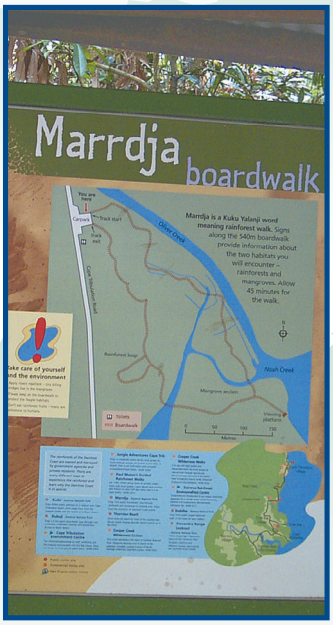

BEST PRACTICE MANUAL

Visitor Monitoring System for the Wet Tropics World Heritage Area

Volume 2
Visitor Monitoring Process From Pre-Destination to Post-Destination

J. M. Bentrupperbäumer,
S.-E. O'Farrell and J. P. Reser

Rainforest CRC
Cooperative Research Centre for Tropical Rainforest Ecology and Management

VISITOR MONITORING SYSTEM FOR THE WET TROPICS WORLD HERITAGE AREA

VOLUME 2
Visitor Monitoring Process
From Pre-Destination to Post-Destination

J. M. Bentrupperbäumer[1],
S.-E. O'Farrell[1] and J. P. Reser[2]

[1]School of Tropical Environment Studies and Geography, James Cook University
[2]School of Psychology, James Cook University

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J. M. Bentrupperbäumer

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PREFACE

Almost three million visitors cannot be wrong! The Wet Tropics World Heritage Area of North Queensland is not only a precious ecological asset, it has also become one of Australia's most outstanding attractions for local, interstate and international visitors. Queensland's reputation and status as a tourism destination owes much to its natural environment, not least the wonders of our tropical forests and landscapes.

Tourism in the World Heritage Area alone is estimated to generate over A$750 million (Driml 1997) of economic benefit for local communities each year. The Wet Tropics region has experienced significant increases in domestic and international tourism over the past twenty years, with some two million visitors per year in 1995 and an estimated three million in 2003. Recent projections suggest that tourist numbers will reach four million per year by 2016, with an increase in international visitors being a major contributing factor.

The recent *Wet Tropics Visitor Survey* (Bentrupperbäumer and Reser, 2002) has estimated about 4.4 million visits per year to recognised Wet Tropics World Heritage Area sites, with sixty percent of these visits by domestic and international tourists. The remaining forty percent were local residents engaging in rainforest-based recreational activities. In addition, it is estimated that some 270,000 people will live in the Wet Tropics region by 2016, placing increasing pressure on the World Heritage Area.

The *Wet Tropics Nature Based Tourism Strategy* (Wet Tropics Management Authority 2000) and *Wet Tropics Walking Strategy* (Wet Tropics Management Authority 2000) both address tourism and recreation issues in the World Heritage Area, and both have identified the need to develop a Visitor Monitoring System for ongoing evaluation of the environmental condition of some 180 recognised visitor nodes and sites in the area. Successful strategies to address these needs requires sound scientific advice on environmental impacts of visitation and use on the World Heritage Area. Only on this basis can effective management tools and practices be implemented to achieve sustainable outcomes.

The initial proposal for the Visitor Monitoring System was discussed with the Rainforest CRC's Program 4 Support Group in 2001, the role of which is to ensure that researchers and research users collaborate at every stage of the project. With strong endorsement from the Support Group, the Visitor Monitoring System has been designed to provide advice to managers of the Wet Tropics World Heritage Area on the basis of a hierarchical monitoring system that engages tour operators, park rangers and researchers. Once operational, the Visitor Monitoring System will allow environmental agencies to base land-management decisions on sound scientific advice – a crucial requirement that has been identified by industry, conservation groups and management agencies.

While specifically designed for the Wet Tropics World Heritage Area, this 'gold-standard' three-volume best practice manual is sufficiently generic to be of considerable value to protected area managers in other parts of Australia and overseas.

Tourism, research and conservation have a strong mutual interest. The Rainforest CRC has a long-term commitment to tourism research in tropical Australia, and the tourism industry has long been a major user of its research and a driver of the CRC's research agenda for the last ten years.

I congratulate the Rainforest CRC, the authors and the production team for the practical and highly valuable contribution they have made to sustainable tourism and conservation. I recommend the Visitor Monitoring System tools to all stakeholders in industry and in government agencies, and look forward to a continued tourism industry partnership with all stakeholders of the Wet Tropics World Heritage Area.

Daniel Gschwind
Chief Executive Officer
Queensland Tourism Industry Council

TERMS OF REFERENCE

DEVELOPMENT OF A VISITOR MONITORING SYSTEM FOR THE WET TROPICS WORLD HERITAGE AREA

The following Terms of Reference are quoted directly from the Wet Tropics Management Authority Contract (No. 658).

Purpose of the Contract

The *Wet Tropics Nature Based Tourism Strategy* (NBTS) and *Wet Tropics Walking Track Strategy* (WS) identify the need for a visitor monitoring system (VMS) associated with nature based tourism and recreation activities in the Wet Tropics World Heritage Area (WTWHA) and surrounding areas.

The proposed VMS aims to build on past and current research and monitoring of visitor management, coordinating the work of various researchers and land managers to provide a comprehensive and practical system for monitoring all aspects of visitor management. The project provides a necessary link between the research goals of Rainforest CRC Programs 3 and 4, which are essentially concerned with rainforest visitation and usage at regional and local level, respectively.

Aims of the Project

The aim of this project, essentially, is to design a robust, efficient, practical and cost-effective VMS for the WTWHA and environs, which assists management in identifying whether visitor management objectives are being met so that appropriate management responses can be made.

Key Attributes Required of the VMS Design

The VMS must be efficient, practical and cost-effective to implement.

The design should be recognised by both tourism interests and protected area managers as a robust, useful and worthwhile system for tourism and visitor management information and as a support for decision-making.

The site-monitoring component, which requires ongoing monitoring by field staff and/or tour operators, should be able to be readily incorporated into regular visitor management and tour operations. The benefits of conducting such monitoring must be readily demonstrable to field staff.

The VMS can be applied across the range of visitor site scenarios occurring in the study area (N.B. site monitoring elements are to be demonstrated at four pilot sites as part of this project).

The VMS design will also incorporate:

- Monitoring at other key regional locations (e.g. information centres, airports);
- Survey components and associated questionnaires to complement ongoing monitoring systems. (N.B. As part of a separate but complementary project, the Rainforest CRC will be designing and undertaking site visitor surveys to plug into this VMS. However, this VMS project will need to design more intensive and targeted survey components for the

four pilot sites, and ensure such surveys are completed as part of the 2001/2002 survey project);

- Elements associated with monitoring pre-destination marketing, promotions and trip planning information;
- Elements associated with monitoring suitability and appropriateness of information accessible to visitors on arrival to the Wet Tropics region, to assist in 'matching' visitor interests and expectations with available nature based tourism products; and
- A trends-based approach, which will assist management in identifying whether visitor management objectives are being met so that appropriate management responses can be made.

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ACKNOWLEDGEMENTS

We wish to acknowledge all of those listed below who were involved in various aspects of this research project on Marrdja Boardwalk.

Data processors: Bronwyn Guy, Charmayne Paul, Sue-Ellen O'Farrell, Lucas Talbot, Sunny Pegararo and Jenny Butler.

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Tourism Industry personnel: John Courtenay, Gordon Dixon and the many tour operators who assisted with surveys and encouraged their clients to participate.

EXECUTIVE SUMMARY

RESEARCH OBJECTIVES

1. To identify and collate existing expertise and data to develop a framework for a visitor monitoring system (VMS) for the Wet Tropics region that is recognised by tourism and protected area management.
2. To design a robust, efficient, practical and cost-effective system that incorporates both site and regional level components and to trial the system in the field.

INTRODUCTION

Australia's Wet Tropics World Heritage Area (WTWHA) is of international significance. It is the duty of the Australian community to ensure its special values are protected, conserved, presented and rehabilitated for future generations (WTMA 2000). In order to meet these obligations it has been recognised that the WTWHA requires a visitor monitoring system that incorporates regional and site level monitoring and involves all levels of users, commercial and free and independent travellers, and managers (WTMA 2000, 2001).

The Wet Tropics are an internationally acclaimed visitor destination (WTMA 2000). In 1998, there were over two hundred commercial tour operators with permits to operate within the Wet Tropics (QPWS 1998), most of who were operating in far north Queensland within the WTWHA (TQ 1998). Visitors to the WTWHA sites also include domestic travellers and the local community. A survey, conducted in 1998 by Tourism Queensland, found domestic travellers account for more than eighty percent of visitors to Queensland (TQ 1998). Direct use of the WTWHA by tourists is estimated to generate over $179 million annually, which is a significant economic contribution to the local and regional economy (Driml 1997).

There are over 180 sites being used by visitors to the WTWHA, of which 94 have associated infrastructure (WTESSC 1996). This is a significant number of sites. Visitation is increasing to WTWHA sites and this requires careful management if it is to be sustainable. Human presence in any natural environment results in some level of disturbance (Hammitt and Cole 1998) and these impacts require monitoring.

Tour operators have reported that in the past their observations and comments to management regarding negative impacts associated with visitation were not always addressed. This highlights the need for a formalised monitoring system that ensures their concerns are recorded and, if necessary, acted upon. Therefore the first level of monitoring in the visitor monitoring system produced for the Wet Tropics Management Authority involves the tourism industry.

Sites with low levels of visitation are primarily visited by the local community and the more adventurous independent travellers. The types of impacts occurring at these sites are different than those at high use areas. Tour groups do not usually visit low use sites and thus land managers form the first level of monitoring at these sites.

Visitation and use of sites changes over time, so site managers require a monitoring system that will track these changes and respond as necessary.

There are three basic levels to the visitor monitoring system presented in this report: 1) tour operator rapid assessment; 2) land manager semi-rapid assessment; and 3) researcher semi-intensive assessment.

STRUCTURE OF THE VISITOR MONITORING SYSTEM BEST PRACTICE MANUAL

The Best Practice Manual consists of four sections, separated into three Volumes:

- Volume 1: Procedural Manual;
- Volume 2: Visitor Monitoring Process – From Pre-Destination to Post-Destination; and
- Volume 3: Case Studies – Biophysical Assessment.

Section 1 (Volume 1) details how the components of the VMS link to provide useful information for visitor management. It also shows how this VMS links with other VMS at a national, state and regional level and how it is complemented by other research and survey activities within the Rainforest CRC.

Section 2 (Volume 1) presents the protocols, proformas and methods used to monitor visitation and use, and directions for how the VMS might be enhanced with additional data from other sources in the future.

Section 3 (Volume 2) details how the VMS may be linked with pre- and post-destination planning and other components of the travel sequence.

Section 4 (Volume 3) comprises four case studies used to develop and trial the visitor monitoring system.

OVERVIEW OF SECTION 1: STRATEGIC LINKAGES (VOLUME 1)

In this section, we report on visitor monitoring conducted at a national, state and regional level. We discuss the work undertaken in Project 4.1 of the Rainforest CRC, which involved site and regional monitoring, and its links to Project 4.5 and pre-destination planning. Within Project 4.1 two types of surveys were conducted. The first was conducted during the wet and dry season at ten sites distributed throughout the Wet Tropics World Heritage Area (WTWHA); the second was a community attitudes survey. The site level work of Project 4.1 was developed further at four sites to provide a linkage to Project 4.5 (which addresses the biophysical impacts of visitation) by including an additional section in the visitor survey that addressed visitors' perceptions of biophysical impacts. Regional level monitoring conducted at gateways (Project 3.1, Rainforest CRC) to provide a link between site and regional level monitoring, was not completed. A genuine attempt to link site level monitoring and regional monitoring was undertaken by Project 4.1 by aggregating data collected at the ten survey sites.

Key Findings

There are few examples of visitor monitoring systems in Australia. Most visitor monitoring systems are being developed for protected areas by national park agencies. They range in complexity from general regional surveys of visitation and traffic counts to more detailed systems that include visitor surveys of peoples' experiences, expectations and satisfaction, and actual biophysical monitoring. However, they do not attempt to link components of visitor monitoring at a regional and site level.

To a large extent, existing systems and methods are serving very different objectives and addressing very different target populations and client/consumer audiences, as well as operating at different levels of analysis and spatial scales.

Our VMS has a more balanced approach compared with others we have reviewed, as it includes not only biophysical impacts of visitation and use but also the impact of settings and experiences on visitors. Moreover, our system attempts to correct any adverse trends impacting on visitors and the environment.

Recommendations

Regional components of the VMS should include visitor pre-destination planning, arrival and departure information and community attitudes. A strategic framework is presented, examining how the VMS relates to other components of the travel sequence. We recommend the adoption of the visitor monitoring techniques developed for the various travel stages, although we acknowledge that further research will be required to operationalise these methods.

Site level components should include traffic counts, which are verified by on-site observations of vehicle occupancy, visitor surveys, observations of visitor behaviour on-site, and biophysical impact monitoring. These components should be supplemented by qualitative information from tour operators, land managers and the Aboriginal community that together provide the data to trigger responses by management.

Management Implications

With respect to a fully operational and satisfactory VMS, it is likely that two or more independent 'systems' will be adopted and implemented. The first will focus on site level and resident community management, and reporting needs relating to changes and impacts resulting from all human visitation and use. A second tourism planning and industry sponsored system will have a clearer focus on the monitoring of visitation patterns and profiles, destinations and decisions for those tourists visiting the WTWHA bioregion, and more generally, far north Queensland.

The more 'regional' tourism planning and industry sponsored system will in any case need to articulate with other state-wide and national tourism monitoring enterprises. It will serve rather different needs and requirements, though their findings are nonetheless of particular interest and relevance to protected area management, especially with respect to the assessment and quantification of changing 'pressures' and preferences, and both visitor satisfaction and tourism-related economic benefit.

Further Research

The relationship between the VMS and the full travel sequence has only been considered in general terms in this report. Recommendations are given on how different stages of travel might be monitored. A more detailed analysis of these recommendations is an area for further study.

OVERVIEW OF SECTION 2: PROCEDURES AND PROFORMAS FOR MONITORING BIOPHYSICAL IMPACTS OF VISITATION (VOLUME 1)

Section 2 of the report details the procedures and proformas for conducting a biophysical monitoring program at a site level in the WTWHA. Biophysical impacts in this context refer to impacts on the natural environment and visitor infrastructure. The methods and indicators chosen for this VMS allow basic visitor monitoring and use simple, robust, and cost-effective measures. This VMS was designed to identify positive, neutral and negative trends in the environment, infrastructure and services at a site. If negative trends were identified, then the

action to be implemented will depend on the nature, severity and source of impact, management intent and current management practices in place.

Procedures and proformas were designed for a tropical rainforest setting but may be applied to other natural settings. Types of monitoring are presented in order of increasing complexity, that is, from rapid assessment to detailed field-based measurements. We consider how the site monitoring components should be set up, and how the survey components should be applied.

Visitors to sites, whether on tours or as independent travellers, impact on the natural environment and have the potential to affect the quality of a site. The condition of the site also impacts on the visitor. Monitoring allows early detection of potential problems and thus assists in the preservation of a site and allows management to identify whether or not their objectives are being met.

Indicators included in the proformas were identified and collated from research and consultation with members of the tourist industry and protected area managers. Indicators used by researchers were adapted from methods used overseas and within Australia.

Key Findings

Tour operators represent the first level of visitor monitoring and are very important in the VMS for alerting land managers to problems, triggering immediate action and, if necessary, further intensive monitoring. We recognise that tour operators make more frequent visits than land managers to most sites and are in the position to give an early warning of any adverse impacts.

It is recognised that there are site-specific issues, which will be addressed for each site. Of the four VMS sites, only Marrdja Boardwalk is being used on a regular basis by tour groups. Particular issues at this site include the use of bus parking spaces by free and independent travellers and unauthorised tour groups, and visitors walking the wrong way around the boardwalk.

Protected area managers (rangers) represent the second level of visitor monitoring. The techniques employed are more intensive and comprehensive than those used by tour operators and so can be conducted less often. Specifically, we have developed and tested proformas for campsites and picnic sites, walking tracks and water features.

Recommendations

It is recommended that all tour guides conduct their VMS survey component once a week and incorporate it into their tour. This will allow a temporal overview of the site in a day. Benefits for tour guides include:

- involvement in management practices;
- opportunities to involve visitors in monitoring; and
- increased awareness of the environment by operators and their guests.

Monitoring techniques developed for rangers should be undertaken four times a year. Those developed for researchers should be conducted at least bi-annually.

Management Implications

The tour operator proforma was designed to:

- assist in monitoring site changes over time;
- increase awareness of changes in the environment;
- assist rangers in identifying problems;
- provide information to trigger land management actions; and
- provide an early warning to trigger intensive survey work.

Ranger-level proformas inform management on a range of human and environmental risks, including:

- inappropriate visitor behaviour;
- the need for greater ranger presence;
- the status of maintenance of infrastructure;
- the need for signs or fenced-off areas;
- information about visitor movements;
- tracking of maintenance needs;
- waste disposal problems;
- potential for human risk;
- disturbance to flora and fauna due to visitation;
- soil erosion; and
- decline in health of vegetation.

Further Research

Site-level survey instruments will be applied and tested at further visitor sites in the Wet Tropics to evaluate their utility across a range of settings.

OVERVIEW OF SECTION 3: VISITOR MONITORING PROCESS – FROM PRE-DESTINATION TO POST-DESTINATION (THIS VOLUME)

Section 3 is presented in three sections:

- The visitation process;
- Methodologies used to monitor the visitation process; and
- An example illustrating the process.

The four stages of the visitation process under consideration include: planning the visit, access to the site; the onsite visit; and finally, the post site visit. The methodologies used to research the different stages of the visitation process are outlined and are those that have been used in the research reviewed (e.g. content analysis, surveys, impact assessments, infrastructure inventories etc.). The example provided illustrates how monitoring a particular issue, i.e. information flow, can be examined across each of the stages of the visitation process (e.g. brochures, signage etc.).

Marrdja Boardwalk, a key WTWHA site, is examined as a case study. The case study systematically addresses and presents research results for each component of the visitation process and current management policies. These together provide for an articulation of the management objectives and possible responses/actions.

Finally, a summary overview of the Marrdja case study is presented. This section identifies those aspects of the visitation process and VMS that need further research.

OVERVIEW OF SECTION 4: CASE STUDIES – BIOPHYSICAL ASSESSMENT (VOLUME 3)

Case studies, including data for Marrdja Boardwalk, Davies Creek, Henrietta Creek/Nandroya Falls and Murray Falls are contained in Volume 3.

Key Findings

A hierarchical system of monitoring visitation and use of Wet Tropics sites is feasible and operational but depends on the commitment of tour operators, land managers and researchers to make it successful.

A rapid assessment proforma developed for tour operator site monitoring allows for early detection of potential problems.

Intensive biophysical monitoring undertaken by researchers indicated high variability within sites, which negated the opportunity to compare amongst sites.

Common issues across sites included weed infestations along roads, walking tracks, camp and picnic areas, and evidence of feral pigs.

Intensive biophysical monitoring indicated people were keeping to walking tracks and not venturing into the forest, except where social (undesignated) tracks had developed. When this occurred, activity was confined to undesignated tracks and not widespread within the forest.

Human litter was an issue in habitats bordering camp and picnic areas.

