



***COMMISSION OF ENQUIRY INTO
THE FIRE AT THE PRETORIUSKOP
AREA IN THE KRUGER NATIONAL
PARK THAT BROKE OUT ON
4 SEPTEMBER 2001***

FIRST AND FINAL REPORT


Commissioner: DD Ngobeni

NGOBENI COMMISSION OF INQUIRY

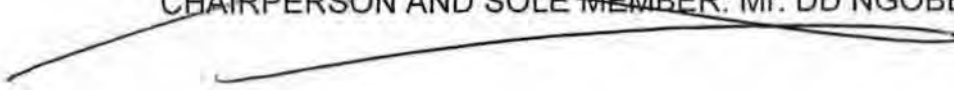
TO: THE PRESIDENT OF SOUTH AFRICA

Your commissioner has the honour to present this one and final report of the Commission Of Inquiry Into The Fire At The Pretoriuskop Area In The Kruger National Park That Broke Out On 4 September 2001.

Signed at Pretoria On 2 September 2005.



CHAIRPERSON AND SOLE MEMBER: Mr. DD NGOBENI



**NGOBENI COMMISSION OF INQUIRY FIRST AND FINAL REPORT
REGARDING THE FIRE WHICH STARTED IN THE PRETORIUSKOP
AREA OF THE KRUGER NATIONAL PARK ON 4 SEPTEMBER 2001**

PREFACE: THANK YOU

The Commission wishes to express its appreciation to the members of the public and members of various state organs who participated in the process which enabled the Commission to draw conclusions in the time available.

I wish to record my sincere appreciation to the leader of evidence Mr NH Ritshuri and his assistant Ms J Mbuli, the legal team on behalf of the Kruger National Park from Deneys-Reitz attorneys – Mr D Wanblad and Advocate Watt Pringle, the legal team on behalf of the victims and families Mr SA Cilliers assisted by Mr CH Moolman from the firm Du Toit, Smuts & Mathews Phosa Inc, the interpreter Mr D Boyd and Ms A Pieterse, the stenographer.

The office of the Area Commissioner, South Africa Police Services, Nelspruit, also assisted in providing the services of two experienced detectives and I also would like to thank Inspectors GK Mhlanga and NT Mnisi for their services rendered.

Special thanks to Mr John Bacon who served as the secretary and also in investigating matters. He made it a point that all logistic arrangements are in place for the successful running of the commission.

I also wish to reward my appreciation to the Director, Mr D Mabunda, at the Kruger National Park assisted by Mr F Laubscher in supplying accommodation, transport, meals and support services for the commission attendants.

BACKGROUND

1. The Commission of Inquiry was established in terms of section 1 of the Commissions Act, 1947 (Act No. 8 of 1947) read with Section 84(2)(f) of the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996).
2. The Commission has been assigned with a legal duty to inquire into, make findings and report on the matters stipulated in the terms

of reference regarding the fire which started in the Pretoriuskop area in the Kruger National Park on the 4th of September 2001.

3. This tragedy happened on the 4th of September 2001 and it has caused the untimely death of 23 people being identified as follows:

- 3.1 Ms Christinah Sibuyi, ID 550111 0731 082 from Kildare.
- 3.2 Ms Yvonne Rebeca Mathabela ID 8201100303086 from Mabarthule.
- 3.3 Ms Riminah Risenga, ID 560115 0184 082 from Kildare.
- 3.4 Ms Frarie Zwane, ID 491103 0041 082 from Makoko.
- 3.5 Ms Mildred Ndlovu, ID 660119035083 from Hluvukani.
- 3.6 Ms Lizzy Mashele, ID 6310020727083 from Cork Trust.
- 3.7 Ms Florance Mokoena, ID 6704160474087 from Culcatta.
- 3.8 Ms Lettie Manzini, ID 5907150690080 from Shabalala Trust.
- 3.9 Ms Linah Lekhuleni, ID 5009130641085 from Makoko.
- 3.10 Ms Allita Makhubela, ID 5401150451080 from Shabala Trust.
- 3.11 Ms Meriam Ngomane, ID 5902010585685 from Calcutta.
- 3.12 Ms Lilly Maphanga, ID 5503020425086 from Calcutta.
- 3.13 Ms Maria Nkuna, ID 640129 0537 087 from Mkhuhlu.
- 3.14 Ms Eslinah Sithebe, ID 580201 0795 080 from Makoko.
- 3.15 Ms Nominah Nkuna, ID 540317 0746 086 from Makoko.
- 3.16 Ms Gienah Ndimande, ID 5204020320084 from Makoko.
- 3.17 Ms Nomaphepha Mpisi Lubisi, ID 3809100150086 from Makoko.
- 3.18 Ms Velaphi Mokoena Nqwenya, ID 5006020548089, from Makoko.
- 3.19 Ms Sarah Mawela Mazibuko, ID 53080603336084 from Makoko.
- 3.20 Mr Shadrack Mhlanga, ID 4912145295081 from Huntington trust.
- 3.21 Mr Phillip Fakude, ID 5607175387080 from Nyongane trust.

- 3.22 Mr Wilson Ngobeni, ID 6210055443088 from Josefa-mhinga.
 - 3.23 Mr Fransisco Nhate, ID 5205105731087 from Cork Trust.
4. The following employees survived although they were hurt by the fire.
- 4.1 Ms Agnes Lamula, ID 6504170387081 from Cork Trust.
 - 4.2 Ms Anesy Mashego, ID 5803140860083 from Ludlow.
 - 4.3 Ms Ngomatabo Ngobeni, ID 34112101689088 from Makoko.
 - 4.4 Ms Lorrain Khumalo, ID 5509290561088 from Kildare.
 - 4.5 Ms Linah Leyane, ID 6007120810080 from Makoko.
 - 4.6 Ms Assia Nkuna, ID 3907120211084 place of abode unknown.
 - 4.7 Ms Linah Lekhuleni, ID 4006300439083 place of abode unknown.
 - 4.8 Mr Frans Mhlongo, ID 6711075252086 place of abode unknown.
 - 4.9 Mr Tommy Mogakane, ID 7204085326081 place of abode unknown.
 - 4.10 Mr Sandros Ngwenya, ID 7211095597080 place place of abode unknown.
 - 4.11 Mr Moses Lekhuleni, ID 6908075414084 Mahuxu.
5. The following were not hurt as the result of the fire disaster
- 5.1 Ms Lizzy Mashabane, ID 4710100258084 from Shabalala trust.
 - 5.2 Ms Magnett Mkhathswa, ID 6401080579083 from Makoko.
 - 5.3 Ms Eunice Makhabela, ID 7002030586084 from Justicia.
 - 5.4 Ms Stellar Ndubane, ID 7602020384083 from Justicia.
 - 5.5 Ms Elsie Lekhuleni, ID unknown from Makoko
 - 5.6 Ms Lindiwe Ngobeni, ID unknown place of abode unknown.
 - 5.7 Ms Anna Ngomane, ID unknown from Welverdiend,
 - 5.8 Ms Lisbeth Mathebula, ID 5007040530081 from Hluvukani.

- 5.9 Ms Sizane Mnisi, ID 4610220387089 from Hlalakahle.
- 5.10 Ms Rose Leyane, ID 8001070325089 from Makoko.
- 5.11 Ms Louisa Silinda ID 6006110955086 from Kildare.

6. The total number of persons as classified above is as follows:

Deceased	:	23
Injured	:	11
Not injured	:	<u>11</u>
Total		<u>45</u>

7. The terms of reference were promulgated in Government Notice R.68, 2001 and published in Regulation Gazette No. 7229 as contained in Government Gazette No. 22944, also of 21 December 2001, and signed by Mr. J. Zuma, the Acting President of the Republic of South Africa as follows:

"1. The Commission shall inquire into, make findings and report on the following matters regarding the fire which started in the Pretoriuskop area of the Kruger National Park on 4 September 2001, with special reference to the following:

(1) ORIGIN OF THE FIRE

- (a) Locality of the origin of the fire.
- (b) Cause of the fire.
- (c) Possible link between SA National Parks' fire research activities and the fire.

(2) FIRE HAZARD

- (a) Climatic conditions on 4 September 2001.
- (b) Fire-fighting competence of SA National Parks.
- (c) Competence employed during the fire.

(3) FIRE POLICY

- (a) Compliance with the existing policy on 4 September 2001.

- (b) Precautionary measures taken by SA National Parks.

(4) SAFETY OF TEMPORARY STAFF

- (a) Safety procedures for staff camping in the bush.
- (b) Possibility of housing temporary staff in a rest camp.
- (c) Warning and assistance to temporary staff during the fire.

(5) EMERGENCY PROCEDURES

- (a) Compliance with emergency procedures.
- (b) Reaction time of emergency team.

(6) CONDITIONS OF EMPLOYMENT FOR TEMPORARY STAFF

- (a) Responsibility of SA National Parks after fire.
- (b) Assistance to families of the deceased.

2. The Commission shall report and make recommendations on how similar fire hazards could be avoided and/or minimised in future.
3. These terms of reference may be added to, varied or amended from time to time.
4. The Commission shall commence with its duties forthwith.
5. To report to me as soon as this can conveniently be done, using all diligence, the result of the inquiry.
6. The Commission shall be subject to and be conducted in terms of the provisions of the Commissions Act, 1947 (Act No. 8 of 1947) as amended, and the regulations published thereunder."
8. The terms of reference have not been added to, varied or amended as contemplated in paragraph 3 thereof."

9. The Acting President, Mr. J Zuma appointed me, David Dlamafa Ngobeni, as sole member and chairperson of the Commission of Inquiry into the Fire at the Pretoriuskop Area in the Kruger National Park that broke out on 4 September 2001. The appointment was promulgated in Government Notice R.1388 in the Government Gazette No. 22944 of 21 December 2001.
10. Mr. NA Ritshuri, a senior Public Prosecutor, was appointed to lead the evidence and Mrs. J Mbuli, a Public Prosecutor, was appointed to assist the leader of the evidence at the Commission. Mr. D Boyd was appointed as interpreter and Ms. A Pieterse as stenographer, whilst Mr. John Bacon served as secretary to the Commission. Inspector GK Mhlana, South African Police Services Hazyview, and Inspector NT Mnisi, South African Police Services White River, was seconded to the Commission to assist with the investigations prior and during the sittings of the Commission.
11. The following legal representatives appeared before the Commission.

For the Kruger Nation Park: Mr D Wanblad – Deneys Reitz
Attorneys
Advocate Watt – Pringle

For the Communities (Hoxane, Makoko, Jongilanga and Mnisi):

Mr S A Cilliers and Mr C H Moolman
both from Du Toit, Smuts and
Mathews Phosa Inc

The firm Du Toit, Smuts and Mathews Phosa Inc at the beginning of the Commission of Inquiry indicated their status being of rendering legal services to the Community without being compensated. It only transpired during the submission of Heads of arguments that a

request was made that the Legal Aid Board be approached to assist the community financially in order to enable them to compensate the legal team from Du Toit Smuts and Mathews Phosa Inc or alternatively that they be compensated out of the honourable Commissions' budget. The recommendation in this regards will be dealt with at the conclusion of the report under recommendations.

12. The following witnesses testified before the Commission of Inquiry.

On behalf of the Kruger National Park:

- 12.1 Mr D J Pienaar: Head, Department Scientific Services; Kruger National Park.
- 12.2 Mr A L F Potgieter: Fire Ecologist; Kruger National Park.
- 12.3 Mr M Mugwabana: Assistant Section Ranger; Pretoriuskop, Kruger National Park.
- 12.4 Mr D B Woods: Support Scientist Geographic Information Systems; SAN Parks.
- 12.5 Mr N Zambatis: Research Officer Scientific Services; SAN Parks.
- 12.6 Mr Haggart: Hospitality Services Manager; Pretoriuskop, Kruger National Park.
- 12.7 Mr A Nkuna: Ranger; Pretoriuskop, Kruger National Park.
- 12.8 Mr M T Msomi: BIV-technician; Kruger National Park.
- 12.9 Dr B W van Willgen: Environment and Forestry Technology; Kruger National Park.
- 12.10 Mr F Mhlongo: Ranger; Pretoriuskop.
- 12.11 Mr H M Mathebula: Maintenance officer; Kruger National Park.
- 12.12 Mr D Visagie: Manager Infrastructure and Project Management.
- 12.13 Mr B Baloyi: Ranger; Stolzneck.
- 12.14 Mr W Mabasa: Manager Game Processing Plant; Kruger National Park.
- 12.15 Mr H J Coetzee: Manager Game Processing Plant; Kruger National Park.

- 12.16 Dr R Ferreira: Medical Practitioner – Skukuza
- 12.17 Mr J Chabani: Head Division Corporate Management Services; Kruger National Park.
- 12.18 Mr P J Nobela: Advisor of Wildlife Management within Conservation Services Department; Kruger National Park.
- 12.19 Mrs H M Mohale: Accountant.
- 12.20 Mr M D Mabunda: Director; Kruger National Park.
- 12.21 Mrs H Mmethi: Advisor Social Ecology.
- 12.22 Mr DMR English: SAN Parks Section officer Corporate Investigation Services

On behalf of the leader of evidence:

- 12.23 Mrs L Khumalo:Thatch Cutter.
- 12.24 Mr T R Langeveldt: Ex Senior Wilderness Trails Ranger
- 12.25 Mr T Mogakane: Ranger; Pretoriuskop
- 12.26 Mr M Lekhuleni: Ranger; Pretoriuskop
- 12.27 Mr F J Fraser: Visitor / Hiker
- 12.28 Inspector J C Jansen: Inspector; Department of Labour
- 12.29 Inspector V G Madubane: Inspector; Department of Labour.
- 12.30 Lieutenant Colonel M J D Wessels: SADF Sand River Base.
- 12.31 Mr D D Khoza: Administration Clerk; Kruger National Park.
- 12.32 Mr S B Mhlanga: Assistant Trails Ranger; NAPI
- 12.33 Mr J P N Coetzee: First Riple Day Walk Guide; Pretoiruskop
- 12.34 Mr M A Skippers: Technical Officer; Southern Business Unit.
- 12.35 Mrs F A Lekhuleni (Mgwenya): Mother of the late Sandros Mgwenya
- 12.36 Mr T P Melamu, Manager: Occupational Health & Safety Corporate; Kruger National Park

- 12.37 Mr M S Mona: Committee Member Community Representative
- 12.38 Mr B Havemann. Head Ranger; Jock of the Bushveld
- 12.39 Dr W P D Gertenbach: General Manager Conservation Services
- 12.40 Mr K J Rae: South African Weather Bureau Services
- 12.41 Mr CC de Bruno Austin: Chairman of Fire Protection Association
- 12.42 Mr J P Heine: Forest Association Nelspruit
- 12.43 Mr P Molapo: Deputy Director of fire; Department of Water Affairs and Forestry
- 12.44 Mr A Legari: Section Ranger; Lower Sabie
- 12.45 Mr N Funda: District Ranger; Skukuza
- 12.46 Colonel B D Burger: South African Air Force
- 12.47 Dr C de Ronde: Fire Expert

On behalf of the Commission:

- 12.48 Mrs N Govender – Fire Technician

- 13 The Kruger National Park is a conservation area and covers an area of some two million hectares under the control of the South African National Parks (SAN Park) it falls within the Lowveld Savannah System which is considered unique because of the co-existence of grass and trees without the one dominating the other. The fire is and always has been an integrated feature of this Savannah ecosystem. Fire is one of the important components of the ecosystem which has helped to shape it and which is essential to its continued existence. The bio-diversity, that is the diversity of plants and animals in the system is dependent on the renewing effects of fire, the renewing effects which fire has at different times and frequencies and in different conditions. The fire is usually caused by natural causes being lightning or presence of man. Fire is not necessarily a bad thing and is in fact something which they live

with in that the environment partly is one of necessity and partly because it is in fact desirable.

In the year 2000 there have been a higher than average rainfall in the Kruger National Park. The area of Gabbro where the camp of the grass cutters was situated had for the past three years no fire in that particular area. The biomass was extremely high. It can be understood why the grass cutters were deployed to harvest the grass easily in that zone. The veld conditions assessment carried out at Pretoriuskop during 2001 indicated that the grass biomass (fuel load) was between 4000 and 9000 kilograms per hectare. In determining scientifically the degree of bio mass which is regarded to be low not to fuel the fire swiftly, Dr Cornelius de Ronde has indicated that it is a bio mass which is below four times per hectare, 3 and a half to 4 times per hectare that is a bio mass over 4000 kilograms per hectare could be regarded as high. A closer consideration needs to be made in respect of the mandate assigned to the Kruger National Park which is clearly stipulated in its mission statement which is:

"To maintain biodiversity in all its natural facets and fluxes and to provide human benefits in keeping with the mission of the South African National Parks in a manner which declared as little as possible from wilderness qualities of the Kruger National Park"

The Kruger National Parks' mission statement mandates it to maintain it in as pristine wild or natural state as is possible. It is the maintenance of bio diversity in all its facets and fluxes. They must try to protect and conserve the Kruger National Park from the excessive impact of modern humans which presumes that they must have to manage the system in a way that it simulates the evolutionary pressure of humans when they did not have the same potential for habitat modification as they have to day. It must be retained in its wilderness nature as wilderness is associated with

dangers, the danger of wild animals, the danger of being isolated in a dangerous situation far from modern amenities and assistance.

This does not mean that human life must of necessity be sacrificed in the interest of maintaining a conservation area and reasonable precautions, with full recognition of the attendant risks, must be taken. In achieving this approach the Kruger National Park is zoned in different zones according to the various forms of humans allowed in the park. These zones are called wilderness zones where there is only very low people impact that are allowed there. The ideal status of the wilderness is supposed to have as little human impact as possible and also little human impact in the form of management by reserve managers. In reality that is unfortunately not possible because in the wilderness zones in the Kruger National Park which is pretty large, have also been impacted by humans. The impacts are in terms of the fences, the effect fences have on animal movements, the excessive water extraction from rivers, and high people diversity around the parks. This has made it impossible to leave wilderness zones completely unmanaged which they are expected to manage such wilderness.

