

# Greater Stutterheim Fire Protection Association Veldfire Management Strategy



## Contents

<b>1. Introduction</b> .....	3
<b>2. Legal Framework</b> .....	3
<b>3. GSFPA Management Cells and Fire Management Units (FMU's)</b> .....	4
<b>4. Role-players</b> .....	7
<b>5. National Veldfire Risk Assessment</b> .....	8
<b>6. Weather and Climate</b> .....	9
<b>7. Risks</b> .....	10
7.1 Human Element.....	11
7.2 Lightning.....	12
7.3 Power Lines .....	12
<b>8. Challenges</b> .....	12
8.1 Climate Change .....	13
8.2 Land Use.....	13
8.3 Policy Implementation .....	14
8.4 Social Behaviour .....	14
8.5 Government Involvement .....	14
<b>9. Benefits of Good Fire Management</b> .....	14
<b>10. GSFPA Veldfire Management Strategy</b> .....	15
<b>11. References:</b> .....	20

## 1. Introduction

The Greater Stutterheim Fire Protection Association (GSFPA) was started in 2009 in accordance with the National Veld and Forest Fire Act, 1998. The formation, duties, and functions of all FPA's are prescribed in Chapter 2 of The National Veld and Forest Fire Act (NVFFA), 1998. Chapter 2(5) outlines the duties of fire protection associations.

The GSFPA functions within the Eastern Cape Province. The GSFPA is managed by dividing the area into management units which are referred to as Fire Management Units (FMU) and management cells. These cells overlap municipal boundaries which include the Buffalo City District Municipality, Amahlathi Local Municipality, Greater Kei, and Raymond Mhlaba Local Municipalities.

GSFPA aims to assist its members with mitigating fire risk to; and around their properties by promoting a cohesive approach to fire management in each FMU. The GSFPA, therefore, aims to always manage all high risks as soon as possible and intends on continuing to educate its members about better fire management.

As our climate changes, so must our management of veld and forest fires. The National Veld and Forest Fire Act makes provision for the Veldfire Management Strategy in Section 5(1)(a). GSFPA will embrace this and use this document to strengthen legal compliance amongst landowners within its area.

## 2. Legal Framework

It is important to consider the impact the legal framework has on the ability of an FPA to motivate successful integrated fire management in an area. FPA's are formed as a result of the NVFFA, 1998.

### **Chapter 2, Section 3 Formation of Fire Protection Associations**

*"(1) Owners may form an association to predict, prevent, manage, and extinguish veldfires and apply for its registration as a fire protection association in terms of this Chapter.*

*(2) A fire protection association may be formed by owners who wish to co-operate for the purpose referred to in subsection (1) in respect of an area that has-*

*(a) regular veldfires; or*

*(b) a relatively uniform risk of veldfire; or*

*(c) relatively uniform climatic conditions, or*

*(d) relatively uniform types of forest or vegetation.”*

As mentioned in the *Introduction* above, GSFPA functions across different local and district municipalities. It is important to nurture an integrated approach to fire management across all institutions. It is, however, not to say that this comes without challenges, and although it is mandated that Municipalities must be members of the FPA in their area where there is a designated fire service, it is a continuous challenge to obtain membership from Municipalities.

In addition to the NFVVA, the following pieces of legislation have been identified to have a direct impact on IFM in South Africa:

- a. The Constitution of the Republic of South Africa, 1996.
- b. Local Government: Municipal Systems Act (Act 32 of 2000).
- c. Local Government: Municipal Structures Act (Act 117 of 1998).
- d. Disaster Management Act (Act 57 of 2002).
- e. Fire Brigade Services Act (Act 99 of 1987).
- f. Conservation of Agricultural Resources Act (Act 43 of 1983).
- g. Environment Conservation Act (“ECA”) (Act 73 of 1989).
- h. National Environmental Management Act (“NEMA”) (Act 107 of 1998).
- i. National Environmental Management: Air Quality Management Act (Act 39 of 2004).
- j. National Environmental Management: Biodiversity Act (Act 10 of 2004).
- k. National Environmental Management: Protected Areas Act (Act 57 of 2003).
- l. National Environmental Management: Protected Areas Amendment Act (Act 15 of 2009).
- m. Pollution Prevention Act (Act 45 of 1965).
- n. National Forests Act (Act 84 of 1998).
- o. National Heritage Resources Act (Act 25 of 1999).
- p. National Water Act (Act 36 of 1998).