A comparison of human perceptions of biophysical impacts and measured biophysical impacts using Land Manager Proformas indicated:

- water quality was the only indicator where reasonable agreement between peoples' perceptions and biophysical assessments occurred;
- biophysical measures suggested infrastructure damage was higher than that perceived by visitors;
- weeds and evidence of feral animals were more likely to be higher than visitor perceptions suggested;
- no clear correlation between perceptions and biophysical assessment were evident for soil erosion, vegetation damage or scavenging; and
- visitor responses were not providing appropriate information for managers.

Recommendations

- Develop a database that allows tour operators and land managers to enter data and receive an update on the condition of their sites.

- Hold workshops for tour operators and land managers on use of the proformas.
- Trial the Land Manager Proformas with rangers.
- Implement the Visitor Monitoring System.
- Take water samples for laboratory testing from sites used by visitors during intermediate assessments by land managers.

Management Implications

Social (undesignated) tracks pose potential human risk, as they may occur on steep sections of tracks or near waterholes and waterfalls. They may also cause environmental impacts such as erosion, and act as vectors for the spread of pathogens. Social tracks may also intrude on sensitive Aboriginal sites.

Weeds were dense along the edge of camp and picnic areas and water bodies, and need to be controlled to prevent further distribution.

Human litter within forest bordering camp and picnic areas needs attention, as poses a risk to wildlife and humans.

Future Research

Develop a weighting system, as attempted in this project with the modified Land Manager Proformas, that allows a condition score for natural and built environments to determine any human risk.

Identify potential indicators of visitation and wildlife interactions.

SECTION 3:
VISITOR MONITORING PROCESS – FROM PRE-DESTINATION TO POST-DESTINATION

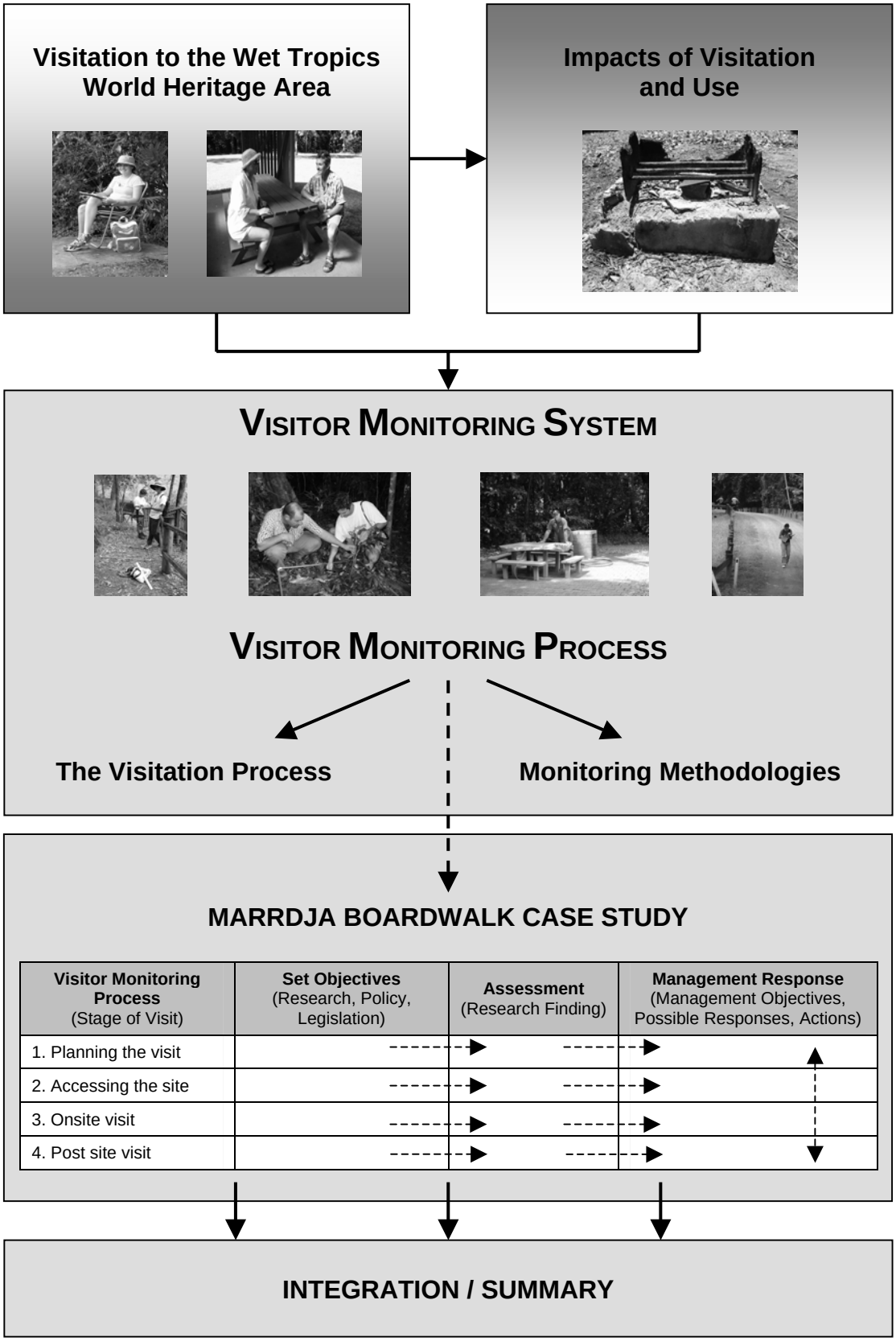


Figure 1. Diagram showing the structure of Volume 2 (this report).

STRUCTURE OF VOLUME 2

Figure 1 schematically presents the structure of this report, which provides both an overview of general issues to the visitor monitoring process and a specific case example of its application.

GENERAL ISSUES

Visitation to the Wet Tropics World Heritage Area

The report begins with summary information on visitors to the Wet Tropics World Heritage Area, including annual numbers, patterns of use and impacts resulting from such use. Issues arising from the current (or absent) monitoring system are also briefly discussed.

Visitor Monitoring System

An overview of some key issues concerning the conceptualisation, formulation and implementation of the Visitor Monitoring System (VMS) is presented.

Monitoring the Visitation Process

This is presented in three sections:

- The visitation process;
- Methodologies used to monitor the visitation process; and
- An example illustrating the process.

The four stages of the visitation process under consideration include (1) planning the visit; (2) access to the site; (3) the onsite visit; and (4) the post site visit. The methodologies used to research the different stages of the visitation process are outlined and are those that have been used in the research reviewed (e.g. content analysis, surveys, impact assessments, infrastructure inventories etc.). The example provided illustrates how monitoring a particular issue, i.e. information flow, can be examined across each of the stages of the visitation process (e.g. brochures, signage etc.).

CASE STUDY – MARRDJA BOARDWALK

Background Information on Marrdja Boardwalk

General information on the location of the boardwalk, the cultural and political history of the area, annual visitation and the natural and built environments is presented. The recreational activities commonly undertaken at this site are also briefly described.

Framework of the Visitor Monitoring System

An outline of the framework used in the presentation of the Marrdja Boardwalk case study is provided – it overlays the Visitor Monitoring Process (VMP) onto the VMS model. Attention is given to management responses resulting from researching and monitoring the different stages of visitation. Also included in this section are the key documents and research papers that have been used to undertake monitoring and assessment at Marrdja.

Marrdja Boardwalk Case Study

The case study systematically addresses and presents research results for each component of the visitation process and current management policies. These together provide for an articulation of the management objectives and possible responses/actions.

Integration/Summary

A summary overview of the Marrdja Boardwalk case study is presented. This section identifies those aspects of the visitation process and VMS that need further research.

VISITATION AND USE OF THE WET TROPICS WORLD HERITAGE AREA

Annual Visitation to the Wet Tropics World Heritage Area (WTWHA)

Of the 146 sites identified in the Wet Tropics Nature Based Tourism Strategy, one hundred of these sites (located on or inside the boundary of the WTWHA) received a total of 4.65 million visits per year. Of these sites, just fifteen (e.g. Barron Gorge, Lake Eacham, Mossman Gorge and Cape Tribulation) accounted for an estimated 3.5 million visits per year (approximately 75% of the total visitation) (Bentrupperbäumer, 2003).

Visitors

The most recent research indicates that the majority of visitors to nine WTWHA sites are locals (37.9%), followed by overseas (34.8%) and national visitors (27.3%) (Bentrupperbäumer and Reser, 2002). A recent survey of local community residents, i.e. those residing in the Wet Tropics bioregion, showed that over half of the respondents visit the WTWHA at least every three months and that 11.6% visit every day. Research has also shown that community residents have a strong place attachment to the WTWHA, with the WTWHA landscape constituting an important physical, emotional, recreational and experiential component of their lives (O'Farrell, 2003). The WTWHA is also important to the tourist industry with national and international visitors providing considerable input into the local and regional economy (Driml, 1997).

Positive and Negative Impacts of Visitation to the WTWHA

The positive (benefits) and negative (costs) impacts of visitation and use of the WTWHA sites are key concerns for management agencies, researchers and the tourist industry. Biophysical impacts on soils, water, vegetation and wildlife have been documented in many research projects (e.g. Bentrupperbäumer and Reser, 2000; Bentrupperbäumer 2002a-j; Wilson, 2002). Psychosocial impacts of high visitation such as crowding and displacement have also been researched (e.g. Bentrupperbäumer and Reser, 2002a; Bryden, 2001; O'Farrell, 2003).

However, positive and rewarding 'impacts' as a consequence of experiencing the WTWHA, such as enhanced sense of well being, relaxation, changed attitudes, understandings and behaviours, are also important outcomes from an encounter with the WTWHA. These provide important presentation opportunities.

THE VISITOR MONITORING SYSTEM

Models, Methods and Integration with Respect to a Wet Tropics World Heritage Area Visitor Monitoring System

"The Wet Tropics Nature Based Tourism Strategy (NBTS) and Wet Tropics Walking Track Strategy (WS) identify the need for a visitor monitoring system (VMS) associated with nature based tourism and recreation activities in the Wet Tropics World Heritage Area (WTWHA) and surrounding areas.

The proposed VMS aims to build on past and current research and monitoring of visitor management, coordinating the work of various researchers and land managers to provide a comprehensive and practical system for monitoring aspects of visitor management."
(WTMA Contract No. 658).

Summarised extracts from Bentrupperbäumer and Reser, 2002, p xxvi-xxx.

Important objectives of the WTWHA Visitor Monitoring System project were to review operating visitor monitoring systems and models in Australia, assess their utility and performance in the context of possible WTWHA use and/or adaptation, and in particular look at indicators and linkages across levels of data collection and analysis, and across disciplinary vantage points and methodologies. It was also very important, within the context of the WTWHA bioregion to examine operating systems and initiatives and assess where and how linkages, intersecting data collections, and existing archival data might be systematised, simplified, and integrated. It was the case that in the WTWHA bioregion, multiple and typically independent visitor monitoring exercises have been undertaken by management agencies, regional planning organisations, research organisations and university departments.

It is clear that, to a large extent, existing research and monitoring and methods are serving very different objectives and addressing very different target populations and client/consumer audiences. These programs are also operating within and across very different disciplinary perspectives and levels of analysis as well as catchment areas and geographic scales. It is only at particular junctures that a regional tourist portal survey aligns with a site based visitor/user survey, or that a natural science driven monitoring exercise at a 'biological community' or 'population' level might coincide with a 'bioregional community survey' of local residents. As well, it is clear that what has been almost entirely missed in previous 'regional' visitor surveys is an adequate understanding of either the specific impacts *of* visitors at identified sites, or the impacts of specific sites (or the WTWHA as a whole) *on* visitors in terms of experience, appreciation, or attitudinal or behavioural change.

An important challenge for us in the undertaking of social and behavioural science-based studies has been to explore how the methods, measures and levels of analysis we are using can articulate with other monitoring and survey systems being utilised in protected area management, and more broadly. Our prognosis with respect to a fully operational and satisfactory VMS is that it is likely that ongoing and independent research and monitoring programs will continue, but hopefully in the context of a parallel and articulated VMS that uses, integrates, and assists with ongoing data collections, but also systematises, standardises, and simplifies some components of these monitoring exercises. These independent and ongoing research and monitoring programs would minimally include:

- a visitor site based research program focussing on the psychosocial impacts of visitation and use;

- resident community survey exercises addressing management and reporting needs relating to changes and impacts resulting from all human visitation and use;
- a regional planning and tourism industry sponsored program which has a clearer focus and mandate with respect to monitoring visitation patterns and profiles, destinations and decisions, for those tourists visiting the WTWHA bioregion and far north Queensland more generally; and
- a visitor and other WTWHA site based research and monitoring program monitoring the biophysical impacts of visitation and use, and other threats and pressures impacting on the WTWHA.

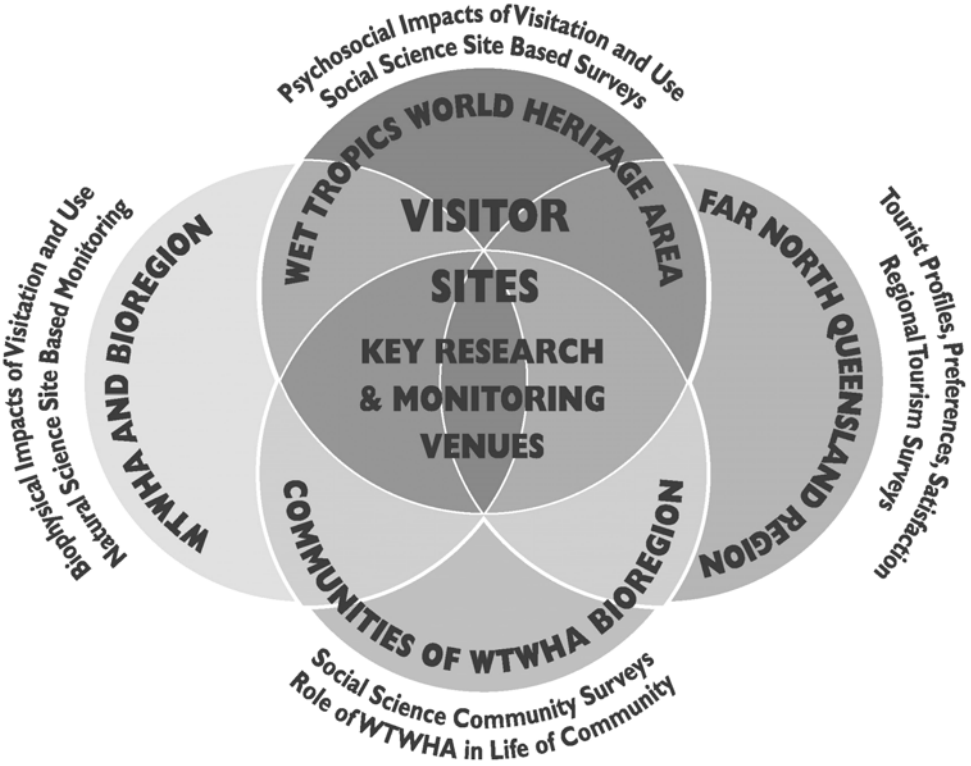


Figure 2. The overlaying and alignment of different types of research and monitoring surveys.

Figure 2 represents the ways in which differing types of research and monitoring surveys tend to overlay and align with each other with respect to data collection venues and visitor and user populations and catchments. It also attempts to demonstrate the efficiencies of a VMS system that articulates existing research and monitoring programs by taking advantage of the naturally occurring overlap and intersection of visitation and data collection at WTWHA visitor sites. This Venn diagram illustrates the functional overlap, but also the independent character of objectives and domains for the principal operating research and monitoring programs. Some key points to note include:

- The more substantial overlap occurring between WTWHA sites and resident communities reflects the proximity of many visitor sites to communities and the high level of visitation and use of WTWHA sites by local residents.
- The substantial overlap between natural science based monitoring in the WTWHA and visitor sites in the WTWHA reflects the reality that most biophysical monitoring of the impacts of visitation and use is undertaken at nominated visitor sites.

- The figure suggests the appreciable overlap and mutual use of WTWHA sites by tourists and local visitors.
- It also reflects the reality that visitor sites are important locations for biophysical impact assessment and monitoring, and that researchers themselves are important 'users' of these sites, with their own 'impacts', as are site managers, maintenance workers, other council employees, and those who live in the WTWHA and pass through or by particular sites on a daily basis.
- Visitor sites are where much of the impacts of visitation and use take place which makes these very apposite, efficient, and informative venues for researching and monitoring impacting processes, environmental changes, and people-environment transactions, and management effectiveness.
- Site-based sampling and monitoring can efficiently and effectively sample a substantial proportion of the tourist population visiting a region. Importantly it is that sector of the tourist visitor population who visit the WTWHA who are of direct concern with respect to protection and presentation, enjoyment and appreciation.
- The elegance and efficiency dividends of such a site-based visitor monitoring system from WTWHA and WTMA perspective, include the fact that data and information collected is all directly relevant to pressures and potential problems at particular sites.

MONITORING THE VISITATION PROCESS

The Visitation Process

One possible way in which alignments between research findings, monitoring programs and management objectives can be considered is by addressing the whole of the visitation process, from predestination to post destination. For most visitors to the WTWHA a logical sequence of events generally unfolds, which together forms the 'WTWHA experience'. A simplified 'mapping' out of these events not only provides a useful working framework for considering such alignments but also allows for a much more comprehensive analysis of the visitation process and the linkages between the different stages of the process.

For the purpose of this review and case analysis the visitation process has been divided into four key stages: planning; access to the site; onsite visit; and post site. Table 1 describes each stage of the visitation process. For most people wanting to explore and experience the WTWHA the visitation process starts before their actual arrival at the site – it begins at the planning stage, and ends at post site/post destination stage (after the visit to the site, the return home).

Stage 1: Planning the Visit

This predestination, planning stage of the visitation process considers how the WTWHA and particular visitation sites are 'represented' and 'promoted' to potential visitors and users. The external phase focuses on planning undertaken by visitors located outside the tropical north Queensland region (e.g. national and international visitors). The internal phase focuses on the planning undertaken in tropical north Queensland by all visitors (local, national and international). This division in the planning stage is due to the different types of information sources and content available on the WTWHA.

Stage 2: Accessing the Site

Accessing the site is the second stage in the visitation process. Because roads are the means by which the majority of visitors and users access the *actual* Wet Tropics (both by passing through the area and/or as a means of reaching a destination), they constitute the first direct and arguably one of the most dramatic and consequential forms of impact that visitation and use can potentially have on the WTWHA.

Stage 3: Onsite

Once the visitor actually arrives at their destination, positive and negative, biophysical and psychosocial interactions occur between the visitor and the natural, built, social and cultural environments. Visitor sites are where much of the impacts of visitation and use take place, making these the most apposite and informative venues for researching and monitoring impacting pressures and processes, environmental changes, reciprocal people-environment impacts, and management effectiveness.

Stage 4: Post Visit

The post visit stage provides the opportunity to assess whether expectations of the WTWHA visit, which may have been formulated through utilisation of information sources such as brochures, pamphlets, maps and previous experiences, 'match' or are congruent with actual experiences had at the site.

Methodologies Used to Monitor the Visitation Process

Table 2 outlines the visitation process, the research methods and existing databases used to monitor the visitation stages. The table demonstrates that there are several methodologies that can be implemented to monitor the different stages of visitation and that some methodologies, such as survey research, tour industry statistics and content, and the analyses of information sources, can be utilised at all stages of the visitation process. The table also illustrates that, currently, rich and comprehensive databases exist for all stages of the visitation process.

