IMPORTANT NOTICE

South African National Parks ("SANParks") has produced this Information Memorandum in connection with the Management Agreement opportunity available for the Food and Beverage Facility at the Skukuza Safari Lodge in the Kruger National Park.

No representation or warranty, express or implied, is made, or responsibility of any kind is or will be accepted, by SANParks, with respect to the accuracy and completeness of this Information Memorandum, and any liability in connection with the use by any Interested Party of the information contained in this Information Memorandum is hereby disclaimed.

This Information Memorandum has been provided to the recipient to assist in making its own appraisal of the opportunities presented herein. However, this Information Memorandum is not intended to serve as the basis for an investment decision on the opportunities, and each recipient is expected to make such independent investigation and to obtain such independent advice, as he or she may deem necessary for a decision.

South African National Parks may amend or replace any information contained in this Information Memorandum at any time, without giving any prior notice or providing any reason.

August 2019
## TABLE OF CONTENTS

1. **INTRODUCTION** ...................................................................................................................... 5

2. **SANPARKS’ VISION, MISSION AND KEY STRATEGIC OBJECTIVES** ................................. 5

3. **RESPONSIBLE TOURISM STANDARDS** .................................................................................. 8

4. **ARTICULATION OF SANPARKS’ COMMERCIALISATION POLICY, OBJECTIVES AND STRATEGY** .......................................................................................................................... 11

5. **PROJECT DESCRIPTION – FOOD AND BEVERAGE FACILITY AT THE SKUKUZA SAFARI LODGE** ......................................................................................................................................... 15

6. **MANAGEMENT AGREEMENT** .................................................................................................. 20

7. **PROJECT TIMETABLE** .............................................................................................................. 23

8. **SCHEDULE 1 – SKUKUZA SAFARI LODGE DESCRIPTION OF FACILITIES AND ATTRIBUTES** ........................................................................................................................................ 24

9. **SCHEDULE 2 – SKUKUZA SAFARI LODGE GREEN OPERATION STRATEGY** ............. 30

10. **SCHEDULE 3 – ENVIRONMENTAL GUIDELINES FOR OPERATOR’S OPERATION WITHIN THE SOUTH AFRICAN NATIONAL PARKS** ................................................................. 31

11. **SCHEDULE 4 – BROAD BASED BLACK ECONOMIC EMPOWERMENT** ...................... 40

12. **SCHEDULE 5 – OUTSTANDING CAPEX ITEMS** .................................................................. 42

13. **SCHEDULE 6 – SKUKUZA SAFARI LODGE GREEN BUILDING INITIATIVES** .............. 43

14. **SCHEDULE 7 – SANS 1162:2016 – SOUTH AFRICAN NATIONAL STANDARD RESPONSIBLE TOURISM REQUIREMENTS** .......................................................................................... 52

15. **SCHEDULE 8 – NATIONAL RESPONSIBLE TOURISM GUIDELINES FOR SOUTH AFRICA (MAY 2002)** ......................................................................................................................... 53

16. **SCHEDULE 9 – PROHIBITED CHEMICALS** ......................................................................... 70

17. **SCHEDULE 10 – PREFERRED CHEMICALS** ........................................................................... 73

18. **SCHEDULE 11 – BAT MANAGEMENT GUIDELINES** ............................................................. 76
19. SCHEDULE 12 - INTEGRATED PEST MANAGEMENT PLAN ................................................82
1. **INTRODUCTION**

1.1 This Information Memorandum is issued by South African National Parks ("SANParks") in accordance with the guidelines for Public Private Partnerships ("PPPs") contained in National Treasury's Tourism Management Toolkit, and in compliance with Treasury Regulation 16 issued in terms of the Public Finance Management Act 1999.

1.2 SANParks is currently investigating the feasibility of an opportunity in which it gives a selected Operator the right to manage the Food and Beverage Facility at the Skukuza Safari Lodge in the Kruger National Park.

1.3 SANParks makes no guarantees about and takes no responsibility for the accuracy and completeness of this Information Memorandum and disclaims any liability for any interested party's use of the information.

1.4 This Information Memorandum is not intended to serve as the basis for an investment decision. Each recipient is expected to make an independent investigation and to obtain the necessary independent advice regarding the Management opportunity.

1.5 SANParks may change or replace any information contained in this Information Memorandum at any time, without giving any prior notice or providing any reason.

1.6 The Operator shall be granted the rights to manage the Food and Beverage Facility at the Skukuza Safari Lodge on behalf of SANParks and shall be paid a Management fee. The Operator will meet agreed environmental, operating and broad-based BBBEE obligations.

2. **SANPARKS’ VISION, MISSION AND KEY STRATEGIC OBJECTIVES**

2.1 **SANParks’ Vision and Mission**

South African National Parks was established as a parastatal through an Act of Parliament in 1927. As per the Public Finance Management Act, Act 1 of 1999 (as amended by Act 29 of 1999), SANParks is a Schedule 3(a) “public entity” that
functions under the ambit of the National Environmental Management Act ("NEMA"): Protected Areas Act, 2003 (Act 57 of 2003) read concurrently with the Biodiversity Act of 2004 and the Protected Areas Act. The core mandate of SANParks is the conservation and Management of biodiversity and associated cultural heritage through a system of National Parks. SANParks is also involved in the promotion and Management of nature-based tourism, and delivers both conservation Management and tourism services through an authentic people centred approach on all its programmes.

The organisation’s operations are totally guided by its vision statement (the word picture of the future) and mission statement (depicting the purpose of its existence). As a public entity, the organisation is committed to act in pursuance of transformation of South Africa’s society in support of entrenching South Africa’s democracy. In this regard the organisation has adopted a transformation mission to guide its efforts accordingly.

**VISION** – A world class system of sustainable national parks reconnecting and inspiring society.

**MANDATE** – Delivery of Conservation Mandate by Excelling in the Management of a National Park System.

**MISSION** - To develop, protect, expand, manage and promote a system of sustainable national parks that represents natural and cultural heritage assets, through innovation, excellence, responsible tourism and just socio-economic benefit for current and future generations.

2.2 Organisational Environment

SANParks’ business operations are founded on three important core pillars:

2.2.1 **Conservation** – the primary mandate of the organisation is the conservation of South Africa’s biodiversity, landscapes and associated heritage assets through a system of national parks.

2.2.2 **Responsible Tourism** – the organisation has a significant role in the promotion of South Africa’s nature-based tourism, or ecotourism business targeted at both international and domestic tourism markets. The eco-tourism
pillar of the business architecture provides for the organisation’s self-generated revenues from commercial operations that is necessary to supplement government seed funding of conservation management. A significant element of the ecotourism pillar is the Commercialisation Strategy which (through the implementation of Public Private Partnerships) SANParks has adopted to expand tourism products and the generation of additional revenue for funding of conservation and constituency building.

2.2.3 **Constituency building towards a people-centred conservation and tourism mandate** – SANParks is required to build constituencies at international, national and local levels, in support of conservation of the natural and cultural heritage of South Africa through its corporate social investment. It has to ensure that a broad base of South Africans participate and get involved in biodiversity initiatives, and further that all its operations have a synergistic existence with neighbouring or surrounding communities for their educational and socio-economic benefit.

2.3 **Corporate Values**

- Leadership
- Environmental Ethics
- Transformation
- Scientific and Service Excellence
- Professionalism
- Initiative and Innovation
- Equity and Justice
- Discipline
- Respect
- Honesty
- Transparency and Open Communication
3. RESPONSIBLE TOURISM STANDARDS

3.1 Responsible Tourism

Responsible Tourism is a tourism Management strategy embracing planning, Management, product development and marketing to bring about positive economic, social, cultural and environmental impacts. Responsible Tourism provides for the following:

- generates economic benefits for local people and enhances the well-being of host communities;
- improves working conditions and access to the industry;
- involves local people in decisions that affect their lives and life chances;
- makes positive contributions to the conservation of natural and cultural heritage to the maintenance of the world's diversity;
- provides more enjoyable experiences for tourists through more meaningful connections with local people and a greater understanding of local cultural, social and environmental issues;
- minimises negative economic, environmental and social impacts; and
- is culturally sensitive, engenders respect between tourists and hosts, and builds local pride and confidence.

3.2 National Responsible Tourism Guidelines

In 2002, the Department of Environmental Affairs and Tourism (“DEAT”) published National Responsible Tourism Guidelines (attached as Schedule 8), reflecting South Africa’s vision to manage tourism in a way that contributes to the quality of life of all South Africans. The Guidelines aim to set benchmark standards for accommodation and transport Operators, tourism associations and custodians of our cultural and natural heritage. The objective is to ensure that our tourism sector keeps pace with international trends towards responsible business practice – and gains market advantage in doing so. In 2003, DEAT published the Responsible Tourism Handbook, which took it one-step further by giving practical examples of how tourism Operators can improve their economic, social and environmental practices.
Various institutions/organisations offer environmental Management consulting and accreditation services to all business sectors interested in implementing environmentally friendly business practices and hence offer Environmental Rating Programmes. Such eco-labelling schemes include:

- ISO 14001
- Green Globe
- Blue Flag
- NEAP
- Heritage
- Eco quest
- Fair Trade in Tourism

3.3 National Responsible Tourism Standard & Accreditation System

DEA has recently commenced with the development of a National Standard for Responsible Tourism, a national accreditation scheme that tourism Operators will be accredited by. The Hotel Operator shall be obliged to comply with the accreditation in terms of the National Standard for Responsible Tourism, once completed. Such accreditation will be compulsory and should be obtained within 12 months from Operation Commencement Date and renewed thereafter on an annual basis.

3.4 SANParks Responsible Tourism Strategy

South African National Parks is also in the process of drafting a Responsible Tourism Strategy. The purpose of developing this responsible tourism strategy and implementation plan is to consistently integrate the principles of the national responsible tourism guidelines into South African National Parks operations.

This strategy and plan will help to reduce fragmentation of responsible tourism activities by SANParks and its business partners, by providing a framework for a coordinated approach. It will also reduce the disparity between levels of responsible tourism practiced, monitored and reported between SANParks tourism operations and concessionaires (who are contractually required to practice responsible tourism). Implementation of strategy and plan will help address potential future problems, such as mitigation and adaptation to climate change.
The strategy is also a response to the increased market demand for responsible holidays from tourists, and will enable SANParks to put into place the conditions that are required to position the national park systems as responsible destinations.

The responsible tourism strategy is divided into three sections:

- The alignment of the principles of Responsible Tourism with existing corporate values and actions, with amendments to policies and procedures to accommodate Responsible Tourism values and indicators
- Recommended additions to the SANParks scorecard to include Responsible Tourism indicators
- Processes required to embed awareness of and decision-making and actions aligned with Responsible Tourism throughout the organisation.

3.4.1 Objectives of the Responsible Tourism Strategy

The objectives of the responsible tourism strategy and implementation plan aim to provide a basis for decision making, and guidance for divisions to develop action plans that comply with this policy. The objectives are:

- Align SANParks operations with the national policy on responsible tourism;
- Enhance responsible tourism awareness and Management skills among protected area managers and tourism officers and business partners within SANParks;
- Enhance responsible tourism awareness and skills among SANParks’ external stakeholders, including communities, and suppliers;
- Integrate responsible tourism principles and actions into Management plans for each national park in South Africa;
- Establish a practical framework for monitoring, evaluation and reporting in national park destinations; and
- Integrate responsible tourism into the performance Management frameworks of the organisation, individual parks and individual staff members.
3.4.2 Guiding Principles of the Responsible Tourism Strategy

The guiding principles of the responsible tourism strategy and implementation plan are that they are:

- based on the national responsible tourism guidelines (DEAT, 2002);
- aligned with the national Minimum Standards for Responsible Tourism;
- aligned with SANParks Corporate Strategic Business Plan, and cognisant of the Conservation Development Framework and Park Management Plans;
- easy to understand and implement;
- adaptive and flexible;
- monitored at both a corporate and operational level;
- developed and implemented through a participatory process by a broad range of SANParks stakeholders, including business partners;
- initially focus on quick wins, that can be used to promote the responsible tourism agenda throughout the organisation; and
- address initiatives that facilitate the achievement of SANParks core objectives (e.g. better relations with local communities, reducing poaching, helping park expansion).

4. ARTICULATION OF SANPARKS’ COMMERCIALISATION POLICY, OBJECTIVES AND STRATEGY

4.1 The Motivation for Commercialisation

“Global conventions and programmes alone are not enough to ensure the continued existence of, and sufficient funding for, protected areas. In times of fiscal austerity and tightening government budgets – especially in developing countries which are home to much of the world’s biodiversity – traditional funding sources are
increasingly under threat. Innovative alternatives to these traditional sources are needed in order to secure the long term viability of protected areas.” (IUCN, 1998)

In order to encourage greater efficiency in the delivery of public services, the Cabinet in April 1997 approved the establishment of an interdepartmental task team chaired by the Department of Finance, to explore how public private partnerships could improve infrastructure and service delivery efficiency, and make more efficient use of under-utilised state assets. The key objectives of this programme were to develop a package of cross-sectoral and inter-Institutional policies and legislative and regulatory reform.

In September 1998, the Department of Environmental Affairs and Tourism (“DEAT”) articulated the need for SANParks to prepare for a lesser dependence on state funding, which would increasingly be aimed at funding the essential conservation requirements. This formed the basis of the Commercialisation Strategy adopted by SANParks in 2000 with its foundation in the economic theory which defines the State’s responsibility as one of performing a regulatory function and intervening in the market-place only where there is market failure. The objective was to reduce the dependence on state funding and improve existing operational efficiencies. This does not imply that SANParks has to be independent of the State but rather that the collective funding sources (i.e. state funding, private donations, NGO and international donations, SANParks’ tourism activities and commercialisation) must be able to “sustain” the total business of SANParks. Sustainable tourism development depends on a partnership and balance between the social, technological, economical, the environment and political values and benefits. Hence, should one source of funding be threatened, SANParks must be able to absorb such withdrawal without compromising its sustainability.

The implementation of the Commercialisation Strategy 2000, resulted in the awarding of 11 (eleven) concession sites to private Operators, seven of which are in Kruger National Park, two in Addo Elephant National Park, and two in Table Mountain National Park.

In addition to the concessions, the Commercialisation Strategy 2000 also resulted in the awarding of 21 shops and 17 restaurants across all national parks to private Operators. Facilities were upgraded by the Operators and SANParks receives a Management Fee from these Operators.

4.2 The Strategic Plan for Commercialisation 2006
Following the implementation of the Commercialisation Strategy 2000, there have been significant developments in SANParks’ approach to PPP initiatives. SANParks accordingly developed the Strategic Plan for Commercialisation 2006 to accommodate and benefit from:

(i) The experience and specialist skills acquired;

(ii) The lessons learnt from implementation and Management of PPP’s;

(iii) Legislative requirements; and

(iv) The extended scope of projects identified to enable SANParks to improve its infrastructure towards 2010 and beyond, generate revenues, promote BEE and create employment.

The objective of the strategy is to ensure that SANParks has the fundamentals including capacity in place for managing existing, and for entering into new PPP’s successfully. In addition, SANParks has a responsibility towards creating tourism infrastructure on a longer term as compared to a tourism organisation run by a private company. Such infrastructure will enable South Africa to compete with global tourism destinations like Brazil, Thailand etc. Commercialisation through Public Private Partnerships provides SANParks the opportunity to achieve this goal.

4.3 Benefits of the SANParks Commercialisation Strategy

The achieved high level commercialisation objectives for SANParks include the following; revenue generation; loss minimisation or savings on existing operations; optimal use of under-performing assets; job creation and poverty alleviation; BBBEE; infrastructure upgrades; upgrade/development of historical and/or cultural sites; tourism promotion and further biodiversity protection and conservation. PPPs in SANParks have proved to be an important service delivery mechanism. The SANParks Commercialisation Strategy has yielded the following benefits to SANParks:

4.3.1 Strategic Value

Implementation of the Commercialisation Strategy has resulted in increased market segmentation and product and price differentiation with 508 additional guest beds in the five-star segment resulting in increased economic activity
and foreign exchange generation. In addition, it has resulted in improved efficiencies of the restaurant and retail facilities, contributing to an enhanced visitor experience to the guests of SANParks. The strategy has also resulted in an increased contribution to the broader economy through the tourism multiplier effect and SANParks’ image has improved considering that national parks are being put to responsible and sustainable use for the economic development of the country.

4.3.2 Monetary Value

The Commercialisation Strategy has resulted in a total contribution of R1,067 million by March 2019.

4.3.3 Increased Infrastructure

The Commercialisation Strategy roll out has resulted in increased infrastructure in National Parks to the value of R758 million with the assets ultimately reverting to SANParks. In addition, it has resulted in the refurbishment of aging infrastructure of both the restaurant and retail facilities to the value of R20 million.

4.3.4 Risk Transfer

The strategy has resulted in significant commercial risk transfer to the private sector including EIA risk, construction risk, availability risk, insolvency risk, market demand or volume risk and operating risk. However, SANParks is still exposed to the risks experienced by the Operator and hence effective contract management is essential.

4.3.5 Socio Economic Value

The strategy resulted in broadening the participation of BEE partners in the tourism industry thereby contributing to the demographic restructuring of the industry and poverty alleviation. Private Party agreements included the following contractual commitments:

- increased employment in the tourism industry with 1946 new jobs excluding construction;
- 79% of employees recruited from local communities adjacent to the Parks;
Reported spend of R 58million per annum with local community SMME’s;  
Considerable continuous skills transfer and training; and  
The tourism multiplier effect to the broader economy.

4.3.6 Environmental Value

The environmental regulations that apply to the commercial operators are in many instances superior creating a benchmark in SANParks nature based tourism operations and over time, SANParks will be obliged to comply with these standards. This can only be to the long term benefit of our national parks.

5. PROJECT DESCRIPTION – FOOD AND BEVERAGE FACILITY AT THE SKUKUZA SAFARI LODGE

5.1 Introduction

SANParks has developed the Skukuza Safari Lodge adjacent to the Conference Facility in the Kruger National Park. The Design is based on the following:

5.1.1 A 3-star facility offering 4-star service and price;

5.1.2 128 keys (256 bed) with a combination of 8 luxury suites, standard rooms and family rooms including universal access rooms;

5.1.3 Staff accommodation facilities in Skukuza only for essential staff, majority of staff will stay outside of the Park.