### 3. GSFPA Management Cells and Fire Management Units (FMU’s)

To aid more effective management, the GSFPA area has been divided into management cells. GSFPA has employed Managers and these management areas are split between them to oversee. The area of GSFPA is well defined, though some of these cells have low membership as membership in these areas can be complex when considering land ownership.

Additionally, membership is often linked to the fire risk in an area. With the Eastern Cape having a mixture of vegetation types, our highest membership is natural grasslands and developed commercial plantations. There is a higher membership where there is an increased fire risk.

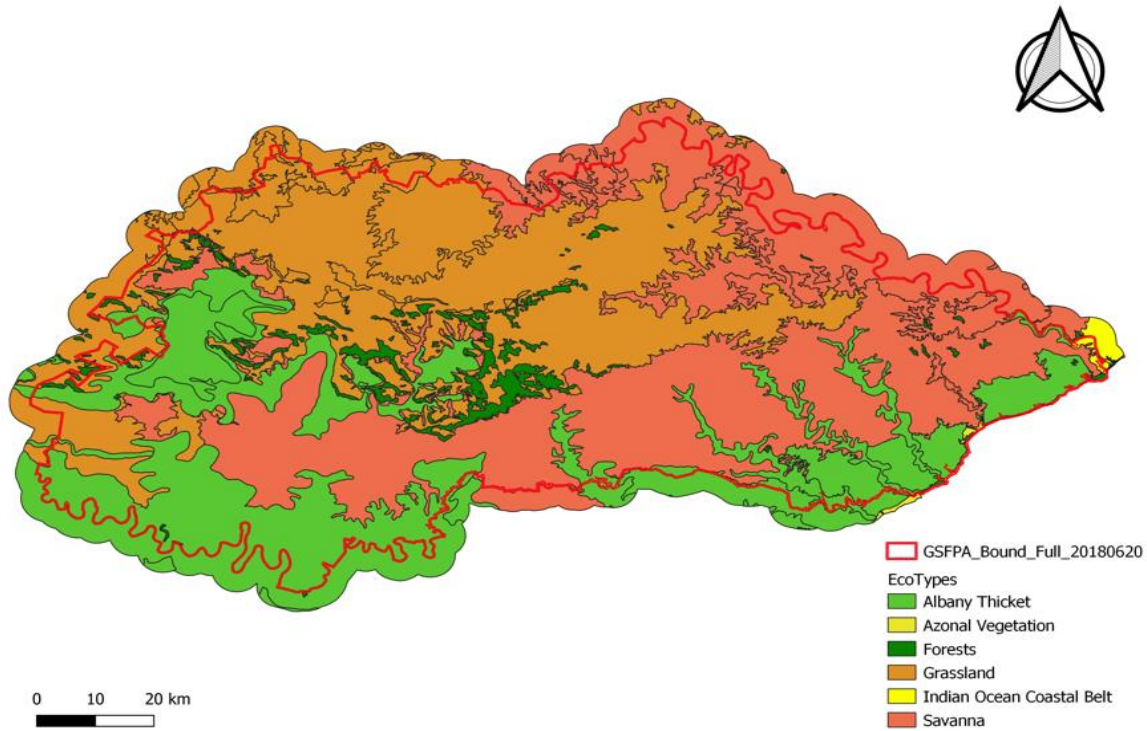


Figure 1: Biomes in GSFPA Area

Many of the high-risk cells that fall over agricultural areas are well organized and have coordinated their fire resources and prevention by taking a unified approach and responding to fires on a cell basis and not per landowner.

The map (Figure 2) below is a visual representation of the various cells within the GSFPA area.