- 14 There are various forms which ignites the fire in the wilderness, which is experienced by the Kruger National Park (SAN Parks), and which need ecosystem fire management. There is a system which is to be put in place, where targets and point fires are put in. The underlying ideas being to create an ecologically rich mosaic and in so doing break up the fuel bed as the season progresses thus reducing the risk of large fires. This system is being generally implemented to some success in several Southern African conservation areas. This brings the creation of an ecologically rich mosaic and then the question of breaking the fuel bed with the resultant reducing risk of large fires. This simply means that if you put in these point fires which will turn into a patch under the conditions from early in the season through to late in the season

you would get fires that burn while the grass is still fairly green and there will be small cool fires. As the season progress they would burn bigger and they would be warmer. These point fires would also burn over a longer period of time, in other words some of them would burn through the night and may be for a couple of days, which entails they would burn under different temperature conditions as well. Also because the field is dissected by rivers, streams, foot paths, blackish areas, all of that would help to create this patchy fire in that you won't have one clean burn. You will have a very nice patchy mosaic as the fire stop against the stream it would carry on this way, there it might be blocked by a blackish area and be burning in another area. You will then not find any fire that burns the whole black very clearly under the same intensity. This describes what is called ecologically rich mosaic.

These point fires and patches would generally be scattered over the whole of the Kruger National Park. The acme of the results being to break up the continuous fuel load available and minimize changes of getting fire that burn very, very large areas at once, being limited because of the different burned partly already in place.

The second cause driven by nature being lightning, and such fire caused is left to go and no attempts are done to combat it. The underlying factor is usually that the fires induced by the management did not reach the target stipulated for the month and this unplanned fire accelerates the achievement of the target sought.

The third cause is where fire is caused by illegal immigrants (transmigrant) or tourist or poachers and even sometimes management fires that escape or fires at a refuse dump that escapes. These fires which are set by or non-lightning fire, the rangers had the obligation, to try and contain that fire to the smallest possible area, beside when it lands in those plots which were burnt, it will be contained in the block by putting in back burns in front of the fire that is approaching. Further to retain the fire to the

block they would put the fires in the upwind side of the block as well to encircle the fire in the block, the ring burn method.

- 15 The temporary staff members that cut the thatch grass were employed on a short term contract. Their contract of service was to the effect that they will be paid per bundle of grass that they cut. According to the evidence this institution has been in existence for the past 25 years.

The campsites for grass cutters have been used on a rotation basis for a long period in the past. That has been the situation with the specific camp. This campsite was activated again during mid July 2001 and 37 thatch cutters plus a supervisor were deployed at the camp. Ten tents were pitched in two rows.

The following procedures were supposed to have been strictly followed, which issue will later be deal with on the evaluation of evidence.

- 15.1 An area of $\pm 150 \times 80$ metres cleared and graded, depending on site conditions.
- 15.2 Tents are pitched in rows, not closer than 5 meters to the perimeter of the graded area.
- 15.3 A 5000 litre water tank is installed with a multiple outlet for water, filled every second day.
- 15.4 Rations, toilets and medicine essentials like Tabbard malaria tablets etc are provided.
- 15.5 Paraffin lamps and firewood are provided. Fires are made in the central area of the opened campsite.
- 15.6 Medical treatment is provided when needed and sick people are transported to hospital as need arises.
- 15.7 Thatch stacking areas are separated from the camp sites by means of a firebreak or a firebreak road.
- 15.8 Protection is arranged through the section Ranger regarding fire protection and general protection.
- 15.9 A supervisor for Administration arrangement is placed in the camp from Technical Services.

- 16 The Kruger National Park had to undergo restructuring or the retrenchment of its employees. This process was named "*Operation Prevail*". The procedure was that specific posts were declared redundant with the result that the incumbents of such posts were accordingly informed of their status. The mechanism was in place for an individual made redundant to apply for any post advertised where he/she will qualify. These individuals who could not be successful in those vacant posts were given two months i.e. July and August 2001 to remain residing at the park. A rider was added to it that should a case require specific consideration in regard to an individual's circumstances an extension could be considered. The evidence reveals that a lot of extensions were granted to redundant employees. The last employee left on the 31 of December 2001. This process was not properly welcomed as it was a painful process, especially to people that were at the receiving end and were at the short end of the stick. The people affected were disgruntled about the process raising the following facts that "*Operation Prevail*" mechanism was discriminative in application because people with tremendous experience, passion, pride, qualification and training were summarily dismissed, some were left with some few months to retire.

It was further indicated by the management of the Park that all the affected employees were briefed about "*Operation Prevail*". The CEO of the South African National Parks first discussed this issue with the Directorate and then the process was started from bottom up. The unions were consulted especially like SACCAO which is affiliated to COSATO and it had the majority of members in the Kruger National Park.

There was a specific group of employees being the Trails rangers where the Director, Mr Mabunda wrote a letter to Dr Gertenbach which was before the 4 September 2001 where he outlined options and strategies that were based to assist the trail rangers to actually form their own companies and become business operators in a

worker empowerment scheme. It was confirmed to the Commission that all the Trails Rangers who were employed at Kruger National Park have their own companies and are employed in the Wilderness except for Mr Trevor Robert Langeveldt who resigned because he was quite shocked by the incident. The fire disaster happened on the 4th September 2001 which was on a Tuesday. The redundant employees as per then existing Human resource policy were supposed to vacate their residential areas at the end of August 2001 beside those granted an extension in the exclusion of the Trails Rangers.

It is a common cause that the restructuring process was not popular among the employees more especially those affected and there have been a lot of criticism to the implementation of "Operation Prevail" by the media, accusing it of getting rid of experienced white employees in favour of employing lowly qualified black staff. On the positive side the implementation of "Operation Prevail" was based on the provisions of section 195(2) of the Constitution of the Republic of South Africa which also classifies SAN Parks and the Kruger National Park as organs of state. It is on this basis that the Kruger National Park as one of the organs of state had to comply with the basic principles governing public administration, section 195 (1)(i) states that:

"Public administration must be broadly representative of the South African people, with employment and personnel management practise based on ability, objectivity, fairness and the need to redress the imbalances of the past to achieve broad representation"

Evidence has revealed that historically, management and supervisory positions in the Kruger National Park and the rest of the parks under SAN Parks were held by white employees. Traditionally game rangers were white and male and this section of Conservation remained closed to white

women and blacks in general except for isolated pockets of tokenism. An illustration was made to indicate the imbalances that out of 22 section rangers in 2001, only six were black and most of them were appointed after 1998. Departments such as technical services, finance and procurement were entirely managed by white males. The majority of camp managers were also white and so was the Traffic Department.

According to the evidence the process of "*Operation Prevail*" was not to reduce staff for its own sake but instead to make the organisation more cost effective, efficient, representative and productive. It was also used to identify and remove dead wood and duplications of system. "*Operation Prevail*" did not only apply at the Kruger National Park but it also applied to the 19 National parks and their Head office. Out of 663 post declared redundant 150 new positions were created. This entailed that a balance of 513 employees faced the inevitable reality of losing their jobs.

The retrenched staff had an agreed package which among other things it included, relocation to new destinations to be done within three months from the company's account. The staff was not required to work for the notice month of July and would be paid for it. A severance package was to be paid according to company policy. Counselling services and training support was provided to retrenched staff.

Having raised this issues which reflects the different approaches that were hinged on the understanding of the implementation of "*Operation Prevail*", it is not intended to venture at this stage to link the fire disaster with "*Operation Prevail*" but only to take note of such "*atmosphere and climate*" that was prevailing among the different categories of the employees at the Kruger National Park at that time.

**SURVEY OF THE EVIDENCE BASED ON THE TERMS OF
REFERENCE AS MENTIONED SUPRA AT PARAGRAPH 7**

- 17 Each main term of reference will be dealt separately although the sub-headings will in certain circumstances be dealt with jointly due to the fact that certain matters fall under more than one issue.

18 **ORIGIN OF THE FIRE(1)**

- 18.1 **Locality of the origin of the fire**
 18.2 **Cause of the fire**
 18.3 **Possible link between SA National Park's fire research activities and the fire.**

19 **Sub heading 18.1 and 18.3 will be dealt with jointly.**

A team from the Scientific Services of the Kruger National Park under the leadership of Mr Andre Leon Francois Potgieter, the fire ecologist had on the 4 September 2001 planned to burn one experimental burn block in each of four locations in the Pretoriuskop area these burn plots are known as Numbi, Shabeni, Kambeni and Fayi (the Pretoriuskop burn plots)

Bundle A (MAP), p50

Potgieter, p103, line 30

Bundle A, p201 and 202

The experimental burning of plots has been an exercise that has been conducted in the park since 1954.

It is a long term ecological experiment. The purpose of conducting the burn plot experiments was embarked on because of the fires that were inevitable in the park. The program was started by putting in management of fires in the Kruger National Park on a rotation basis, but at the same time ensure what was the best time of the year to burn the park and also how often should you burn the veld. The whole purpose of the experiment was to try and establish how often one should burn the veld in that ecosystem and at what time of the year. Four experiments in four different vegetation types of the park were established. The experiment is designed to burn the

plots in all sessions in order to see what the effect of the different seasons are as well as different frequencies so that the fires can be applied at different frequencies also. There is data that is being collated before they start burning the plot, and that is, they do a base line survey of the vegetation both bush and grass on all plots. It then gives them an indication of the state of the vegetation before the experiment is actually started. Then, they start conducting the burning.

The amount of grass on the plot will give an indication of fuel load by means of a disc pasture metre. The samples are processed at the Laboratory to access information as to the actual moisture content of the fuel. The data is collated so that at the end of the day you can be in a position to calculate what the actual fire intensity is, because if you know the intensity of the fire which is expressed in kilojoules per second per metre that can be related to what is happening to the vegetation.

Bundle A, p 50

Potgieter, p 99, line 10

Potgieter, p100

- 20 The team that goes out to conduct such an exercise is composed of a research assistant employed by Scientific Services. In certain instances Technikon students are also included; these are those that are doing their year internship with a conservation agency. On this specific day only one Technikon student accompanied Mr Potgieter. The fact that they have to put in and extinguish the fire which is labour intensive he had to be accompanied by their own team from Scientific Services who are capable to do that. This was done on that day.

Potgieter, p103, lines 9-22 and

p163, line 30 to p164, line 1

- 21 It has been a standard practise that whenever research activities have to be conducted in a specific section that section ranger needs to, be informed before such an activity is carried out.

Potgieter, p 105, line 2

Mr Thando M Msomi, Bio-technician, employed at Kruger National Park, reporting to Mr Potgieter was instructed to contact the section ranger at Pretoriuskop and to inform him about the intended experimental burning of the plots at Pretoriuskop area. The call was taken by Corporal Ngoben. This information was further filtered to Pretoriuskop assistant section ranger Mr Mugwabana about Mr Potgieter intention to conduct experimental burning of the plots at Pretoriuskop. According to the evidence he was not precisely informed which specific plots were to be burnt at Pretoriuskop. The information was to the effect that they were going to burn plots at Pretoriuskop which included Napi and Numbi plots, which information was vague. The main purpose of the section ranger being informed specifically the location of the place, where such activities are to be conducted, is to be aware were the burning is being done if ever there is a plume of smoke. This being a precautionary major and a co-ordinating service. This was not the position of the 4 of September 2001.

Msomi, p 533, line 24

Nkuna, p 473, line 5

Mugwabana, p 208, line 4-18

- 22 On the 4th September 2001, Mr Potgieter and his team proceeded to one of the identified plots among the experimental burn block of the four locations in the Pretoriuskop being the Numbi plots. They arrived at the plot at 09h53 to make the necessary preparation before the burning which entails the following procedures:

Disc pasture metre survey where they do a hundred points through the plot which gives them a fair idea of the amount of grass.

Put up a wind metre or an anemeter that measure the wind over the whole period i.e. wind velocity.

The use of a sling cyclometer to establish an indication of the relative humidity and day temperature.

The fire intensity.

These measurements are very important because if your relative humidity is too low and your temperature too high and your wind velocity is high it is not conducive to put a burn as the fire will be uncontrolled.

- 23 On the day in question before the burning of the plot at Numbi plots at 09h58 the readings were as follows:

The relative humidity was 43% and normally if it goes below 40% down to 35% it is hazardous to put the fire.

The day temperature was 29°C normally fire is put when the temperature is in the high 30°C and with a low relative humidity in the 30°C.

Wind velocity at that stage was 5,46 km/h.

The wind direction was a North Westerly Wind, as a matter of clarity a North-Westerly wind is the one which comes from the North-West not in which it leads to the North-West. Simple meaning that the wind direction is indicated by the direction it is coming from, not the direction it is going to.

The experimental burning of the Numbi plot 1 ended at 10h50. The following changes were recorded when the measurements were done again.

The temperature was 32°C.

Relative humidity had dropped to 24 %.

The wind velocity had gone up to 16 km/h.

The climatic conditions were no longer satisfactory to conduct any further experimental plot burning, based on the recordings *supra*. The exercise was then totally stopped for the day.

The precautionary measures that were taken according to the evidence is that the team was instructed by Mr Potgieter to go round the plot as they normally do to make sure that everything is safe. Small burning stumps that were burning were extinguished by water.

Potgieter, p105, line 10

Potgieter, p106, line 21, line 30

Potgieter, p107, line 30

Potgieter, p108, line 10

Potgieter, p110, line 4-10

Potgieter, p140, line 1-10

Bundle A, p51-53

Bundle A, p57

Msomi, p548, line 26

Msomi, p549, line 27

- 24 Mr Potgieter later made a follow up and was ensured on the 4 September 2001, by Mr Landman that everything was still okay at the burned plot. He did not see any fire near the plot or anywhere else in the neighbourhood. As a follow up process he visited the place the following day and found that it was the only place that was burnt and the fire did not run away. This is being confirmed by the satellite photos which indicate where probably the fire must have started.
- 25 The Graphic representation of satellites images taken at 14h57 on 4 September 2001, **MAP "C", Graphic representation of satellite image taken at 15h23 on 4 September 2001 MAP "D" and Graphic representation of satellite image taken at 22h51 on 4 September 2001** clearly indicates the locality of the place where the fire started. The **landsat photo at page 35, Bundle A,**

represents a part of the Southern district or region of the park between Sabie and the Crocodile rivers but specifically the Western side of the region that includes part of Skukuza section, Pretoriuskop section and the Stolsnek Section.

The evidence revealed that the left side of the landsat reflect the west the right side reflects the East. There is a lighter coloured line which goes to the left of the dam and then down the page from North to South. This reflects a string of plots called Numbi plots. **The landsat photographs taken again on the 3 September 2001 and subsequently on the 5 September 2001 on page 36, Bundle A,** reflects the same geographic area. The landsat photograph *supra* reflects a very dark blackened area which runs through mostly the middle of the picture from top almost right to the bottom, which indicates the blackened area representing the burnt area. The lighter darkened area to the right, if you take from the 2 in 2001 and one goes straight down one will see a darkened area but not as dark as it is to the left. This symbolises an area which was burned with less fuel. The evidence reveals that the one that was burnt more recently is a blackened one, the black area to the left area side and the one that was either burned previously or may be with less fuel is the lighter coloured one. The closer look of the landsat reveals where the Numbi plots are situated there is only one black spot which was identified by Mr Potgieter as the experimental plot he has burned and it never extended further but it was contained in that plot.

- 26 The evidence shows very clearly that the fire commenced in the vicinity of Napi Boulders which is one of the areas frequently visited by Tourists. The origin of the fire is primarily based on the satellite images submitted as evidence, the initial reports of the fire, and the evidence of Dr De Ronde in relation to the bark scorch. The bark scorch is caused where the fire comes towards a tree and goes around the tree and continues. The wind side bark scorch is always lower than the bark scorch on the least side. The reason being that

when the fire goes round the tree the two densities are coming together and give a higher scorch on the least side. The model can actually estimate the exact fire behaviour where the fire went past the tree.

The other checking method, which was employed by Dr De Ronde on the fire behaviour, was the use of fire simulation that is the reconstruction of the wild fire events. This programme that was developed is called "*Behave*". It allows the user to make a lot of calculating between one point and another point and another point where the fire passed through, two-dimensional.

The fire side which is also another simulation programme that simulates fire three dimensionally was also employed by a combination of data and information to simulate fire spread.

The fire research plot that was burnt is about 15km away to the West of the estimated area fire origin. It is conclusive that the fire can not spot or jump over such a distance because the surrounding plots to the burnt plots at Numbi have not been burnt. The maximum spotting distance recorded in South Africa in grassland fire was 2 and a half kilometres.

There were no lightning fires on that day.

The survey on the bark scorch that was done South of the Napi Boulders, the compass readings and the progressive increase in the measurements that was recorded in that area, clearly pointed that the fire started at Napi Boulders. It was indicated in the evidence that it will be impossible from the simulation results to pinpoint the origin of fire 10 x 10 metre grid but it is, the area from the road, the loop road being a dirt road, passed Napi Boulders as the most acceptable point of origin.

The third issue for consideration as the sub-term of reference was the cause of fire. According to the climatic conditions on that day as per evidence adduced there was no lightning storm in the area. The only possible cause is to be restricted to man-made fire in a form of arson or by negligent means. There is no evidence to identify who specifically set the fire alight.

Map A (Graphic representation of
Satellite image taken at 11h31 on
4 September 2001) Bundle A, p15

Map B Direction of and probably
location of origin of fire Bundle A, p16

Map C (Graphic representation of
Satellite image taken at 14h57 on 4
September 2001) Bundle A, p32

Map D (Graphic representation of
Satellite image taken at 15h23 on 4
September 2001) Bundle A, p32

Map E (Graphic representation of
satellite image taken at 22h51 on 4
September 2001) Bundle A, p33

Landsat images on 3 September
2001 and 5 October 2001, Bundle
A, p35 – 36

Satellite images (duplicate)
Bundle A, p37- 39

Satellite image at 14h57
(duplicate) Bundle A, p37A

Potgieter, p119, lines 5 to p133,
line 7

Potgieter, p122 to 123

Potgieter, p132, line 8 to line 29

Potgieter, p139, line 25

Potgieter, p140, line 1-10

Woods, p 340, line 2 to p344, line 24

De Ronde, p1925, line 30

De Ronde, p1929

De Ronde, p1933

De Ronde, p1949, line 19

De Ronde, p1947, line 15 to p1948,
line 1
Bundle B, p630- 636, 638 and 639

**27 FINDINGS IN RESPECT OF SUB-TERMS OF REFERENCE
ORIGIN OF THE FIRE**

27.1 Locality of the origin of the fire.

It is clear from the evidence supra, that the origin of the fire commenced at the Napi boulders being the area South of the Loop road including the whole area covered by the boulders themselves.

27.2 Cause of the fire

The only conclusive deduction to be made from the facts is that it was caused by Mankind. Although it has not been possible to pinpoint the person responsible.

