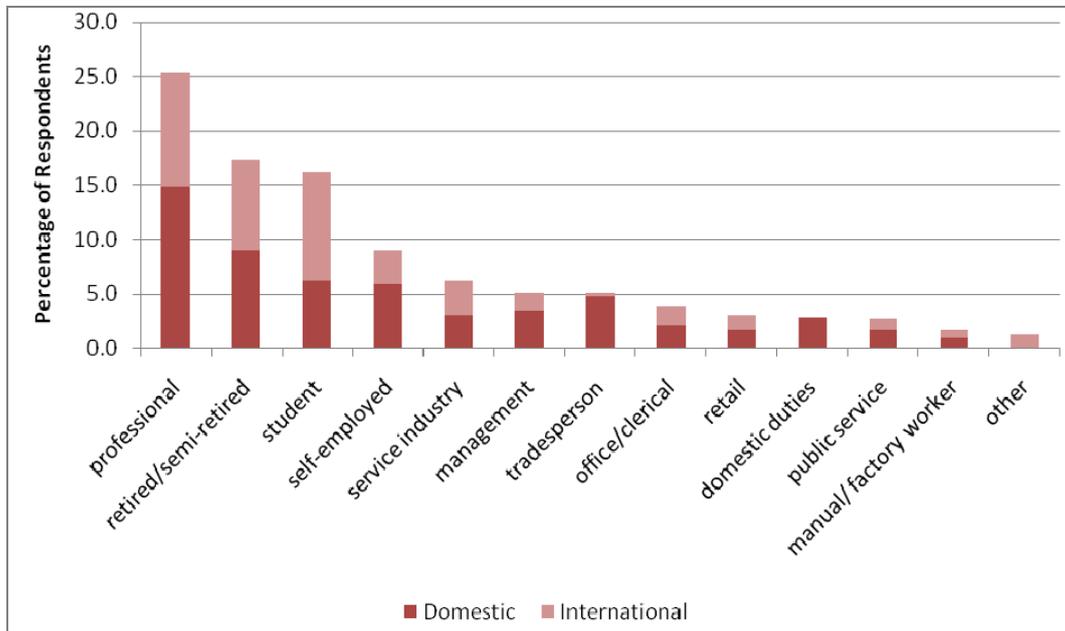


Figure 2: Occupations of Barron Falls survey respondents (n = 289).

Age

Figure 3 highlights the age ranges of respondents by whether they were domestic or international visitors. The mean age was 39.8 years, with a range of 16 to 77 years. The standard deviation was 16.6 years. Respondents aged 20-29 years (37.3%) were the largest group followed by the 60-69 years group (16.1%). The smallest groups were those aged 70 years and older (3.4%) and those less than 20 years (3.8%).

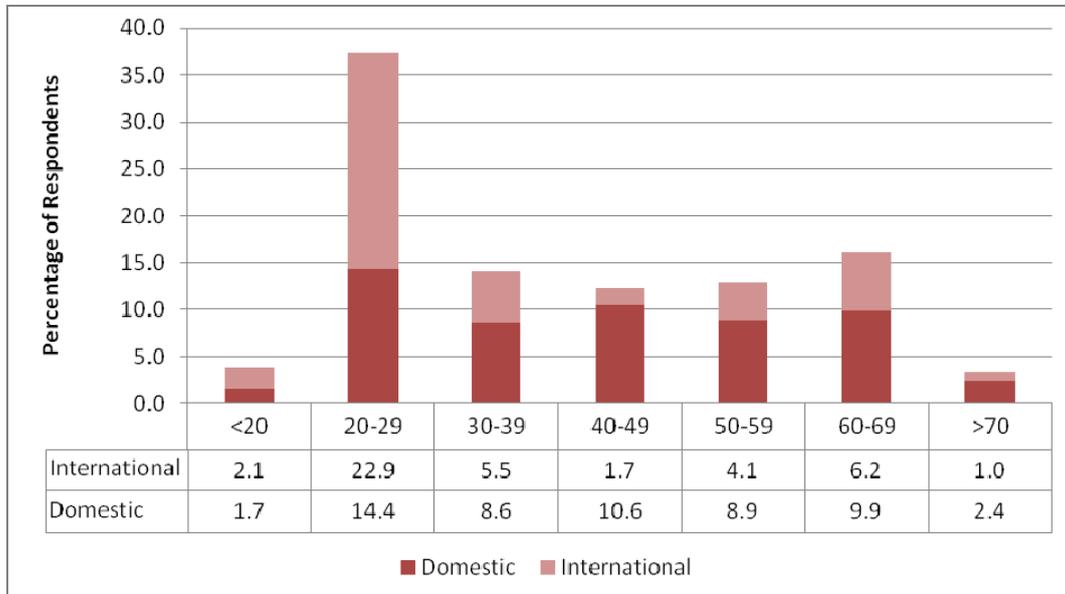


Figure 3: Age groups of Barron Falls survey respondents (n = 293).

Education

Figure 4 highlights survey respondents' education levels, where Tertiary A is defined as technical or further education, and Tertiary B is defined as a university qualification. For the whole sample, the largest group of respondents indicated they had attained the level of Tertiary B education (42.3%) while 28.9% of respondents reported having a Tertiary A education. Domestic visitors were more likely to possess a Tertiary B education (21.3%) or a secondary education (21.3%), while international visitors were more likely to hold a Tertiary B (21.0%) or Tertiary A qualification (16.5%).

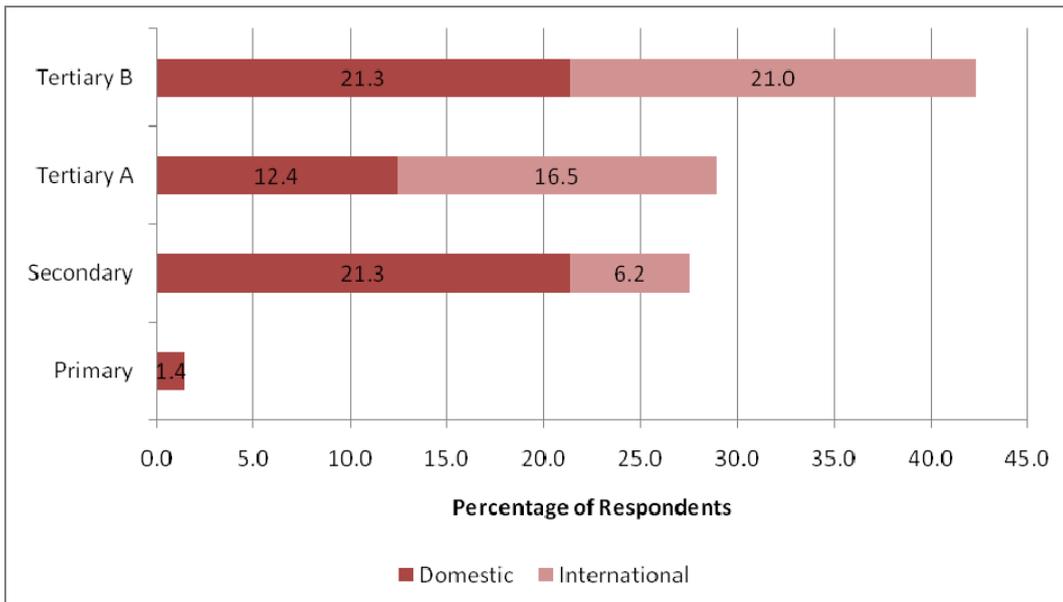


Figure 4: Levels of education attained by Barron Falls survey respondents (n = 294).

A cross-tabulation analysis of respondents' age and education is provided in Table 5. The largest group of respondents had achieved a Tertiary B education and was aged 20-29 years (19.9%). The second largest group was 20-29 years, with a Tertiary A education (11.0%).

Table 5: Respondents' age and education (n = 290).

Age Group	Primary (%)	Secondary (%)	Tertiary A (%)	Tertiary B (%)
< 20 years	0.3	1.7	1.7	-
20-29 years	-	5.8	11.0	19.9
30-39 years	0.3	2.7	4.8	6.5
40-49 years	-	5.8	2.7	3.8
50-59 years	-	4.1	4.5	4.5
60-69 years	-	5.8	3.8	6.5
> 70 years	0.7	1.4	-	1.4
Total Respondents (n=290)	1.4 (n = 4)	27.5 (n = 80)	28.5 (n = 83)	42.6 (n = 123)
Domestic	1.4% (n = 4)	77.5% (n = 62)	43.4% (n = 36)	50.4% (n = 62)
International	0%	22.5% (n = 18)	56.6% (n = 47)	49.6% (n = 61)

Travel Party and Mode of Transport

Figure 5 indicates that just under two thirds (60.3%) of respondents reported travelling in rental vehicles, while 38.0% travelled by private vehicle and 1.6% used public transport. Both domestic and international visitors displayed similar levels rental vehicle usage.