## GSFPA MANAGEMENT AREA

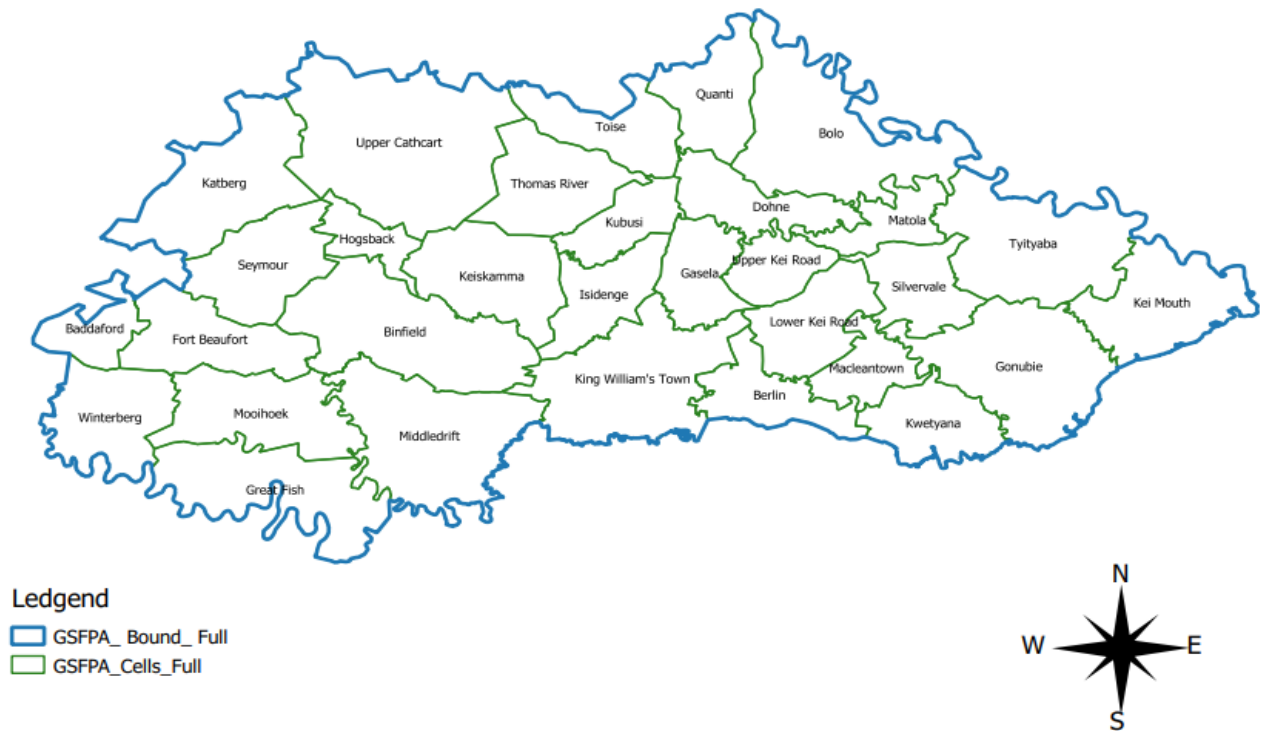


Figure 2: GSFPA Area divided into Management Cells

Land management can be differentiated into 4 main categories (irrespective of land use):

- Privately owned land
- Commercially owned land
- Government/ state-owned land
- Tribal Authorities and management councils

For the purpose of this document, we refer back to the NVFFA, Chapter 1 which defines what may be considered a landowner.

*(xiii) "owner" has its common law meaning and includes-*

*(a) a lessee or other person who controls the land in question in terms of a contract, testamentary document, law, or order of a High Court;*

*(b) in relation to land controlled by a community, the executive body of the community in terms of its constitution or any law or custom;*

*(c) in relation to State land not controlled by a person contemplated in paragraph (a) or a community-*

*(i) the Minister of the Government department or the member of the executive council of the provincial administration exercising control over that State land; or*

*(ii) a person authorized by him or her; and*

*(d) in relation to a local authority, the chief executive officer of the local authority or a person authorized by him or her;”.*

## 4. Role-players

There are many role-players when considering IFM in an area. Ideally, all role-players must work together towards a common goal.

### **a. Private Landowners:**

Private landowners and the farming community form the most significant single grouping or group of landowners in the rural Eastern Cape. These landowners are organized via structured agricultural organizations. Furthermore, there are other registered Fire Protection Associations (FPAs) in all the high fire risk areas bordering GSFPA.

### **b. Large Landowners (Nature Reserves, Forestry Areas, and Conservation Areas)**

This is a grouping of large properties managed for conservation and forestry purposes. Land ownership is both private land and extended state land. Due to the large surface area of these reserves, they have a definite impact on the spatial, environmental, and Integrated Fire Management principles and practices.

### **c. State Land**

State land is spread over the entire Eastern Cape, including areas within and bordering GSFPA. This makes the involvement of these areas significant for Integrated Fire Management. These properties are utilised for a large variety of purposes. Land reform is quickly becoming a significant factor and must be taken into account when considering these areas.

### **d. Communities and Communal Grazing Areas**

Roughly one-third of the Eastern Cape is under the control of tribal authorities and councils. Some areas were part of the former Ciskei area which falls under the traditional leaders and local chiefs.

