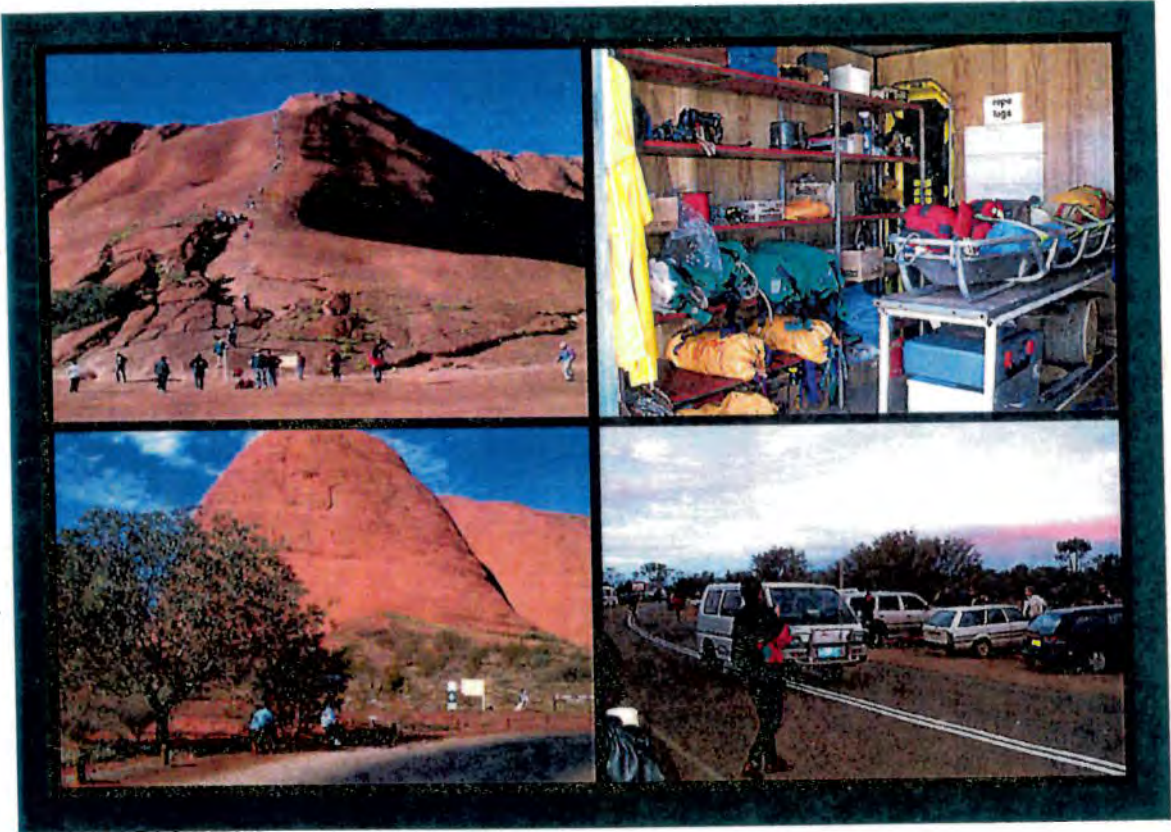


# ULURU KATA TJUTA NATIONAL PARK: VISITOR RISK MANAGEMENT ASSESSMENT AND VISITOR SAFETY PLAN



SEPTEMBER 1997



**ULURU KATA TJUTA NATIONAL PARK:  
VISITOR RISK MANAGEMENT ASSESSMENT AND  
VISITOR SAFETY PLAN**

**SEPTEMBER 1997**

**prepared for  
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Disclaimer: This visitor risk assessment and visitor safety plan is designed to provide Australia Parks and the Uluru Kata Tjuta National Park Board of Management with an overview of visitor risks within the Park. It does not provide a detailed safety audit of all hazards at every location within the park, nor does it address work safety or residential community safety issues (refer Study Brief, Section 3.2 and Study Scope, Section 3.3).

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Parks and Wildlife Commission of the Northern Territory	
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Anangu Tours	
Uluru Experience	
VIP Tours	
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The Manager, Ayers Rock Plus	s47F
The Manager, Sahara Tours	
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## **2. EXECUTIVE SUMMARY**

Uluru Kata Tjuta National Park is a World Heritage Area which attracted approximately 400,000 visitors in 1996/97. Unfortunately, because of the arid nature of the countryside, extreme climatic conditions, and steep physical characteristics of the Uluru climb, a small percentage of park visitors get into difficulty and experience some form of injury or may even be killed.

This risk of visitor injury or death is of great concern to the Anangu people who are associated with the Park, and Parks Australia who manage the area on their behalf.

This concern for visitor safety has resulted in the allocation of considerable park resources to provide Park Ranger support services and park infrastructure which minimise risk and enhance visitor safety. As part of an ongoing monitoring and review process, this visitor risk management assessment and visitor safety plan was undertaken to:

- document existing conditions within the Park;
- highlight any areas requiring attention, and
- make recommendations regarding remedial measures.

The study revealed that Parks Australia and the Uluru Kata Tjuta Board of Management have placed great importance on ensuring visitor safety within the Park as is evidenced by:

- the inclusion of safety messages in various park information media
- a requirement of tour operators to pass similar safety messages to all passengers
- park safety signage
- quality park infrastructure including boardwalks, safety rails and clearly designated walking tracks
- regular Park Ranger patrols and safety procedures
- a trained emergency rescue team, rescue support equipment and emergency response manual
- emergency response protocols with other organisations

### **Study Methodology (refer Section 4)**

The study applied the Canadian Visitor Risk Management (VRM) Process to Uluru Kata Tjuta National Park. The process resulted in five public safety zones of varying degree of risk being identified namely:

- Zone 1: Intensive: Cultural Centre/Facilities/Parking and Viewing Areas
- Zone 2: Intensive: Highway Corridors
- Zone 3: Intensive/Intermediate: Tracks and Attractions Sites
- Zone 4: Minimal: Open Area Lands
- Zone 5: Intensive to Minimal: Rock Monoliths

### **Risk Issue Analysis (refer Section 5)**

Some 109 risk issues were identified (refer Appendices 2 and 3).

The major findings to arise from the analysis of accident incident data, a survey of tour operators and major stakeholders, and a systematic random sample of park visitors, were:

1. The Uluru climb emerged as the major risk issue within the Park and the greatest source of risk for visitors. It accounts for:

- 66% of all accidents and medical incidents
- 90% of all fatalities
- Most rescues, especially the more time consuming and complex ones involving vertical rock rescue
- Greatest demands on park staff time
- Most likely the greatest proportion of park visitor rescue costs

2. The trend towards sustained high levels of visitation into the summer is producing a corresponding increase in summer accidents and particularly more heat stress incidents on the Valley of the Winds walk at Kata Tjuta.



3. A lack of familiarity with environmental conditions and especially the hot arid climate, insufficient time to acclimatise and variable health and fitness are likely to be significant factors contributing to injury. Of note were the following:

- 18% of accidents were directly related to visitor characteristics.
- Visitor characteristics would contribute to the high levels of reported heat stress (17%), ankle (16%), and heart related (11%) incidents.
- Males, teenagers, and seniors aged 50 to 70 were identified as particularly "at risk" groups within the visitor market.
- 74% of accidents occur among the 50% segment of international visitors to the Park, suggesting that this sector requires particular risk management attention.

4. Park stakeholders, comprising mostly tourism industry representatives, tended to downplay risks associated with the Park environment and Uluru climb, and perceived risk management program issues, infrastructure and communication hazards to be of greater significance.

5. Park costs associated with emergency rescues are high:

- An average of 5.2 personnel are involved in each rescue.
- An average staff time of 12.8 hours per week is spent on rescues alone (almost two person days per week).
- Substantial additional staff time would be taken up with staff training (especially for vertical rock rescue and stretcher evacuation), trauma counselling, equipment organisation and maintenance, etc.

6. The pilot visitor survey highlighted the limited effectiveness of existing risk communication sources. Information appears to be accessed by visitors either too late for it to be influential or not at all, and in a format that is not conducive to access or processing. This suggests the need for earlier exposure to park safety information in a more visual or appealing mode of presentation. This could be achieved through travel or booking agents, inflight and coach videos, and audio information cassette tapes for vehicle use.

#### **Prioritisation of Visitor Park Issues (refer Section 5.5)**

A quantitative value was assigned to each risk issue according to its frequency of occurrence, severity of the consequences, and likely visitor awareness of the hazard. This process resulted in the identification of 16 significant risk issues, namely:

- Hot dry weather - dehydration/ heat stress/ hyperthermia
- Visitor characteristics - injuries resulting from non-normal activities
- Uluru - falling
- Uluru - heart attack
- Uluru - vertigo, anxiety attack, physical exhaustion
- Trail surface defects - tripping and falling
- Inadequate provision of drinking water - dehydration
- Lack of water availability - dehydration
- Inadequate provision of shade - dehydration/ heat stress/ hyperthermia/ sunburn
- Risk communication hazards - brochures
- Risk communication hazards - signs
- 50% international visitors - lack of familiarity
- Inadequate incident database - uninformed risk management program
- Inadequate provision of emergency alarms - delayed response
- Dangerous or erratic driving behaviour - impact injuries
- Inadequate promotion of cultural perspective on climbing Uluru and other monoliths - Anangu grief and psychological stress

#### **Park Site Risk Assessment (refer Section 6)**

An assessment of park sites identified a number of minor physical hazards which will require attention by Park Ranger staff to maximise visitor safety.

### Visitor Safety Plan (refer Section 7)

The visitor safety plan identifies the suggested actions necessary to address each of the serious risk issues identified within the Park under the following headings:

- Organisational Commitment to Risk Management
- Risk Communication
- Risk Prevention / Mitigation
- Emergency Response Readiness
- Emergency Response Protocol
- General Park Risk Issues

Of particular importance to improved visitor safety within Uluru Kata Tjuta National Park are the following:

- more effective pre-visit information
- more effective communication of safety information, particularly to those segments of the visitor population most prone to accidents,
- more effective management and control of park visitors during high risk conditions, particularly on the Uluru climb and in the Valley of the Winds,
- additional shade and water points, particularly at the Valley of Winds and the Olga Gorge walk,
- upgrading of the area around the base of the climb, including the provision of shade,
- additional emergency rescue radios to be located in the Valley of the Winds and at the entrance to the Olga Gorge walk,
- a greater emphasis on trained backup and support for the park rescue team,
- improved communications within the Park and with other Northern Territory Emergency Service providers,
- the establishment of an integrated accident data base, and
- various works to reduce the risk of minor injuries at a variety of sites.

It is believed that when these matters are attended to, visitor safety within the Park will be considerably enhanced. This should be reflected in a continued reduction in the visitor accident incident rate within the Park over the coming years.



### 3. INTRODUCTION : VISITOR SAFETY IN ULURU KATA TJUTA NATIONAL PARK

#### 3.1 The Duty of Care

Visitor safety within Uluru Kata Tjuta National Park is of prime concern to the Anangu, and to Parks Australia who manage the Park on their behalf.

Anangu concerns are based on Tjukurpa (Aboriginal Law) and a strong sense of responsibility for visitors who visit their custodial lands. Whenever a visitor is injured or dies, Anangu are distressed because they consider them part of their extended family. Under Tjukurpa, Anangu consider themselves to be responsible for visitors to their country.

Parks Australia has a legal responsibility as land managers to exercise a duty of care towards all park visitors. That is, Parks Australia must ensure that visitors are not exposed to situations where there is a real risk of injury or, where this is not possible, to ensure that visitors are appropriately warned regarding the situation. This duty of care is reinforced by statements in the Uluru (Ayes Rock - Mount Olga) National Park Plan of Management (1991) (Section 4.6: Visitor Safety).

This duty of care is a responsibility shared by others who contribute in any way to a visitor coming to the Park. This applies particularly to those who actively promote the Park, transport providers, accommodation providers, tour operators and tour guides who transport or escort visitors around the Park.

A plaintiff will succeed in proving negligence if it can be shown that:

- the defendant owed the plaintiff a duty of care, and
- the defendant failed to observe the required standard of care.

The amount of liability will probably be determined by the answer to two questions, namely:

- a) was the risk of injury to the plaintiff reasonably foreseeable?
- b) did the defendant take reasonable measures to minimise or remove this foreseeable risk of injury to the plaintiff?

#### 3.2 The Study Brief

Parks Australia commissioned this primarily:

- to review the safety of park visitors and park staff involved in visitor rescue operations;
- to seek the views of people responsible for visitor safety;
- to analyse accident incident information;
- to assess safety hazards within the Park; and
- to advise Parks Australia about possible safety measures to further minimise the risk to visitors.

Because of the constraints imposed by the brief, the report does not attempt to represent a detailed Risk Management assessment and visitor safety plan of all the visitor use areas within the Park. Rather, the authors have attempted to provide Parks Australia with a comprehensive overview of the range of hazards present within the Park, with the focus given to the management of hazards considered to represent the most serious threats to park visitors.

It is envisaged that the findings from this study will be considered for incorporation into the Visitor Management Strategy, (currently underway) which will feed into the next Uluru Kata Tjuta National Park Plan of Management.

### 3.3 The Study Scope

This report does not address workplace health and safety issues which are covered by a separate report titled "Australian Nature Conservation Agency Workplace Safety Report, Uluru Kata Tjuta National Park, January 1994". Nor does the report attempt to address those safety issues associated with the Anangu community or Parks Australia staff in residential areas within the Park boundaries.

### 3.4 The Legal, Legislative and Policy Framework

Visitor safety falls within a number of jurisdictions because of the overlapping responsibilities of Federal and Territorial Agencies responsible for safety related issues in the Park. These overlapping responsibilities are illustrated in Figure 3.1 below, with relevant park policies included in Appendix 9.1

Figure 3.1: A Summary of the Legal, Legislative and Policy Framework Relating to Visitor Safety in Uluru Kata Tjuta National Park.

- |   |
|---|
| <p>a) The Legal Framework</p> <ul style="list-style-type: none"><li>• The Common Law - Duty of Care</li></ul> <p>b) The Legislative Framework</p> <ul style="list-style-type: none"><li>• Commonwealth Occupational Health and Safety Act</li><li>• Northern Territory Work Health Act</li><li>• National Parks and Wildlife Conservation Act</li><li>• National Park and Wildlife Regulations - Section 30 and 31</li></ul> <p>c) The Policy Framework</p> <ul style="list-style-type: none"><li>• The ANPWS Occupational Health and Safety Policy</li><li>• The Uluru (Ayers Rock - Mount Olga) National Park Plan of Management - Section 4.6</li><li>• Various Park Specific Policies (refer Appendix 7)<ul style="list-style-type: none"><li>- Emergency Response Procedure at Uluru National Park</li><li>- Duty Park Ranger After Hours Duty Policies and Emergency Procedures</li><li>- Standard Response to Emergency Alarm Radios</li><li>- Climb Rescue Procedure at Uluru Kata Tjuta National Park</li><li>- Rock Patrol and Chain Maintenance Procedure at Uluru</li><li>- Procedures and Responsibilities for the Kata Tjuta Patrol</li><li>- Wind Policy</li></ul></li></ul> |
|---|

At an operational level, the Northern Territory Police have overall responsibility for rescue in the Northern Territory. By mutual agreement, minor emergencies within the Park are normally dealt with by the Park Emergency Response Team. However all significant emergencies (fatality or serious injury or rescue beyond the resources of the Park) require the involvement of the Northern Territory Police who have the authority to provide overall emergency response coordination.

### 3.5 Definitions

*(Note: The terms relating to risk management have been drawn from the Australian/New Zealand Standard on Risk Management (AS/NZS 4360:1995))*

**Accident** - an event resulting in a loss.

**Anangu** - the term which Pitantjatjara and Yankunytjara people use to refer to themselves.

**Consequence** - the outcome of an event or situation expressed qualitatively or quantitatively, being loss, injury, disadvantage or gain.

**Cost** - of activities, both direct and indirect, involving any negative impact, including money, time, labour, disruption, goodwill, political and intangible losses.

**Event** - an incident or situation, which occurs in a particular place during a particular interval of time.

**Frequency** - a measure of likelihood expressed as the number of occurrences of an event in a given time. See also **Likelihood** and **Probability**.

**Hazard** - a source of potential harm or a situation with a potential to cause loss.

**Likelihood** - used as a qualitative description of probability and frequency.

**Loss** - any negative consequence, financial or otherwise.

**Monitor** - to check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change.

**Organisation** - a company, firm, enterprise or association, or other legal entity or part thereof, whether incorporated or not, public or private, that has its own function(s) and administration.

**Probability** - the likelihood of a specific outcome, measured by the ratio of specific outcomes to the total number of possible outcomes. Probability is expressed as a number between 0 and 1, with 0 indicating an impossible outcome and 1 indicating an outcome is certain.

**Residual Risk** - the remaining level of risk after risk treatment measures have been taken.

**Risk** - the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood.

**Risk acceptance** - an informed decision to accept the likelihood and the consequences of a particular risk.

**Risk analysis** - a systematic use of available information to determine how often specified events may occur and the magnitude of their likely consequences.

**Risk assessment** - the process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria.

**Risk avoidance** - an informal decision not to become involved in a risk situation.

**Risk control** - that part of risk management which involves the provision of policies, standards and procedures to eliminate, avoid or minimise adverse risks facing an enterprise.

**Risk identification** - the process of determining what can happen, why and how.

**Risk Issue** - a factor associated with a potential risk.

**Risk management** - the systematic application of management policies, procedures and practices to the tasks of identifying, analysing, assessing, treating and monitoring risk.

**Risk reduction** - a selective application of appropriate techniques and management principles to reduce either the likelihood or magnitude of an occurrence or its consequences, or all of these.

**Risk transfer** - shifting the responsibility or burden for loss to another party through legislation, contract, insurance or other means. Risk transfer can also refer to shifting a physical risk or part thereof elsewhere.

**Risk treatment** - selection and implementation of appropriate options for dealing with risk.

**Tjukurpa** - the great period of the creation during which all features, both animate and inanimate, were first formed. Often incorrectly referred to as the "dreamtime". Also, Tjukurpa forms the framework of responsibility or law for Anangu.

**Victim** - the subject of an accident.

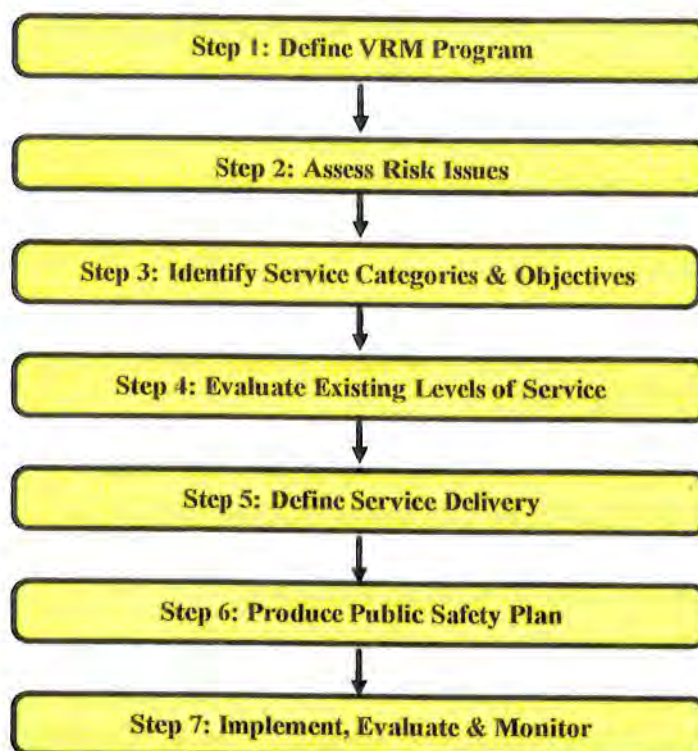


## 4. THE STUDY METHODOLOGY

### 4.1 The Canadian Visitor Risk Management (VRM) Process

This project adopted a methodology based upon an adaptation of the Parks Canada (1996) Visitor Risk Management (VRM) Process. The Visitor Risk Management approach was developed by Parks Canada in 1994 and subsequently revised in 1996 following a number of applications in parks such as Banff, Alberta and Pukaskwa, Ontario. The system is described as a seven step process resulting in the production of a "Public Safety Plan". The resultant plan documents risk issues, specifies risk control objectives, and details action plans to achieve the desired level of control.

The steps in the VRM process are illustrated below:



The methods associated with each step as applied in Uluru - Kata Tjuta National Park are outlined in detail in the project implementation framework (refer Appendix 1). An important aspect of defining the VRM program (step 1) involved the specification of Park public safety zones, risk categories, visitor activity groups and risk service categories.

### 4.2 Park Public Safety Zones

The Park was divided into five public safety zones based upon particular recreation opportunity setting characteristics and the potential for selected specific visitor risks to dominate in each zone. Varying visitor activities, degrees of remoteness and requirements for different levels of visitor self-reliance are associated with the zones. Also, various degrees of risk control intervention and search and rescue response are features of the different zones. The "Risk Control Spectrum" (RCS) is the basis of this zoning concept (Parks Canada, 1996:730) and arises from the Recreation Opportunity Spectrum Methodology developed by the United States Forest Service. The RCS acknowledges that differing degrees of Park risk management intervention and expected self-reliance of visitors are associated with the range of opportunities available to visitors in the Park.