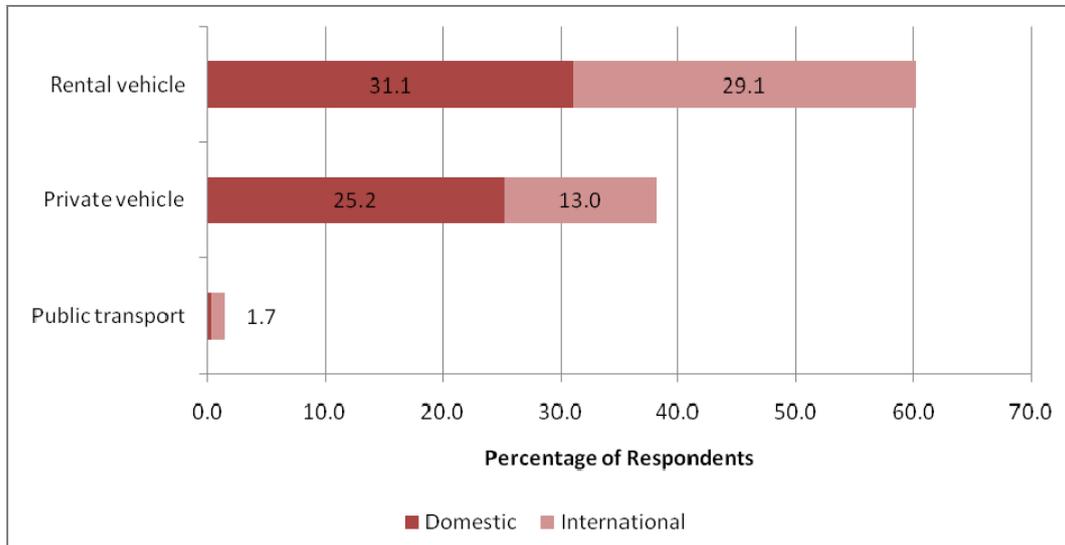


Figure 5: Modes of transport used by survey respondents to travel to Barron Falls (n = 254).

Table 6 reports on travel party composition. Travel parties of two adults with no children (n = 156) and four adults with no children (n = 53) were the largest segments. The average number of adults per vehicle was 2.56 with a standard deviation (SD) of 1.03 adults.

Table 6: Composition of visitor travel parties to Barron Falls (n = 288).

	1 adult	2 adults	3 adults	4 adults	5 adults	6 adults
0 children	19	156	25	53	10	-
1 child	-	12	-	-	-	2
2 children	-	1	6	2	-	-
3 children	-	2	-	-	-	-
Adults per vehicle 2.56 ± SD 1.03 (range 1-6)						
Children per vehicle 0.13 ± SD 0.47 (range 0-3)						

Organised Tour Visitors

Although permits have been issued to a number of far northern Queensland commercial tour operators to visit Barron Falls, none of the respondents surveyed during the collection period were with an organised tour. All of the respondents may be classed as free independent travellers.

Travel Flow

Respondents were asked about their travel patterns on the day of the survey, including where they had been and where they intended to go after leaving the site. Results are outlined in Tables 7 and 8. Almost one third of respondents had travelled from Cairns (30.7%), while others had travelled from nearby Kuranda (22.8%), Port Douglas (10.6%) and Mareeba (9.6%).

Table 7: Visitors' reported previous stop before arriving at Barron Falls (n = 263).

	Frequency (n)	Percent (%)
Towns		
Cairns	81	30.7
Kuranda	60	22.8
Port Douglas	28	10.6
Mareeba	26	9.9
Palm Cove	12	4.6
Atherton	7	2.7
Trinity Beach	4	1.5
Daintree	3	1.1
Speerwah	2	0.8
Herberton	2	0.8
Cape Tribulation	1	0.4
Mossman	1	0.4
Millaa Millaa	1	0.4
Hamilton Island	1	0.4
Airlie Beach	1	0.4
Natural Attractions		
Rainforest	4	1.5
Great Barrier Reef	2	0.8
Beach	1	0.4
Other Attractions		
Nowhere/ first stop	8	3.0
Home	7	2.7
Barron Falls Hydro Visitor Centre	4	1.5
Zoo	4	1.5
Accommodation	3	1.1
Total	263	100.0

After leaving the Barron Falls site, survey respondents indicated (Table 8) they would travel to Cairns (34.6%), Kuranda (20.3%), Port Douglas (9.9%), Mareeba (5.7%) and Atherton (5.3%). A number of other towns and attractions were cited by a small number of respondents. One travel pattern that can be distinguished from the results outlined in Tables

7 and 8 is the propensity to visit towns and sites along the Kennedy and Cook Highways route, as respondents travel to and from the Atherton Tablelands.

Table 8: Intention of survey respondents to visit other places within the region after Barron Falls (n = 287).

	Frequency (n)	Percent (%)
Towns		
Cairns	99	34.6
Kuranda	58	20.3
Port Douglas	28	9.9
Mareeba	16	5.7
Atherton	15	5.3
Cape Tribulation	8	2.9
Palm Cove	4	1.4
Ayr	3	1.0
Mossman	2	0.7
Mission Beach	2	0.7
Trinity Beach	1	0.3
Daintree	1	0.3
Brisbane	1	0.3
Lake Placid	1	0.3
Normanton	1	0.3
Malanda	1	0.3
Ayres Rock	1	0.3
Darwin	1	0.3
Natural Attractions		
Wright's Lookout	5	1.7
Lake Barrine	3	1.0
Beach	2	0.7
Lake Eacham	2	0.7
Undara	2	0.7
Rainforest	1	0.3
Other Attractions		
Don't know	13	4.6
Atherton Tablelands	9	3.1
Home	3	1.0
Accommodation	2	0.7
Barron Falls Hydro Visitor Centre	1	0.3
Swimming	1	0.3
Total	287	100.0

Visits to Protected Natural Areas

Respondents were asked about the frequency of their visits to protected natural areas. As indicated in Figure 6, 35.3% of respondents visited natural areas between two and five times a year while another 34.9% visited similar natural areas more than five times a year. A small number of respondents (3.0%) indicated that their visit to Barron Falls was their first visit to a natural area. Results also indicate that domestic respondents (56.4%) are more likely to visit protected natural areas than international visitors (43.5%).

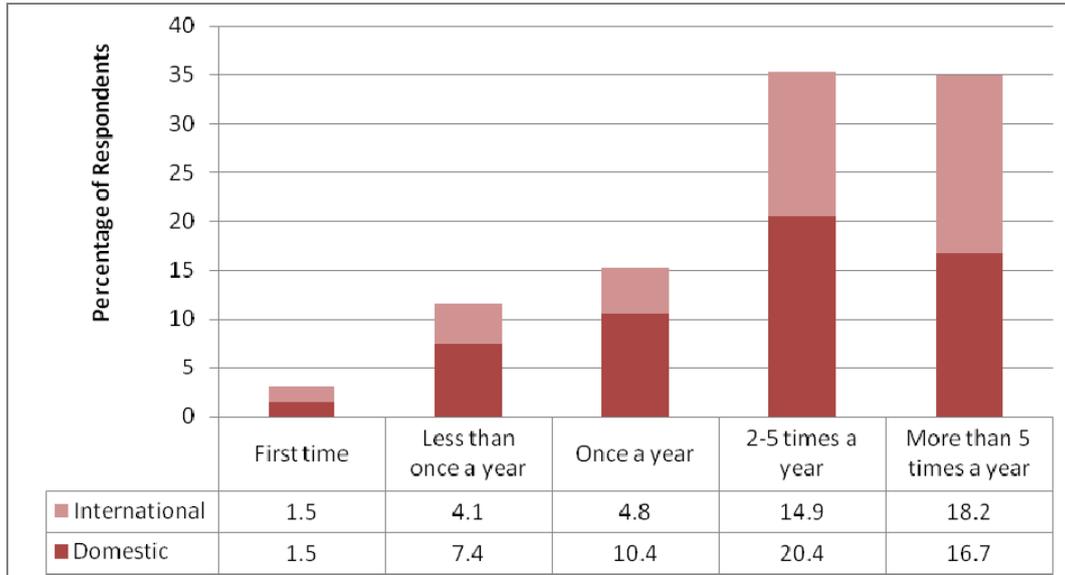


Figure 6: Survey respondents' frequency of visitation to protected natural areas (n = 269).

Reasons for Visiting Barron Falls

Respondents were asked to respond to a series of questions about their motivations for visiting Barron Falls. A six-point Likert scale of 1 = 'not important' to 6 = 'very important' was used. A mean of 4 or greater indicated that the motivation may be classed as important to very important. Table 9 indicates that the most important reason cited by survey respondents for visiting Barron Falls overall was to see the natural features and scenery (mean = 5.14), be close to/ experience nature (mean = 4.75), experience tranquility (mean = 4.40) and for outdoor exercise (mean = 4.13). International visitors appeared to be more motivated to experience the natural and cultural features of the site whereas domestic visitors were more motivated by the opportunities for tranquility, rest and relaxation and general exercise outdoors. The means for international visitors to see natural features and scenery (mean = 5.27) and to be close to/experience nature (mean = 4.91) were higher than that for domestic visitors. However, domestic visitors gave a higher level of importance to experiencing tranquility (mean = 4.50), relaxing (4.38) and outdoor exercise (mean = 4.31).

Table 9: Comparative domestic and international visitors' motivations to visit Barron Falls.