Some of these areas fall within the GSFPA area. These are complex structures and defining land ownership as per the definition of the NVFFA is challenging.

#### **e. Municipal Fire Services**

The function of Veld and Forest Fires is currently with the District Municipalities apart from Amahlathi and Raymond Mhlaba where the function has been delegated to these Local Municipalities. This is according to the division of functions and powers between the district and local municipalities as per section 84(1)(j) of the Municipal Structures Act.

#### **f. Working on Fire Programme**

The Working on Fire Programme (WoF) is a valuable asset to FPAs and landowners in the Eastern Cape. This programme is funded by the Department of Forestry, Fisheries, and the Environment. GSFPA currently has a Memorandum of Agreement with WoF whereby their firefighting teams can assist landowners when requested by GSFPA, within the GSFPA boundaries.

## **5. National Veldfire Risk Assessment**

Veldfires are an important natural hazard in South Africa. To plan for fire incidences, one must understand the provinces' fire risk, frequency, and distribution.

In compiling this section, information was used from CSIR Report No: CSIR/NRE/ECO/ER/2010/0023/C, namely **National Veldfire Risk Assessment: Analysis of Exposure of Social, Economic and Environmental Assets to Veldfire Hazards in South Africa** by Authors: *GG Forsyth, FJ Kruger, and DC Le Maitre, March 2010.*

#### **a. Fire Regime and Fire-Ecology Types:**

The "fire regime" is the history of fire in a particular vegetation type or area, including the frequency, intensity, and season of burning. It is the combination of elements that typifies fires in a given region under the assumed natural conditions.

A fire-ecology type is a class of vegetation types that are relatively uniform in terms of the fire regimes (e.g., frequency, season, intensity, and size) within the constituent vegetation types. Figure 3 indicates the fire-ecology types in the Eastern Cape.



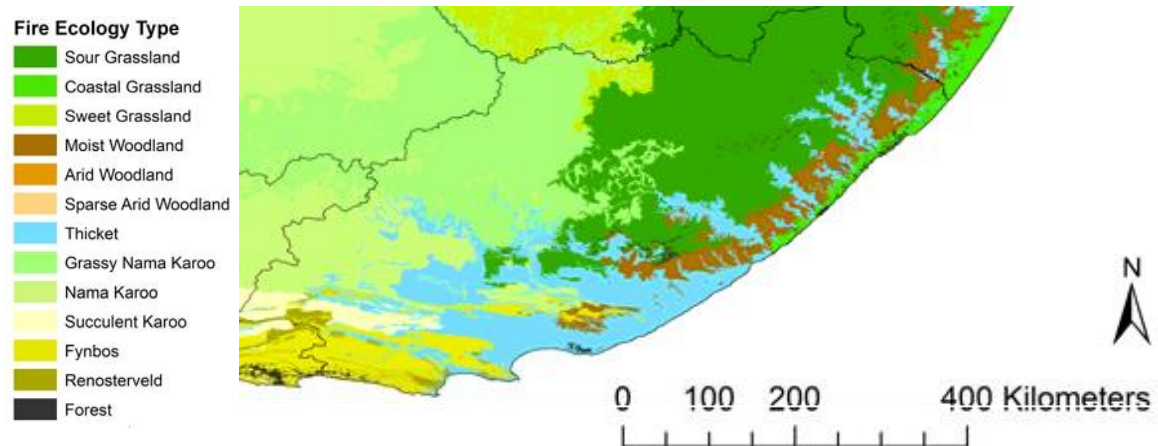


Figure 3: The distribution of the 13 fire-ecology types based on the descriptions and distribution of the vegetation.

### b. Fire Regions in the Eastern Cape:

The Eastern Cape is divided into two distinct fire regions which have been listed below:

- **Grassveld Area / Summer rainfall region**
- **Fynbos Area / Winter or all-year rainfall region:**

The generalized Grassveld area is the largest portion of the Eastern Cape. The GSFPA management area encompasses a portion of this Grassveld area. The eastern and northern regions predominantly have a summer rainfall season with mainly Grasslands and Savanna and experience a winter fire season.