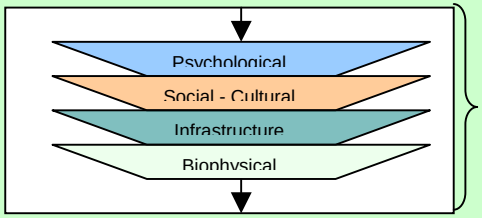
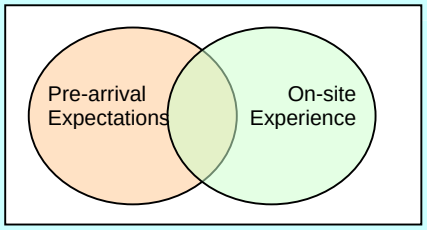
Example

An example of the use of the Visitor Monitoring Process to address a specific issue – information flow – is outlined in Table 3. For each stage of the visitation process there are monitoring questions including information sources that can be used for analysis and monitoring. The research methods used to monitor these stages for this specific example are also included in the table.

Table 1. Descriptions and roles of the four key stages of the visitation process.

	STAGE OF VISIT	DESCRIPTION	ROLE			
VIRTUAL LEVEL	**Planning the visit** • Local • Non Local: External and Internal	• This first stage involves human-environment interactions that occur at the ***virtual level.*** • In general, visitors first experience the WTWHA through written material, the spoken word, and/or various images, which are available from a variety of sources and which ***re-present*** the WTWHA, providing a diversity of information. • This level is also applicable to local and repeat visitors to the WTWHA. Memories of previous visits are continuously being re-created and maintained by their interactions with other people at these sites, and by living in the Wet Tropics landscape. • At this level, due to the experiences and information gathered, expectations are often formed about the WTWHA and specific sites.	This stage of the visit plays a critical role in: • Where people go (which WTWHA site they visit); • How they behave once there; • Their experience and expectations of the WTWHA and specific sites; and • Why people decide to visit the WTWHA.	Expectations are formed of the WTWHA site		
ACTUAL LEVEL	**Access to the sites**	• This stage involves human-environment interactions that occur at the ***actual level***. • Here the first 'real' encounter with the WTWHA is experienced as the visitor is transported via the road network from the virtual through the actual landscape. • These roads provide entry point, contact point and vantage point from which the WTWHA is accessed by people – physically, perceptually and psychologically. • At this stage, the visitor can still formulate expectations of the WTWHA site due to the surrounding landscape / environment they encounter along the way. This 'access' experience may well have an influence on their overall WTWHA experience.	This stage of the visit plays a critical role in: • Determining where people go (which WTWHA site they visit); • Their positive and negative impacts on biological and physical human communities; and • Their experiences and expectations of the WTWHA.		The WTWHA site is experienced	
ACTUAL LEVEL	**Site visits**	• This stage involves human-environment interactions that occur at the ***actual site level***. • Once the visitor physically encounters the WTWHA site, a number of interactions with the site can occur at the psychological, social / cultural, infrastructure and biophysical levels. • The interaction between these levels influences the visitor's overall WTWHA site experience and behaviour at the site.	This stage of the visit plays a critical role in: • The overall experience of the visitor to the WTWHA and specific sites.			
VIRTUAL LEVEL	**Post site visits**	• This stage brings the process full circle, and occurs at the ***virtual level*** again. • Via memories and photographs taken of the WTWHA site, the visitor often ***re-creates*** their WTWHA site experience. • Visitors can also access more information from brochures, pamphlets and the internet, to add to their overall WTWHA experience. • At this stage, the visitor may well compare their initial expectations of the WTWHA site, to what they remember of their onsite experience.	This stage of the visit plays a critical role in: • Sharing with others the good and bad experiences – word of mouth.			The experience is compared to the expectation

Table 2. The research methods and existing databases for monitoring the four stages of the visitation process.

	VISITORS		LEVELS	MONITORING METHODS	EXISTING DATABASES / RESEARCH / INFO SOURCES
	NON LOCAL	LOCAL			
PLANNING THE VISIT – PRE TNQ ARRIVAL	Reasons for visiting tropical north Queensland; Information on tropical north Queensland – content and availability; Accessibility of tropical north Queensland.	Reasons for living in tropical north Queensland; Knowledge of the WTWHA; Information on WTWHA – content and availability; Previous experience/visits to WTWHA; Place attachment; Reasons for visiting WTWHA.	**Virtual Level**	Arrival Point Statistics; Analyses of Tour Guides / Tour Businesses – Content and Statistics; Analyses of Information sources:	• Bentrupperbäumer and Reser (2000): *Representation of the WTWHA* • Young, M. (1997 and 1999) • Pearce and Moscardo (1994) • Moscardo and Ormsby (2000) • Travel agencies • Arrival Statistics: Cairns Port Authority
PLANNING THE VISIT – INTERNAL (TNQ)	Information on WTWHA – content and availability; Reasons for visiting WTWHA; Type/content of access information.				• Bentrupperbäumer and Reser (2000): *Representation of the WTWHA* • TTNQ • Information centres • Tour operators • Travel agencies • Bentrupperbäumer and Reser (2002): *Community Survey*
ACCESS TO THE SITES	Accessibility; Type and content of information on access; Type of transport required to access WTWHA; Which access route is most frequently used and why.		**Actual Level**	Voice Recorders / Cameras; Road Assessment; Site Infrastructure Inventory; Signage Inventory; Biophysical Impact Assessments; Behavioural Observations; Traffic & People Counters; Brochures, Pamphlets, Books, Television programs, Maps, Websites.	• Bentrupperbäumer and Reser (2000): *Highways into the Wilderness* • Goosem, M.: Road Studies
SITE VISITS	 Monitoring and measuring the onsite visitor experience at every level.				• Bentrupperbäumer (2002a-j) • Bentrupperbäumer and Reser (2002): Report 11 • Bentrupperbäumer and Reser (2000) • Manindis Roberts • Wilson (2002)
POST SITE VISITS	 Did the visitor's onsite experience 'match up' with their pre-arrival expectations?		**Virtual Level**		• Bentrupperbäumer and Reser (Take Home Visitor Survey 1998 / 2000) • Pearce and Moscardo (1994)

Survey Research: → Pre-arrival, On-site, Post-site and Community; On-site and Post-site; On-site, Post-site, and Community; Post-site and Community

Table 3. Example of methods used to monitor the flow of information from pre-destination to post-destination.

		MONITORING QUESTIONS – VISITORS		INFORMATION SOURCES		MONITORING METHODS													
PLANNING THE VISIT	PRE TNQ ARRIVAL	**NON LOCAL VISITORS:** In relation to information sources: • What information is available on TNQ? • What information is being accessed on TNQ? • What is the content of this information? • What are the reasons for travelling to TNQ?	**LOCAL VISITORS:** In relation to information sources: • What are the reasons for residents living in TNQ? • What awareness and knowledge do locals have on the WTWHA? • What information is available to locals on the WTWHA? • What information is being accessed by locals about the WTWHA? • What is the content of this information? • What are the reasons for visiting the WTWHA?	• Previous experiences • Brochures and pamphlets • Maps • Television shows • Tour packages • Word of mouth – recommendations • Internet • Books and travel guides • Travel agents	→ → Communication Channel – Information Flow → →										Brochures, Pamphlets, Radio, Television, Internet, Books, Maps, Information Centres		Pre-arrival, On-site, Post-site and Community
	INTERNAL (TNQ)	**NON LOCAL VISITORS:** In relation to information sources: • What information is available on the WTWHA? • What information is being accessed on the WTHA? • What is the content of this information? • What are the reasons for visiting the WTWHA?		• Local information centres • Places of accommodation • Brochures and pamphlets • Tour businesses • Previous experience • Road signage • Word of mouth • Travel agents • Repeat visits.		Arrival Point Statistics								**Analyses of Tour Guides / Tour Businesses – Content and Statistics**			
		❖ *What knowledge and expectations do visitors have before visiting the WTWHA?*																	
ACCESS TO THE SITE		In relation to information sources: • What information was used to access this site? (e.g. maps, signs) • Was the site easy to find? • Was the site easily accessible? • What were the reasons for accessing the site via that particular route?		• Road signage • The landscape • Maps • Brochures and pamphlets • Word of mouth • Previous experience • Tour			Voice Recorders / Cameras	Road Assessment		Signage Inventory	Biophysical Impact Assessments	Behavioural Observations	Traffic and People Counters		Signage, Maps	On-site, Post-site and Community		
		❖ *How does accessing the WTWHA site impact on the visitor's expectations and experience of the WTWHA site?*																	
SITE VISITS		In relation to information sources: **Psychological / Behavioural** • Are visitors aware of the on-site information? • What behaviour are the visitors portraying? **Infrastructure (Signage)** • What is the content of the infrastructure / signage? • What is the condition of the infrastructure? **Social / Cultural** • What are the S/C aspects communicating to the visitor? **Biophysical** • What are the biophysical aspects communicating to the visitor?		• Tour guides • Behaviour of other people • Signage and infrastructure at site • State / impact of natural and built environments at site					Site Infrastructure Inventory						Signage, Maps, Brochures		
		❖ *How does this all impact on the visitor's overall experience of the WTWHA site?*																	
POST SITE VISITS		In relation to information sources: • What information is being accessed post site visit? • What is the content of this information? • Does this information impact on the visitor's experience of the site?		• Experience of site • Follow up information (brochures, internet, books etc.) • Tour guides • Word of mouth.											Brochures Internet, Books	Post-site and Community	
		❖ *Did the visitor's experience of the site 'match' with their expectations of the site?*																	

THE MARRDJA BOARDWALK CASE STUDY

BACKGROUND INFORMATION ON MARRDJA BOARDWALK

Marrdja Boardwalk is located within the Daintree National Park in the Wet Tropics World Heritage Area (WTWHA). It is one of four main boardwalks (Kulki, Dubuji and Jindalba) found in the National Park managed by Queensland Parks and Wildlife Service. It is easily accessible, with the car park situated on the eastern side of Cape Tribulation Road.

Source: WTMA Handbook for Tour Guides

Cultural and Political History

The Daintree National Park has had a long cultural and much publicised political history. The cultural history is deeply embedded in Rainforest Aborigine occupation, with the Kuku Yalanji tribe traditionally residing in this area. The Kuku Yalanji lived off vegetation (e.g. rainforest fruits) that the lush rainforest afforded and animals that inhabited the rainforest such as cassowary, fish and snake. The arrival of Europeans and their subsequent use of the rainforest for tin mining and logging had disastrous impacts on the Kuku Yalanji. Many Kuku Yalanji were forced into missions located at Bloomfield, Mossman Gorge and Daintree River (WTMA, 2000).

The political history of the Daintree National Park is well documented (Source: DCTTA, 2000).

The political history of the Daintree area originated from the Bloomfield Track blockade that occurred in 1983 and 1984. This confrontation between conservationists and the local council and State Government gained national and international media attention with several protesters burying themselves in front of bulldozers and chaining themselves to trees (WTMA, 1997; Nielsen, 1997). With support from the Federal Government, the Daintree National Park and several other National Parks located along the coast south to Townsville and inland on the Tablelands were nominated and successfully listed as a World Heritage Area in 1988. Since then however, the future of the Daintree still remains a political issue with development, tourism and 'buy back' schemes generating local, state and national controversy.

Annual Visitation

The Daintree National Park is one of the most frequently visited National Parks in the WTWHA with sites such as Mossman Gorge receiving just under 367,000 visitors per year, and Kulki boardwalk receiving over 220,000 visitors per year. Compared to these sites, Marrdja experiences considerably lower annual visitation numbers with approximately 68,000 visitors per year. Many of these visitors are domestic and international tourists.

The Natural Environment

The natural environment has provided the context for the rich cultural and political histories as well as the high visitation numbers to the National Park. Specifically, the natural environment found at Marrdja offers visitors a unique rainforest and mangrove experience not found on other boardwalks. Plants that represent all of the stages of the evolution can be found at Marrdja (WTMA, 2000) along with a variety of flora such as ferns and orchids found in the mangrove section (WTMA, 1996). Unfortunately, the activity of feral pigs at the site has had a detrimental effect on the natural environment (e.g. diggings on the rainforest floor).

Epiphytic ferns and
cannon ball mangroves
(Bentrupperbäumer, 2002).

Boardwalk at Marrdja
(Bentrupperbäumer, 2002).

The Built Environment

Marrdja is a highly structured site with the boardwalk being the dominant built feature. Other facilities found at Marrdja include the car park, composting toilets and numerous interpretive signage located along the boardwalk. There are no camping, picnic or seating facilities at the site, and as such Marrdja is only for limited day usage.

Recreation and Activities

Walking and photography are the main recreational activities visitors engage in at Marrdja. The interpretive signage located along the boardwalk provides visitors with an educational experience. By engaging in these activities visitors are able to appreciate a natural environment of World Heritage significance.

FRAMEWORK OF THE MARRDJA BOARDWALK CASE STUDY

Visitor Monitoring Process

The four stages of the Visitor Monitoring Process provides the basic structure of this case study (Table 4):

1. Planning the visit;
2. Access to the site;
3. Onsite visit; and
4. Post site visit.

For each of these stages in the visitor monitoring process there are four components in the ongoing monitoring 'cycle' as follows (as shown in Figure 3):

1. set visitor management objectives;
2. monitoring and research process;
3. monitoring and research findings; and
4. management response.

"The primary aim of the VMS is to design a robust, efficient, practical and cost-effective system for the WTWHA which enables management in identifying whether visitor management objectives are being met so that appropriate management responses can be made."

Wilson, Turton, Bentrupperbäumer and Reser, 2004, p.4

It is important that both regional scale and site scale Visitor Management Objectives are set up front to give a context and framework for the monitoring cycles associated with each of the four stages of the visitor monitoring process.

Table 4. Structure of the Marrdja Boardwalk Case Study.
Stages are colour coded within this document for ease of reference.

VMP (Stage of Visit)	**Visitor Management Objectives** →	**Monitoring and Assessment** →	**Management Response** →
	Regional and Site Level Objectives (Policy/Legislation)	Research Findings	Possible Responses/Actions
Planning the visit			
Access to the site			
On site visit			
Post visit			

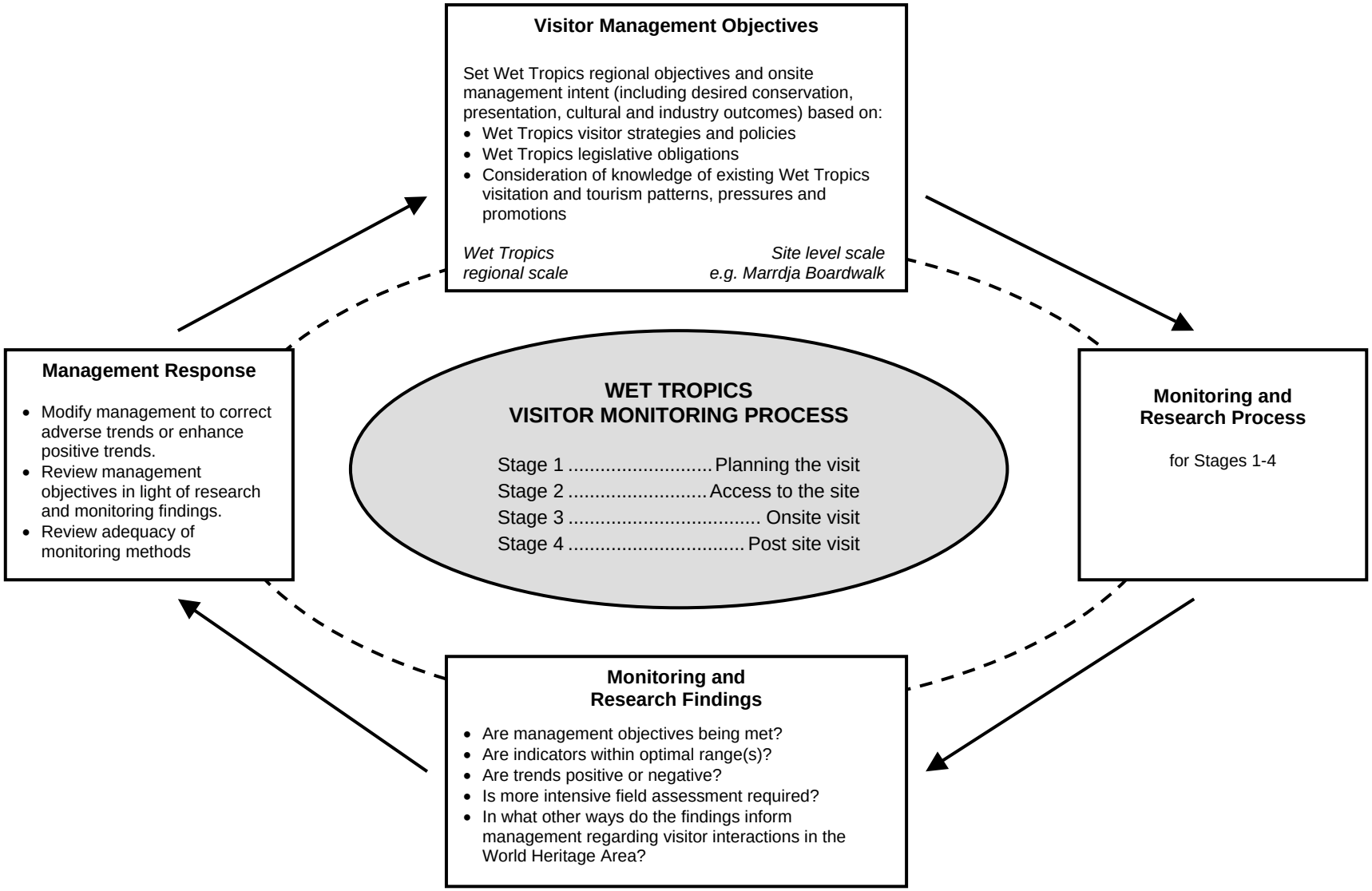


Figure 3. The Visitor Monitoring System.

Setting Visitor Management Objectives

The Set Visitor Management Objectives component comprises two sub-components, i.e. a Wet Tropics regional scale component and an onsite component. The terms of reference for the VMS establish the framework for setting Management Objectives as follows:

Regional Objectives

Regional level objectives are required in relation to:

- marketing and promotions;
- visitor information and orientation;
- presentation and education;
- visitor interests / tourism product 'matching';
- sustainable regional tourism industry;
- regional community quality of life and socio-economic objectives;
- Aboriginal cultural heritage perspectives and objectives; and
- advice from the Authority, Queensland Parks and Wildlife Service, Aboriginal interests and the tourism industry, sought with respect to setting regional objectives.

Management Objectives for Visitor Sites

- Objectives will be defined to a level that will allow monitoring and assessment of a range of aspects of visitor management including biophysical, psychosocial, behavioural, economic, cultural, presentation quality, asset management, visitor safety and tour operator compliance.
- Management objectives will be consistent with the Wet Tropics Nature Based Tourism Strategy (NBTS), Wet Tropics Walking Strategy (WTWS) and Queensland Parks and Wildlife Service policies.
- Opportunities to obtain consensus on management objectives will be sought with Aboriginal and tourism interests. It is envisaged this will include site visits to discuss same.

For the purposes of this case study, the following information has been used to set Management Objectives.