Motivations to visit Barron Falls	n	Overall Mean	Domestic visitors (mean)	International visitors (mean)
See natural features and scenery	280	5.14	5.03	5.27
Be close to/ experience nature	279	4.75	4.61	4.91
Experience tranquility	277	4.40	4.50	4.26
Outdoor exercise	277	4.13	4.31	3.88
Rest and relax	279	4.08	4.38	3.70
Because it is a National Park	279	4.03	4.17	3.84
Opportunities for short walks	274	4.01	4.18	3.79
Because it is a World Heritage Area	278	3.82	3.79	3.87
Socialise with family or friends	277	3.73	3.83	3.63
Learn about native animals and plants	282	3.65	3.53	3.80
Opportunities for long walks	276	3.59	3.54	3.66
Learn about Aboriginal culture	275	3.19	3.03	3.37

Table 10 shows the level of importance ascribed to each motive on a scale from 'not important' to 'very important'. Results show that 92.9% of respondents considered the opportunity to see natural features and scenery an important motivation for visiting the site, with more than half of the respondents (51.4%) indicating that this motive was very important. 'Learning about native animals and plants', 'opportunities for long walks' and to 'learn about Aboriginal culture' were not considered to be important reasons for visiting the site.

Table 10: Survey respondents' most cited reasons for visiting Barron Falls.

Reasons for visiting Barron Falls	Percentage of survey respondents					
	Not important	Slightly important	Moderately important	Important	Quite important	Very important
See natural features and scenery	0.7	1.0	5.4	21.1	20.4	51.4
Be close to / experience nature	2.2	2.5	10.0	25.1	24.4	35.8
Experience tranquility	3.6	6.1	15.2	22.0	29.2	23.9
Outdoor exercise	4.7	11.2	21.6	20.6	24.2	17.7
Rest and relax	7.5	8.6	18.6	20.8	24.0	20.5
Because it is a National Park	8.6	9.0	21.1	26.9	15.4	19.0
Opportunities for short walks	5.5	9.1	19.7	28.5	19.3	17.9
Because it is a World Heritage Area	10.1	11.2	20.1	23.0	16.2	19.4
Socialise with family or friends	22.7	7.6	14.8	21.3	17.0	16.6
Learn about native animals and plants	8.9	14.2	23.8	24.5	14.5	14.1
Opportunities for long walks	12.6	16.7	24.3	18.2	15.6	12.6
Learn about Aboriginal culture	19.6	17.5	19.6	21.1	12.4	9.8

Activities

Respondents were asked to indicate which activities they had undertaken at Barron Falls. Results are outlined in Figure 7. The most popular activities were observing the scenery (84.9%), a short walk of up to one hour (83.5%), photography/ painting/ drawing (68.1%) and relaxing (50.9%). Domestic visitors participated in the short walk (49.5%), observing the scenery (47.7%) and photography/ painting / drawing (37.0%). The most popular activities for international visitors were participating in the short walk (37.1%), observing the scenery (33.8%) and photography/ painting / drawing (31.1). Five percent of the respondents indicated camping although Barron Falls is not a camping site. This response is a possible example of social desirability bias.

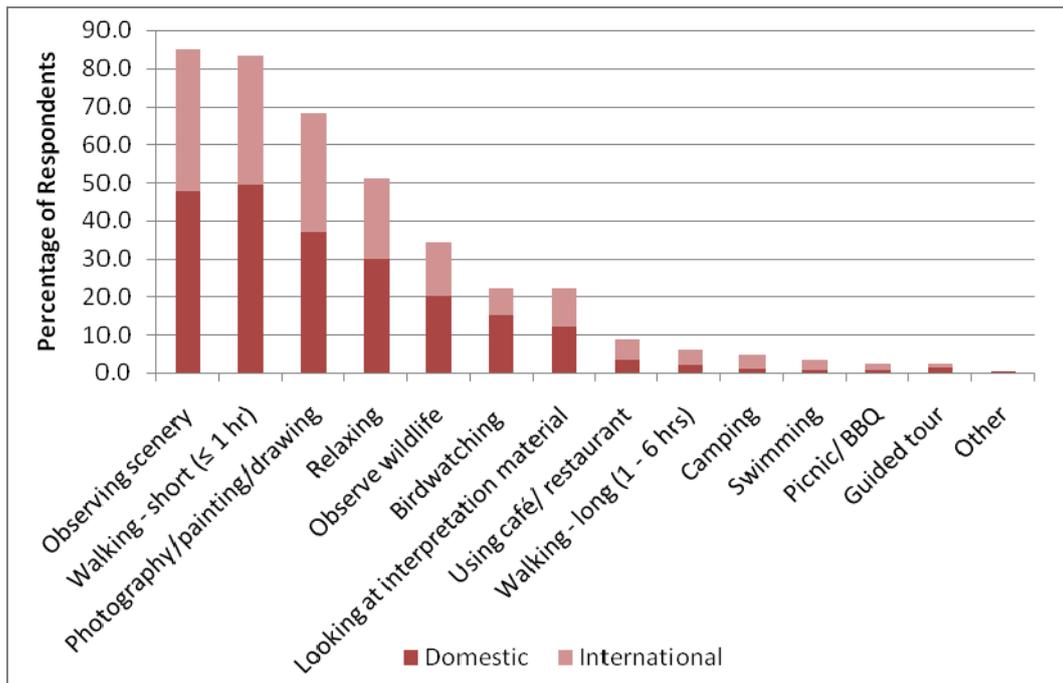


Figure 7: Activities undertaken at Barron Falls as cited by survey respondents (n = 294) in response to a multiple-response survey question.

Using an open-ended survey question, respondents were asked to indicate if there were activities that they would have liked to have participated in, but could not. Only 11.6% (n = 34) of survey respondents answered this question, with results displayed in Figure 8. Swimming (29.4%) and being able to get closer to the waterfall (23.5%) were the most frequently desired activities. International visitors were more likely to have expected to be able to swim (20.6%) and get closer to the waterfall (11.8%). Swimming is not permitted at Barron Falls and the viewing deck at the railway platform is the closest point of access to the waterfall.

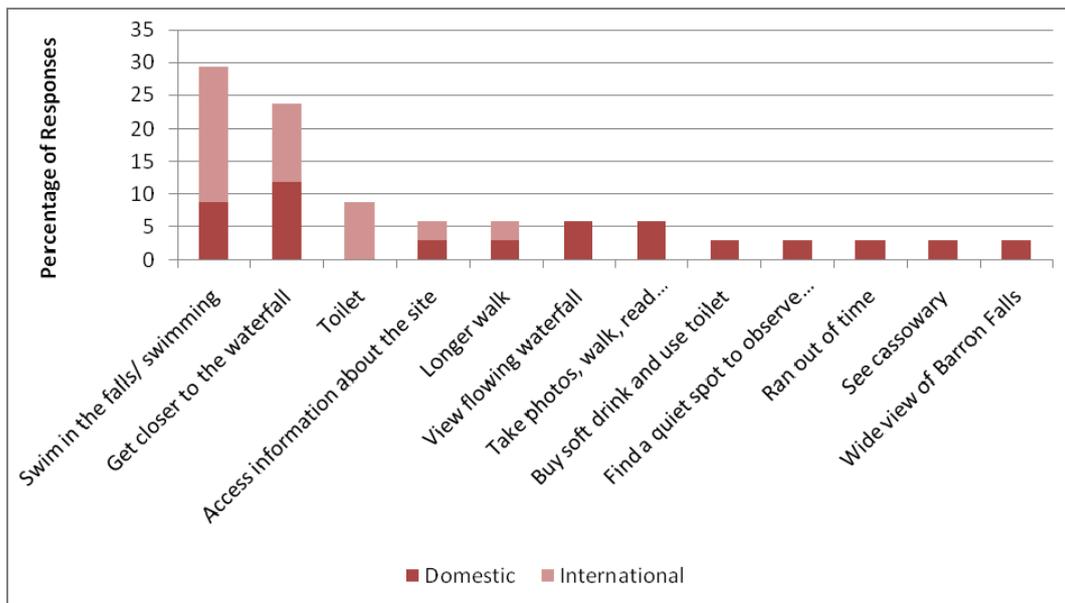


Figure 8: Activities which survey respondents would like to have undertaken at Barron Falls, but could not (n = 34).

Respondents were asked to state the length of time they spent at the Barron Falls site. Results outlined in Figure 9 indicate almost half of all respondents (46.4%) spent up to an hour at the site while one third spent about half an hour (34.6%). Domestic respondents spent more time at the site than international respondents.