5.1.4 Green building initiatives to ensure the greenest lodge possible within the framework of international best practice; and

5.1.5 Community beneficiation through economic opportunities in the construction and operation of the lodge.

5.2 Opportunity

5.2.1 SANParks requires a Private Party to manage the Food and Beverage Facility at the Skukuza Safari Lodge. The Food and Beverage Facility includes the Conference Catering required at the Nombolo Mdluli Conference Centre. The opportunity will be for a 2-year term.
5.2.2 The appointed Private will have exclusive rights to operate and manage the Food and Beverage Facility.

5.2.3 No room service is offered.

5.3 Lodge Vision

The bigger Kruger National Park offer a wide range of accommodation choices; from camping to luxury concession lodges. Skukuza Camp currently offer camping, chalets and corporate style houses. The number of ‘rooms’ are limited. A modern conference centre has been built. It is currently under-utilised as the current accommodation available cannot provide adequately for conference guests. Skukuza Safari Lodge has been built to develop additional accommodation choices that plans to:

5.3.1 Provide accommodation for conferences and attract the MICE market with its own requirements and needs; and through them attract guests who would for the first time be exposed to the Kruger National Park;

5.3.2 Meet the needs of the local emerging tourist market that would be exposed to Kruger (perhaps for the first time) and may become loyal to Kruger Park;

5.3.3 Draw the International Group Tourist and FIT market for whom camping or self-catering would not be attractive; and

5.3.4 Attract the corporate and business market.

The vision of the Skukuza Safari Lodge is to widen the guest base for SANParks and Kruger National Park; and to provide an acceptable hotel style accommodation option for tourists and delegates of the conference centre.

5.4 Underlying Principles

The following underlying principles needs to be taken into consideration:

- Skukuza Safari Lodge and the adjacent Conference Centre are designed to operate as one business entity. It is managed independently from other services and products of the camp.

- Rooms are loosely based on a 4-star standard, but graded as 3-star.

- The lodge complies with all the relevant Universal Access legal requirements.
• Green principles have been applied in the construction process and the Operator is expected to apply green principles in the Management of the Food and Beverage Facility.

• Minimising noise is important in the Kruger National Park. The Private Party is responsible for controlling noise levels on the property.

• The Private Party shall ensure that condiments sachets, paper serviettes, butter tubs/pads, straws and any packaging that may pollute the environment is not used at Skukuza Safari Lodge or Nombolo Mdluli Conference Centre.

5.5 Lodge Operator Qualification Criteria

The following shall constitute the mandatory requirements of this bid, and Operators are required to comply with the following qualification criteria:

5.6 Financial Requirements

5.6.1 The Submitting Company shall submit audited financial statements corresponding to the previous financial year;

5.6.2 If the qualification criteria are being met by reference to any other companies, whether current or intended Shareholders or partners, then these companies must submit the same information.

5.6.3 If the financial criteria are met by companies that are privately held, and do not produce audited statements, or by private individuals, then these companies or individuals must produce a statement of assets, with confirmation of ownership, certified by a qualified auditor.

5.7 Financial capacity

5.7.1 The Submitting Company must have a Net Asset value exceeding R1,000,000 (One million Rand).

5.8 Experience (The technical partner shall have a minimum of 30% equity)

5.8.1 Number of functional outlets: The operator must have experience of
outsourced service contracts at a minimum of 3 hotels including Full Service Kitchen and Bakery, Buffet, ala Carte, Conference and Beverage service.

5.8.2 **Existence:** The restaurants operated should be in existence for at least 5 (five) year;

5.8.3 **Turnover of restaurants:** Combined turnover of the 3 (three restaurants) should not be less than R 5,000,000 (R5 million) per annum.

5.9 **BBBEE**

5.9.1 At least 51% of total measured procurement spend must be from black South African Suppliers within a 150km radius of the Skukuza Safari Lodge.

5.10 **Operator Requirements**

5.10.1 **General**

The Private Party acknowledges that it undertakes to:

- Co-operate with SANParks in general and fit the property into both the SANParks brand
- Accept the limitations of operating conditions and rules and regulations that prevail in Kruger National Park.
- Operate according to location in a National Park and attendant restrictions.
- Manage operating stock and replacement orders (attic) via the procurement officer in conjunction with the Financial Manager.
- Learn how the equipment works as well as service maintenance schedules and contracts.
- Be responsible for the care of the capital equipment.
- Agree to be serviced by equipment suppliers where appropriate.
- Manage the Food and Beverage Cost to agreed standards.
- Produce and maintain Standard Operating Procedures specific to Skukuza Safari Lodge.
- Create menu planning and vary according to availability of local produce.
• Produce a 4-star buffet, small quantities, regularly replenished, no industrial catering.

• Have the capacity to manage the Conference Centre and Banquets. Contract staff and caterers if business demands.

• Manage other tasks from time to time as required by the General Manager.

5.10.2 Outstanding Capital Expenditure (CAPEX) Requirements

CAPEX - The Operator should acknowledge that selective CAPEX items as required for the Food and Beverage Facility have not yet been provided for. Such items will be procured in order for the Food and Beverage Facility to be fully functional.

5.10.3 Hygiene Audits

The Operator must conduct hygiene audits at Skukuza Safari Lodge at least twice a year and furnish SANParks with the outcomes within five (5) Business Days of its completion. In the event the Operator fails to conduct hygiene audits, then SANParks shall have the right to conduct or commission such an audit. The Operator must at all times score a minimum of at least seventy-five percent (75%) on the Hygiene Audit total quality index.

5.10.4 Staffing

• The Operator is required to recruit a Food and Beverage Manager and the Head Chef;

• SANParks will carry the payroll of the two employees;

• SANParks will recruit the remainder of the Food and Beverage staff i.e. waiters etc.;

• SANParks will provide uniforms/

5.10.5 Housing

• Limited housing is available in the Park;

• The majority of employees must be housed outside the Park;

• Staff who are not accommodated at the Camp will be transported by
SANParks to and from various collection point locations.

5.10.6 **PMS and POS**

The Property Management System and Point of Sale System will be supplied by SANParks.

5.11 **Property Analysis**

The primary purpose for the lodge is to provide hotel style accommodation, meals and related services to guests. The hotel and conference centre are managed as a single business unit.

- Three-star grading but four-star guest experience
- Value for money in all aspects of the hotel
- 120 x Single occupancy with king bed OR twin occupancy on double beds and 8 x 2-Room Suites
- Family/inter-leading rooms
- Universal Rooms
- Lap Pool
- Bar facilities for after-hours socialising
- Mainly buffet style meals
- All day snack menu inclusive of a kiddy’s menu to be served on the veranda and public areas.
- Air-conditioning
- Security, CCTV is supplied.

The Lodge Facilities and Attributes are further explained in Schedule 1.

6. **MANAGEMENT AGREEMENT**

6.1 **Term of Agreement**

The term of the Management Agreement shall be for 2 (two) years from Operation Commencement Date.
6.2 **Objective Criteria**

During evaluation of the PPP Fee Offer and B-BBEE, the following objective criteria will be applied, which may result in the contract being awarded to a Bidder that did not score the highest points, as per Section 11 of the Preferential Procurement Regulations 2017 and in accordance with Section 2(1)(f) of the Preferential Procurement Policy Framework Act:

6.2.1 To broaden participation in PPPs, SANParks will give preference to Bidders that have less than five PPP contracts with SANParks”

6.3 **Management Fee**

Under the Management Agreement, the Management Fee payable by SANParks, in arrears, a monthly fee equal to:

6.3.1 Base Fee – XX% of Gross Revenue; plus

6.3.2 Incentive Fee – XX% of EBITDA.

6.3.3 Irrespective of which these elements determine the final amount payable in any given Financial Year, the payment schedule will be as follows:

6.3.4 The Base Fee and Incentive Fee shall accrue and be payable by SANParks to the Operator within 30 (thirty) days following the end of each month, free of deduction or set-off;

6.3.5 The Variable Management Fee, shall be calculated by SANParks at the end of each Financial Year on the basis of SANParks’ audited accounts. If these figures are higher than the Base Fee and Incentive Fees already paid, the difference will be payable to the Management Operator 60 (sixty) Business Days after the end of the Financial Year in question.

6.3.6 No Management Fees shall be payable prior to the Effective Date of the Management.

6.3.7 Any overdue payment by either SANParks or the Operator shall be subject to an interest charge of prime plus 3 (three) %.

6.4 **Principal Obligations of the Operator**
SANParks requires the successful Operator comply with the following:

6.4.1 The Operator is obliged to acquire SANParks' consent prior to making use of any SANParks trade names and or logo's in any way.

6.4.2 The Operator must adhere to SANParks conservation regulations.

6.4.3 The Operator must adhere to the SANParks normal operating hours for transportation of goods and service.

6.4.4 The Operator is required to operate according to hours specified by SANParks for gate entry and exits. Internal operations will be according to Lodge requirements.
7. **PROJECT TIMETABLE**

<table>
<thead>
<tr>
<th>Action</th>
<th>Dates</th>
</tr>
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<tbody>
<tr>
<td>Public Advertisements for the Management of Skukuza Safari Lodge</td>
<td>18 August 2019</td>
</tr>
<tr>
<td>Provide Information Memorandum and RFP to Operators</td>
<td>18 August 2019</td>
</tr>
<tr>
<td>Registration for Due Diligence Site Visit</td>
<td>28 August 2019</td>
</tr>
<tr>
<td>Due Diligence Site Visits &amp; Bidders Conference</td>
<td>3-4 September 2019</td>
</tr>
<tr>
<td>Provide Management Agreement to Interested Operators</td>
<td>6 September 2019</td>
</tr>
<tr>
<td>Receive Operators Questions</td>
<td>6 September 2019</td>
</tr>
<tr>
<td>Facilitate and distribute minutes of Conference Qs and As</td>
<td>13 September 2019</td>
</tr>
<tr>
<td>Tender Submissions</td>
<td>11 October 2019</td>
</tr>
<tr>
<td>Bid Evaluation of Bids received</td>
<td>14 October 2019</td>
</tr>
<tr>
<td>Special Bid Adjudication</td>
<td>16 October 2019</td>
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</tr>
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8. SCHEDULE 1 – SKUKUZA SAFARI LODGE DESCRIPTION OF FACILITIES AND ATTRIBUTES

8.1 Description of Facilities

8.1.1 Green Principles

Green principles were carefully considered in the design and building of the lodge. It is a fundamental requirement for an Operator to develop and implement green standard operating procedures and standards in all activities included in the Management of the property. The Operator needs to subscribe to becoming a member of the GBCSA and maintain its membership annually on an ongoing basis.

8.1.2 Safety and Security

The Skukuza Safari Lodge falls within the KNP Safety and Security Plan

- All staff access will be via the back of house entrance and security or the Skukuza Airport;
- No staff will be allowed to walk through Skukuza Safari Lodge unless it is required as part of their duties.
- All the delivery vehicles will only use back of house access and not via the Skukuza Rest Camp. Delivery times will be in accordance with the gate open/close times. All delivery vehicles will comply with the maximum load capacity and speed limits as per KNP rules and regulations.

8.2 Food & Beverage and Public Areas

8.2.1 Overview

Dining facilities are mainly buffet to cater for conferences and accommodate large volumes of meal requirements. Although there is a semi equipped conference kitchen in the conference centre, it is envisaged that, if the lodge is booked for a conference, guests will make use of the meal facilities at the lodge.
- SA la carte snack meals are catered for in the open air, roofed veranda area adjacent to the main bar.
- All day snack menu (inclusive of kiddy’s menu) to serve in the public lounge off Reception
- Coffee/tea be served from reception or bar area for group game drives
- No room service is offered
- WIFI available in all areas

### 8.2.2 Buffet Restaurant

Centrally situated off reception. Design gives a cordoned off effect.

Can be operational for breakfast, lunch and dinner

- Welcome area: 2 x entry areas with desk and telephone
- Space for Computer and POS terminal
- Seating: 240 in configurations of 2, 4 and 6’s
- Buffet: 1 large equipped buffet
- Central buffet area: multi-purpose use

### 8.2.3 Public Lounge – Reception Area

Public lounge with a configuration of lounge seating flows from the Reception area. Snacks can be served.

### 8.2.4 Main Bar and Veranda

Main bar and veranda area is one functional area.

Wine and drinks for restaurant served from the service area in Main Bar

- Seating: Restaurant tables & chairs (can be used as an overflow area when restaurant is full) and lounge style seating, 6 bar stools.
- Bar counter: u-shaped with 2 x POS facility for waiters and service bar area
- Lockable liquor and glassware storage
- Glass washing area with small glass dishwasher
- Back of house storage space in bar

### 8.2.5 Veranda

- Flows from the main bar area. Open air, roofed area with configuration of lounge and table seating
- Waiter station with POS at the bar counter
- 2 x Waiter stations at the entrances

### 8.2.6 Small Bar/Cocktail Bar

- Initially an area has been allocated and equipped to serve as an ad hoc bar area for cocktail parties and other smaller functions.
- It is used mainly as a multi-functional and semi children-friendly area. The Operator to develop according to the guests’ needs

### 8.2.7 Boardrooms

2 x Small Boardrooms adjacent to the restaurant. To serve as ad hoc meeting rooms and sales and tasting areas for banquets and conferences.

- 1 x Boardroom furnished with lounge furniture and 1 x restaurant table and chairs
- 1 x Boardroom furnished with a boardroom table and television

### 8.2.8 Food & Beverage Administration and Back of House

- F&B Manager Office
- Open Plan Office with desk space for 3 with computer terminals and space for cash-ups
- Space for administrative supplies
- F&B Control Office
- Liquor Cellar
- One store room with shelving close to the restaurant
- Crockery and Cutlery Store
- Equipment and General Store

8.2.9 Kitchen

The kitchen designed for buffet and à la carte snack or light menu.

As the lodge is situated far from large bakeries, a bakery section is included in kitchen.

- Goods Delivery and Receiving close to the back entrance of the kitchen
- Chefs Office - desk space for 2 with computer terminals, Internet connectivity and telephone points still to be supplied
- Dry Store
- Walk in Deep Freeze
- Walk in Cold Store/Fridge

8.3 Conference Centre

8.3.1 The Operator will be required to attract the MICE market with its own requirements and needs; and through them attract guests who would for the first time be exposed to the Kruger National Park. This will include weddings;

8.3.2 Bulk parking is catered for at the conference centre and lodge;

8.3.3 The Nombolo Mdluli Conference Centre floor plan and capacity is depicted below.
NOMBOLO MDLULI CONFERENCE CENTRE - SKUKUZA

NOMBOLO MDLULI CONFERENCE CENTRE FLOORPLAN
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9. SCHEDULE 2– SKUKUZA SAFARI LODGE GREEN OPERATION STRATEGY

9.1 Green Operation Experience

9.1.1 The Operator needs to confirm that the Food and Beverage Facility at the Skukuza Safari Lodge will be operated in accordance with the green star rating or similar

9.1.2 The Operator needs to adhere to the Green Operations Strategy submitted as part of its Bid Submission in terms of Section 4 of the Request for Proposal.
10. **SCHEDULE 3 - ENVIRONMENTAL GUIDELINES FOR OPERATOR’S OPERATION WITHIN THE SOUTH AFRICAN NATIONAL PARKS**

10.1 **Introduction**

10.1.1 This is an undertaking by the Operator to conduct, manage and carry out the Project at all times in an environmentally responsible way by adopting appropriate operating methods and practices for conducting such a Project in a proclaimed National Park.

10.1.2 The Operator undertakes to take all reasonable steps in conducting of the Project to prevent and limit the occurrence of any Environmental or health hazards and to ensure the health and safety of the Private Parties and the general public.

10.2 **Legislative Basis for these Guidelines**

SANParks is bound by a number of statutes with relevance to environmental management of Parks, including (without limitation) the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA); the National Water Act 36 of 1998; the Water Services Act, 108 of 1997; the National Environmental Management Act, 107 of 1998 (NEMA); the National Environmental Management: Air Quality Act; the Hazardous Substances Act, 15 of 1973; and the National Heritage Resources Act.

Authorization of any development in a Protected Area is governed by the NEMA and the NEMPAA, and regulations. Any changes to infrastructure or operations require written approval from SANParks and are subject to the prescribed policies and procedures.

The process for upgrading or refurbishment of Skukuza Safari Lodge will be undertaken as per SANParks internal policies and procedures, and authorisations given by the Department of Environmental Affairs and Tourism where relevant and SANParks.

The EIA laws and Regulations do not specifically require an EIA for a development such as the refurbishment and/or expansion of a Skukuza Safari Lodge. However, given that the development is taking place within a protected area such as a
National Park, SANParks requires environmental scoping to be conducted on any proposal to modify the Skukuza Safari Lodge. Modifications include both structural changes to the facility and additions to the facility or its environs, including signage. The scoping report must be submitted to DEA, the "relevant environmental authority" as defined in the EIA Guideline documents.¹

Operator proposing significant expansions or structural modifications should anticipate that an EIA will be required, and should factor the cost of carrying out the EIA into their financial projections.

SANParks will have a role in the EIA process, both as an Interested and Affected Party (IAP), and as the regulatory authority with jurisdiction over the Protected Area. It will be DEA's responsibility to determine whether, on the basis of information provided in the scoping report, a detailed EIA needs to be carried out.

In addition to the environmental laws the Operator will also be bound by any laws pertaining to operation on a railway line as determined by the Rail Safety Regulator.

10.3 **Guidelines Based on SANParks Internal Requirements**

The EIA Regulations cover many of the issues that will arise during the assessment of developments within National Parks. In addition, SANParks undertook a review of its internal policies that may impact on such developments.

As a result, some of the Guidelines contained herein flow from internal SANParks management documents, such as the Kruger National Park Management Plan. In some instances, however, these documents were neither sufficiently comprehensive nor sufficiently detailed as to the allowable parameters for development by commercial Operators. Where this occurred, SANParks undertook an internal effort to develop the necessary Guidelines.