## 6. Weather and Climate

Most of the Eastern Cape has a bi-modal type of rainfall this means that it receives both winter and summer rainfall. The coastal area of the Eastern Cape Province is found directly between the subtropical conditions of KwaZulu Natal and the Mediterranean conditions of the Western Cape, while its interior areas are separated by the great escarpment resulting in the southern reaches being defined by a series of rivers and corresponding wetland fauna and flora, while the northern areas are those of the altitudinous plains of the Plateau and the Great Karoo. These topographical differences are what cause the climatic differences and conditions experienced by the towns and cities within these areas.

Veldfires occur mostly during winter, from about early May to late September, especially after the first frosts and before the first spring rains. During this period the winter climate and daily weather are dominated by two patterns:

- High-pressure cells that cause deep atmospheric inversions, and which persist for periods of days, resulting in relatively still air and moderate fire danger.
- Intermittent periods of one or two days or less when the passage of cold fronts to the south and east cause strong westerly winds and very low atmospheric humidity, causing high and extreme fire danger conditions.
- These are accompanied by a hot dry wind blowing down the Great Escarpment from the high central plateau to the coast. These winds travel predominantly in a North Westerly direction and mainly occur from May to September.

Veldfires are small and slow-moving during inversions, but grow and spread rapidly, burning with great heat release, during cold front episodes. These cold fronts generally move from northwest to southeast. The effect that cold fronts have on the weather during summer is much less intense than during autumn, winter, and spring. Cold fronts can produce dramatic changes in the weather when a cold front passes, winds become gusty and there is a sudden drop in temperature.

## 7. Risks

The probability of a fire starting in an area is determined by the presence of causative agencies.

The vegetation type has a direct implication on the flammability and flash point. According to the National Veldfire Risk Assessment undertaken in 2010, the Eastern Cape has an extreme veldfire risk in the GSFPA area. Overall extreme veldfire risk corresponds with the Sour Grassland and Moist Woodland fire- ecology types (see Figure 2 below). In the Fynbos fire-ecology type, such conditions mainly occur where there are commercial forestry plantations. On the contrary, in Coastal Grasslands and Arid Woodland pockets, an extreme veldfire risk occurs where there are dispersed rural settlements. In 48.2% of the province, there is an extreme veldfire risk, while it is high in 5.3%, medium in 18.8%, and low in 27.8%. In areas of extreme and high veldfire risk, it is necessary to take precautions to safeguard lives, livelihoods, property, and the environment.