27.3 Possible link between SA National Parks' fire research activities and the fire.

There is no evidence to support the alleged link between fire research activities and the fire as clearly indicated supra.

28 FIRE HAZARD (2)

- (a) Climatic conditions on 4 September 2001
- (b) Fire-fighting competence of S A National Parks
- (c) Competence employed during fire.

29 (a) Climatic conditions on 4 September 2001

The climatic condition on 4 September 2001, especially from late morning, represented an extremely high fire hazard. This is confirmed by the evidence adduced through the witnesses Zimbatis, Rae and Van Wilgen.

At Skukuza, the following weather conditions were recorded

The maximum temperature 38° C and at 08h00 was 21,8 ° C, wind 2 metre per second.

Relative humidity, at Skukuza was 64% at 08h00 in the morning and by 14h00 had dropped to a low of 13% and then again at 20h00 it increased up to 83%.

Strong winds at times reaching gale force conditions were experienced during the day. The name of this sort of a climatic condition which was experienced on the 4th September 2001 during the day is called bergwind. Bergwind conditions is because it comes from inland, off the mountain.

The following instruments were used to determine the wind speed, and direction which has been recorded i.e. windtolariser, pressure plate anemometer.

Zimbatis, p378, lines 26-29; p381, lines 21-23 and p385 lines 2-19, p370, line 12

Bundle A, p40 – 48A (climatic data recorded on 4 September 2001

Bundle B, p319 - 322

Bundle B, p517 - 519

Rae, p1588, line 28 to p1590, line 17, and p1598, line 20 to p1599, line 10

The evidence of Mr Brian William van Wilgen at **page 578, line 21 to P579, line 6** is to the effect that in terms of fire danger indicators the 4th of September was the worst day or the second worst day for run away veld fires over the previous years.

The climatic data on that day suggests that a cold front moved in the area in the broad vicinity at 19h00, heralding the change in wind direction.

Zimbatis, p369, line 6 to p370, line 28.

Rae, p1597, line 13 to p1598 line 3.

The climatic condition on that day is initially confirmed, by Mr Potgieter who first tested the wind, temperature and humidity conditions before commencing the experimental burn at Numbi burn-plots and found the conditions acceptable. It was only when he was busy with the burning that the weather condition changed which had caused them to abandon the continuation of burning the other experimental plots. When he tested again the climatic condition was as follows, temperature was 32°C, relative humidity has dropped to 24% and the wind velocity had gone up to 16km per hour. It was at 10h50.

By 14h00, the temperature had increased to 38°C; relative humidity had decreased to 13% and wind speed increased to 5 metre per second.

The wind data submitted as evidence indicates that the average speed of the wind fluctuated through the course of the day, but gradually increased between 07h00 - 08h00 local time (5-6GMT) up to 14h00 local time when it peaked and then gradually declined towards 18h00, peaking again at around 20h00. It will be noted that the gusts of wind increase specifically in the middle of the day and again at between 19h00 and 20h00 local time.

Potgieter, p107, line 25 to p119

Rae, p1589, line 30 to p1590, line 28

Bundle A, p518

The relative humidity did exactly the opposite during that day, as it was very high during the first hours of the day, thereafter decreasing rapidly from about 60% to just above 20% at 12h00, and thereafter remaining very low at about 13% to 14% during the afternoon. In the evening it increased very rapidly from about 20% to almost 80% at five o'clock.

The average hourly wind speed in kilometres per hour was in the vicinity of about 10 km per hour until about 08h00. It started increasing at about 09h00, half past nine and then settled at about 15 to 16km per hour until about 13h00. Then it increased to more

than 20 between 14h00 and 16h00 in the afternoon before increasing to about 50km per hour.

De Ronde, p1923

The evidence adduced to the Commission by witnesses reveals that the direction of the wind at first was towards a South - Westerly direction with the North - Easterly wind behind it and then at a later stage the wind changed to North - Westerly and started pushing the fire in a South - Easterly direction. It is, therefore, clear from the evidence that there have been a change in wind direction from the South - West to the South - East.

It will further be noted that there have been some changes in regard to the wind direction during the day. During the first part of the day, they experienced a typical bergwind condition where the wind was constantly coming from generally Northerly direction. It is normally when a cold front is moving up the coast and you can expect significant changes in your wind pattern and in this particular case the wind was fairly constant until about the middle of the day varying from North - North - East to North - North - West.

These changes are subject to weather forecasting which demands that one should have to concentrate on weather forecast in order to be in a position to know and predict.

The weather forecasters can actually assist there and actually give some indication of what they are expecting whether there will be an increase in wind, whether there will be a more and variable wind direction and from what direction to what direction they are expecting the wind to change. I concede to the fact that weather forecasting is not scientific to the extent of being absolutely reliable and accurate. In the same breath it is one of the available tools to help one to predict what the weather will be the next day. Generally, it is a known fact that when a cold front is predicted approaching, you might probably expect a change in the wind direction. The evidence confirms what was generally known by the people that have been working at the Kruger National Park for

some times. The submission made to the effect that one does not know exactly when that cold front is going to reach the area. Secondly be able to know what effect it is going to have – does not hold any water. The acme of the matter is not to have an absolute reliable and accurate data, but to know from the climatic data that there is a cold front coming and it is likely to experience a change in wind direction whenever you are engaged with any activity. It creates the needs for one to be conscience about possible changes. It is a human principle that when you are "*fore warned you are fore armed*".

Mr Havemann in his evidence indicated that local Rangers or experienced people that lived in the area or worked in Skukuza they know that when you have a bergwind, it is very often followed by a cold front and there will be a change in direction. It was submitted by Advocate Watt-Pringle for the Kruger National Park, who indicated that there was no reason to suggest that Pretoriuskop Rangers were not equally alive to that. It is, therefore, based on this submission, evident that they have been aware of a possible change of wind direction as the result of the bergwind. This is confirmed by the fact that when they realised that the fire will cross the tarmac road from Napi to Pretoriuskop, it was on the assumption that sooner or later the wind direction was going to change and the fire is going to cross the road unless the back-burn is put. It was further suggested to the Commission that the Rangers should in actual fact be applauded by anticipating what was going to happen.

The question which is still unclear is, as to whether they did have the capacity to control or maintain the condition they anticipated.

The Kruger National Park has since 1980 established weather stations in various parts of the park to monitor the weather, the climate of the park. It is part of the climate monitoring programme. The weather conditions are being supplied to the office of Mr Nicholas Zambatis on a weekly basis. They are not interested in the daily weather as such. They are interested in the long term

climatic trends of the area. Their main aim is to collate it with the other biological ecological events happening phenomena. The research is to look backwards to see what relationship are there between climate and events that happen in the eco-system and to be able to better explain them as to what has changed, why it changed, what is the role of climate in these changes.

This data is not used to determine the weather forecast because they do not do weather forecasting at all. They are not equipped to do weather forecasting. The weather forecasting is done by the weather station at Nelspruit and Komati draai.

Zambatis, p393, line 10-20

Mogakane, p1213, line 22-29 and

p1216, line 29 to p1216, line 5

Lekhuleni, p1246, line 14 to p1247, line 2

Mhlongo, p594, lines 18-21

The other factor which contributes to influence the fire danger in the area or fire hazard is the biomass with fuel load together with other perimeters such as density of the fuel and height of the fuel. There is an area with a low biomass and an area with high biomass. The evidence of Dr De Ronde is to the effect that the area range was between 3531 and 6133 kg/ha and the one above 4000 kg/ha could be regarded to have fuel load which is dangerous. The Gabbro intrusion is an area with a high biomass.

The geology landscape 19, on which the thatch cutters camp was situated consisted of Gabbro. This is covered by clay which has relatively high nutrient content, in turn resulting in a relative high biomass production. Average biomass for this landscape in 2000 was 5891kg/ha and 5390kg/ha in 2001. The annual rainfall is also the highest in this area.

De Ronde, p1982, line 17 to and

p1983, line 12

De Ronde, p1966, line 14-16.

Zambetis, p389, line 20-30 and

p390, line 1-9

Bundle B, p323 – 325

Bundle A, p627 (map 3)

The landscape also plays an important roll in contributing to the spread of fire and its velocity. An area with large concentration of trees might impede the speed of the fire to be fast.

Bundle B, p626 (map 2)

All these factors supra have to be weighed against the prevailing climatic conditions on the 4th of September 2001.

The fire danger index on the 4 September 2001 was the worst day for runaway veld fires over the previous ten years. There is also evidence to the effect that it was featured on the previous night's SABC news.

The Forest Fire Association makes a full study of the fire index and one would have expected the Kruger National Park to access such information from the weather bureau and from the forest fire association. Such information can not be ignored as fire in the South African National Park is mostly regarded normal because fire is unavoidably endemic to the Kruger National Park and even necessary to the maintenance of its biodiversity. This would be an eye opener to guard against frequent presence of fire to contain it in determining before hand the adverse conditions of high wind, high temperatures and low humidity.

The joint consideration of the facts supra dictates that the Kruger National Park should have been very careful when controlling the fire due to the fire danger index which was very high for run away fires.

Mogakane, p1213, line 22-29 and

p1215, line 29 to p1216, line 5

Lekhuleni, p1246, line 14 to p1247, line 2

Mhlongo, p594, line 18-21

Pienaar, p57, line 21 to p61, line 27

Ecological Fire Policy, Bundle A, p80-105
 Van Wilgen, p582, line 20 to p583, line 14
 Heads of arguments Adv Watt-Pringle,
 p2073, line 1-20

- 30 (b) Fire-fighting competence of South African National Parks
 and;
 (c) Competence employed during the fire

31 The two Sub-terms of reference *supra* have been dealt with jointly
infra due to the fact that the evidence adduced can not be singled
 out in compartments as such evidence is also relevant to the other
 sub-terms of reference.

32 When considering the fire fighting competence of the Kruger
 National Park, it is fundamental important to draw a distinction
 between veld fires and infrastructural fires. Infrastructural fires are
 fought using conventional measures such as fire hydrants, fire
 engines and trained fireman who are skilled at extinguishing a
 blazing building, rescuing occupants and valuable items. This type
 of fire is of necessity destructive and it is in most instances be
 combated at virtually high costs. The opposite approach is
 achieved with veld fire, because fire is unavoidably endemic to the
 Kruger National Park and is even necessary to the maintenance of
 its biodiversity. This has been evident where it is furthermore
 essential to appreciate that large veld fires which rage over several
 days and over extensive areas with no practical means of
 containing them until and unless conditions permit, are common
 and are not destructive of the park's ecology nor do they
 necessarily present imminent danger to human presence.
 Different fire fighting methods are employed more specially in a
 savannah veld conservation area where precisely there is a lack of
 infrastructure such as roads, running water and cleared areas.

Pienaar, p57, line 21 to p61, line 27

Ecological Fire Policy, Bundle A, p80-105**Van Wilgen, p582, line 20 to p583, line 14**

- 33 The primary responsibility at containing veld fires is that of the Ranger corps. They are the people who are in the first line of defence against fire. The staff position starts from the advisor of wildlife management, Mr PG Nobela who gives advice to the Rangers on certain issues of wildlife management function. The Section Ranger is the one responsible together with his subordinates who are Sergeants, Corporals and ordinary Rangers. The main function is to combat veld fire and to protect human life and properties from uncontrolled fires, although maintaining biodiversity and wilderness gravity.

Prior to the event of the 4th of September 2001 apart from those people who might have had some training at a Technicon as part of their nature Conservation the form of training was really on the job training. This entails that there was no formal training of fire fighting in the field of knowledge and skills. Skills training are required for suppressing fires. Knowledge is mostly needed for fire management skills. The Rangers were supposed, all of them to have been equipped with basic fire fighting skills while the Senior Ranger, Sergeants and Corporals are trained in the formally veld fire management skills and leadership. Their efficiency was based on experience which varied for 5 years to 30 years.

They have undergone military style training with emphasis on physical fitness, weapon handling, decision making in the field and interpretation of natural phenomena, namely plants and animals. It has been clearly indicated supra that the veld fire fighting did not form part of initial Field Ranger training and that necessary skills and experience had to be acquired via on the job training, under the guidance and supervision of Section Rangers and the Senior Field Ranger Corps.

Labourers employed to assist the Rangers to fight veld fire also receive on the job training and experience which also varies from

individuals. The other group of employers who, if required, would ordinarily be deployed for the purposes of combating veld fire would be the team employed under the fire ecologist, part of Scientific Services.

Normally in the ordinary course the Ranger Corps in the section where the fire has broken out will in the first instance attempt to contain it. Rangers from neighbouring section would be notified if their sections were in danger and even called upon to assist if required. If they are not able to contain the fire then Rangers from throughout the Region are called upon and if the fire is such that more help is required, it may be obtained from elsewhere, including other regions.

The most important control measure of containing veld fire in the Kruger National Park must be placed on the need for proper training and equipment for ranger corps to enable them to deal with veld fire and equip them with both survival skills and the ability to display the requisite level decision making skills. The fire fighting must by and large be left to the well trained, organised and equipped Rangers. The involvement of unfit, untrained, inexperienced and ill-equipped "helpers" is likely to make them a danger to themselves. This has been evident to the danger that faced the grass cutters who were requested to help without any knowledge of fire fighting. The Rangers varied in terms of experience with no strict and direct supervision to co-ordinate their activities. There was no evidence whether that they do receive refresher courses in relation to veld fire fighting just to keep them abreast. It was suggested by Dr De Ronde in his evidence that there is a greatest need that a person holding a position of Fire Manager should have been appointed who is expected at all relevant times to study weather conditions and predict weather conditions and wind conditions continuously, that officer will be well equipped in using fire danger index as well as studying weather patterns in general. It is needless to state that it is a combination of experience and training that can make a tremendous difference in the prediction of weather conditions when

it comes to fire. Dr De Ronde was requested to raise an opinion by correlating the evidence dealing with the standard of training of the Rangers and fire management. He indicated as follows:

"I think that with regard to fire management and associated weather studies, observations, as well as fuel management, I do not see an input with regard to experience and training in the events as we have seen them happened during that day."

De Ronde, p1943, line 12-19

The responsibility of a Fire Manager is expected to have control as from the initial stage. According to Dr De Ronde, it then entails that on the 4th of September 2001 the Fire Manager should have taken control from the time the plume of smoke is identified. The measure of control should have been exercised from the air either in a helicopter or in a spotter plane from where he could control everything in communication with the ground crews. This control would then be from one person, a qualified person, experienced person.

Adv Watt-Pringle in his submissions indicates that this experienced and trained Fire Manager who has a bird's eye view is not different to a Section Ranger. According to him this person is in effect the Fire Manager. He might not be in a helicopter but then receives information by radio from his Rangers who are at various points around the fire, who are telling him where the fire is, which way it is going, which way the wind is blowing. The prevailing circumstances at that stage as to the quality of the Rangers were that they have the thorough knowledge of the area in which they operate. The Section Ranger Mr Hendrik Mugwabana was a new man appointed; he did not have any thorough knowledge of the area where he was operating. This is the area at Pretoriuskop where the fire disaster took place.

Mr Josiah Chabane did in his evidence indicate to the effect that they did take care to ensure that where there was a new person

coming in there was also experience that was left behind. Mr Hendrik Mugwabana was beefed up by Sergeant Nkuna who has been there for years, two Corporals who were well experienced. The primary assignment was that Mr Hendrik Mugwabana was obliged to take an informed decision as to what must be done in regard as to when and where to put in a fire-break or a back-burn. He was expected to make an informed decision as the Section Ranger and supervise that those instructions are strictly followed. But he was forced to rely on the knowledge of his sub-ordinates for their local knowledge and experience. The instructions were not unleashed from one source due to lack of co-ordination. There has been an apportionment of responsibilities. The instructions were not centred to one person.

This is evident to the fact that the capacity of the Rangers deployed to do the fire fighting was not enough to confront the fire of such a magnitude. The initial number, they were twelve (12) and later divided themselves into 2 groups. The total number of 12 included also general workers who were not trained to do the fire fighting through the job training. This group was all from Pretoriuskop. Each group was initially constituted by 6 people. Bernard Mhlanga and two Corporals left in a bakkie to the camp where they resided. Sandros Ngwenya, Frans Mhlongo and Tommy Mogakane remained to do the back-burning on the left side of the road facing Pretoriuskop, trying to combat the fire not going to the right-hand side.

They did this with no instruction from Mr Hendrik Mugwabana. They did back-burns for a distance of plus minus 100 meters to 200 meters. According to them the wind was in their favour but it suddenly changed direction blowing to the North. The continuation to do back-burns needed a well informed, trained Senior Ranger, accustomed to the weather prevalent at that stage. The lack of survival skills is evident to the evidence adduced by Mr Tommy Mogakane at page 1186 which reads as follows;

"We were in between the fires. We stood for may be about a minute to think what other option do we have. The late Sandros came with the suggestion that we should lie down on the tar road. Frans Mhlongo came with the idea that we should run and I myself, Tommy Mogakane suggested that we should board (climb) trees we did first accept the idea of boarding the trees because of the fact that the grass was tall and thinking that the fire would reach us and we could burn."

The back-burn they did put was within a short distance of Shitlave Dam, some 3 km as a crow flies to the South-East of the grass cutters camp.

Their battery on the hand-held radio went flat.

Mogakane, p1186, line 27-30, p1187, line 1-10 and p1193, line 1-5

Mugwabane, p200, line 16-30

Mugwabane, p197, line 1-6

English, p1895, line 23, p1896, line 8

Mogakane, p1185, line 18 and 29

De Ronde, p1942 and p1943

Mugwabana, p216, line 23-27

Mugwabana, p217, line 14-22

p221, line 22-25

p227, line 13 to 18 and

p228, line 21 to 27

p260, line 9 to 23

- 34 The submission made by Adv Watt-Pringle in equating the position of a Senior Ranger to that of the proposed post of Fire Manager by Dr De Ronde was supported by Mr Phineas Nobela in his evidence when dealing with the new fire policy that was not fully implemented before the 4th of September 2001. He indicated that there is a need

to have a fire fighting structures in every section. The incumbents have to be trained in different levels, the Fire Boss, who ideally in this case will be a Section Ranger; crew leaders' ideal person will be Sergeant or a Corporal, and fire fighters who will be all the personnel within the district. Mr Phineas Nobela did concede that the present structure in place does not dictate who is now the Fire Boss and crew leader. The establishment of this organigram was to strengthen that clear effective line of command.

Nobela, p946, line 1-10

The training will also be conducted at various levels. Advance fire management course, which will be aimed at Fire Boss or crew leaders, and then basic fire management which is for the senior managers. It is envisaged that it will include even Fire Ecosystem Management. Such training was never ever proposed or implemented before the 4th of September 2001.