Wet Tropics Regional Scale

Management Objectives in relation to the Wet Tropics regional scale has come from key Wet Tropics Management Authority documents such as:

- Protection through Partnerships (WTMA, 1997);
- Wet Tropics Walking Strategy (WTMA, 2001);
- Wet Tropics Nature Based Tourism Strategy (WTMA, 2000);
- A Handbook for Tour Guides: Daintree River to Cape Tribulation (WTMA, n.d.);
- Wet Tropics Conservation Strategy (WTMA, 2004); and
- Which Way our Cultural Survival? (WTBMRSC, 1998).

Other documents used in this section include:

- Daintree Futures Study (Rainforest CRC, 2000);
- Douglas Shire Council Corporate Plan; and
- Pursuing Common Goals (DITR, 2003).

The regional scale policies and objectives in these documents provide a starting point and regional context for this visitor monitoring process. Of particular relevance in this Marrdja case study are the NBTS Daintree/Cape Tribulation Precinct objectives (NBTS p31) as follows.
Maintain and promote the values of the Precinct by:

- enhancing the 'reef meets rainforest' presentation and tourism experience;
- primarily providing for small group day tours and overnight stays;
- providing visitor infrastructure and interpretation to cater for high volume day use at specific sites;
- maintaining high quality visitor infrastructure and interpretive facilities;
- reducing the net visitor impacts on World Heritage values;
- encouraging and supporting the host community to provide specialist services to visitors that present the special attributes of the Daintree area; and
- redirecting future tourism growth to alternative opportunities for nature based tourism in Wet Tropics areas south of the Daintree River.

Site Level Scale (Case Study: Marrdja Boardwalk)

Management Objectives in relation to the onsite scale has come from key Wet Tropics Management Authority documents where there is a specific reference or relevance to management at the site (refer NBTS, WTWS).

Consistent with the VMS terms of reference, a site review of Marrdja involving Wet Tropics Management Authority, Queensland Parks and Wildlife Service and tourism interests was undertake to seek consensus on more specific management objectives in relation to Marrdja. Management objectives for the purposes of the Marrdja Boardwalk case study are summarised as follows:

Management Objectives developed as part of VMS project case study:

- manage Marrdja boardwalk so it provides visitors with the highest quality World Heritage experience;
- design and manage the site so that it provides for high throughput of people while simultaneously reducing the experience of crowding due to such high visitation; and
- provide and maintain high quality interpretation infrastructure and interpretation services.

NBTS Management Objectives:

- Marrdja visitor site to be managed as an 'Icon 1' site, i.e. opportunities to experience outstanding World Heritage Area features and values in small to medium groups. Maximum vehicle capacity 35 persons, well developed infrastructure and high onsite interpretation. (NBTS p 40, 45).

WTWS Management Objectives:

- Resolve problem of carpark not coping with numbers, damage to track environs by pigs (WTWS pA3).

Monitoring and Research Process

The basic purpose of this component is to collect information and data that can be analysed to assess whether visitor management objectives are being met so that appropriate management responses can be made.

An example of the use of the Visitor Monitoring Process to address a specific issue is outlined in Table 3. For each stage of the visitation process there are monitoring questions including information sources that can be used for analysis and monitoring. **The research methods used to monitor these stages for this specific example are also included in the table.**

Monitoring and Research Findings

While this component draws upon numerous research projects, the *Marrdja Boardwalk Site Level Data Report* (Bentrupperbäumer, 2002), which primarily addresses the *Access to* and *Onsite* stages of visitation, is most frequently referred to.

Other research findings used include:

- Representations of the WTWHA (Bentrupperbäumer and Reser, 2000);
- Impacts of Visitation and Use (Bentrupperbäumer and Reser, 2000);
- The Role of the Wet Tropics in the Life of the Community (Bentrupperbäumer and Reser, 2002);
- Mossman Gorge Community - Based Planning Project. Bama Babu Sees the Future (Bentrupperbäumer, Hill, Peacock, and Day, 2001);
- Developing a Wet Tropics World Heritage Area Visitor Monitoring System (Wilson, 2002);
- Daintree Futures Study (Rainforest CRC, 2000);
- Place Attachment to the WTWHA (O'Farrell, 2003);
- Understanding Visitor Travel Plans for, Visitor Expectations or and Visitor Reactions to the Wet Tropics World Heritage Area (Pearce and Moscardo, 1994).

Management Response

The ***Management Response*** component of the model is where management reviews management objectives in light of research and monitoring findings, takes management action to correct adverse trends or enhance positive trends, and review the adequacy of current monitoring processes. This stage brings the process 'full circle" by articulating management objectives which are informed on both current research findings and relevant management policies and legislation, and possible management actions or responses.

The following section now uses Marrdja Boardwalk as a case study and takes us through the four stages of the Visitation Process. For each stage specific **Regional and Site Level Management Objectives** are described, existing **Research Findings** in relation to those management objectives are provided and possible **Management Responses** are suggested.

VISITOR MONITORING PROCESS
CASE STUDY: MARRDJA BOARDWALK

STAGE 1
Planning the Visit

STAGE 1: PLANNING THE VISIT

BACKGROUND INFORMATION

Preparation undertaken prior to visiting a tourist place, or in this context an internationally significant Wet Tropics World Heritage Area site such as Marrdja Boardwalk, is an important part of the visitation process. It is at this **planning stage** that the prospective visitor (local, inter and intra state and international) may access a variety of sources in an attempt to seek out a range of information on potential destinations. Based on the information provided and knowledge gained, important travel decisions are often made, such as determining the specific place or places to visit and the activities to engage in once there, and formulating expectations of what the destination has to offer.

"In contemporary society, the promotion of tourist places has grown dramatically from its humble beginnings to become a cornerstone of the world's largest industry. These promotional strategies are important for several reasons. Firstly, the tourist market is dominated by relatively unconstrained consumer choice; consumers may choose from a range of alternative place images. Secondly, tourists have an increasing number of destinations to choose from. Thirdly, many tourist rely heavily on promotional literature in lieu of direct experience of place."

Young, 1999, p. 374

While some visitors (12%) opportunistically visit sites such as Marrdja Boardwalk, most (88%) intend to visit a particular site and hence partake in some form of planning by actively seeking out and accessing information. Information sought prior to arrival at a destination, i.e. externally or outside of tropical north Queensland, is commonly available in travel books and guides, magazines, web sites, television programs. Internally, i.e. within tropical north Queensland, the most readily available and accessed sources of information include brochures, pamphlets and maps (produced by both the tourism industry and environmental management agencies). However, other information sources such as word of mouth, previous experience at the site, and road signage are also important in determining where people go and what they expect to find.

RESEARCHING THE PLANNING STAGE

The primary aim of researching this predestination planning stage of the visitation process is to explore how the Wet Tropics World Heritage Area and particular visitation sites are **represented** and **promoted** to potential visitors and users, how such representations contribute to actual visitation, perceptions, expectations, use and cumulative impact, the selective over and under-representation of particular sites, and the nature and quality of information. Multiple methods have been used to undertake such research. Of particular importance has been the database consisting of the maps, pamphlets, and tourist brochures available that present, promote, and interpret the Wet Tropics World Heritage Area and its sites to potential visitors. Content analysis of this printed material has provided an important insight into the ways in which the images, maps and text may influence and shape the expectations and understandings that mediate visitors' actual encounters, experiences and enjoyment in the World Heritage Area and popular understandings and perceptions of the Wet Tropics and its management (Bentrupperbäumer and Reser, 2000). This virtual, constructed and marketed landscape can then be compared and contrasted with the actual Wet Tropics, and in particular with those visitation sites which most visitors encounter.

Additional data from interviews with actual visitors onsite allowed for an assessment of the extent to which exposure to or familiarity with particular material influenced the decision to visit a particular site, the activities engaged in at that site, and reported satisfaction with one's experience at the site (e.g. Bentrupperbäumer, 2002; Bentrupperbäumer and Reser, 2000). Survey research conducted at arrival points in tropical north Queensland (Moscardo and Ormsby, in Wilson *et al.*, 2004), community surveys (e.g. Bentrupperäumer and Reser, 2002), post-visit surveys at departure points in tropical north Queensland (e.g. Pearce and Moscardo, 1994), and tourism industry surveys (e.g. Young, 1999), have also contributed to a greater understanding of the key elements of this predestination, planning phase.

Topics Addressed

The topics addressed in this planning stage include:

- Who are the visitors? Who is the target audience for this promotional/planning material?
- What information is available and used by all visitors?
- What is the nature and quality, purpose and content of this information?
- Which destinations are being promoted?
- What is the role of management agencies and the tourist industry in developing this information?

To answer these questions, this section of the visitor monitoring process endeavours to link relevant sections of various regional level policy and legislative documents and site level management objectives with the results of monitoring and assessment – the research findings. Together these provide the policy and research evidence necessary to develop appropriate and informed management responses and actions needed to achieve these objectives (Table 5).

Table 5. Stage 1 of the Marrdja Boardwalk Case Study.

Stage #	VMP (Stage of Visit)	Visitor Management Objectives	Monitoring and Assessment	Management Response
		Regional and Site Level Objectives (Policy/Legislation)	Research Findings	Possible Responses/Actions
1	**Planning the visit**			
2	Access to the site			
3	On site visit			
4	Post visit			

STAGE 1 – PLANNING THE VISIT

VISITOR MANAGEMENT OBJECTIVES →

		Regional Level Objectives: Policy/Legislation	**Site Level Objectives:** Marrdja Boardwalk
PLANNING THE VISIT	WHO ARE THE VISITORS?	**Wet Tropics Management Authority (1997, p.7, 80 and 91) *Protection through Partnerships* web.** • The opportunity is to use, enjoy and present the Area to our family, friends and visitors from around the world. • Spectacular rainforests, coastline, waterfalls, rugged gorges, mountain peaks and volcanic crater lakes attract locals and visitors from all over the world. • Visitors may include both residents and non residents.	**Information Provision** • To provide all potential visitors (international, national and local) with information about Marrjda Boardwalk in formats that are easily and readily available and accessible both outside (externally) and within (internally) tropical north Queensland.
	VISITOR INFORMATION SOURCES	**Wet Tropics Management Authority (2001, p. vi and 29-30) *Wet Tropics Walking Strategy.*** • A database of managed walks will be developed to enable walkers to search a website for walk information. This will complement the numerous books, brochures and visitor centres already providing information. Educational information about the many aspects of the Wet Tropics environment and history will also be available on particular walks. • Off site information and promotion includes land mangers' walk pamphlets and internet sites, tourism industry marketing, and several books with Wet Tropics walking information. • Public information currently available about walking in the Wet Tropics includes: individual brochures and visitor information sheets available from QPWS and local governments. • Provide walking information and promotional material which enables walkers to easily learn about and select appropriate walks. • Walk information should be available: o on the internet. It is envisaged that the current walks database developed during this strategy can be adapted to enable visitors to search on the web for suitable walks to meet their needs and capabilities; o in tourism guide books. These include those used by travellers such as Lonely Planet, as well as local productions focusing on walks in the Wet Tropics, o in management and tourism brochures and information sheets, o from all management agencies and tourism information services, o in various languages as required to suit demands of international tourists.	
	VISITOR DESTINATIONS	**Wet Tropics Management Authority (2001, p. 16) *Wet Tropics Walking Strategy.*** • Presently, the majority of tourists to the Wet Tropics visit areas around Cairns and Kuranda, go north to the rainforests at Mossman and the Daintree and go west to the lakes, dams and waterfalls of the Tablelands.	

STAGE 1 – PLANNING THE VISIT

→ MONITORING → MANAGEMENT RESPONSE

VISITOR PROFILE

Research Findings: Marrdja Boardwalk

Bentrupperbäumer (2002). *Marrdja.*
Target audience for planning information:

	Of Total	International	National	Local
Visitors		71.7%	17%	5.7%
		UK = 33% USA = 16%	+ 5.7% Aust	
Organised Tour	44.5%	84.5%	10.3%	5.2%
University Education	59.5%	81.3%	14.8%	3.9%
Gender (Female)	56%	78%	17.8%	4.2%
Gender (Male)	44%	74.2%	18.6%	7.2%
Age	34.6	33.2	37.4	34.3
	Majority of visitors = 20–29 age group			

Possible Responses/Actions

Visitor Profile

- The information provided needs to carefully consider the demographic profile of the visitors when developing the content, and when considering the quality and nature of that information.
- Given that just under half of the visitors are with an organised tour, their primary source of Wet Tropics World Heritage Area and Marrdja specific information will be the tour guide. It is therefore important that the tour guides are providing correct and relevant information.
- Some foreign language signage may be necessary.

VISITOR INFORMATION SOURCES USED

Bentrupperbäumer (2002). *Marrdja.*

Sources of information used to plan trip to Marrdja Boardwalk:

	Of Total	International	National	Local
Word of Mouth	27%	77.6%	17.2%	5.2%
Road Sign	15.8%	67.6%	32.4%	0%
Map	18.1%	59%	41%	0%
Been Before	5.6%	16.7%	33.3%	50%
Info Centre (NQ)	8.8%	63.2%	36.8%	0%
Info Centre (Ext)	9.3%	85%	15%	0%
Leaflet	5.6%	83.3%	16.7%	0%
Book	20%	95.3%	4.7%	0%
Web	2.8%	83.3%	16.7%	0%

Information Sources

- An information dissemination strategy will need to reflect the primary avenues visitors use to source Wet Tropics World Heritage Area and Marrdja specific information.
- Information sourced internally (within tropical north Queensland), in particular through word of mouth, road signage and maps, is very significant particularly for the international visitors. This therefore requires special attention with respect to planning for, resourcing and disseminating Wet Tropics World Heritage Area and Marrdja specific information.
- Because local visitors are not accessing traditional information sources, critical information about the Wet Tropics World Heritage Area and Marrdja needs to be available on site and through those off site avenues most used.
- Clearly, the web is the least utilised source of Wet Tropics World Heritage Area information.

DESTINATION INFORMATION

Bentrupperbäumer and Reser (2000): *Representation of the WTWHA*

- Sites dramatically over-represented in the printed material were: Cape Tribulation, Mossman Gorge, Lake Barrine and Lake Eacham.

Pearce and Moscardo (1994): *Understanding Visitors' Travel Plans…*

- 62% of visitors who were *travelling north* at the time of the survey planned to visit Port Douglas, Daintree, Cape Tribulation and/or Cooktown.
- 56% of visitors who were *travelling south* at the time of the survey had visited Port Douglas, Daintree, Cape Tribulation and/or Cooktown.

Destinations

- In all of the printed materials, more emphasis should be placed on destinations within the Daintree region other than Cape Tribulation and Mossman Gorge in order to distribute visitors throughout the region.

STAGE 1 – PLANNING THE VISIT

VISITOR MANAGEMENT OBJECTIVES →

		Regional Level Objectives: Policy/Legislation	**Site Level Objectives:** Marrdja Boardwalk
PLANNING THE VISIT	NATURE AND CONTENT, PURPOSE AND QUALITY OF INFORMATION	**Wet Tropics Management Authority (2000, p19-20):** ***Wet Tropics Nature Based Tourism Strategy*** • Marketing will be used as a tool to influence visitor demand, encouraging visitation across the region in a manner consistent with management objectives and intent, ensuring accuracy of presentation, and setting visitor expectations in relation to the range of nature based tourism opportunities available within the Wet Tropics WHA. The relationship between the destination marketing strategies of the tourism industry and the Strategy will be examined to: • Assess the potential of marketing programs to support World Heritage Area management objectives; • Ensure the accuracy of marketing images; and • Support a sustainable tourism industry. In cooperation with the tourism industry, a marketing action plan will be prepared for the accurate and appropriate marketing of Wet Tropics to: • Manage demand through appropriate marketing of visitor sites and tourism precincts consistent with Strategy management objectives; • Ensure a balanced and coordinated approach to the marketing of Wet Tropics values between the tourism industry and land managers for the Wet Tropics WHA and surrounds; • Promote the development of a diversity of nature based products; • Ensure marketing does not create unrealistic visitor expectations; • Increase awareness and appreciation of Wet Tropics World Heritage values; and • Provide a style manual and library of images, which assists the media, Wet Tropics Management Authority and the industry to develop a common approach to marketing. **Wet Tropics Management Authority (2001, p.29-30):** ***Wet Tropics Walking Strategy*** The function of such material extends beyond marketing and incorporates management objectives to: • Promote walking as an ideal way to experience the Wet Tropics; • Provide accurate information about climate, minimal impact walking, safety, permit requirements, seasonal variations, environmental and World Heritage values, and Aboriginal cultural connections; • Provide specific information on all walks such as features and themes, degree of difficulty, track type, gradient, transport needs and walk route maps in order to enable walkers to choose an experience to suit their needs; • Enhance visitor enjoyment by allowing them to choose experiences which match their expectations and abilities; • Ensure that walkers understand the intended experience, their behaviour is appropriate and they are suitably prepared; and • Better distribute visitors throughout the region. Inform and educate walkers about the reasons for the environmental protection and management of much of the Wet Tropics walking areas. **(p.30-31)** ***Wet Tropics Walking Strategy*** • Walking promotion and information is currently limited in its availability, forms and languages. • Inaccurate and inappropriate promotional material can lead to disappointment and misbehaviour amongst walkers whose expectations are not met. This can be a cause of a variety of adverse impacts. For instance, problems such as overcrowding, vegetation damage and vandalism can result from excessive marketing of a walk designed for small numbers of people. • Aboriginal people also have concerns regarding appropriate promotion of their culture.	To ensure that the external (National and International) and internal (Tropical North Queensland) promotion (e.g. tour brochures, pamphlets and internet information) of Marrdja Boardwalk as a tourist destination is: • **Correct and accurate** in terms of what natural features visitors can expect to see (highlight rainforest and mangrove opportunities); • **Provides specific information** about the boardwalk (and other infrastructure) that may suit the visitors' needs and abilities (for example, wheelchair access, toilets, limited car parking for non tour visitors, no picnic tables and no rubbish bins); • **Informs the visitor of the popularity** of Marrdja and provides alternative times (non-peak times) for visitation to the boardwalk; • **Increases the awareness** of the visitor of the WH status of Marrdja through specific information relating to the natural attributes of the site (and WHA in general) (e.g. evolutionary significance, natural beauty etc.); • **Provides and advertises alternative boardwalks** in the region (e.g. Dubuji, Jindalba or privately owned walks such as Cooper Creek Wilderness Walks or Indigenous walks such as Kuku Yalanji Dreamtime tours) that provide different visitor experiences to share / spread visitor load in the region; • **Promotes environmentally and socially responsible and safe behaviour** when visiting Marrdja boardwalk (e.g. no littering, no deviating from boardwalk, consideration of others) and highlights the impacts of irresponsible behaviour on the site and other visitors; and • **Highlights the significance of the area to the Rainforest Aborigines** and the care and cultural sensitivity needed.