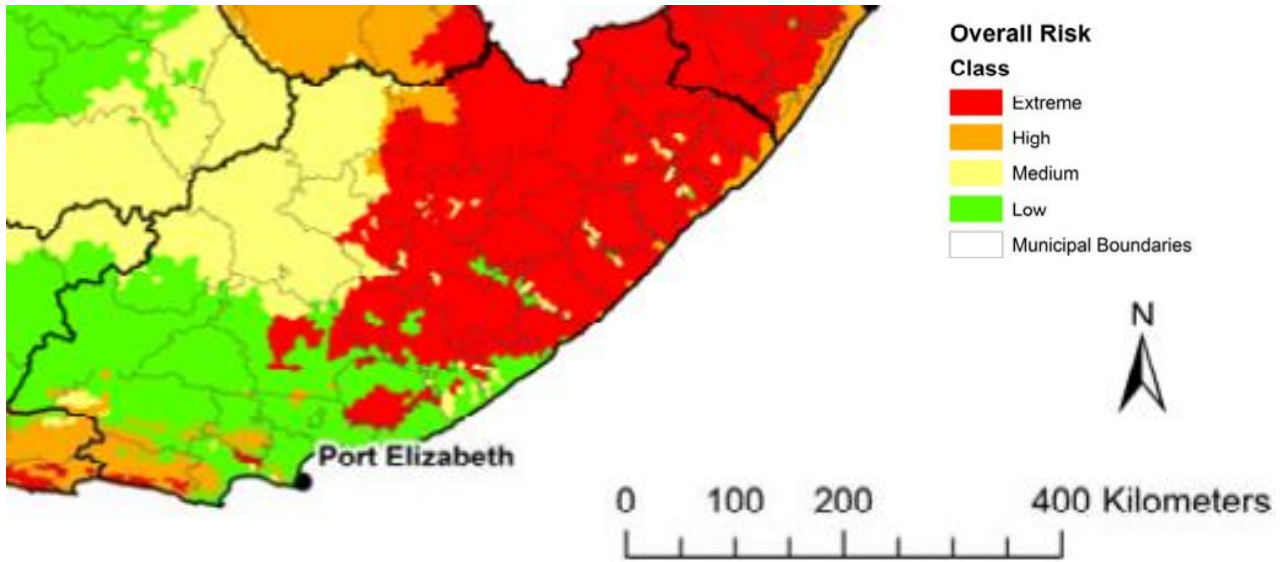


Figure 4: Overall assessment of veldfire risk levels in the Eastern Cape

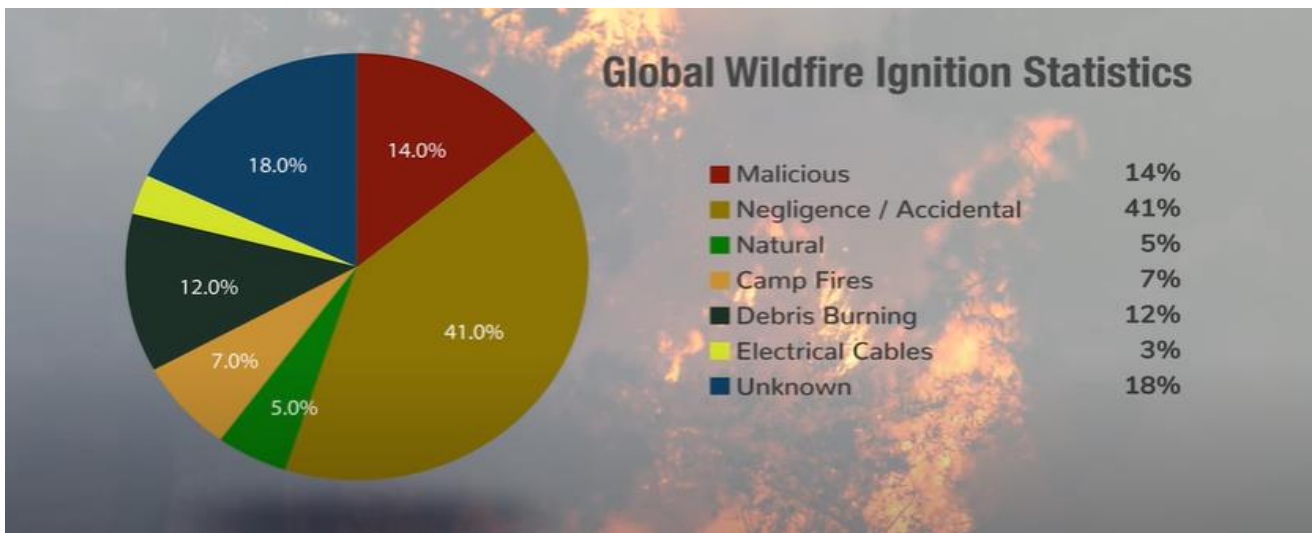


Figure 5: Global Statistics on Wildfire Ignitions

Human activity remains the largest threat to fire ignitions. This can be split into various subcategories. GSFPFA experiences a large number of fires as a result of human negligence, ignorance, and lack of information and awareness.

## 7.1 Human Element

**Negligence:** Human migration to less inhabited areas combined with negligence and ignorance may lead to veldfires. This includes starting fires in the wrong conditions or mismanaged mechanical operations. Warming fires that have not been properly extinguished are often a source of wildfire ignitions.

**Escaped Burns:** This is categorized as a fire that escaped the intended/ prescribed area. Sometimes, when burning fire breaks, compartments, or grazing camps,

**Traditional Beliefs:** There are various cultures and religions around Eastern Cape. Fire has always been an integral part of human development and in many instances, part of cultural beliefs. The Eastern Cape is dominantly a *Xhosa* region. Fire is often used for traditional cooking and ceremonies. Rural populations in South Africa have an effect on fire activity. Additionally, fire can affect these communities adversely.

**Hunting:** During the drier season, fire is used as a tool to flush animals into open areas where they can be more easily identified. These fires are often unmanaged and do not have any cut-offs which lead to wildfires.

## 7.2 Lightning

Many areas with the GSFPA experience dry lightning. This is the lightning that strikes without any accompanying rain. It is known to strike dominantly in areas of higher altitudes. The combination of dry fuels together with lightning may lead to easy fire ignition.

## 7.3 Power Lines

Power lines can ignite wildfires through a variety of mechanisms. Trees and other vegetation intruding onto power lines can cause fires in multiple ways. A tree falling across a line can tear the line down and result in a downed line.