The five zones are:

***Zone 1: Intensive: Cultural Centre/Facilities/Parking and Viewing Areas***

This zone includes the predominant visitor concentration and intensive management areas associated with interpretation facilities, picnic areas, toilets, parking lots, and areas designated for viewing sunrise and sunset on Uluru and Kata Tjuta.

***Zone 2: Intensive: Highway Corridors***

This zone includes all the public roads and highways within the Park, including adjacent shoulders, used to access and view visitor sites.

***Zone 3: Intensive/Intermediate: Tracks / Attraction Sites***

The principal sites included in this zone are those attractions distributed around the base of Uluru as well as the Valley of the Winds and Olga Gorge walks at Kata Tjuta.

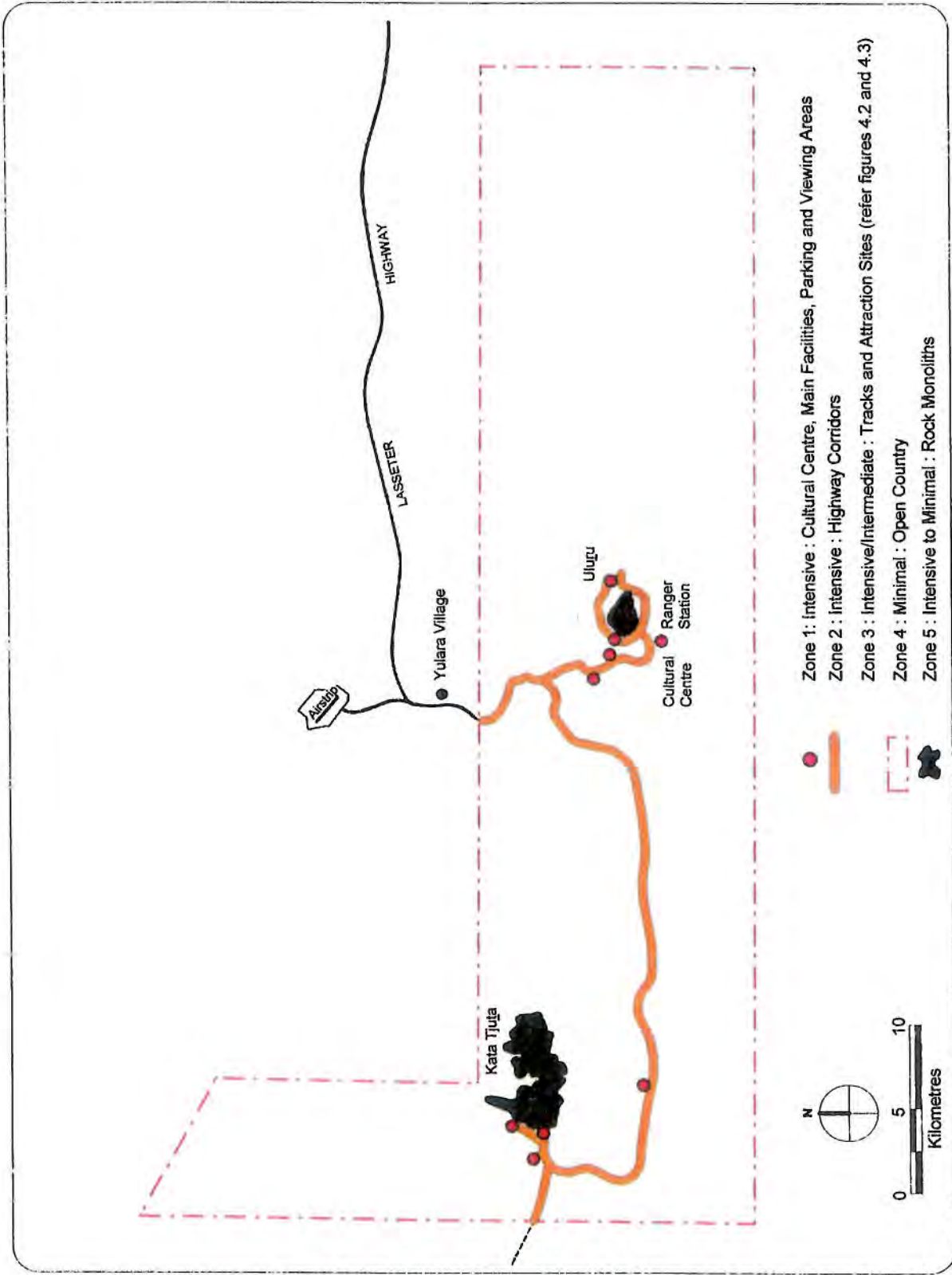
***Zone 4: Minimal: Open Country***

This zone includes the essentially undeveloped and untracked sections of the Park comprising dry fluvial plains and sand dune areas. This zone is not promoted by the Park for visitor access.

***Zone 5: Intensive to Minimal: Rock Monoliths***

This zone presents special risks associated with the steep and rugged terrain of Uluru and Kata Tjuta. Climbing on Uluru is only permitted via the single, established route. Climbing is not allowed on any other part of Uluru or on the domes of Kata Tjuta, though it is evident that some illegal climbing takes place on Uluru.

The locations of the five public safety zones are indicated in Figures 4.1, 4.2 and 4.3.



**Figure 4.1: Public Safety Zones within Uluṛu Kata Tjuta National Park**

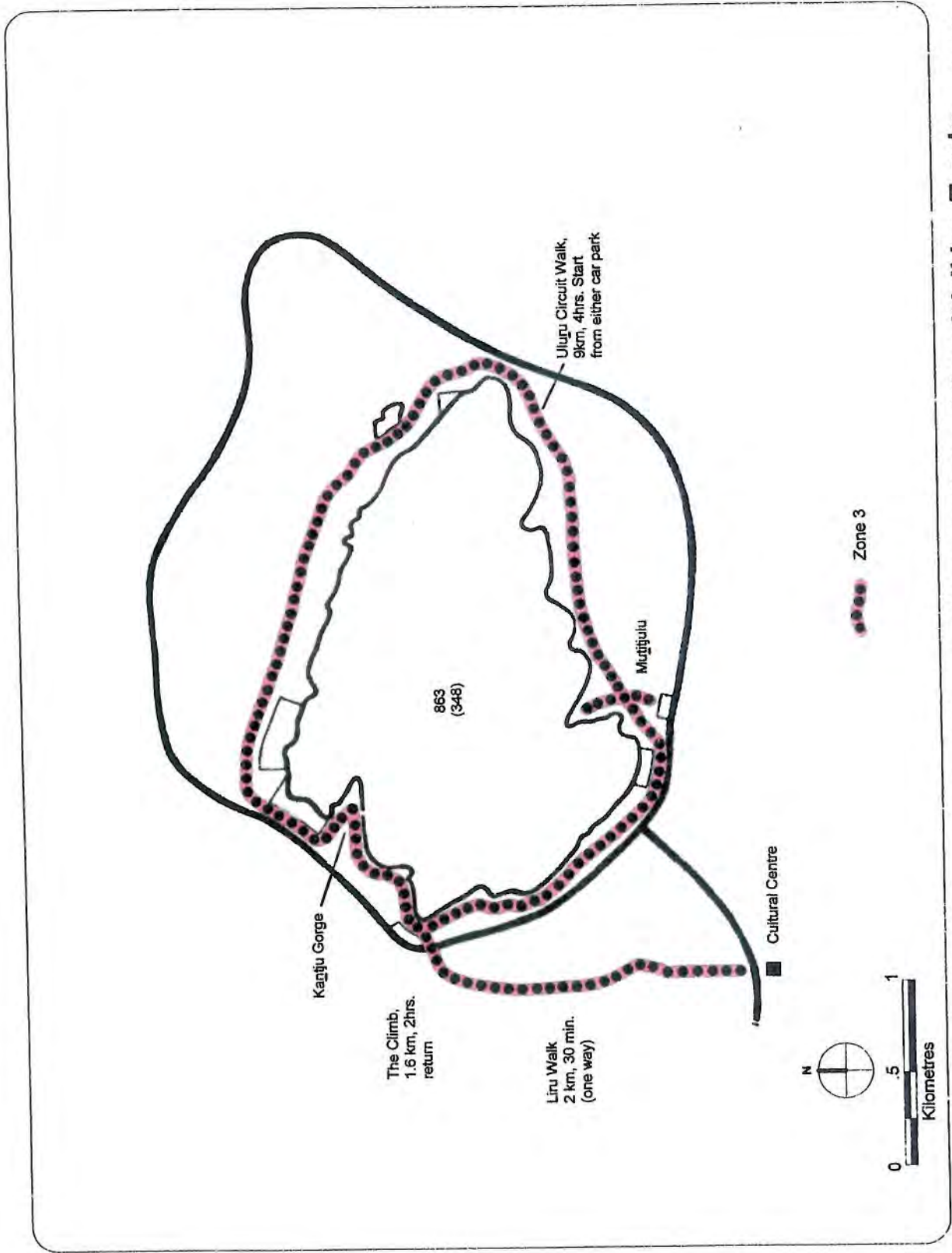
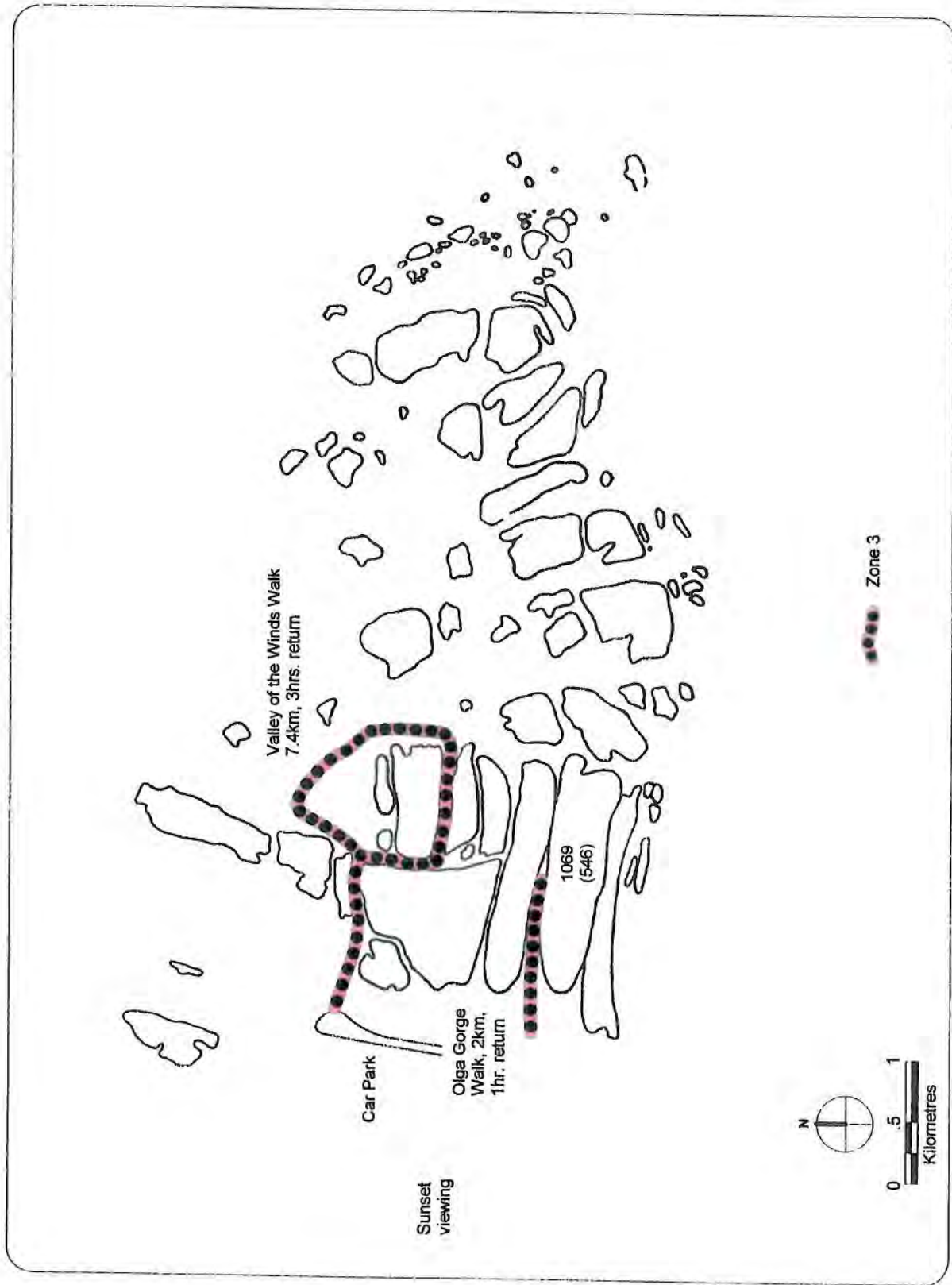


Figure 4.2 : Public Safety Zone 3 - Intensive/Intermediate - Uluru Walking Tracks



**Figure 4.3 : Public Safety Zone 3 : Intensive/Intermediate : Kata Tjuta Trails**



### 4.3 Risk Categories

Risk categories represent the groupings of potential sources or causes of accidents or incidents within the Park, or impediments to the management capability for implementing the Park's visitor safety program. Five major risk categories were considered for Uluru Kata Tjuta National Park (for a more detailed breakdown of specific hazards and risk issues, see the Potential Hazards Check List, Appendix 2):

- i) Environmental hazards
- ii) Infrastructure and equipment hazards
- iii) Risk communications
- iv) Visitor characteristics
- v) Safety program management or administration

### 4.4 Visitor Activity Groups

A basic *a priori* market segmentation was used in the project to identify Visitor Activity Groups (VAGs) which vary according to how visitors are supervised, what activities they may engage in, the kind of experience they may be seeking and above all their potential exposure to Park risks. The three groups are:

- i) Free, independent travellers (FITs)
- ii) Resort based coach tour groups
- iii) Excursion coach tour groups

### 4.5 Risk Service Categories

Risk service categories represent the key components of the Park's public safety program. They are service areas where particular types of risk management interventions are relied upon to minimise visitor exposure to hazards within the Park. Five categories were identified in this project:

- i) Organisational commitment to risk management and planning
- ii) Risk communication
- iii) Risk mitigation/prevention (physical measures)
- iv) Emergency response readiness
- v) Emergency response protocol

## 5. RISK ISSUES ANALYSIS

### 5.1 Introduction

In order to obtain an overall picture of the range of visitor safety issues confronting the Park several strategies were adopted. The objectives of this process were to identify, evaluate and prioritise all hazards and associated potential visitor risks within the Park. The stages in this analysis were:

- Risk issue identification via brainstorming by VRM team
- Risk issue identification via analysis of Park accident/incident data
- Identification of perceived risk issues via tour operator surveys and key stakeholder interviews
- Risk issue identification via pilot visitor survey
- Risk issue identification via physical site inspections and digital photography
- Objective evaluation of risk issues according to potential frequency, potential severity, visitor awareness of hazard and degree of Park control
- Prioritisation of the major risk issues according to the evaluation scores.

This represents Step 2 in the VRM Process as illustrated in Section 4.1 and outlined in Appendix 1

### 5.2 Risk Identification

Initially, risk issues were identified through a brainstorming process. This was based on the prior experience of the members of the VRM team and on evidence from past research. Hazards, or the causal factors of risk, were recognised for each public safety zone and risk category. Subsequently the specific risk issues, or potential accidents, were identified for each hazard. This resulted in the initial identification of 94 risk issues. A further 15 issues arose from field investigations and stakeholder interviews and these were added to the list to give an overall total of 109 identified risk issues (refer Hazards Check List, Appendix 2). All the issues were compiled into a risk assessment matrix for later evaluation. The matrix is displayed in Appendix 5.

### 5.3 Risk Analysis and Findings

Three independent sets of risk data were gathered, coded and entered into Excel spreadsheets for subsequent statistical analysis. These were:

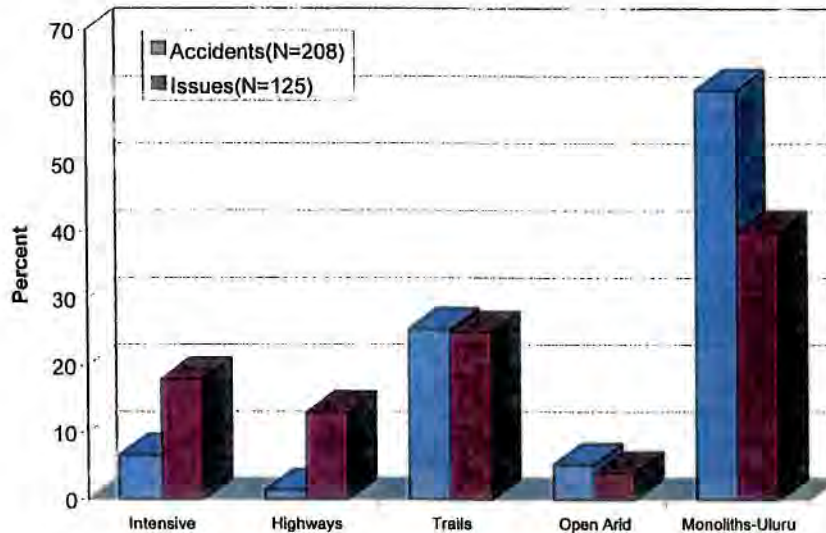
- i) Actual accident and incident data derived from Park incident report forms. This information covered a seven year period from January 1990 to June 1997 with a total of 211 cases reported.
- ii) Information on perceived risk issues was compiled from tour operator surveys and focused interviews with 25 key stakeholders (see list, Appendix 3). The survey questionnaire (see Appendix 4) was sent to approximately 200 tour operators who regularly use the Park (see list, Appendix 5), only 19 of whom responded (10% response rate). The total number of stakeholder respondents was therefore 44, and 29 (66%) of these identified a total of 200 perceived risk issues which comprised the sample for analysis.
- iii) A systematic random sample of 85 visitors was surveyed on The Valley of the Winds track, Kata Tjuta on Thursday 26 June, 1997. This pilot survey sought to establish visitor awareness of risk information sources and to assess their level of preparedness for the 7.4 kilometre walk.

The findings of the physical site audits were not incorporated into the statistical analysis, but are considered separately in Section 6 of the report.

The following results from the analysis are presented graphically and principal conclusions drawn from the findings are subsequently highlighted in point form.

### 5.3.1 Risk Issues According to Public Safety Zone

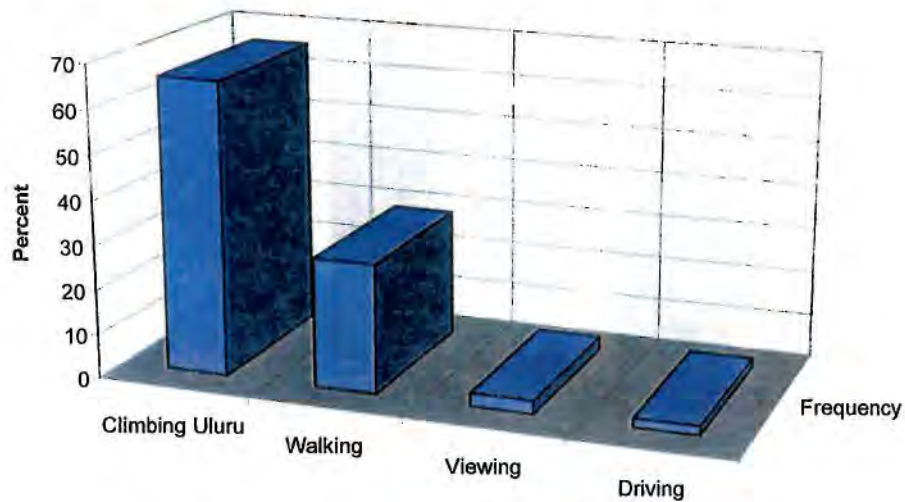
Figure 5.1 : Total Number of Accidents and Perceived Risk Issues by Public Safety Zone



- 61% of all accidents were ascribed to the "monoliths" zone, and because no incidents were reported from the domes of Kata Tjuta all were associated with climbing Uluru.
- Most of the remaining accidents (25%) occurred on walking tracks within the Park.
- Stakeholders perceived Uluru to be less of a hazard than it actually was, and considered the "intensive" areas associated with the Cultural Centre, parking lots and viewing sites, and also the Park roads to be more dangerous than the accident data would suggest. This situation probably reflects the focus of the local tourism industry on road-based activities within the Park and concerns for safe driving behaviour and the effects of congestion at parking locations.

### 5.3.2 Risk Issues According to Visitor Activity

Figure 5.2 : Total Number of Accidents/Incidents by Activity (N=200)

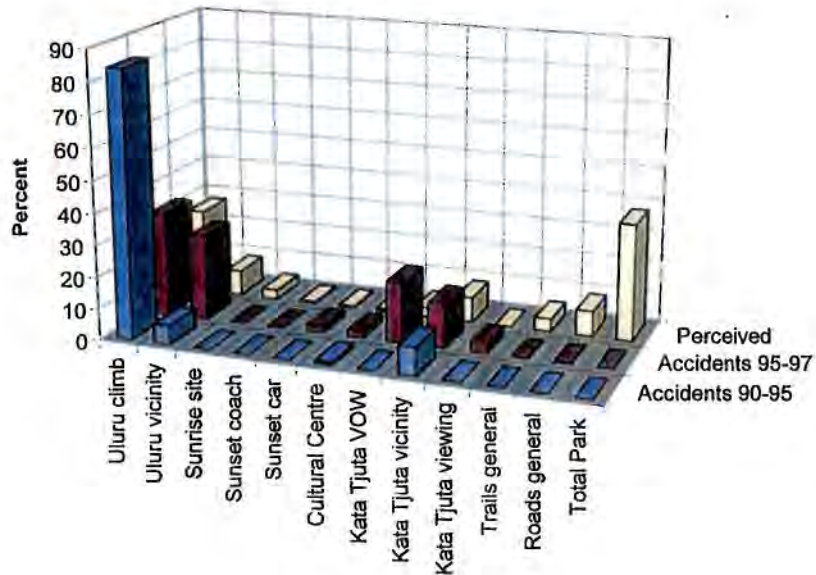


- These results support the previous findings that most accidents within the Park result from climbing Uluru (66%) followed by walking (29%).
- Driving and sightseeing activities result in very few incidents (5%).