A series of workshops were held with SANParks conservation staff, and specifically from KNP, who assisted in establishing standards to be applied to commercial tourism developments within the Parks. Draft standards were reviewed by a wide range of professionals within SANParks, including the Manager, Environmental Management, and Park rangers and staff from Scientific Services, Conservation Services, Park Planning and Technical Services. The Guidelines contained herein

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¹In the case of the SANParks, the ‘relevant environmental authority’ for review of EIAs conducted in National Parks is the
are the result of these efforts.

The Environmental Guidelines set out and referred to in this document must be regarded as a first step in SANParks’ efforts to compile a comprehensive Environmental Management System (EMS) for the entire Parks. Once in place, the EMS will likely be modified and refined over time, as and when needed to take into account new information, standards and conditions. Private Parties must therefore be aware that the terms and conditions set forth in these Guidelines are subject to amendment. Private Parties will be expected to comply at all times with the provisions of the Environmental Guidelines as they may change from time to time.

The remainder of this document presents the specific standards or parameters that the Operator will be expected to apply to activities in its Project Site.

10.4 **Precautionary Principle**

Ecological and natural resource processes are not always clearly understood, nor are the interactions among such processes. SANParks recognises that issues may arise suddenly, or circumstances change, due to limitations in current knowledge. SANParks has endeavoured to identify these limitations wherever possible, and to design the concession/operator management process in a way that minimises the environmental risk to the national assets under its control. However, situations may arise where changes which have not been anticipated may cause SANParks to require adaptations to the management of the area.

10.5 **Code of Conduct**

10.5.1 The Operator undertakes to induct all staff employed on the Kruger National Parks Code of Conduct.

10.5.2 The Operator confirms that the Code of Conduct is understood and will be complied with.

10.6 **Environmental responsibility:**

10.6.1 The Operator acknowledges that SANParks has an active role to play in national Department of Environmental Affairs and Tourism.
Responsible Tourism and expects the same from Private Parties that operates in National Parks. SANParks subscribes to the minimum standard of Responsible Tourism (SANS 1162) (Schedule 7) and expects the same from Private Parties that operates commercial outlets in National Parks.

10.6.2 Undertaking from the Operator to conduct, manage and carry out the Project at all times in environmentally responsible way by adopting appropriate operating methods and practices for conducting such a Project in a proclaimed National Park.

10.6.3 The Operator undertakes to take all reasonable steps in conducting of the Project to prevent and limit the occurrence of any environmental or health hazards and to ensure the health and safety of the Private Parties and the public.

10.7 **Regulatory Provisions**

10.7.1 The Operator undertakes to adhere to the Regulatory Provisions and the Environmental Specifications.

10.7.2 The Operator undertakes to comply with its statutory duties in terms of the Environmental Laws and to take reasonable measures to prevent pollution or degradation from occurring, continuing or recurring or, in so far as such harm to the Environment is authorised by SANParks, to minimise and rectify such pollution or degradation of the Environment.

10.7.3 The Operator undertakes to comply at all times with the provisions of the Environmental Guidelines.

10.7.4 The Operator acknowledges that the terms and conditions set forth in the Environmental Guidelines are subject to amendment.

10.7.5 The Operator undertakes to comply with amended Environmental Guidelines.

10.8 **Environmental Impact**

10.8.1 Confirmation that all legislative requirements including Environmental Impact Assessment (EIA) or Basic Assessment (BA) requirements are understood
and will be complied with.

10.8.2 The Operator undertakes to bring to the attention of SANParks any matter which may, in its view, have a detrimental impact on the Environment within the Protected Area.

10.8.3 Where fish might be part of the menu, the Operator needs to subscribe to the South African Seafood Initiative (SASSI) and only sell fish with green status or SASSI certified.

10.9 **Solid Waste Management:**

10.9.1 The Operator undertakes to manage all waste that is generated in such a way that direct and indirect impacts are kept to a minimum.

10.9.2 The Operator undertakes to achieve Solid Waste Management Best Practices which implies the following:

10.9.2.1 Manage solid waste from source to disposal (use of green bags for recycle waste and black bags for non-recycle waste as per KNP Waste management system);

10.9.2.2 Strive to eliminate non-recyclable or hazardous packaging or containers at the procurement phase;

10.9.3 The Operator undertakes to include the following policies in the waste management:

10.9.3.1 Green Procurement Policy: This policy defines the procedures that the Operator will implement to ensure that all produce, containers and packaging comes from suppliers that under-write environmental principles, and that waste be recyclable as far as possible;

10.9.3.2 Hazardous Waste Policy: The Hazardous Waste Policy defines procedures that the Operator will implement to manage any hazardous waste, to ensure that it is firstly minimised, but also that it is stored and discarded in a safe and legal way.

10.9.4 The Operator will follow the following guidelines to minimise the effect of the solid waste on the ecosystem:

10.9.4.1 Minimise solid waste production at all sources, by striving for the
minimization of all waste.

10.9.4.2 Maximise the recycling of solid waste. Glass, tin, paper and cardboard must be sorted on site for recycling, while actual recycling will take place off site at the approved camp waste disposal site.

10.9.4.3 All waste must be removed to the respective approved camp waste disposal site and incinerator for disposal and recycling. The dumping and disposal of waste other than at the approved waste site is strictly prohibited and failure to comply may result in termination.

10.9.4.4 Waste storage and sorting areas must be properly maintained. Back-of-house waste cages and waste storage areas must remain clean and secure from problem animals.

10.9.4.5 Waste storage areas must remain visually hidden from visitors to the park.

10.9.4.6 Packaging and containers given to visitors must be environmentally friendly, biodegradable and recyclable.

10.9.4.7 The distribution of plastic bags and polystyrene to visitors is strictly prohibited and only brown paper bags are allowed to be given for the purpose of carrying items purchased.

10.9.4.8 In terms of packaging the Private Operator undertakes to not use the following in outside seating and eating areas as this pollutes the park:

10.9.4.8.1 Sachets (for sugar, tomato sauce, salt and pepper, etc.);

10.9.4.8.2 Paper serviettes;

10.9.4.8.3 Butter tubs/pads

10.9.4.8.4 Plastic Straws

10.9.4.8.5 Plastic cutlery

10.9.4.9 The Operator must undertake to continuously strive towards eliminating plastic water bottles and single-use plastics in their operations as part of an initiative by the KNP.

10.9.4.10 Ensure that the all areas are kept free of litter by promoting an ethic amongst guests and staff alike and soliciting the co-operation of all staff to pick up litter wherever they find it.
10.10 **Liquid Waste Management:**

10.10.1 Liquid waste refers to sewerage as well as grey water;

10.10.2 The Operator undertakes to manage liquid waste in accordance with national and local legislation requirements;

10.10.3 The Operator undertakes to design management techniques to be both economically viable and environmentally sustainable;

10.10.4 The Operator undertakes to implement waste procedures that optimise the principles of waste reduction and waste recycling and ensures that the end product do not pollute the environment;

10.10.5 The Operator undertakes to maintain the grease taps for:

10.10.5.1 Pot and Rinse Sinks attached to Dish Washers;

10.10.5.2 Fixtures or drains through which significant amount of fats, oils or grease may be introduced;

10.10.5.3 Soup Kettles or similar devices;

10.10.5.4 All sinks that are used to clean any dishes, pots, pans or cooking utensils.

10.10.6 The Operator undertakes to implement processes and procedures which stipulates the following:

10.10.6.1 Kitchen staff should inspect and clean grease traps and interceptors at daily and maintain a log sheet of each trap inspection detailing condition of the trap and any maintenance activity;

10.10.6.2 Ensure that grease traps are cleaned daily; and

10.10.6.3 That waste recovered from the grease traps be removed from the park and disposed of at an authorised facility.

10.11 **Water Management and guidelines:**

10.11.1 The Operator undertakes to implement water conservation measures in the design and implementation of their operations;

10.11.2 The Operator undertakes to:
10.11.2.1 Monitor the use of water;

10.11.2.2 Educate staff via on-site notices on the use of water;

10.11.2.3 Set water usage targets (monitored weekly/monthly) and manage these targets; and

10.11.2.4 Aim to avoid accidental loss through effective maintenance, installing quality storage and reticulation systems and implementing leak detection systems.

10.12 Chemical substances

10.12.1 The Operator (including staff of the Operator) undertakes to not use any of the chemicals that are banned from use in KNP (as determined by any Environmental Manager in National Parks);

10.12.2 The Operator acknowledges that all chemicals listed as “Prohibited” (Schedule 9) may not be brought into or used in the KNP.

10.12.3 The Operator undertakes to ensure safe storage and disposal of preferred chemicals (Schedule 10) and their containers;

10.12.4 The Operator undertakes to have a specific disposal system for toxic or other waster regarded as being dangerous under supervision of the Technical Services Department;

10.12.5 The Operator undertakes to only use environmentally friendly and biodegradable detergents and cleaning agents.

10.13 Pest Control

10.13.1 The Operator undertakes to comply with the integrated pest management plan as provided by SANParks (Schedule 12);

10.13.2 Where and if required the Operator undertakes to control bats as outlined in in the SANParks Bat Management Plan;

10.13.3 The Operator undertakes to make use of preferred pest control chemicals as outlined in the SANParks Pest Control Report.
10.14 **Visual Impacts**

10.14.1 Describe efforts to minimize the visual impacts of the development, including lighting;

10.14.2 The Operator undertakes to implement mitigation measures in order to reduce the visual impact in the park.

10.15 **Monitoring and Compliance**

10.15.1 The Operator agrees to cooperate with SANParks in compiling a monitoring checklist that encompasses all environmental conditions. The checklist would be used for auditing purposes and would be conducted once every 6 months; and

10.15.2 The Operator agrees that SANParks will monitor, evaluate and score the operations (based on the line items in the checklist) and that a score of less than 85% for three (3) consecutive audits would imply material breach of the Management Agreement.

10.15.3 The Operator acknowledges and agrees that failure to comply with any of the environmental standards and requirements will result in a fine / penalties being issued to the Operator.

10.16 **Energy use**

10.16.1 The Private Operator undertakes:

10.16.1.1 To measure energy use and continuously aim to implement measures to reduce energy usage until optimal levels are reached;

10.16.1.2 Monitor the use of energy;

10.16.1.3 Educate staff via on-site notices on the use of energy;

10.16.1.4 Set energy usage targets (monitored weekly/monthly) and manage these targets.
11. SCHEDULE 4 – BROAD BASED BLACK ECONOMIC EMPOWERMENT

11.1 BBBEE REQUIREMENTS FOR THE DURATION OF THE MANAGEMENT AGREEMENT

11.1.1 At least 51% of total measured procurement spend must be from black South African Suppliers within a 150km radius of the Skukuza Safari Lodge;

11.1.2 Failure to meet these requirement will be seen as a material breach of the contract which will result in termination.

11.2 EXTERNAL BBBEE VERIFICATION

11.2.1 The Private Party shall appoint a reputable external verification agency to determine the Private Party’s BEE Recognition Level and a copy of such certificate shall be provided to SANParks within 15 (fifteen days) after the end of each Project Year. The level submitted as part of the tender should be maintained or improved for the duration of the contract.

11.3 OPPORTUNITIES FOR LOCAL PROCUREMENT

Opportunities for local procurement could include but is not limited to the following opportunities:

11.3.1 Environmentally friendly bottled water

Environmentally friendly water bottling using refillable glass bottles with the Wild Brands as well as ice-cube manufacturing.

11.3.2 Fresh Produce

It may be a worthwhile exercise to establish the viability of sourcing items from local farming collectives who are in possession of the relevant Health Certificates as determined by the applicable by - laws. Examples to be debated:

11.3.2.1 Seasonal vegetables

11.3.2.2 Seasonal fruits
| 11.3.2.3  | Juices  |
| 11.3.2.4  | Eggs    |
| 11.3.2.5  | Chickens|
| 11.3.2.6  | Other   |
12. SCHEDULE 5 – OUTSTANDING CAPEX ITEMS

12.1 IT AND RELATED:

12.1.1 PMS (Property Management System)

12.1.2 POS (Point of Sale) that links with PMS

12.2 FOOD AND BEVERAGE

12.2.1 Buffet equipment and crockery/cutlery

12.2.2 Crockery

12.2.3 Cutlery

12.2.4 Glassware and outdoor glassware

12.2.5 F&B linen

12.2.6 Menus/folders

12.2.7 Waiter equipment

12.2.8 Kitchen – cookery ware – pots/pans/equipment

12.2.9 Bush braai equipment

12.3 CONFERENCING

12.3.1 All conferencing equipment that may need replacement
13. SCHEDULE 6 – SKUKUZA SAFARI LODGE GREEN BUILDING INITIATIVES

13.1 Sustainable Sites

13.1.1 Construction Activities Pollution Prevention

Building construction best management practices were integrated into the EMP as Construction Activities Pollution Prevention and will be applied on site during construction.

SANParks waste management policy for the KNP was also included in the construction process in order to limit waste and pollution as a result of the construction works. This included the sorting of construction waste and diversion of waste to recycling.

Prior to the demolition and removal of some of the existing buildings, it became apparent that a fair amount of hazardous Asbestos materials had to be removed from the site. This was mainly comprised of roofing materials, fascias and bargeboards, etc. In terms of gazetted legislation, it was necessary to call in a specialist consultant to assess the extent of Asbestos, and then to prepare a detailed specification in terms of the process to be followed for the removal and proper disposal of the Asbestos material. All the hazardous materials were disposed of at a registered dumping site in Olifantsfontein, Gauteng.

As much as possible trees on the site are to be protected during construction. The site chosen for the Lodge was selected due to its already disturbed nature within Skukuza Camp and minimal damage will occur to existing plants.

13.1.2 Storm Water Quantity & Quality

Storm water management on site during construction is incorporated into the EMP for the site. The design for the Lodge also includes the harvesting of rainwater for re-use irrigation of the areas around the lodge.

13.1.3 Heat Island effect on roof and non-roof systems

Roof areas not covered by PV will be coated with SRI coatings or to use ex.
factory coating that has an SRI > 78. Non-roof areas will be landscaped as far as possible and parking is to be achieved using grass block pavers or shaded using artificial shading systems or trees.

13.1.4 Light pollution reduction

The lodge lighting is designed to limit light pollution in line with LEED and ASHREA requirements. A lighting impact assessment was commissioned as part of the lodge EIA and showed a negligible increase in light pollution above the ambient light within the Skukuza Camp.

13.2 Water Efficiency

Water use reduction target of 35% below the LEED baseline has been set for the Lodge. This will be assessed once the facility is built in order to confirm that the target has been achieved. Fixtures (flow and flush) that exceed LEED baseline of 20% water savings have been specified for all areas. All rooms to have showers, not baths. Industrial consumption (kitchen, laundry) is to be minimised to ensure LEED compliance and Laundry and Kitchen equipment water usage to be optimised during procurement.

Water sub metering within the building has been accommodated. Electronic metering feeding back to central control room have been specified. The areas currently metered include: Domestic hot water, Main meter, Kitchen, laundry, grey water, irrigation use

Water efficient landscaping will be specified that is locally endemic and indigenous. Existing baobab trees planted at the establishment of the park will not be removed. The irrigation system that is fed with non-potable water only.

13.2.1 Innovative Wastewater Technologies

Grey Water Plant will be installed to treat the total available grey water from all showers and used for toilet flushing and irrigation purposes

The design case total flow from showers is 7,594,920 l/y. The total flush requirement is 1,167,270 l/y while the irrigation requirement is min 609 531 l/y assuming sprinklers for 6000m2 project lawn and the remainder for irrigation of the surrounding areas. The required system is to process approx. 10,000 litres of water per day.
13.3 Energy and Atmosphere

13.3.1 Building Commissioning Process

Commissioning will be carried out by the responsible Engineer / commissioning agent to ensure that all aspects of the services installation comply with the specification and that there are no abnormalities within the building that could affect building performance.

13.3.2 Energy Performance

An energy, thermal comfort and daylight model have been developed to assist engineers and architects in investigating different building solutions; use model for value engineering and have influenced the selection of glazing, roofing finishes, Air-conditioning Plant, Hot Water Plant & Kitchen Equipment.

The target for Energy efficiency interventions aim to achieve 30% reduction in energy usage over ASHRAE 90.1-2007

13.3.3 Shading

Design incorporates shading to all glazing and special attention has been paid to east / west solar shading.

13.3.4 Energy Efficient systems

13.3.4.1 Heating, Ventilation and Air Conditioning

The following HVAC principles are incorporated into the mechanical design; Efficient equipment, Night time pre-cooling / flushing & Free cooling, CO2-monitoring, Variable air volumes, Dehumidification and Switch-off controllers to bedroom air-conditioning when these are unoccupied.

13.3.4.2 Electrical Sustainable Design and Operation

The green building initiative related to the electrical discipline have been incorporated using:
13.3.4.2.1 The client selected “Best Practice Targets – Level 2: Preferred best practice initiatives and a BMS but with no green certification”.

13.3.4.2.2 The requirements of ASHRAE 90.1.

13.3.4.2.3 The ASHRAE Advanced Energy Design Guide for Highway Lodging (which aim to reduce energy consumption to 30% below that of ASHRAE 90.1).

13.3.4.2.4 Selecting the best possible electrical or alternative technology (e.g. gas) to achieve or better the power densities (power consumed per square meter) contained in the local and ASHRAE codes.

13.3.4.2.5 Installing control mechanism such as occupancy sensors, lighting control systems to reduce the lighting burn time to only when it is needed and building monitoring systems to monitor energy usage.

Water and energy meters will be installed at appropriate points and linked into the BMS system to log and analyse consumption. Consumption reports and measurement of consumption against the energy efficiency targets will be available via the BMS onto management PCs, the front information display kiosk and back to SANParks Pretoria via web interface. This information serves as a benchmark and early warning system when trends change unexpectedly.

On site commissioning of all electrical and electronic systems will be done in greater detail than the norm to follow LEED guidelines but with recognition of the budget constraints.

13.3.5 Building Management System

A Building Management System (BMS) will monitor all the areas identified in the Level 2 Best Practice Targets across all disciplines.