Nobela, p945, line 23-30

- 35 The other factor for fire fighting competency is the adequate fire equipment used by the fire fighters. The new policy that is being piloted after the 4th of September 2001 indicates the minimum equipment requirement for each section to have. This entails that prior to the 4th of September 2001 such a minimum standard should have at least been maintained because human life has been identified as one of the priority during fire fighting.

The following are the minimum standards of the equipment which needs to be available in each and every section that need to be maintained from time to time and then replaced if may be, they need to.

Bakkie sakkie/fireman bakkie unit which is a unit which you can fit in the vehicle. They differ in sizes e.g. 500 litre or 600 litre.

Water trailer which you can tow with the water.

Hand operated rucksack this is a pump which you can use to extinguish fire.

Fire-beaters is an equipment that you use to beat the fire.

Rake hoes used when you are doing point burn which you can use to push the fire.

Drip torch used to light the fire.

Hand held radio for communication.

First Aid kit.

On the 4th of September 2001 and prior to that the Rangers assigned with fire fighting at the Kruger National Park where in possession of the following equipment:

Not all had a bakkie sakkies.

Some of the rangers had a water trailer.

All did not have a hand operated rucksack.

Some had a drip torch.

All rangers had fire beaters.

Not all Rangers had hand held radios, such provision is being made to a specific section to have as least 5 hand held radios. This is not in terms of the human capacity in that Section but in terms of the number of patrols. Each patrol consists of 3 people that must have the radio. This is evident from the fact that Sandros Ngwenya, Frans Mhlonga and Tommy Mogakane had one hand held radio which ultimately failed due to the battery which was flat. They did not have the rake hoes.

Nobela, p948, line 10 to 20

Nobela, p957, line 15 to 20

Draft policy Bundle A, p214-229

Mogakane, p1193, line 1 to 25

Mhlongo, p600, line 19

It is evident from the list of equipment that the Rangers on the 4th September 2001 were not properly equipped to meet the demand of the fire they were faced with.

- 36 The other factor for consideration is to determine the fire protective clothing they were equipped with prior to the 4th of September 2001 and on the day in question.

The following fire protective clothing meets the minimum standard:

Fire fighting respirators (double half-mass) this is being utilised to protect smoke to the fire fighter.

One jumpsuit for crew leader/the boss.

Two piece fire-proof overall for fire fighters (including the driver).

The two fire-proof overall is made of material which is fire resistant to protect any person from burning and effectively can resist the fire.

Safety-goggles for fire fighters.

Pair of leather boots.

Nobela, p947, line 20-30

Draft policy, Bundle A, p80-105

The situation of the 4th of September 2001 was as follows:

The Rangers did not have fire fighting respirators.

The crew leader/fire boss did not have the jump suit.

The Rangers did not have two piece fire-proof overall.

They only had a pair of leather boots and ordinary uniform for Rangers.

Not all had safety goggles.

Nobela, p948, line 24-30

Nobela, p948, line 1-6

Nobela, p958, line 30-31

Nobela, p959, line 1-30

Communication among the Rangers, the relevant interested people within the area and concession area must be informed in terms of where they spot an unattended fire. This clearly gives the highest responsibility to communicate in case of the field fire. The effective mechanism of communication must be in place and monitored on, measured now and then.

The procedure in place as at 4th September 2001 was that if a person spots an unattended fire he needs firstly to contact the local Section Ranger to inform him. The local Ranger also have to assess the situation of the fire, if it is an accidental fire, he/she inform the relevant people within that area or inform the concession area. The Section Rangers have to assess it if the fire is a threat to human life or buildings and then inform the people or evacuate the occupants or the area. These are some of the main functions of the Rangers.

If the Scientific Services are to conduct the experimental burns of a specific block, they are obliged to advice the local Section Ranger that experimental burns will take place and they should be specific as to the time, location and number of burns which would be done telephonically or through a radio message within a day before the project is embarked on. There was no clear obligation imposed to the Scientific Services to further inform the Senior Ranger whenever they have stopped burning ahead of schedule or when they have completed the burning so that there must be unanimity of minds. It was not strictly stipulated in the existing practise that Mr Potgieter was expected to report to the Section Ranger if he had stopped the burning due to unforeseen circumstances.

The proposed draft policy is specific as to the time frame of notification being 14 days than the previous procedure. This procedure is confirmed by Mr Nobela that although it is provided under **paragraph 4.5.5 on page 222** of his statement it was not a new procedure. The main issue of including it to the draft policy was to emphasise it so that if something does happen they can know how to deal with the situation.

Nobela, p950 line 10-20

Nobela, p952 line 20-30

Bundle A, p214A

Nobela, p953 line 1-10

The protection on the 4th of September 2001 was characterised by the following events.

A team from Scientific Services under the leadership of André Potgieter had planned to burn one experimental burn block in each of the four locations in the Pretoriuskop area. These burn plots are known as Numbi, Shabeni, Kambeni and Fayi "the Pretoriuskop burn plots".

Bundle A (Map), p50

Thando Msomi, a technician reporting to André Potgieter, was instructed to and did contact the Pretoriuskop Rangers in view to inform them of their intention to burn experimental plots in the Pretoriuskop area. This call was taken by Corporal Ngobeni.

Msomi, p533, line 24

Nkuna, p473, line 5

Potgieter, p105, line 1-10

The Pretoriuskop assistant Section Ranger Mugwabana was advised of Potgieter's intentions in this regard by Corporal Ngobeni, but was not advised as to precisely which plots were to be burnt. The communication was not effective. This is where the confusion started which indicates non compliance with the standing guidelines prevailing on the 4th of September 2001.

The importance of this exercise is to know where such burning is taking place not to be surprised by a plume of smoke.

The location of the experimental plots was not specifically filtered to the Senior Range, Mr Mugwabana by Corporal Ngobeni

Mugwabana, p208, line 4-18

Mr Potgieter, due to the climatic change, after having burnt the first plot, decided to discontinue with the further burning of the experimental plots. The condition was no longer conducive for such an exercise because the temperature was 32°C, relative humidity had dropped considerably to 24% and the wind velocity had gone

up to 16km per hour. He did not inform the Senior Ranger Mr Mugwabana that he had stopped continuing burning the experimental plots, although he did ask his assistant Mr Thando Msomi to inform him about the burning at the experimental plots. This has been a flaw on his part which contributed to the confusion that existed among the Rangers about the fire. On his way to Skukuza Mr Potgieter saw a plume of smoke in far distance towards the South - East of the Biyamiti River. He estimates the time to be 14h00. Arriving at Skukuza camp he thought of informing the local Ranger whose station was nearest to the fire according to the way he has recognised it. He could not find him or members of the staff. He dropped the exercise on the assumption that they must by then being aware of the fire and they all went there, which assumption is totally unfounded as it had no basis. Mr Potgieter being an experienced employee of the Kruger National Park for the past 30 years was obliged to take serious consideration of filtering the information to the relevant responsible officers. He has been involved in the burning of the experimental plots that day and the weather did change which made him to stop further experimental burnings. He should have realized that the fire that he has identified can be fuelled by the status of the weather at that time. The control of such fire will also be difficult as he had realized that by stopping further experimental burns at the plots. He had a legal duty to inform the responsible officers or even phoning Mr Hendrik Mugwabana, Legari, Corporal Ngobeni etc. He attached very little significance to the whole exercise. This has been the very same approach displayed by Mr Trevor Langeveldt, Senior Trails Ranger who happened to identify the smoke from the fire in the region of Napi Boulders at approximately 12h00 on the 4th of September 2001. He, being an experienced and capable Trail Ranger failed to report the presence of the fire.

Langeveldt, p1112, line 4-22

**Langeveldt, p1116, line 27-to
p1118, line 13**

There are officers who felt they have a legal duty, who immediately filtered the information to the relevant respective officers.

Mr Bernard Mahlangu, an assistant Trails Ranger based at Napi Trails camp, contacted the Pretoriuskop Ranger specifically Sergeant Nkuna as well as Corporal Mongwe from Skukuza about the fire.

Mahlangu, p1371, line 24-31

Mahlangu, p1372, line 3

Corporal Mongwe informed the Skukuza Section Ranger, Mr Legari

Legari, p1613, line 3-7

Mr Hendrik Mugwabana, Section Ranger after having received the information he then radioed Pretoriuskop and spoke to Corporal Ngobeni who he instructed to check the fire. The fire was located by Sergeant Nkuna to be at Napi block where he then contacted the Rangers at the Stolznek and requested Sergeant Baloyi to contact the Rangers at Malelane and advised them of the fire.

Mugwabana, p215, line 15 and

p216, line 11-14

Nkuna, p424, line 23-28

Nkuna, p475, line 2-18

It was, at this period, that Mr Hendrik Mugwabana instructed his Rangers to collect their equipment and go and fight the fire. The fire at that time had already gained momentum, fuelled by the climatic condition that has changed and the biomass available. This had already spread to the bigger area than if it was attended to immediately, if the confusion that existed about associating the fire with the burning of the experimental plots at Numbi was not in existence. The lack of effective clear communication about which plot was burned and that there have been a stop to the burning of the plots due to climatic change has contributed greatly to the fire

spread. When identified as to its location it became difficult to control it based on a number of contributing factors indicated supra and infra.

Mr Hendrik Mugwabana in his endeavour to unleash the instructions he was communicating with Sergeant Nkuna and Corporal Nyathi

Mugwabana, p216, line 23-27

Mugwabana, p216, line 21-30

The following reactions unfolded immediately after Mr Hendrik Mugwabana had unleashed his instructions to the Rangers to collect their equipment and go and fight the fire.

The priorities in terms of their action plans, which are questionable, identified to be undertaken by the Rangers, were categorised as follows, firstly the Hlangweni Breeding Camp, secondly the Napi Trails Camp, and then later on the tar road.

Sergeant Nkuna and Corporal Ngobení regarded the Hlangweni Breeding Camp as the first priority because most of the grazing had already been burnt around the breeding camp. It became a high priority to safeguard the remaining grazing because if the remaining grazing is burnt out in the camp, then the camp would literally be useless. They would not be able to maintain the animals in the breeding camp. That was apart from the fact that some of those rare animals, the antelope could have been caught against the fence if the fire had spread through there. Secondly, the prevailing wind at that time blew the fire in the direction of the burnt out area in the South of the Voortrekker Road.

The Rangers decided not to beat the fire out physically by going into the block and beating it, but to actually surround the fire with fire. They had to put back-burns all around the block, except for areas that were already burnt out like to the South and to some extent also South-West. It is not clear who actually gave the instruction at the site, that is at Hlangweni Breeding Camp, that the back-burn was the appropriate method to be used under the

circumstances, because evidence revealed that the breeding camp fire was in fact a low risk fire from the point of view that the area behind the Hlangweni Breeding Camp had already been burnt out, in fact most of the breeding camp itself had been burnt out.

The high priority for consideration was based on the fact that rare animals will be burnt and the breeding camp would literally be useless. It will be inferred that Sergeant Nkuna being the most experienced and high ranking official at the site did unleash such an instruction because Mr Hendrik Mugwabana was not on site when the back-burns were being undertaken. It is more practical to give such instructions while on site.

Mr Hendrik Mugwabana indicated in his evidence that Rangers had a duty to identify their priorities, because he was not well acquainted with the area. They were not supposed to report to him, in order for him to give further instructions. They had the right to take decisions in the field in his absence and perform. This was not in line with his job description. The only exception was when he is present and they identify problems or need any help, they have to report to him before they can take a final decision.

**Mugwabana, p261, line 17 to p262,
line 20**

This confirms the fact that the Rangers were allowed to take decisions which might have serious consequences. The position of Senior Section Ranger in the Kruger National Park is, however, unique and challenging as he has the following responsibilities among others namely;

He must be prepared to put his life at stake in the execution of his duties.

He must develop and maintain the loyalty and integrity of his rangers in the face of dangerous situations, and the threat of intimidation against himself and his Rangers.

He is responsible for making critical decisions which would have far reacting consequences.

He must be able to cope with the extreme physical and mental demands of the post.

He is responsible for the protection of people's lives in dangerous situations in confrontations with both man and beast.

He must interpret and disseminate information pertinent to natural phenomena and processes to his own staff and the public and other staff members.

His responsibilities isolate him at all relevant times to take the lead and be responsible in making critical decisions which could have far reaching consequences. He can not delegate that.

- 37 Mr Hendrik Mugwabana later arrived at the Hlangweni Breeding Camp and it was agreed that he (Hendrik Mugwabana), Sergeant Nkuna with some Rangers would finish up there whilst the remainder under the leadership of Corporal Ngobeni and Nyathi would make their way to Napi Trails Camp.

The priorities made by the rangers in terms of identifying the Hlangweni Breeding Camp as the first priority was not based on a well informed decision this is being attributed to lack of proper training and refresher courses. There was low risk at the breeding camp.

The Napi Trail Camp was utilised to accommodate tourist who had to walk in the wilderness escorted by the trailist. They had their own properties kept in the guest chalets. There was a Chef who was responsible for the catering, having been allocated a 303 rifle to guard against any animal danger whilst at the Napi Trail Camp. They had to balance the protection of human lives in a dangerous situation against wildlife and the grazing that was to be destroyed and make an informed decision. The negative approach was implemented. This is evident from the fact that when they had completed the back burn at the Hlangweni Breeding Camp the fire had already burnt down the Napi Trails Camp and some of the properties were burnt down.

**Adv. Watt – Pringle, Heads of Argument,
p2048, line 30 to p2049 line 1 to 5**

The third priority was to fight the fire at the tar road. The Rangers under the leadership, of Corporal Ngobeni and Nyathi started putting in a back-burn along the tar road between Napi boulders, loop road and Napi Trails Camp road which was the fire with the wind, roughly from North to South. This aspect will later be dealt with in full infra.

- 38 It is important, firstly to out line the purpose and the judicious method of putting a back-burn in order to easily evaluate whether the putting of a back-burn at a specific place and time was competently being carried out.

The Operational Rules of the integrated Fire Management System reveals the following under back-burns;

“It has become clear from experience here and elsewhere, that injudicious placement of back-burns is responsible for many large fires. Although put in good faith because of an overriding desire to do “something to help”, these back-burns often result in far larger fires than if they were not put in at all. This illustrates the following non-linear sequence:

If conditions enhancing fire spread are unfavourable, back-burns are often unnecessary, but if put in, will probably not result in very serious consequences unless weather conditions change. Under the right conditions, they may improve chances of stopping the fire, if this extra certainty was really needed. It needs to be remembered that the risk of weather change is what can turn an (other) unnecessary back-burn under those

conditions into an undesirable cause of extra danger.

If conditions promoting fire spread are intermediate, back-burns which are correctly put in at the right time (not too soon after point-fires, else point-fire setting is useless; and not too late, when they will no longer stop the fire) will stop the fire, helping rangers to stay within target. Under this policy, these conditions should be commoner than conditions favouring rapid spread, since rangers choose the circumstances for prescribed burns.

If conditions for fire spread are favourable, back-burns are often counterproductive, as these fires tend to jump firebreaks and roads. Setting back-burns several fire-conditions, increases the chance that a very large area burns and the new fire jumps, with multiple extra heads and fronts to control. If they can not put in, and conditions change, the fire may die down and can be put out more easily, often having burnt a far smaller overall area. On the other hand, the right back-burn, if really needed, may on important occasions save the day. Thus great care is needed putting in back-burns, discretion sometimes being the better part of valour. Back-burns are always safer put in the night, if it is at all feasible to wait. If the decision is to not put in back-burns, that time can be used to further secure infrastructure or human safety. Seniors and the public at large should be aware of the difficulty rangers face making these decisions."

It is, therefore, clear that injudicious placements of back-burns often results in far larger fires than if they were not put at all. The

following considerations need to be looked at before such back-burns are applied.

Whether the climatic conditions prevailing are unfavourable in enhancing the spread of fire because under the right conditions, they will improve chances of stopping the fire.

It needs to be remembered that although the condition might be unfavourable to enhance the spread of fire the risk of weather change can turn an (often) unnecessary back-burn under these conditions into an undesirable cause of extra danger.

Where the conditions promoting fire spread are immediate if back-burns are correctly put in at right time, will stop fire.

Where the conditions for fire-spread are favourable, back-burns are often counterproductive, it then happens that the fire tend to jump firebreaks and roads.

What is being learnt from the factors cited supra for consideration is that great care is needed putting in back-burns, discretion being the better part of valour. It, therefore, demands that such critical decisions must be taken by one person being the Senior Ranger or Fire Manager not it being taken at random by any person which has been the position on the 4th of September 2001.

De Ronde, p1932, line 4-8

De Ronde, p1945, line 7-25

**De Ronde, p2006, line 21 to
p2007, line 23**

It is expected of this senior officer, in this case Mr Hendrik Mugwabana, to have been highly knowledgeable or well informed and acquainted with the climatic conditions, the biomass, the topography of the area affected when exercising his discretion to unleash instructions of putting in a back-burn. This knowledge he lacked and he had to rely on Sergeant Nkuna, Corporals Ngobeni and Nyathi etc. who had the superior knowledge and experience.

De Ronde, p1943, line 31 to

p1944, line 2

Mugwabana, p216, line 23 to 27,

p217, line 14 to 22, p221, line 22 to 25,

p227, line 13 to 18, p228, line 21 to 27,

p260, line 9 to 23

- 39 The events of the day on the 4th September 2001 reveals the following critical happenings in respect of the discretion employed to combat the fire by putting the back-burns and the competency therein attached;

Sergeant Nkuna, Corporals Ngobeni and Nyathi with the labourers from Pretoriuskop did put in a back-burn along the dirt road which passes by the South-Eastern side of the breeding camp. This was not on an instruction given by Mr Hendrik Mugwabana, Senior Ranger.

Nkuna, p475, line 25 to p476, line 12

**Mugwabana, p218, line 20 to p219,
line 12**

The back-burn that was put in at Hlangweni breeding was prematurely done because the prevailing wind at that time blew that fire in the direction of the burnt out area to the South of the Voortrekker Road. The conditions enhancing fire spread were unfavourable and prudently speaking it was unnecessary to put in a back-burn. This back-burn did not result in any serious consequences but the acme of the matter is, to determine the mind set of the Rangers whether they do first assess the situation to decide to put in a back-burn. This is based on experience and training. This was unnecessary because the fire would have stopped as the result of the burnt out area.