### 5.3.3 Risk Issues According to Specific Park Location

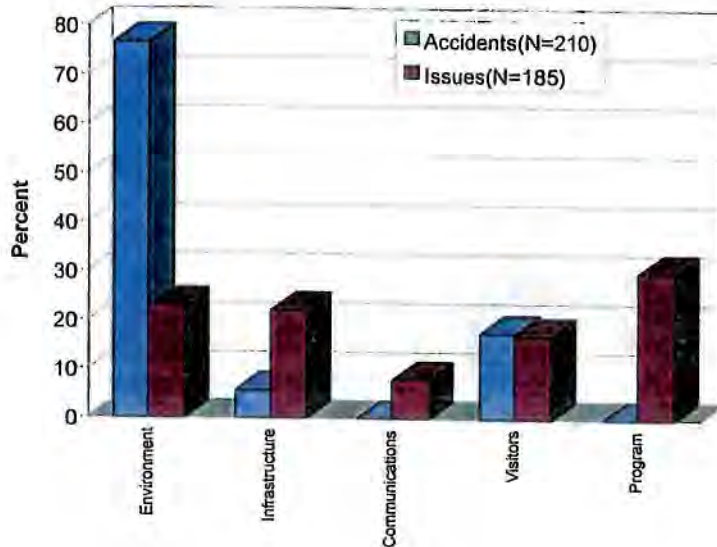
Figure 5.3 : Accident/Perceived Risk Issue by Location



- 84% of all accidents reported between 1990 and 1995 occurred on the Uluru climb, with only 9% in the Kata Tjuta vicinity.
- In the most recent two year period up to June 1997 the climb continued to dominate, though more accidents were reported close to the base of Uluru and there was a marked increase in incidents at Kata Tjuta (33%). The change at Uluru could represent a change in detail of reporting with the acknowledgment of victims being treated at the base of the climb once they had managed to descend or had been evacuated. The increases at Kata Tjuta could be attributed to increasing visitation to this section of the Park, especially during the hotter summer months when heat stress is more probable.
- Stakeholder perceptions also reflected the more recent pattern of accident locations, though many of the issues raised could not be coded to a specific site and were deemed to apply to the Park in general (37%).

### 5.3.4 Risk Issues According to Risk Category

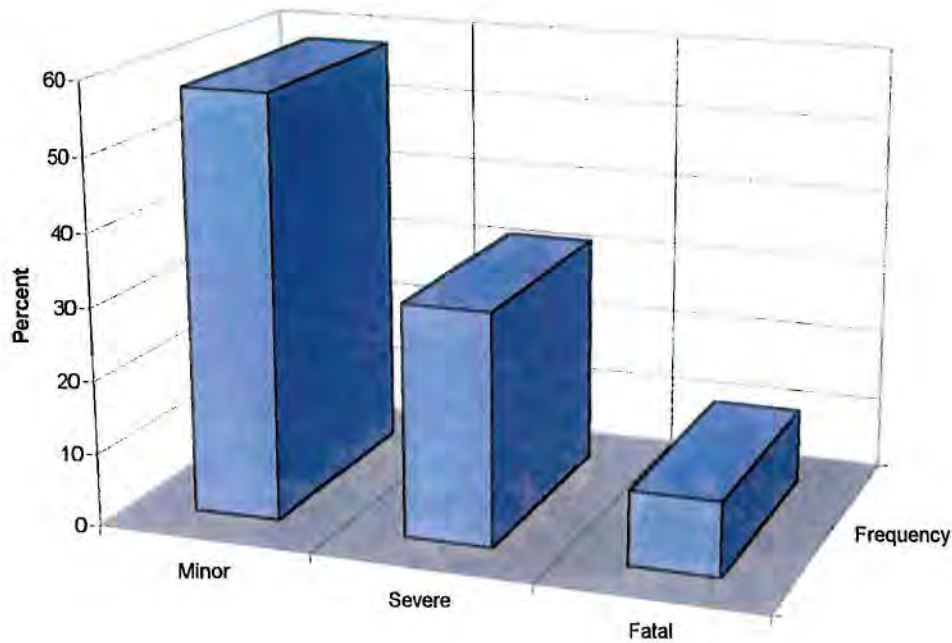
Figure 5.4 : Number of Accidents and Perceived Risk Issues by Risk Category



- The natural environment of the Park is the principal source of risk to visitors. This is related to the hot, arid conditions and the steep, irregular terrain of Uluru and Kata Tjuta. 77% of all the accidents were attributed to these conditions.
- 18% of accidents were related to a range of visitor characteristics associated with variable awareness, preparation, fitness and health.
- Very few accidents were caused by infrastructure developments (6%) and none could be directly attributed to risk communication or risk management program deficiencies.
- Stakeholders perceived the Park environment to be a much lesser risk than the accident data suggests and felt that program issues such as training and emergency response needs were more dominant concerns. Infrastructure and communication hazards also emerged as significant issues. These findings may not be surprising when it could be assumed that stakeholders are keen to optimise visitor safety and therefore tend to focus more on the organisational and structural approaches associated with risk management.

### 5.3.5 Risk Issues According to Injury Severity

Figure 5.5 : Frequency of Injury Severity (N=88)

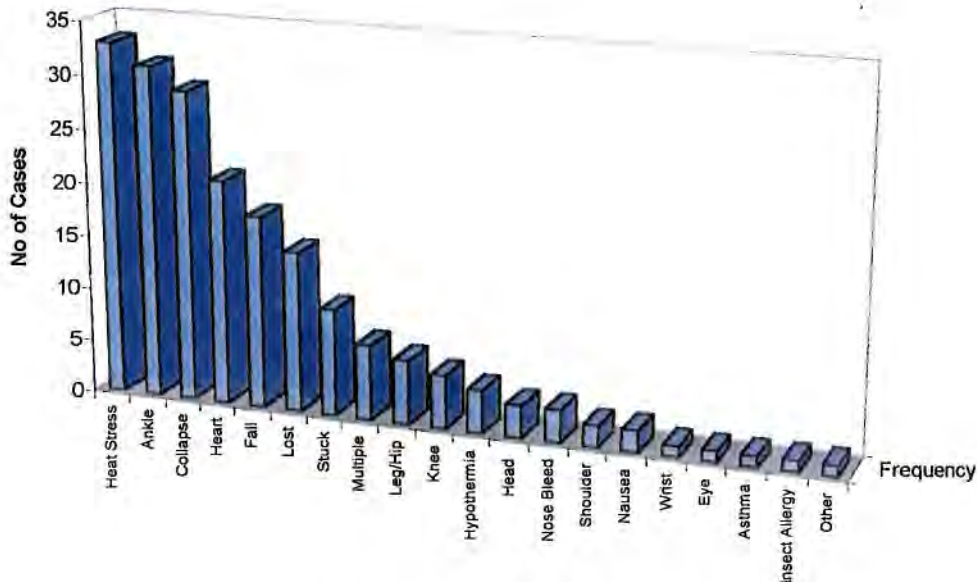


- Most of the accidents reported were rated as "minor" (58%). This is a typical profile and it is certain that many more accidents that would fit into this category are not brought to the Park's attention and are treated by the individuals themselves, companions or tour guides.
- No accidents were rated as "moderate." This probably reflects the fact that within the environmental context of the Park, moderate incidents can rapidly transform into serious cases and therefore warrant an optimal response.
- Severe accidents comprised 32% of the sample and 10% produced fatalities. On average there is one fatal incident per year.
- 90 % of all fatalities occur as a result of climbing Uluru, and 30 visitors have lost their lives on the climb since 1962. Assuming prior research suggesting 50% of visitors climb Uluru, the annual death rate from climbing is approximately one per 150,000 visitors.



### 5.3.6 Risk Issues According to Injury/Incident Type

Figure 5.6 : Frequency of Injury/Incident Occurrence (N=194)



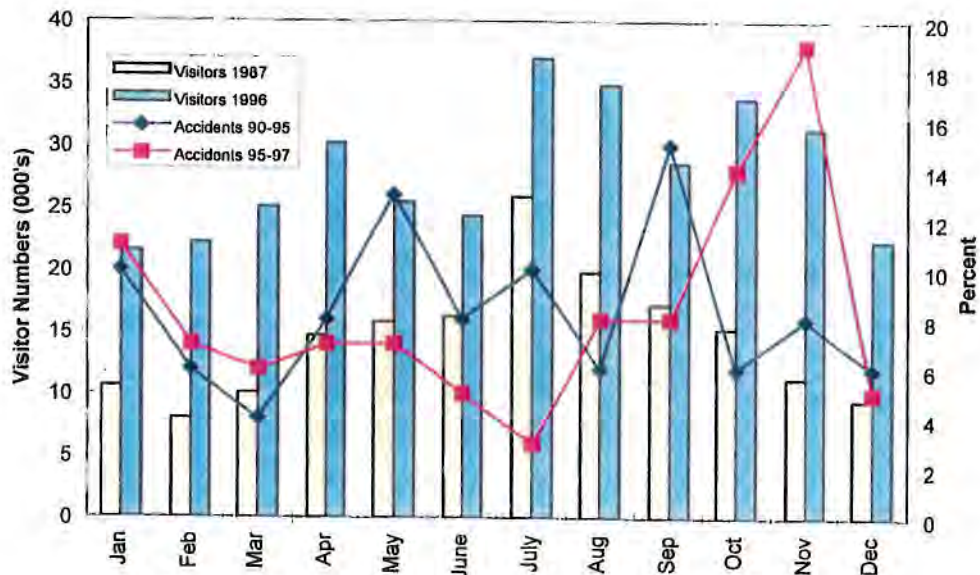
- The most frequent incidents are associated with heat stress (17%; 33 cases), followed by ankle injuries (16%; 31 cases), collapse (15%; 29 cases) and heart conditions (11%; 21 cases). The category of "collapse" highlights the issue of confusion within the data associated with non-specific diagnosis of patient conditions. The actual medical cause of collapse could be attributed to a range of effects including heat stress, exhaustion, anxiety and circulatory or neurological disorders. This represents an incident reporting issue that needs to be addressed in the future.
- Injuries from "falls" (9%), getting "lost" (8%) and "stuck" (5%) are the next highest categories. These incidents could also be more clearly specified in the future according to medical diagnosis.
- Very low rates are associated with wrist and eye injuries, asthma attacks and allergic reactions to flora and fauna (all 0.5%).



### 5.3.7 Risk Issues According to Monthly Distribution and Visitor Numbers

**Figure 5.7: Monthly Visitor Numbers and Accident Frequency**

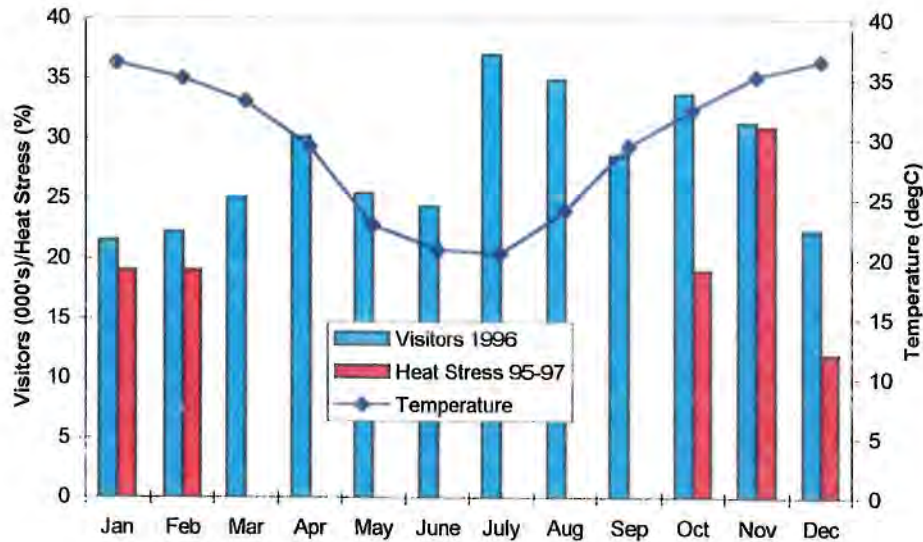
(Visitor numbers supplied by Parks Australia)



- A comparison of the monthly visitation profiles for 1987 and 1996 highlights significant and relevant changes in the distribution. First, the total number of visitors doubled during the ten year period with increases evident in all months. Second, the more traditional bell-shaped distribution peaking during the cooler winter months has been replaced with a more even distribution with peaks in the April and July school holiday periods and sustained high levels of visitation into the summer season.
- Corresponding to the visitor figures, accident frequency for the period 1990-1995 also reflected a winter peak with highest levels during school holidays. Since 1995 however, the greatest proportion of accidents has occurred in the early summer months. This suggests a correlation with higher visitor numbers during hotter weather conditions when heat stress potential is increased.
- The relatively low accident figures for winter months since 1995 could reflect the success of Park initiatives, and especially track improvements, in reducing visitor risk exposure.

To further explore the suggested relationship between increasing summer visitation and incidence of heat stress, the monthly proportion of heat stress cases for the two year period since May 1995 was plotted together with the 1996 visitor numbers and mean monthly air temperature measured in the Park.

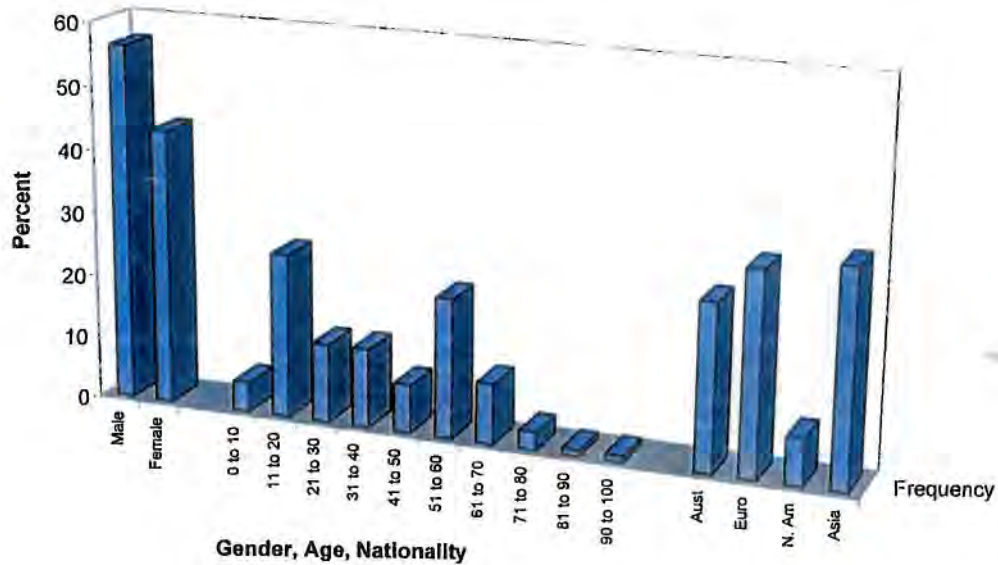
Figure 5.8 : Monthly Visitor Numbers, Heat Stress Frequency and Mean Air Temperature



- Heat stress cases typically occur during the months October to February and the data shows that an early summer peak in heat stress incidence corresponds to the pattern of sustained high visitor levels into periods when mean air temperature rises above 35 degrees Celsius.
- This situation could partially explain the increased number of incidents at Kata Tjuta, and especially The Valley of the Winds, since 1995 as illustrated in Figure 5.3.
- This finding could act as a significant warning about the increasing visitor exposure to heat stress risk at various locations in the Park, and especially on more extended walks, as the tourism industry and Ayers Rock Resort continue to promote year-round visitation.

### 5.3.8 Risk Issues According to Victim Characteristics

Figure 5.9 : Victim Demographics



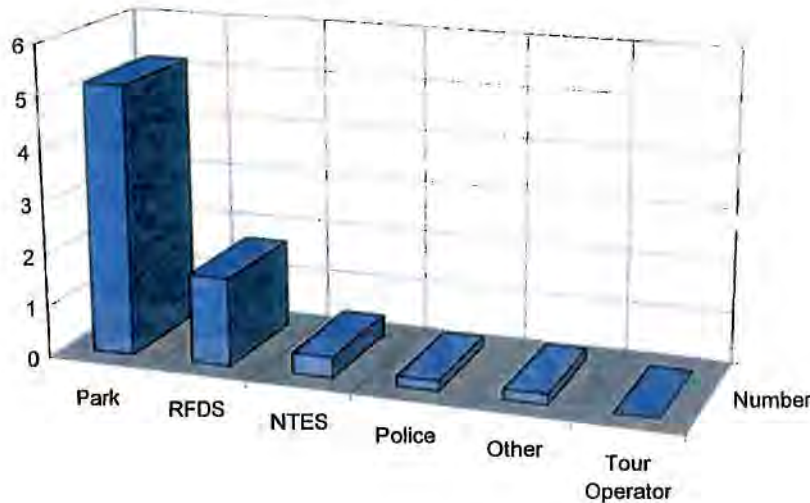
Evidence from the analysis of victim demographics suggests that visitor segments most at risk are:

- males (13% more than females) - stronger "conquest" mentality?
- teenagers (age 11 to 20) - high energy and peer group pressure?
- senior visitors (age 51 to 70) - reduced health and fitness?
- international visitors (especially from Europe and Asia): comprise approximately 50% of the visitor market, yet are involved in 74% of all accidents - reduced familiarity with the environment, cultural differences, lack of acclimatisation?



### 5.3.9 Park involvement in Visitor Rescue Operations

Figure 5.10 : Mean Number of Personnel per Rescue 1995-97 (N=87)

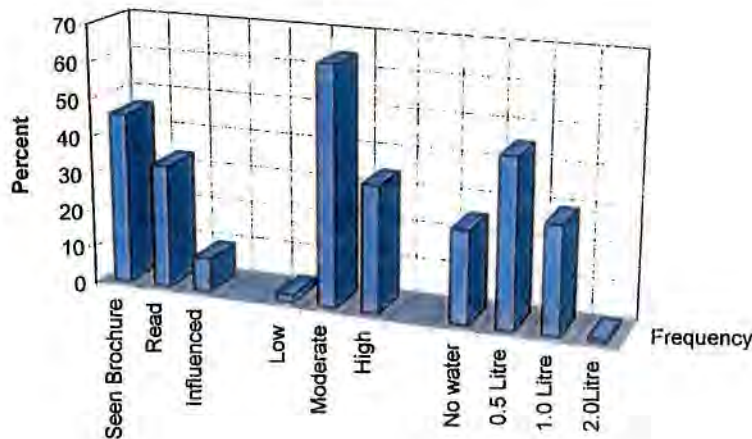


- Park personnel dominate the contribution to rescue efforts, with an average of 5.2 staff members involved in each rescue.
- Park staff work most closely with paramedics attached to the Royal Flying Doctor Service (RFDS) based at Yulara (Ayers Rock Resort), with an average of 1.7 personnel per rescue.
- Police and Emergency Service (NTES) volunteers play vital coordinating and support roles in major or complex rescues, especially when a fatality is involved.
- Tour operators and tourism industry personnel are generally not involved in search and rescue operations except as Emergency Service volunteers, or in circumstances when commercial helicopter or fixed-wing assistance is offered.
- The average time per week spent by Park staff on rescues is 12.8 hours, or almost two person days per week. This was calculated in the following manner:  $[(\text{mean no of Park staff per rescue, } 5.21) \times (\text{average hours spent on each rescue, } 2.93) \times (\text{no of rescues, } 87)] \div (\text{time period of data, } 104 \text{ weeks})$ . This does not take into account the additional time commitment to staff training, trauma counselling, equipment organisation and maintenance, etc.