Multiple fires in the GSFPA area have started as a result of downed lines, often caused by the combination of strong winds and little maintenance on the line. This causes an additional risk as during the time that repairs are taking place, the power is often cut in the affected area. If the repair work is a lengthy process, it could affect the cell phone reception in the area.

## 8. Challenges

Every Fire Protection Association is faced with unique challenges in its management area. These challenges either affect the operational functionality of the FPA or affects the environmental considerations in the area.

## 8.1 Climate Change

Universally, climate change is a challenge across all boundaries, vegetation types, and jurisdictions. Global warming and climate change are known to be the main drivers behind the increase in average temperatures and inconsistent weather patterns. This can sometimes result in extreme weather behaviour such as an increase in hot dry winds, longer periods of extreme hotness, persisting drought conditions, and unpredictable lightning events.

Climate change affects the fire regime in the following ways:

- Fire Frequency - Fires are becoming more frequent due to longer and drier fire seasons. Additionally, in the future, climate change is expected to increase veldfire risk through more adverse fire weather including a predicted increase in the number of days of severe fire danger increasing the likelihood of veldfire ignitions.
- Heat- Increased weather temperatures create favourable conditions for easy ignitions.
- Fuel – Higher temperatures result in dry fuel loads which are easy to ignite.
- Fire Intensity – It has been noted that the constant heating of fuels due to higher temperatures and lower levels of precipitation when fires do burn, they will burn with greater intensity and spread rapidly.
- The combination of warm dry air and strong winds together with less moisture results in the rapid spread of fires which become difficult to contain.
- Fire Severity – The combination of increased fire frequency and intensity results in more severe fires.
- Vegetation- The microclimate will favour different species before changing the vegetation in an area over time.

## 8.2 Land Use

As a result of the overlapping land-use types, so increases the risk of fires starting or spreading across different fuel loads. Many of the high-risk areas within GSFPA are a combination of land uses overlapping which then leads from one cell to the other. There is a large portion of agricultural areas, forestry areas, residential areas, and rural communities.

Planning for the mitigation of these fires requires the buy-in and coordination across cells and a greater understanding of holistic fire management. This is the goal of all FPA's however, there are often challenges in understanding the importance of land-use priorities across cells.

### 8.3 Policy Implementation

South Africa is very proactive in their legislation regarding veld fires. The National Veld and Forest Fire Act, 1998 applies to all landowners at risk of having wildfires on their properties. As part of this Act, it encourages the formation of FPA's in these fire risk areas as means of coordination and awareness. Across the Eastern Cape, there are many registered FPA's however the effectiveness of these is often lacking. This becomes challenging when fires spread across FPA's, and the areas of jurisdiction are blurred.

### 8.4 Social Behaviour

A major challenge is altering the thought process behind fire mitigation and management. The Working on Fire (WoF) teams currently assist FPA's in community outreach programmes, where possible. There needs to be a paradigm shift when realizing the serious implications of the threat of unmanaged fires. Education and awareness are ongoing with a transdisciplinary approach and involvement. Integrated Fire management should be implemented to incorporate different types of fire management activities in a strategic framework to reduce the impact of unwanted fires.

### 8.5 Government Involvement

Most FPA's have involvement with government organizations at either district or local municipal level. When applying integrated fire management over a larger area, this needs the support of the municipalities in the area. A great challenge in the GSFPA area is that many of these Municipalities struggle to pay their membership fees to the FPA. Additionally, these municipalities are ill-equipped, understaffed, and do not have the budget to deal with the fire risk in their areas.

## 9. Benefits of Good Fire Management

The sporadic occurrence of fire helps maintain and improve the habitat of animals and plants by reducing competition. This is attained by the removal of heavy brush fuel, leaving room for new grasses, herbs, and regenerated shrubs which in turn will provide nutrient-rich food and habitat for fire wildlife species.

Additionally, with fewer plants absorbing water, there is more water available in streams and rivers benefiting other animals and plants reducing stress levels/mortality.

Humans make use of fires by implementing prescribed burns that reduce the annual fuel accumulation in veld reducing fire intensity and creating an ecosystem that is less susceptible to devastating veldfires. An additional benefit of making use of fire is that it can improve grazing for livestock and limit the growth of woody invasive plants.

Wildfires can often be beneficial in protecting biodiversity and maintaining ecosystem services. Landowners will often allow wildfires to continue out of season, as long as it is confined to the desired areas, for their ecosystem benefits as well as acting as a fire break. Prescribed burns for the same purpose.