STAGE 1 – PLANNING THE VISIT

→ MONITORING → MANAGEMENT RESPONSE

	Research Findings: Marrdja Boardwalk and Wet Tropics World Heritage Area	**Possible Responses/Actions**
GENERAL	**Bentrupperbäumer & Reser (2000): *Representation of the WTWHA*** Of the printed material (e.g. brochures and pamphlets) collected from local information venues: • 48% contained no reference to the WTWHA; and • 48% came from Information Centres, 26.5% from Tour/Travel Agencies, 12% from Tour Operators, and 12% from Accommodation Houses. Printed material was reported as being readily available and accessible to visitors.	**Tour Company Collaboration** • Collaborate with tour companies who visit Marrdja (or the WTWHA in general) and discuss issues concerning current advertising particularly with respect to WTWHA. • Formulate an advertising checklist (or content code) that addresses the regional and site level management objectives regarding nature, quality and content of all information sources. • Develop an information sharing system to ensure interpretive material provided to visitors is accurate, appropriate and relevant to opportunities in the Area (this may include use of a "quality control" stamp on interpretive material) (WTMA, 1997, p.100). • Hold regular information sessions so as to ensure that tour operators are up-to-date with all of the relevant biological, ecological, cultural and management information and protocols. **Education at Non- local visitor Information nodes** • Collaborate with companies (e.g. car rental companies, places of accommodation, tour operators) and organisations (information centres) on current issues concerning information quality and content. **Education at Local visitor Information nodes** • Provide information about Marrdja boardwalk to locals (via newspapers, newsletters, radio etc.; the sources most frequently used) that comply with the regional and site level management objectives. **Local Volunteer Guides** • Develop a program where locals can become volunteer guides. Such a program will not only assist in the management of Marrdja, but also act as a communication channel of information both to visitors and throughout the broader community. **Aboriginal Issues** • Ensure that all information concerning Aboriginal content is appropriately and accurately presented, has been sourced and acknowledged properly, and is formulated and presented in collaboration with and which has the permission of the traditional owners of that knowledge. • Employing Indigenous representatives from local communities to provide Indigenous knowledge and information on the site. **Continuous Visitor and Community Survey Research** • Through continuous visitor and residential survey research, trends in information availability and accessibility externally and internally can be monitored. • Through continued community survey research sources used by residents to access information on the WTWHA and WTMA can be monitored.
NATURE AND PURPOSE	Of the printed material that contained information on the WTWHA: • 61.5% contained less than 20% Wet Tropics content; • 74.7% were in the 'brochure' format; • The purpose of this material was to: promote tours (61.7%), promote the region (21.4%) and to advertise accommodation (10.4%); and • The bulk of material was produced by tour operators. Other producers of such information included: Local Councils, Tourism Authorities and Management Agencies.	
QUALITY AND CONTENT	Of the printed material (e.g. brochures & pamphlets) collected from local information venues: • 45% of the images (photos and drawings) used were Wet Tropics related; • Landscape photos of the Wet Tropics were the most popular natural photo imagery (61%), followed by wildlife photos (28%) and photos of plants (11%); and • In terms of text, 5% of items examined made reference to feeding wildlife. The facilities of a setting were referenced more often in text than photos. Majority of respondents assessed printed material as being very (5-6 rating): 74% Credible 70.4% Helpful 68.5% Informative Aboriginal Issues: • Very little emphasis was placed on explaining anything of substance about Aboriginal culture. • Reference in no more than a sentence was made to their presence in the region and what cultural activities were on offer in the region. • Reference to cultural connection to region was made in 5% of items.	
SITE REPRESENTATION	• Of the printed material that referred to the Wet Tropics World Heritage Area, Marrdja accounted for 3% of this representation (5% text, 3% photos), Cape Tribulation accounted for 21%, and Mossman Gorge 10%. • Of the 105 tours to the Daintree National Park advertised by 39 tour companies: – 32 companies offered 82 tours to Cape Tribulation; – 22 companies offered 40 tours to Mossman Gorge; and – 9 companies offered 10 tours to Marrdja.	

STAGE 1 – PLANNING THE VISIT

VISITOR MANAGEMENT OBJECTIVES →

		Regional Level Objectives: Policy/Legislation	Site Level Objectives: Marrdja Boardwalk
PLANNING THE VISIT	MANAGEMENT INFORMATION SOURCES AND CONTENT	**Wet Tropics Management Authority (1997, p.109):** ***Protection through Partnerships*** • Appropriate visitor behaviour will be promoted through information and education programs, including minimal impact codes. • Whenever possible, marketing programs promoting use of northern Queensland and the Area should aim to foster expectations and behaviour consistent with management objectives for the Area. **(p.90)** ***Protection through Partnerships*** • Land managers and the Authority will continue to provide a range of pre-visit off-site and on-site information and interpretative opportunities promoting safe, educational and enjoyable visits to the Area consistent with Australia's obligations to present the Area under the Primary Goal. • Interpretive techniques will include development and promotion of a minimum impact code for visitors. Themes will focus on the World Heritage listing criteria, natural and cultural heritage and management issues. • Special attention will be given to the interests of rainforest Aboriginal communities. Information and interpretation incorporating Aboriginal cultural messages will take place with the involvement of the communities themselves. Communities initiating interpretative projects will be supported.	**Management Information** • To develop information sources (such as pamphlets, booklets, maps, websites) that address the key management objectives. • To develop information sources (such as pamphlets, booklets, maps, websites) that clearly addresses the purpose and content of key management objectives. • To provide relevant information in a format that can be easily and directly added to all printed material (e.g., actual photo archives, caption texts, glossary of terms). **Specific Local Information** • To promote the cultural, historical and contemporary significance of the site and broader region to both indigenous and non indigenous peoples.
	LOCAL ATTACHMENT AND USE	**Wet Tropics Management Authority (1997, p. 9):** ***Protection through Partnerships*** • The rainforest has special meaning for most people in northern Queensland and the regional population's interests, knowledge and attachment to the Area should be acknowledged and respected. This particularly concerns the rainforest Aboriginal peoples whose culture and the rainforest are inextricably linked. The Authority will develop a collaborative relationship with Aboriginal peoples.	
	LOCAL INFORMATION SOURCES AND CONTENT	**Wet Tropics Management Authority (1997, p. 96):** ***Protection through Partnerships*** • Sites managed for use predominantly by local residents will not be publicised. **(p. 49)** ***Protection through Partnerships*** • Desired outcome: An informed community with a good understanding of the values of the Area, the meaning of World Heritage listing, the current threats to the integrity of the area and the current state of knowledge about how to mitigate impacts of the Area's natural values. **Wet Tropics Management Authority (2003, p.63-64):** ***Wet Tropics Conservation Strategy Draft*** Information is available through: • magazines, newsletters and specialised information such as Tropical Topics or research fact sheets. • Visitor centres, displays at public events and talks to schools also provide valuable links to inform the public about conservation issues and how the community can assist in conservation management. • Seminars, posters, booklets and brochures, television advertisements and websites are all used effectively for public education.	

STAGE 1 – PLANNING THE VISIT

→ MONITORING → MANAGEMENT RESPONSE

MANAGEMENT CONTENT

Bentrupperbäumer & Reser (2000): *Representation of the WTWHA*

- In the context of textual reference, the relative amount of marketing versus interpretive versus management content differed considerably, with marketing and interpretive content present in the majority of printed material (99% and 93% respectively), and management content present in just 24% of the printed material.
- 13% of text was dedicated to management information.

Bentrupperbäumer *et al* (2001): *Mossman Gorge Community-Based Planning Project*

- Kuku Yalanji wish to formalise protocols with WTMA, QPWS, DSC, tourist industry regarding Cultural Access & Use of Indigenous knowledge.

LOCAL PLACE ATTACHMENT AND DISPLACEMENT

O'Farrell (2003): *Place Attachment to the Wet Tropics World Heritage Area*

- The Daintree National Park was the most frequently referred to favourite place by community residents.
- The most nominated reasons for attachment to the Daintree NP related to the natural features of the NP such as the rainforest and wildlife.
- The most nominated places of displacement in the WTWHA, are also located in the Daintree NP.
- The most frequently referred to reason for feeling displaced in the Daintree NP was because of crowding and tourist issues.

Bentrupperbäumer & Reser (2000): *Aboriginal Perspectives*

- 63% reduction in number of Aboriginal Community members visiting Daintree NP.

RESIDENT REPEAT VISITS

Bentrupperbäumer & Reser (2002): *The Role of the Wet Tropics in the life of the community*

- Approximately 85% of community residents have visited the WTWHA.
- Over half of the community visit the WTWHA 1-4 times per year (up to once every 3 months).
- 11.6% of community residents visit the WTWHA virtually every day.
- Activity (56.7%) and Experiential (36.0%) reasons are why residents visit the WTWHA.

LOCAL USE OF INFORMATION SOURCES

Bentrupperbäumer & Reser. (2002): *The Role of the Wet Tropics in the life of the community*

Information sources used by community respondents.

- For information about the WTWHA:

71.1%	Newspapers
65.7%	Television
56.0%	Word of Mouth
46.1%	Radio
44.1%	Books
42.8%	General Information Centres
32.7%	Environmental Management Agency Information Centres
28.3%	Tropical Topics
27.5%	Work
20.4%	School/University

- For information about Wet Tropics Management Authority:

38.0%	Signage at WTWHA Sites
27.3%	WTMA Leaflets
13.4%	WTWHA Newspaper
8.9%	Wet Tropics Neighbours Newsletter
8.0%	Wet Tropics Web Site

- Over half of community respondents believed that information about the WTWHA and its management was available only from a slight to moderate (3-4) extent.

Research Findings: Marrdja Boardwalk

Possible Responses/Actions

Management Information

- Work together with the tourist industry (tour operators, accommodation houses, etc) to ensure that management content is sufficiently, appropriately and accurately presented in all information outlets.
- Work together with the Kuku Yalanji and develop and formalise protocols for the access and use of indigenous knowledge both in the written and verbal form.

Local Visitors

- Acknowledge that the WTWHA forms an important living space for residents of the Wet Tropics bioregion and that many residents are visitors to sites within the WTWHA.
- Respect that many residents have a special attachment to the WTWHA, in particular to the Daintree NP and that information on the Daintree NP and the WTWHA (including Marrdja) be readily available and accessible through information mediums commonly used by community residents (for example, through Newspapers and Television).

KEY POINTS AND LINKS TO OTHER STAGES

1. One way in which overuse of particular sites in the Daintree region is occurring is through the excessive promotion of those sites in the printed material.
2. If dispersing visitors/users throughout the Daintree is an aim of the management agencies so that more of the region can be explored and experienced, and crowding can be minimised, there is the need to encourage those producing the printed material to place more emphasis on designated WTWHA sites other than Cape Tribulation, Mossman Gorge, as well as those private sites in the region. One very easy way of doing this would be to at least reference them more in the maps and orientation material provided.
3. In the text of the printed material produced by the tourist industry very little emphasis is placed on describing the WTWHA, or communicating its attributes, plans, policies and regulations. Negligible information is available on behaving in an environmentally responsible way, which would seemingly be critical to the prevention and mitigation of negative visitor and/or user biophysical impacts on the region.
4. In terms of the number and space occupied in the printed materials, images (photos/drawings) related to the WTWHA were clearly an important information dissemination strategy.
5. Natural heritage presentation and interpretation eclipses cultural heritage in the printed material available, and what little cultural heritage content is there relates to a stereotypic picture of an indigenous cultural past, not present.
6. There needs to be some more careful consideration of the material produced by private and commercial interests and for a management agency (e.g., WTMA) to consider taking some responsibility for what is out there, offering, perhaps, to provide relevant information in a format that can be easily and directly added to the printed material (e.g., actual photo archives, caption texts, promotional layouts, glossary of terms, etc). In particular, information on how to behave in a culturally sensitive and environmentally and socially responsible way should be added to all material.

IN SUMMARY…

It is important for management agencies and the tourist industry to appreciate the nature and impacts of promotional/marketing materials on actual visitation, use, and experience in the Wet Tropics and the potential possibilities for management and monitoring with respect to particular representations and products which are produced in the region.

Source: Bentrupperbäumer and Reser (2000, 2002); Bentrupperbäumer (2002)

VISITOR MONITORING PROCESS
CASE STUDY: MARRDJA BOARDWALK

STAGE 2
Access to the Site

STAGE 2: ACCESS TO THE SITE

BACKGROUND INFORMATION

Accessing the site is the second stage in the visitation process but generally the first opportunity for the visitor to encounter the *actual* environment. For many visitors, it is at this stage that the transition from the virtual environment (maps and brochures etc.) to the actual environment (Marrdja Boardwalk or Daintree National Park) occurs, even though it is mediated through the mode of transport used.

Accessing Marrdja Boardwalk and other sites north of the Daintree River is an experience like no other in the Wet Tropics World Heritage Area. The very nature of the access, which is first by ferry across the Daintree River and then along a narrow, winding road, provides for a sense of remoteness and isolation. The maintenance of Cape Tribulation Road as a 'green corridor' is important both in the context of ecological sensitivity and as a significant aspect of the overall visitor experience of the Daintree. However, despite conscious attempts by management agencies and local councils to maintain Cape Tribulation Road as a "green corridor", travelling through this area is associated with and often the source of many biophysical and psycho-social impacts.

"In terms of human use, roads are critical and complex determinants of behaviour. They clearly provide easy and routine access to and through places otherwise inaccessible. Even as traffic corridors, roads provide tantalising glimpses of country and landscape and places, which suggest the possibility of later visits and exploration. Such images from driving through a place often constitute the most immediate and lasting impressions of a country or region. In all of these ways, roads provide the ***entry point****,* ***contact point****, and* ***vantage point*** *from which a particular area can be accessed by people – physically, perceptually and psychologically."*

Bentrupperbäumer and Reser, 2000, p.61.

"Roads define, permit, restrict, and regulate. They become the forest ranger, interpreter, guide. They can also, unfortunately, ensure that one's never 'really' been there. Ironically, in National Parks and forests, the road also often serves as parking lot, viewing point, and even main street through the picnic area cum truck stop, with traffic noise, exhaust fumes, and asphalt panoramas framing our nature-based outing and experience."

Bentrupperbäumer and Reser, 2000, p.62.

As will be highlighted in research findings in the onsite stage of visitation, Cape Tribulation Road acts as an 'overflow' car park when the car park at Marrdja is full, with visitors parking their cars on the fringes of the road causing both biophysical impacts and dangerous traffic conditions. Additionally, because the road is narrow and winding and acting as a thoroughfare for small to larger vehicles such as tour buses and trucks, noise, congestion and associated feelings of crowding are of concern.

RESEARCHING ACCESS

Because roads are the means by which the majority of visitors and users access the *actual* Wet Tropics (both by passing through the area and/or as a means of reaching a destination), they constitute the first direct and arguably one of the most dramatic and consequential forms of impact visitation and use can potentially have on the WTWHA. As well, roads unequivocally and dramatically *present* the Wet Tropics to the visitor and user and constitute a multifaceted avenue for determining the impressions, responses and behaviour of the

visitor in this region. For many visitors their principal contact with National or State Parks, or World Heritage Areas such as the WTWHA derives from driving through the area, whether this is in terms of actual time spent, quantity of places seen, overall impression of the place, or sensory images, etc.

There are a number of methods employed to research this second stage of the visitation process, access to the site, the most appropriate depending on the aims/goals of the research. These include:

- Video recorders / cameras;
- Road assessments;
- Signage inventories;
- Biophysical Impact Assessments;
- Behavioural Observations;
- Traffic & People data counters;
- Analyses of tour guides/businesses statistics;
- Analyses of signage, maps & brochures;
- Onsite and Post visit survey research.

Topics Addressed

The topics addressed in this access stage include:

- How visitors locate the site;
- Statistics and key issues associated with the Daintree Ferry;
- Statistics and key issues associated with Cape Tribulation Road;
- Modes of transport used by visitors (e.g. by tour, hired vehicle, private vehicle etc.).

The representation of roads in the context of maps and visitor information has been addressed in Stage 1 – Planning the Visit.

To answer these questions, this section of the visitor monitoring process endeavours to link relevant sections of various regional level policy and legislative documents and site level management objectives with the results of monitoring and assessment – the research findings. Together these provide the policy and research evidence necessary to develop appropriate and informed management responses and actions needed to achieve these objectives (Table 6).

Table 6. Stage 2 of the Marrdja Boardwalk Case Study.

Stage #	**VMP** (Stage of Visit)	**Visitor Management Objectives** →	**Monitoring and Assessment** →	**Management Response** →
		Regional and Site Level Objectives (Policy/Legislation)	Research Findings	Possible Responses/Actions
1	Planning the visit			
2	**Access to the site**			
	On site visit			
	Post visit			

STAGE 2 – ACCESS TO THE SITE

VISITOR MANAGEMENT OBJECTIVES →

ACCESS TO MARRDJA BOARDWALK AND THE DAINTREE REGION

	Regional Level Objectives: Policy/Legislation	Site Level Objectives: Marrdja Boardwalk
LOCATING THE SITE	**Wet Tropics Management Authority (1997, p.90): *Protection through Partnerships*** • Priority will be given to the widespread use and public recognition of the Wet Tropics logo and graphic design standard, (consistent with strict guidelines to ensure appropriate use). This will include prominent highway and entry signage for visitor facility nodes.	To ensure that Marrdja is: • easy to locate and access; • clearly identifiable as a WTWHA site • safe with regards to entry and exit points To promote the access road to Marrdja as: • part of the "Daintree and Wet Tropics experience"; • providing a safe and pleasurable experience
DAINTREE FERRY	***Daintree Futures Study* (2000 p.111-112)** • *Desired Outcomes:* Ferry and road management that meets the needs of residents, businesses and tourists. • The ferry will provide an attractive gateway experience for the visitors to the area and serve community needs. **Douglas Shire Council (p. 15): *Corporate Plan 2003-2007*** • Manage the ferry and road capacity north of the Daintree.	**Daintree Ferry and Cape Tribulation Road** • To encourage and assist in the maintenance of the Daintree Ferry and Cape Tribulation Road as a 'green corridor' so it remains an important part of the Daintree experience and exposes visitors to its World Heritage attributes.
CAPE TRIBULATION ROAD AND OTHER ROADS	***Daintree Futures Study* (2000 p.111-112)** • Road and road corridors that are sympathetic to the environmental sensitivities of the areas through which they pass based on the green corridor concept for the main tourist pathway from the ferry to Cape Tribulation. • Maintaining the visual quality and appropriate traffic conditions along the main road is critical to the rainforest tourism experience. • The Cape Tribulation Road is the only transport route into the area, and central to the tourism experience. • Its width, alignment and adjoining land uses are major determinants of visitor experience. • Maintaining the road in largely its present form, with only minor upgrading, as a green corridor, has wide acceptance amongst locals and the tourist industry. ***Daintree Futures Study* (2000 p.120)** • Recommendation 23: All roads and road corridors will be sympathetic to the environmental sensitivities of the areas through which they pass. **Wet Tropics Management Authority (1997, p.133-136): *Protection through Partnerships*** • The desired outcome is a road network, which provides appropriate and safe access for residents, visitors and managers and which is managed to reduce net impact on the Area. • Roads and tracks within the Area will be managed consistent with the zoning scheme and the Flora and Fauna Conservation Guidelines. • The Authority will work with Department of Main Roads, Department of Natural Resources, local government and other road management agencies to ensure road design, construction and maintenance have minimal impacts on World Heritage values. • In consultation with road management agencies and, where appropriate, road users (including commercial operators), the Authority will develop strategies for managing and rehabilitating degraded roadside vegetation which significantly impairs the conservation or presentation of World Heritage values. **Douglas Shire Council (p. 15): *Corporate Plan 2003-2007*** • Manage the ferry and road capacity north of the Daintree River • Continue to improve the Shire's roads, drainage and bridges.	