The BMS will have four main functions:

13.3.5.1 Log and analyse data;

13.3.5.2 Monitor the current status of the Lodge and its sub-systems;

13.3.5.3 Maintenance records and notifications;
13.3.5.4 Alarms.

The BMS will log the data received from a variety of devices (water meters, energy meters, flow meters, pressure meters etc.) and store the history of the recorded values from a week to years' worth of data. A sample of the data that can be analysed and used to display:

- Power & Water consumption:
  - Overall
  - A single area (e.g. ground floor, west wing guest room).
  - A single device or plant (e.g. HVAC).
- HVAC
  - HVAC performance (e.g. showing the average cooling coefficient - the time to cool a room or area to a specific set point, the coefficient of performance for the chiller in order to monitor maintenance needs or piping issues).
  - Refrigerant levels and pressures.
- Equipment failure trends

From the BMS graphical interface it is possible to view the status of a device. Typical control would consist of but not be limited to:

- Having a graphical view of where a fire alarm has occurred with links to emergency procedures and contacts immediately available to the service team.
- Scheduled maintenance reminders with links to standard operating procedures for maintenance.
- Changing the temperature settings of selected areas.
- Change the minimum and maximum HVAC levels in the rooms.

By extracting historical data and current performance data the system can provide the Lodge with maintenance and performance information such as:

- Expected lamp failures based on the lamp's historical performance vs the expected lamp life. This information can be used to do mass lamp replacements that can be properly arranged instead of doing a replacement every time a lamp fails.
- Should a chiller compressor operate outside of its parameters the Lodge
can be alerted to investigating the possible causes even if the system is still operating normally. This kind of data helps with preventative maintenance, saves money and ensures guest comfort.

- Historical data can also be used to baseline equipment and identify trends where failures are occurring outside the trend resulting in corrective measures.

Should any system operate outside its parameters an alarm will be raised in the form of a visual and audio alarm at a chosen location (reception, technical office etc.) These alarms can also be emailed and/or sent via SMS to off-site technical personnel or vendors responsible for maintenance.

All alarm history is stored and thus there is always an active history available with regards to the system alarms providing a detailed maintenance tool.

### 13.3.6 Energy efficient equipment

Where available appliances, electrical fittings and mechanical equipment with independently verified energy efficiency ratings will be selected but with recognition of the budget constraints.

Appliances and mech equipment However, all fan coil units, extraction fans, pumps etc. will need to be rated, requiring an additional 30% to 40% increase in equipment costs?

### 13.3.7 Renewable Energy

A photo voltaic farm is currently proposed for Skukuza Camp in order to reduce energy consumption. The size and nature of the farm is limited by environmental considerations. The project is under direct control of SANParks and does not form part of this project.

### 13.3.8 Green Power purchases

It is anticipated that the Lodge will sign 2-year contract for renewable energy credits to provide 70% of buildings electrical use.

### 13.3.9 Measurement & Verification

Measurement and verification will be via the BMS system using the various
energy, flow and pressure meters in the electrical and mechanical systems. The BMS will use this information to record detailed sub-metering and generate automatic reports, trends and warnings on energy usage.

13.4 Material and Resources

13.4.1 Waste area fitting out

Planned waste separation area size is in line with best practice and is to be fitted out and linked to SANParks Skukuza Recycling system.

13.4.2 Construction waste management

Incorporate best management practice into SANParks waste management policy and incorporate into Tender. The current target 75% diversion from landfill.

13.4.3 Recycling Material

The target of 20% recycled content of construction material was set in the tender, the cost of which was included in the tender amount.

13.4.4 Cement bricks

Cement bricks with recycled content.

13.4.5 Clay bricks

Recycled content in clay bricks.

13.4.6 Carpets

Recycled content in carpets.

13.4.7 Interiors

Linen: 100 cotton linen and throws for the bedrooms.

Décor: A local beneficiation project initiated with students to provide photographs for bedrooms. Local artists are being sourced by the Public Areas.
Interior Designers for public areas décor.

13.4.8 Rapidly renewable content

As far as possible building elements are to be made from rapidly renewable materials. Renewable materials include; Roofing (thatch), Flooring (bamboo, wool – not if imported), Furniture (where possible), Shop fitting where possible.

13.4.9 Sustainable timber

FSC certified timber from regional sources (150km) was used during construction.

13.5 Indoor Environmental Quality

The indoor environmental quality will incorporate the following:

- Environmental Tobacco Smoke (ETS) Control
- Minimum air quality will comply with SANS 10400
- IAQ management will not be incorporated in the PBC contract
- No VOC products and urea formaldehyde are specified in the building
- Indoor lighting control incorporates best practice
- Thermal control is in accordance with best practice requirements and all services will follow enhanced commissioning process to ensure that equipment is incorporated into operation for verification.

13.6 Furniture and Interior Elements:

Further considerations when designing and selecting the furniture and interior elements are:

- Embodied Energy:
  - Consider energy usage during its life-span
  - Consider energy usage during manufacturing
  - Consider energy usage for maintaining the element
- Life-Cycle:
• Cradle to cradle approach instead of a cradle to grave approach. (Eliminate the amount if items that will become landfill at the end if its life-span.)

• Consider the type of waste it will become:
  - Toxic waste?
  - Landfill?
  - Organic Waste / Biodegradable Waste

• Longevity:
  - The longer an item lasts, the less waste it generates and less embodied energy it consumes.
  - Adaptability and reusability takes preference.

• Carbon Footprint:
  - How much CO2 is generated during its manufacturing process?
  - How much CO2 is generated during its transportation process?
  - Even if the items cannot be sourced from the specified radius, using South-African (especially handcrafted) products takes preference over imported items.

• Preference to “RRRR” Materials:
  - Recycled Materials
  - Reclaimed Materials
  - Recyclable Materials
  - Reduced materials

• Preference to Grown Materials:
  - Certified Timber
  - Water Consumption
  - Non-Toxic
  - Carbon Sequestration
14. SCHEDULE 7 – SANS 1162:2016 – SOUTH AFRICAN NATIONAL STANDARD RESPONSIBLE TOURISM REQUIREMENTS

The National Minimum Standard for Responsible Tourism (SANS 1162) was developed with objective of establishing a common understanding of responsible tourism by developing a single set of standards to be applied throughout South Africa by harmonising the different sets of criteria that were used for certifying the sustainability of tourism businesses. The National Minimum Standard for Responsible Tourism consists of 41 criteria divided into four categories i.e. sustainable operations and management, economic criteria, Social and cultural criteria and environmental criteria.
15. **SCHEDULE 8 – NATIONAL RESPONSIBLE TOURISM GUIDELINES FOR SOUTH AFRICA (MAY 2002)**

15.1 **Guiding Principles for Economic Responsibility**

Tourism still plays a relatively small role in the South African economy and it has a long way to go if it is to fulfill its potential to significantly contribute to national income. Traditionally the main focus of governments has been on the growth in international arrivals and total foreign exchange earnings, and is now on fostering entrepreneurial opportunities for the historically disadvantaged, poverty relief, employment and local economic development. Both domestic and international tourism can create employment; it is a relatively labour intensive industry and it employs a multiplicity of skills from accountants and hairdressers to tour guides and trackers. Tourism can provide very good skills development opportunities for local communities.

The White Paper concluded in 1996 that tourism development in South Africa had largely been a missed opportunity; and that the focus on a narrow market has reduced the potential of the industry to spawn entrepreneurship and to create new services, like local entertainment and handicrafts, and to drive local economic development. In fact formal tourism sector provides major opportunities for the informal sector. Tourists travel to the ‘factory’ to consume the product; they travel to the destination to enjoy their holiday. Tourism is a “final good”, all the final touches have to be provided in South Africa and so the value is captured here. The value of a taxi ride from the airport, wildlife viewing and restaurant meals all accrue to the local economy – the challenge is to maximise it by reducing leakages and developing the multiplier effect. Tourist enterprises attract domestic and international tourists and create opportunities for small entrepreneurs and economic linkages, for example agriculture, hunting, handicraft production, and a wide range of service industries which tourists are likely to consume in the destination.

South Africa is now beginning to work on maximising the local economic benefits which tourism can bring to an area; there is much to be gained from creating a more diversified tourism product and marketing a wider range of experiences, activities and services to tourists. Established enterprises can gain by encouraging and assisting the development of complementary product – the larger and more
diversified the local tourism base, the more successful enterprises in the area will be. The White Paper identified a wide range of opportunities for historically disadvantaged groups ranging from small guesthouses, shebeens and restaurants with local cuisine, through community tour guiding, music, dance and story-telling, arts and crafts, traditional hunting and medicine to laundry, gardening and specialty agriculture. Tourism provides particular opportunities for local economic development in rural areas where it can provide people with an alternative to moving to urban areas. Tourism must be market related. If community-based and other tourism development processes are not planned, implemented and managed according to market demands then far too many South Africans, especially the poor, are facing not merely “missed” opportunities, but the hard realities of failed or under-performing products to which tourists simply do not come. The African cultural tourism experience needs to be woven into the fabric of the mainstream South African tourism product.

Domestic tourism plays an important part in the South African tourism sector and it is expected to continue to grow, as historically disadvantaged people become tourists and travellers themselves. Whether the tourists are domestic or international, their expenditure in local communities contributes to the economic development of the area. The greater the proportion of total tourism spending that stays in the local area, the stronger and more diverse the local economic base. The multiplier effect is greatest where the local linkages are strongest – the imperative is clear, source the inputs for all tourism enterprises as locally as possible in order to maximize local economic benefit and to assist in diversifying the local economy. Reducing economic leakages from the local area and increasing linkages will bring significant local economic development and assist in local economic diversification. Similarly, the development of complementary product will strengthen the local economy and local enterprises, groups of established enterprises working together can make a significant difference. Strong economic linkages at the local level were identified in the White Paper as a critical success factor in the local economy.

There is an increasing aspiration for Fair Trade in Tourism in several of the international originating markets; part of a trend towards increasing demand for equitably traded products. Increasing numbers of consumers are purchasing products that demonstrably benefit local communities more fairly than competitor products. The IUCN South Africa Fair Trade in Tourism marketing initiative has identified a set of principles that embody a strong commitment to responsible tourism. It is a good example of a responsible tourism marketing association with a
vision of just, participatory and ethical tourism that provides meaningful benefits to hosts and visitors alike. The principles of Fair Trade should be part of the culture of responsible tourism.

15.2 Economic Objectives and Indicators

15.2.1 Assess economic impacts as a pre-requisite to developing tourism

(a) Extend the season of enterprises by developing new products to create better employment conditions and to provide a stronger base for local economic development. Monitor occupancies or seasonality of employment over the year to show progress in extending the season.

(b) The historically disadvantaged are a significant emerging domestic tourism market. Identify and encourage commercial responses to this opportunity.

(c) Recognize that our cultural heritage should not only be assessed in economic terms, and that tourism can create revenue from cultural heritage, traditional ways of life and wildlife and habitats.

(d) Encourage business relationships between foreign entrepreneurs and local and emerging entrepreneurs.

(e) Always consider the opportunity costs of tourism for local communities and their livelihoods, and be prepared to accept that there may be more appropriate economic opportunities for the area. Maintain and encourage economic diversity, avoid over dependency on tourism.

(f) Plan initiatives and investment to contribute to the broader local economic development strategy (for example, Integrated Development Plans (IDP’s) for the area).

(g) Planning authorities need to consider how they can intervene to avoid tourism developments where they may cause adverse effects such as local land price inflation, loss of access to resources or undermining sustainable livelihoods.

(h) Exercise a preference for business and land tenure arrangements that directly benefit local communities and/or conservation.

(i) Conduct market and financial feasibility assessments before raising
expectations and exposing the community or local entrepreneurs to risk.

15.2.2 Maximizing local economic benefits – increasing linkages and reducing leakages

(a) Encourage all establishments to upgrade their standards of service, particularly small, medium and micro-enterprises and emerging entrepreneurs, and to maximize their revenue earning potential by adding value.

(b) Encourage the informal sector to become part of the formal sector.

(c) Buy locally made goods and use locally provided services from locally owned businesses wherever quality, quantity, and consistency permits. Monitor the proportion of goods and services the enterprise sourced from businesses with 50 km and set 20% target for improvement over three years.

(d) Help local communities or emergent entrepreneurs to develop their product so that it can be more easily used by others and marketed to tourists.

(e) Co-operate with other formal sector businesses to maximize benefits for local community enterprises – for example, a community laundry or tailoring business may only be viable if a group of enterprises commit to source supplies there. Showcase the initiative and be explicit about whether community projects are funded by tourism revenue to the enterprise, donations from tourists or tour Operators, or funds from donor aid agencies.

(f) Give customers the opportunity to purchase locally produced crafts and curios, set targets to increase the proportion of sales of goods sourced within 20 km of the enterprise. Assist local craft workers to develop new products to meet market demand as evidenced in the enterprise.

15.2.3 Ensure communities are involved in and benefit from tourism

(a) Government and established businesses need to redress previous imbalances, and to enable the historically disadvantaged to engage in the tourism sector. For example, they should source 15% of services and 15% of products, increasing by 5% per year, for 3 years, from
historically disadvantaged groups, and/or individuals, and report on purchasing activities.

(b) Work closely with local communities, small, medium and micro-enterprises and emerging entrepreneurs to develop new products that provide complementary products for formal sector tourism enterprises.

(c) Develop partnerships and joint ventures in which communities have a significant stake, and with appropriate capacity building, a substantial role in Management. Communal land ownership can provide equity in enterprises.

(d) Identify projects that the enterprise can support that will benefit the poor. Identify at least one project.

(e) Assist the development of local communities and emergent entrepreneurs with visitor feedback on their products.

(f) Consider guaranteeing loans for promising projects in communities or with emerging entrepreneurs, and providing marketing, training and managerial support.

(g) Foster the development of community-based tourism products by providing marketing and mentoring support.

(h) Encourage visitors to spend more money in the local economy, and to visit local bars and restaurants and participate in tours to local areas, bringing business to local communities. Where appropriate treat this as part of the business of the enterprise and charge a booking fee or commission, or sell craft and local food products through the mainstream enterprise.

(i) Encourage tour Operators be more innovative in their itineraries, by for example including shebeens, local museums, arts and craft shops and local ethnic restaurants in their tour itineraries, and by doing so encourage visitor spend.

(j) Consider using local entrepreneurs (particularly emerging and historically disadvantaged entrepreneurs), experienced consultants and non-governmental organisations in developing community initiatives.

(k) Be transparent when reporting community benefits distinguish between benefits to employees, benefits to emerging or community based
entrepreneurs and community benefits, for example leasehold payments that go to community projects (grinding mills or school books) or are distributed as household income in the local area.

(l) Consider establishing targets to monitor progress in achieving objectives.

15.2.4 Marketing & Product Development

(a) Lack of market access is a major constraint on the growth of new enterprises. Enterprises should provide information about local services and attractions provided in local communities, and encourage their clients (individuals and Operators) to use them.

(b) Consider co-operative advertising, marketing and the promotion of new and emerging products and attractions.

(c) Ensure that the visual way in which the product is presented includes local cultural elements and emphasizes the richness of the local complementary product.

(d) Consider developing and marketing fairly traded tourism products.

(e) Foster the development of access opportunities for all visitors and potential visitors, regardless of physical or mental conditions of the visitor. Public authorities and enterprises need to understand and embrace financial incentives that enhanced accessibility will create, and the positive image such ‘access to all’ will provide.

15.2.5 Equitable Business

(a) Enterprises should pay fair prices for local services purchased or packaged as part of mainstream itineraries. Beware of abusing market power and imposing unfair commissions or pushing down prices inequitably.

(b) Develop transparent systems of sharing the benefits of tourism through equitable contracts. (E.g., this can be applied through tendering processes.)

(c) When entering into agreements with local communities or emerging entrepreneurs ensure that the risk is equitably shared.
(d) Recruit and employ staff in an equitable and transparent manner and maximize the proportion of staff employed from the local community. Set targets for increasing the proportion of staff and/or of the enterprise wage bill going to communities within 20 km of the enterprise.

(e) Develop a community labour agreement with targets for employment and for progression. Recognize that the enterprise can play a significant role in increasing the skills and capacity of the local community and that the enterprise benefits from that.

(f) Go beyond the bare minimum wage rate and invest in local staff – quality is dependent upon well-motivated staff.

15.3 **Guiding Principles for Social Responsibility**

*Batho Pele: Putting People First – One and all should get their fair share*

Tourism and the travel industry “is essentially the renting out for short-term lets, of other people’s environments, whether that is a coastline, a city, a mountain range or a rainforest.” Tourism is dependent upon the social, cultural and natural environment within which it occurs, and its success is dependent upon the environment that it operates within. Good relationships with neighbours and with the historically disadvantaged make good business sense. These relationships need to be based on trust, empowerment, co-operation and partnerships. Too few of the benefits from tourism currently accrue to local communities whose environment is visited.

As was pointed out in the White Paper, the majority of South Africans have never been meaningfully exposed to the tourism sector. In the new South Africa, the government’s objective is to ensure that all citizens have equal access to tourism services as consumers and providers. Enterprises and communities need to identify ways in which they can provide a range of tourism experiences sufficiently wide to be accessible to the average South African. Programmes are being established to allow South Africans, and particularly front-line tourism employees, to become “tourists at home”. To this end, the notion of *Batho Pele* is a guiding principle.

The opportunity costs of the creation of national parks and subsequent reduced access to natural and cultural resources was often borne by local disadvantaged communities in the past. Such communities did not perceive or receive any
significant direct benefits from the change in land use from conservation and tourism. Communities must be empowered to take part in the Management of areas so that they can have a say in the distribution of the benefits and the sustainable use of their environment. Efforts are not being made to enable local communities to experience wildlife in the parks.