### 5.3.10 Assessment of Effectiveness of Park Safety Brochure and Visitor Preparedness

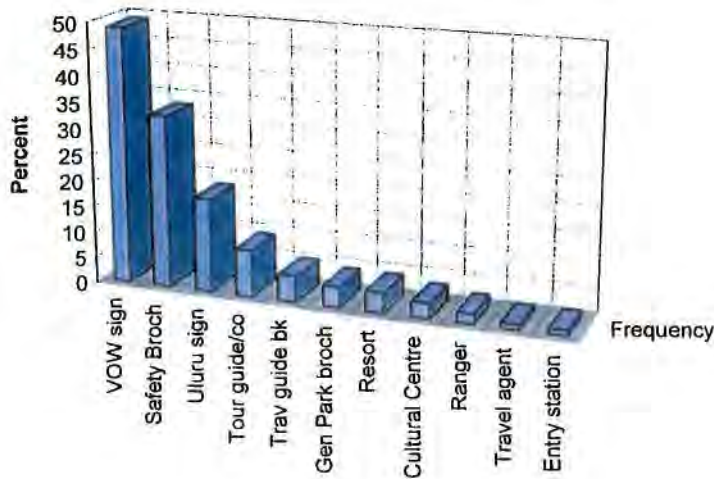
Figure 5.11 : Visitor Preparedness - Valley of the Winds 26/6/97 (N=85)



- When shown the Park safety brochure "For your comfort and safety" only 46% of visitors walking in The Valley of the Winds claimed that they had seen it. Furthermore, only 33% had read the brochure and 9% acknowledged that it had influenced the way in which they prepared for the walk.
- A visual assessment of the visitors' preparedness for the walk in terms of clothing, footwear, fitness, and possession of a route map indicated that most were moderately (64%) to highly (34%) prepared for the activity under the mild winter conditions that prevailed on the day of the survey.
- With regards to water being carried by each individual, 25% had none, the majority (45%) only carried half a litre, with 29% having one litre and only 1% with two litres (brochure recommends 1 litre per hour in hot weather). The results of this survey may be different if carried out in the summer.
- These results raise significant concerns about visitor awareness of safety issues within the Park and the apparent lack of effectiveness of one of the Park's principal risk communication initiatives.

5.3.11 Assessment of Visitor Exposure to Risk Communication Sources

Figure 5.12 : Visitor Exposure to Risk Communication Sources - Valley of the Winds 26/6/97 (N=85)



- 49% of visitors walking in The Valley of the Winds claim to have seen and read the Park safety sign at the start of the trail.
- The Park safety brochure was the next most accessed source of safety information (33%), followed by the sign at the base of Uluru (18%), tour guide or company (9%), travel guide book (5%) and general Park information brochure (4%).
- Since 27% of the visitors sampled were on commercial tours, it is evident that only one third of this visitor activity group appear to be accessing safety information from their tour guides.
- Less than 5% of visitors seem to be exposed to safety information through the Resort or Park Cultural Centre and only 1% claimed to gain safety advice through their travel or booking agent.
- These results again question the effectiveness of existing Park visitor risk information sources, especially when most visitors are on tight schedules and appear to have limited time to read and process safety information once they arrive in the area.

## 5.4 Summary of Principal Findings From the Data Analysis

1. The Uluru climb emerged as the major risk issue within the Park and the greatest source of risk for visitors. It accounts for:

- 66% of all accidents
- 90% of all fatalities
- Most rescues, especially the more time consuming and complex ones involving vertical rock rescue
- Greatest demands on Park staff time
- Most likely the greatest proportion of Park visitor safety budget

2. The trend towards sustained high levels of visitation into the summer is producing a corresponding increase in summer accidents and particularly more heat stress incidents on The Valley of the Winds walk at Kata Tjuta as the tourism industry and Ayers Rock Resort continue to promote year-round visitation.

3. The characteristics of visitors contribute to their level of risk in the Park environment. A lack of familiarity with environmental conditions and especially the hot arid climate, insufficient time to acclimatise and variable health and fitness are likely to be significant factors contributing to injury.

- 18% of accidents were directly related to visitor characteristics.
- Visitor characteristics would contribute to the high levels of reported heat stress (17%), ankle (16%), and heart related (11%) incidents.
- Males, teenagers, and seniors aged 50 to 70 were identified as particularly "at risk" groups within the visitor market.
- 74% of accidents occur among the 50% segment of international visitors to the Park, suggesting that this sector requires particular risk management attention.

4. Park stakeholders comprising mostly tourism industry representatives tended to downplay risks associated with the Park environment and Uluru climb, and perceived risk management program issues, infrastructure and communication hazards to be of greater significance.

5. Park costs associated with emergency rescues are high:

- An average of 5.2 personnel are involved in each rescue.
- An average staff time of 12.8 hours per week is spent on rescues alone (almost two person days per week).
- Substantial additional staff time would be taken up with staff training (especially for vertical rock rescue and stretcher evacuation), trauma counselling, equipment organisation and maintenance, etc.

6. The pilot visitor survey highlighted the limited effectiveness of existing risk communication sources. Information appears to be accessed by visitors either too late for it to be influential or not at all, and in a format that is not conducive to access or processing. This suggests the need for earlier exposure to Park safety information in a more visual or appealing mode of presentation. This could be achieved through travel or booking agents, inflight and coach videos, and audio information cassette tapes for vehicle use.

## 5.5 Risk Evaluation

Accident/Incident data was incorporated into the Visitor Risk Assessment Matrix (refer Appendix 5) to inform the risk evaluation process. For each of the 109 identified risk issues the number of reported fatalities and injuries and the number of times an issue was cited as a problem by stakeholders was added to the matrix. A quantitative value was then assigned to each risk issue according to its frequency of occurrence, severity of the consequences, likely visitor awareness of the hazard, and the degree of Park control associated with the hazard.

In line with the Parks Canada VRM approach (1996: 42), the following numerical values were used to weight the elements of each evaluation category:

- Potential Frequency
  - 5 - Often
  - 3 - Occasional
  - 1 - Rare
- Potential Severity
  - 5 - Severe injury or fatality
  - 3 - Minor or moderate injury
  - 1 - No possible injury
- Visitor Awareness
  - 5 - Not aware
  - 3 - May be aware
  - 1 - Hazards are obvious
- Park Control
  - 5 - Facility directly involved
  - 3 - Facility tangentially involved
  - 1 - No Park facilities

The resultant risk evaluation scores for all the identified risk issues are tabulated in the Visitor Risk Assessment Matrix. Hazards and issues rated at 10 or below are considered to be of minimal risk to Park visitors, those rating between 11 and 14 are assessed as moderate risks, and items rating 15 or higher represent major or high risk issues. The evaluation process allowed visitor risk issues to be prioritised in order to facilitate a focused consideration of Park risk control efforts. The ranked list of all risk issues scoring an evaluation rating above 10 is shown in Figure 5.13.



Figure 5.13 : Prioritisation of Visitor Risk Issues at Uluru - Kata Tjuta National Park

Risk Priority	Issue Code	Risk Issue	Risk Evaluation Score (Max Risk = 20)	Public Safety Zone(s)	Risk Category
1	A.E.1	Hot dry weather - Dehydration/ heat stress/ hyperthermia	18	All	1
2	A.V.1	Visitor characteristics - Injuries resulting from non-normal activities	18	All	4
3	B.5.E.1	Uluru - Falling	18	5	1
4	B.5.E.2	Uluru - Heart attack	18	5	1
5	B.5.E.3	Uluru - Vertigo, anxiety attack, physical exhaustion	18	5	1
6	B.3.I.1	Trail surface defects - Tripping and falling	14	3	2
7	B.3.P.1	Inadequate provision of drinking water - Dehydration	14	3	5
8	A.E.16	Lack of water availability - Dehydration	12	All	1
9	A.I.1	Inadequate provision of shade - Dehydration/ heat stress/ hyperthermia/ sunburn	12	All	2
10	A.C.1	Risk communication hazards - brochures	12	All	3
11	A.C.3	Risk communication hazards - signs	12	All	3
12	A.V.3	50% international visitors - Lack of familiarity	12	All	4
13	A.P.1	Inadequate incident database - uninformed risk management program	12	All	5
14	A.P.8	Inadequate provision of emergency alarms - delayed response	12	All	5
15	B.2.V.1	Dangerous or erratic driving behaviour - impact injuries	12	2	4
16	B.5.C.1	Inadequate promotion of cultural perspective on climbing Uluru and other monoliths - Anangu grief and psychological stress	12	5	3

Note: The issue code is derived from the Visitor Risk Assessment Matrix (Appendix 5).

The prioritisation suggests that risks associated with the distinctive Park environment (1,3,4,5,6,8,9,13,14,16), the nature of the visitor market (2,15) and the level of visitor awareness and preparation (7,10,11,12) all contribute individually and collectively to visitor risk exposure in the Park. This realisation prompted development of the "Uluru - Kata Tjuta Visitor Risk Exposure Model" described in Section 5.7. The greatest risks to visitors in the Park are:

- Circulatory, physical and neurological injuries resulting from climbing Uluru.
- Heat stress injuries resulting from hot, dry weather conditions.
- Various injuries associated with visitors engaging in non-normal activities in an unfamiliar setting.

## 5.6 Data Comparisons

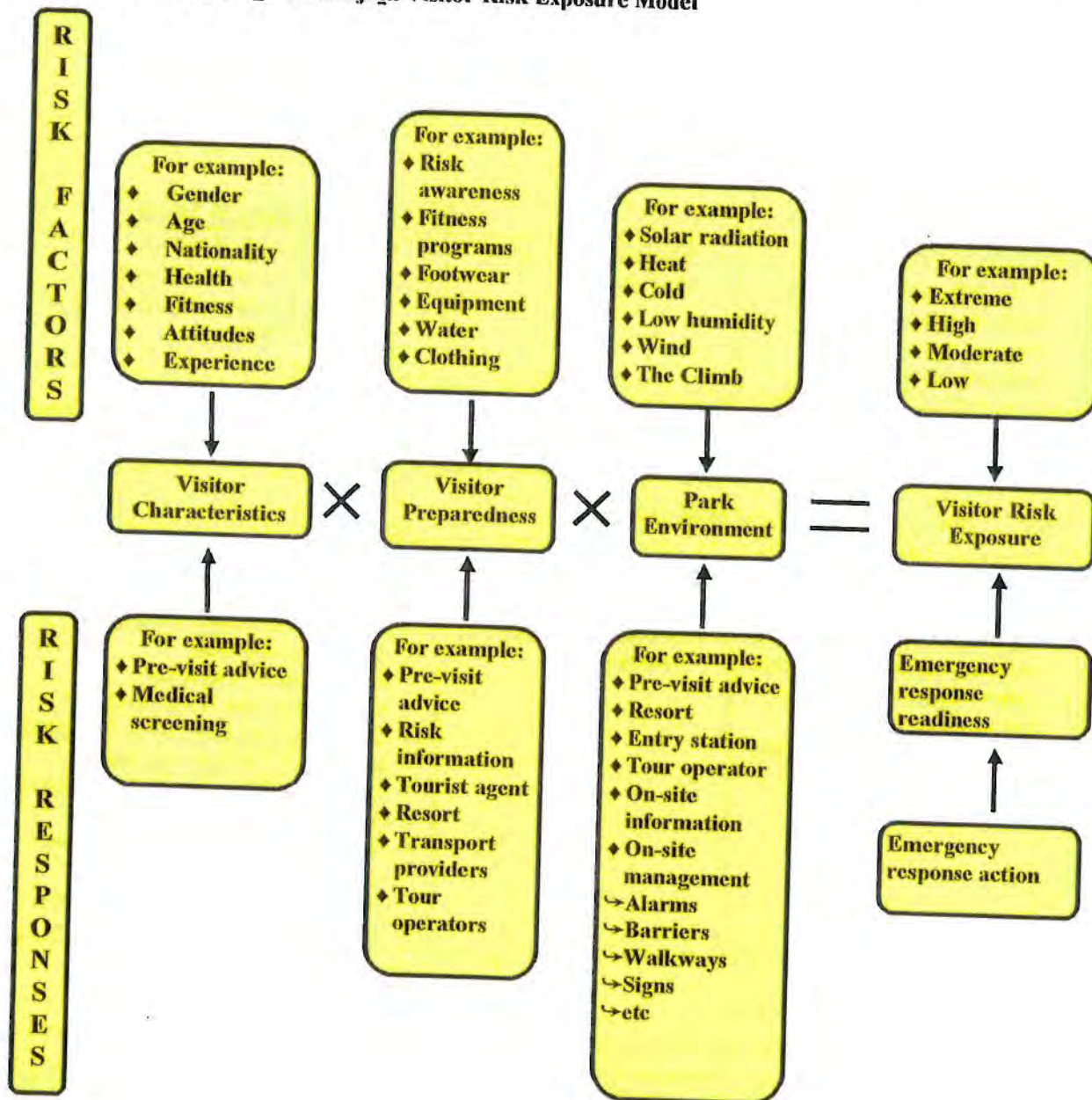
Injury and death rates for the Park are respectively, 5.1 and 0.66 per 100,000 person-days of exposure. These are very low for activities that could be described as falling in the realm of outdoor recreation. This is evident when comparisons are made with accident rates for participants in Outward Bound courses in the United States. The overall injury rates reported by Paton (1995) were 75 per 100,000 person-days, and a death rate of 2.04 per 100,000. The motor vehicle death rate for all ages in the US was also quoted by Paton (1995) to be 20.2 per 100,000. Gentile et al (1995) reported injury and fatality rates associated with client outdoor activities at the National Outdoor Leadership School in the US to be 230 and 0.28 per 100,000 person-days of exposure respectively.

Watarrka National Park (Kings Canyon) to the north of Uluru is in the same climatic region and has an annual visitor count of just over 200,000, about half the current level at Uluru. Approximate calculations made from interpreting the visitor accident/incident data supplied by Watarrka Park management suggests an injury rate of 11.7 per 100,000 person days, and a death rate of 0.4 per 100,000. The apparently higher injury rate is likely to be an aberration of the Watarrka data which seems to include many more records of medical assistance for general ailments such as colds, flu, pain, etc. Therefore it may be concluded that rates of injury occurrence and death are similar for both Parks. Also, a visual assessment of the types of incidents at Watarrka reveal that heat stress, heart conditions, ankle injuries and trauma from falls all seem to occur regularly as was found for Uluru.

## 5.7 The Uluru Kata Tjuta Visitor Risk Exposure Model

According to the risk data analysis, sources of visitor risk in the Park were found to be attributed to groups of hazards associated with the Park environment, visitor attributes and visitor preparation for their intended activities in the Park. The presence of certain risk factors at a given time and place will predispose visitors to a predictable level of risk exposure. Essentially, the more risk factors that exist within and between risk groups the greater the potential for an accident to occur. This is represented in the model illustrated in Figure 5.14.

Figure 5.14 : The Uluru Kata Tjuta Visitor Risk Exposure Model



Even if one risk factor, such as poor visitor health, is present an incident may be precipitated during a walk in The Valley of the Winds for example. However if additional factors are added, such as a strong determination to complete the circuit walk, no water and sunny conditions with a shade air temperature of 41degC, then a heat stress condition is virtually a forgone conclusion. According to prior research, it is likely that the number of factors present in each risk group are likely to have a multiplier effect on risk exposure rather than an additive one. Hence, two risk factors in each of the hazard groups will produce a risk exposure of eight (2x2x2) times rather than six (2+2+2) times.

The model highlights the need for park management to address a range of risk responses aimed at mitigating the multiple risk factors that have been found through the risk analysis process to be present in the Park. These pro-active risk control measures should constitute the basis of the Park's visitor safety plan. In the event of an accident occurring, emergency response procedures will need to be in place and capable of rapid implementation.



## 5.8 Evaluation of Priority Risk Control Measures

From Figure 5.13, six key risk issues were identified for more detailed evaluation of control measures.

### 5.8.1 *The Uluru Climb*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• A small % of visitors may suffer falls, collapse or heat exhaustion during climb.</li> <li>• Warning signs, safety brochures, tour operator advice, chain, emergency radio, emergency rescue protocol.</li> </ul>	<ul style="list-style-type: none"> <li>• No visitors injured on the climb.</li> </ul>	<ul style="list-style-type: none"> <li>• Extended period of closure.</li> <li>• Improved pre-climb information.</li> <li>• Improved signage and positioning at base of the climb.</li> </ul>

### 5.8.2 *Hot, Dry Weather and Heat Exposure*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• A small proportion of visitors may suffer some form of heat stress during hot, dry weather.</li> <li>• Safety brochures and signs, tour operator advice, emergency radios, emergency rescue protocol.</li> </ul>	<ul style="list-style-type: none"> <li>• No visitors exposed to potential heat stress conditions.</li> </ul>	<ol style="list-style-type: none"> <li>1. Ensure visitors are advised of:               <ul style="list-style-type: none"> <li>• high risk weather conditions</li> <li>• appropriate dress</li> <li>• heat stress symptoms</li> <li>• action to take if heat stressed</li> </ul> </li> <li>2. Extend existing park policy for partial park closures in high risk weather situations, particularly for the Climb and the Valley of the Winds</li> <li>3. Provide shade structures in all main visitor use areas.</li> <li>4. Provide additional emergency water sites.</li> </ol>

### 5.8.3 *Visitor Characteristics*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• A large proportion of visitors are unfamiliar with the environment.</li> <li>• Safety brochures and signs</li> <li>• Foreign language brochures and signs.</li> </ul>	<ul style="list-style-type: none"> <li>• To inform all visitors of potential risks and precautions.</li> </ul>	<ol style="list-style-type: none"> <li>1. Review all existing brochures and signs for context and presentation</li> <li>2. Ensure the tourist sector reinforces safety messages and procedures.</li> </ol>

### 5.8.4 *Trail Defects*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Most trails are in good conditions with minor surface and barrier defects.</li> <li>• Regular trail maintenance schedule.</li> <li>• Emergency radios.</li> </ul>	<ul style="list-style-type: none"> <li>• High quality trails appropriate to the setting.</li> </ul>	<ol style="list-style-type: none"> <li>1. Continued upgrading of problem areas.</li> <li>2. Installation of additional emergency radios.</li> </ol>



### 5.8.5 Lack of Water Availability

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Visitor are asked to carry their own water supply</li> <li>• Water is available at various sites in the Park</li> <li>• An emergency water tank is located in the Valley of the Winds</li> </ul>	<ul style="list-style-type: none"> <li>• No visitor to suffer from lack of water.</li> </ul>	<ol style="list-style-type: none"> <li>1. Ensure visitors are advised of:                             <ul style="list-style-type: none"> <li>• the risks of dehydration</li> <li>• the need to carry water</li> <li>• the symptoms of dehydration</li> <li>• action to take if dehydrated</li> </ul> </li> <li>2. Provide advice about sources of drinking water (location and quality)</li> <li>3. Provide additional emergency water supplies at Kata Tjuta at the trail heads to the Olga George walk and the Valley of the Winds walk</li> </ol>

### 5.8.6 Inadequate Provision of Shade

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• There is limited provision of shade structures at main day use areas.</li> <li>• All visitors are encouraged to wear protective clothes and head wear.</li> </ul>	<ul style="list-style-type: none"> <li>• No visitors to suffer from sunburn or heat stress.</li> </ul>	<ol style="list-style-type: none"> <li>1. Ensure visitors are advised of :                             <ul style="list-style-type: none"> <li>• dangers from sun exposure</li> <li>• appropriate precautions</li> <li>• action to take if sunburnt</li> </ul> </li> <li>2. Extend provision of shade structures in all main visitor use areas</li> </ol>

## 5.9 Safety of Park Staff and Traditional Owners

The risk issue analysis revealed a range of concerns about the exposure of Park staff, Anangu and rescue volunteers to certain special risks. These groups are also exposed to many of the same hazards as those identified for visitors (See Appendix 5), though because of staff familiarity with the Park setting and their professional experience they should possess a greater appreciation and level of preparedness for potential risks.

During interviews, stakeholders particularly identified staff involvement in complex rescues (especially on Uluru and in open country searches) and bush fire control as significant workplace risk issues (see Appendix 5, Issues A.E.14 and B.5.P.3). The potential physical injuries (falls, collapse, hyperthermia, burns, etc.) associated with these staff activities highlight the ongoing need for appropriate specialist staff training and the maintenance of a high level of physical fitness for all individuals who may be involved. Recommendations addressing these concerns have been made in section 7.1.

Of equal, though possibly less obvious, concern is the potential for emotional distress associated with staff psychological responses to rescuing accident victims (see Appendix 5, Issues B.5.C.1 and B.5.P.3). This risk issue relates to the grief reaction that typically results from encountering a seriously or fatally injured person. Such occurrences highlight the need for understanding, recognising and managing the health impacts of "critical incident stress" (Tasmanian Outdoor Leadership Council, 1996).

Grief is the evolutionary emotional and behavioural train of reactions set in motion by the loss of a loved one or by involvement in a traumatic event (Wilkerson, 1985). Rescuers and others at Uluru may experience trauma and grief following the treatment and evacuation of a seriously injured or deceased visitor. Such trauma is likely to be greater amongst staff and amateur rescuers with limited encounters of real-life accidents. The reaction cycle associated with grief usually proceeds through a sequence of protest, despair, detachment and recovery. The manifestation of these stages and the timing of the cycle will vary considerably for different individuals. If the rescuer is not afforded the opportunity to work through their stress reactions it is possible that the extreme condition of "posttraumatic stress disorder" will result. This is a debilitating and protracted neurosis requiring

extensive professional therapy. Whatever the degree of stress reaction, it is important to acknowledge that this is a normal response.