STAGE 2 – ACCESS TO THE SITE

→ MONITORING → MANAGEMENT RESPONSE

	Research Findings	Possible Responses/Actions
LOCATING THE SITE	**Bentrupperbäumer and Reser (2002): *The Role of the Wet Tropics in the life of the community*** • 83% of community respondents were unable to describe the WTWHA logo. 17% identified it as either the cassowary, frog or cassowary now frog. **Bentrupperbäumer (2002) *Marrdja*** • 18% of respondents found out about Marrdja because a map indicated that it was a tourist site, while 16.3% relied on the road sign. • 60% found Marrdja to be obvious and identifiable as a visitor site.	**Directory Information Sources** • Inform the public about the variety of logos used to identify different agencies operating in the WTWHA, and in particular those logos that represent WH, WTWHA and WTMA. • Maintain road signage that identifies Marrdja boardwalk as part of the WTWHA. • Provide accurate and user friendly maps with relevant site and travel information that will enhance the visitor's experience. • On maps, provide the location and description of alternate visitor sites for times when Marrdja boardwalk is not accessible (e.g. car park is full). **World Heritage Natural Attributes** • Maintain the natural environment along the access routes to Marrdja so that accessing the site is also an important part of the Daintree and WTWHA experience. **Car Park Capacity Issues** • While the current car park capacity at Marrdja acts as a mechanism for controlling visitor numbers (e.g. limits visitor numbers) it nevertheless can cause serious problems on Cape Tribulation road (e.g. during peak visitation times when the car park is full, visitors park on the fringes of Cape Tribulation road). This problem needs to be discussed and appropriately addressed. **Spread Road Traffic** • Promoting alternate Daintree sites that provide similar experiences may 'spread' the traffic / visitor volume across Cape Tribulation Road, minimising road congestion at sites such as Cape Tribulation, Marrdja and Alexandra Range Lookout. • Informing visitors of "non peak" times during the day may also encourage a 'spread' of traffic / visitors along the road and at the ferry. **Transport** • Discuss with Daintree residents, businesses and tour operators the option of a Transit Bus System operating from the ferry which would access the whole of the Daintree region. • Educate visitors (locals, and those non local visitors who hire cars etc.) to the need for care on the road, the state of the road in certain weather conditions, possible dangers on the road (e.g. fallen tree branches, wildlife etc), and the appropriate driving behaviour required on the road. **Monitor Visitation Trends** • Monitoring visitation numbers to the Daintree (either by Ferry figures or by Traffic counters on Cape Tribulation Road) will provide management agencies and the local council with an accurate assessment of visitor and traffic numbers at the Ferry and on Cape Tribulation Road.
DAINTREE FERRY	***Daintree Futures Study* (2000 p.114)** • 1999 Daintree River Ferry vehicle statistics: o Cars: ▪ Residents & their visitors: 74,979 ▪ Tourists: 153,017 o Other Vehicles: ▪ Trucks: 16,049 ▪ Buses: 21,554 ▪ Pedestrians: 12,039 Total Vehicle Traffic: 277,638.	
CAPE TRIBULATION ROAD	**Bentrupperbäumer (2002): *Marrdja*** • When the car park is full at Marrdja, visitors park their cars along Cape Tribulation Road. ***Daintree Futures Study* (2000 p.113-114)** • Maximum VPD occurs in the winter months, averaging 1000 per day. Using the Transport Research Board Level of Service criteria for rural roads, the Cape Tribulation Road in the Alexandra Range section is still at levels A, or at worst B. • Level A: a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent. • Level B: in the zone of stable flow and drivers still have reasonable freedom to select their desired speed and to manoeuvre within the traffic stream, although the general level of comfort and convenience is a little less than with level of service A. **Bentrupperbäumer and Reser (2000): *Roads & Access, Visitation and Use.*** • 70 % of respondents considered the access (road) to Marrdja adequate (5-6). • Descriptive measure of physical condition supports perceptual measure of adequacy of access road. • Respondents acknowledged that roads cause problems in the region. Respondents strongly supported lowering speed limits as a strategy for reducing impacts of roads on wildlife.	
TRANSPORT	**Bentrupperbäumer (2002): *Marrdja*** • 44.8% of visitors to Marrdja were part of an organised tour. • Of those people who were 'free/independent', 53.5% travelled in a hired vehicle.	

KEY POINTS AND LINKS TO OTHER STAGES

Planning the Visit

1. Maps that show the routes and roads and indicate visitation sites clearly privilege particular sites and routes, guaranteeing higher use and greater visitor numbers at those sites (e.g., Daintree Region: Cape Tribulation, Mossman Gorge).

Access

2. Roads provide for wonderful views and perspectives on the WTWHA as a system, and from a vantage point that both presents and enhances the attributes of this World Heritage area.
3. In the case of access roads to World Heritage Area visitation sites such as the Cape Tribulation Road, the impacts of visitation and use on the adjacent community are closely intertwined, raising complex management issues with respect to rights, access and control.

Onsite Visit

4. Numbers of vehicles exceeding the limits of parking lots should serve as a clear signal that other capacities and limits may well be exceeded by the numbers of people visiting the site.
5. Vehicle numbers and length of stay can provide the most efficient and effective way of keeping track of visitor numbers. Restriction and control on vehicle access, parking, and use may well provide the most effective and available mechanism for ensuring that visitor numbers do not exceed the optimal number of a particular site.
6. The nature and proximity of particular roads to particular sites (e.g., Marrdja Boardwalk) ensures that some sites become convenience stops for tour buses and through travellers, and it is inevitable that proximity brings with it impacts relating to noise, dust, litter, and congestion.

IN SUMMARY…

People's perceptions of roads, access and use, and map-mediated representations of roads and sites can powerfully influence actual road use, destination choice, and actual site behaviours and use.

Source: Bentrupperbäumer and Reser 2000, 2002; Bentrupperbäumer, 2002

VISITOR MONITORING PROCESS
CASE STUDY: MARRDJA BOARDWALK

STAGE 3
Onsite Visit

STAGE 3: ONSITE VISIT

BACKGROUND INFORMATION

The **onsite stage** of the visitation process has been assessed (researched and analysed) according to the four environmental domains outlined in the figure above. This multilayered, multidisciplinary research approach provides a framework for the comprehensive exploration and analysis of visitor-environment interactions at the very time and location where they occur. As in the case of Marrdja Boardwalk, this approach required the application of several research methodologies, outlined in the figure above according to the relevant environmental/research domain.

"Natural resource managers are increasingly aware that the real issue and challenge for them is people management. In a protected area context this requires an informed understanding of the nature and quality of the interaction between people and environment...The conceptual and methodological framework which assesses and documents this interactive process and which was applied in this research is outlined in Figure 4 (below)*. This framework differentiates between four primary research layers or domains, one for each of the four key site-level 'environments' within the setting: social and psychological (psychosocial), natural and built (physical)."*

Reser and Bentrupperbäumer, 2001.
Bentrupperbäumer, 2002, p.6.

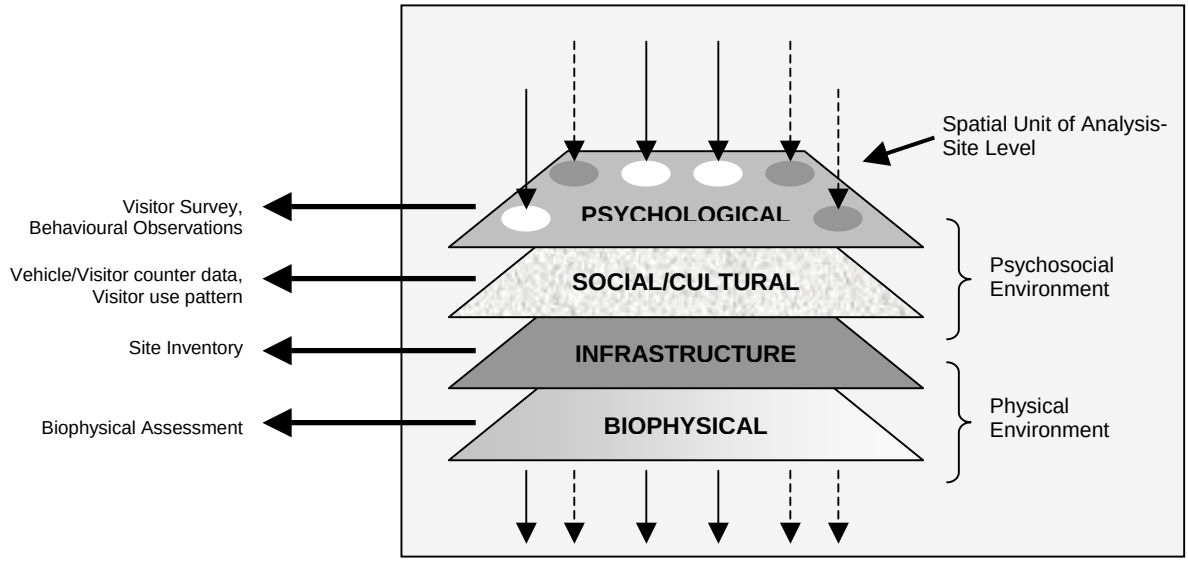


Figure 4. The conceptual and methodological framework used to determine the nature and quality of the interaction between people and environment.

ONSITE RESEARCH FRAMEWORK

- ***Psychological and Behavioural:*** A series of visitor surveys/questionnaires were distributed and behavioural observations undertaken at Marrdja Boardwalk for the purpose of assessing the nature and quality of the visitor's experience and the activities engaged in. The surveys focused on visitor appraisal of the natural, built and social environments at the setting. The main reason for using visitor surveys/questionnaires as a methodology in this research was to elicit information from visitors at the recreation sites relating to perceptions, preferences, motivations, and satisfactions as well as socio-demographic details, mode of transport, number in party, etc. This survey approach constitutes the only practical avenue for accessing such demographic and psychological information relating to experiences, emotional responses, attitudes, and enjoyment. The recording of critical incidents and behavioural events at the site allowed for an independent and systematic documentation of behaviour and activity patterns over space, time, and situation. In the context of this research such behavioural information provided an important and qualitatively different perspective and data base on impacts of visitation and use, and, in combination with the other assessments, allowed for a more comprehensive understanding of the nature and consequences of environment-visitor transactions.

- ***Social:*** Traffic counters were used to assess vehicle and visitor numbers and observations of visitors were made to determine number of visitors per vehicle, groupings of visitors (e.g. couples, families, tour groups), length of stay, and type of vehicle used to access the site. This information provided an estimate of visitor numbers at Marrdja for any one point in time and the approximate annual visitation figure (using the mean number of visitors over the observational periods and the continuous traffic counter data). What is significant about this information is that planning decisions based on the designated 'carrying capacity' of sites and facilities require a way of documenting, monitoring and possibly regulating numbers of visitors at particular sites. Vehicle and visitor numbers, categories, length of stay, patterns of use across time provide the most efficient and effective way of keeping track of visitor numbers, and managing, and where necessary limiting vehicle access, parking, and use may well provide the most effective and available mechanism for ensuring that visitor numbers do not exceed the optimal number of a particular site.

- ***Infrastructure:*** A site inventory of type, number and condition of facilities (e.g. signage and amenities) as well as layout and design of the built environment was undertaken at Marrdja. This type of site level information is highly relevant to any longitudinal assessment of the condition of WTWHA sites and the human setting infrastructure that exists at sites. Infrastructure, site design, layout, and amenities become particularly important when monitoring psychosocial impacts as these components can substantially influence how visitors access, travel through, use and ultimately experience a natural setting. They are critical to managing the impact of visitation and use. The basic purpose of this *built environment* inventory was to document and describe the physical setting itself.

- **Biophysical:** A biophysical assessment focused on the ecological impacts on soil, vegetation, and water quality at Marrdja. Three levels of data collection were undertaken including rapid, intermediate and intensive assessments which were designed to be utilised by tour operators, land managers, and researchers (see Wilson et al., 2004 for details).

Topics Addressed

A considerable number of topics are addressed in this onsite stage of the visitation process as outlined in the following tables. As with the previous stages this section of the visitor monitoring process endeavours to link relevant sections of various ***regional level policy and legislative documents*** and ***site level management objectives*** with the results of monitoring and assessment – the ***research findings***. Together these provide the policy and research evidence necessary to develop appropriate and informed ***management responses*** and actions needed to achieve these objectives (Table 3.1).

Table 7. Stage 3 of the Marrdja Boardwalk Case Study.

Stage #	**VMP** (Stage of Visit)	**Visitor Management Objectives**	**Monitoring and Assessment**	**Management Response**
		Regional and Site Level Objectives (Policy/Legislation)	Research Findings	Possible Responses/Actions
1	Planning the visit			
2	Access to the site			
3	**On site visit**			
	Post visit			

STAGE 3 – ONSITE VISIT

VISITOR MANAGEMENT OBJECTIVES →

		Regional Level Objectives: Policy/Legislation	Site Level Objectives: Marrdja Boardwalk
ONSITE VISIT: PSYCHOLOGICAL / BEHAVIOURAL	EXPERIENCE	**Wet Tropics Management Authority (1997, p.93): *Protection through Partnerships*** • The desired outcome is to have a diversity of quality visitor opportunities consistent with the interests, capabilities and expectations of residents and visitors and the protection of World Heritage values. **Wet Tropics Management Authority (2001): *Wet Tropics Walking Strategy* (p. 14)** • A diversity of walking experiences should meet the varied characteristics, abilities, expectations and recreational and educational needs of walkers throughout the Wet Tropics. ***Wet Tropics Walking Strategy* (p. 28)** There is often no quality control for tour guides and interpretation can be inaccurate or inappropriate. An investigation into accreditation of tour operators and guides is currently being undertaken under the NBTS. • Develop interpretation guidelines for an accreditation scheme for tour operators and guides to ensure the highest standard of interpretation and information.	**Experience** • To manage Marrdja Boardwalk so it provides visitors with the highest quality World Heritage experience.
	ACTIVITY / RECREATION	**Wet Tropics Management Authority (2001, p.v-vii): *Wet Tropics Walking Strategy*** • The Walking Strategy proposes to create a high quality walking network where walkers can learn about and appreciate the regions natural and cultural heritage values and enjoy a range of recreational and educational experiences. • Walking provides people with the time, freedom and flexibility to interact intimately with the wide range of Wet Tropics environments. • Walking plays a vital role in presenting the Wet Tropics World Heritage values. • Walking also provides social, recreational and educational benefits for all sectors of the community and caters for diverse interests and capabilities. • Walks will be regularly monitored to maintain the desired experience. This includes managing track conditions, vegetation damage, wildlife disturbance, visitor numbers, satisfaction and behaviour, and Aboriginal concerns. **Wet Tropics Management Authority (1997, p.93): *Protection through Partnerships*** • Vehicle touring is the most popular way of enjoying the Area and is often combined with walking, picnicking and camping. • Opportunities range from highway bus tours to private four-wheel-drive trips in remote areas. • Estuaries, lakes and rivers cater for motorised and non-motorised activities and provide an internationally recognised setting for canoeing, rafting and kayaking. • Horse riding is a popular recreational activity. However, it is not allowed in national parks, but is unrestricted on dedicated roads. The Bicentennial National Trail which traverses parts of the Area from Julatten to Cooktown is a popular horse riding experience. • Mountain biking is a legitimate recreational use of the Area on formed roads subject to land manager's approval, providing that there is no significant adverse environmental impact and there is no significant adverse impact on other recreation users' quality of experience.	**Activity/Recreation** • To provide visitors to Marrdja Boardwalk with a short walk opportunity through lowland rainforest and mangrove forest.

STAGE 3 – ONSITE VISIT

→ MONITORING → MANAGEMENT RESPONSE

<table>
<tr><th></th><th>Research Findings</th><th>Possible Responses/Actions</th></tr>
<tr><td>EXPERIENCE</td><td>

Bentrupperbäumer (2002): *Marrdja*

Of the visitors who responded:

- 78% experienced a real sense of involvement and connection with Marrdja;
- Over 80% agreed that visiting Marrdja was a special experience;
- 97% enjoyed their visit to Marrdja;
- 93% indicated that their visit to Marrdja was worth the money that they had spent; and
- 17% indicated that they were disappointed with just some aspects of Marrdja.

Tours

Responses from visitors in tour groups regarding what aspects of the site detracted from their enjoyment of Marrdja:

- “Other large groups”, “Bad tour”, “Not enough time”, “Too many people” “Guided tours”.

Responses from visitors not in tour groups regarding what aspects of the site detracted from their enjoyment of Marrdja:

- “Guided groups – too loud”, “Large tour group”, “Other visitors making too much noise”, “Large groups”.

</td><td>

Tour guide accreditation

- Develop an education program that informs Daintree tour guides of the natural, ecological, historical, cultural and international significance of the Area.
- To ensure that visitors on tours get the best possible experience, develop a program that accredits tour guides, rather than tour companies.
- Update/maintain the handbook for tour guides.

Maintain the World Heritage Experience

- Currently, the majority of visitors appear to have a positive experience at Marrdja, which is closely linked to the state of the natural, built and social environments. This needs to be maintained.

Indigenous presence on site

- Employing Indigenous representatives from local communities to provide Indigenous knowledge and information on the site could enhance visitor experiences at Marrdja.

</td></tr>
<tr><td>ACTIVITY / RECREATION</td><td>

Bentrupperbäumer (2002): *Marrdja*

The activities visitors engaged in at Marrdja boardwalk (most often reported) were:

90.4%	Observing Scenery
77.5%	Walking – Short (1 hour or less)
55.8%	Observing wildlife
53.1%	Photography/painting/drawing

The most frequently nominated activities that visitors to Marrdja wanted to do but were unable to were:

- Wildlife viewing;
- Bird watching;
- Long walks; and
- Read the signs/boards.

</td><td>

Infrastructure

- The current facilties appear to provide the recreational/activity needs of visitors to Marrdja, and therefore should be maintained.

Promoting other sites

- Promote other visitation sites (including private sector sites) that have or allow visitors to engage in the activities that they weren’t able to undertake at Marrdja (for example: see wildlife. Such visitors who were not able to do this at Marrdja may visit Cooper Creek Wilderness instead).