The second event was the back-burn that was put in by the Rangers, under the leadership at that time of Corporals Ngobeni and Nyathi. This was put in along the tar road between the Napi Boulders, Loop road and the Napi Trails camp road. They were

making a back-burn in the direction that the wind was blowing into, roughly from the North to South direction. They were not burning into the wind; they were burning with the wind which is not the correct method of applying a back-burn or firebreak.

**Coetzee, p1389, line 19 to p1391,
line 20**

This back-burn was not on the instruction of Mr Hendrik Mugwabana or Sergeant Nkuna, they did not know about it. They were the most senior officials who were supposed to have given directives for the Rangers to stay within target. This fire did not contribute to the disaster and it did not reach the Napi Trails Camp but the only assessment which could be inferred from this action is to evaluate the competency of the Rangers in the fire-fighting and whether they have the relevant necessary experience demanded to execute such an exercise. Secondly, instructions were not unleashed from one co-ordinating centre being from Mr Hendrik Mugwabana.

Mr Hendrik Mugwabana, Senior Ranger and Corporal Nkuna intended to put fires along the tar road both to the East and West of the Napi trail road, but they were advised by Sergeant Baloyi that they should only do so East of the Napi Trails road once the Ngwenyeni firebreak had been made safe by means of a back-burns all the way up the tar road. This places the experience and skills of both the senior officials in question to competently unleash the instruction to the Rangers remaining on target.

The incorrectly execution of the back-burn has delayed the Rangers from getting to Napi trails camp earlier than they would otherwise have done. The setting out of the priorities of their actions on that day was wrongly set out e.g. the Hlangweni Breeding Camp as the first priority.

After the Napi Trails camp incident the Rangers, including the Rangers from Skukuza, were divided into two groups, one of which was under the leadership of Corporals Ngobeni and Nyathi would

take care of the tar road to the West and the other under the leadership of Mugwabana and Nkuna would take care of the tar road to the East as well as the Ngwenyeni firebreak which far roughly parallel to the Napi road from the road to the East of Napi and all the way down to the Voortrekker road in the South.

**Mugwabana, p222, line 23 to p223,
line 9**

Nkuna, p477, line 1-20

A grader was utilised to grade the area in which they were supposed to drive and they followed the grader by doing back-burns. There was also an area which was previously burnt which would create a buffer for the fire not to continue burning.

Bundle A, p201

The capacity of the Rangers that were deployed to Ngwenyeni firebreak from Stolznek and Malelane were more than 10, inclusive of some labourers. They were putting the back-burn in order to stop the coming fire which was already in a block facing them. They went up to where they crossed the Biyameti River, when the direction of the wind changed facing the direction from where the fire was coming from.

Baloyi, p713, line 10-12

Baloyi, p711, line 20-30.

It was immediately after the wind direction has changed that Sergeant Baloyi overheard Corporal Ngobeni informing Sergeant Nkuna that the fire has already crossed the tarmac towards the direction of the grass cutters camp and that they are proceeding there.

Corporal Ngobeni and Nyathi were supposed to be on site at the Napi Trails – tar road intersection to control the other Rangers namely Tommy Mogakane, Mahlangu and Sandros Ngwenya in doing the back-burns to the South of the Napi Boulders, Loop road

and where the road met up again with the tarmac road to the West, along the tarmac road in the direction of Pretoriuskop. Corporals Ngobeni and Nyathi left the group proceeding to Pretoriuskop to drop off the goods salvaged from the Napi trails camp. This has an impact in terms of the prioritisation of serious events with dangerous consequences. No reason was advanced why both of them being seniors left the responsibility to the three (3) Rangers to take such decisions of putting back-burns well knowing that injudicious placement of back-burns is responsible for many large fires, while great care is needed in putting in back-burns. There was nothing that excluded the possibility of the risk of weather change which might cause an undesirable extra danger because the climatic conditions have been identified not to be conducive as from the time when Mr Potgieter stopped burning the plots.

This has been the same position with the group that was under the leadership of Hendrik Mugwabana and Sergeant Nkuna. The only positive factor is that although they had left, there was Sergeant Baloyi, who was experienced and well skilled and had previously made a sound decision in terms of prioritising the events.

It will be observed from the evidence that there have been some communication through the two-way radios but the importance attached to such communications were mostly to make known the decisions already taken by the rangers to their Seniors not to receive instructions as to what they must do to remain within the target area. This had a negative impact in terms of maintaining one line of instruction from Mr Hendrik Mugwabana. Their services could not easily be co-ordinated which was vital in this critical situation.

Mhlongo, p592, line 7-15

**Mogakane, p1182, line 27 to p1186,
line 12**

A further communication by Corporals Ngobeni and Nyathi was also negatived by the battery of the hand-held radio that went flat.

Mogakane, p1193, line 1-5

Mhlongo, p600, line 19-25

Ranger Mogakane, Mhlongo, and Ngwenya continued with their task of putting back-burns until a short distance to the Shitlave Dam turn off, some 3km as to the crow flies to the South-East of the grass cutters camp.

Mhlongo, p593, line 2-11

Mogakane, p1212, line 8-18

The evidence reveals that between 18h30 and 18h45, the wind direction changed and this can be confirmed by the fact that the rangers suddenly found themselves trapped by fire which was heading towards the tarmac road and had in places jumped the tarmac road. They attempted to reach the Shitlave Dam turn-off in the hope that the road would provide them with refuge, but they were unable to get that far. There was another fire ahead of them, that is, towards the Pretoriuskop side. They were caught between two fires both crossing the tar road from the South. They eventually decided to run in the Northern direction to the unburnt veld and they climbed trees. Ranger Mogakane and Mhlongo did that but it is uncertain whether Ngwenya did so as well. Their reaction when faced with fire flames clearly indicates the total lack of survival skills.

**Haggart, p417, line 30 to p419,
line 18**

**Mogakane, p1186, line 26 to p1187,
line 16**

Mhlongo, p594, line 6-8

Corporal Ngobeni informed Mr Hendrik Mugwabana and Sergeant Nkuna that the fire had crossed the tarmac to the Nwaswitshaka block and it was big that they could not beat it. They are now driving to the grass cutters camp to back-burn around the camp.

Mugwabana, p230, line 1-4

What is strange is that he prematurely indicated what method he is going to employ in combating the fire even before he could assess the situation at the grass cutters camp. This determined modus operandi was supported by Mr Hendrik Mugwabana with no reservations, without taking other considerations that might enhance the spreading of the fire in terms of the climatic conditions prevailing and which can cause serious consequences, as it did.

Mugwabana, p234, line 1-27

Corporal Ngobeni did not proceed straight to the grass cutters camp, but firstly proceeded to Pretoriuskop staff quarters, where he co-opted the assistance of Moses Lekhuleni and Phillip Fakude both, Pretoriuskop rangers. The three of them and Nyathi proceeded first to the bushbraai area where they instructed Andy Haggart (the Pretoriuskop Hospitality Services Manager) to evacuate with the tourist and from there they then proceeded to the grass cutters camp.

Lekhuleni, p1225, line 13-29**Haggart, p419, line 20-30****Haggart, p420, line 1-10**

The manner in which the events on that day have unfolded after the fire crossed the tarmac road, questions the ability of the rangers in regard to their competency to prioritise their action plans at the given time. The "climate and the atmosphere" prevailing on that day as indicated, since after the stopping of the burning of the experimental plots, by Mr Potgieter, was indicating that the weather was changing and not conducive for any veld fires. Secondly, that the velocity of the change in wind direction was great as described by Haggard, Mogakane and Mhlongo.

**Haggard, p417, line 30 to p419,
line 18**

Haggard, p418, line 1-19

Haggard, p419, line 1-30

**Mogakane, p1186, line 26 to p1187,
line 16**

Mhlongo, p594, line 6-8

There was no specific reason why Corporal Ngobeni and Corporal Nyathi did not proceed straight to the grass cutters camp via the bushbraai which was on the same direction towards the grass cutters camp which is \pm 3km. The only deduction that can be made is the lack of effective ability to prioritise the events in terms of serious consequences.

The manoeuvres of not proceeding straight to the grass cutters camp, caused some delays in the reaction time to combat the fire at the grass cutters camp, as a first priority dictated by the combined existing climatic conditions at that time, which were enhancing the spreading of the veld fire namely being the strength/velocity of the wind, the high biomass in the area occupied by the grass cutters and the stacked thatch which was available at the site.

Mr Haggard who occupied a senior position was in charge of the tourist and equipped with a vehicle. The topography of where the bushbraai is situated privileged him to see the fire before the wind direction changed. He could only have been reminded by Corporals Ngobeni and Nyathi. There was no such necessity to go there and instruct them physically to leave.

The instructions from Hendrik Mugwabana to Corporal Ngobeni was to remind him to cause the tourist at the bushbraai to vacate the place due to the fire approaching. The main reason of such an approach was that human life was at stake. This is one of Mr Hendrik Mugwabana's responsibilities as Section Ranger for the protection of people's lives in dangerous situations. The most surprising factor, was that the very same thinking was not exercised when it come to the protection of human lives of the grass cutters. It was canvassed during the evidence that if human safety was to

enjoy the highest priority to the exclusion of all others, the Kruger National Park could not be maintained as a pristine wilderness area. It was further conceded that this does not mean that human life must of necessity be sacrificed in the interest of maintaining a conservation area and reasonable precautions with full recognition of the attendant risks, must be taken. The evacuation of the grass cutters was never an issue that was discussed as an alternative precautionary measure to be considered for its possible implementation. It is unascertainable from the evidence why the Rangers did not immediately take steps to evacuate the grass cutters from the camp. The following assumptions can be matched to their conduct on that day which assumptions are not conclusive. Firstly, they must have thought that they will secure the camp by putting in a back-burn against the wind, in accordance with the normal procedure, this assumption must be weighed against the fact that it was clearly canvassed in evidence that the Rangers have the necessary relevant experience because they have worked in the area for many years and have had an intimate knowledge of the terrain, the state of the veld and even weather conditions. This consideration, based on the experience portrayed, if it was objectively applied, it would have placed them in a better position to evaluate the situation whether it was conducive to put in such a back-burn along the southern perimeter or to evacuate the grass cutters. It is a notorious fact that back-burns which are placed injudiciously, although *bona fide*, are responsible to enhance the spreading of fire depending on the contributing circumstances. The condition of the fire status at that time have been evident from the reaction of Corporal Ngobeni who requested Mr Hendrik Mathebula to bring reinforcement from the single quarters at Pretoriuskop although he did not specify the man power needed.

**Mathebula, p613, line 11 to p614,
line 19**

Havemann, p1555, line 8-15

Mr Hendrik Mathebula received a second call from Corporal Ngobeni once again requesting assistance as the fire was coming towards the camp. The thought of evacuating the grass cutters never dawned although the circumstances changed.

Survey plan, Bundle A, p204

Lekhuleni, p1245, line 5-21

Khumalo, p975, line 10-18 and p1002, line 23 to p1004, line 3.

The help needed by Corporal Ngobeni could not be received timeously before the fire passed through the grass cutters camp because the reinforcement group were obstructed by the fire to access the grass cutters camp.

It is important to sketch out the climatic conditions at that stage as expressed by Ms Lorraine Khumalo, one of the survivors of the grass cutters camp, before Corporals Ngobeni and Nyathi, Rangers Lekhuleni and Fakude arrived and how it was once they arrived at grass cutters camp. These are her observations;

"The wind was blowing very strongly immediately when it had changed from blowing from west to east and east to west. In some of their tents they could not open and in some tents they tried to fasten not to be taken by the wind. Some were blown away and rolling with the wind. The fire was coming towards their direction. The amount of the fire smoke increased, that at one stage they could not see each other. They were screaming and they could feel the heat. The rangers arrived and ordered them out."

Khumalo, p 974, line 8-30

The fact that the reinforcement group could not access the grass cutters camp timeously before the disaster, caused the Rangers as

the only last resort, to enlist the assistance of the grass cutters to carry water in their buckets and pouring it over to the edge of the graded thatch storage area so as to facilitate the putting in of a back-burn along the Southern perimeter, with the intention being to proceed along the Eastern perimeter and thereafter create effective fire break against the fire which at that time was coming from South-Eastern side of the camp. They had to draw the water from a water tank which was only supplied for human consumption, which was clear that there will be no sufficient water to meet the magnitude of the fire that was approaching. The speed in which the grass cutters had to fill their buckets was also negatived by the height of the pipe at the tank and the pressure of the water, the capacity of the bucket itself.

**Lekhuleni, p1225, line 1 to p1226,
line 26**

Secondly, they drew a whole lot of amateurs, people who were not trained at all and place them in fire conditions that are risky for their lives and dangerous as well as to others. These circumstances needed extraordinary measures of which they were not equipped. They were not part of the command where one would have expected them to stay alert, keep calm, think clearly and decisively. They did not have the necessary equipment to combat the fire. They had their civilian clothing to face the fire and the smoke. They had to expose themselves to combinations of irritants and toxicants and inhale toxic gases which may have several harmful effects on the human body because of lack of the necessary protective clothing. The worst observation was that even the rangers did not have the necessary equipment to fight the fire and the necessary protective clothing let alone the training in survival skills.

Thirdly, the human capacity in terms of the fire fighters, right through this exercise has been a point of serious concern. The only available number that proceeded to rescue the grass cutters were

four rangers namely Corporals Ngobeni and Nyathi, Rangers Lekhuleni and Fukude.

It is a legal obligation to every owner of the land to have sufficient capacity to manage fire burns and prevent veld fires. The landowner must have suitable fire fighting equipment and fire fighting protective clothing.

There was only one vehicle available at that stage until the fire passed through the grass cutters camp. This illuminates the ability to prioritise the plan of action in assessing the dangerous situations, prevailing in the protection of people's lives and to make a critical decision which in some instances have far reaching consequences. It will be noted that Corporal Ngobeni was finally taking the decision as to the modus operation. The Section Ranger bestowed with that responsibility did not exercise it.

Fourthly, according to Dr De Ronde the fire would have reached the grass cutters camp at approximately 20h00. He estimates it to have been between 19h30 and 20h30. If ever they were uncertain whether they had sufficient time to evacuate the grass cutters at that time it can be measured behind the background of the time when the fire crossed the tarmac road and the time when Mr Haggard and the tourists left the bushbraai and proceeded to Pretoriuskop. He later, came back again and it was at that stage that the fire engulfed the grass cutters camp.

Lekhuleni, p1225, line 30 to p1226,

line 26

Khumalo, p975

Khumalo, p979, line 9-10

Khumalo, p984, line 1-10

National Veld and Fire Act, 1998

(Act No 101 of 1998), Chapter 4.

- 40 According to the considerations set out *supra* about the combined circumstances prevailing at that stage in respect of the risk and the dangerous situation that had enveloped human lives. The Rangers

should have had full appreciation of the danger that they were in and that they were supposed to consider taking steps to evacuate the grass cutters rather than taking steps of reinforcement from the various areas which exercise did not succeed. The strength of the fire revealed from the onset that human force could not fight such fire. The only option was to give way and the probable accepted approach was to evacuate them.

41 FINDINGS UNDER THE SUB-TERMS OF REFERENCE: FIRE HAZARD

41.1 Climatic conditions on 4 September 2001

The findings in respect of the climatic conditions on the 4th of September 2001 are as follows:

At 08h00 it was 21.8°C and by 14h00 the temperature had increased to the maximum of 38°C. The temperature was fluctuating during the course of the day.

According to the fire danger indicators the 4th of September 2001 was the worst day or second worst day for runaway veld fires over the previous years.

The relative humidity was 64% at 08h00 in the morning, decreasing rapidly to just above 20% at 12h00 and it remained very low at about 13% to 14% during the afternoon.

In the evening it increased very rapidly from 20% to almost 80% at 17h00.

It again increased at 20h00 up to 83%.

The average hourly wind speed in kilometres per hour was in the vicinity of about 10 km per hour until 08h00 in the morning.

It started increasing at about 09h00 and settled at about 15 to 16 km per hour until 13h00 in the afternoon.

It then increased to more than 20 km between 14h00 and 16h00 thereafter increased to 50km per hour.

It was a notorious fact that local rangers or experienced people that lived in the area or worked in Skukuza knew that when you have a

bergwind, it is very often followed by a cold front and there will be a change in the wind direction.

There has been a change in the wind direction, at first it was towards a South-Westerly direction with the North-Easterly wind behind it and then at a later stage the wind changed to North-Westerly and started pushing the fire in a South-Easterly direction.

There are weather stations established at various sections of the park to monitor the weather and the climate of the park. It is part of a climate monitoring programme. This weather conditions are being supplied to the office of Mr Nicholas Zambatis on a weekly basis. But the park is not interested in the daily weather conditions as such but interested in the climate in the long term climatic trends of the areas. The main aim being to collate it with the other biological ecological events happening phenomena. This enables the research section to look backwards to see what relationship are there between climate and events that happen in the ecosystem and to be able to better explain them as to what has changed, or why it had changed or what was the role of the climate in the changes. But it is not the data used to determine the weather forecast.

The Kruger National Park is not equipped to do weather forecast and there was no contractual agreement for daily supply of the data by the weather station at Nelspruit and Komati draai or the Forest Fire Association.

The Gabbro intrusion is an area with a high biomass, which covered by clay which is relatively high nutrient content in turn resulting in a relative high biomass of a maximum of 5390 kg/ha. This is the area where the grass cutters camp was situated.

The topography plays an important consideration because it has a decided effect upon the fire behaviour. The steepness of a slope affected both the rate and direction of a bush fires spread. The fire usually moves faster uphill than downhill, and the steeper the slope, the faster the fire moves. The area where the grass cutters camp was situated did not have a lot of trees to impede the fire spread.

The only reasonable inference sought to be drawn is based on the following facts;

Climatic temperature that fluctuated during the day from 21.8°C to 38°C,

Average hourly wind speed which was in the vicinity of 10 km to 50 km per hour.

The relative humidity that was fluctuating from 13% to 83%.

The fire danger index which was very high causing it the worst day for runaway veld fires.

The caution made through SABC news on the 3rd September 2001 by the weather bureau;

Conclusively it indicated that it was the worst day for runaway veld fires and it created an obligation that any uncontrolled fire must be monitored promptly and that burning of veld fires on that day must be avoided at all costs.

41.2 Fire-fighting competence of South African National Parks

The following findings were made under the sub-term reference:

The main function of fire-fighting at the Kruger National Park is bestowed to the Rangers to fight the veld fires, protect human lives and properties, although in the same capability maintaining biodiversity and wilderness quality. These are the people who are in the first line of defence against fire.