Critical incident stress may result in absence from work, reduced workplace efficiency, or an incapacity to engage in certain tasks (such as another rescue). Typical signs and symptoms include:

Physical	Thinking	Emotional
<ul style="list-style-type: none"> <li>• Nausea</li> <li>• Upset stomach</li> <li>• Tremors (lips, hands)</li> <li>• Feeling uncoordinated</li> <li>• Profuse sweating</li> <li>• Chills</li> <li>• Diarrhoea</li> <li>• Dizziness</li> <li>• Chest pain</li> <li>• Rapid heart beat</li> <li>• Rapid breathing</li> <li>• Increased blood pressure</li> <li>• Headaches</li> <li>• Muscle aches</li> <li>• Sleep disturbance</li> <li>• etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Slowed thinking</li> <li>• Difficulty making decisions</li> <li>• Difficulty in problem-solving</li> <li>• Confusion</li> <li>• Disorientation (place and time)</li> <li>• Difficulty calculating</li> <li>• Difficulty concentrating</li> <li>• Memory problems</li> <li>• Difficulty naming common objects</li> <li>• Poor attention span</li> <li>• Seeing the event over and over</li> <li>• Distressing dreams</li> <li>• etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Anxiety</li> <li>• Fear</li> <li>• Guilt</li> <li>• Grief</li> <li>• Depression</li> <li>• Sadness</li> <li>• Feeling lost</li> <li>• Feeling abandoned</li> <li>• Feeling isolated</li> <li>• Wanting to hide</li> <li>• Wanting to limit contact with others</li> <li>• Anger and irritability</li> <li>• Feeling numb</li> <li>• Shocked</li> <li>• Startled</li> <li>• etc.</li> </ul>

Discussions held with Mr S47F during the field investigation period of the consultancy revealed the considerable and prolonged psychological stress experienced by the traditional Aboriginal community at Muġitjulu. Anangu experience extreme grief when a visitor is injured or dies in the Park because all visitors on their custodial lands are considered part of their extended family. Their grief is rekindled when family members of victims visit the community, and they also appear to be subjected to a constant level of worry associated with anticipation of the inevitable next accident. This is possibly one of the strongest arguments in favour of actively discouraging all visitors from climbing Uluru.

## 6. PARK SITE RISK ASSESSMENT

All significant park sites were inspected and a photographic record taken of any safety measures and hazards observed (refer Appendix 6). The following observations summarise the existing situation and suggest actions to achieve the desired conditions.

### 6.1 Specific Site Risk Issues

#### 6.1.1 The Roads

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Good quality roads</li> <li>• Some risk of vehicle/people conflicts in car parks at the sunrise/sunset viewing areas and at the base of the Climb.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain existing road safety standards</li> <li>• No road accidents</li> </ul>	<ol style="list-style-type: none"> <li>1. Ensure regular road maintenance.</li> <li>2. Control vehicle movement at peak times in main use areas.</li> <li>3. Develop more effective car parking arrangements at the base of the Climb.</li> <li>4. Review road sight lines and overtaking lines.</li> </ol>

#### 6.1.2 The Base of the Climb

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Poorly defined car parking.</li> <li>• Rough gravel surfaces.</li> <li>• Inadequate shade</li> <li>• Some obstacles and uneven surfaces</li> <li>• Pedestrian/vehicle conflicts</li> </ul>	<ul style="list-style-type: none"> <li>• Safe, accessible, comfortable day use area</li> </ul>	<ol style="list-style-type: none"> <li>1. Develop an agreed master plan for the redevelopment of the area, integrated with the rest of the Park.</li> <li>2. Eliminate existing hazards from area, especially uneven surfaces.</li> <li>3. Provide temporary shade structures</li> <li>4. Limit vehicle speed in vicinity.</li> <li>5. Redesign car/coach parking arrangements.</li> </ol>

#### 6.1.3 The Climb

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Many climbers not fully aware of risks</li> <li>• Warning signs bypassed by many visitors</li> <li>• Some visitors not fit enough to undertake the climb</li> <li>• Climb closed under certain temperature, wind and wet conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced percentage of visitors undertaking the climb.</li> <li>• Ultimate closure of climb.</li> </ul>	<ol style="list-style-type: none"> <li>1. Improved signage at the base of the climb</li> <li>2. Greater restrictions on climb times during hot weather (refer specifics)</li> <li>3. Advise visitors who are 40 plus to consult their medical practitioner about undertaking the climb.</li> </ol>

#### 6.1.4 The Base of the Uluru Trailheads and Walks

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Well delineated tracks and boardwalks</li> <li>• Some uneven surfaces</li> <li>• Some sharp projections</li> <li>• Some low wire fences around carparks</li> </ul>	<ul style="list-style-type: none"> <li>• Safe and convenient walking tracks and trail heads</li> </ul>	<ol style="list-style-type: none"> <li>1. Continued upgrade and maintenance of track surfaces, particularly after rain</li> <li>2. Routine maintenance of board walks, signs and facilities</li> <li>3. Elimination of any sharp projections from wire fences and trail edges</li> <li>4. Continued replacement of low wire /poly fences with more appropriate people barriers.</li> </ol>

6.1.5 *Uluru Sunrise Viewing*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Roadside viewing area</li> <li>• Mixed people and vehicle use areas</li> <li>• Restricted vehicle speed zone</li> </ul>	<ul style="list-style-type: none"> <li>• Safe and convenient viewing area free of pedestrian/vehicle conflicts</li> </ul>	<ol style="list-style-type: none"> <li>1. Develop a masterplan for the redevelopment of the area with effective people/vehicle separation</li> <li>2. Continue to control vehicles during peak periods.</li> </ol>

6.1.6 *Uluru Sunset Viewing - Private Cars*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Separate vehicle and viewing areas</li> <li>• Some concern about vehicle backing</li> <li>• Overcrowding in peak periods</li> </ul>	<ul style="list-style-type: none"> <li>• Safe and convenient viewing area free of pedestrian/vehicle conflicts</li> </ul>	<ol style="list-style-type: none"> <li>1. Advise motorists to drive slowly and reverse carefully</li> </ol>

6.1.7 *Uluru Sunset Viewing - Coaches*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Separate coaches parking and viewing areas</li> <li>• Some low wire fences around parking areas</li> </ul>	<ul style="list-style-type: none"> <li>• Safe and convenient viewing area free of pedestrian/vehicle conflicts</li> </ul>	<ol style="list-style-type: none"> <li>1. Continued replacement of low wire fences with more appropriate people barriers.</li> </ol>

6.1.8 *Kata Tjuta Dune Viewing Area*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Separate vehicle and viewing areas</li> <li>• Disabled access to shaded viewing platforms</li> <li>• Some obstacles and sharp projections in car park</li> <li>• Some uneven car park edges</li> </ul>	<ul style="list-style-type: none"> <li>• Safe and convenient viewing area free of pedestrian/vehicle conflicts</li> </ul>	<ol style="list-style-type: none"> <li>1. Eliminate obstacles and sharp projections from within car park</li> <li>2. Eliminate uneven edges in car park</li> <li>3. Routine maintenance of boardwalks</li> <li>4. Improved entry/exit signs on roadways to avoid people driving on wrong side of road.</li> </ol>

6.1.9 *Kata Tjuta Sunset Viewing and Day Use Area*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Separate vehicle and viewing areas</li> <li>• Low wire fences around viewing area</li> </ul>	<ul style="list-style-type: none"> <li>• Safe and convenient viewing area free of pedestrian/vehicle conflicts</li> </ul>	<ol style="list-style-type: none"> <li>1. Continued replacement of low wire fences with more appropriate people barriers</li> </ol>



6.1.10 *The Olga Gorge Trailhead and Walk*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Planned vehicle parking and trail head</li> <li>• Clearly delineated walking trail and boardwalks</li> <li>• Loose uneven trail surfaces</li> <li>• Some sharp projections on park furniture</li> <li>• Lack of shade</li> <li>• Lack of water</li> <li>• Nearest emergency radio is at Valley of the Winds trail head</li> </ul>	<ul style="list-style-type: none"> <li>• Safe and convenient trail head and walking track</li> </ul>	<ol style="list-style-type: none"> <li>1. Provide shade structure and seating at start of walk and along walk</li> <li>2. Provide emergency radio and water supply at trail head</li> <li>3. Continue to groom trail surface</li> <li>4. Eliminate sharp projections from park furniture</li> <li>5. Routine maintenance of boardwalks</li> </ol>

6.1.11 *The Valley of the Winds Trailhead and Walk*

Existing Situation	Aim	Suggested Actions
<ul style="list-style-type: none"> <li>• Planned vehicle parking and trail head</li> <li>• Clearly delineated walking trail and signage</li> <li>• Emergency phone at trailhead</li> <li>• Emergency Shelter and water supply in the Valley of Winds</li> <li>• Uneven trail surfaces</li> <li>• Clearly marked tracks</li> <li>• Unrestricted access to trail, even on very hot days</li> </ul>	<ul style="list-style-type: none"> <li>• Safe, adventure walking trail</li> <li>• Partial closure of the Valley of Winds walk on very hot days</li> <li>• Imposed emergency communications in the Valley of the Winds</li> <li>• Safe and Convenient trail head</li> </ul>	<ol style="list-style-type: none"> <li>1. Provide shade structures, emergency water and seating in trail head area</li> <li>2. Prohibit visitor access beyond the first lookout on very hot days (above 35°C)?</li> <li>3. Provide an emergency radio at the Valley of the Winds emergency shelter</li> <li>4. Improve signage at the Valley of the Winds circuit walk loop junction to indicate emergency shelter (completed August 1997)</li> <li>5. Continue to groom and stabilise trail surfaces</li> <li>6. Prune vegetation projections from trail corridor</li> </ol>

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## 7. VISITOR SAFETY PLAN

*Note: The following represent suggested actions arising from the visitor risk assessment that are presented for consideration by Park management. The extent and timing of implementation will depend upon strategic management priorities and availability of necessary staff, financial, physical and technical resources.*

### 7.1 Organisational Commitment to Risk Management

- i) Maintain staff training schedule for first aid, stretcher evacuation, vertical rock rescue, helicopter evacuation, bushfire suppression, radio use, etc.
- ii) Organise a specific NTES vertical rock rescue training course for Park staff.
- iii) Encourage the certification of at least one Park Ranger as an emergency services vertical rock rescue instructor.
- iv) In conjunction with the RFDS, establish and maintain a comprehensive, cooperative, electronic accident/incident reporting system. This needs to incorporate accurate injury diagnosis, circumstances of the incident, Park and outside staff involvement, and detailed victim demographics.
- v) Require Park staff, especially those involved in rescues, to pass regular fitness assessments (at least once a year) and to maintain their health and fitness, possibly through membership of the Resort recreation centre and gymnasium.
- vi) Maintain a core of Park staff trained in emergency response in order to combat the transience effect.
- vii) Maintain cooperative training, education initiatives, and emergency response protocol with all emergency services (Police, NTES, RFDS).
- viii) Monitor visitor numbers and patterns to assess visitation levels of potentially higher risk market segments (e.g. school groups, international visitors).
- ix) Develop alternative visitor activities to replace those closed for safety reasons. For example, a greater focus on the Cultural Centre with increased Anangu demonstrations and other interpretation activities.
- x) Park should commit funds to ensure adequate staffing levels to allow for involvement in rescue operations, train an emergency rescue instructor, provide general emergency and first aid training for all Park Rangers, provide sufficient, appropriate rescue and emergency equipment.

### 7.2 Risk Communication

- i) Specifically target strong risk messages to international visitors. Due to: their lack of awareness of the environment, lack of acclimatisation, inappropriate dress and footwear, alcohol consumption, food consumption prior to strenuous physical activity, lack of understanding about dehydration, cultural limitations on water consumption and toileting and influence of pre-existing health disorders.
- ii) Emphasise the influence of pre-existing illnesses exacerbating the potential for dehydration, heat stress, and physical collapse.
- iii) Promote "000" as emergency contact number.
- iv) Take action with Telecom Australia to optimise mobile telephone coverage throughout the Park.
- v) Develop early risk communication interventions. For example through travel agent, international travel wholesalers, hotel room information, in-house video, inflight video.
- vi) Design communication approaches to be more visual, using photo images, sketches and video.
- vii) Design clearer and more understandable and accessible signs. International languages to dominate above English. Content should include reference to specific risks and appropriate visitor precautions.
- viii) Provide standardised risk information package to tour operators and make compliance a condition of their permit to operate.
- ix) Promote travel cassette tape to independent travellers presenting the World Heritage values of the Park, available visitor opportunities, and visitor safety.

### 7.3 Risk Prevention / Mitigation

Note : A whole range of options have been explored including some of which are known to be improbable.

#### 7.3.1 General

- i) Appropriate safety inspection frequency for all zones, visitor sites and installations.
- ii) Visitor health and fitness screening, especially for the elderly (self assessment before doing the climb).
- iii) Review heat stress research and apply to inform management options.
- iv) Review allowable visitor activities and match to the natural and cultural heritage values of the Park and identified risk minimisation objectives.
- v) Encourage safety behaviour modelling/reinforcement. For example, serve plain water on all inbound flights just prior to arrival; within Resort provide free or inexpensive access to one and two litre size water bottles and water; promote quality of local water; serve water with all meals.
- vi) Develop a cooperative relationship (safety partnerships, pooling of resources) with the tourism industry stakeholders to encourage a congruent awareness of visitor risks and a consistent approach to risk minimisation.

#### 7.3.2 Visitor Centre/Facilities/Parking and Viewing Areas

- i) Re-evaluate the fire safety provisions in the Cultural Centre (building currently has no smoke detectors or sprinklers and inadequate fire pressure pump and water reservoir).
- ii) Upgrade fire provisions to Australian Standards.

#### 7.3.3 Highway Corridors

- i) Upgrade Uluru base road to provide secure shoulders and eliminate eroded bitumen edges.
- ii) Review current speed limits throughout Park.

#### 7.3.4 Tracks/Attraction Sites

- i) Re-assess the use and positioning of low poly "wire" guardrails at visitor sites. Especially in situations where visitors may be tempted to step over them and trip; for example at the Kata Tjuta sunset viewing site.
- ii) Develop closure policy for Valley of the Winds trail during extreme heat stress conditions. Suggest closure at first lookout to maintain a limited experience for visitors wishing to view the central valley of Kata Tjuta.
- iii) Upgrade unstable "creek section" of Valley of the Winds track.
- iv) Establish a number of key visitor emergency sites within the Park where shade shelters, emergency water, safety signage, and emergency telephones are provided. Suggested locations include: Base of the climb, Olga Gorge parking lot, Valley of the Winds parking lot, existing emergency water site on Valley of the Winds loop track. Brochures and road signs should indicate the locations of these sites.

#### 7.3.5 Open Country

- i) Continue to discourage visitor access except on tracks or guided walks



### 7.3.6 *Rock Monoliths*

- i) Maintain closure of Uluru according to existing policies for adverse wind and rain conditions.
- ii) Extend closure of Uluru under high temperature conditions (above 35°C) so that the last person to attempt the climb departs by 8.00am and is off the rock by 10.00am
- iii) Ensure effectiveness of closures with appropriate barriers, signage and Park Ranger presence.
- iv) Respect the social and psychological impact upon the Anangu associated with a visitor fatality or serious injury on Uluru or in any other part of the Park.
- v) "Channel" visitors past safety warning signs at the base of Uluru.
- vi) Extend and improve chain?
- vii) Professionally guided climbs only?
- viii) Institute a "formal direction" under the National Parks Act to make the climb a prosecutable offence for visitors with a recognised health disorder (e.g. heart condition, epilepsy, high blood pressure, etc.).
- ix) Require Uluru rock climbers to take out insurance?
- x) Require people who are rescued to pay costs of being rescued?
- xi) Maintain total closure of the Kata Tjuta monoliths
- xii) Close climb - optimal option
- xiii) Close climb in hottest summer months only - secondary option

### 7.4 **Emergency Response Readiness**

- i) Encourage continued involvement of RFDS paramedics in the training provision for Park staff, the safety education component of tour operator workshops and in the appropriate content of risk communication initiatives.
- ii) Regularly check, maintain and, where appropriate, replace emergency equipment.
- iii) Coordinate safety equipment supplies amongst the key emergency response groups (Park, NTES, RFDS, Police).
- iv) Encourage greater volunteer involvement in emergency response activities.
- v) Establish a register of rescue personnel, including their expertise, certification, location, contact numbers, availability, etc. This should incorporate Anangu where appropriate (e.g. tracking expertise in searches for lost people).

### 7.5 **Emergency Response Protocol**

- i) Need to formalise and document the cooperative emergency response arrangements, responsibilities and personal competencies of the Police, Park staff, Anangu, RFDS, NTES and associated volunteers. The system currently works very effectively, though this is mostly attributable to the high level of commitment of the current key personnel involved. (Indicate relationships on flow chart).
- ii) Need to formalise arrangements for post critical incident debriefing and counselling.
- iii) Improve the service road into the Valley of the Winds emergency water site to facilitate ambulance access and smoother victim evacuation.



## 7.6 Safety of Park Staff and Traditional Owners

Although it was not a prime focus of this study, the authors felt that some observations regarding the safety of Park staff and Traditional Owners may be of some value.

Park management should consider or formalise the following strategies to minimise critical incident stress amongst its employees, Park residents and volunteer rescuers:

- i) Selection of rescuers according to appropriate physical condition, technical expertise and personality characteristics.
- ii) Preparation of staff to encounter victims or dead bodies. This will involve professional critical incident management training to provide simulated accident experiences and the development of anticipatory grief as a buffer to real life exposure.
- iii) Allow staff to choose how closely involved with the rescue operation they wish to be during a given incident.
- iv) Allow staff adequate time to eat and rest after a rescue.
- v) Encourage opportunities for post-incident strenuous aerobic exercise to relieve tension and achieve greater muscular relaxation. Also promote regular physical training to maintain a high level of fitness.
- vi) Conduct a critical incident stress debrief within 24 to 48 hours after the rescue. This may necessitate facilitation by a professional counsellor if senior park personnel do not feel competent to handle potential outcomes.
- vii) Following physical and emotional recovery, the rescue team should objectively critique the rescue and learn from successes and mistakes which contribute to an improved emergency response plan in the future.
- viii) Provide access to professional grief/trauma counselling for individual staff members as required.
- ix) Discourage visitors from climbing Uluru.

It would also be useful for the Park to make their staff and rescuers aware of ways they can help themselves and each other to alleviate the emotional impact of a traumatic event (Tasmanian Outdoor Leadership Council, 1996). Some examples include:

Self help	Mutual support
<ul style="list-style-type: none"> <li>• Rest</li> <li>• Contact friends</li> <li>• Have a companion at home</li> <li>• Don't resist normal signs and symptoms</li> <li>• Maintain normal schedule if possible</li> <li>• Eat well</li> <li>• Keep active</li> <li>• Avoid boredom</li> <li>• Express feelings</li> <li>• Talk to loved ones</li> <li>• Seek counselling if feelings become prolonged or too intense</li> </ul>	<ul style="list-style-type: none"> <li>• Listen carefully</li> <li>• Spend time with each other</li> <li>• Offer assistance and a listening ear, even when help has not been sought</li> <li>• Offer reassurance of personal safety</li> <li>• Offer help with everyday tasks (cleaning, cooking, family care)</li> <li>• Allow opportunities for private time</li> <li>• Don't take another's anger or feelings personally</li> <li>• Offer understanding and assistance and not judgemental statements</li> </ul>

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## 9. APPENDICES

### 9.1 Appendix 1: Uluru VRM Process Framework

Implementation Framework Based on the Parks Canada (1996) Visitor Risk Management (VRM) Process

Task	Action
P.1 Establish legislative and organisational (Parks Aust) context.	<p>a. Identify and review relevant Commonwealth and Territory legislation (WHS, Parks, Tourism) to establish legal obligations and required codes of practice.</p> <p>b. Identify and review relevant Parks Aust and Park policy documents (including Plan of Management, 1991) relating to public safety and risk management.</p> <p>c. Review priorities and outcomes indicated in the consultancy brief (31/3/97) and seek any clarifications from Julian.</p>

#### Step 1, Define VRM Program:

Task	Action
1.1 Identify information sources and flows.	a. Establish VRM team: Terry, John, Brendan, others?
1.2 Establish guiding principles for project.	<p>b. Identify all stakeholders and develop mailing list and contact database.</p> <p>a. Elaborate on intent of consultancy brief: E.G.</p> <ul style="list-style-type: none"> <li>• Identify and evaluate hazards and associated risks.</li> <li>• Seek information from a variety of sources.</li> <li>• Review current risk management practices.</li> <li>• Recommend modified or new strategies for risk management and emergency response.</li> </ul>
1.3 Define scope of project.	<p>a. Identify target groups:</p> <ul style="list-style-type: none"> <li>• Park visitors.</li> <li>• Park staff engaged in rescues.</li> </ul> <p>b. Identify permitted and promoted visitor activities.</p> <p>c. Specify and map "public safety zones" according to ROS/RCS: E.G.</p> <ul style="list-style-type: none"> <li>• Visitor centre/facilities/parking and viewing areas.</li> <li>• Highway corridors.</li> <li>• Track/attraction sites.</li> <li>• Open Country.</li> <li>• Rock Monoliths.</li> </ul> <p>d. Identify Visitor Activity Groups (VAGs) or market segments. E.G.</p> <ul style="list-style-type: none"> <li>• "FITs."</li> <li>• Resort based coach tour groups.</li> <li>• Excursion coach tour groups.</li> </ul>
1.4 Identify project outputs.	<p>a. E.G.</p> <ul style="list-style-type: none"> <li>• Visitor Risk Management Audit - Risk assessment summary.</li> <li>• Draft Visitor Safety Plan.</li> <li>• Final Visitor Safety Plan.</li> </ul>