</td></tr>
</table>

STAGE 3 – ONSITE VISIT

VISITOR MANAGEMENT OBJECTIVES →

		Regional Level Objectives: Policy/Legislation	**Site Level Objectives:** Marrdja Boardwalk
ONSITE VISIT: PSYCHOLOGICAL / BEHAVIOURAL	RANGER PRESENCE	**Wet Tropics Management Authority (2001, p.28): *Wet Tropics Walking Strategy*** • Some walkers desire a management presence on walks to supplement existing educational material and foster healthy and positive interactions between rangers and the public. o Increase ranger presence on selected walks to provide additional information and education and occasional guided tours. **Wet Tropics Management Authority (2001, p.21): *Wet Tropics Walking Strategy*** • The tourism industry has indicated a preference for the development of walks which offer a comprehensive range of walking experiences. This could include…. Ranger guided tours…. • Many walkers have expressed concern at the lack of ranger presence along walks to monitor conditions and behaviour.	**Ranger Presence** • To provide a ranger presence at Marrdja Boardwalk primarily for site maintenance.
	CROWDING	**Wet Tropics Management Authority (n.d., p.1-2): *A handbook for tour guides: Daintree River to Cape Tribulation*** • Too many people at one site can be very damaging to the environment – and to your visitors' experience. Working with other companies and following the permit system will help to avoid overcrowding at sites. **Wet Tropics Management Authority (1997, p.108): *Protection through Partnerships*** • Negative social impacts include crowding and congestion, which may reduce the quality of the experience sought by the visitor, conflict between incompatible activities and between visitors and the local community. **Wet Tropics Management Authority (2001, p.50-53): *Wet Tropics Walking Strategy*** • The desired natural, social and managerial settings of the walking experience can be dramatically altered by excessive visitor numbers. • Too many walkers can cause overcrowding or misbehaviour. Managers may be forced to respond by hardening tracks and adding infrastructure and signs. • Commercial activity permits to some popular walks are oversubscribed and would cause significant overcrowding and environment problems if full capacity is reached.	**Crowding** • To reduce visitor perception of crowding through the design and layout of the built setting (loop walking track, small retreat, passing areas, limited vehicle parking spaces)

STAGE 3 – ONSITE VISIT

→ MONITORING → MANAGEMENT RESPONSE

	Research Findings	Possible Responses/Actions
RANGER PRESENCE	**Bentrupperbäumer (2002): Marrdja** • 60% of respondents would have liked a ranger present. The four main reasons given were: • To provide information / education (50.4%) • To answer questions (46%) • For safety/security (29%) • For site maintenance (33%) Other reasons: • Ranger guided tour = 22% • Monitor/report behaviour = 7.5%	**Ranger presence / alternative Information centres** • Have a ranger present at the site during the annual peak visitation months (Winter months – June and July) to provide additional information and to provide a sense of safety and security. • Build an information centre in Mossman (or in close proximity to the Daintree) that provides specific information on Daintree sites, and the area in general. **Volunteer guides** • Develop a voluntary guide program run and monitored by local residents. • Local residents can provide their own knowledge and experiences of living in the Daintree by being available at key sites such as Marrdja. • Such volunteering programs have been successful in Yellowstone National Park and Rocky Mountain National Park in the USA.
CROWDING	**Bentrupperbäumer (2002): *Marrdja*** <u>Social Impact:</u> Of the visitors who responded: • 19% agreed Marrdja was crowded • 13% agreed that the presence of other visitors prevented them from doing what they wanted to do. • 8% agreed that the behaviour of other visitors detracted from their enjoyment of the site. "The presence of too many people detracted from my enjoyment of the site" – Canadian visitor. <u>Environmental Impact:</u> In response to "What do you consider to be the three most important threats to the well being of the environment at this site?", the most frequently reported first response was: "Too many tourists, visitors, overcrowding, followed by pollution and littering."	**Reduce Crowding** • Promote the experiences at alternative sites to spread the visitation load to the Daintree area (reduce crowding at certain key sites). **Permit System** • Enforce **Boardwalk design** • Design the boardwalk so it is widened at interpretation nodes for visitors to pass stationary tour groups or other visitors more easily. • If possible, construct another additional thematic loop (such as the rainforest loop) so visitors are 'spread out' over a larger area. **Visitation Trends** • Monitor visitor numbers and behaviour to establish and maintain acceptable limits of visitor numbers. **Continued Onsite Survey Research** • Continue to monitor visitor experiences at Marrdja via onsite survey research. • Such surveys are also useful to measure visitor experiences in relation to management practices on the site.

STAGE 3 – ONSITE VISIT

VISITOR MANAGEMENT OBJECTIVES →

		Regional Level Objectives: Policy/Legislation	Site Level Objectives: Marrdja Boardwalk
ONSITE VISIT: SOCIO-CULTURAL	VISITOR NUMBERS AND PATTERNS OF USE	**Wet Tropics Management Authority (1997, p. 95 - 98): *Protection through Partnerships*** • The Authority will work with the tourism industry and land managers to achieve a sustainable level of visitor use of the Daintree-Cape Tribulation area. Visitor facility node-Social Interaction: Large numbers and groups of users on-site and in nearby areas with continuous human occupation (in accommodation) and interaction between users. Recreation-Social Interaction Frequent encounters with other user groups can be expected especially along access routes (roads, rivers or walking tracks) and at camp sites or day-use sites.	**Visitor Numbers** • To design and maintain the site so that it accommodates the number of visitors that will minimise the experience of crowding.
	CULTURAL / INDIGENOUS INFORMATION AT SITES	**Wet Tropics Management Authority (2003, p.5): *Wet Tropics Walking Strategy*** • Interpretation along walks also has the potential to promote the understanding and revitalisation of Rainforest Aboriginal culture. • The Wet Tropics is a 'living' cultural landscape for Rainforest Aboriginal people. • Many walks are part of a network of Aboriginal walking tracks, connecting places such as campsites, hunting areas and ceremonial grounds. • Aboriginal people view these tracks as cultural sites, a manifestation of their connections with nature through dreaming tracks. • Walking provides enormous social benefits to the Wet Tropics region. • It offers opportunities for recreation and the appreciation and enjoyment of the Wet Tropics region. • If properly managed, walking is entirely compatible with the conservation and protection of World Heritage values and the Aboriginal cultural landscape. **(p.28) *Wet Tropics Walking Strategy*** Aboriginal people are particularly concerned that presentation of cultural information be accurate and appropriate. Improve presentation of Aboriginal cultural interpretation by: • Ensuring proper consultation with traditional owners regarding on site information and interpretation; • Providing more Aboriginal cultural information for suitable walks; • Using Aboriginal names of walks; • Incorporating Aboriginal cultural information and cross cultural training into future accreditation schemes; and • Requiring the use of Aboriginal tour guides for some Aboriginal cultural walks. **Wet Tropics Management Authority (p.100-101): *Protection through Partnerships*** The Authority and land managers will work as part of the Tourism Liaison Group to: • Support the inclusion of non-specific Aboriginal cultural information in tour operator training courses (such as the TAFE heritage interpretation courses) to encourage a sensitive approach to cultural heritage and promote the involvement of Aboriginal people in cultural tourism activities. • Identify, in consultation with relevant communities and interest groups, appropriate opportunities for presenting Aboriginal and non-Aboriginal cultural values in the Area.	**Cultural Issues** • To promote the cultural, historical and contemporary significance of the site to both indigenous and non indigenous peoples. • To ensure that all information concerning Aboriginal content is appropriately and accurately presented, has been sourced and acknowledged properly, and is formulated and presented in collaboration with and which has the permission of the traditional owners of that knowledge. • To present Indigenous information at Marrdja boardwalk which: o Acknowledges the traditional owners of the land; o Educates visitors about the traditional uses of the land; and o Informs visitors about the spiritual connection/attachment to the land.
	CULTURAL MANAGEMENT AND CULTURAL HERITAGE LISTING	**Wet Tropics Management Authority (1997, p.26-27): *Protection through Partnerships*** • The desired outcome is recognition and appreciation of rainforest Aboriginal culture and meaningful Aboriginal involvement in management of the Area. • Discussions will continue with Aboriginal peoples to identify opportunities and mechanisms for facilitating their meaningful involvement in management. **Wet Tropics Board of Management by the Review Steering Committee (1998, p.iv): *Which Way our Cultural Survival?*** • That an agreement for management of the Wet Tropics World Heritage Area is negotiated that places the traditional carers for their country in a position to assert their legitimate (including customary-law) rights and interests, for the protection and preservation of cultural survival for the present and future generations.	

STAGE 3 – ONSITE VISIT

→ MONITORING → MANAGEMENT RESPONSE

VISITOR NUMBERS AND PATTERNS OF USE

Research Findings

Bentrupperbäumer (2002): *Marrdja*

Visitor Data 2002:

Yearly Total	**68,393**	
	Average Number	**Highest Number**
Monthly	5,668	12,501 (July)
Weekly	1,315	3,427 (July)
Daily	176 (week day) 170 (weekends)	685 (July)
At one time		87 (11.50 to 12.05)
Number per vehicle	5.13	6.34
Length of stay	51 mins	190 mins
Peak Use Times	1130 to 1230, and 1400 to 1600	

Group Profile:

- Approximately 45% of visitors indicated they were members of tour groups.
- The mean size of these tour groups was 12 people, with the largest tour group comprising 21 people, the smallest 3 people.
- Of those visitors who did not travel in a tour group, 48% were families/small group with the largest group comprising of 7 people.

Possible Responses/Actions

Car park capacity

- Keeping the car park at its current size/vehicle capacity limits (to some extent) the number of visitors accessing the boardwalk/site. However, due to a large number (6) of parking bays being allocated for buses carrying tour groups (as large as 20 people), certain sections of the boardwalk become quite congested.
- To reduce boardwalk congestion, fewer parking bays could be allocated for buses, therefore reducing the number of large groups that could be on the boardwalk or using the other facilities at the same time.
- Collaborate with tour companies registered/accredited to use the site and discuss the possibility of a timetable for visiting the site.
- During busy periods (time of year & time of day), enforce time restrictions on tour groups/guides that use the boardwalk.

High visitation periods

- Advertise in external and internal information sources the non peak times of visitation so non tour group visitors have the choice and opportunity to visit the site at a time of minimal crowding.

Visitor flow

- To reduce congestion and associated experiences of crowding related to visitors having to pass others on the boardwalk coming from the opposite direction, encourage visitors (through signage) to walk around the boardwalk in a clockwise direction.

Boardwalk design

- Design the boardwalk so it is widened at interpretation nodes for visitors to pass stationary tour groups or other visitors more easily.
- If possible, construct another additional thematic loop (such as the rainforest loop) so visitors are 'spread out' over a larger area.

Monitor Visitor Trends

- Establish an optimum or maximum visitor and traffic number that minimises negative impacts on the biophysical and social environments.
- Continue to monitor traffic and visitor trends to the site and take appropriate action when these trends exceed the optimum/maximum visitation figure.

Continued Onsite Survey Research

- Continue to monitor visitor experiences at Marrdja via onsite survey research.
- Such surveys are useful to measure visitor experiences of crowding.

VISITOR APPRAISAL OF CULTURAL INFORMATION

Bentrupperbäumer (2002): Marrdja

Of the visitors who responded:

- Just under 60% agreed that the cultural information presented at Marrdja was interesting.
- 63% agreed that it was clearly presented.
- 57% agreed that this cultural information helped them to understand the significance of the area for Indigenous Australians.

CULTURAL MANAGEMENT AND CULTURAL HERITAGE LISTING

Bentrupperbäumer and Reser. (2002): *The Role of the Wet Tropics in the life of the community*

- 58.4% of community respondents support some form of Aboriginal co-management
- 63% of community respondents support the inclusion of Aboriginal cultural heritage in future listing of the WTWHA.

Involvement with Local Indigenous Communities & Interpretation Content

- To improve or add to the current cultural information available at Marrdja, it would be necessary to consult with local Indigenous communities what information is appropriate and how it should be presented.

Indigenous Employment

- Some Indigenous communities (e.g. Mossman Gorge) have CDEP work gangs which can undertake cultural heritage surveys in the Daintree region.
- Having an Indigenous ranger or tour guide present at the site to answer specific cultural questions and/or provide cultural tours could enhance the visitor experience and be economically beneficial for local Indigenous community members.

STAGE 3 – ONSITE VISIT

VISITOR MANAGEMENT OBJECTIVES →

		Regional Level Objectives: Policy/Legislation	Site Level Objectives: Marrdja Boardwalk

ONSITE VISIT: INFRASTRUCTURE	INFRASTRUCTURE: SIGNAGE	**Wet Tropics Management Authority (2000, p.31): *Wet Tropics Nature Based Tourism Strategy***
		• Maintain and promote the values of the Precinct (Daintree/Cape Tribulation) by:
		  o Providing visitor infrastructure and interpretation to cater for high volume day use at specific sites; and
		  o Maintaining high quality visitor infrastructure and interpretive facilities.
		(p.vi and14) *Wet Tropics Walking Strategy*
		• Educational information about the many aspects of the Wet Tropics environment and history will also be available on particular walks.
		• A walk's natural and cultural features and educational themes are important in creating walk diversity because they provide the primary motivation for visitor use.
		• Educational themes may relate to aspects of particular features of may underlie the entire walking experience. Some examples are Aboriginal cultural associations and stories, interpretation of rainforest vegetation, information about habitats and ecosystems, ecosystem management, local history about mining or logging, wildlife viewing and life cycles, or the geology of a gorge or waterfall.
			Infrastructure
			To maintain high quality interpretation infrastructure and services so as to successfully and effectively:
			• Present and protect the natural and cultural attributes of the site;
			• Inform and educate visitors of the significance of these attributes;
			• Enhance the visitor's experience of the site; and
			• Demonstrate the sensitivity and high standards adopted by the management agencies in their commitment to the above.

	INFRASTRUCTURE: VISITOR FACILITIES	**Wet Tropics Management Authority (1997, p.106-107). Protection through Partnerships**
		• The desired outcome is to have visitor facilities designed, constructed and maintained in ways that minimize impacts of the Area and maximize presentation opportunities.
		• Land managers will continue to have primary responsibility for the design, construction and maintenance of visitor facilities and to ensure the impacts of such facilities upon the Area are minimal.
		• The following have been identified as priorities for the management of visitor facilities:
		  o Upgrading existing facilities where this will reduce impacts on World Heritage values;
		  o Developing new facilities on lands adjacent to the Area where possible, to reduce pressure on sites where there are significant impacts on World Heritage values; and
		  o Upgrading or developing facilities where there are opportunities to present World Heritage values with minimal impacts on the Area, consistent with the Visitor Management Guidelines.
		• Visitor facilities will be designed, constructed and maintained in a manner sympathetic to their environment and consistent with the zoning scheme, Visitor Management Guidelines, Flora and Fauna Conservation Guidelines, and detailed management plans.
		• Where facilities such as accommodation and car parking detract from the scenic appreciation or protection of World Heritage values, the Authority will encourage their development outside the Area and/or mitigation of their impacts. Preference will be given to developing such visitor infrastructure on land neighbouring the Area.
		• The Authority and land managers will work together to establish a comprehensive inventory of facilities in the Area suitable for people with disabilities as a basis for future planning and information programs. Land managers will be encouraged to provide information to the community about the availability of facilities for people with disabilities.
		(p.96) *Protection through Partnerships*
		• Presentation opportunities, such as lookouts, picnic and parking areas along appropriate State-controlled roads and regional access roads, will be provided and maintained through co-operation with the relevant government agencies.
		Wet Tropics Management Authority (2000, p.26): *Wet Tropics Nature Based Tourism Strategy*
		• The provision of infrastructure at visitor sites will address the need to:
		  o Be consistent with the management objectives of visitor sites;
		  o Direct limited resources for infrastructure to priority areas;
		  o Provide effective integration between public and private visitor infrastructure and services; and
		  o Ensure services and facilities, whether public or private, are of a standard that reflects the significance of the WTWHA.
		The concept of service and infrastructure 'hubs' will be adopted as an alternative to direct provision of on-site infrastructure wherever possible. While dependent on location, site visitation members and patterns, basic services ad facilities such as toilets and garbage disposal should be concentrated wherever possible at points, usually off site, where a number of visitor sites may be efficiently used.
		Wet Tropics Management Authority (2001, p35&37). Wet Tropics Walking Strategy
		• Where facilities are provided, land managers have a duty to ensure such facilities are designed, constructed and maintained to appropriate service and safety standards.
		• Design campsites and provide facilities such as toilets or shelters where necessary to minimise maintenance and adverse impacts.	

STAGE 3 – ONSITE VISIT

→ MONITORING → MANAGEMENT RESPONSE

	Research Findings	Possible Responses/Actions
SIGN INVENTORY AND VISITOR APPRAISAL OF SIGNAGE	**Bentrupperbäumer (2002): *Marrdja*** Sign Inventory: • There are a total of 32 signs at Marrdja: 15 interpretive signs; 10 visitor orientation signs 6 visitor advice signs; 1 corporate identity sign Of the visitors who responded: *Maps and Directions*: • 85% agreed they were easy to locate and 77% agreed they helped them find their way around. *Rules and Regulations*: • 74% agreed they were easy to determine and 70% agreed they enabled them to clearly identify acceptable activities. *Safety Information*: • 58% agreed it was easy to locate and 62% agreed it was easy to understand. *Natural/Ecological Information*: • 95% agreed it was interesting and clearly presented and 93% agreed it helped them better understand the ecological processes of the area. *Indigenous Cultural information*: • 59% agreed it was interesting, 63% agreed it was clearly presented, and 58% agreed it helped them understand the significance of the area for Indigenous Australians.	**Signage** • Continue to monitor the condition of the signage. • Improve the content of the safety signage so that it is easier understood, and the positioning so that it is more visible. • More work needs to be undertaken on the presentation of Indigenous cultural information. **Facilities** • Maintain the current condition of the boardwalk and composting toilet. • Discuss the option and possible impacts of installing rubbish bins. **Boardwalk design** • Design the boardwalk so it is widened at interpretation nodes for visitors to pass stationary tour groups or other visitors more easily. • If possible, construct another additional thematic loop (such as the rainforest loop) so visitors are 'spread out' over a greater area.
INFRASTRUCTURE INVENTORY	**Bentrupperbäumer (2002): *Marrdja*** • Car park: o Hard landscaping. o No single vehicle demarcation. o Designated bus areas. o Medium wear on bollards. o Medium levels of litter o Car park capacity is often exceeded – high numbers of vehicles park in undesignated areas along the road. • Boardwalk: o Hard landscaping. o Boardwalk and cement pathway. o Composting toilet. o Basins in toilets. o No litter.	
VISITOR APPRAISAL OF INFRASTRUCTURE	**Bentrupperbäumer (2002): *Marrdja*** • The most frequently used infrastructure at Marrdja was the: o Boardwalk (85%), o Viewing platform (62%) and o The composting toilet was used by over one third of visitors. • Most of the facilities adequately provided for the visitors needs, however some would have liked rubbish bins and eating facilities (picnic tables). • Over 90% of visitors to Marrdja agreed that the site was appealing in terms of: o the character and attractiveness of the facilities (90%), o adequacy of facilities (93%), o the overall good condition of the facilities (97%) and o the good standard of management of the facilities and infrastructure (95%). • 40% of visitors to Marrdja prefer to visit natural areas that have limited facilities (eg. Walking tracks evident, some directional signage). o "I was expecting rubbish bins to be available at this site. I saw no safety information or no rules and regulations at this site" – Australian visitor, p.45.	
ASSESSMENT OF INFRASTRUCTURE	**Wilson *et al.* (2004): *Visitor Monitoring System for the WTWHA*** Tour Operator Proforma Trial (Assessment by Tour Operators) • Car park requires maintenance • Litter recorded in car park (sparse) o Railings vandalised o Signs require maintenance Land Manager Proforma Trial (Assessment by Land Managers) o Railings require painting	

STAGE 3 – ONSITE VISIT

VISITOR MANAGEMENT OBJECTIVES →

		Regional Level Objectives: Policy/Legislation	Site Level Objectives: Marrdja Boardwalk
ONSITE VISIT: BIOPHYSICAL	VISITOR IMPACTS	**Wet Tropics Management Authority (1997, p.108): *Protection through Partnerships*** • The desired outcome is to have the number, location and type of visitor sites managed within predetermined standards so that they do not adversely affect World Heritage values while maximising options for presenting the Area. • The Authority will work with land managers and other providers of visitor opportunities to ensure that visitor impacts are monitored. **Wet Tropics Management Authority (2001, p.24): *Nature Based Tourism Strategy*** • A Code of Practice for Guides for the Wet Tropics WHA will be developed and integrated with accredited heritage interpretation and tourism courses to enhance: o Ecological and cultural responsibility in tourism activities; and o Community understanding and appreciation of the Area. • Various levels of accreditation will be required for different activities and access to particular areas: o Based on the sensitivity of areas being accessed and presented; and o Reflecting the values and management intent as described under the Wet Tropics Management Plan zones, precincts and site classifications. **Department of Industry, Tourism and Resources (2003, p.43): *Pursing Common Goals*** • …there is great potential for both conservation and tourism in areas outside of park administration. Greater gains in conservation will come from stimulating viable tourism ventures that can invest in and pay for the running of private and community conservation. Equally, from a business perspective, changes to park laws and plans will take years and even then still limit business flexibility.	**Impacts** To maintain the site so that it successfully and effectively: • Presents and protects the significant natural and cultural attributes of this World Heritage Area; • Informs and educates the visitor about the consequences for the natural and cultural environment of irresponsible behaviour; • Promotes the high standard of management undertaken to minimise biophysical impacts while ensuring positive visitor experience.
	MANAGEMENT RESPONSE TO IMPACTS	**Wet Tropics Management Authority (1997, p.74): *Protection through Partnerships (web)*** • Rehabilitation priority will be given to: o habitats of rare and threatened species; o rare community types; o habitats of special faunal significance; o fragmented areas and corridors; o areas degraded by activities on neighbouring land; o areas of high visitor use where significant degradation has occurred or is occurring; o areas degraded by human activity (rather than natural processes such as cyclones); o areas where there is ongoing significant erosion; o areas degraded by feral animals and weeds; and o visually prominent areas such as hillsides.	
	COMMERCIAL ACTIVITY IMPACTS	**Wet Tropics Management Authority (1997, p. 100-101): *Protection through Partnerships*** • In exceptional circumstance where there is a need to protect particularly sensitive sites, land managers may permit access only in the company of an approved guide. • Commercial tour activities may be appropriate in all zones of the Area, subject to individual assessment and their consistency with the character, setting and provisions for each zone. It may be necessary to restrict or prohibit commercial tour activities where natural and cultural values are threatened. • Continue to contribute to training programs to help ensure tour operators are properly informed, better able to promote appropriate visitor behaviour and provide satisfying visitor opportunities.	
	ANIMAL IMPACTS	**Wet Tropics Management Authority (1997, p.67): *Protection through Partnerships*** • The desired outcome is to have the impacts of introduced animals controlled to a level where World Heritage values are not adversely affected. **Wet Tropics Management Authority (2003, p.viii &xiii): *Conservation Strategy – Draft*** • Prevent the establishment of new arrivals of invasive feral animals and focus on eradicating new and localized outbreaks of pest animals which threaten World Heritage values. • Control the spread of established feral animals focusing on those threatening World Heritage values. • Research improved methods for control of weeds and feral animals.	