The staff position starts from the advisor of wildlife management, Mr P.G Nobela, the Section Rangers, Sergeants, Corporals and ordinary Rangers.

The sphere of the Section Ranger's responsibility encompasses the entire spectrum of his activities among other things making critical decisions which could have far reaching consequences, responsible for the protection of people's lives in dangerous situations.

The position of the Section Ranger has been compared with that of a Fire Manager to be having the same responsibilities. It was found

that these positions are not the same although there are few similarities there and then. The Fire Manager is expected at all relevant times to study weather conditions and predict weather conditions continuously. He must be well equipped in using the fire danger index as well as studying weather patterns in general. It is needless to state that it is a combination of experience and training that can make a tremendous difference in the prediction of weather conditions when it comes to fire.

Apart from those people who might have had some training at a Technicon as part of their nature conservation the only forum of training for the Rangers at the Kruger National Park in respect of fire fighting was on the Job training, under the guidance and supervision of the Section Ranger and senior ranger corps. There was no formal training for the fire fighters in the field of knowledge and skills. Skills' training is a basic requirement for suppressing fire. Their efficiency was tested against the experience they hold which varied from 5 years to 30 years.

The only training they have undergone was a military style with emphasis on physical fitness, weapon handling skills, decision making in the field and interpretation of natured phenomena namely plants and animals.

Labourers employed to assist Rangers to fight veld fires also received on the Job training and with experience that varies from individuals. This mostly was the labourers under the Fire Ecologist Section being part of the Scientific Services.

There were no refresher courses conducted at the Kruger National Park to the Rangers to measure the efficiency of the skill to combat or manage the fire.

There was no focussed training in different levels in the field of fire management.

No survival skills training was conducted to enable the victims of fire how to survive in case of such fire.

There was no standby component during the fire sessions.

The fire fighters on the 4th September were not having all the minimum standard of equipments identified to fight the fire.

Not all had a bakkie sakkies.

Not all had water trailers.

All did not have a hand operated rucksack which is a pump which you can use to extinguish the fire.

Some had the drip torch used to light the fire.

Not all had hand radios for communication.

All not having rake hoses.

They all had fire beaters.

First aid kit was in the vehicle.

The fire fighting equipments were not adequate as they fell short of being in compliance with the minimum standard acceptable for such a combat.

The fire protecting clothing did also not meet the minimum standard.

They all did not have the fire fighting respiration (double half-mask) which is being utilised to protect smoke to the fire fighter.

The crew leader did not have a jump suit.

The fire fighters did not have a two piece fire – proof overall. The fire proof overall is made of material which is fire resistant to protect any person from burning and effectively can resist the fire.

Not all had safety goggles.

They only had a pair of leather boots and ordinary uniform for rangers.

41.3 Competence employed during the fire

The following findings were made under this sub-term of reference:

Mr Potgieter and some of the research assistants went to do experimental burns at the plots known as the Numbi experimental plots

Potgieter, p103, line 18-19

Msomi, p533, line 21-,31 and

p534, line 2.

He later realised that the climatic conditions has greatly changed which was no longer conducive to continue with the burning at the experimental plots.

The procedure to conduct such experimental burns of plots was hinged on the following:

The Section Ranger of the area where full experimental burns are to be conducted must be informed at least a day before the burning is executed. Mr Msomi did inform Corporal Ngobeni who failed to filter the information correctly as to which plots the experimental burning is to be conducted.

Mr Potgieter had failed to inform the Section Ranger or his delegate that they have stopped commenting the experimental burning of the plots.

The weather condition was at a high risk for any veld fire.

Potgieter, p175, line 3-8

Msomi, p537, line 11-12

Msomi, p538, line 3-6

This has caused confusion among the personnel at Skukuza when they saw a plume of smoke and they laboured under the impression that it was Mr Potgieter's team that were burning the experimental plots. There was no initial control from the initial stage when the smoke of the fire was identified.

Mr Potgieter failed to inform the Ranger or any responsible person about the smoke of the fire he had identified on his way to Skukuza. If he had exercised his legal duty to disclose the location of the fire he identified this should have been attended to at an earlier stage. The same legal obligation was expected from Trevor Langeveldt who also had the necessary experience, who identified the plume of smoke at an earlier stage.

Mr Hendrik Mugwabana as the most senior official and responsible for the Rangers at Pretoriuskop had to take informed decision as to

what must be done, as to when and where to put in a firebreak or a back-burn. He had to supervise that those instructions given are strictly followed in terms of the determined plans of action. This was negatived by the fact that he was still new and not aware of the area and he was forced to rely on his subordinates for their local knowledge and experience.

The instructions were not unleashed from one central source. There was lack of co-ordination which created an apportionment of responsibilities taken either by Sergeants Nkuna and Baloyi, Corporals Ngobeni and Nyathi, Tommy Mogakane, Frans Mhlongo and Sandros Ngwenya. These Rangers were opportuned to take decisions which had serious consequences. This is evident from the following:

Sergeant Nkuna and Corporal Ngobeni when they were informed to collect their equipment and go and fight the fire they formulated their priorities with no consultation with their senior, Mr Hendrik Mugwabana. They formulated their plans of action by identifying the priorities to be as follows:

To go first to Hlangweni breeding camp.

Secondly, to Napi Trail.

Thirdly, to the fire at the Tarmac road.

It will be noted *infra* that the decision taken was not based on a well assessed information.

The Hlangweni breeding camp become the first priority to safeguard the remaining grazing because if the remaining grazing is burnt out in the camp, then the camp would literally be useless. They would not be able to maintain the animals in the breeding camp. That was apart from the fact that some of those rare animal, the antelopes could have been caught against the fence if fire had spread. The prevailing wind at that time blew the fire in the direction of the burnt out area to the South of Voortrekker Road. They had to put the back-burn all around the block except for areas that had already burnt out. This camp fire was a low risk fire from the point of view that the area behind the Hlangweni breeding camp had already

been burnt. But time was spent to combat that fire. Mr Hendrik Mugwabana was not on site when such decision was taken.

Second priority was that Napi Trail camp which was being utilized to accommodate tourist who had to walk in the wilderness escorted by the trailist. Their properties were kept at the Napi Trail camp. A chef was also accommodated there. The Rangers were expected to balance protection of human lives in dangerous situation against wildlife and the grazing that was to be destroyed and make an informed decision. Their method of determining their priorities is questionable because when they left the Hlangweni breeding camp to Napi Trail camp the fire had already burnt down the Napi Trails with some of the properties there.

The third priority was to fight the fire at the tar road. They did put in a back-burn. They were under the leadership of Corporals Ngobeni and Nyathi. It was along the tarmac road between Napi boulders, Loop road and Napi Trails camp road, which back-burn was fire with the wind. It has been criticised by Mr Frazer.

**Frazer, p1286, line 25 to p1290,
line16**

This was also not done via Mugwabana's instruction.

Corporals Ngobeni and Nyathi left the group and proceeded to Pretoriuskop to drop the property salvaged from Napi Trails. Their presence was needed to give instructions but no reason could be advanced why both of them went to Pretoriuskop.

Corporal Ngobeni did not proceed straight to the grass cutters camp but first proceeded to Pretoriuskop to co-opt the assistance of Moses Lekhuleni and Phillip Fakude. It was clearly known that the fire had cross the Tarmac road towards the grass cutters, when he went to Pretoriuskop again. The weather conditions had been severe as the result of the wind change.

They proceeded to the bushbraai i.e. Corporals Ngobeni and Nyathi, Moses Lekhuheni and Phillip Fakude before going to the grass cutters camp. This was to inform Mr Andy Haggard to

evacuate the tourists from there and they proceeded to the grass cutters camp. Mr Haggard and the tourists evacuated the place in the vehicle they had.

Their manoeuvres of not proceeding straight to the grass cutters camp has caused some delays in the reaction time to combat the fire which was supposed to enjoy first priority which was dictated by the combined existing climatic conditions at that time which were enhancing the spreading of the veld fire namely the strength, velocity of the wind, the high biomass and the stacked thatch.

The evacuation of the tourist at the bushbraai was in line with the main reason of protecting human lives in dangerous situation. This very important consideration was not applied in evaluating the evacuation of the grass cutters who had no other means to escape the fire.

The evacuation of the grass cutters camp was never an issue that was discussed or evaluated by the Rangers as an alternative precautionary measure.

There was sufficient time to evacuate the people at the grass cutters camp, this can be measured behind the background of the time when the fire crossed the tarmac road and the time when Mr Haggard and the tourists left the bushbraai and proceeded to Pretoriuskop and later come back. It was at that stage that it engulfed the grass cutters camp. It is estimated to be between 19h30 to 20h30.

The capacity of the Rangers who were available at the grass cutters camp when the fire engulfed it, were only four, namely Corporals Ngobeni and Nyathi, Rangers Lekhuleni and Fakude.

It is a legal obligation to every owner of the land to have sufficient human capacity to manage fire burns and prevent veld fires.

There was no sufficient fighting equipments and protective clothing in terms of the minimum standards required.

They had to enlist the services of the amateur people who were not trained at all and place them in fire conditions that are risky for their

lives and dangerous as well as to others. These circumstances needed extraordinary measures.

There was only one vehicle available at that stage when the fire passed through the grass cutters camp.

The injudicious placement of back-burn often results in far larger fires than if they were not put at all. Care is needed in putting in back-burns and discretion being the better part of valour. It demands that such extreme decision must be taken by one person either the senior Ranger or Fire Manager.

The back-burn which was put in at the grass cutters camp while the conditions for fire spread were favourable was counterproductive because it has caused it to fuel. It was put in good faith but there was lack of knowledge and experience. The climatic conditions already indicated that there was a change of wind direction and the fire was of such magnitude that it could not be stopped by human beings. The only alternative was to give way for nature to take its course.

The back-burn which was put in at Hlangweni breeding camp was prematurely done because the prevailing wind at that time blew the fire in the direction of the burnt area. They failed to assess the situation before acting and causing a delay to attend to the most demanding, dangerous and risky situations.

The back-burn which was put in along the tarmac road between the Napi Boulders, Loop road and Napi Trails camp road, was put in the direction in which the wind was blowing into. This questions the competency of the Rangers in fighting the fire. This fire did not constitute to the disaster and it did not reach the Napi Trail camp. But it has an impact in evaluating the competency of the fire-fighters.

The wind direction did change while they have been putting the back burns to stop the coming fire. It changed facing the directions from where the fire was coming from. The Rangers namely Mogakane, Mhlongo and Ngwenya suddenly found themselves trapped by fire.

There have been some communication through the two-way radios but the importance attached to such communication were mostly to make known the decision already taken by the Rangers to their seniors not to receive instructions as to what they must do to remain within the target area. This had a negative impact in terms of maintaining one line of instruction from Mr Hendrik Mugwabana. Their services could not easily be co-ordinated which was vital in this critical situation.

The Commission had took note of the fact that Rangers should not be reprimanded for consequences which may arrive founded on good or even reasonably judgement on their part most specially in fare events when there are unexpected changes of weather conditions that leads to large fires but in the same vein this can be combated by maintaining a high standard of prioritising their actions to be embarked on, which is hinged on fire management skills as clearly set out supra.

42 FIRE POLICY

42.1. Compliance with the existing policy on 4 September 2001

42.2. Precautionary measures taken by SA National Parks

42.1 Compliance with the existing policy on 4 September 2001:

There was no consolidated fire security policy in existence at the time. The policy was still at the draft stage. This does not entail that there was totally no policy or practise. It is needless to state that the veld fires have generally been a normal event in the Kruger National Park either ignited by lightning or transmigrants\man-made fires. There have always been different procedures or practices in combating such fires. In regard to lightning fires it was to give it the best chance under practical circumstances to play out its natural role. It does happen that the lightning ignited fires predominated several of this fires which were considered uncontrollable, leading to the "Lid-on fire" clause.

The fire that has caused this disaster was caused by transmigrants' man-made fire, and it was not caused by any lightning. The procedure or practice adopted in those instances where there was such uncontrolled man-made fire, was that, it had to be contained in a block by creating back-burns or beating the fire from the surrounding graded firebreaks and tourist roads. These were the only practices that they acquired on the job training, for the accumulated years of experience. To manage fire, the Park is divided into \pm 400 burning blocks, separated by graded fire breaks and tourist roads. A total of 890 km for tar roads, 1742 km dirt roads and 5700 km graded management roads which are used to facilitate fire management in the Park.

A total of 22 Section Rangers, 220 Field Rangers and 132 labourers are responsible to implement this adopted procedure which had become a policy. It must be noted that this human resource capacity covers the whole of the Kruger National Park which indeed is a vast area.

The other factor for consideration is that the SAN Parks' Board decided to increase the status of the wilderness areas in the Kruger National Park by closing down some of the graded fire breaks.

The grass cutters camp did not fall within a wilderness area but the spreading of the fire that engulfed the grass cutters camp, was influenced by the area where the fire came from.

The following factors contributed negatively in the employment of the practice;

The increase emphasis on wilderness management in the Park, which has led to the removal of some breaks and caused less ability to control "run away fire" like the one that crossed the road and caused disaster at the grass cutters camp.

The unfortunate timing of the change in the wind direction coming from South-East and to the North-West, the strength of the wind and high biomass in the area occupied by the grass cutters.

The fire approached the grass cutters camp, from the side on which the thatch was stacked which resulted in burning the thatch and it

being blown over on the camp and creating a fire hazard which was combined with the spread of the fire.

42.2. Precautionary measures taken by SA National Parks

Annually the management teams from the respective divisions, Technical Services and Nature Conservation, will come together and discuss the thatch cutting operation and the requirements. These campsites for grass cutters have been used on a rotation basis for a long period in the past. In mid July 2001, this campsite was activated again and 37 grass cutters plus a supervisor were deployed at the camp. The tents were pitched in two rows.

The following standards for safety procedures were to be complied with:

An area of $\pm 150 \times 80$ metres is cleared and graded depending on the site conditions and the number of grass cutters to be accommodated.

Tents are pitched in rows, not closer than 5 meters to the perimeter of the graded area.

A 5000 litre water tank is installed with a multiple outlet for water, filled every second day.

Rations, toilets and medical essential like tabbard, malaria tablets etc. are provided.

Paraffin lamps and firewood are provided. Fires are made in the central area of the opened campsite.

Medical treatment is provided when needed and sick people are transported to hospital as the need arises.

Thatch stacking areas are separated from the lamp sites by means of a firebreak or a firebreak road.

Protection is arranged through the local Section Ranger regarding fire protection and general protection.

A supervisor for administration arrangements is placed at the camp from Technical Services.

p655, line 1 – 8

The following shortfalls were identified in relation to the grass cutters camp:

The graded area of the grass cutters camp according to the survey made was approximately 29 metres x 75 metres.

The fire break road was just less than 5 metres in width.

The thatch storage area was approximately 79 metres x 42 metres in extent.

The graded place where the tents were pitched was not sufficient.

The other tents at the back were right on top of the grass patch.

The tents pitched at the back, were not on an area that was graded.

**Khumalo, p979, line 20 to p980,
line 1-2.**

The space between the tents and the stock pile of grass was not graded. The two single lanes were caused as the result of the vehicle that was bringing the rations/supplies.

Khumalo, p980, line 10-12

At the grass stock piling the area was graded, but not sufficiently.

The Induna, Shadrack Mhlana, was informed that the camp was not safe before this disaster, when it was compared with the previous camp they occupied. The reason why they felt unsafe, was because of the fact that the place was not graded. This has formed the basis of the complaint by the grass cutters.

Khumalo p996, line 20-22.

Khumalo, p986, line 20 -31

Khumalo, p989, line 20-32

No first aid kit was given to Shadrack Mhlana. If injured they had to wait for Hendrik Mathebule, if you were hurt in the afternoon you will have to wait until the next morning.

They were not offered any protection to walk deep in the bushes cutting grass as they were exposed to wild animals. According to the policy such security was guaranteed but later during the hearing, it was indicated that they had an option, that if it becomes dangerous then they could request the services of a Ranger to go along with them in the deep veld. It is needless to state that the wilderness is not a safe place to walk on foot without any fire arm. Tourists are not even allowed to alight from their vehicles beside on specific areas. Mr Shadrack Mhlanga was not even armed, while the chef at Napi Trails was armed.

The wild animals namely, lions and elephants were roaring during the night and they were forced to do drum beating for their safety. They were fortunate because there were no casualties ever experienced, caused by wild animals.

Khumalo, p988, line 10-22

Khumalo, p993, line 1-9

The supervisor did not have any means of communication in case of trouble. He was not provided with a two way radio. It was mooted that he had his own cell phone which was vehemently denied by Ms Khumalo. This does not change the situation whether he had his own cell phone or not, because there was no commitment to oblige him to use it as there was no suggestion that prior arrangements were made for the payment of the official calls made.

The four Rangers who were at the grass cutters camp were not trained in survival skills, this is evident from the fact that Corporal Ngobení and the others instructed the grass cutters how to pour the water, as the only available means at their disposal to kill the fire not to reach the camp and the thatched piles. When they realized that they were overtaken by the fire they never gave any further instruction as to what must be done, they all run away.

Secondly, their competency as to fire fighting was clearly sketched out supra which was not up to scratch as they were not trained in that discipline beside on the job training.

They never expected such a magnitude of the fire but if they were properly trained, they could have been in a position to evaluate or being able to manage the velocity of different kinds of fires.

The grass cutters did complain to the driver of the truck, Mr Ephraim Mkonto about the fire that was approaching, he did not seriously consider it, he only assured them that the fire was still far away and there are fire guards, with the result that it will not reach them. He hoped that it will be stopped before it had reached the grass cutters camp.

Khumalo, p990, line 20 – 27

Khumalo, p102, line 16 – 27

There was more harvested grass to fit the graded space where the piles of the grass had to be fitted. They were bound in putting this grass on top of the natural grass. This was the sole responsibility of the Technical Service Division to grade the site and avoid the spreading in case of veld fire.

Visagie, p50, line 29

There was only one vehicle available for the rescue operation. The other two vehicles, one driven by Sergeant Mathebule from Stolsnek and the one by Hendrik Mathebula, immediately arrived after the fire had passed.

The fire or plume of smoke which was observed in the early hours of the day, if it was immediately attended to, it would have been a different story to tell.

The lack of well considered priorities in terms of such imminent needs has been strongly influenced by the lack of concrete communication lines and the flow of instructions emanating from one centre or source of command.