One of the key challenges for business, local government and educators is to develop knowledge amongst the historically disadvantaged regarding what tourism is, and how it can benefit local communities. In the 1996 White Paper the involvement of local communities and historically disadvantaged groups was identified as a critical success factor. Communities need to be involved in the planning, decision-making and the development of tourism; and in all operational aspects of the industry as tourists, employees and entrepreneurs. Social exclusion has contributed to the historically narrow, myopic focus of the industry in South Africa. Responsible tourism is about enabling and encouraging historically disadvantaged local communities to access lucrative tourism markets. This is to overcome the problem of visitors being kept within the hotels and resorts and only venturing out to ‘sanitized’ places of interest. For example, local shebeens and craft vendors rarely see a tourist.

One of the key challenges for the formal sector is to develop ways of engaging with community entrepreneurs and community groups to develop new products and diversify the industry. The success of township tours is one example of the product development opportunities that exist in the new South Africa. Much more effort needs to be made to improve the linkages between the formal and informal sectors of the tourism sector. The exclusion of the historically disadvantaged has contributed towards poverty and crime – the ‘township tours’ demonstrate that where local guides act as hosts, and where there are clear benefits both to communities and to historically disadvantaged entrepreneurs, tourists can have a good experience and be assured of their safety. In 1995, involving local communities in tourism, creating employment, training, and awareness programmes were identified as solutions to the problem of security for tourists. There is much still to be done and this is a core challenge for responsible tourism. National priorities for action are described within 3.1: Social objectives and indicators.

The meaningful involvement of historically disadvantaged communities as employees and as entrepreneurs in South Africa is a priority. This requires both market access and capacity building. Training at all levels is essential to the
development of a more inclusive industry, able to demonstrate its social responsibility and to develop new products which meet the cultural and “meet the people” interests of tourists. The development and delivery of new quality products for the changing market place is of central importance to enable the historically disadvantaged to become part of mainstream tourism. It is also required for social justice and the avoidance of exploitation of local cultures and community groups. The value of the culture of historically disadvantaged people needs to be recognized and new tourism products developed. Their awareness of the opportunities in tourism needs to be a key element in training and education, and it is important that these opportunities be presented in a realistic commercial framework.

15.4 Social Objectives and Indicators

15.4.1 Involve the local community in planning and decision-making

(a) Understand the historical, political and cultural context of local and host communities, and historical relationships with tourism development and protected areas.

(b) Creating opportunities and eliminating barriers to access mainstream tourism markets for local communities, historically disadvantaged people and individuals.

(c) Understand the local, safety and security, infrastructural, resource, educational, poverty, disability and health constraints (e.g. HIV/AIDS), when designing, operating and marketing tourism.

(d) Encourage proactive participation and involvement by all stakeholders - including the private sector, government at all levels, labour, local communities (their leaders and structures) - at all stages of the tourism life cycle.

(e) Encourage formal and informal sector enterprises to develop effective structures, or join existing bodies, for marketing and tourism development. Create the environment to do so by providing resources, technical and Management capacity.

(f) Encourage successful entrepreneurs, particularly those from the emerging tourism fraternity, to mentor others.
(g) Planning authorities should work to include stakeholders as part of a decision-making process at the destination level, to determine what constitutes sustainable levels of tourism in the social, natural, and economic context.

(h) Programmes of education within school curriculums, and public awareness within communities, are needed regarding the potential positive and negative aspects of tourism.

(i) Post-employment education and training programmes within the framework of the Skills Development Act and South African Qualifications Authority (SAQA) are required to educate employees regarding the potential pros and cons of tourism, and comparative costs and benefits of alternative enterprises in order to aid decision-making.

(j) Involve the local communities in growing the local tourism business by using existing facilities and by developing new activities and attractions. Individual enterprises and groups of enterprises need to develop complementary products. (Report number of new activities/attractions; number of visitors).

(k) Empower communities to market their cultural traditions and products as assets and enhance their economic opportunities.

(l) Interpretation material and visitor information centers should be developed in consultation with local communities.

(m) Integrate community development goals as identified in the Integrated Development Plan (and similar processes) into the enterprise’s social and sustainability mission and objectives.

15.4.2 Assess social impacts as a prerequisite to developing tourism

(a) Identify and monitor potential adverse social impacts of tourism and minimize them in the short and the long-term, and ensure that communities actively participate in the monitoring.

(b) Larger enterprises should appoint a member of staff to take responsibility for developing better local relationships and partnerships. Implement social audits of tourism projects. These can be conducted in an inexpensive, rapid and participatory way.
(c) Consider schemes to encourage local co-operation and civic pride like an “adopt a school” initiative or ‘adopt a street’, or other local area near the enterprise. Work with local government and the local community to identify priority sites, and make them safe and attractive for tourists.

(d) Enterprises should develop strategies to promote equality in terms of gender, ethnicity, age, and disability, and report progress on implementation.

15.4.3 Maintain and encourage social and cultural diversity

(a) Develop tourism with dignity, respect and nurture local cultures (including religion), so that they enrich the tourism experience and build pride and confidence among local communities.

(b) Use tourism as a catalyst for human development, focusing on gender equality, career development and the implementation of national labour standards. (Report on gender equality and career development)

(c) Tourism development should not compromise respect for social, cultural, and religious rights, or the essential human rights of people to food, a safe and clean environment, work, health, and education.

(d) Support the development of sustainable local handicraft enterprise by assisting with improvement of design, marketing, production and packaging skills for craft workers in relation to market demand. Consider specifically what can be done to enhance the skills and earnings of women, particularly in rural areas.

(e) Support visits by local schoolchildren to tourism sites that promote and display their heritage.

(f) Consider what contributions the enterprise can make to scholarships, local youth sports teams and other community causes. Monitor and report increasing contributions with respect to the number of projects and level of investment.

(g) Display local cultural artifacts in your enterprise and encourage the development and sale of traditional cultural products, crafts and folklore. Aim for 25% items for sale at enterprise from within 50 km, with tours offered to local markets, and try to increase these by 25% over 3 years. Provide customer feedback in order to raise standards.
(h) Be wary of the dangers of commoditization, and encourage craft and other cultural workers to maintain the authenticity and cultural values of their products. Encourage craft workers to explain the cultural values and history of their crafts.

(i) Give enterprises a local flavour by serving local dishes and source soft furnishings, arts and crafts locally. Monitor the proportion of local dishes on menu and the proportion of furnishings & crafts locally made, and aim to increase these proportions by 25% over 3 years. Visitors expect to find at least one local dish their menus.

(j) Identify cultural heritage resources in the local area and where there is sufficient demand from tourists and work with the local community to develop them as sustainable tourism attractions. Consider mission settlements, sites of slave occupation, festivals, struggle related monuments and places, rock art sites, cultural monuments, food, drink, arts and crafts, music, dance and storytelling.

(k) Encourage tourists to show respect by learning a few words of the local language, (and to use them when talking to local people!) and to learn about the host culture and traditions.

(l) Share enterprise level knowledge regarding informal sector tourism skills and products. Draw the attention of ground handlers, the media and tour Operators to complementary product opportunities in the local community.

15.4.4 Be sensitive to the host culture

(a) Respect, invest in and develop local cultures and protect them from over-commercialisation and over-exploitation. Encourage workers and staff to observe their religious and cultural practices.

(b) Respect indigenous intellectual property, especially when setting up contractual arrangements for the use of indigenous knowledge.

(c) Use local guides, and encourage them to continually improve their quality, to ensure that the community speaks for itself and to increase the revenues going into the local community (by higher fees for quality tours). Monitor and report this economic contribution to the community and set targets to increase it annually.
(d) Develop a local social contract for interactions and behavior between the local community and tourists (including responsible bargaining), developed with the participation and contributions from the community, and display it prominently for visitors and publicly within the community.

(e) Create opportunities for visitors to interact with locals in an unstructured, spontaneous manner (e.g. through sporting activities, visits to local schools, shebeens, taverns, restaurants in townships).

(f) In accordance with the Batho Pele principle, provide visitors with inclusive, honest and reliable information about history and contemporary life in South Africa, local tourism attractions and facilities.

(g) Promote a sound, proud, service ethic among all participants in the tourism sector.

(h) Promote and ensure the respect and dignity of people in the development, marketing and promotion of tourism.

(i) Ensure that tourism does not undermine the resource rights, traditional knowledge and skills of local communities.

(j) Negative social and cultural impacts associated with tourism, such as increased crime, drug and alcohol abuse, prostitution, and crime should be monitored and be proactively addressed in cooperation with the community.

(k) Educate tourists regarding local culture and where necessary make them aware of how they should behave to respect it.

(l) The exploitation of human beings in any form, particularly sexual and when applied to women and children, should be energetically combated with the co-operation of all concerned.

15.5 Guiding Principles for Environmental Responsibility

Responsible tourism implies a proactive approach by the tourism sector to the environment through the promotion of balanced and sustainable tourism. This is particularly important where the focus of the tourism sector and of the activities of tourists is the natural environment, as is the case with wildlife viewing, hunting and marine tourism. There are particular challenges in making nature-based tourism sustainable. Responsible tourism development has to be underpinned by
sustainable environmental practices. In the environmental sphere, only conservative decisions based on the precautionary principle can be considered responsible. Cultural heritage is also part of the environment, and the responsibility of the tourism sector towards the cultural environment was considered in the social responsibility guidelines.

Central to environmental responsibility is thinking about the life cycle impact of an enterprise or product, and so these guidelines apply to the stages of design, planning, construction, operation and decommissioning. The process of managing the business should be fully integrated with environmental Management, throughout the project life cycle (from conceptualization to decommissioning). In constructing concessions and leasehold developments it is particularly important to ensure that during decommissioning it will be possible to remove all structures and restore the area. Larger businesses should be using Environmental Management Systems to exercise environmental responsibility; for businesses above a defined size in each sector, it would be irresponsible to operate without one.

All tourism enterprises can contribute to environmental sustainability by exercising care in purchasing decisions – by seeking out and supporting responsible producers of the products that are required to run the enterprise, and by making clients aware of the responsible purchasing policy. The practical guidelines and indicators that follow are organized around the key environmental elements of responsible tourism identified in the 1996 White Paper.

15.6 **Environmental Objectives and Indicators**

15.6.1 **Assess environmental impacts as a prerequisite to developing tourism**

(a) Plan new developments only in areas where the use of water and other natural resources for tourism will not conflict with local community needs, now or in the foreseeable future. Integrate environmental Management into the project planning cycle.

(b) Follow best practice guidelines on the design, planning and construction of buildings and associated infrastructure to minimize environmental impacts and to reduce energy requirements for lighting, cooling and heating.

(c) Use local materials (where sustainable) and local architectural styles on
a scale that does not create a negative aesthetic impact.

(d) Avoid damaging the environmental quality of the enterprise’s neighbourhood by noise or light pollution.

(e) Design buildings with natural ventilation and actively plan to reduce resource use during the construction and operational phases. Tell visitors what has been done to make the enterprise more environmentally friendly. Quantify the resources “saved”.

(f) Plan new developments to have the lowest possible ecological impact, particularly in environmentally sensitive areas such as the coastal zone, indigenous forests, wildlife habitats and wetlands. Minimize the transformation of the environment around the enterprise.

(g) When developing plans for a new enterprise include elements, which contribute to the maintenance of biodiversity by planting local indigenous and non-invasive species, which provide habitats for birds, bees, and butterflies.

15.6.2 Use local resources sustainably, avoid waste and over-consumption

(a) Meter the quantity of water consumed and manage consumption and leakage to reduce water consumption by percentage to be agreed per annum for 3 years, and report water consumption and performance in monitoring.

(b) Measure electricity consumption and introduce energy saving measures to achieve percentage to be agreed reduction in use per annum over three years. This can be done by for example dimming lights, using low energy appliances and light bulbs and enhancing the use of natural ventilation.

(c) Monitor the use of diesel, paraffin and petrol and set targets to reduce consumption and switch to less polluting fuels.

(d) Set targets to increase the proportion of energy used from renewable resources – for example solar, wind, hydroelectric (increase by 10% over 3 years). Sustainable use of wood, from indigenous and plantation forests is complex, and great care needs to be taken.

(e) Install and display appropriate technology to reduce consumption of
natural resources, production of waste and incidences of pollution.

(f) Monitor the sewage system and demonstrate how pure the outflow back into the environment is. If the enterprise has one, make the reed bed a valuable habitat feature.

(g) Set percentage targets and time scales for the reduction of waste produced, levels of recycling and reuse of waste from the enterprise. Set appropriate targets for reduction and/or recycling of waste produced per year for paper (5%), plastics (5%), metal (5%) and glass (5%). Report on progress towards percentage targets over 3 years.

(h) Work with suppliers to minimize the amount of packaging purchased with supplies, and therefore reduce the amount of waste that needs to be disposed of. It may be appropriate for trade associations to conduct these discussions on behalf of members.

(i) Reduce “food miles” by using locally produced food.

(j) Enterprises should assist conservation by investing in sustainable trails, hides and interpretation. Tell visitors what the enterprise is doing, and claim credit for activities.

(k) Encourage the use of environmentally friendly transport.

15.6.3 Maintain and encourage natural diversity

(a) Encourage visitor behaviour that respects natural heritage and has a low impact upon it.

(b) Discourage the purchase of products that exploit wildlife unsustainably or contribute to the destruction of species or habitats (e.g. some handicrafts; bush meat).

(c) Look for ways in which the enterprise and its guests can assist with the conservation of natural heritage, for example through removing litter.

(d) Invest a percentage of profits or turnover in species conservation or habitat restoration and Management. Report the investment, and try to increase this by 5% per year.

(e) Avoid pollution by using environmentally friendly chemicals, and by using biodegradable soaps and detergents – tell visitors and staff why the enterprise is doing this and how it benefits the environment.
(f) Work with conservation authorities to ensure that visitors to natural heritage areas are aware of the impacts that they may have on the ecology of the area and how they should behave in order to minimize those impacts.

(g) Ensure that relevant members of staff are familiar with the issues and ways of avoiding environmental impacts – they should abide by the advice and communicate it to guests, and use the services of companies that abide by local environmental Best Practice.

(h) Do not market tourism resources to encourage tourists into ecologically sensitive areas which are vulnerable to irresponsible tourism practices, particular sports or recreational uses discourage these activities (e.g. irresponsible 4x4 use, hunting, diving or sand boarding).
### 16. SCHEDULE 9 - PROHIBITED CHEMICALS

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<td>Edabrom</td>
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</tr>
<tr>
<td>Dibromoethane</td>
<td>Gerbex</td>
<td>Banned in 14 countries. Restricted</td>
</tr>
<tr>
<td></td>
<td>Aquamix</td>
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</tr>
<tr>
<td>CHEMICAL</td>
<td>TRADE NAME</td>
<td>NOTES</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Bacfume</td>
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<td>status in RSA.</td>
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<tr>
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<td>Aldrin</td>
<td>An organochlorine insecticide. Highly toxic, Toxic group I.</td>
</tr>
<tr>
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<td>HHDN</td>
<td>Banned in 34 countries. Restricted status in RSA.</td>
</tr>
<tr>
<td>dimethanonaphthalene</td>
<td>Shelldrite</td>
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</tr>
<tr>
<td>Plus derivities Aldrin and Endrin</td>
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<tr>
<td>DDT</td>
<td>Rattex</td>
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<tr>
<td>Dichloro-diphenyl trichloro-ethane</td>
<td>Finale</td>
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</tr>
<tr>
<td>plus derivities DDE and DDD</td>
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<td>CH3CC13</td>
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<td>NOTES</td>
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<tr>
<td>-----------------------</td>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------</td>
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<td>Dyant</td>
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<td>Hexachlorocyclohexane</td>
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</tr>
<tr>
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<td>Fumitabs</td>
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</tr>
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<td>Ant and garden spray</td>
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</tr>
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<td>Nexit</td>
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</tr>
<tr>
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</tr>
<tr>
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<td>Anticide</td>
<td></td>
</tr>
<tr>
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<td>Gardit</td>
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</tr>
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<td></td>
<td>Ants</td>
<td></td>
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<tr>
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</tr>
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<td>Agronex</td>
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</tr>
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</tr>
<tr>
<td></td>
<td>Woodprufe</td>
<td></td>
</tr>
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<td></td>
<td>Blue death</td>
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<td>Servidol</td>
<td></td>
</tr>
<tr>
<td>Paraquat</td>
<td>Paraquat Chloride</td>
<td>A bipyriyl herbicide. Moderately toxic, Toxic Group II</td>
</tr>
<tr>
<td>Dimethyl-bipyridinium</td>
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<tr>
<td>dichloride</td>
<td>WPK</td>
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<tr>
<td></td>
<td>PARAQUAT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gramoxone</td>
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## 17. SCHEDULE 10 - PREFERRED CHEMICALS