**Step 2, Assess Risk Issues:**

Task	Action
<p>2.1 Identify hazards and associated risk issues for all visitor activities in each public safety zone according to the categories:</p> <ul style="list-style-type: none"> <li>• Environmental</li> <li>• Infrastructure and equipment</li> <li>• Communications</li> <li>• Visitor characteristics</li> <li>• Program, e.g. training.</li> </ul>	<p>a. VRM team to identify issues via brainstorming.</p> <p>b. VRM team to identify issues via site assessment - digital mapping and photography.</p> <p>c. Establish typical visitor profile from prior visitor survey data.</p> <p>d. Survey stakeholders to gather accident/ incident data and establish if relevant records exist:</p> <ul style="list-style-type: none"> <li>• incident type</li> <li>• activity involved</li> <li>• location</li> <li>• circumstances/ causes</li> <li>• nature/severity of injuries</li> <li>• victim profiles - demographics, behaviour, etc</li> <li>• emergency response approach</li> <li>• numbers and status of rescuers involved.</li> </ul> <p>e. Survey stakeholders to establish:</p> <ul style="list-style-type: none"> <li>• perceived risk issues</li> <li>• existing risk management measures and their effect on the natural and cultural values of the Park and on the visitor experience</li> <li>• existing emergency (or critical incident response) procedures</li> <li>• litigation history.</li> </ul> <p>f. Interview stakeholders and review any records to gather accident/incident data, and establish risk issues and existing management and emergency responses.</p> <p>g. Review and evaluate the types, content and timing of risk communication sources targeted to particular VAGs.</p> <p>h. Collect local/regional newspaper accounts of past incidents.</p> <p>i. Evaluate Park incident reporting and storage system, safety equipment inventory and storage facilities.</p>
<p>2.2 Evaluate all identified risk issues and assign priorities.</p>	<p>a. Assign numerical values to each risk issue according to:</p> <ul style="list-style-type: none"> <li>• potential frequency</li> <li>• potential severity</li> <li>• visitor awareness of hazard</li> <li>• degree of Park control.</li> </ul>

**Step 3, Identify Service Categories and Objectives:**

Task	Action
3.1 Identify service categories.	a. Specify public safety program components: E.G. <ul style="list-style-type: none"> <li>• commitment to ongoing risk management and planning</li> <li>• risk communication</li> <li>• risk prevention</li> <li>• emergency response readiness</li> <li>• emergency response protocol.</li> </ul>

**Step 4, Evaluate Existing Levels of Service:**

Task	Action
4.1 Identify existing risk control measures.	a. Specify existing risk control measures according to each identified service category and public safety zone. Address each risk issue in order of risk priority.
4.2 Evaluate existing risk control measures.	a. Evaluate measures adopted to address each risk issue: <ul style="list-style-type: none"> <li>• adequate (A)</li> <li>• partially adequate (PA)</li> <li>• no measure currently provided (NP)</li> <li>• over-provided (OP).</li> </ul>
4.3 Identify alternative risk control measures.	a. VRM team to brainstorm alternatives for each risk issue evaluated as PA, NP, or OP. Criteria to be applied include: <ul style="list-style-type: none"> <li>• priority of issue</li> <li>• location of issue</li> <li>• existing policies/ guidelines</li> <li>• existing control measures</li> <li>• stakeholder and public preferences</li> <li>• effectiveness, efficiency, economy</li> <li>• potential cooperative partnerships.</li> </ul>

**Step 5, Define Service Delivery:**

Task	Action
5.1 Compile Draft Visitor Safety Plan.	a. Write summaries and appendices for all data and information collected through steps 1 to 4 above. b. Highlight recommended changes to level of risk management service delivery.
5.2 Submit Draft Visitor Safety Plan.	

**Step 6, Produce Visitor Safety Management Plan:**

Task	Action
6.1. Compile and submit ten copies of final Visitor Safety Management Plan.	

**Step 7, Implement, Evaluate and Monitor (not part of consultancy):**

Task	Action
<p>7.1 Implement proposed risk control strategies.</p> <p>7.2 Evaluate the effectiveness of risk control measures implemented.</p> <p>7.3 Monitor the risk management program.</p>	<p>a. Park management to implement recommendations.</p> <p>a. Collect evaluation data via:</p> <ul style="list-style-type: none"> <li>▪ incident data</li> <li>▪ Park Ranger reports</li> <li>▪ police reports</li> <li>▪ facility inspection schedules</li> <li>▪ visitor comment or feedback sources</li> <li>▪ WHS audits</li> <li>▪ safety message response</li> <li>▪ reports from service areas</li> <li>▪ visitor survey questionnaires.</li> </ul> <p>b. Compare evaluative data with risk management service objectives. Rate compliance as excellent, good, fair, poor.</p> <p>a. Park should establish an on-site VRM team.</p> <p>b. Park VRM team to conduct an annual review of the Visitor Safety Management Plan.</p>



## 9.2 Appendix 2: Potential Hazards Check List

<i>9.2.1 Natural and Cultural Hazards</i>	
<b>Topographical Hazards</b>	<b>Geological Hazards</b>
Examples: <ul style="list-style-type: none"> <li>• Steep Terrain</li> <li>• Rough Terrain</li> <li>• Confusing Terrain and Features</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Weathered rock</li> </ul>
<b>Hydrological Hazards</b>	<b>Meteorological Hazards</b>
Examples: <ul style="list-style-type: none"> <li>• Flooding</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Frost</li> <li>• Strong Winds</li> <li>• Heat Exposure</li> <li>• Lightning</li> <li>• Hail</li> <li>• Fog</li> </ul>
<b>Faunal Hazards</b>	<b>Floral hazards</b>
Examples: <ul style="list-style-type: none"> <li>• Domestic Animals</li> <li>• Dingoes</li> <li>• Snakes</li> <li>• Scorpions</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Tree Failure</li> <li>• Toxic Plants</li> <li>• Stinging/Thorny Plants</li> <li>• Wild Fires</li> </ul>
<b>Insect/Parasite and Disease Hazards</b>	<b>Cultural Hazards</b>
Examples: <ul style="list-style-type: none"> <li>• Bees, Wasps, Hornets</li> <li>• Ticks/Lice</li> <li>• Giardiasis</li> <li>• Water Borne Pathogens</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Historic Buildings</li> <li>• Engineering Works</li> <li>• Archaeological resources</li> <li>• Historic Ruins</li> <li>• Historic Landscapes</li> </ul>
<i>9.2.2 Infrastructural Hazards (All subject to seasonal variations)</i>	
<b>Trail Hazards</b>	<b>Road Hazards</b>
Examples: <ul style="list-style-type: none"> <li>• Trail Surface</li> <li>• Support Structures</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Road Surface</li> <li>• Road Design</li> <li>• Support Structures</li> </ul>
<b>Camping and Day Use Hazards</b>	<b>Building Hazards</b>
Examples: <ul style="list-style-type: none"> <li>• Water Quality</li> <li>• Sewage/Waste Disposal</li> <li>• Fire Pits and Barbecues</li> <li>• Garbage Bins/ Containers Disposal</li> <li>• Play Equipment</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Non-conformity to Codes</li> <li>• Dim Lighting</li> <li>• Water Quality</li> <li>• Sewage/Waste</li> </ul>

<b>9.2.3 Infrastructural Hazards (continued) (All subject to seasonal variations)</b>	
<b>Operation Hazards</b>	
Examples: <ul style="list-style-type: none"> <li>• Garbage Removal</li> <li>• Road/Highway Maintenance</li> <li>• Trail/Route Maintenance</li> <li>• Facility Cleaning</li> <li>• Guide/Concession Agreements</li> </ul>	

<b>9.2.4 Communication Hazards</b>	
<b>Text Hazards</b>	<b>Sign Hazards</b>
Examples: <ul style="list-style-type: none"> <li>• Information not accurate</li> <li>• Information not available</li> <li>• Information not targeting proper clients</li> <li>• Information not provided at proper stage of trip cycle</li> <li>• Self-reliance not promoted or promoted inappropriately</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Information not accurate</li> <li>• Defaced or Weathered</li> <li>• Inappropriate Location</li> </ul>

<b>9.2.5 Visitor Characteristics Hazards</b>	
<b>Individual Characteristics</b>	<b>Drug and Alcohol Hazard</b>
Examples: <ul style="list-style-type: none"> <li>• Mental Health/Disability</li> <li>• Physical Health/Disability</li> <li>• Age</li> <li>• Education</li> <li>• Activity Awareness/Preparedness</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Poor Judgement</li> <li>• Dangerous Behaviour</li> </ul>
<b>Personal Equipment Hazards</b>	<b>Group Characteristics</b>
Examples: <ul style="list-style-type: none"> <li>• Condition of Equipment/Clothing/ Footwear</li> <li>• Appropriateness of Equipment/ Clothing/Footwear</li> <li>• Familiarity with use</li> </ul>	Examples: <ul style="list-style-type: none"> <li>• Size of Group</li> <li>• Leadership Quality</li> <li>• Peer Pressure</li> <li>• Group Preparation</li> </ul>

9.3 Appendix 3: Key People Contacted Regarding Park Risk Management

Name	Phone	Agency
s47F		Mutitjulu Community
		Education, Information and Public Relations Manager, Uluru Kata Tjuta National Park
		Chief Park Ranger - Uluru Kata Tjuta National Park
		Senior Medical Officer, Royal Flying Doctor Service, Yulara Medical Centre
		Senior Paramedic, Royal Flying Doctor Service, Yulara Medical Centre
		Senior Paramedic, Royal Flying Doctor Service, Yulara Medical Centre
		Yulara Police
		NT Emergency Service, Alice Springs
		Yulara airport manager and also of the Northern Territory Emergency Service, Yulara
		Unit Officer, Northern Territory Emergency Service, Yulara
		People, Planning and Support, Canberra
		Assistant Secretary - Parks Australia North, Darwin
		Assistant Secretary - Strategic Planning and Development, Canberra
John Hicks	s22	Director Human Resources, Biodiversity Group, Canberra
Peter Woods		Northern Territory Tourism Commission, Alice Springs
s22	s47F	Watarrka National, Parks and Wildlife Commission of the Northern Territory
		Ayers Rock Resort
		Anangu Tours
		Uluru Experience
		VIP
		AAT Kings
		Ayers Rock Plus
		Sahara Tours
		Coroners Court, Alice Springs
		Regional Parks Manager (South), Parks and Wildlife Commission of the Northern Territory
		CMG Insurance Brokers
		Human Resources Manager, Parks and Wildlife Commission of the Northern Territory
		Australian Government Solicitors Office, Darwin
		Parks Australia, Uluru Kata Tjuta



**9.4 Appendix 4: Sample Stakeholder Survey Questionnaire**

**ULURU - KATA TJUTA NATIONAL PARK  
VISITOR RISK MANAGEMENT ASSESSMENT AND VISITOR SAFETY MANAGEMENT PLAN  
1997**

**STAKEHOLDER SURVEY**

- Your assistance in completing this survey will contribute to a realistic assessment of risks in the Park and the development of an appropriate and workable visitor safety management strategy.
- Please complete the following questions, and feel free to attach additional sheets if there is not enough space.
- Any information you provide will remain confidential. Only summary information will be presented in the plan.
- The survey is being conducted by Terry Brown (Centre for Leisure Research, Griffith University) and John Wood (EDAW) on behalf of the Australian Nature Conservation Agency.

**SECTION 1: STAKEHOLDER DETAILS**

- 1) Name of organisation, group or company: \_\_\_\_\_
- 2) Number of years operating in or associated with Uluru - Kata Tjuta National Park: \_\_\_\_\_
- 3) Your name: \_\_\_\_\_
- 4) Telephone Number: \_\_\_\_\_ 5) Facsimile Number: \_\_\_\_\_

**SECTION 2: IDENTIFICATION OF RISK ISSUES**

- 1) Are you aware of any safety issues or safety "hot spots" within the Park?  
 YES  NO If yes, please list issues below:

ISSUES	PRIORITY	LOCATION IN PARK

Over ....

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2) Do you keep any records or statistics concerning safety issues within the Park? (These may include details about accidents, incidents, safety issues, or your organisation's emergency response approach in the event of an accident occurring).

YES    NO

If yes, please list below any documents or records that could be made available to the consultancy team (Either, copies could be provided or, records could be viewed and discussed during a pre-arranged meeting when the team visits the area from 16-25 June):

DETAILS OF REPORTS/DOCUMENTS	COPIES AVAILABLE (YES/NO)

3) Is there any other person or group either within or outside your organisation who you think we should talk to about safety issues within the Park?

YES    NO   If yes, please list contacts below:

NAME OF CONTACTS	ADDRESS	PHONE

4) Any other comments about safety issues and safety management in the Park?

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**THANK YOU FOR YOUR ASSISTANCE**  
Please return by fax directly to Park Headquarters (08 8956 2064) by 10 June 1997.

## 9.5 Appendix 5: Uluru Kata Tjuta Visitor Risk Assessment Matrix

### Risk Issues Identified by Public Safety Zone and Risk Category

#### A. RISK ISSUES COMMON TO ALL ZONES

##### A.E Environmental

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem <sup>*1</sup>	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
A.E.1	Hot dry weather, heat exposure	Dehydration/ heat stress/ hyperthermia		33	14	Insufficient data for all items	18
A.E.2	High solar radiation	Sunburn/ conjunctivitis			3		8
A.E.3	Cold winter weather - sub-zero temperatures	Hypothermia/ reduced coordination		4	1		8
A.E.4	Storms - lightning	Burns/ electrocution					8
A.E.5	Storms - heavy rain, flash flooding	Stranding/ drowning					8
A.E.6	Storms - hail	Impact injury					8
A.E.7	Strong winds - blowing sand	Eye damage, respiratory distress					8
A.E.8	Fauna - dingoes	Bites/ trauma infection					8
A.E.9	Fauna - venomous snakes	Poisoning					8
A.E.10	Fauna - insects	Poisoning/ allergic reaction		1			8
A.E.11	Fauna - micro-organisms (contaminated water)	Digestive system disorders					8
A.E.12	Flora - toxic plants	Poisoning/ allergic reaction					8
A.E.13	Flora - spinifex	Puncture wounds/ infection					8
A.E.14	Bush fire	Burns		7	3		10
A.E.15	Earthquakes	Impact injuries					8
A.E.16	Lack of water availability	Dehydration			2		12

\*1 refer Section 5.3 (ii)

**A.1 Infrastructure and Equipment**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
A.I.1	Inadequate provision of shade	Dehydration/ heat stress/ hyperthermia/ sunburn			9		12

**A.C Communications**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
A.C.1	Text hazards - <ul style="list-style-type: none"> <li>• information not available</li> <li>• info available in English only</li> <li>• info not accurate</li> <li>• info not targeted to specific user groups</li> <li>• info not provided at appropriate stage of trip cycle</li> <li>• self-reliance not promoted</li> </ul>	Injuries resulting from lack of visitor awareness			7		12
A.C.2	Audio visual hazards - see items above	Injuries resulting from lack of visitor awareness					10
A.C.3	Sign hazards - <ul style="list-style-type: none"> <li>• information not accurate</li> <li>• info available in English only</li> <li>• defaced or weathered</li> <li>• in-appropriate location</li> <li>• absence of sign where needed</li> </ul>	Injuries resulting from lack of visitor awareness			2		12



**A.V Visitor Characteristics**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Me Risk = 20)
A.V.1	Mixed tourist population - variable age, fitness, health, education, hazard awareness, preparedness	Injuries resulting from non-normal activities	2	33	16		18
A.V.2	Natural human characteristic of inquisitiveness	Injuries resulting from non-normal activities and poor judgement		1	1		8
A.V.3	50% international visitors	Injuries resulting from lack of familiarity			4		12
A.V.4	25% non-English speaking visitors	Injuries resulting from lack of understanding					8
A.V.5	Visitor drug/ alcohol use	Injuries resulting from lack of behavioural control			1		8
A.V.6	Inadequate or inappropriate personal clothing or equipment	Injuries resulting from lack of preparedness			2		8
A.V.7	Most visitors in family or tour groups	Injuries resulting from deficient leadership or peer pressure to engage in inappropriate activities					8
A.V.8	Increasing summer visitation	Injuries resulting from increased exposure to heat stress			1		8

**A.P Program**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
A.P.1	Inadequate incident data available	Injuries arising from uninformed and deficient risk management program			6		12
A.P.2	Inadequate user statistics	Injuries arising from uninformed and deficient risk management program					10
A.P.3	Infrequent Park Ranger patrols or checks	Injuries arising from uninformed and deficient risk management program					8
A.P.4	Inadequate staff emergency response training	Injuries arising from emergency response or rescue errors			1		8
A.P.5	Inadequate staff first aid training	Injuries arising from treatment errors			1		8
A.P.6	Inadequate or unsafe rescue equipment	Injuries arising from equipment failure					8
A.P.7	Inadequate storage or maintenance of rescue equipment	Injuries arising from inaccessible or damaged equipment					8
A.P.8	Inadequate provision of emergency alarms	Injuries arising from late response			4		12
A.P.9	Inadequate communication between emergency response groups	Injuries arising from uncoordinated response			3		10
A.P.10	Inadequate tour operator safety training	Injuries due to lack of safety awareness or inappropriate emergency response			2		8
A.P.11	Inadequate Park Ranger contact with visitors	Injuries arising from deficient risk management program			2		8
A.P.12	Inadequate provision and use of emergency radios by tour operators	Injuries arising from late response			1		8
A.P.13	Inadequate Park Ranger/ emergency staff fitness	Exacerbation of visitor injuries, and possible staff injuries due to physical limitations of response			5		10
A.P.14	Transience of Park and other emergency service staff	Injuries arising from inadequate or uncoordinated response			3		8

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A.P.15	Inadequate provision of mobile telephone coverage	Injuries arising from late response			2		10
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**B. ZONE SPECIFIC RISK ISSUES**

**B.1.E Zone: 1. Intensive: Cultural Centre/Facilities/Parking and Viewing Areas  
Risk Category: 1. Environmental**

No specific risk issues

**B.1.I Zone: 1. Intensive: Cultural Centre/Facilities/Parking and Viewing Areas  
Risk Category: 2. Infrastructure and Equipment**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.1.I.1	Buildings and structures - non-conformity to codes and standards	Injuries resulting from tripping, falling or impact		1			8
B.1.I.2	Buildings and structures - dim lighting	Injuries resulting from tripping, falling or impact		1			8
B.1.I.3	Drinking water quality	Bacterial or microbial infection					8
B.1.I.4	Inadequate sewage/ waste disposal	Bacterial or microbial infection					8
B.1.I.5	Shared use - vehicles/ pedestrians	Impact injuries			7		10
B.1.I.6	Traffic congestion	Impact injuries			6		10
B.1.I.7	Structural fire exacerbated by lack of smoke alarms or sprinklers	Burns			2		8

**B.1.C Zone: 1. Intensive: Cultural Centre/Facilities/Parking and Viewing Areas  
Risk Category: 3. Communications**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.1.C.1	Site traffic flow signage	Impact injuries					8
B.1.C.2	Failure to incorporate safety messages into interpretation interventions	Injuries resulting from lack of visitor awareness					8

**B.1.V Zone: 1. Intensive: Cultural Centre/Facilities/Parking and Viewing Areas  
Risk Category: 4. Visitor Characteristics**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.1.V.1	Climbing on vehicles or barrier fences to gain view or take photographs	Injuries from falling					8
B.1.V.2	Aggressive behaviour to establish viewing position	Injuries from confrontations					8

**B.1.P Zone: 1. Intensive: Cultural Centre/Facilities/Parking and Viewing Areas  
Risk Category: 5. Program**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.1.P.1	Inadequate or poorly supplied first aid stations	Injuries resulting from unavailable supplies					8



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**B.2.E Zone: 2. Intensive: Highway Corridors  
Risk Category: 1. Environmental**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.2.E.1	Sand drifts on road	Impact injuries from loss of vehicle control					8
B.2.E.2	Blowing sand	Impact injuries due to restricted visibility					8
B.2.E.3	Infrequent rain - wet, slippery roads	Impact injuries from loss of vehicle control					8
B.2.E.4	Winter nocturnal freezing temperatures - frost, black ice	Impact injuries from loss of vehicle control					8

**B.2.I Zone: 2. Intensive: Highway Corridors  
Risk Category: 2. Infrastructure and Equipment**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.2.I.1	Road surface defects - potholes, depressions, other irregularities	Impact injuries from loss of vehicle control			1		8
B.2.I.2	Road shoulder defects - drop-offs, erosion, washouts	Impact injuries from loss of vehicle control			1		8
B.2.I.3	Poor drainage - water pondage	Impact injuries from loss of vehicle control					8
B.2.I.4	Lack of or inadequate guardrails	Impact injuries from loss of vehicle control					8
B.2.I.5	Unprotected roadside installations - poles, etc	Impact injuries					8
B.2.I.6	Obstacles on road - natural (e.g. branches, vegetation), discarded refuse	Impact injuries from loss of vehicle control			2		8
B.2.I.7	Poor road design - geometry, visibility	Impact injuries from loss of vehicle control					8
B.2.I.8	Inadequate or infrequent maintenance	Impact injuries from deterioration in road condition					8

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B.2.1.9	Inadequate provision of road side shoulders for scenic viewing	Impact injuries			2		8
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**B.2.C Zone: 2. Intensive: Highway Corridors  
Risk Category: 3. Communications**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation(Max Risk = 20)
B.2.C.1	Signage hazards <ul style="list-style-type: none"> <li>• missing signs</li> <li>• obscured signs</li> <li>• conflicting signs</li> <li>• damaged or defaced signs</li> </ul>	Impact injuries from loss of vehicle control			1		8
B.2.C.2	Failure to warn of special vehicle maintenance requirements - air conditioning, engine cooling	Heat stress during periods of vehicle breakdown					8