43 FINDINGS

43.1 Compliance with the existing policy on 4 September 2001

The following findings are made under this sub-term of reference

There was no consolidated fire security policy in existence at the time. The policy was still in the draft stage. The existing procedures that were previously employed for years at the Kruger National Park were used to address the situation. The policy only dealt with fire ignited by lighting or transmigrant or man-made fire as to its control, as clearly indicated under paragraph 42.1.

The increase emphasis on wilderness management in the Park has led to the removal of some fire breaks and it had caused less ability to control "run away fire".

The unfortunate timing of the change in the wind direction coming from the South-East wind and the high bio-mass in the area occupied by grass cutters.

There was more thatch that was stacked to meet the place graded, it therefore, demanded the use of the ungraded area.

43.2. Precautionary measures taken by SA National Parks

The following findings were made under this sub-term of reference:

It has been clear during the evidence that the tents were not fully 5 metres from the edge of the graded area and not always 5 metres apart. It was submitted that the distance of the tents to one another and to the edge of the camp played no role in the disaster. This has just been a speculation because the minimum standard procedures were prescribed for the safety of the occupant.

The video footage submitted by the Department of Labour shows that the fire-break road had not recently been graded. The submission that it is irrelevant because the amount of grass on the road would have been insufficient to carry a significant amount of fire, it does not hold any water, because it was supposed to have been graded as to comply with the minimum standards of safety.

**Video footage submitted by Department
of Labour**

Visagie, p670, line 8-12

The Rangers were responsible for the safety of the grass cutters and they were there to assist them in the event of inter alia, fire. In order to bring life to such a responsibility, precautionary measures were supposed to be in place to combat any human danger they were faced with. There was supposed to be enough human capacity, provided on standby, to cater such unforeseen events more especially that veld fires has been a common event in the Kruger National Park. This could have been established by creating a network mechanism for help in case of such event. The evidence only reveals that only four Rangers were assigned or happen to be there to rescue the situation which was in actual fact attempting the impossible.

Their lack of prioritising skills for the actions to be taken in combating the veld fire, which in certain instances, has caused some unnecessary delays in addressing the core of the problem. Time was wasted where there was no need to combat such fire e.g. the Hlangweni breeding camp.

The grass cutters were never even taught or trained in survival skills. This has been the position with the Rangers too. This is evident from the fact that some of the grass cutters together with the rangers fled the camp before the fire even passed through the thatched stack pile area.

Lekhuleni, p1227, line 20-26

No fire engines or helicopter were arranged, as the magnitude of the veld fire indicated its aggressiveness during the course of the day and the climatic conditions which revealed the danger of the run away fires. The fire engines and a helicopter were only arranged after the disaster.

The shortfalls stipulated under paragraph 42.2 supra are of reference under this sub-term of reference.

44 SAFETY OF TEMPORARY STAFF

44.1 Safety procedures for staff camping in the bush

44.2. Possibility of housing temporary staff in a rest camp

44.3 Warning and assistance to temporary staff during the fire

44.1. Safety procedure for the staff camping in the bush

The safety procedures which are supposed to be in place at the grass cutters camp are clearly stipulated in the policy document named "Beleidsaspekte, Prosedures en vraagstukke en rondom die sny van Dekgras in die NKW" dated 4 May 1994.

Bundle A, p69-79

The Technical Services supervisor was appointed to be in charge at the grass cutters camp regarding administration and discipline. His duty was to report any safety or administrative issues to the local maintenance officer or section ranger. Mr S Mhlanga was appointed as the supervisor at the grass cutters camp. Mr Hendrik Mathebula was the maintenance officer and Hendrik Mugwabana was the Section Ranger. The Technical Service supervisor's responsibilities specifically included the following:

Camp site supervision.

Reporting of any needs i.e. water, paraffin, rations, medical supplies, sickness, etc.

Communication with section ranger's staff and or the local maintenance officer.

The maintenance officer was assigned with a duty to visit each campsite as far as possible on a dally basis to inspect the site and communicate with the supervisor regarding any relevant problems.

The Kruger National Park provided standard ration packs which were issued to each grass cutter on monthly basis, arranged by the Skukuza camp.

The Technical Service overseer was to visit the site and the cutting area every second week to inspect the quality, progress and to ensure that all administrative requirements are in place. The overseer does the counting of bundles and arrange for remuneration of the grass cutters. The Maintenance Officer was to immediately report to the Technical Service overseer if the stock area has been fully packed of thatch, in order to conduct the counting and to have the bundles removed from site to enable the further piling of thatched grass which is being harvested. This was to avoid the bundle to be packed on an upgraded area which will easily be favourable for any veld fire to catch up on the piled thatch grass. This grass was never collected since they started working in this camp.

Khumalo, p979-988

The primary responsibility to combat all veld fires that may endanger the grass cutters camp or the thatch stock pile is that of the Section Ranger and his staff.

The tents were supposed to be placed 5 metres apart to ensure that if any one tent catches fire, it does not set the next one alight.

The fire break road was just under 5 metres in width and the thatch storage area was approximately 79 metres x 42 metres in extent. The capacity of the grass bundles exceeded the graded area which would not minimize the fire risk.

The following factors for non-compliance with the procedure set out in the policy "Beleidsaspekte, Prosedures, en vraagstukke en Rondom die sny van Dekgras in die NKW" are identified under the following items;

Camp site supervision.

Reporting of any needs i.e. water, paraffin, rations, medical supplies.

Communication with section ranger's staff and or the local maintenance officer.

Graded, cleared camping area.

Graded, cleared stacking area.

Monthly rations.

Protective clothing has been dealt with extensively under the paragraph 42 and 43 supra.

*The following are just additions to the shortfalls indicated supra.
The camp area was supposed to be fenced and the gates be locked.*

Mlambo (Melamu), p1466, line 14

Fire extinguishers to be provided.

Mlambo (Melamu), p1467, line 30

Lack of the provision of assembly points – this being an area cleared for emergencies so that people should be able to run to that area if there is an emergency e.g. fire

Mlambo (Melamu), p1473, line 20-23.

There was no first aid kit at the camp which was supposed to be kept by the camp supervisor.

Lack of an allocated vehicle to convey the sick grass cutters or to address imminent needs in times of human danger.

That larger bundles be made and removed for sorting into small bundles off-site, so as to avoid stock piling of large quantities on site.

There was a supervisor appointed at the camp to be in charge regarding administration and discipline. He was not armed with any fire-arm to protect the grass cutters against any attack from wild

animals. For their safety they were expected to beat the drums to scare the wild animals.

He had no means of communication.

44.2 Possibility of housing temporary staff in a rest camp

The following are reasonable options which can be employed to accommodate the grass cutters

That a tented camp be erected next to Pretoriuskop staff quarters in a safe fenced area of approximately 150 x 80 metres. These dimensions are based on the need to house no more than 60 grass cutters.

OR

Two veld camps, each comprising of a cleared, graded area of approximately 80 x 80 metres and each housing no more than 40 grass cutters in tents to be erected 10 metres from the perimeter of the cleared, graded area and 20 metres wide fire break outside the perimeter of the cleared camp area. Properly fenced and each site having one vehicle under the control of the overseer who also sleep in the camp overnight.

A fire cement prefab building erected in the centre of the camp to serve as a sick bay and storeroom and also for general protection.

Bundle B, p347 – p348,

paragraphs 47 – 48

Visagie, p671, line 21 to p675, line 8

OR

The possibility of expanding the present staff quarters by providing more accommodation for the grass cutters to be housed at the rest camp together with the other members of the staff employed by the Park.

OR

The grass cutting operation be outsourced to private companies that complies with the B.E.E. policy. This entails that employees will be

transported on a daily basis to their various places of destination which is usually within the vicinity of the Kruger National Park.

Mabunda, p1802, line 1-10

It will be difficult for the park to totally stop the thatch harvest as the thatch is considered to be the primary roof covering of tourism facilities in the Kruger National Park. The present existing area of roofs covered by thatching is approximately 90,000 square metres.

44.3 Warning and assistance to temporary staff during the fire

The grass cutters saw the fire at a distance at about midday and they proceeded to work under the impression that there were people putting out the fire.

The supply truck that brought the rations for the grass cutters which was driven by Mr Ephraim Mkhonto arrived at about 17h00. The grass cutters did complain to the driver of the truck about the fire that was approaching, but he did not take such serious consideration about it. He only assured them that the fire was still far away and there are fire guards with the result that it will not reach them. He hoped that it will be stopped before it had reached the grass cutters camp. He was assuming that to be the position but he should have taken it a mile further to verifying as to whether the fire was being attended to in order to inform the grass cutters about the correct situation.

Khumalo, p990, line 20-24

Khumalo. p1002, line 16-24

The argument raised by Advocate Watt-Pringle, **p2095, line 5-10**, is to the effect that if ever they were threaten by the fire at that stage they would possibly have made use of that opportunity to leave the camp then, this argument raised, does not hold water, when weighed against the evidence by Ms Khumalo which is very clear.

The constant spreading of the fire towards the direction of the grass cutters camp, even before crossing the tarmac road, no warning indications were made to the grass cutters. It might be argued that

there was no necessity to do so at that stage and that the magnitude of the fire was fuelled as the result of the change of the wind direction, be that as it may, the climatic conditions on that day were favourable for run away veld fires. Secondly, the Napi Trails camp was burnt down where property and human life was in danger that should have conclusively ignited the thinking of making sure that there must be no further casualties or damage.

The four Rangers who arrived at the grass cutters camp under the leadership of Corporal Ngobeni, on their arrival, they found the grass cutters having taken shelter in their tents in fear of the wind and the plume of smoke and the fire approaching. They were not warned about the prevailing climatic condition at that time when their services were enlisted. They were just instructed as to how to pour water as the only available means to combat the fire not to reach the camp and the thatched piles. They were not warned about what steps they have to employ in order to survive the human danger they were facing. No survival skills were explained to the grass cutters. They were not warned as to the danger of the fire fighting as they were inexperienced.

Khumalo, p974

Khumalo, p991, line 23-25

When they could not combat the fire they all run away and the majority tried to outrun the fire and they were caught up which resulted them in being burned.

The fact that the Rangers under the leadership of Corporal Ngobeni never considered to evacuate the grass cutters from the camp they should at least have warned them how to behave as the fire was approaching. Sight can not be lost of the fact that the Rangers themselves also did not have any survival skills training but they were better advantaged knowledge wise than the grass cutters who lacked the knowledge and the necessary skills.

The only available assistance during the fire was conducted by the four Rangers and the grass cutters themselves. Corporal Ngobeni

did ask for extra help which he never succeeded as they were prevented by the fire to access the grass cutters camp. They only arrived at the grass cutters camp after the fire already passed through the camp.

45 FINDINGS

The following findings are made under this sub-term of reference:

45.1 Safety procedures for staff camping in the bush

The various policies regarding the thatch cutting operations and practices that were in place on the 4th of September 2001 were not fully complied with, in the following aspects;

The maintenance officer was assigned with a duty to visit each campsite as far as possible on a daily basis to inspect the site and communicate with the supervisor regarding any relevant problems.

The Technical Service overseer was to visit the site and the cutting area every second week to inspect the quality, progress and to ensure that all administrative requirements are in place. He had to count the bundles and order the immediate removal of such stack piles to avoid stack pilling of large quantities on site. The thatch which was piled at the grass cutters camp was more than the graded area and it had to be stored on an area not graded.

The tents were not placed 5 metres apart to ensure that if any tent catches fire, it does not set the next one alight.

The fire break road was just less than 5 metres in width and the thatch storage area was approximately 79 metres x 42 metres in extent.

Lack of vehicle allocated for emergency.

The following are shortfalls which were identified in terms of Occupational Health and Safety Act and the relevant Acts applicable in this regard.

The camp area was not fenced with locked gates.

No fire extinguishers provided.

Lack of provision of assembly points.

Lack of provision of first aid kit.

Lack of co-ordination within the various departments that had something to do with the grass cutters operation.

45.2 Possibility of housing temporary staff in a rest camp

The accommodation provided to the grass cutters was totally not in accordance to the standard required for human habitation. The accommodation to be provided must also be safe with all the necessities of life. The various options have been dealt with under paragraph 44.2 *supra*.

43.3 Warning and assistance to temporary staff during the fire

The lack of knowledge and insight in survival skills has been one of the most contributing factors to enable the field rangers to unleash any warnings.

The lack of prioritising skills in terms of the action plans to enable them to control the danger at hand and operate within the ambit prevailing.

The lack of ability to assess the implication and the wider consequences of the danger they were facing and the risk to be taken.

46 EMERGENCY PROCEDURES

46.1 Compliance with emergency procedures

46.2 Reaction time of emergency team

The sub-terms of reference mentioned *supra* will be dealt with jointly due to the fact that the factors for consideration are interrelated.

A disaster management committee has been established in the Kruger National Park prior to the 4th of September 2001. It revolves around a control and command centre, generally known as a Joint Operational Centre or "JOC".

This centralization of emergency management had enabled the Kruger National Park to take advantage of various facilities so as to coordinate the management and control of disaster and emergency activities.

The Kruger National Park operates a "JOC" in conjunction with the SA Defence Force and the SA Police Services. The Sand River Military base at the Kruger National Park has a fully operational command and control centre. The procedure set out as per agreement was to be effect that in the event of emergency, the Park, the military and SAPS will get together at the control centre. The organisation that is facing the disaster will take control of the situation and co-ordinate the various activities. The "JOC" has the responsibility for liaising with other external role players such as emergency rescue services (fire brigade, ambulance services), hospitals and medical services etc, and all activities taking place at the site of the disaster.

This disaster management committee was divided further into regions or "wyke". The various rest camps each formed a "wyk". Each region consist of a number of volunteers who have skills in different areas such as first aid, crowd control, medical teams, fire fighting, public relations, technical etc. These volunteers consist of staff members and in certain instances guests; each region is co-ordinated and controlled by the camp manager and or the Section Ranger.

The regional disaster management structure caters mainly for infrastructural disasters. It is only when infrastructure is threatened and there is an immediate threat to life that disaster management takes control.

The disaster that happened on the 4th September 2001 was the responsibility of the Kruger National Park's disaster management

structure to respond to it because Rangers attend to incidents in the veld, such as fire. Mr Herman Jacobus (Manie) Coetzee was the person in supervision of the disaster management committee. The fire disaster was supposed to have been reported to Mr Coetzee as the disaster manager or emergency manager in terms of the line of command.

This was not the position as Mr Coetzee happened to be aware of the disaster at 20h40.

Mr Hendrik Mathebula was the first person outside of the camp to receive news to the effect that the fire had passed through the camp and that people had been caught in the fire.

He immediately contacted Mr Legari at 20h30 who in turn immediately contacted Mr Coetzee at about 20h40. It was the first time for the disaster manager to be aware of the incident.

The information filtered to Mr Legari was to arrange with Mr Coetzee for a helicopter which could be used to evacuate people trapped in the fire which Mr Coetzee understood it to mean that they were still alive and needed to be evacuated.

Mathebula, p617, line 11 to p618,

line 2

Legari, p1695, line 24-29

Legari, p1720, line 9-18

Mr Coetzee being the head of the disaster management, took the following steps for the purpose of rendering emergency assistance to the victims;

He arranged for a helicopter to fly to Pretoriuskop

Coetzee, p802, line 18 to p803,

line 7

While the pilots were assessing the conditions whether or not they could fly, he arranged with the SA National Defence Force fire crew to get the two fire engines which were based on the airport at Skukuza.

Coetzee, p803, line 7-10

The fire engines were to create an opening through the burning veld and then the trapped people could then either run out or be lifted out. The capacity of the helicopter was to evacuate only three persons at a time.

Coetzee, p803, line 10-18

Arriving at the Pretoriuskop (grass cutters camp) they realised the magnitude of the disaster that there had been loss of life and that the survivors had been seriously burnt. It was then imperative that they be transported for treatment as quickly as possible.

He arranged for both Drs Ferreira who are permanent medical doctors at Skukuza and the medical orderlies available to go to Sand River base and activate the medical facilities there.

Coetzee, p810, line 4-9

After Mr Coetzee had been advised that the Sand River base could not do anything for people with these sort of injuries, evident of the first patient who was taken there by helicopter, he supervised the ferrying of patients by motor vehicles from the intersection at the tar road to the various hospitals.

Coetzee, p811, line 8-17

The victims were taken to various external medical services e.g. Matikwana Hospital, Rob Ferreira Hospital, Medi Clinic Nelspruit, White River. Most victims were conveyed to various external medical services by making use of ordinary vehicles belonging to Kruger National Park. This was made possible because the moment the news of the disaster was made known, outside the grass cutters camp, several Kruger National Park officials proceeded to the grass cutters camp to assist.

Visagie, p669, line 1-28

**Visagie, p669, line 29 to p670,
line 13**

There was no medical evidence tendered which had revealed that the use of ordinary vehicles was detrimental to their health. The evidence of Dr Ferreira is to the effect that those who were fatally injured, their injuries were of such a severe nature that they were beyond medical help and the best thing to do was to get them to hospital as soon as possible by whatever means available.

**Ferreira, p853, line 16 to p854,
line 25; p858, line 7-26 and p886,
line 21 to p887, line 2**

A limited number of the injured grass cutters were conveyed in an ambulance. The Kruger National Park has one fully equipped ambulance.

Mr Hendrik Mathebula informed Mr Legari who immediately informed Mr Coetzee about the disaster and the need of a helicopter to airlift the victims.

After having filtered the information he proceeded to the grass cutters camp to rescue the victims. Sergeant Baloyi from Stolsnek had already arrived at the camp. Sergeant Baloyi and Hendrik Mathebula conveyed the injured people to Rob Ferreira Hospital. This was immediately after the fire has passed through. The reaction time was swift. The other emergency team arrived while the rescue process was in place.

Khumalo, p1016, line 14-29

The following shortcomings were identified from the evidence adduced;

The Kruger National Park should instead strengthen its ties with emergency services available on the perimeter of the Park and ensure strong channels of communication between the Park and these services so that they can be effectively mobilised in the event of a disaster.

The line of command to be strictly adhered too in order to co-ordinate the activities.

The strong bond of relationship to be established with local or external medical services for rescue services to be available to air lift people as fast as they can to the nearest hospital.

Mabunda, p1792, line 1–16

The Kruger National Park has an equipped ambulance but it lacks the human capacity in terms of paramedics, medical qualified personnel to attend to injured victims or patients being conveyed to external services.

**47 The findings in respect to the following sub-terms of reference
Compliance with emergency procedures, and
Reaction time of emergency team**

The emergency procedures were substantially compiled with and the reaction time was good *vide* paragraph 46.2 *supra*.