<table>
<thead>
<tr>
<th>PEST</th>
<th>SPECIES</th>
<th>MORPHOLOGICAL PHASE</th>
<th>PESTICIDE INGREDIENT</th>
<th>ACTIVE PESTICIDE/CHEMICAL CLASS</th>
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</thead>
<tbody>
<tr>
<td>Cockroaches</td>
<td>Various spp.</td>
<td>Adult</td>
<td>Alpha - cypermethrin</td>
<td>Pyrethroid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Larvae</td>
<td>Deltamethrin</td>
<td>Pyrethroid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cyfluthrin</td>
<td>Pyrethroid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Beta-cyfluthrin</td>
<td>Pyrethroid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Triflumuron</td>
<td>Benoylurea</td>
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<td>Bed Bugs</td>
<td>Various spp.</td>
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<td>Pyrethroid</td>
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<tr>
<td>Rats and Mice</td>
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<td>n/a</td>
<td>Coumatetralyl</td>
<td>Coumarin anti-coagulant</td>
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<td></td>
<td></td>
<td></td>
<td>Warfarin/Sulphaquinoxaline</td>
<td>Coumarin anti-coagulant</td>
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<td>Subterranean wood destroying</td>
<td>n/a</td>
<td>Imidacloprid</td>
<td>Chloronicotinyl</td>
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<td>Thatch mites</td>
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<td>n/a</td>
<td>Permethrin</td>
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<td>n/a</td>
<td>Permethrin</td>
<td>Pyrethroid</td>
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<tr>
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<td>n/a</td>
<td>Permethrin</td>
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<td>Pyrethroid</td>
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<td></td>
<td></td>
<td></td>
<td>Deltamethrin</td>
<td>Pyrethroid</td>
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<td></td>
<td></td>
<td>Cyfluthrin</td>
<td>Pyrethroid</td>
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<td></td>
<td></td>
<td></td>
<td>Lambda-cyhalothrin</td>
<td>Pyrethroid</td>
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<td></td>
<td></td>
<td></td>
<td>Alpha - cypermethrin</td>
<td>Pyrethroid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rough walls</td>
<td>Permethrin</td>
<td>Pyrethroid</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Propoxur</td>
<td>Pyrethroid Carbamate</td>
</tr>
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<td></td>
<td></td>
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<tr>
<td>PEST</td>
<td>SPECIES</td>
<td>MORPHOLOGICAL PHASE</td>
<td>PESTICIDE INGREDIENT</td>
<td>ACTIVE INGREDIENT</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------</td>
<td>---------------------</td>
<td>----------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td>Mozzie nets/clothing</td>
<td></td>
<td>Cyfluthrin</td>
<td>Cyfluthrin</td>
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<tr>
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<td>Fleas</td>
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<td>See Cockroach</td>
<td></td>
</tr>
<tr>
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<td>Fishmoths</td>
<td>See Cockroach</td>
<td>See Cockroach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ticks</td>
<td></td>
<td>Pyrethroid</td>
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<table>
<thead>
<tr>
<th>PESTICIDE</th>
<th>FORM</th>
<th>COMPANY NAME</th>
<th>GRAMS ACTIVE INGREDIENT</th>
<th>DOSAGE</th>
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<tr>
<td>Fendona</td>
<td>AL SC</td>
<td>Cyanamid</td>
<td>1g/l 100g/l 60g/l</td>
<td>Undiluted 25-50ml 40-85ml</td>
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<tr>
<td></td>
<td>SC</td>
<td>Cyanamid</td>
<td>125g/l 480g/l</td>
<td>20-40ml 10ml/10l</td>
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<tr>
<td>K-Othrine</td>
<td>EW or HN SC</td>
<td>AgrEvo Bauer</td>
<td>135g/kg</td>
<td>1 tin/120-1000m3</td>
</tr>
<tr>
<td>Responsar Tempo</td>
<td>SC</td>
<td>Bayer</td>
<td>5g/kg</td>
<td>na</td>
</tr>
<tr>
<td>Starycide</td>
<td>FD</td>
<td>AgrEvo</td>
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<td></td>
<td>DP</td>
<td>AgrEvo</td>
<td>5g/kg</td>
<td></td>
</tr>
<tr>
<td>Coopex maxi/mini smoke generator Coopex dust</td>
<td>FD</td>
<td>AgrEvo</td>
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</tr>
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<td>SC</td>
<td>Bayer</td>
<td>7.5g/kg</td>
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<td>Racumin</td>
<td>CB (l)</td>
<td>Bayer</td>
<td>350g/l</td>
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<td>Bayer</td>
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<td>145ml</td>
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<td>Premise</td>
<td>SC</td>
<td>Bayer</td>
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<tr>
<td>Coopex maxi/mini smoke generator</td>
<td>FD</td>
<td>AgrEvo</td>
<td>135g/kg</td>
<td>1 tin/120-1000m3</td>
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<td>Spray</td>
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<tr>
<td>Coopex ant dust</td>
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<td>5g/kg na</td>
<td>Na See Cockroach</td>
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<td>SC</td>
<td>Bayer</td>
<td>125g/l</td>
<td>20-40ml</td>
</tr>
<tr>
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<td>SC</td>
<td>Bayer</td>
<td>125g/l</td>
<td>20-40ml</td>
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<tr>
<td>PESTICIDE</td>
<td>FORM</td>
<td>COMPANY NAME</td>
<td>GRAMS PER ACTIVE INGREDIENT</td>
<td>DOSAGE</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------</td>
<td>--------------</td>
<td>----------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>K-Othrin</td>
<td>EW or HN# WP AL SC</td>
<td>Bayer</td>
<td>100g/kg 1g/l 100g/l 60g/l</td>
<td>78g (1 sachet of 62.5g/8l of water) Undiluted 25-50ml 40-85ml</td>
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<td>Cyanamid</td>
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<tr>
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</tr>
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<td>WP</td>
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<td>Bayer</td>
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18. **SCHEDULE 11 – BAT MANAGEMENT GUIDELINES**

18.1 **Introduction and background**

Nearly 80% of all bat species in South Africa occur within the National Parks. Of the 42 species recorded within the parks, four species are also listed as threatened and have Red Data status. Bats play an important role in the ecosystem in that they control insect numbers and also contribute towards the pollination and further propagation of various flowering plants. Mosquitoes are among the primary prey of many insectivorous bats and a thriving bat population can consume huge numbers of these potentially dangerous insects. Fruit eating bats on the other hand play a very important role in the pollination of certain fruit bearing trees and the dispersal of their seeds. Despite the above, people often view bats as household pests due to the unpleasant sounds, smells and possible unhygienic conditions associated with bats roosting in the roofs of houses and accommodation units. With the development of rest camps, staff villages and concession lodges in the National Parks, bats started colonizing many of these buildings as the thatched roofs, attics and eaves provided ample shelter and roosting sites. Unfortunately, this brought bats into conflict with people. Foreign and local visitors to the KNP often feel threatened by the presence of bats in their accommodation units and the noises, as well as the smells emanating from the bat urine and dung, often lead to complaints regarding quality and maintenance standards in our camps. In order to minimize the problem, bat colonies need to be evicted from the roofs of all accommodation units and houses and all buildings need to be sealed to prevent bat re-colonization. To achieve this may prove to be technically complicated, e.g. in thatched roofs where it is impossible to seal every crack between the thatch and wooden poles. The aim of this document is to provide practical guidelines on the removal of bats and to highlight preventative measures to be taken to minimize recolonization by bats.

18.2 **Management Options**

Unfortunately there are no quick-fix solutions to the bat problems experienced. To achieve any lasting measure of success both a preventative and crises management approach needs to be followed. Preventative management will necessitate a large scale and long term approach, whilst crisis management will focus on interim solutions to the most immediate problems. The Section Ranger
from the area should be involved to ensure that no bats are injured and that conservation ethics are upheld during implementation.

18.2.1 Preventative Management (Long Term and Large Scale)

This approach is aimed at preventing bats from establishing new roosting sites in huts/chalets/houses not yet infested. Management action must therefore specifically be aimed at the systematic sealing of all uninhabited units to make them bat proof. This process must be completed before any evictions of bats can start from colonized units. If not, the evicted bat colony will just relocate themselves to the nearest unsealed units once removed. Preventative management thus requires a large scale approach necessitating proper planning and the cost-effective use of available funds and manpower. It remains the only long term solution to the bat problem within the park.

The suggested approach should be the following:

18.2.1.1 Phase 1: Seal – off all units not already occupied by bats

- Identify all structures that are not already colonized by bats and identify all possible bat entry points (usually where the roof and the wall meet).

- Systematically seal all possible entry points in each unoccupied unit using Sista Expanding Foam Filler (Henkel Product available at Mica). This process can take a couple of weeks and will necessitate proper planning between Technical Services and Hospitality staff.

- Expanding Foam Filler is both rodent and insect proof, easy to apply and will cut down on the time needed to seal the units. Cement is the cheaper option and can be used, but it will crack over time and the bats will re-enter the unit.

18.2.1.2 Phase 2: Evict bats from units already colonized by them

- Ensure that all adjacent chalets/houses are sufficiently sealed before bat eviction start.

- Identify all the chalets/houses occupied by bats as well as the access points the bats use to gain entry.
• Ensure that no access is possible through the thatch/roof of the chalet/house to be sealed.

• Proceed to seal all possible access/exit points, but allow for at least one opening to be left unsealed to allow the bats to escape. If infection is severe allow for 2 or 3 exit points.

• Determine the roost site/s (the colony may have more than 1) within the chalet/house and apply deterrent solution.

• Jeyes fluid should be administered as a deterrent by spraying or painting it onto rafters and beams. Jeyes fluid is a strong smelling substance and the unit will have to be ventilated after application.

• Do not apply the deterrent directly to the roost site. This is merely general practice to avoid any unknown complications.

• The colony should be sufficiently disturbed and leave after the first application, but one may have to apply continuously to remove all individuals.

• If the situation calls for removal by hand, the Section Ranger should be present. Removal by hand should be done with discretion and the utmost care must be taken not to injure any bats.

• The structure must be sealed immediately after exclusion to prevent the bats from returning to the site after the deterrent’s smell has dissipated. Sealing should be done so that the entire perimeter of the structure is secure.

• The structure must be monitored subsequent to exclusion and sealing to ensure that the process was successful and bats do not re-enter.

Eviction should preferably be implemented from May to October during the non-breeding season, but special allowance will be given to individual situations outside of this period. If bats have to be evicted from November to April, special care must be taken to ensure safe removal. If the colony that has infested the structure does not have young, then one can follow the above procedure. However, if the colony has young, then it is best to
remove the entire colony by hand. All efforts must be made to ensure that the entire colony is caught and moved together. The group should be moved together to a new site, preferably not far from their original roost. The structure should then be sealed as discussed above.

The exclusion of bats can be avoided during breeding season through continual management of the structures throughout the year.

18.2.1.3 Phase 3 - Monitor and re-evaluate all the units on a regular basis and ensure that systematic maintenance is done to seal/close any new holes or entry points which might appear.

Squirrels might pose a limited problem even though bats are not likely to use these entry points. However to ensure that these do not become problem areas these sites must be sealed too as soon as they are located. Many Bat experts and Bat Interest Groups are of the opinion that these areas are not true points of concern, however there is still a belief that if these sites are left long enough Bats will use them.

18.2 Crises Management (Short Term and Small Scale)

This approach requires immediate intervention and only provides an interim solution. It is aimed at immediate eviction of bats from a unit and should not take more than 1 to 2 days to complete. No phases are involved, just systematic exclusion:

- Locate the roost site of the bat colony within the hut/chalet/house.
- Spray detergent (Jeyes fluid) on rafters/beams around the roosting site. This will disturb the colony sufficiently and the bats will vacate the unit within a day or two.
- If any bats remain, remove them by hand using gloves. Release the bats at an alternative site nearby only once the unit where they were evicted from has been sealed properly. Approach the Section Ranger for assistance.
- Once all bats have vacated the unit, immediately seal all openings and possible bat entry points with Sista Expanding Foam Filler.

18.3 Post-Removal Treatment of Roosting Sites
Once all bats are removed from a unit and the entry points sealed, all roosting sites must be cleaned and disinfected.

The following approach is recommended:

- Mix 10ml Starycide (Bayer) with 10l of water and add 80ml Responsar (Bayer). Do not exceed the prescribed dosages and always wear protective clothing, gloves and a mask.
- Spray this mixture liberally over the bat faeces and sediment in the roof in order to kill all larvae and other insects.
- Wait for 30 minutes and then remove the faeces and sediment and clean the roof.
- Disinfect the area with the disinfectant Virkon-S to kill all viruses and bacteria.

18.4 Responsibility Matrix

<table>
<thead>
<tr>
<th>RESPONSIBLE PERSONS</th>
<th>ACTIONS</th>
<th>TIME FRAMES</th>
</tr>
</thead>
</table>
| Hut Attendants and Supervisors     |  Conduct daily inspection of huts/accommodation units for the presence of bats.  
|                                    |  If any signs are found that bats are starting hut/accommodation unit, immediately report it to supervisor and camp hospitality staff | Daily       |
| Hospitality and Duty Mangers      |  Conduct regular a-hoc inspections to ensure that units are bat proof and that scheduled maintenance is done to prevent bat infestation.  
|                                    |  Ensure that all reports and complaints regarding bat problems are pointed | Ad-hoc      |
|                                    |                                                                           | Immediate   |
| Maintenance officers              |  Conduct regular inspections of all facilities and implement preventative measures.  
|                                    |  Systematically seal all units to make them bat proof                     
|                                    |  Evict bats from units and seal all entry/exit points in accordance with these guidelines.  
<p>|                                    |  Once bat eviction completed, clean and disinfect the units in accordance with these guidelines. | Bi-Monthly  |
|                                    |                                                                           | On-going    |
|                                    |                                                                           | Immediate   |
|                                    |                                                                           | Immediate   |</p>
<table>
<thead>
<tr>
<th>RESPONSIBLE PERSONS</th>
<th>ACTIONS</th>
<th>TIME FRAMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section Rangers</td>
<td>➢ Monitor and oversee the eviction of bats to ensure safe and ethical handling in accordance with these guidelines.</td>
<td>As required</td>
</tr>
</tbody>
</table>
| Technical officers  | ➢ Conduct random inspections of all facilities to ensure maintenance are done timeously and in accordance with these guidelines.  
➢ Partakes in inspections with Hospitality staff to ensure that units are bat proof and that maintenance is done effectively | Ad-hoc and Random  
➢ Bi-monthly |
| Corporate Technical Services | ➢ Monitor and conduct spot checks to ensure maintenance procedures and programs are in accordance with these guidelines. | Ad hoc and Random |

18.5 **Safety guidelines when handling bats**

- Don’t handle bats unless you have to;
- Always wear gloves when handling bats to prevent being bitten;
- If bitten or scratched, use soap and iodine to disinfect wounds.
- Immediately seek medical attention if rabies infection is suspected and also contact the Onderstepoort Veterinary Institute near Pretoria for assistance.

Address:

Rabies Laboratory
Private Bag X5
Onderstepoort 0110
South Africa

Tel: (012) 5299440   Fax: (012) 5299390
19. **SCHEDULE 12 - INTEGRATED PEST MANAGEMENT PLAN**

19.1 **INTRODUCTION AND BACKGROUND**

19.1.1 **PEST CONTROL:** Aiming towards natural and barrier methods (mechanical control) as opposed to chemical control.

All chemicals that are artificially introduced into the natural environment may create an imbalance and have a negative effect on that environment. These effects can range from slight to catastrophic, but will be largely dependent on the type of chemical, the method of application and the dosage applied. Chemicals must be controlled and used in such a way as to impact as little as possible on the natural diversity and functioning of ecosystems.

19.1.2 **WARNING ON THE USE OF CHEMICALS**

Pesticides are poisonous. Always read carefully and follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labelled containers in a locked cabinet or shed, away from food and out of reach of children and unauthorized persons. Consult the pesticide label to determine active ingredients and signal words. Pesticides applied in your home and landscape can move and contaminate streams, lakes and rivers. Confine chemicals to the property being treated and never allow them to reach drainage areas. Do not place containers containing pesticide into the rubbish bin, down the sink, toilet or outside drain. Either use the pesticide according to the label until the container is empty, or take unwanted pesticide to a household hazardous waste collection site. Dispose of empty containers by following label directions. Never reuse or re-burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

19.2 **TERMINOLOGY**

**Pest:** Any organism occurring in unnaturally high numbers due to human development, which has a deleterious effect on the human population in terms of health and wellbeing.

**Pesticide:** A species specific chemical component designed to combat a particular
pest species that is deemed as having deleterious effects on the resident human population.

**Herbicide:** A chemical component designed to eliminate a specific type or species of vegetation.

**Active ingredient:** the chemical compound within the pesticide that produces the required negative effect on the target species

**Synergist:** Substance added to pesticide in order to make the active ingredient more effective by performing a catalytic function.

**Wetter (spreader):** enables the chemical to stick evenly onto the target.

**Coloring agent:** used to discourage birds, animals and people from consuming the pesticide.

**Bitter compound:** prevents animals from swallowing the compound.

**Carrying medium:** usually inactive and won’t have an effect on the pest.

**Pesticide toxicity:** All pesticides must be considered to be toxic. The relative toxicity, however, varies considerably as does the susceptibility of the human being, animal or plant. Species, age, sex, physical and nutritional state and type of formulation are some of the more important factors influencing the potential toxicity and hazard.

**LD50:** The toxicity of a chemical is expressed as an LD50 value. This is the lethal dosage expressed as mg per kg body mass which will kill 50% of a random sample of a population of test animals (usually white laboratory rats). This standard makes comparison of toxicity possible. The potential hazard of a pesticide may not be judged only by its oral toxicity, as many pesticides can be absorbed through the skin, eyes and or lungs.

**Pesticide hazard:** Both the concentration of a pesticide and its formulation affect the hazard of a remedy. The higher the concentration of an active ingredient, the more hazardous it becomes. A pesticide formulated as a solution or as an emulsifiable concentrate, is more hazardous than when formulated as a dust or as a wettable powder.

**Pesticide formulations:** Nearly all pesticides have to be formulated in order to enhance their efficacy and to make them suitable for application in a particular manner. Sometimes certain materials such as sticking or wetting agents are added to increase the terminal effectiveness.
AE – Aerosol dispenser
AL – Other liquids to be applied
BB – Bait block
CB – Bait concentrate (solid or liquid for dilution before used as a bait)
CS – Capsule suspension (normally diluted in water)
DP – Dusting powder
EC – Emulsifiable concentrate (applied as liquid after dilution in water)
EW – Emulsion, oil in water (pesticide within oil droplets in water)
FD – Smoke tin
FK – Smoke candle
FT – Smoke tablet
FU – Smoke generator
GA – Gas
GB – Granular bait
GE – Gas generating product
GR – Granule
HN – Hot fogging concentrate
KN – Cold fogging concentrate
OL – Oil miscible liquid – dilute in an oil before application
PA – Paste (water based film forming)
SC – Suspension concentrate
SL – Soluble concentrate
SP – Water soluble powder
RB – Ready bait
TB – Tablet
UL – Ultra low volume liquid
VP – Vapor releasing product
WP – Wettable powder
**First generation poison:** A poison that will only affect the target species, in that it requires multiple feeds to be fatal.

**Second generation poison:** A poison that will have immediate deadly effects on the target population, as well as any predatory populations feeding on the dead target or other effected animals.

### 19.3 CHEMICAL CLASS OF ACTIVE INGREDIENT

**Chemical class:** Classification of chemicals based on the composition of the active ingredient.

#### 19.3.1 Organochlorine: E.g. DDT. These compounds take a long time to decompose (e.g. 8 tonnes of DDT will take 90 years to decompose). This means that the long-term effects are much worse than short-term effects, due to the build-up in the environment. All these products should be banned from use in terms of the environmental damage caused. Organochlorine should not be permitted for use in a National Park.