STAGE 3 – ONSITE VISIT

→ MONITORING → MANAGEMENT RESPONSE

	Research Findings	Possible Responses/Actions
BIOPHYSICAL AND BEHAVIOURAL IMPACTS	**Bentrupperbäumer and Reser (2000, p. 118.): *Impacts of Visitation and Use*** • The most frequently observed behavioural impact was damage to vegetation. **Bentrupperbäumer (2002): *Marrdja*** • Negative behavioural events included: visitors short-cutting off the track to access the toilet, undesignated parking and littering. **Wilson *et al*. (2004): *Visitor Monitoring System for the WTWHA*** <u>Tour Operator Proforma Trial (Assessment by Tour Operators)</u> • Canopy death evident • Visitors walking wrong way round track <u>Land Manager Proforma Trial</u> • Mineral soil exposure due to visitors stepping off track to photograph fig tree, view forest dragon • Weeds adjacent to track, car park and road section evident <u>Semi-Intensive Survey (Assessment by Researchers)</u> • Mineral soil exposure and decrease in seedling density due to visitors stepping off track	**Preventing and Reducing Impacts** • To reduce visitor impacts (such as short cutting off tracks), install signage explaining the impacts of these behaviours on such a sensitive environment or prevent such behaviour by constructing railings/bollards. **Biophysical Standards** • Establish biophysical, social and management standards to be maintained for Marrdja (Protection through Parternerships, p.109). **Continued Onsite Research** • Continue to monitor biophysical impacts and visitor appraisal of those impacts via onsite impact assessment and survey research. **Design of boardwalk** • Discuss the option with tour guides/companies of redesigning the boardwalk so tour guides would have allocated space/room/platform on the boardwalk to address his/her tour group at particular interpretation nodes, rather than addressing the tour group off the boardwalk. **Feral Pigs** • Since the biophysical impacts from feral pigs are having a detrimental impact on visitors' experiences at Marrdja, information (through signage or brochures) could be distributed to visitors informing them of the impacts of pigs and the efforts of management agencies to control and reduce such impacts.
APPRAISAL OF BIOPHYSICAL	**Bentrupperbäumer (2002, p.46): *Marrdja*** • Visitors to Marrdja were more likely to perceive evidence of erosion and top soil loss in addition to the presence and evidence of feral animals than any other impact to the site.	
TOUR GUIDE IMPACTS	• Anecdotal evidence from management personnel suggests that tour guides are stepping off the boardwalk at key nodes to address their tour groups. Such negative behaviour has resulted in erosion at specific points along the boardwalk. **Wilson *et al*. (2004): *Visitor Monitoring System for the WTWHA*** <u>Land Manager Proforma Trial</u> • Commercial tour groups walk the wrong way round the track.	
FERAL PIG ACTIVITY	**Wet Tropics Management Authority (n.d.): *Handbook for Tour Guides: Daintree River to Cape Tribulation*** • Why is the soil disturbed? Some areas are badly damaged by feral pigs. There is even pig activity in the mangroves. The pigs dig up the soft, moist soil looking for their favourite meal – worms. Their insatiable appetites are responsible for the badly eroded areas where the only protected mounds are held together by existing vegetation, such as wait-a-while clumps. **Bentrupperbäumer (2002, p.46): *Marrdja*** <u>Visitor Comments on feral pigs</u> • "Due to wild pigs, the site appears to be disturbed" – Australian visitor. • "It is a pity that the feral animals can cause so much damage to this beautiful area" – Australian visitor. • "This if the only site where I have seen evidence of feral pigs. Out tour guide explained the damage that feral pigs can cause" – American visitor. • "Once pointed out to us, the impact of feral pigs was clear" – UK visitor. **Wilson *et al*. (2004): *Visitor Monitoring System for the WTWHA*** <u>Problems recorded by Researchers</u> • Extensive evidence of feral pig activity along walking track • Pot holes/bogs due to feral pig activity	

KEY POINTS AND LINKS TO OTHER STAGES

Conservation and Management

1. Visitors appear to be impressed with the overall management and condition of the natural and built environments at Marrdja. Nevertheless they were aware of the presence and impact of feral pigs on the natural environment.

2. The presence of a ranger at Marrdja was important to the majority of visitors mainly for the purpose of providing information and/or answer specific conservation and management questions.

Information Sources (Planning and Access)

3. The high non-local use of this site would explain the high use of information sources such as word of mouth, road signs, travel guides and books, and the trip being included in a package tour by this respondent group The high use of such sources indicates that Marrdja is a well publicised tourist attraction, particularly in travel centres or books for tourists.

Layout and Design

4. The current site layout and design at Marrdja appears to be legible, functional and sensible and is able to mitigate potential use conflicts and distribute visitors along the boardwalk in a way which reduces crowding. The circuit nature of the track together with some careful consideration of the timing of the tour groups will assist in providing a continuous flow of visitors along boardwalk.

Infrastructure and Facilities

5. The infrastructure and facilities at Marrdja appears to not only provide for most of the visitor needs but in addition are highly regarded by visitors in terms of adequacy, appeal, condition and management. All facilities present are well used. The infrastructure, particularly the boardwalk and interpretive signage present at Marrdja was commented on by some visitors as enhancing and increasing their enjoyment of the site. It appears that the built-natural environment association is working well at Marrdja.

Signage

6. An important presentation issue and management responsibility at Marrdja is the provision of signage that clearly identifies the management agencies responsible for the management of the site, rules and regulations and safety issues.

Inappropriate Behaviour

7. Inappropriate behaviours varied at Marrdja, and although, as single events they do not present a major problem to the natural environment, the cumulative effect can be considerable over time (littering, domestic animals, taking short cuts off the trail).

Source: Bentrupperbäumer, 2002

VISITOR MONITORING PROCESS
CASE STUDY: MARRDJA BOARDWALK

STAGE 4
Post Visit

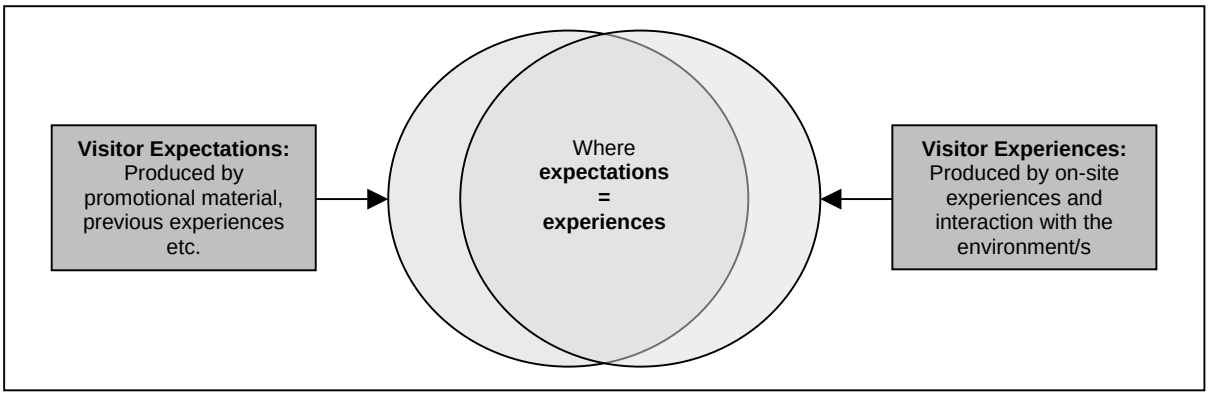
STAGE 4: POST VISIT

BACKGROUND INFORMATION

The post destination/**post visit stage** is the least researched of the visitation process. This is despite management recognition of the importance of this stage for monitoring the matching of visitor expectations with visitor experience, and research findings suggesting that the behaviour of visitors after their first visit (such as recommending the site/area to family and friends, returning the site, forming an attachment to the site) is an important consideration.

In one way this stage brings the visitation process 'full circle' where the visitor once again experiences the site at a virtual and removed level. However, rather than experiencing the site through brochures, pamphlets and other interpretive material (Stage 1), the visitor often re-experiences the site when viewing photos they may have taken, or through the souvenirs they may have bought. Perhaps most important of all, visitors also re-experience the site via their memories and recollections of events. These can be highlights from the visit (such as wildlife sightings/encounters, the scenery of the site and transactions that may have occurred with other visitors), and/or aspects of the site that may have detracted from their enjoyment (for example, the lack of wildlife, evidence of environmental degradation, difficult access, inadequate infrastructure, crowding, etc).

This is also the stage which provides the opportunity to monitor and assess whether expectations of the site, which may have been formulated through information sources such as brochures, pamphlets, maps and previous experiences, "match" or are congruent with actual experiences had at the site.



For management agencies and the tourist industry, the experiences of visitors should ideally, at minimum, be congruent with their pre-visit expectations. This would ensure that visitors felt that their visit to a site such as Marrdja was worth the money, time and effort required to get there. Non congruence between expectations and experience can be the result of the onsite experiences either exceeding or less than pre-site expectations.

POST VISIT RESEARCH

This stage of the visitation process is limited to the one research methodology: surveys. Also the point in time at which surveys can be administered is limiting - surveys can only be completed after the on-site visit. The most comprehensive surveys undertaken at this stage have been those posted out to visitors who have supplied their address to researchers (e.g. Bentrupperbäumer & Reser, 2000), community surveys (e.g. Bentrupperäumer & Reser, 2002), and point of departure surveys (at airports etc.) (e.g. Pearce & Moscardo, 1994).

Topics Addressed

A limited number of topics are addressed in this post visit stage as outlined in the following tables. This is due to the lack of research, and relevant policy information. Nevertheless, as with the previous stages this section of the visitor monitoring process endeavours to link what relevant sections of various policy and legislative documents are available together with site level objectives and research findings. In spite of these limitations, an attempt is made to identify possible responses and actions needed to achieve these objectives (Table 8).

Table 8. Stage 4 of the Marrdja Boardwalk Case Study.

Stage #	**VMP** (Stage of Visit)	**Visitor Management Objectives** →	**Monitoring and Assessment** →	**Management Response** →
		Regional and Site Level Objectives (Policy/Legislation)	Research Findings	Possible Responses/Actions
1	Planning the visit			
2	Access to the site			
3	On site visit			
4	**Post visit**			

STAGE 4 – POST VISIT

VISITOR MANAGEMENT OBJECTIVES →

		Regional Level Objectives: Policy/Legislation	**Site Level Objectives:** Marrdja Boardwalk
POST VISIT	POST SITE TOUR EXPERIENCES	**Wet Tropics Management Authority (n.d., p.1-3): *A Handbook for Tour Guides: Daintree River to Cape Tribulation*** • Providing guides with a 'little black book' for notes about the day builds up a useful collection of information – anything from nature entries, what was good or bad about the day, or even a funny saying that popped up during the day. • A guestbook can be a good insight into visitors' experiences and provides feedback on the tour.	To develop a holistic approach to visitation to WTWHA sites and acknowledge that an adequate post visit experience depends on the: 1. Expectations formed by promotional information before visiting the site; 2. A pleasant and safe experience whilst accessing the site; and 3. The highest quality Wet Tropics experience possible onsite.
	VISITOR INPUT INTO MANAGEMENT	**Wet Tropics Management Authority (1997, p. 92): *Protection through Partnerships*** • Opportunities for visitors to provide input into management of the Area, such as post-visit evaluation, will be explored and, if feasible, provided.	

STAGE 4 – POST VISIT

→ MONITORING → MANAGEMENT RESPONSE

	Research Findings	Possible Responses/Actions
POST SITE TOUR EXPERIENCES	**Pearce and Moscardo (1994, p.22): *Understanding Visitors Travel Plans….*** • It is tempting however to suggest that visitor flows in the region are not totally fixed, that travellers do change from the intended destinations to alternatives, perhaps on the basis of local "road talk", accommodation difficulties or improved information about less well known destinations. • The encouraging element in the visitor planning data for the managers is that it appears that people can be re-routed away from the best known destinations and adequate alternatives found. **Pearce and Moscardo (1994): *Understanding Visitors Travel Plans….*** • Daintree and Mossman were visited more often than planned (by approximately 6%).	**Visitor Feedback** • Provide contact details (address, phone numbers and e-mail addresses) on interpretational material (brochures and signage) for visitors to provide information or comments on their experience. **Surveys** • Conduct post-visit survey research which allows all four stages of visitation to be assessed. • Community surveys are also adequate in assessing post site experiences of local visitors to the WTWHA. **Tour Member Feedback** • Encourage tourism businesses to provide feedback sheets for their customers about the tour and the sites that they visited. • Collaborate with tourism industry regarding visitor feedback.
VISITOR INPUT INTO MANAGEMENT	**Pearce and Moscardo (1994): *Understanding Visitors Travel Plans….*** • Mean satisfaction of WT rainforest visitors: o Get away / relax with nature group: 8.57. o Nature experience and appreciation group: 8.39. o Novelty / Sunseeker group: 8.00.	

VISITOR MONITORING PROCESS
CASE STUDY: MARRDJA BOARDWALK

SUMMARY OF MANAGEMENT OBJECTIVES AND RESPONSES/ACTIONS

MARRDJA BOARDWALK CASE STUDY – SUMMARY OF OBJECTIVES AND RESPONSES/ACTIONS

STAGE OF VISITATION	MANAGEMENT OBJECTIVES	RESPONSES / ACTIONS
STAGE 1: PLANNING THE VISIT	Provide all potential visitors (international, national and local) with information about Marrdja Boardwalk in formats that are easily and readily available and accessible both outside (externally) and within (internally) tropical north Queensland.	Continued survey research; Alternative information centres
	Ensure that external (international and national) and internal (within tropical north Queensland) promotion (e.g. tour brochures, pamphlets and internet information) of Marrdja Boardwalk as a tourist destination is: • Correct and accurate; • Provides information about the built, natural, social and cultural environments; • Provides alternative boardwalks to visit; • Promotes environmentally responsible behaviour; and • Highlights the significance of the area to Rainforest Aborigines.	Continued survey research; Tour company collaboration; Education at information nodes; Promotion of other sites.
	• Acknowledge that the Wet Tropics World Heritage Area landscape is the backdrop in which the residents of the Wet Tropics bioregion live their lives in and that many residents are visitors to sites within the World Heritage Area. • Respect that many residents have a special attachment to the Wet Tropics World Heritage Area, in particular the Daintree National Park, and ensure that information on the Daintree National Park (including Marrdja Boardwalk) be readily available and accessible through the information mediums in which community residents assess Wet Tropics information (e.g. through newspapers and television).	Continued survey research; Volunteer guides.
STAGE 2: ACCESS TO THE SITE	Ensure that the location of Marrjda Boardwalk is: • Easy for visitors to locate; • Easy for visitors to access; • Provides a safe and pleasurable transition from the virtual to actual environment; • Part of the "Daintree and Wet Tropics Experience"; and • Identifiable as a site within the Wet Tropics World Heritage Area.	Continued survey research; Maintain road signage; User friendly maps, etc.; Maintenance of World Heritage values; Promotion of other sites; Advise peak visitation times.
	Encourage (and assist?) the maintenance of the Daintree Ferry and Cape Tribulation Road as a green corridor so it remains an important part of the Daintree experience and the presentation of World Heritage attributes.	Continued survey research; Address car park issues; Spread road traffic; Transit bus system; Maintenance of World Heritage values; Monitor visitor trends; Advise peak visitation times.

STAGE OF VISITATION	MANAGEMENT OBJECTIVES	RESPONSES / ACTIONS
STAGE 3: ON SITE	Provide and maintain the Marrdja site so it provides visitors with the highest quality World Heritage experience.	Continued survey research; Address car park issues; Maintenance of World Heritage values; Volunteer guides; Promotion of other sites; Permit system; Boardwalk design; Visitor trends; Ranger presence; Alternative information centres; Advise peak visitation times; Indigenous involvement; Indigenous employment.
	Design and present a site that can cater for a substantial number of visitors whilst simultaneously reducing the experience of crowding from such high numbers.	Continued survey research; Address car park issues; Maintenance of World Heritage values; Promotion of other sites; Boardwalk design; Visitor trends; Advise peak visitation times; Boardwalk direction.
	Present a site that: • Acknowledges the Traditional Owners of the land; • Educates visitors about the traditional uses of the land; and • Informs visitors about the spiritual connection/attachment to the land.	Continued survey research; Maintenance of World Heritage values; Ranger presence; Indigenous involvement; Indigenous employment; Provide and maintain signage with appropriate content.
	Provide and maintain high quality infrastructure, facilities and interpretation to promote and protect the World Heritage significance of Marrdja Boardwalk.	Continued survey research; Maintenance of World Heritage values; Boardwalk design; Ranger presence; Provide and maintain signage with appropriate content.
	Maintain the site so that is successfully and effectively: • Presents and protects the significant natural and cultural attributes of this World Heritage Area; • Informs and educates the visitor about the consequences for the natural and cultural environment of irresponsible behaviour; and • Promotes the high standard of management undertaken to minimise biophysical impacts while ensuring positive visitor experience.	Continued survey research; Maintenance of World Heritage values; Boardwalk design; Ranger presence; Provide and maintain signage with appropriate content.
STAGE 4: POST VISIT	Develop a holistic approach to visitation to Wet Tropics World Heritage sites and acknowledge that an adequate post-site experience depends on: • The expectations formed by promotional information before visiting the site; • A Pleasant and safe experience whilst accessing the site; and • The highest quality Wet Tropics experience possible.	Continued survey research; Tour company collaboration; Tour member feedback.

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