**B.2.V Zone: 2. Intensive: Highway Corridors  
Risk Category: 4. Visitor Characteristics**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation(Max Risk = 20)
B.2.V.1	Dangerous or erratic driving behaviour	Impact injuries from loss of vehicle control		3	5		12
B.2.V.2	Driver fatigue	Impact injuries from loss of vehicle control					8
B.2.V.3	Drink driving	Impact injuries from loss of vehicle control					8
B.2.V.4	Attraction effect - En route distraction resulting in wandering from vehicle and getting lost	Heat stress and other environment related injuries					8

**B.2.P Zone: 2. Intensive: Highway Corridors  
Risk Category: 5. Program**

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Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.2.P.1	Unrealistic/unenforceable speed limits	Impact injuries from loss of vehicle control			2		8

**B.3.E Zone: 3. Intensive/Intermediate: Track/Attraction Sites  
Risk Category: 1. Environmental**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.3.E.1	Caves	Head impact, falling					8
B.3.E.2	Rockfall from adjacent weathered rock cliffs	Impact injuries					8
B.3.E.3	Water pools	Drowning					8
B.3.E.4	Waterfalls	Abrasion and impact injuries from slipping and falling					8

**B.3.I Zone: 3. Intensive/Intermediate: Track/Attraction Sites  
Risk Category: 2. Infrastructure and Equipment**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.3.I.1	Trail surface defects - potholes, depressions, other irregularities	Tripping and falling		10	4		14
B.3.I.2	Obstacles on track	Tripping and falling			1		8
B.3.I.3	Elevated walkways and platforms - exposed edges, inadequate or faulty guardrails, uneven joints, congestion	Tripping and falling			2		8
B.3.I.4	No or inadequate toilet facilities	Pollution and bacterial or microbial infection/ resistance to drink water			1		8
B.3.I.5	Inadequate or infrequent maintenance	Tripping and falling					8



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B.3.I.6	Disorientation on indistinct trail - getting lost	Heat stress and other environment related injuries					8
B.3.I.7	Low fencing or barriers	Tripping and falling			4		8

**B.3.C Zone: 3. Intensive/Intermediate: Track/Attraction Sites  
Risk Category: 3. Communications**

No specific risk issues

**B.3.V Zone: 3. Intensive/Intermediate: Track/Attraction Sites  
Risk Category: 4. Visitor Characteristics**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.3.V.1	Aggressive behaviour - violent attack at remote or quiet site	Assault injuries					8
B.3.V.2	Depreciative behaviour - throwing or dropping rocks	Impact injuries					8

**B.3.P Zone: 3. Intensive/Intermediate: Track/Attraction Sites  
Risk Category: 5. Program**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.3.P.1	Inadequate provision of drinking water	Dehydration			5		14
B.3.P.2	Inadequate provision of short walk options	Injuries resulting from over-exertion or increased exposure to environmental hazards			1		8
B.3.P.3	Inadequate provision or standard of Park service roads for ambulance evacuation	Injuries resulting from late response or delayed evacuation to medical facilities			1		8



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**B.4.E Zone: 4. Minimal: Open Country  
Risk Category: 1. Environmental**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.4.E.1	Confusing terrain - disorientation due to repetitious landscape and poor visibility in dune swales	Heat stress and other environment related injuries		2	2		10

**B.4.I Zone: 4. Minimal: Open Country  
Risk Category: 2. Infrastructure and Equipment**

No specific risk issues

**B.4.C Zone: 4. Minimal: Open Country  
Risk Category: 3. Communications**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.4.C.1	Inadequate promotion of self-reliance message (voluntary assumption of risk)	Injuries resulting from lack of visitor awareness					8

**B.4.V Zone: 4. Minimal: Open Country  
Risk Category: 4. Visitor Characteristics**

No specific risk issues

**B.4.P Zone: 4. Minimal: Open Country  
Risk Category: 5. Program**

No specific risk issues

**B.5.E Zone: 5. Intensive to Minimal: Rock Monoliths**  
**Risk Category: 1. Environmental**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.5.E.1	The Uluru climb - steep and exposed	Falling	1	58	7		18
B.5.E.2	The Uluru climb - steep and exposed, requiring sustained effort	Heart attack	5	10	2		18
B.5.E.3	The Uluru climb - exposure	Vertigo, anxiety attack, physical exhaustion	1	36	7		18
B.5.E.4	Illegal climbing - steep, exposed, smooth surface, loose rock flakes	Slipping, falling, heart attack, exhaustion		2	1		10
B.5.E.5	Strong winds	Falling					8

**B.5.I Zone: 5. Intensive to Minimal: Rock Monoliths**  
**Risk Category: 2. Infrastructure and Equipment**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.5.I.1	The Uluru climb chain - false sense of security	Falling					8
B.5.I.2	The Uluru climb chain - failure due to inadequate maintenance	Falling					8
B.5.I.3	Disorientation on indistinct route - getting lost	Falling					8

**B.5.C Zone: 5. Intensive to Minimal: Rock Monoliths**  
**Risk Category: 3. Communications**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.5.C.1	Inadequate promotion of cultural perspective on climbing Uluru and other monoliths	Anangu grief and stress from sense of responsibility for victims			2		12
B.5.C.2	Strong tourism industry promotion of Uluru climb - possibly encouraging "at-risk" visitors to climb	Slipping, falling, heart attack, exhaustion			2		10

**B.5.V Zone: 5. Intensive to Minimal: Rock Monoliths**  
**Risk Category: 4. Visitor Characteristics**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.5.V.1	Positive visitor attitude towards climbing Uluru - promoting challenge and adventure seeking behaviour	Slipping, falling, heart attack, exhaustion			1		8
B.5.V.2	Strong conquest behaviour of young males in particular - promoting climbing behaviour	Slipping, falling, heart attack, exhaustion			1		8

**B.5.P Zone: 5. Intensive to Minimal: Rock Monoliths  
Risk Category: 5. Program**

Issue Code	Hazard (or Danger)	Risk Issue	Number of Fatalities	Number of Injuries	Number of Citations as a Problem	Typical Victim Profile: Gender, Age, VAG	Risk Evaluation (Max Risk = 20)
B.5.P.1	Inadequate provision (training, procedures and equipment) for vertical rock rescue	Exacerbation of visitor injuries, and possible staff injuries due to equipment failure or falling			5		10
B.5.P.2	Inadequate provision for helicopter rescue	Exacerbation of visitor injuries, and possible staff injuries due to equipment failure or falling			1		8
B.5.P.3	Complex rescues	Exacerbation of visitor injuries, and possible staff injuries or emotional distress due to equipment failure or falling			8		10
B.5.P.4	Inadequate provision of alternative activities during periods of climb closure	Injuries resulting from visitor temptation to climb illegally			2		8



**ULURU KATA TJUTA NATIONAL PARK:  
VISITOR RISK MANAGEMENT ASSESSMENT AND VISITOR SAFETY PLAN**

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**C. RISK ISSUE PRIORITISATION**

<b>Risk Priority</b>	<b>Issue Code</b>	<b>Risk Issue</b>	<b>Risk Evaluation Score (Max Risk = 20)</b>	<b>Public Safety Zone(s)</b>	<b>Risk Category</b>
1	A.E.1	Hot dry weather - Dehydration/ heat stress/ hyperthermia	18	All	1
2	A.V.1	Visitor characteristics - Injuries resulting from non-normal activities	18	All	4
3	B.5.E.1	Uluru - Falling	18	5	1
4	B.5.E.2	Uluru - Heart attack	18	5	1
5	B.5.E.3	Uluru - Vertigo, anxiety attack, physical exhaustion	18	5	1
6	B.3.I.1	Trail surface defects - Tripping and falling	14	3	2
7	B.3.P.1	Inadequate provision of drinking water - Dehydration	14	3	5
8	A.E.16	Lack of water availability - Dehydration	12	All	1
9	A.I.1	Inadequate provision of shade - Dehydration/ heat stress/ hyperthermia/ sunburn	12	All	2
10	A.C.1	Risk communication hazards - brochures	12	All	3
11	A.C.3	Risk communication hazards - signs	12	All	3
12	A.V.3	50% international visitors - Lack of familiarity	12	All	4
13	A.P.1	Inadequate incident database - uninformed risk management program	12	All	5
14	A.P.8	Inadequate provision of emergency alarms - delayed response	12	All	5
15	B.2.V.1	Dangerous or erratic driving behaviour - impact injuries	12	2	4
16	B.5.C.1	Inadequate promotion of cultural perspective on climbing Uluru and other monoliths - Anangu grief and psychological stress	12	5	3

## 9.6 Appendix 6 : Selected Park Policies and Procedures Relating to Visitor Safety

Note: The following Park policies undergo continual refinement and are included here to illustrate documentation as at July 1997

### 9.6.1 Emergency Response Procedure at Uluru National Park



# emergency

## emergency response procedure at Uluru National Park

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An emergency situation is usually initiated by activation of one of the radio alarms, although increasingly Park staff are being notified by phone or on location.

### **duties of HQ, CC and Duty Ranger**

If one of the alarms is activated, *Headquarters* (8.00am-4.30pm weekdays), *Cultural Centre Ranger* (8.00am-4.30pm weekends) or the *Duty Ranger* (4.30pm-8.00am) is to answer it using the standard response. Whether by radio or phone, as much information as possible about the incident will be obtained and recorded. Unless the incident is trivial, the Operations Manager, Work Supervisor or other Senior Ranger will be contacted immediately to initiate a response.

If the incident involves any kind of injury or potential danger to public or staff, the Yulara Ambulance will be called on 000 and asked to attend the scene. The paramedics will be supplied with as much information as possible.

If the incident involves death, serious injury or danger, or may need a big rescue or search, the Yulara Police will be informed by calling 8956 2166 or 000.

If the incident may require a helicopter, it is the response co-ordinator who will authorise its use.

Professional Helicopter Services can be contacted on 8956 2003.

Ayers Rock Helicopters can be contacted on 8956 2077.

There is a portable air band radio on the desk in the chief ranger's office. It is set at s47E(d) the only air band frequency used within 50km of Yulara airport. Use your National Parks callsign, the callsign for PHS is s47E(d) and that for ARH is s47E(d). The Police callsign is s47E(d).

HQ, CC or Duty Ranger will then keep a running log or communications record, recording times, communications, actions taken, staff involved and names and addresses of victims and witnesses. This will later be filed with the incident report.

### **duties of response co-ordinator**

The initial response will be co-ordinated by (in order of priority, if available) the Operations Manager, Work Supervisor, other Senior Ranger or Duty Ranger.

The closest available Ranger will be dispatched to the scene to provide a *sitrep* (situation report). Any relevant information will be passed on to paramedics or other authorities.

If the situation may require a rescue or search, five Rangers will be put on initial stand-by, awaiting further information from the *sitrep*.

In the event of a large incident or disaster, the most senior Police Officer available will take overall control of the incident. He or she is the only person authorised to call in the Northern Territory Emergency Service.

The Police Officer in charge will set up a control point from which to co-ordinate the response. The most suitable place in the Park is the Ranger Station meeting room. Parks communication will go through the Parks response co-ordinator, who will liaise with the Police Officer in charge.



### **requirements of a sitrep**

The Ranger attending the scene will first check for personal danger and danger to the public. The initial situation report will describe exact location and situation. Medical information will be reported by following the standard medical sitrep form. Descriptions of people will include *gender, age, nationality, height, build and colour of clothing*. Vehicles will be described by means of *colour, year, make, type and rego number*, as well as condition and contents. As much information as possible will be obtained from patients, friends, tour guides and passers-by. Anything relevant will be passed on to the response co-ordinator. If immediate back-up is required, do not hesitate to ask for it.

### **Uluru rescue**

If a person is injured or experiencing serious difficulties on the climb or up to 200m above the top of the chain, a standard climb stretcher rescue will be initiated.

If they are above this point, or have come down the side of the Rock somewhere, a helicopter rescue will be initiated. Ring PHS 8956 2003 or ARH 8956 2077 and ask them to meet the rescue party at the Ranger Station Helipad. If access to the victim may be difficult, take the following up in the helicopter:

- 3 black Cliff Rescue Kits
- All serviceable 11mm static rope
- Rock drill kit
- Spare radios
- Water
- Food

### **Kata Tjuta rescue**

The nearest available Ranger will be dispatched to the scene to administer first aid and provide a sitrep. If a stretcher rescue may be required, 5 more Rangers will attend the scene to carry the stretcher, picking up the stretcher from the Kata Tjuta toilets store on the way. Leather gloves will be worn when carrying the stretcher.

The Ambulance is not to drive into the Valley of the Winds beyond the emergency water tank. If necessary, supplies or rescuers may be carried further in a Parks trayback.

### **search**

A person is deemed missing after all initial and reasonable attempts at locating them have failed.

As much information as possible will be obtained about the situation from passers-by, tour guides etc. The information should include details of search procedures undertaken so far and a detailed description of the person, including:

- gender,
- age,
- nationality,
- name
- height,
- build,
- colour and length of hair,
- skin colour,
- colour of clothing,
- shoe type and sole pattern
- when and where they were last seen,
- which direction they were heading in,
- what condition they were in,
- whether they had water, food or a torch,
- what they were carrying,
- what they said,
- what plans they had,
- what temperament they had,
- how they might react in a stressful situation.

The Yulara Police will then be informed of the situation. The Officer-in-Charge will take control of the situation and set up a control point at a suitable location, normally the Meeting Room at the Ranger Station.

Remember that some staff will need to remain on reserve and rested in case of a protracted search.

### **wildfire**

Wildfires, as distinct from management burns, will be extinguished as soon as possible.

Any sighting of smoke will be reported to HQ or Duty Ranger immediately. The Chief Ranger, or if unavailable the Work Supervisor or other Senior Ranger, will then co-ordinate a response.

The nearest Ranger (having a rakehoe and fire overalls in their vehicle at all times) will be dispatched immediately to the fire ground to provide an initial sitrep. The sitrep will include:

- *exact location of fireground*
- *size and intensity of fire*
- *direction of spread of fire*
- *wind speed and direction*
- *general landform around fireground, particularly in direction of spread*
- *vegetation type and density around fireground, particularly in direction of spread*
- *ground cover density and dryness around fireground, particularly in direction of spread*
- *any other observations which would help to plan a response*

The Ranger will then mop up any small flank or finger fires, keeping HQ informed of any developments.

If the fire is small and does not threaten life or property, a small team of Rangers will be dispatched to put out the fire according to the instructions of the response co-ordinator. A number of staff will remain in reserve and rested in order to take over should the response become protracted. The Yulara Fire Service will be called as soon as possible and informed that we are aware of the fire and that at this stage we do not require their assistance.

If the fire is large or threatens life, health or assets, including important natural or cultural resources, a helicopter will be called and the response co-ordinator and another senior staff will go up in order to determine the full extent of the fire and response requirements.

If the fire threatens life, health or structural assets, the Yulara Fire Service will be called immediately on 000, given as much information as possible about the situation and asked to attend.

In a really big regional fire, as with other disaster situations, the Police Officer-in-Charge will assume overall command of the situation

### **general rules regarding emergency response**

Emergency response personnel will comprise, in order of priority, Rangers, Senior Rangers, Trainee Rangers, management staff.

Park staff with a blood alcohol content of over .05% will not participate in emergency response.

Regular updates on proceedings will be transmitted to the communications recorder.

Rangers and Senior Rangers will be prepared at all times to respond to an emergency.

Your torch will be fully charged and operational at all times.

Service cars will have at least half a tank of fuel at all times. The car will at all times have aboard and ready to use:

- *inflated spare tyre, jack, wheel brace, jumper leads, Ranger's tool kit*
- *rakehoe, posthole shovel, crowbar*
- *full 20 litre water container*
- *maps*
- *rescue kit*

Rescue kits (WE daypacks, about 30l) will contain:

- *walkers first aid kit*
- *fire overalls and socks*
- *japara raincoat*
- *Slings and 3 large steel karabiners*
- *full waterbottles and belt*
- *pocket knife*
- *tinned food and/or army ration packs*
- *cotton araphat hat*
- *riggers gloves*
- *glarefoil polaroid shades*
- *sunblock*
- *compass*
- *whistle*
- *cyalume and flare*
- *flagging tape*
- *maps*
- *notebook and pen*

Wrote by: SATF  
Updated: 20 September, 1997  
Template file: g:\general\policy\emergency.doc  
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9.6.2 *Duty Ranger After Hours Duty Policies and Emergency Procedures*



# duty ranger

*after hours  
duty policies  
and  
emergency  
procedures*

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The Duty Ranger is responsible for being an after hours contact point for the Park in the event of an emergency. This duty is signified on the roster by a 25% shaded area on the daily duties square.

The hours of duty are from 4.30pm till 8.30am the following morning.

## duties

Awaiting the call from the KP Ranger, an hour or so after the Park has closed, to say that the Park is clear of minga and that the KP Ranger has returned safely. A call should also be received from the KP Ranger as they leave the ranger station on the way out, before they leave Kata Tjuta to inform the Duty Ranger that Kata Tjuta is clear and that they are heading back to Uluru.

Ensuring that the climb is closed if it is raining or if you reasonably suspect rain or other dangerous conditions are on the way, between the hours of 4.30pm and 8.30am. Notify the Cultural Centre of the closure. The Cultural Centre should then inform entry station and the Yulara Visitor's Centre. If rain is imminent, then close the climb with plenty of time to allow the remaining people on the Rock to descend, but no-one else to begin climbing. You may have to stay there to enforce the closure. If the Rock is wet, or about to get wet, get the knotted rope, stored under the base of climb toilets, and attach it to the lowest post of the chain with the sling and karabiner to assist climbers to get to the base. When the dangerous conditions have abated, ensure that the climb is re-opened and the rope taken down, chained up properly and put back in the toilet storage area.

Answering the emergency alarm between 4.30pm and 8.30am. Learn the procedure for answering the alarm and record all details of the emergency including time, location, sitrep, action taken etc. and keep a running log of all communications and significant events. Send someone around to the alarm as soon as possible to report on the situation. Inform the Operations Manager and/or a Senior Ranger so they can co-ordinate a response.

Receiving notification of unoccupied cars or breakdowns in the Park. Obtain all details of the car, eg. colour, make, model, rego, what's inside etc. For breakdowns, ring Ayer's Rock Autos (8956 2188) or after hours (8956 2219 or 8956 2052). For unoccupied vehicles, try phoning the campground (8956 2055) as they keep a list of visitors' rego. numbers, the rental company (if it's a rented vehicle), or contact the Police (8956 2166) who may be able to locate the owner or driver. If the car is at one of the carparks, the Ranger may feel comfortable enough to conduct a quick search of the immediate area alone, but if any more extensive search is to be undertaken, another Ranger should be dispatched (or go yourself after organising for someone to fill in as Duty Ranger) to accompany the first Ranger. Under no circumstances are Rangers to conduct any search alone more than one kilometre from their vehicle, nor are they *required* to conduct any kind of search alone (ie. they can search up to 1km from their vehicle if, and only if, they feel comfortable about it).

During an emergency the Duty Ranger is responsible for contacting the Ambulance, Police and/or Yulara Fire Service on "000" (specify *Yulara* Ambulance, Police or Fireys) and any other services required. The Police are the only ones allowed to initiate Emergency Services (NTES). Contact the Operations Manager and/or a Senior Ranger as soon as possible so they can co-ordinate the emergency response. Keep a communications record to document all radio and other communications, times, events etc.

As Duty Ranger you would normally (though not necessarily) attend the scene as you are prepared, sober and straight and probably still in uniform. If you do, *make sure someone else takes over the Duty Ranger role for the duration of your absence.*

## *emergency situations*

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### **search and rescue**

If an alarm is activated or a call is received of an injured person or someone even remotely suspected of being injured, **call the Ambulance** on "000" (specify *Yulara* Ambulance), inform the Operations Manager and/or a Senior Ranger to coordinate Park staff for a rescue.

If a person(s) is deemed missing and all initial and reasonable attempts at locating them have failed, then a search is to be initiated. Record as many details as possible of the missing person from whoever reported the situation. Inform the Operations Manager and/or a Senior Ranger to co-ordinate Park staff to carry out a search. Notify the Police on "000".

### **vehicle accident**

Notify the Ambulance immediately on "000" (specify *Yulara*), and then the Yulara Police. Inform the Operations Manager and/or a Senior Ranger to coordinate Park staff to attend with first aid equipment. Contact with the ambulance in transit can sometimes be made via Parks s47E(d) or by the Ambulance satellite phone s47E(d) to relay sitreps, update information or seek advice.

### **fire**

If a fire is threatening house, property or life, inform the Operations Manager and/or a Senior Ranger to organise Park staff to attend with fire fighting equipment. Ring Yulara Fire Service on "000".

If a grass or bush fire is burning in or around the Park, contact the Operations Manager and/or a Senior Ranger to organise Park staff. Call the Yulara Fire Service to inform them that you are aware of the fire and Park staff are responding, but you do not require their assistance at this stage. The Operations Manager or the Senior Ranger in charge may ask you to ask them to respond.

### **power or water failure**

Inform the Maintenance Officer, Operations Manager or a Senior Ranger. They will deal with the situation. Do not attempt to fix it yourself or call anybody else in to fix it.

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As the Duty Ranger, ensure you are contactable at all times and that your radio and spare battery are both fully charged. If you are not at home make sure that you can be contacted and be available to fulfil the above obligations at any time ie. be near a phone or able to attend the situation immediately and remain sober and straight. Carry your torch and keys and a list of emergency phone numbers. If you are out of the Park or away from a phone for a period of time, then organise someone else to fill in as Duty Ranger for you during your absence.