Mr HJ (Manie) Coetzee who was the disaster manager and emergency manager acted swiftly immediately he was informed of the disaster. Sergeant Mathebula who first arrived at the grass cutters camp and immediately followed by Hendrik Mathebula never wasted any time they conveyed the injured victims to Rob Ferreira Hospital even before the emergency team arrived.

This was immediately done after the fire has passed through the grass cutters camp.

Khumalo, p1016, line 14-29

48 CONDITIONS OF EMPLOYMENT FOR TEMPORARY STAFF

The Kruger National Park through its Social Ecology Department was recruiting women from local communities bordering on the Kruger National Park to harvest thatch in the Pretoriuskop area. This operation has been in place for possibly 25 years or more.

The grass cutters are engaged in terms of temporary contracts of employment through the Kruger National Park's Technical Services division.

**Bundle B, p349, Applications for
temporary appointments,
Visagie, p653, line 17 to p654,
line 9**

The employment is for a fixed term and payment is entirely dependent upon the number of "sheriffs" harvested. The payment rate for 2001 operation was R0.45 per cleaned and bound bundle. They work under the supervision of the Technical Services Division and in particular a supervisor who lives on site with them.

The grass cutters were given rations and consumables such as Malaria tablets, insect repellent, paraffin lamps, a cutting sickle and binding rope.

**Visagie, p654, line 20 – 30
Bundle B, p338 – 339,
Paragraph 10**

The grass cutters are requested to provide their own bedding and their own water buckets.

Visagie, p666, line 29 – 31

The temporary camps in which the grass cutters were accommodated were governed by a policy formulated in 1994.

**Bundle A, p69
Visagie, p650, line 14 – 22
Slippers, p1406, line 22– 31
Slippers, p1407, line 1– 3**

48.1 Responsibility of SA National Parks after fire

It has been vividly explained *supra* as to the status of the grass cutters. The Kruger National Park had upon the disaster the following legal obligations.

To notify the Department of Labour of the incident in accordance with the Occupational Health and Safety Act,

To assist the employees to submit claims to the Commissioner for Workmen's Compensation through the section: Occupational Health and Safety Corporate.

Melamu, p1462, line 26 - 31

Melamu, p1477, line 7 - 10

To comply with emergency procedures of submitting the victims swiftly for medical attention at the health service providing institutions.

48.2 Assistance to families of the deceased

The Kruger National Park beyond the legal obligations sketched out *supra* did not have any legal obligation to assist the employees who were either injured or to the families of those who passed away.

The Kruger National Park adopted a moral obligation to render assistance to the victims and to the families that have lost their beloved ones. This is evident from the following projects that were immediately established and championed.

A disaster committee was established immediately on the 5th of September 2001 to oversee all the arrangements pertaining to the memorial service, funeral, memorial stone and to the administration of the disaster fund and the distribution of the funds collected to the affected families.

On 5 September 2001 a fire disaster fund was established, the main objective being to help the families who have lost their loved ones and those who were injured during the fire disaster. The details of the disaster funds were widely published. It is through this process that donations poured from diverse range of

organisations and individuals. SAN Parks together with the Department of Environment Affairs and Tourism through Minister Vally Moosa donated R100, 000.00 to the fund at its opening.

Bundle A, p119 – 126

The Kruger National Park has a group Live Assurance policy with Old Mutual.

Old Mutual donated R285, 000.00 designated to 19 specific beneficiaries who did not contribute in paying premiums for life cover. Each family had to be paid R15, 000.00. This gesture was extended by Old Mutual due to the sound and healthy partnership existing between the two institutions.

The Kruger National Park immediately on humanitarian grounds provided the following services to the victims and their families.

Transport to visit the injured at the hospital, to identify their loved ones at the place of the disaster and at the funeral parlour. To be conveyed to the Department of Home Affairs to apply for identification documents and birth certificates in order to submit such documents to the Commissioner for workmen's compensation.

Providing food parcels for each bereaved family.

Providing water, wood and tents for each family to accommodate relatives who will converge to those families to give support and to conduct prayer meetings.

Provided transport to those who needed treatment on specific dates at various medical institutions.

Those who were to go for an ongoing treatment from Dr Ferreira were given accommodation in the single quarters.

External psychologists and SAN Parks industrial psychologists to help families and victims were appointed as early as the 6th of September 2001. The Mpumalanga Department of Health later deployed a number of counsellors who have been stationed there for two weeks rendering service.

Provision was made for any special need required by a specific patient. On the recommendation of Dr Ferreira a TV set was hired

for Mr Ngwenya to keep himself occupied. It had to act as a therapy during the healing process.

Arrangements were made by the Kruger National Park to place a member of each family to be an employee of the working for water project. This being to assist the families to keep the fire burning. This was a project commissioned by Government to remove alien plants through out the country. Most activities were at the Kruger National Park.

They paid all those who were involved their last salaries which was equivalent to a general workers salary at the end of September 2001.

The Director of the Kruger National Park, Mr David Mabunda, did spend a day visiting families of the victims to extend the SAN Parks condolences and to give a moral support, as the employer on behalf of the Department.

Bundle A, p122

A special grave yard as a symbol of respect was demarcated by the Kruger National Park where the families will have free excess to visit and pay tribute to their loved ones.

A resolution was taken in agreement with the families that the money available will be distributed in various categories:

The family that has lost a family member should be allocated a larger share of R11, 228.00.

The next category was those who sustained some injuries irrespective of the magnitude of the injury. They were entitled for half of the amount received by the first group i.e. R5, 614.00.

The last category was those who lost their properties irrespective of the magnitude of the lost. They received R2, 000. 00.

Mabasa, p744, line 12-20

- 49 The disaster fund was established and the main objective being to help the families who have lost their loved ones and those who were injured during the fire disaster. Donations have been pouring in. In order for the disaster fund to realize its objective there must be sound financial control. The disaster committee has failed to keep proper accounting of every expenditure incurred with supporting documents. Some expenditure did not have supporting documents. Some could not be clarified as to who gave the authority to pay. The powers to authorise payments were bestowed on the disaster fund committee. In certain instances the members of community who were disaster fund members were marginalised and decisions were taken in their absence by the management of the Kruger National Park.

The disaster fund was debited for expenses which were in relation with the fire disaster but not strictly for the benefit of the victims. They did not in the practical sense distinguish between the bank account and the fund. What actually happened as far as the bank account was concerned, the bank account was identified for purposes of receiving donations other than monies which were not strictly speaking donations to the fund were also deposited in that account for example the amount of R285, 000. 00 donated by Old Mutual. It was not a donation to the fund it was an amount designated to specific beneficiaries. The Disaster Committee did not have control over this amount. The internal auditor, Ms Mpo Mohale, did discover that there were a number of amounts debited, on a basis that they had to do with the fire disaster but not necessarily direct assistance to the victims. This should have been covered by the Kruger National Park on its day to day expenditure e.g. overtime, subsistence or transport allowance.

The following specific flaws identifying the lack of sound finance control are set out hereunder;

The following expenses were paid out without prior approval and or discussion with the disaster committee.

R3, 450.00 for transport paid to Temelani.

R2, 050.00 for helpers.

Ms Mmethi and Mr Mabasa made decisions which were not authorised by the Committee.

Mmethi, p1823, line 15 – 31;

p1824, line 1– 24; p1827, line 19– 31

and p1828, line 1– 31

Some payments did not have supporting documents to determine the nature of the service and the amount

R1, 400.00 cash handed to Goodness to purchase groceries at Spar.

R650.00 cash handed to Ethel in respect of liquor to be bought. The explanation made was that the receipts were lost. There was no affidavit in support of such explanations submitted to Ms Mmethi who handled the case. This would have assisted the internal auditor.

Mmethi, p1830 – 1831

R300.00 in respect of petrol purchased by Mr David Mabunda.

R200.00 petrol purchased by Helen Mmethi.

It will be realised that Ms Helen Mmethi was assigned with the duty to arrange for catering during the mass funeral not for some of the activities supra.

There are receipts which are attached to the report of Ms Mohale which amounts to R20, 446.60 of which it could not be fully explained by Ms Mmethi in terms of the break down of each expenditure.

Mmethi, p1862

Bundle A, p525 – 528

There are still certain amounts which are still to be reconciled and be transferred to the disaster fund e.g. Nando's receipt for meals at Hazyview etc.

The report submitted by Ms Mpho Mohale has a lot of accounting flaws e.g. it does not even reflect whether there is a surplus or a debit – it does not comply with a proper balance sheet.

50 FINDING

The findings in respect to the following sub-terms of reference

50.1 Responsibility of SA National Parks after fire

The Kruger National Park has complied with its legal responsibility after the fire in this regard to the following:

- 50.1.1. It did notify the Department of Labour in respect of all the incidents in accordance with the Occupational Health and Safety Act.
- 50.1.2 Employees were assisted to submit claims to the Commissioner for Workmen's Compensation through the section Occupational Health and Safety Corporate.
- 50.1.3 It complied with emergency procedures of submitting the victims swiftly for medical attention at various Health Services.

50.2 Assistance to families of the deceased

- 50.2.1 The Kruger National Park beyond the legal obligations sketched out supra did not have any legal obligation to assist the employees who were either injured or the families of those who passed away.
- 50.2.2 The Kruger National Park adopted a moral obligation to render assistance to the victims and to the families that have lost their beloved ones. This is evident from the projects sketched out under paragraph 48.2 supra.
- 50.2.3 The financial statement submitted to the Commission reveals a failure to keep full and correct data of all moneys received and expended by the disaster fund committee. This is in contrast to a sound financial control. An external auditor must be appointed with a framework of identifying strictly the expenditure for the benefit of the intended

beneficiaries of the fund which should be deducted to the fund and that any outstanding amount must be distributed to the beneficiaries. This audit report will round up all the received amount up to date. Any financial misconduct if discovered must be dealt with in terms of financial prescripts.

51 Request by the communities of Makoko, Mnisi, Jongilanga and Hoxane to compensate the firm Du Toit Smuts & Mathews Phosa Inc for the legal costs incurred during the Ngobeni Commission of Inquiry.

The firm Du Toit, Smuts & Mathews Phosa Inc represented the above communities. It was on the communities own choice to obtain legal services from this firm.

According to **page 4 of the record of proceedings, line 25 to 30**, it is confirmed that the communities were explained that they can secure legal representation by approaching the Legal Aid Board to assign a legal representative at State expense or if they want a legal representative of their own choice they will have to pay the costs.

The secretary of the commission at the initial stage of the proceedings issued a notice as per file 8/1 indicating the following;

“you may at your own expense appoint legal representation to represent the interest of the deceased and or his/her dependents”.

The communities cited *supra* appointed the firm Du Toit, Smuts and Mathews Phosa Inc as legal representatives of choice.

The firm Du Toit, Smuts and Mathews Phosa Inc took instructions from the community to represent them free of charge. Their submission is that they have been labouring under the impression that the Commission of Inquiry would be sitting for a short period of time. The commission conducted its inquiry over a number of weeks.

The legal representatives considered withdrawing but they met resistance from the community and secondly, for the interest of the Commission, they would not do so.

At the close of the Commission of Inquiry a bill of costs was submitted reflecting a total fee in an amount of R587, 622. 00. The firm concerned indicated that an amount of R373, 122. 00 will be discounted and the actual amount due at 6 November 2002 will be R214, 500. 00.

The firm Du Toit, Smuts & Mathews Phosa Inc requested that such an amount be paid.

52 The following considerations are made

- 52.1 The concerned communities have exercised their choice to engage the services of the firm mentioned *supra*. This technically entails that they have to pay the legal costs.
- 52.2 The Legal Aid Board was not approached at the initial stage of the proceedings to determine whether such an application is approved.
- 52.3 There was an amount budgeted to cover the costs for the day to day running of the Commission, which amount was never disclosed to the Chairman of the Commission.
- 52.4 The Kruger National Park appointed a legal team of its own choice. The next question is who have covered their legal costs because this is a state organ.
- 52.5 The victims and their families arise from the most poorest of the poor who can not raise any money for legal costs. The recommendation will be made under paragraph 53 *infra*.

53 RECOMMENDATIONS

The Ngobení Commission is assigned to report and make recommendations on how similar fire hazards could be avoided and or minimised in future. Regard has also been taken in terms of the Commissions Act, 1947 (Act No 8 of 1947) and the Regulations

thereof to the effect that whenever the Commission is satisfied upon evidence or information presented to it, that the Commission's inquiry may adversely affect any existing, instituted or pending legal proceedings or any investigation instituted in terms of any law, evidence which is relevant to such legal proceedings or investigation shall be dealt with by the Commission in such a manner as not to affect adversely such legal proceeding or investigation.

- 53.1 Whenever there are experimental burning of plots by the section, Scientific Services they must be obliged to notify the Section Ranger in writing and by not later than 14 days.
- 53.2 The notifications must be distributed via the morning radio session on daily basis until the day when the burning of the experimental burning plots will take place.
- 53.3 The Scientific Services section must take all reasonable steps to alert the owners of the adjoining land about the burnings to be conducted.
- 53.4 Such a notification should be very specific as to the location, time, date and number of the experimental plots to be burned.
- 53.5 The section: Scientific Services should be obliged as a mode of procedure and systems to advise the Section Ranger when the experimental burn has been completed, so that in the event of burning embers starting a fire after Scientific Services have left or in the event of another unrelated fire starting, the rangers will not be lulled into the belief that the fire is under the control of Scientific Services.
- 53.6 It should be implanted within the Kruger National Park structures that all personnel have a legal duty to report uncontrolled fire until it is apparent that the Section Ranger and his staff are aware of the uncontrolled fire.
- 53.7 The Kruger National Park must consider employing a Fire Manager or beef up the responsibility of Senior Rangers who are expected at all relevant times to study weather

conditions or weather patterns in general. The Fire Manager must be well equipped in the monitoring of the fire danger index on a daily basis.

- 53.8 If the fire hazard index exceeds a pre-determined point of danger, this information should be discussed in the morning radio sessions and all departments and Section Rangers must be advised in writing via email or fax.
- 53.9 Where the fire hazard index has exceeded pre-determined point of danger no scientific or other voluntary burning should ordinarily be permitted, unless there is a pressing scientific need to burn under those particular conditions and only if it can be done without an unacceptable risk of the fire becoming uncontrolled. This risk must be commensurate to the fire fighting equipments, protective clothing and properly trained personnel to extinguish veld fire.
- 53.10 The Field Rangers assigned with the duty to fight veld fires must receive formal training in the field of fire management in order to take all steps needed to co-ordinate the fire fighting operations in accordance with the fire management strategy. Survival skills training must be offered to the ranger personnel and also to the other personnel who may be at risk of being caught in a veld fire. It is imperative that practical training be conducted to implement the skills and knowledge acquired. The present position of the Kruger National Park is that Rangers only undergo military style of training with the emphasis on physical fitness, weapon handling skills, decision making in the field and interpretation of natural phenomena namely plants and animals.
- 53.11 Refresher courses to be conducted at the Kruger National Park to measure the efficiency of the skills to combat or manage the fire.

- 53.12 There must be focussed training in different levels in the field of fire management.
- 53.13 There must be adequate fire fighting equipments in compliance with the standard accepted for veld fire-fighting.
- 53.14 There must be adequate fire-fighting clothing in compliance with the standard accepted for protection during the fire fighting.
- 53.15 There must be one single line of command. The plan of action must be unleashed from one central point by the Fire Manager or Section Ranger who is in constant contact with the rangers fighting the fire and being in a position to give advice. There must be supervision that those instructions given are strictly followed in terms of the determined plan of action. All priorities must be in line with the fire management strategy.
- 53.16 There must be comprehensive metrological information provided.
- 53.17 There must be a clear consolidated fire security policy, addressing emergency procedures and the safety of human life at the Park, so that where there is potential danger, arrangements be made to evacuate the persons in danger.
- 53.18 It will be difficult for the Park to totally stop the thatch harvest as the thatch is considered to be the primary roof covering of tourism facilities in the Kruger National Park. The following options are recommended to sustain the harvesting of thatch.
 - 53.18.1 That a tented camp be erected next to Pretoriuskop staff quarters in a safe fenced area, with a fire cement prefab house erected in the centre of the camp to serve as a sickbay, storeroom and also for general protection.

OR

53.18.2 The possible upgrading of the present staff quarters by providing more accommodation for the grass cutters to be housed at the rest camp with other members of the staff employed by the Park.

OR

53.18.3 The grass cutting operation is outsourced to private companies which comply with the B.E.E. policy. The employees be transported on a daily basis to their various places of destination which is usually within the vicinity of the Kruger National Park. This option of the grass cutters being transported home every day can also be utilized by the Kruger National Park.

- 53.19 The grass cutters be accompanied by two overseers from, Technical Services and two field rangers issued with handset radios or cell phones and at least one fire-arm. A vehicle be allocated for use by the grass cutters.
- 53.20 The requirements set out in the Occupational Health and Safety Act and the relevant Acts and policies applicable be strictly complied with.
- 53.21 The Kruger National Park should strengthen its ties with the emergency services available on the perimeter of the Park and ensure strong channels of communication between the Park and these services so that they can be effectively mobilised in the event of a disaster.
- 53.22 The line of command be strictly adhered to in order to co-ordinate the activities during a disaster.
- 53.23 A strong bond of relationship to be established with local or external medical services for rescue services to be able to air lift people as fast as they can to the nearest hospitals.
- 53.24 The Kruger National Park has an equipped ambulance but it lacks the human capacity in terms of paramedics or medical qualified personnel to attend to injured victims or

patients being conveyed to external services. The creation and the filling of such posts is a necessity.

- 53.25 The failure to keep full and correct data of all moneys received and expenditure by the disaster fund committee obligates that the disaster fund should be audited by an external auditor. It should be finally reconciled on the basis that only funds paid out strictly for the benefit of the fire disaster victims should be deducted. The remaining funds available should be distributed in accordance with the decision(s) taken by the full bench of the fire disaster committee in order to close the fire disaster fund.
- 53.26 The Kruger National Park through its Section: Occupational Health and Safety Corporate has to follow up the claims submitted to the Commissioner of Workmen's Compensation and filter the information to the interested parties and where help is further needed, it be provided as a legal obligation by the Kruger National Park.
- 53.27 That an amount of R214, 500. 00 be paid out to the firm Du Toit, Smuts & Mathews Phosa Inc for the legal costs incurred on behalf of the Makoko, Hoxane, Mnisi and Jongilanga communities.