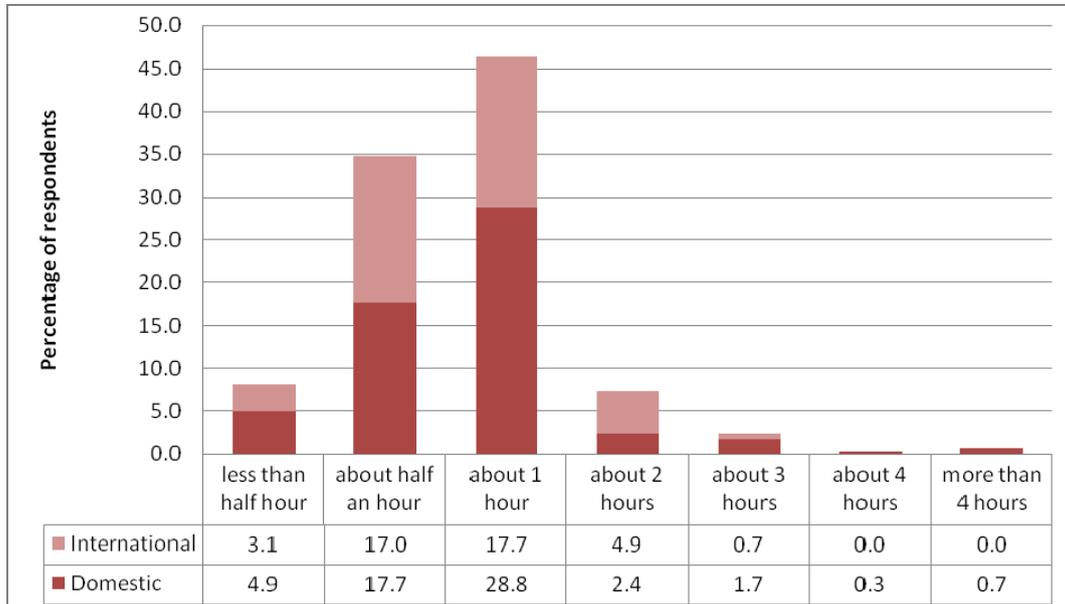


Figure 9: Approximate time spent at Barron Falls by both domestic and international visitors (n = 289).

Willingness to Pay

Currently, visitors to protected natural areas in Queensland are not charged an access/entry fee. Respondents were asked to indicate how much they would be prepared to pay if an entrance fee was introduced at the Barron Falls site.

As shown in Figure 10, 46.2% of respondents would be willing to pay up to \$5.00, while 30.2% felt they should not have to pay anything. Only 4.9% would be willing to pay between \$10.00 and \$20.00.

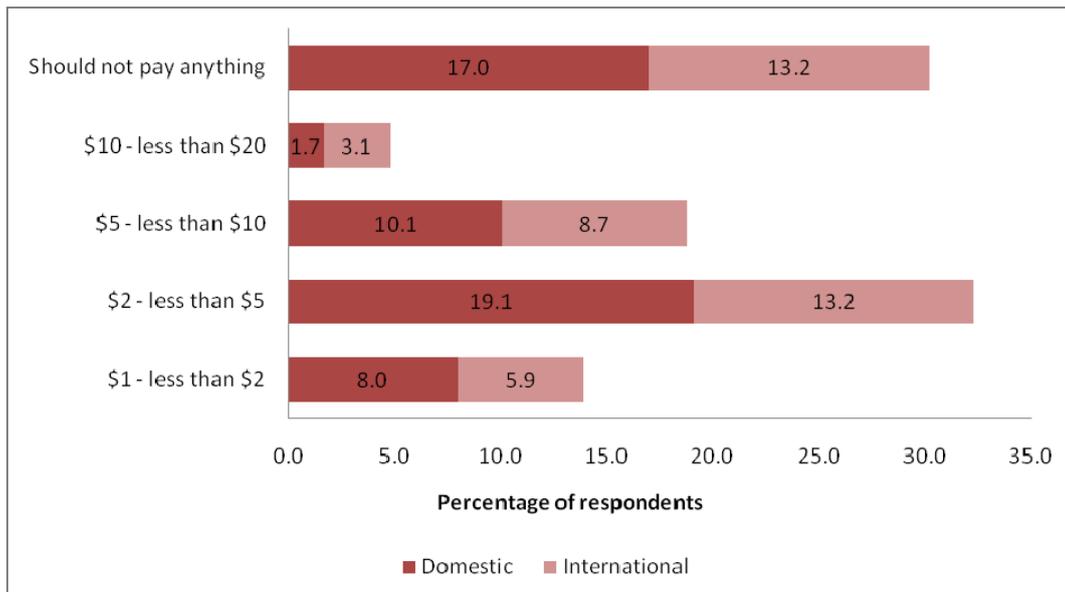


Figure 10: Survey respondents' willingness to pay an access/entrance fee to visit Barron Falls (n = 288).

3.2 Perceptions of the Natural Environment

A series of statements were used to gather respondents' views on the natural environment at Barron Falls. Respondents were asked to indicate their views using a Likert scale where 1 = 'strongly disagree' and 6 = 'strongly agree'. Table 11 summarises the results: the natural environment of the site is interesting (mean = 5.68), in good condition (mean = 5.41), well managed (mean = 5.39) and appealing (mean = 5.35). While there was not a strong sense that the site had been disturbed (mean = 2.49), domestic visitors in particular expressed a relatively strong concern about the impacts of human activity (mean = 4.06). International visitors were very enthusiastic about the site's natural environment and less concerned than domestic visitors about possible impacts of human use (mean = 3.74).

Table 11: Domestic and international visitors' perceptions of the natural environment at Barron Falls.

Perceptions of the natural environment at Barron Falls	n	Overall Mean	Domestic visitors (mean)	International visitors (mean)
The natural environment at this site is interesting.	290	5.68	5.52	5.87
The condition of the natural environment at this site appears to be good.	290	5.41	5.44	5.35
The natural environment at this site is well managed.	288	5.39	5.48	5.27
In terms of natural attractions and scenic beauty this site is appealing.	287	5.35	5.39	5.29
I would like to spend more time exploring this natural environment.	287	4.84	4.88	4.79
I am concerned about the impacts of human activity on the natural environment at this site.	289	3.91	4.06	3.74
This site appears to be disturbed and impacted.	289	2.49	2.48	2.50

Table 12 presents the data outlined in Table 11 as the actual level of agreement or disagreement about natural aspects of the Barron Falls site. Almost all respondents (99.7%) indicated that the natural environment was interesting; while 97.6% thought that the natural environment appeared to be in good condition and was well managed (97.3%). Just over half of all respondents (57.7%) expressed some level of concern about the impacts of human activity at the site. Only 23.9% of respondents thought the site appeared to be disturbed and impacted.

Table 12: Survey respondents' perceptions of the natural features at Barron Falls.

Perceptions of the natural environment at Barron Falls	Percentage of survey respondents					
	Strongly disagree	Somewhat disagree	Mildly disagree	Mildly agree	Somewhat agree	Strongly agree
The natural environment at this site is interesting.	0.3	-	-	10.7	29.7	59.3
The condition of the natural environment at this site appears to be good.	0.3	-	2.1	8.3	34.8	54.5
The natural environment at this site is well managed.	0.3	-	2.4	10.1	31.9	55.3
In terms of natural attractions and scenic beauty this site is appealing.	0.3	-	1.7	12.3	33.8	51.9
I would like to spend more time exploring this natural environment.	0.3	1.7	5.9	26.8	35.6	29.7
I am concerned about the impacts of human activity on the natural environment at this site.	11.4	13.8	17.0	22.1	20.8	14.9
This site appears to be disturbed and impacted.	30.8	28.4	17.0	11.1	10.6	2.1

3.3 Perceptions and Use of the Site Facilities

Respondents were asked to comment on the facilities that were available. It should be noted that subsequent to the survey being undertaken composting toilets were built. A Likert scale of 1 = 'strongly disagree' to 6 = 'strongly agree' was used to gather respondents' perceptions. Results illustrated in Table 13 indicate that the overall condition of the facilities was perceived to be good (mean = 4.93), well managed (mean = 4.91) and presented in a manner that made the site look appealing (mean = 4.75). The presence of a ranger at the site was not strongly supported (mean = 3.61). Domestic respondents displayed a higher level of positive perceptions of the site than international respondents.

Table 13: Domestic and international visitors' perceptions of the site facilities at Barron Falls.

Perceptions of site facilities at Barron Falls	n	Overall Mean	Domestic visitors (mean)	International visitors (mean)
The overall condition of the facilities at this site appears to be good.	277	4.93	5.05	4.77
The facilities and infrastructure at this site are well managed.	277	4.91	5.06	4.72
This site is appealing in terms of the character and attractiveness of the facilities.	275	4.75	4.95	4.49
The facilities at this site are adequate.	278	4.60	4.75	4.40
The presence of a ranger at sites like this is important to me.	280	3.61	3.84	3.32

Table 14 provides the percentages for the respondents' levels of agreement with each statement. The vast majority of respondents (91.7%) agreed that the facilities were in good condition, and 88.5% thought the facilities were well managed. Just over half (57.6%) of all respondents thought that the presence of a ranger was important.

Table 14: Survey respondents' perceptions of the site facilities at Barron Falls.