#### 19.3.2 Organophosphate: These are acutely toxic in most cases, however, only to animals not plants. Organophosphates should not be permitted for use within a National Park.

#### 19.3.3 Pyrethroid: These compounds are made from the carnation flower, by extracting pyrethrins from the oil. They are made in Kenya. They are mostly highly toxic to insects, fish and amphibians, but not so toxic to reptiles, birds and mammals. When used correctly, this is the least harmful class of all chemicals. When chemicals are used within a National Park, it is preferable that they are Pyrethroid in nature.

#### 19.3.4 Carbamate: These compounds are medium in toxicity when compared to organophosphates but more toxic than pyrethroids. They do however break down rapidly (chemicals last 4 weeks indoors and only a few days outdoors) and are not very toxic to fish and amphibians. Carbamates should not be used in a National Park.

### 19.3.5 RESTRICTED USE OF CHEMICALS WITHIN A National Park

A management plan for the use of chemicals within National Parks was written by D.A. Zeller and L.E.O. Braak in January 1995. This document contained
policies regarding the use of chemicals within National Parks as well as list of restricted chemicals, prohibited chemicals and chemicals to be phased out. This list has since been updated by L. Foxcroft in January 2004. The new edition has one list of chemicals, for which the importation and use of within National Parks are strictly prohibited. A second list has been included outlining chemicals that are not recommended for use within National Parks, based on the chemical class of their active ingredients. Although the prohibited list has been part of the management plans since 1995, a large number of pesticides containing chemicals on these restricted and prohibited lists, are currently available and being sold within both staff and tourist retail outlets inside National Parks.

19.3.6 RATS AND MICE

19.3.6.1 General information

Rats and mice are mostly active at night. They have poor eyesight, but they make up for this with their keen senses of hearing, smell, taste and touch. Rats and mice constantly explore and learn about their environment memorizing the locations of pathways, obstacles, food and water, shelter and other elements in their domain. They quickly detect and tend to avoid new objects placed in a familiar environment. Thus, objects such as traps and baits are often avoided for several days or more following their initial placement. Mice and young rats can squeeze beneath a door with only 2cm gap. If the door is made of wood, rats may gnaw to enlarge the gap. Rats and mice eat a variety of foods including cereal grains, meats, fish, nuts, fruits, slugs and snails. When searching for food, rats and mice can travel up to 150m from their nests or burrows. Females can wean between 3 – 6 litters per year, each litter containing between 3 – 5 young. Rats consume and contaminate foodstuffs and damage storage containers. They can also cause damage by gnawing electrical wires and wooden structures.

19.3.6.2 Management

Three elements are necessary for a successful rat and mouse management program: sanitation, building construction and rodent proofing and, if necessary, population control.
19.3.6.3 Mechanical Control

19.3.6.3.1 Sanitation: Sanitation is fundamental to rat control and must be continuous. If sanitation measures are not properly maintained, the benefits of other measures will be lost and rats will quickly return. Good housekeeping in and around buildings will reduce available shelter and food sources for rats and mice. Neat, off-the-ground storage of pipes, timber, crates, boxes, gardening equipment and household goods will help reduce the suitability of the area for rats and will also make their detection easier. Garbage and garden refuse should be collected frequently and all garbage containers should have tight fitting covers. Thinning dense vegetation will make the habitat less desirable including climbing hedges such as jasmine and ivy. Trees with branches hanging closer than 1m to the roof should be trimmed.

19.3.6.3.2 Building construction and rodent proofing: The most successful and long lasting form of rat control in buildings is to “build them out”. Seal off cracks and openings in building foundations, and any openings for water pipes, electric wires, sewer pipes, drain spouts and vents. No hole larger than 7mm should be left unsealed. Make sure doors, windows and screens fit tightly. Their edges can be covered with sheet material if gnawing is a problem. Coarse steel wool, wire screen and lightweight sheet material are excellent materials for plugging gaps and holes. Plastic sheeting, wood, caulking and other less sturdy materials are likely to be gnawed away. Because rats and house mice are good climbers, openings above ground level must all be plugged, especially all access points in the roof. Chimneys should be covered with wire netting or gauze to prevent rat and mice entry. Check all screens on windows, doors, and air vents are in good condition. Make sure all exterior doors are tight fitting and weatherproofed at the bottom.

19.3.6.3.3 Trapping: This is the safest and most effective way of controlling rats in and around homes. Traps can be used more than once therefore it is a cost effective but more labor-intensive method. The kind of bait used for the trap is important. Dried fruit or bacon makes excellent bait for rats. The bait should be fastened securely to the trigger of the
trap with a light string or bit of glue. Soft baits such as peanut butter or cheese can also be used, but rats sometimes take soft baits without setting off the trap. Leaving traps baited but unset until the bait has been taken at least once improves trapping success by making the rodents more accustomed to the traps. Set traps so the trigger is sensitive and will spring easily. The best places to set traps are in secluded areas where rats are likely to travel and seek shelter. Droppings, gnawing and damage indicate the presence of rodents and areas where such evidence is found are usually the best places to set traps, especially when these areas are located between their nests and food sources. Place traps in natural traveling paths such as along a wall, so the rodents will pass directly over the trigger of the trap. Position traps along a wall at right angles, with the trigger end nearly touching the wall. If traps are set parallel to the wall, they should be set in pairs to intercept rodents traveling from either direction. If a rat sets of a trap without getting caught, it will be very difficult to catch the rat with the trap again. Other good places for traps are behind objects, in dark corners, on ledges, shelves, branches, fences, pipes or overhead beams. In overhead places, the traps should be attached securely with screws or wire. In areas where children or birds and other animals might contact traps, place the trap in a box or use a barrier to keep them away. Use as many traps as are practical so trapping time will be short and decisive. A dozen or more traps for a heavily infested home may be necessary. Place rat traps about 5-10 meters apart. Dispose of dead rats by burying them. Do not touch the dead rodent with bare hands and wash thoroughly after handling traps. Live traps are not recommended because trapped rats must either be killed or released elsewhere. Releasing rat's outdoors is not recommended because of health concerns.

19.3.6.4 Chemical control

While trapping is generally recommended for controlling rats indoors, when the number of rats around a building is high, it may be necessary to use toxic baits to achieve adequate control, especially if there is a continuous infestation from surrounding areas. Most toxic baits for rodents
contain active ingredients that work as an anticoagulant, causing death by internal bleeding. Most anticoagulant baits have been considered as relatively safe baits to use around the house and garden because they require multiple feedings to be effective. This is referred to as a first generation poison, as only the target animal will be killed. Some of the more lethal rodent poisons that are prohibited for use in a National Park, contain a single feed, second generation poison, that will result in death to anything that eats the poison directly from the baits, or indirectly, by eating the dead rodents (e.g. Predators including owls, genets etc.). Rodent bait should only be used, when placed in a bait station (Rodent bait station made by Bayer). These bait stations protect the bait from weather and restrict accessibility to rodents, providing a safeguard for people and other animals. Place bait stations next to walls or in places where rats will encounter them. Stations that may be accessible to children must be made of sturdy, tamper resistant material and be secured in a way that they cannot be tipped. All bait stations should be clearly labelled. The use of bait stations help rats to feel secure when feeding. Place all bait stations in rat travel-ways or near their burrows. Do not expect rats to go out of their way to find the bait. If you place bait stations above the ground (on fences, eves), make sure they are securely fastened, and won’t fall onto the floor where children may find them. Because rats are often suspicious of new or unfamiliar objects, it may take several days for them to enter and feed in bait stations. For best results, make sure there is a continuous supply of bait until feeding stops. It usually takes 5 days or more once the rats start feeding for them to succumb. During the baiting process, dispose of dead rodents by burying them, or placing them in a marked plastic bag, and putting them in the rubbish for incineration at the dump. Use gloves and wash hands thoroughly after handling dead rodents, traps or bait stations. Additionally, poisoned rats often die in inaccessible locations within a building, leading to persistent and unpleasant odours, so rodent proof the building before you use toxic baits outside. A successful bait formula that can be administered in a Bayer Rodent Bait station can be made up as follows: Dilute 1 part Racumin (made by Bayer) in 30-40 parts water (8g/l). Dilute 1litre of lecol pinenut with 7 litres of water, and add 40ml of Racumin. Keep this available for 16 days and refill as required. This is a first generation poison, so animals need multiple feeds to die. It will therefore
not affect predators feeding on them. Rats drink every 24 hours, therefore bait after dark, in secluded spots to minimize contaminating other small animals. Remove bait stations during the day.

19.3.7 COCKROACHES

19.3.7.1 General information

Cockroaches may become pests in any structure that has food preparation or storage areas. They contaminate food and eating utensils, destroy fabric and paper products, and impart stains and unpleasant odours to surfaces they contact. They may transmit bacteria that cause food poisoning. The skin shed by cockroaches may cause asthma in children if inhaled. In South Africa, the exotic German cockroach is the main pest. Cockroaches are common in kitchens and bathrooms because they favour warm, humid areas that are close to food and water. The German cockroaches are the fastest reproducing of all the pest cockroaches and a single female and her offspring can produce over 30,000 individuals in a year. Egg laying occurs more frequently during warm weather. The female carries around a light tan egg case (6mm long) for about 28 days (1-2 days before the eggs hatch), when she drops it. Each case contains about 30 young and a female may produce a new egg case every few weeks. Young or immature cockroaches undergo gradual metamorphosis resembling the adult visually and in feeding habits, but do not have fully developed wings and are not reproductively active. Cockroaches are white after molting, but their outer covering thickens and darkens as it hardens within hours. Cockroaches are nocturnal; hiding in dark, warm areas especially narrow spaces where surfaces touch them on both sides.

19.3.7.2 Management

Cockroaches are tropical and like warm hiding places with access to water. If cockroaches have access to food, baits will have limited effect. Sprays lone will also not be effective against cockroaches. An integrated approach is required. The keys to controlling cockroaches are sanitation and exclusion: cockroaches will continue to re-invade as long as the habitat is suitable for them (i.e. available food, water and shelter). In
addition to sanitation and exclusion, baits can be effective. Sprays or
dusts that are registered for use on cockroaches may temporarily
suppress populations, but they do not provide long-term solutions.

19.3.7.2.1 Mechanical control

Sanitation: Cockroaches thrive where food and water are available to
them. Even tiny amounts of crumbs or liquids caught between cracks
provide a food source

Important sanitation measures include:

- Store food in insect-proof containers such as glass jars or sealed
  plastic containers
- Keep rubbish in containers with tight fitting lids. Remove rubbish,
  newspapers, magazines, piles of paper bags, rags, boxes and
  other items that provide hiding places. Do not store rubbish
  indoors or close to the house.
- Eliminate plumbing leaks and correct other sources of free
  moisture. Increase ventilation where condensation is a problem.
- Vacuum cracks and crevices to remove food and debris. Be sure
  surfaces where food or beverages have been spilled are cleaned
  up immediately. Vacuuming also removes cockroaches, shed
  skins and egg capsules. Removing cockroaches reduces their
  numbers and slows development.
- Trim shrubbery around buildings to increase light and air
  circulation, especially near vents, and eliminate ivy or other
  dense ground covers near the house as these may harbor
  cockroaches.
- Remove trash and stored items such as piles of wood that
  provide hiding places for cockroaches from around the outside of
  buildings.

Exclusion and removal of hiding places: During the day, cockroaches
hide in cupboard cracks, stoves, crawl spaces, outdoor vegetation
and many other locations. They invade kitchens at night. Limiting
hiding areas or avenues of access to living areas is an essential part
of an effective management strategy. False-bottom cupboards,
hollow walls and similar areas are common cockroach refuges. Prevent access to the inside of buildings through cracks, conduits, under doors of through other structural flaws:

- Seal cracks and other openings to the outside
- Look for other methods of entry such as from items being brought into the building, especially appliances, furniture and items that have been in storage.
- Look for egg sacs glued to undersides of furniture, in refrigerator and other appliance motors, boxes and other items. Remove and destroy any that are located.
- Locate and seal cracks inside the treatment area where cockroaches can hide.

19.3.7.2.2 Chemical control

Insecticides are most effective in controlling cockroaches when combined with sanitation and exclusion practices that limit the cockroaches’ ability to establish or re-invade; chemical control alone will not solve the problem. If insecticides are used, they must always be used with extreme care. Indoor chemical control is warranted only in the cockroach population is established but not for an incidental intruder or two.

- **Fendona** (Made by Cyanamid, active ingredient = Alpha-cypermethrin) should be diluted at the specified rate, and sprayed onto surfaces frequented by cockroaches. Use a higher rate for longer residual action or where infestation is severe. Repeat when necessary.

- **Staryside** (made by Bayer, active ingredient = Triflumuron) should be diluted at 10ml per 10l, and applied simultaneously (in the same sprayer) with the adult treatment. In summer, it can be effective for up to 3 months, and in winter, up to 6 months.

- **Premise cockroach bait gel** (made by Bayer, active ingredient = imidacloprid). Use in pistol gun, apply in small cracks and holes.
Very effective and long lasting. Most insecticides used in baits are slow-acting; cockroaches quickly learn to avoid fast acting ones.

Consequently, an effective bait program does not give immediate results, but may take 7 days or longer. Baits can be quite effective for long-term control of cockroaches unless the cockroaches have other food sources available to them. Baits to not control all cockroaches equally. Female cockroaches with egg cases do very little feeding and avoid open spaces; consequently they are less likely to be immediately affected by bait. Baits do not attract cockroaches, so place them near hiding places or where cockroaches are likely to encounter them while foraging. Bait can also be placed near to fecal specks and droppings of cockroaches, which contain a natural aggregation pheromone. Look for these fecal specks and droppings under kitchen counters, behind kitchen drawers and in the back on cabinets. The German cockroach has developed resistance (or tolerance) to many insecticides used for their control. If cockroaches seem to be unaffected a day after the application of the spray, a different material or strategy may be required. After a cockroach control program has been started, evaluate the effectiveness visually. If populations persist, re-evaluate the situation. Look for other sources of infestation, making sure all possible entryways are blocked, be certain that food and water sources are eliminated as much as possible, and continue sealing and eliminating hiding places. When populations are under control, continue monitoring on a regular basis to make sure re-infestation is not taking place. Maintain sanitation and exclusion techniques to avoid encouraging a new infestation. If severe re infestations continue to occur, consider having the infested area modified or remodeled to reduce the amount of suitable habitat for cockroaches.

19.3.8 FISH MOTHS

19.3.8.1 General information

Fish moths hide during the day, but are active at night looking for food
and water. Fish moths eat cereals, moist wheat flour, books, paper on which there is glue or paste, wall paper, bookbindings and starch in clothing. They can live for several months without food. Fish moths live and develop in damp cool places particularly in basements and laundry rooms.

19.3.8.2 Management

19.3.8.2.1 Mechanical control

To keep fish moths away, keep basements, laundry rooms and bathrooms (especially shower stalls) clean and dry. Plug or putty holes or spaces around pipes. Repair leaks and drips in plumbing. Clean out closets periodically. Collections of magazines, papers and books provide food for them. Move books around in bookcases occasionally. Keep foods in containers with tight lids.

19.3.8.2.2 Chemical control

Fish moths can be controlled using the same chemicals used to control cockroaches. A properly and thoroughly applied insecticide will show results in a few weeks. If control is not achieved in 2 or 3 weeks, fish moths are probably coming from untreated areas. Seek these areas out for treatment and also eliminate water sources. Large populations of fish moths cannot be controlled unless their water sources are eliminated. Chemical control advised for cockroaches will also work on fish moths, no additional pesticides are necessary.

19.3.9 BEDBUGS

19.3.9.1 General information

Female bedbugs lay from 200-500 eggs (in batches of 10 – 50) on rough surfaces such as wood or paper. Eggs are covered in a glue and hatch in about 10 days. There are 5 progressively larger nymph stages each requiring a single blood meal before molting to the next stage. The entire life cycle from egg to adult requires anywhere from 5 weeks to 4 months, depending on temperature. Nymphs and adults generally feed at night
and hide in crevices during the day. Common hiding places include seams in mattresses and box springs, cracks in bed frames, under loose wallpaper, behind picture frames and inside furniture and upholstery. Bed bugs can go without feeding for 80-140 days; older stages can survive longer without feeding than younger ones. Adults have survived without food for as long as 550 days. A bed bug can take 6 times its weight in blood and feeding can take 3 – 10 minutes. Adults live about 10 months and there can be 3-4 generations of bed bugs per year. In addition to leaving a bite wound on their hosts, bed bugs have stink glands that leave odours; they also leave fecal spots on bed sheets and around their hiding places.

19.3.9.2 Management

Infestations of bed bugs can be detected by looking for their fecal spots, egg cases and shed skins under wallpaper, behind picture frames, and inside cracks and crevices near beds.

19.3.9.2.1 Mechanical control

Indirect measures can go a long way in controlling bed bugs: keep bats and birds away from houses; clean furnishings, launder bedding and mattress pads and stem-clean mattresses; and prevent bed bugs from getting into homes by removing debris from around the house, repairing cracks in walls, and caulking windows and doors. Simple physical control methods include standing the legs of beds in soapy water, coating the legs with petroleum jelly or double-sided sticky tape. Bed bugs cannot climb polished glass or metal easily and they don’t fly. Legs of beds can also be placed inside glass jars or metal cans. Heating to 50 degrees C, or freezing to below 0 will kill most bed bugs.