Complete the Duty Ranger allowance form (called "Out Of Hours Restriction Allowance Claim Form" - g:\general\forms\drform.doc) every fortnight, get it signed by your supervisor and place it in the tray marked "Canberra bag only". If you are called out or required to co-ordinate communications from home, record your overtime hours on the "Overtime Record and Claim Form", get it signed and put it in the tray with the other form.

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updated: 30 September, 1997  
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### 9.6.3 Standard Response to Emergency Alarm Radios



# alarm

## *standard response to emergency alarm radios*

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Emergency alarm radios are situated at the base of the climb at Uluru and at the Valley of the Winds carpark at Kata Tjuta. The alarms consist of a series of high pitched beeps at different frequencies for each site. They are set off by pressing the red button inside the box and turned off by pressing the red button again. This also activates the radio for a period of time.

The responsibility for answering the alarm lies with Park Headquarters between 8.30am-5.00pm, Cultural Centre Ranger between 8.00am-4.30pm on weekends and Duty Ranger after hours, however if it remains unanswered for more than 20secs, it should be answered by anyone available.

If the alarm sounds, respond as follows:

***"This is the Ranger speaking.***

***"Please press the red button to stop the alarm."***

Repeat this until the alarm stops, then continue as follows:

***"Lift the handpiece.***

***"There is a white button on the handpiece.***

***"Press the white button to speak and then release it to listen.***

***"Are you at Ayers Rock or the Olgas?"***

***"What is the problem?"***

***"What is the exact location of the injured person?"***

***"Can you give me any details about the condition of the person?"***

***"Please stay at the alarm box.***

***"A Ranger will meet you there as soon as possible."***

A Ranger will be immediately dispatched to the scene to provide a sitrep and first aid where necessary. If a person may be injured or in danger, or if there may be danger to rescue personnel or members of the public, the Yulara Ambulance will be called to the scene immediately by ringing 000.

The rescue will be co-ordinated by, in order of availability, Chief Ranger (Operations Manager), Work Supervisor, another Senior Ranger, Duty Ranger or another Ranger.

If a fatality has occurred, or if a search or rescue requiring more than six participants is required, the Yulara Police should be notified on 8956 2166 (or, if urgent, on 000). The Police will then assess the necessity of calling in the Northern Territory Emergency Service.

If an injured person is on top of the rock or any other situation of limited terrestrial access, a helicopter rescue will be required. Helicopter contacts are:

Professional Helicopter Services, ph: 8956 2003

Ayer's Rock Helicopters, ph: 8956 2077

Headquarters, Cultural Centre Ranger or Duty Ranger will keep a communications record or running log (in green folder near radio) detailing communications, times and actions taken. The rescue party will keep them informed at each stage of the proceedings.

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updated: 30 September, 1997  
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9.6.4 *Climb Rescue Procedure at Uluru Kata Tjuta National Park*



# climb rescue

*climb rescue  
procedure at  
Uluru-Kata  
Tjuta National  
Park*

## procedure after the alarm is raised

A ranger with water, a radio, first aid kit, as well as oxygen and/or cold packs as necessary, will proceed as quickly as possible to the victim, administer whatever first aid is required and provide a sitrep by radio.

The Yulara ambulance will be called by ringing 000 and provided with as much information as possible. Information updates may be provided via satellite phone to paramedics en route by calling S47E(d) for the Ford ambulance or S47E(d) for the 4WD Toyota ambulance.

Another ranger will pick up the climb stretcher and take it to the base of the climb, where a stretcher party of Park staff will assemble. One of the first there should close the climb.

If a stretcher rescue is required, the stretcher party will begin as soon as possible to carry the stretcher up the climb, stopping (and securing the stretcher) for a rest where necessary.

The person in charge of the rescue will nominate who takes which role during the rescue. The roles are not normally changed for the duration of the rescue.

When the stretcher party arrives at the target site, they will quickly prepare for the first lower while keeping clear of any activity around the victim.

## roles in a climb rescue

### officer in charge

This will normally be the Chief Ranger, or if unavailable (in order of priority), the Work Supervisor, other Operations Senior Ranger, Duty Ranger or another Ranger. The Officer in Charge will assign roles to participants in rescues according to their experience and physical build, make decisions on rescue procedure and assume final responsibility for all decisions made. The Officer in Charge may, if necessary, assume one or more of the other roles in a rescue. The Officer in Charge may delegate their responsibility if they are not sufficiently experienced in climb rescue.

### safety officer

This will be the most experienced person in climb rescues and is normally the Officer in Charge. The stretcher harness person may be the safety officer if numbers are low. The safety officer will check every part of the operation, every knot, sling, carabiner, belay and harness from the primary anchor down, before each lower. The Safety Officer will ensure that no-one goes near an edge without being securely anchored.

### stretcher harness

This should be someone tall and strong. They should use the purple harness with a single large steel carabiner connected to the two chunky loops on the harness and to the two carabiners (gates opposite) on the stretcher. The harness should be high enough and tight enough that the hips take the weight of the stretcher.

The stretcher harness person should tie the figure 8 knot onto the two carabiners (gates opposite) on the wheel end of the stretcher and set up the belay system.

The stretcher harness person controls the lower. The commands and answers used are:

"ready?" "OK"

"off safety" "OK"

"lower" "OK"

"faster" "OK"

"slow down" "OK"

"15 metres" to be called by the belay party when there is 15m of rope left.

"OK"



**"stop"** to be called by the stretcher harness person when they've reached a suitable change-over point or *BY ANYONE AT ANY TIME FOR SAFETY REASONS*. "OK"

**"safe"** When the stretcher is secured to an anchor. "OK"

**"clear"** To be called by the anchor person when the anchor knots have been untied. This is to allow the stretcher aide and/or the rope clipper to begin pulling down the rope. "OK"

At the completion of a lower, the stretcher harness person should quickly set up the belay for the next lower.

### **belay**

The belay person is ideally someone with a low centre of gravity and they wear the orange harness with the stop descender (and spare sticht plate and carabiner). The harness should also have a sling and small carabiner which is used to secure the belay person to the chain. The belay person should thread the stop descender then wear leather gloves while actually belaying.

The belay person controls the speed of the descent with the stop descender, at the command of the stretcher harness person. A good belay person can read the slope ahead of the stretcher harness person and adjust the speed accordingly.

If for any reason the descent needs to be stopped beyond the capability of the stop descender, the belay person should immediately kick the jumar to jam it.

When there is 15m of rope left for the lower, the belay person will call, "15 metres", then allow the stretcher harness person to decide where to stop.

At the completion of a lower (ie. the call of "safe" has been answered), the belay person will disconnect the belay system, bring it quickly down to the change-over point (leave it in the stretcher) and set up for the next lower.

### **anchor**

The anchor person ties the figure 8 and alpine butterfly anchor knots for each lower. The anchor person and/or stretcher aide will then lay the rope out across the rock so that it doesn't tangle or snag during the lower.

The anchor person also feeds the rope to the belay person during belaying.

At the end of each lower, (ie. the call of "safe" has been answered), the anchor person will untie the anchor knots, call "clear" (the stretcher aide will pull the rope down from the other end), quickly carry the end of the rope down to the change-over point and tie the anchor knots for the next lower. The anchor person or a helper will need to ensure that the rope does not get caught on flakes of rock as it comes down, and collect any running belays (sling-and-carabiners) which have been left in situ.

### **stretcher safety**

The stretcher safety person accompanies the stretcher down the climb and is responsible for clipping the stretcher safeties on and off. Ensure that the primary safety (the one with two slings) takes the weight and that the small carabiner on the secondary safety is not in such a position that it will take a bending load if load is applied.

The stretcher safety person will call (only to the stretcher harness person), "off safety one" and "off safety two". The stretcher harness person will answer "OK" each time.

The stretcher safety person will also help lift the stretcher before each lower and accompany the stretcher down on the chain side.

### **rope clipper**

The rope clipping person will carry six slings and large steel carabiners and be responsible for clipping in running belays on narrow sections of the climb (to limit the extent of sideways fall of the stretcher should it happen). This person will need to wear leather gloves. The slings should be looped around posts and the carabiners left unclipped.

On the final lower the rope clipping person should clip a sling and carabiner onto the rope while in the dip, and hold it down so that the rope does not lift the stretcher wheels off the rock.

The rope clipping person will also relay messages between the stretcher harness person and the belay person where necessary unless there are enough people around for someone else to take that role.

### stretcher aide

The stretcher aide will accompany the stretcher harness person at all times, helping guide, warning of dangers and helping lift the stretcher before each lower.

The stretcher aide will normally be on the side of the stretcher harness person away from the chain and slightly ahead of them so as not to be taken out if the whole lot goes sideways.

At the end of a lower (ie. after the call of "clear" has been answered), the stretcher aide will pull the rope down and begin to lay out the rope across the rock for the next lower.

### crowd control

The crowd control person will ensure that the climb is closed. They will then ascend (usually as part of the stretcher bearing party) and stand above the rescue proceedings, ensuring that descending mingers are on the southern side of the chain well before they pass the preparation area.

The crowd control person should also minimise photography and video of the proceedings.

### note taker

The note taker will be someone near a phone, a radio and a clock. Their role is to record (with time) all communications, other significant events, sitreps, names, addresses etc. and to pass information on to other services.

Afterwards, these notes should be given to the incident report writer.

### general rules for rescues

All participants in a rescue will have water, a radio, araphat hat, shades and good boots.

The directions of the safety officer and/or person in charge are to be complied with immediately, without question.

*Never stand on rope.*

If any metal piece of rescue equipment is dropped more than a metre onto a hard surface, *render it unusable and throw it away.*

Do not do carabiner gates up too tight. Do them up snug, then back them off half a turn lest they jam.

Do not go near an edge without being secured to an anchor.

Self check constantly:

- A Anchors - *are they bombproof and do they have good knots attached to them?*
- B Belts, Buckles & Bash-hats - *are they tight enough and doubled back?*
- C Carabiners - *screw & squeeze to make sure they're done up (but not too tight).*
- D Descender (or belay Device) - *is it routed correctly?*
- E Emergency Escape - *what will you do if it all comes unstuck?*
- F Final Feel check - *pull on and lean back on ropes just to make sure it all feels right.*

After the rescue, the rope should be chained *carefully* to ensure it comes out smoothly next time.

### radio language during rescues

As always, but even more so, *short, clear, concise* messages with longish breaks to allow people to cut in if necessary.

Report significant events to the note taker.

Sometimes, particularly in windy conditions, the radio may need to be used to pass on commands during a lower. If so, use **S47E(d)** as it is clearer and doesn't jam the system.

Don't leave unattended radios on.

Use language sensitively, anyone could be listening.

A situation involving a fatality will be referred to as a "*code 4 situation*".

A patient, casualty or body will be referred to as a "*victim*".

The location of the victim will be referred to as the "*target site*".

A body bag will be referred to as a "*plastic*".



9.6.5 *Rock Patrol and Chain Maintenance Procedure at Uluru*



# rock patrol

*rock patrol and chain maintenance procedure at Uluru*

Rock Patrol is a monthly, full day foot patrol of the climb and top of Uluru. It aims to offer public contact, observe the behaviour of climbers, check the chain and helipads, pick up rubbish, pull out weeds and remove graffiti and rock cairns. Rock Patrol begins at 8am in winter and half an hour before sunrise in summer.

## things to take

- water, lunch, hat, shades, sunscreen, leather gloves, radio, spare battery, first aid kit,
- 2 shifting spanners, fencing pliers, large screwdriver, spare chain bolts, washers and nuts,
- can of "pioneer" spray paint, wire brush and rags,
- 2 large plastic garbage bags.

## checking the chain

As you climb, nip up the nuts of each of the bolts, using two spanners where necessary. Inspect the chain and bolt hole at each post and that the post is secure. Check particularly the very top link on the short section of chain at the top.

## picking up rubbish

Rubbish lodges in cracks in the rock, hollows and particularly in patches of vegetation. Pick up all you can get to but do not endanger your safety.

## helicopter landing sites

Make sure you know where the four helicopter landing sites are and imagine how they would look from the air. Check for high ground around the landing sites in case you're ever getting out of a helicopter there. Check that there is no loose debris around any of the sites that could blow into a helicopter's rotors.

## removing graffiti and rock cairns

The most common form of graffiti is fortunately easy to remove. People write their names (even in Japanese and Korean) by placing rocks to form the letters. These are easily destroyed by kicking them, preferably into a lower area to make it harder for the next ardent graffitist. Similarly, the piles of rocks which sometimes line the distant ridges can be knocked into lower areas. They must be a source of wonder to some of the minga.

Graffiti on the cairn is best covered with "pioneer" paint from the spray can.

Scratched, chalked or painted graffiti can usually be removed with the wire brush and a little water, but for stubborn efforts we may have to find a strong solvent.

## Weed control

The main patch of vegetation with weeds is the furthest from the cairn, above the easternmost corner of Uluru. There is a lot of blackberry nightshade, milkweed, wild lettuce, smooth cat's ear and buffel grass, as well as a lot of natives which are holding their own quite well. I've even seen *Stylidium inaequipetalum* there, one of the Park's rare plants. Seeding weed plants should be taken down in the plastic bags but if there's too much, leave it up there in a nearby deep hole for burning next RP.

There is occasionally some blackberry nightshade in the patch of vegetation dominated by *Acacia olgana* about 1 km east of the cairn and in some of the flat areas nearby. There is also some rock art left by Martians about 2 million years ago and an ancient campfire.

As well as these duties, Rangers should ensure that they familiarise themselves with the topography of the top of Uluru, and how it relates to the base.

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updated: 4 May, 1997  
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9.6.6 *Procedures and Responsibilities for the Kata Tjuta Patrol*



**KP**

*procedures and responsibilities for  
kata tjuta patrol*

Kata Tjuta patrol (KP) is an afternoon/evening patrol of the Kata Tjuta area during the time of peak visitation, to provide Ranger presence for quick emergency response, law enforcement, education and public relations.

KP begins 7 hours before Park closing time.

Check vehicle for:

- fuel and oil;
- water, in radiator and a 20 litre drum;
- spare wheel, jack and wheel brace,
- jumper leads and basic tools;
- first aid kit and bottled ice;
- fire overalls, rakehoe and shovel;
- torch, radio, spare radio battery, notebook and pens;
- emergency food supply (for searches, fires etc.);
- KP log book.

Call in to ranger station and check your pigeonhole and e-mail for messages and note any film or photography permits which might be operating.

Notify the Work Supervisor (WS) that you are departing for Kata Tjuta.

Pick up roadside rubbish between bus sunset carpark, entry station and dune viewing platform.

Walk up to dune viewing platform, pick up rubbish and check condition.

Change to **s47E(d)** Pick up roadside rubbish between dune viewing platform and Kata Tjuta.

Patrol Homelands road and Docker River road to western boundaries.

Clean Kata Tjuta toilets. Rake piles on Saturdays or if full. Put in one bucket of sawdust per toilet. Empty garbage bins if they're more than half full. Replace any almost finished dunny rolls. Leave the dispenser key there. Sweep the floors. Wipe down the mirrors and benches. Clean toilets with toilet brush, water and LOC. Mop the floors with water. Note in KP log book any supplies needed or things broken.

Patrol carparks, pick up rubbish, fix broken fences, put brush down if people are walking where they shouldn't.

Go for a walk around Valley of the Winds and/or Olga Gorge, picking up rubbish, checking for weeds and the condition of the track and boardwalks and doing PR and law enforcement. Maybe drive around the circuit road and check the solar bore and the emergency water tank in the Valley of the Winds. Get to know the area. Use **s47E(d)** west and south-west of Kata Tjuta and **s47E(d)** to the north, east and south-east and in the Valley of the Winds. Always be in communication and not too far away in case of emergencies. Report emergencies to Park Headquarters before 4.30pm and later to Duty Ranger.

Towards closing time check that the walking track carparks and the Docker River road are clear of cars, gently informing stragglers that its time to leave (bearing in mind that it takes 40min to drive to Yulara at the speed limit). If there is a car still in one of these places after dark, radio Duty Ranger with a description of the car (colour, make model, rego no, what's inside etc.) and any other relevant details. If you feel comfortable, lock your vehicle and search the immediate area with torch and radio, but, if alone, on the VOW track go no further than the first lookout. If you don't feel comfortable, or if you haven't found the person by the time you reach the 1st VOW lookout (call into the valley), inform Duty Ranger and they will initiate a search.

AAT Kings have permission to stay for an hour after closing time, but normally everyone else should be out of the Park by closing time.

When the Kata Tjuta area is clear of minga, and before leaving, inform Duty Ranger that Kata Tjuta is clear and you are heading back.

Follow the last car back to the entry station, driving through the dune viewing area carpark (change to s47E(d) s47E(d) to check that it is clear.

Check entry station for cars or people lurking around, then head back to Uluru, checking bus sunset, car sunset and cultural centre carparks, ranger station picnic area and carpark (check that ranger station doors are locked, drop off rubbish in skip and change to s47E(d) , Mutitjulu carpark, sunrise area (change back to s47E(d) ) and Mala carpark (the climb), asking any remaining minga to leave and following them at least to bus sunset carpark to make sure they do. If cars are abandoned, radio Duty Ranger with a description. Don't search too far on your own, just wait for assistance. After a full lap of the Rock, change back to s47E(d) and if all is well radio Duty Ranger to report that the Park is clear. Its also a good idea to enter the community via the bore 5 and inland motel roads to check that no-one is camping and that all is well. On your way home, check that all workshop gates are locked. If not, lock them.

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date: 30 September, 1997  
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9.6.7 *Wind Policy*



# wind policy

## *Policy for closing the climb in adverse winds*

UPDATED: Dec 1996

### CRITICAL WIND SPEED:

The climb will be closed when wind speed exceeds **25 knots at ground level** (recorded at Yulara Airport) and/or **30 knots at the approximate height of Uluru (2800ft)**. This value was reached upon the advice of Nigel Bullas and Mike Harris Jay Row, several members of Professional Helicopter Services, and Ian Butterworth of the Bureau of Meteorology, and according to experience of Rangers.

### ASSESSING WIND SPEEDS AROUND ULURU:

Since wind monitoring equipment has not been established on Uluru itself, we must rely on wind speed readings measured at ground level at Yulara Airport, helicopter pilot wind speed estimates and ultimately wind conditions as assessed by a Ranger at the base of the climb. This information can be obtained as follows:-

#### *Wind speeds at ground level (recorded at Yulara Airport):*

**ANSETT:**

**Ph 08 8956 2168**

(available after 09:00 daily)

**BUREAU OF METEOROLOGY, Alice springs: Ph 08 8952 1943**

(available after 06:15 daily. Readings made every half hour, on the hour.)

**BUREAU OF METEOROLOGY, Darwin:**

**Ph 08 8982 2824**

(available all hours. Readings made every half hour, on the hour.)

#### *Wind speed estimates by commercial pilots at approximate height of Uluru (2800 - 3000ft above sea level)*

Local commercial pilots have informally agreed to offer advise re wind conditions around Uluru. Note however, that this information is only available when scenic flights are operating. To date, Jay Row have been the most helpful, however any of the commercial operators below may be called.

<b>JAY ROW</b>	<b>562 077</b>
<b>PROFESSIONAL H. SERVICE</b>	<b>562 003</b>
<b>ROCK AYER</b>	<b>562 345</b>
<b>SKYPORT</b>	<b>562 389</b>



### **WIND FORECAST:**

If you are Duty Ranger and concerned about wind conditions for the following morning, a forecast can be obtained by ringing the Bureau of Meteorology in Alice Springs or Darwin AFTER 17:00 (phone numbers listed above).

The Information Officer at the cultural centre polls 2 weather forecasts daily. One of these is from the Bushfire Council which gives wind speeds in knots. This is available on week days only. The other forecast which is available on weekends also, describes wind speeds as shown below. **These forecasts should be checked daily and the Work Supervisor informed if wind forecasts are "strong" or "gale".**

<b>calm</b>	< 1 knot	:	<b>fresh</b>	17 - 21 knots
<b>light</b>	01 - 07 knots	:	<b>strong</b>	22 - 34 knots
<b>moderate</b>	08 - 16 knots	:	<b>gale</b>	> 34 knots

### **SETTING THE RECORD STRAIGHT RE "DEC TALK":**

It appears to be a favourite of some pilots to suggest the "Dec Talk" automated telephone voice to estimate wind conditions at 3000ft above sea level (approximate height of Uluru). However, this wind speed is calculated over a vast area that extends to Giles Weather Station and beyond. Meteorologists have advised me that it is not accurate enough to be used as a guide.

### **RECOMMENDATIONS TO IMPROVE WIND MONITORING:**

It is clear that Uluru generates its own micro climate and is frequently affected by thermal currents which do not prevail as close as the Ranger Station. Thus, the only way to accurately monitor wind speeds is at Uluru itself. I recommend that investigations be made into the purchase of a hand held anemometer that could also be used to monitor wind conditions at fires. Also, we should explore the viability of installing a anemometer on top of Uluru, that is capable of transmitting wind data to head quarters. This instrument could be installed in conjunction with the radio alarm/repeater planned for installation on Uluru.

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**9.7 Appendix 7 : Photo Albums of Various Sites and Safety Issues**

*Note: Refer separate CD for a photo record of all sites visited*