Perceptions of site facilities at Barron Falls	Percentage of survey respondents					
	Strongly disagree	Somewhat disagree	Mildly disagree	Mildly agree	Somewhat agree	Strongly agree
The overall condition of the facilities at this site appears to be good.	0.4	0.7	7.2	23.1	34.7	33.9
The facilities and infrastructure at this site are well managed.	0.4	0.7	10.4	19.1	34.7	34.7
This site is appealing in terms of the character and attractiveness of the facilities.	2.2	1.8	11.3	21.1	30.5	33.1
The facilities at this site are adequate.	1.1	2.9	12.6	27.3	30.9	25.2
The presence of a ranger at sites like this is important to me.	15.0	13.6	13.8	22.9	21.8	12.9

Presence of a Ranger On-site

As shown in Figure 10, almost half of all respondents felt that a Park Ranger would be able to provide information and education (49.6%), answer questions (39.1%) and enhance safety and security (30.6%) at the Barron Falls site. Eight percent considered a ranger would be helpful for lodging complaints about the behaviour of other visitors. Domestic visitors' responses indicated a much higher level of support for the presence of a ranger than international visitors. Further statistical analysis did not identify any significant demographic group of respondents who desired an on-site ranger at Barron Falls.

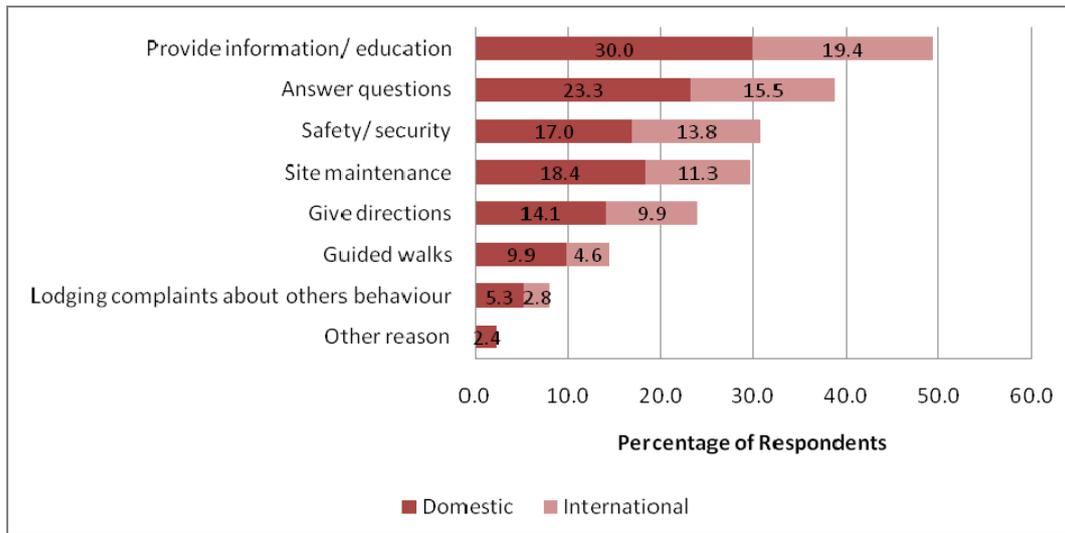


Figure 11: Survey respondents' suggested uses of an on-site Park Ranger at Barron Falls in response to a multiple-response survey question (n = 161).

Use of Site Facilities

A multiple-response format was used to ensure respondents had the opportunity to indicate the facilities they had used at the Barron Falls site. Results outlined in Figure 12 indicate that the most popular facilities used were the viewing platform and lookout (83.2%), boardwalk (80.2%) and walking track (77.7%). Seventeen percent of respondents used the rubbish bin, which is located at the railway viewing platform. Nearly six percent of respondents reported using a nearby café, indicating the presence of social desirability bias as previously discussed in the section on Limitations (page 5).

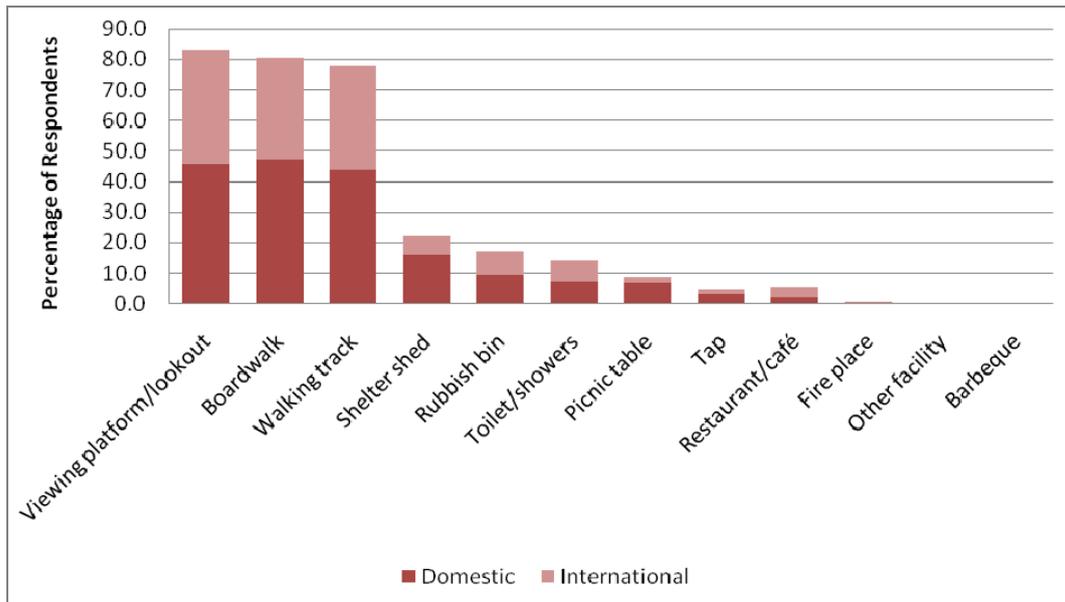


Figure 12: Most popular Barron Falls site facilities used by survey respondents, cited in response to a multiple-response survey question (n = 294).

Expected Site Facilities

Respondents were asked to indicate if there were facilities that they would have liked to have seen at the Barron Falls site. Forty-three respondents (14.6% of the sample) answered this question, providing 45 suggestions (see Table 15). Twenty-three respondents noted the lack of a toilet, followed by rubbish bins (five respondents) and signage about available walks, including distances (four respondents). Respondents who expected a toilet at the site were generally female, from overseas and aged 20-29 years.

Table 15: Facilities expected to be available at Barron Falls by survey respondents (n = 43).

Expectation	Overall	Domestic	International
Toilet	23	9	14
Rubbish bin	5	1	4
Signage for walks and distance	4	3	1
Drinking water fountain/tap	2	2	-
Canteen	2	2	-
Platform closer to Barron Falls	2	1	1
Shower	1	1	-
More water	1	1	-
Picnic tables	1	1	-
Swimming hole	1	-	1
Railway timetable	1	1	-
Seating	1	1	-
Boat ramp	1	1	-
Total Responses	45*	24	21

* Note: Multiple responses were given by individual respondents.

Information about Barron Falls

Survey respondents were asked to indicate the sources they had used to gain information about the Barron Falls site prior to their visit. Results (Figure 13) indicate that the main information sources consulted were road signs (39.4%) followed by word-of-mouth (26.4%), a map which indicated it a tourist site (26.4%) and a travel guide or book (25.0%). A further 22.5% had previously visited the site. Other sources identified included ‘information in the hotel’, ‘did the train trip’, ‘the Hydroelectricity Information Centre’, ‘Lonely Planet’ and ‘viewed from [the overhead] Skyrail’.

The majority of respondents (85.0%) indicated that the information they had used was accurate in describing the site. Only one respondent stated that information was inaccurate, however also said “the site was more pleasant and offered a more interesting experience than anticipated”.

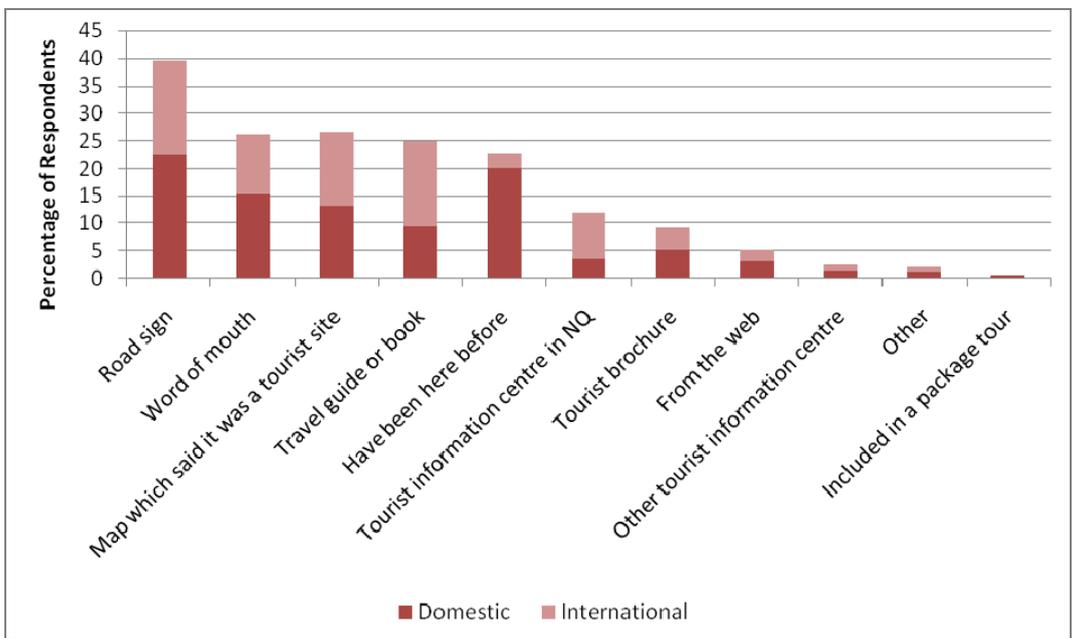


Figure 13: Sources of information consulted by survey respondents prior to visiting Barron Falls (n = 294).