19.3.9.2.2 Chemical control

Doom dual Action Fogger Insecticide (made by Robertson’s homecare, and contains pyrethroid active ingredients) lasts for about 6 months. Also kills adult cockroaches. Ignite and let smolder for 2-3 hours.
19.3.10 TERMITES

19.3.10.1 General information

Termites are small white, tan or black insects that can cause severe destruction to wooden structures. They belong to the insect order Isoptera, dating back more than 100 million years. Although many people think termites have only negative impacts, in nature they make positive contributions to the world’s ecosystems. Their greatest contribution is the role they play in recycling wood and plant material. Their tunneling efforts also help to ensure that soil are porous, contain nutrients and are healthy enough to support plant growth. Termites are very important in the Sahara desert where their activity helps to reclaim soils damaged by drying heat and wind and overgrazing by livestock. Termites have become a problem where they consume structural timber. Termites may also damage utility poles, food, books and household furniture. Termites are social and can form large nests or colonies consisting of very different looking individuals (castes). Physically, the largest individual is the queen. Her function is to lay eggs, sometimes thousands in a single day. A king is always at her side. Other individuals have large heads with powerful jaws, or a bulblike head that squirts liquid. These individuals are called soldiers. The largest groups of termites in a colony are the workers. They work long hours tending to the queen, building the nest or gathering food. While other species of social insects have workers, termites are unique in that they have both male and female workers. Termites can be long-lived: queens and kings can live for decades while individual workers can survive several years.

19.3.10.2 Management

Successful termite management requires special skills including a working knowledge of building construction and an understanding of termite biology. An integrated program is required to manage termites. Combine methods such as modifying habitats, excluding termites from the building by physical and chemical means, and using mechanical and chemical means to destroy existing colonies.

19.3.10.2.1 **Inspection**: Before beginning a control program, thoroughly inspect
the building. Verify that there are termites, identify them, and assess
the extent of their infestation and damage. Look for conditions in and
around buildings that promote termite attack, such as excessive
moisture or wood in contact with the soil.

19.3.10.2.2 Mechanical control

**Prevention:** Building design may contribute to termite invasion. Keep
all substructural wood at least 30 cm above the soil beneath the
building. Alternatively, sink subterranean wood in concrete as a
barrier against termites. Identify and correct other structural
deficiencies that attract or promote termite infestations. Keep
foundation areas well ventilated and dry. Reduce chances of
infestation by removing or protecting any wood in contact with the
soil. Look for and remove tree stumps, stored wood, untreated fence
posts and buried scrap wood near the structure that may attract
termites. Foundation sand barriers can be used for subterranean
termite control. Sand with particle size in the range of 10-16 mesh, is
used to replace soil around the foundation of a building.
Subterranean termites are unable to construct their tunnels through
the sand and therefore cannot invade wooden structures resting on
the foundation.

19.3.10.2.3 Chemical control

**Pre-infection treatment of wood:** Wood used in foundations and other
wood in contact with the soil may be chemically treated to help
protect against termite damage in areas where building designs
cannot be altered or concrete or sand cannot be used. Treated wood
is toxic to termites and discourages new kings and queens from
establishing colonies in it. If susceptible wood is used above the
treated wood, subterranean termites can build their shelter tubes
over chemically treated wood and infest untreated wood above. Use
only “exterior grade” treated wood for areas that are exposed to
weather; otherwise the chemical that is in the wood may leach from
the wood. All topical (applied to wood by painting on) treatments that
will be exposed to weather must also have a sealer coat to prevent
leaching into the soil following rain. Also, **because they contain**
pesticides, disposal of treated wood requires special handling. CCA (chromated copper arsenate) can be used to treat wood prior to construction. It gives the wood a green tint. Although this is a natural poison, it will not leach much into the soil. Creosote is a natural treatment. Wood can be soaked in a hot bath (almost boiling) of creosote until it has penetrated 1/3 of the way into the wood.

Post-infection treatment of wood: Subterranean termites in structures cannot be adequately controlled by fumigation, heat treatment or freezing because the reproductives or nymphs are concentrated below ground level in structures out of reach of these control measures. The primary methods of controlling these termites are the application of insecticides. Treating infested wood in a structure requires drilling and injecting chemicals into the wood to reach the colony. Alternatively, the infested wood can be sprayed liberally with the insecticide (Premise). Spray wood at least 1 m above ground level, and spray the soil all around the infected wooded structure. Use of insecticides should be supplemented with the destruction of their access points or nests. To facilitate control of subterranean termites, destroy their shelter tubes whenever possible to interrupt access to wooden substructures and to open colonies to attack from natural enemies such as ants.

Treatment of soil: Insecticides are applied to the soil either in drenches or by injection. Special hazards are involved when applying insecticides to the soil around and under buildings. Applications in the wrong place can cause insecticide contamination of plumbing used for water under the treated building. Soil type, weather and application techniques influence the mobility of insecticides in the soil. Soil applied insecticides must not leach through the soil profile to contaminate groundwater. Premise (made by Bayer) is effective in combating subterranean termites. It is expensive, but very concentrated and long lasting. One application should be effective for up to 6 years. Dilute as specified (350g/l) and apply in a trench around the building along foundations (6 x 6 inches wide). For existing buildings, apply 3 – 6 l per linear meter (trench treatment). Where possible, treat similarly treat inside along outer foundation walls (suspended floors), of, if impossible, (solid floors), drill through
floor adjacent to our foundation walls, flood soil below by injecting emulsion through holes and seal. Ensure that soil along the whole length of the foundation walls, is thoroughly treated. For new buildings, prior to construction, apply as an overall drench to soil under floor area at 5l per square meter. Use higher rate on heavy (clay e.g. basalt) soils. Apply to bottom of foundation and service trenches, and to soil on both sides of outer foundation walls at 6l per linear meter (trench treatment). For infested wooden structures, apply Premise in a spray (mix as above) liberally to the infested wood, and surrounding soil.

19.3.11 ANTS

19.3.11.1 General information

Ants are among the most prevalent pests in the household. They are found in any environment where they have food and water. Once ants have established a colony inside or near a building, they may be difficult to control. On outdoor (and sometimes indoor) plants, ants protect and care for honeydew-producing insects such as aphids, increasing damage from these pests. Ants also perform many useful functions in the environment, such as feeding on other pests (e.g. Fleas, caterpillars and termites), dead insects, and decomposing tissue from dead animals. Ants are close relatives of bees and wasps, and are often confused with termites. Three main characteristics distinguish ants from termites:

- The ant’s abdomen is constricted where it joins the thorax, giving it the appearance of having a thin waist; the termite’s abdomen is broad where it joins the thorax.

- The ant’s hind wings are smaller than its front wings; the termites’ front and hind wings are about the same size (shortly after their flights to find new colonies, both ants and termites remove their wings so wings may not always be present).

- Winged female ants and worker ants have elbowed antennae; the termite’s antennae are never elbowed.

Ants undergo complete metamorphosis, passing through egg, larval,
pupal and adult stages. Larvae are immobile and wormlike and do not resemble adults. Ants are social insects with duties divided among different types or castes of adult individuals. Queens conduct the reproductive functions of a colony and are larger than any other ants: they lay eggs and sometimes participate in the feeding and grooming of larvae. Female workers, who are sterile, gather food, feed and care for the larvae, build tunnels and defend the colony; these workers make up the bulk of the colony. Males do not participate in colony activities; their only apparent purpose is to mate with the queens. Few in number, the males are fed and cared for by the workers. Inside a building, household ants feed on sugars, syrups, honey, fruit juice, fats and meats. Long trails of thousands of ants may lead from nests to food sources, causing considerable concern among building occupants. Outdoors they are attracted to sweet, sticky secretions, or honeydew, produced by aphids. Ant usually nest in soil; nests are often found next to buildings, along sidewalks, or in close proximity to food sources such as trees and plants that harbour honeydew producing insects. They also construct nests under boards, stones, tree stumps or plants, and sometimes under buildings or other protected places. Ants enter buildings seeking food and water, warmth and shelter, or a refuge from dry, hot weather or flooded conditions. They may appear suddenly in buildings of other food sources become unavailable or weather conditions change. A new colony is typically established by a single newly mated queen. After weeks or months of confinement underground, she lays her first eggs. After the eggs hatch, she feeds the white, legless larvae with her own metabolized wing muscles and fat bodies until they pupate. Several weeks later the pupae transform into sterile female adult workers, and the first workers dig their way out of the nest to collect food for themselves, for the queen (who continues to lay eggs) and for subsequent broods of larvae. As numbers increase, new chambers and galleries are added to the nest. After a few years, the colony begins to produce winged male and female ants, which leave the nest to mate and form new colonies.

19.3.11.2 Management

Ant management requires diligent efforts and the combined use of mechanical, cultural, sanitation and sometimes chemical methods of
control. It is unrealistic and impractical to attempt to totally eliminate ants from an outdoor area. Focus your management efforts on excluding ants from buildings and eliminating their food and water sources. Become aware of the seasonal cycle of ants in your area and be prepared for annual invasions by sealing the building in time.

19.3.11.2.1 Mechanical control

*Exclusion and sanitation:* To keep ants out of buildings, seal cracks and crevices around foundations that provide entry from the outside, using silicon. Ants prefer to make trails along structural elements, such as wires or pipes, and frequently use them to enter and travel within a structure to their destination. Indoors, eliminate cracks and crevices wherever possible especially in kitchens and other food preparation and storage areas. Store attractive food items such as sugar, syrup, honey and other sweets in closed containers that have been washed to remove residues from outer surfaces. Rinse out empty soft drink containers and remove them from the building. Thoroughly clean up grease and spills. Do not store rubbish indoors. Look for indoor nesting sites such as potted plants. If ants are found, remove containers from the building and submerge the pot for 20 minutes in standing water that contains a few droplets of liquid soap. Ant nests may be associated with plants that support large populations of honeydew producing insects. Avoid planting such trees and shrubs near to buildings.

19.3.11.2.2 Chemical control

*Coopex ant dust* (made by AgrEvo) is the only chemical that is legal to use against ants in National Parks. Dust freely along runs and around nests, repeating where necessary. *Fendona* (see cockroach control) is also an effective and approved chemical used in ant control. This however, *is for use on man-made structures only, not for application to vegetation/in gardens etc.*

19.3.12 BEES

Bees play a vital role in the functioning of the ecosystem.
19.3.12.1 Management

19.3.12.1.1 Mechanical control

Bees can be smoked out in most cases. Once the bees have been removed, (either by smoke or pesticide), *Coltar* (carbolic acid) can be sprayed onto the area to get rid of the smell of the pheromones. If not removed, the pheromones could attract the bees back to the same place. *Jays fluid* can be applied to the area after the Coltar to further clean it. These can then be washed off using soapy water. *Brown vinegar* is a bee repellent. Once bees have been removed, it can be applied directly to the area. Pieces of cloth swabbed in brown vinegar can be left in the area to repel the bees.

19.3.12.1.2 Chemical control

It not policy for pesticides to be used to remove bees from any man-made structure except in extreme circumstances. If the bees are posing a threat to humans and the option of smoking them out is not viable, the pesticide *Raidyard* can be used to kill the bees. This can be sprayed from 6m away to avoid danger to the person applying the pesticide. *Permethrin* spray is also a good repellent, and can be sprayed on the cleaned area to repel the bees from re-occupying the space.

19.3.13 SPIDERS

19.3.13.1 General information

Unlike mosquitoes, spiders do not seek people in order to bite them. Generally a spider doesn’t try to bite a person unless it is being squeezed, lain on or simply provoked to defend itself. Moreover, the jaws of most spiders are so small that the fangs cannot penetrate the skin of an adult person. Sometimes when a spider is disturbed in its web, it may bite instinctively because it mistakenly senses an insect has been caught. Spiders are primarily beneficial and their activities should be encouraged in the garden. Pesticide control is difficult and rarely necessary. The best approach to controlling spiders in and around the home is to remove hiding spots for reclusive spiders and regularly clean webs off the house.
19.3.13.2 Management

19.3.13.2.1 Mechanical control

Spiders may enter houses and other buildings through cracks and openings. They may also be carried in on plants, wood and boxes. Regular vacuuming or sweeping of windows, corners of rooms, storage areas and basements and other seldom used areas helps remove spiders and their webs. Vacuuming spiders can be an effective control technique because their soft bodies usually do not survive this process. Indoors, a web on which dust has gathered is an old web that is no longer being used by a spider. Individual spiders can also be removed from indoor areas by placing a jar over them and slipping a piece of paper under the jar that then seals off the opening of the jar when it is lifted up. To prevent spiders from coming indoors, seal crack in the foundation and other parts of the structure and gaps around windows and doors. Good screening will keep out spiders but will also keep out the insects that attract the spiders in the first place. In indoor storage spaces, place boxes off the floor and away from walls, where possible, to help reduce their usefulness as a harborage for spiders. Sealing the boxes with tape will prevent spiders from taking up residence within. Clean up clutter in garages, sheds, basements and other storage areas. Outdoors, eliminate places for spiders to hid and build their webs be keeping the area next to the foundation free of trash, leaf litter, heavy vegetation and other accumulations of materials. Trimming plant growth away from buildings will discourage spiders from first taking up residence near the structure and then moving indoors. Outdoor lighting attracts insects, which in turn attracts spiders. If possible, keep lighting fixtures off structures and away from windows and doorways. Sweep, mop, hose and vacuum spiders and webs off buildings regularly.

19.3.13.2.2 Chemical control

Insecticides will not provide long-term control and should not
generally be used against spiders. Pesticide control of spiders is
difficult unless you actually see the spider and are able to spray it. If
you spray a spider, it will be killed only if the spray lands directly on it;
the spray residual does not have a long-lasting effect. This means a
spider can walk over a sprayed surface a few hours after treatment
and not be effected. Control by spraying is only temporary if not
accompanied by housekeeping. It is just as easy and much less toxic
to catch and remove the spider from the building, or to simply
vacuum it up.

19.3.14 SCORPIONS

19.3.14.1 General information

Scorpions are nocturnal, predatory animals that feed on a variety of
insects, spiders and centipedes. Although they have two eyes in the
center of the head and usually from two to five more along the margin on
each side, they do not see well and depend on touch. Scorpions that hide
under stones and other objects during the day tend to carry their stinger
to one side, whereas burrowing scorpions hold their stinger up over their
backs. Scorpions grow slowly. Depending on the species, they may take
between 1-6 years to reach maturity. On average, scorpions may live 3-5
years, but some species can live as long as 10 – 15 years. Scorpions
have an interesting mating ritual that may last several hours, with the
male grasping the female’s pincers in his and leads her in a courtship
dance. The male then deposits a sperm packet and manoeuvres the
female over it. The sperm packet is drawn into the females opening
located near the front on the underside of her abdomen. The female
stores the sperm packet, and the sperm is later used to fertilize the eggs.
After mating, unless he is quick and able to escape, the male is often
eaten by the female. Once impregnated, the gestation period may last
several months to a year and a half, depending on the species. A single
female may produce 25-35 young. Scorpions are born live and the young
climb onto their mothers back. The young remain on their mother’s back
until the first molt. They assume an independent existence once they
leave their mothers back. Scorpions molt five or six times until they
become fully grown adults. Scorpions generally hunt at night using their
However, if the scorpion is strong enough to overpower its prey, instead of injecting venom, it will simply hold the prey and eat it alive. This conserves venom which can take up to 2 weeks to regenerate, during which time the scorpion's main defence is inactive.

Outside during the day, scorpions hide in burrows or debris, under wood, stones or tree bark and under floors of buildings in crawl spaces. Indoors, scorpions may be found in cracks and crevices of woodwork, behind baseboards, in closets and attics, and inside walls. Scorpions gain entry into buildings through poorly sealed doors and windows, cracks in foundations, vents that are not properly screened and through plumbing and other openings.

19.3.14.2  Management

19.3.14.2.1  Mechanical control

To prevent stinging encounters with scorpions, do not leave shoes, boots, clothing items or wet towels outdoors where scorpions can hide. Shake all clothing/bed linen and towels before use. Portable UV lights can be used to detect scorpions as they glow luminously under this light and are easily seen. Outdoor lights attract insects and thus the scorpions that feed on insects. Yellow outdoor lighting is less attractive to insects and is recommended in areas where scorpions are prevalent. The first strategy for control is to modify the area surrounding a house because scorpions are difficult to control with insecticides. Use the following checklist to protect a building:

a) Clean the area by removing all rubbish, logs, stones, brick and other objects from around the foundation of the building.

b) Prune overhanging tree branches away from the house because they can provide a path to the roof for scorpions.

c) Install weather stripping (rubber seal) around loose fitting doors, between doors and floors and around windows.

d) Seal all eves, pipes and other cracks that allow entrance into the home.

e) Make sure window screens fit tightly in the window frame and
How to safely capture a scorpion

Scorpions can be captured by placing a medium sized jar over the scorpion and sliding a sheet of heavy paper under the jar, trapping the scorpion. With the sheet of paper securely over the mouth of jar, invert the jar and the scorpion will fall to the bottom of the jar. Scorpions can also be picked up safely with forceps (10-12 inches) or with other long mechanical devices made for picking up small objects.

19.3.14.2.2 Chemical control

Chemical control of scorpions is not recommended. Apart from the unnecessary negative effects on the environment, pesticides are not very effective against scorpions as they hide in cracks and crevices during the daylight hours. Adult scorpions are difficult to kill with pesticides because of their larger body size and thicker cuticle.

19.3.15 SAFE AND EFFECTIVE PESTICIDE USE

All pesticides are considered to be potentially poisonous and must be handled accordingly. On the label of each remedy, the minimum requirements for safe handling are given. In the case of many pesticides it is sufficient to follow a few basic rules. These may be summarized as follows:

a) Wear rubber gloves when pouring or measuring a concentrate before dilution. This should be done in such a manner that any fumes or dust will drift away from the applicator. Immediately wash off any spillage on the body with soap and lots of water.

b) Wear an overall or other old clothing that will cover most of the body. These should be regularly washed especially when applying pesticide over an extended period of time. When applying, always keep out of the spray drift or dust cloud.

c) Never smoke, eat or drink during application. Wash at least the hands and face before doing so, during a break.

d) Take a bath after completing the application and change into clean clothes.
never continue with another job while still wearing clothes contaminated by a pesticide.

e) In the case of highly poisonous pesticides it is imperative that additional precautions be taken. Special protective clothing in good repair, rubber gloves and boots, headgear, goggles and mask or respirator must be worn. The eyes and respiratory tract must be adequately protected.

19.4 REFERENCES


STATEWIDE INTEGRATED PEST MANAGEMENT PROGRAM. 2004. UC IPM ONLINE. University of California; Agriculture and Natural Resources.