On-site Signage

Interpretative and directional signs are important features of the infrastructure at any visitor site. More than half of all survey respondents (61.3%, n = 157) referred to the interpretative information available at the site. Further analysis showed these respondents were mainly domestic (35.3%), aged 20-29 years (21.9%) and had a university education (29.9%). The directional and interpretative signage at Barron Falls is presented in English and examples are illustrated in Appendix 2

Visitors were asked to comment on aspects of the on-site signage and interpretation using a Likert scale of 1 = 'strongly disagree' to 6 = 'strongly agree'. Table 16 provides respondents' levels of agreement with information provided at the site. Responses indicate a positive response to signs, maps and directions being easy to find (mean = 5.09) and helping people to find their way around the site (mean = 5.01). Rules and safety information was considered easy to understand (mean = 5.18) and information about natural features and values was considered interesting and informative (mean = 5.11). The importance of cultural information as a means of assisting respondents to understand the significance of the area to the Rainforest Aboriginal people (mean = 4.45) was relatively high. International visitors gave slightly less positive responses than domestic visitors.

Table 16: Domestic and international survey respondents' perceptions of on-site signage at Barron Falls.

Perceptions of on-site signage at Barron Falls	n	Overall Mean	Domestic visitors (mean)	International visitors (mean)
Signs, maps and directions				
Were easy to find	278	5.09	5.12	5.04
Helped me to find my way around	278	5.01	5.15	4.82
The rules and safety information				
Were easy to understand	273	5.18	5.24	5.09
Addressed my interests and concerns	271	4.94	5.02	4.82
The information about natural features and values				
Was interesting and informative	278	5.11	5.22	4.97
Helped me to better appreciate the special natural features of the area.	274	5.05	5.15	4.92
The Aboriginal cultural information				
Was interesting and informative	262	4.49	4.51	4.44
Helped me to understand the significance of this area for rainforest Aboriginal people	265	4.45	4.45	4.43

Table 17 provides the actual percentage of responses for each level of agreement / disagreement to the survey question about on-site information. The majority of respondents reported that signs, maps and directions were easy to find (92.4%) and helpful (91.7%). Similarly, 95.7% agreed the rules and safety information was easy to understand and addressed any issues or concerns (91.9%). Almost all respondents (95.6%) agreed that on-site information about natural features and values was interesting and contributed to their appreciation of these features (94.1%). Likewise, 80.2% agreed the Aboriginal cultural information was interesting and informative, while 77.3% agreed that it assisted in understanding the significance of the area to the Rainforest Aboriginal people.

Table 17: Survey respondents' perceptions of on-site tourism information provided at Barron Falls.

Perceptions of on-site information at Barron Falls	Percentage of survey respondents					
	Strongly disagree	Somewhat disagree	Mildly disagree	Mildly agree	Somewhat agree	Strongly agree
Signs, maps and directions						
Were easy to find	1.8	3.6	2.2	14.0	33.4	45.0
Helped me to find my way around	2.2	2.9	3.2	16.2	34.9	40.6
The rules and safety information						
Were easy to understand	1.8	0.7	1.8	15.8	33.0	46.9
Addressed my interests and concerns	1.1	1.1	5.9	23.6	31.4	36.9
The information about natural features and values						
Was interesting and informative	0.4	0.4	3.6	18.0	38.8	38.8
Helped me to better appreciate the special natural features of the area.	0.4	1.1	4.4	17.2	41.1	35.8
The Aboriginal cultural information						
Was interesting and informative	2.7	6.5	9.9	28.2	25.6	27.1
Helped me to understand the significance of this area for rainforest Aboriginal people	4.2	5.7	12.8	24.9	24.9	27.5

Using an open-ended question, survey respondents were asked for suggestions on additional interpretative information they would like to see at the site. Twenty-four responses (8.5% of the sample) were received and results are outlined in Table 18. The most significant suggestion was for more information about Aboriginal culture (seven responses) and road directions from Kuranda (five responses).

Table 18: Survey respondents' suggested additional visitor information that could be made available at the Barron Falls site (n = 24).

Additional information that could be made available at Barron Falls	Overall (%)	Domestic (%)	International (%)
Aboriginal information	7	4	3
Road directions from Kuranda	5	3	2
Walking track signage	2	2	-
More information about natural features and wildlife	2	1	1
Forestry information/ wildlife information	2	2	-
Discovery dates and by who; simple heritage information and age of environment	2	1	1
Anything	1	1	-
Map directions	1	-	1
Not all Aboriginal information	1	1	-
Train timetable to see train	1	-	1
Total Responses	24	15	9

3.4 Visitor Experience

Visitors were asked to comment on aspects of their visit that enhanced or increased their enjoyment of the site. An open-ended question was used and 87 responses were received from 79 respondents (27.0% of the sample). Results were grouped into four categories: natural, facilities, psycho-social and 'other' (Table 19). The natural beauty of the Barron Falls (ten responses) was the most important natural aspect. The boardwalk was nominated as the best aspect of the site (27 responses), followed by platforms providing better views and photo opportunities (ten responses). The most significant psycho-social responses (three responses each) included the fact that there were few other visitors at the site, and peace and tranquility.

Table 19: Aspects that visitors considered enhanced or increased their enjoyment of Barron Falls (n = 79).

	Frequency (n)	Percentage (%)
Natural		
Natural beauty of Barron Falls	10	11.6
View	6	7.0
Nature – plants and wildlife	3	3.5
Great weather	2	2.3
Sighting the Ulysses butterfly	2	2.3
Rainforest	2	2.3
Unspoilt nature of the site	1	1.1
Facilities		
Boardwalk – maintained; level and even; and wide enough for other walkers to pass	27	31.0
Platforms helping for a better view and photo	10	11.6
Wonderful information about the site	8	9.2
Awesome infrastructure	2	2.3
Site is clean	1	1.1
Easy walking for limited ability / mobility	1	1.1
The break in the middle for leg rest	1	1.1
Psycho-social		
Few other tourists	3	3.5
Peace and tranquility	3	3.5
Very relaxed	1	1.1
Freedom to walk at pleasing pace	1	1.1
Contact with ranger	1	1.1
Other		
Not a commercial area – yet?	1	1.1
Open fires, better boat ramp, not too many rules	1	1.1
Total Responses	87	100.0

Respondents were also asked for their views on aspects of the site that detracted from their enjoyment. The response rate was low (10.5% of respondents) however 36 responses were given. Results are grouped into five categories generally paralleling the categories used to indicate the aspects of the site that respondents found appealing. Categories used are: nature, facilities, psycho-social, rules and regulations, and other. Responses are shown in Table 20. The most significant responses were litter (seven responses), the crowding that occurs when passengers disembarked from the train at the railway platform (four responses) and the lack of toilets (four responses).

The overall conclusions that can be drawn from the results reported in Tables 19 and 20 are that respondents found the site to be enjoyable, with few areas of concern. The boardwalk enhances the visitor experience by allowing visitors to enjoy the site without impacting on the natural environment.

Table 20: Aspects visitors considered took away or detracted from their enjoyment of Barron Falls (n = 31).

	Frequency (n)	Percentage (%)
Natural		
Crocodiles	1	2.8
Lack of water over falls	1	2.8
Biting insects – need a sign to warn people to use repellent	1	2.8
Facilities		
No toilets	4	11.1
Reference to evolution rather than creation	2	5.5
Railway station	2	5.5
Diesel exhaust from the train	1	2.8
Wide boardwalk allows too much light into forest	1	2.8
Lookout would be better with revegetation plantings	1	2.8
No showers	1	2.8
Rules/ Regulation/ Safety		
Not being able to swim safely	2	5.5
Dangerous road	1	2.8
Noise restrictions	1	2.8
Cars speeding along the road – kids near it	1	2.8
Psycho-social		
There were a LOT of people when the train arrived	4	11.1
Train was loud	1	2.8
Man blowing leaves (petrol blower) – noisy and pointless	1	2.8
Only other people	1	2.8
Speaking to a local	1	2.8
Other		
Soft drink can in the bush	3	8.3
Toilet paper / some litter	2	5.5
People smoking and dropping butts on ground	2	5.5
Camera didn't work	1	2.8
Total Responses	36	100.0

Other Visitors

The behaviour of other visitors at a site can affect the level of enjoyment an individual derives from visiting that site. In circumstances where overcrowding occurs the overall level of enjoyment could be expected to fall. However, the link between perceived crowding and satisfaction is weak and is dependent on personal norms, situational variables and site infrastructure (West, 1981; Stankey and McCool, 1984; Kalisch and Klaphake, 2007). A series of statements were presented in the survey and respondents were asked to comment using a Likert scale of 1 = 'strongly disagree' to 6 = 'strongly agree'. Table 21 shows that overall there was mild agreement with the behaviour of other visitors being environmentally responsible (mean = 3.92) and disagreement that there were too many people at the site (mean = 2.05). The inference is that the site is well managed for visitor traffic management.

Table 21: Domestic and international visitors' perceptions of other site visitors.

Perceptions of other site visitors	n	Overall Mean	Domestic visitors (mean)	International visitors (mean)
The behaviour of other visitors at this site has been on the whole environmentally responsible.	280	3.92	3.94	3.89
There were too many people at this site today.	282	2.05	1.91	2.23
The presence of other people at this site prevented me from doing what I wanted to.	281	1.84	1.71	2.00
The behaviour of some visitors at this site detracted from my enjoyment of this site.	280	1.77	1.58	2.00

Table 22 indicates there was a low level of negative responses to the presence of other visitors at the site. For example, only 13.8% of respondents thought there were too many people at the site while 12.7% of respondents felt that the presence of other visitors stopped them doing what they wanted to do. Strong agreement (62.9%) with the statement 'the behaviour of other visitors at the site was environmentally responsible' is a positive response. The responses to all of these statements indicate overall other visitors at the site did not detract from the visitor's enjoyment.

Table 22: Perceptions of other visitors at Barron Falls.

Perceptions of other site visitors	Percentage of survey respondents					
	Strongly disagree	Somewhat disagree	Mildly disagree	Mildly agree	Somewhat agree	Strongly agree
The behaviour of other visitors at this site has been on the whole environmentally responsible.	21.4	8.2	7.5	13.6	18.6	30.7
There were too many people at this site today.	47.2	25.2	13.8	7.1	2.8	3.9
The presence of other people at this site prevented me from doing what I wanted to.	59.8	18.9	8.6	6.0	3.9	2.8
The behaviour of some visitors at this site detracted from my enjoyment of this site.	61.1	19.3	8.6	6.0	2.9	2.1

3.5 Additional Comments

The survey instrument provided respondents with the opportunity to record comments on any aspect of their visit. Twenty-one responses were received and all were complementary.

Date	Comment
23 March 2009	'Very much enjoyed the peaceful walk and the beauty of the falls.' <i>New South Wales visitor, female, 47 years</i>
23 March 2009	'Beautiful and dreamy.' <i>Far North Queensland visitor, female, 47 years</i>
24 March 2009	'I prefer there should be washrooms and cafes.' <i>North Queensland visitor, male, 25 years</i>
24 March 2009	'Graffiti on sign poles is unfortunate.' <i>UK visitor, male, 35 years</i>
24 March 2009	'Walkways are in very good condition. No steps.' <i>Other Queensland visitor, male, 37 years</i>
24 March 2009	'Would have been nice to come closer to the falls.' <i>German visitor, female, 41 years</i>
24 March 2009	'It is really great to provide a feedback form about this site.' <i>North Queensland visitor, male, 23 years</i>
23 April 2009	'Awesome place. I enjoyed the scenic view a lot.' <i>North Queensland visitor, male, 22 years</i>
27 April 2009	'Nice site, as most of them are in Australia.' <i>Hong Kong visitor, female, 37 years</i>
27 April 2009	'Very well run and enjoyable.' <i>UK visitor, male, 66 years</i>
27 April 2009	'Very enjoyable all round.' <i>UK visitor, female, 66 years</i>
27 April 2009	'Beautiful.' <i>German visitor, female, 20 years</i>
27 April 2009	'Need longer walks in National Parks up here, i.e. Daintree and Mossman as well.' <i>Other Queensland visitor, male, 24 years</i>

Date	Comment
27 April 2009	<p>'Some more sign posts at train station as unsure whether path continued up. Lovely visit.'</p> <p><i>UK visitor, female, 54 years</i></p>
27 April 2009	<p>'Guided tours down to the falls, maybe a spot to swim and eat a picnic, would bring a lot of younger, more adventurous people. Actually unguided would be cool too.'</p> <p><i>Canadian visitor, male, 25 years</i></p>
16 May 2009	<p>'It's a beautiful place to visit.'</p> <p><i>Canadian visitor, female, 19 years</i></p>
16 May 2009	<p>'Where can I swim and rock jump?'</p> <p><i>UK visitor, male, 23 years</i></p>
15 June 2009	<p>'Beautiful waterfall.'</p> <p><i>USA visitor, female, 31 years</i></p>
15 June 2009	<p>'Very nice place, well done. People very friendly.'</p> <p><i>Western Australian visitor, female, 44 years</i></p>
15 June 2009	<p>'The primary reason for coming to these areas is natural beauty and to appreciate natural environments. In having used areas this also compromises between use and maintaining the area – perhaps that is why I spend more time in remote parks and less visited parks.'</p> <p><i>North Queensland visitor, female, 27 years</i></p>
15 June 2009	<p>'Thanks for a great opportunity to see this great site.'</p> <p><i>Other Queensland visitor, male, 31 years</i></p>

4. Management Considerations

The findings of this survey indicate that respondents view Barron Falls as a well maintained site that enables them to appreciate the site's natural values. Results also indicate that the boardwalk is a popular activity among visitors. The survey identified demand for an amenities block which, has now been met. The findings presented in this report suggest management consideration is given to the following matters:

- The boardwalk is a popular feature and makes a significant contribution to a pleasant visitor experience. This indicates that additional boardwalks in other visitor locations are likely to enhance the visitor experience at those sites.
- Results indicate that there is an expectation that swimming is a feature of the site. Researchers observed a number of visitors taking towels with them when they entered the site. To avoid disappointment a sign should be erected at the entrance to the boardwalk advising visitors that swimming is not permitted.
- Signage should be erected at the site advising visitors of the location of nearby safe swimming sites.
- Concerns about litter indicate that there is a need for an additional rubbish bin/s at the carpark.
- Signage advising visitors of the return distance to the lookout and railway platform should be considered.
- The site's World Heritage status was not a major 'pull' factor for visiting the site. This finding highlights the need for a more vigorous and coordinated strategy to promote the Wet Tropics' World Heritage status. One element of this strategy may be to encourage destination marketing collateral to include the World Heritage logo.
- Install a visitor counter (similar to toilet counter) at the entrance to the boardwalk to develop a more detailed picture of visitor numbers and daily visitor patterns. Data of this nature, combined with the results of this survey will give managers a better understanding of how the Barron Falls site is used on a daily, weekly and monthly basis.

5. References

- Altinay, L.** and Paraskevas, A. (2008) *Planning Research in Hospitality and Tourism*. Oxford: Butterworth-Heinemann.
- Bentrupperbäumer, J.** (2002) *Barron Falls: Site Level Data Report 2001/2002*. Cairns: Cooperative Research Centre for Tropical Rainforest Ecology and Management (Rainforest CRC).
- Budeanu, A.** (2007) Sustainable Tourism Behaviour – a Discussion of Opportunities for Change. *International Journal of Consumer Studies* 31: 499-508.
- Carmody, J.** and Prideaux, B. (2008) *Community attitudes, knowledge, perceptions and use of the Wet Tropics of Queensland World Heritage Area in 2007*. Report to the Marine and Tropical Sciences Research Facility. Cairns: Reef and Rainforest Research Centre.
- DERM** (2010) http://www.derm.qld.gov.au/parks/barron-gorge/culture.html#culture_and_history (accessed 10 February 2010).
- Kalisch, D.** and Klaphake, A. (2007) Visitors' satisfaction and perception of crowding in a German National Park: A case study on the island of Hallig Hooge. *Forest Snow and Landscape Research* 81(1-2): 109-122.
- Martin, S.** (ed.) (2008) *Bush Telegraph*. Winter, 2008. Cairns: Environmental Protection Agency.
- Stankey, G.H.** and McCool, S.F. (1984) Carrying capacity in recreational settings: Evaluation, appraisal and application. *Leisure Sciences* 6(4): 453-473.
- West, A.** (1981) Recreational carrying capacity. In: J. Pigram (1983) *Outdoor recreation and resource management*. London: Croom Helm Ltd.
- Whitmarsh, L.** (2009) What's in a name? Commonalities and differences in public understanding of "climate change" and "global warming". *Public Understanding of Science* 18: 401-420.

Appendix 1: Site Survey Instrument



Visitor Site Survey in the Wet Tropics World Heritage Area

Interviewer:

Survey Location:

Survey Date: **Time:**

Weather: Sunny Overcast Raining Hot Warm Cool

Other Comments: (e.g. windy, smoky, mist)

.....

Dear Visitor,

We are researchers from James Cook University, School of Business – Tourism, and on behalf of the Wet Tropics Management Authority we are exploring visitors’ expectations and experiences of this Wet Tropics site. We would be very grateful if you would participate in the study by completing this questionnaire.

Your participation will help to improve visitor services and the continued management of sites by understanding visitors’ needs and views.

The questionnaire is **voluntary** and all **responses remain completely anonymous**.
 The questionnaire will take approximately **15 minutes** to complete.
 Thank you very much for your participation.

If you would like any more information about this project please contact the project manager. If you would like to discuss any ethical matters regarding this project please contact the Ethics Administrator. This project has Human Ethics approval H3100 from James Cook University.

**PLEASE DETACH AND RETAIN THIS INFORMATION
 PAGE ONLY FOR YOUR FUTURE REFERENCE**

Project Manager:

Dr Julie Carmody
 School of Business – Tourism
 James Cook University
 Cairns, QLD 4870

T: (07) 4042 1535
 E: Julie.Carmody@jcu.edu.au

Ethics Administrator:

Ms Tina Langford
 Research Office
 James Cook University
 Townsville, QLD 4810

T: (07) 4781 4342
 E: Tina.Langford@jcu.edu.au

9. In your travels today, where did you **previously visit** before coming to this site?
(e.g. township, visitor site)

.....

10. In your travels today, where do you plan to go **after leaving this site**?

.....

11. How often do you **visit natural areas** like this (e.g. National Parks)?

- This is my first time
- Less than once a year
- Once a year
- Between 2 and 5 times a year
- More than 5 times a year

SECTION C: REASONS FOR VISITING

12. Please indicate how important the following **reasons** were for you **visiting this site** today.

	Not important	Slightly important	Moderately important	Important	Quite important	Very important
See natural features and scenery	1	2	3	4	5	6
Be close to / experience nature	1	2	3	4	5	6
Social with family or friends	1	2	3	4	5	6
Rest and relax	1	2	3	4	5	6
Experience tranquility	1	2	3	4	5	6
Outdoor exercise	1	2	3	4	5	6
Opportunities for short walks	1	2	3	4	5	6
Opportunities for long walks	1	2	3	4	5	6
Because it is a World Heritage Area	1	2	3	4	5	6
Because it is a National Park	1	2	3	4	5	6
Learn about native animals and plants	1	2	3	4	5	6
Learn about Aboriginal culture	1	2	3	4	5	6
Other (please specify)	1	2	3	4	5	6

13. What **activities** did you engage in at this site today?

- | | |
|---|---|
| <input type="checkbox"/> Observing scenery | <input type="checkbox"/> Walking – short (1 hour or less) |
| <input type="checkbox"/> Bird watching | <input type="checkbox"/> Walking – long (1-6 hours) |
| <input type="checkbox"/> Observe wildlife | <input type="checkbox"/> Swimming |
| <input type="checkbox"/> Photography / painting / drawing | <input type="checkbox"/> Guided tour |
| <input type="checkbox"/> Picnic / barbeque (BBQ) | <input type="checkbox"/> Looking at interpretation material |
| <input type="checkbox"/> Using café / restaurant | <input type="checkbox"/> Relaxing |
| <input type="checkbox"/> Camping | <input type="checkbox"/> Other (please specify): |

.....
.....

14. Were there particular things you wanted to do today at this site which you were unable to do?

- Yes
- No

If you answered 'Yes', please specify:

.....
.....

15. How **long** have you spent at this site today?

- | | |
|--|--|
| <input type="checkbox"/> Less than half an hour | <input type="checkbox"/> About 3 hours |
| <input type="checkbox"/> About half an hour | <input type="checkbox"/> About 4 hours |
| <input type="checkbox"/> About 1 hour | <input type="checkbox"/> More than 4 hours |
| <input type="checkbox"/> About 2 hours | <input type="checkbox"/> Overnight |
| <input type="checkbox"/> Days (please specify) | |

16. If an **entrance fee** were introduced to access this site today, how much would you be willing to pay?

- \$1 – less than \$2 (AUD)
- \$2 – less than \$5 (AUD)
- \$5 – less than \$10 (AUD)
- \$10 – less than \$20 (AUD)
- I do not think I should pay anything to access this site as a day visitor.

SECTION D: NATURAL ENVIRONMENT

17. The following statements are about the **natural features** of this site. Please rate the extent to which you agree or disagree with each statement.

	Strongly disagree	Somewhat disagree	Mildly disagree	Mildly agree	Somewhat agree	Strongly agree
The natural environment at this site is interesting.	1	2	3	4	5	6
I would like to spend more time exploring this natural environment.	1	2	3	4	5	6
In terms of natural attractions and scenic beauty this site is appealing.	1	2	3	4	5	6
The condition of the natural environment at this site appears to be good.	1	2	3	4	5	6
The natural environment at this site is well managed.	1	2	3	4	5	6
I am concerned about the impacts of human activity on the natural environment at this site.	1	2	3	4	5	6
This site appears to be disturbed and impacted.	1	2	3	4	5	6

SECTION E: SITE FACILITIES

18. What facilities have you used at this site today? (Tick as many as applicable)

- | | |
|---|---|
| <input type="checkbox"/> Picnic table | <input type="checkbox"/> Walking track |
| <input type="checkbox"/> Shelter shed | <input type="checkbox"/> Boardwalk |
| <input type="checkbox"/> Restaurant / café | <input type="checkbox"/> Viewing platform / lookout |
| <input type="checkbox"/> Rubbish bin | <input type="checkbox"/> Fire place |
| <input type="checkbox"/> Toilet / showers | <input type="checkbox"/> Barbeque |
| <input type="checkbox"/> Tap | |
| <input type="checkbox"/> Other (please specify) | |
| | |

19. Were there particular **facilities at this site you were expecting** to find which were not available?

- Yes
- No

If you answered 'Yes', please specify:

.....

20. Please rate the extent to which you agree or disagree with each of the following statements about the **facilities and management** at this site.

	Strongly disagree	Somewhat disagree	Mildly disagree	Mildly agree	Somewhat agree	Strongly agree
The site is appealing in terms of the character and attractiveness of the facilities.	1	2	3	4	5	6
The facilities at this site are adequate.	1	2	3	4	5	6
The overall condition of the facilities at this site appears to be good.	1	2	3	4	5	6
The facilities and infrastructure at this site are well managed.	1	2	3	4	5	6
The presence of a ranger at sites like this is important to me.	1	2	3	4	5	6

21. If you **agreed the presence of a ranger was important**, what are the reasons for this?

- To provide information / education
- To give directions
- To answer questions
- For lodging complaints about others' behavior
- To take us on guided walks
- For site maintenance
- For safety / security
- Other (please specify)

.....

SECTION F: INFORMATION

22. How did you **find out about this site**?

- | | |
|---|---|
| <input type="checkbox"/> Have been here before | <input type="checkbox"/> Travel guide or book |
| <input type="checkbox"/> Road sign | <input type="checkbox"/> From the web |
| <input type="checkbox"/> Word of mouth | <input type="checkbox"/> The trip here was included in a package tour |
| <input type="checkbox"/> Map which said it was a tourist site | <input type="checkbox"/> Tourist brochure (which one?) |
| | |
| <input type="checkbox"/> Tourist information centre in North Queensland | <input type="checkbox"/> Tourist information centre (other) |
| | |
| <input type="checkbox"/> Other (please specify): | |

23. If you obtained **prior information** about this site, was the information accurate?

- Yes
 No

If you answered 'No', please specify:

.....

24. Did you refer to any of the information available at this site today? Yes
 No

25. Please rate the extent to which you agree or disagree with the following statements about **information available** at this site.

	Strongly disagree	Somewhat disagree	Mildly disagree	Mildly agree	Somewhat agree	Strongly agree
Signs, maps and directions...						
were easy to find	1	2	3	4	5	6
helped me to find my way around	1	2	3	4	5	6
The rules and safety information...						
were easy to understand	1	2	3	4	5	6
addressed my interests and concerns	1	2	3	4	5	6
The information about natural features and values...						
was interesting and informative	1	2	3	4	5	6
helped me to better appreciate the special natural values of the area	1	2	3	4	5	6
The Aboriginal cultural information...						
was interesting and informative	1	2	3	4	5	6
helped me to understand the significance of this area for Rainforest Aboriginal people	1	2	3	4	5	6

26. If you were to visit this site again, is there any **additional information** you would like?

Yes

No

If you answered 'Yes', please specify:

.....

SECTION G: VISITOR EXPERIENCE

27. Were there any particular aspects of your visit that **increased / enhanced your enjoyment** of this site?

Yes

No

If you answered 'Yes', please specify:

.....

28. Were there any particular aspects of your visit that **took away / detracted from your enjoyment** of this site?

Yes

No

If you answered 'Yes', please specify:

.....

29. Please rate how strongly you agree or disagree with the following statements about **other visitors at this site** today.

	Strongly disagree	Somewhat disagree	Mildly disagree	Mildly agree	Somewhat agree	Strongly agree
There were too many people at this site today.	1	2	3	4	5	6
The presence of other people at this site prevented me from doing what I wanted to do.	1	2	3	4	5	6
The behavior of other visitors at this site has been on the whole environmentally responsible.	1	2	3	4	5	6
The behavior of some visitors at this site detracted from my enjoyment of this site.	1	2	3	4	5	6

ADDITIONAL COMMENTS:

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

THANK YOU VERY MUCH FOR YOUR PARTICIPATION

Appendix 2: Site Photographs

Barron Falls site signage



Photographs by Bruce Prideaux (JCU)

Barron Falls visitor facilities



Photographs by Bruce Prideaux (JCU)