## 10. GSFPA Veldfire Management Strategy

As listed in the National Veld and Forest Fire Act, Act 101 of 1998, as amended:

Section "5. (1) A fire protection association must at least-

- (a) develop and apply a veldfire management strategy for its area;
- (b) provide in the strategy for agreed mechanisms for the coordination of actions with adjoining fire protection associations in the event of a fire crossing boundaries;"

### Veldfire Management Strategy

Please note, that the sub-bullets are purely for informational purposes to elaborate on the main strategy.

- **Compartmentalized management of the GSFPA area through cells and fire management units (FMU's).**
  - All areas will be managed in cells that can be joined to form larger FMU's.
  - Encourage cells to appoint a cell leader with whom the GSFPA team can liaise.
  - Encourage cooperation between members in cells.
- **GSFPA will utilise strategic fire breaks as the primary protection measure against fires.**
  - Develop fire management plans in high-risk areas with a high membership as a priority which includes the use of strategic fire breaks.
  - Strategic fire breaks will be used as a point of attack and to pinch fires that have jumped across multiple fire breaks.
  - Localized fire break plans may be used in areas with limited membership.

- Make available to all landowners in the GSFPA area, guidelines for the implementation of strategic breaks.
  - Arrange pre-fire season meetings to review the strategic fire breaks in each area and add addendums to the fire management plans.
- **The GSFPA Rules, Policies, and Recommendations will be binding on all landowners in the GSFPA management area.**
    - Make available the *GSFPA Rules, Policies, and Recommendations* to all landowners in the GSFPA area. Furthermore, these documents will be available on the GSFPA website.
    - Enforce the *GSFPA Rules, Policies, and Recommendations* in the GSFPA management area while remaining cognisant of any applicable by-laws in the area.
- **The conditions of Sections 12(4) of the NVFFA will apply to all burning operations within the GSFPA management area.**
    - This implies that all vegetation-related burns, e.g., camp burns, conservation burns, and high-intensity burns will be managed under Section 12(4).
    - The *GSFPA Rules, Policies, and Recommendations* will apply for burning operations undertaken within the GSFPA management area.
- **The GSFPA will implement a Fire Prohibition Period as and when required.**
    - Provide and communicate dates for the fire prohibition period to all landowners ahead of the Fire Prohibition Period.
    - GSFPA will make use of, and encourage, Smoke Reporting during the fire season and fire prohibition period as a way of gaining information about uncontrolled fires in its management area.
    - GSFPA may grant special permission for burning to be undertaken during the fire prohibition period as per the *GSFPA Rules, Policies, and Recommendations*.
- **Ensure that reasonable efforts are made to put agreements in place with neighbouring FPA's in the event of a fire crossing boundaries.**
    - Include the agreed mechanisms for coordination in the agreement between GSFPA and neighbouring FPA's.
    - Include a basic plan of communication in the event of a fire crossing FPA boundaries.



- **GSFPA will make use of the principles of Incident Command Systems (ICS) for wildfire response.**
  - Core principles of ICS will be followed in wildfire incidents.
  - Endeavour to keep records for all large wildfire events.
  - Strive to ensure that debriefs are undertaken with all stakeholders after large wildfire events.
  
- **GSFPA will enforce and maintain a Burning Permit System**
  - GSFPA will issue permits according to the *GSFPA Rules, Policies, and Recommendations*.
  - GSFPA will acknowledge that its jurisdiction is within various district, local and metropolitan municipalities, each having its own policies and by-laws.
  - In each of these areas, GSFPA will work closely with; and notify the relevant officials.
  - The GSFPA permitting system will be cognisant of existing municipal permitting systems (e.g. Buffalo City Metro) that are in place within the boundaries of GSFPA.
  - Investigate and review available technologies for the implementation of a permitting system for GSFPA.
  
- **Promote awareness and enforcement of the National Veld and Forest Fire Act, 1998**
  - GSFPA will explore and where possible, implement mutually beneficial partnerships focused on community areas.
  - Engage landowners and advise them on their compliance with the NVFFA, 1998.
  - Compile and distribute regular newsletters to all members and stakeholders.
  - Review and update the GSFPA website.
  - Review and update the GSFPA Facebook page.
  - Attend community meetings where relevant.
  
- **Develop and implement tools for effective veldfire management and compliance within the GSFPA Area.**
  - Ensure access to *GSFPA Policies, Rules, and Recommendations* for landowners within the registered area of GSFPA.

- Work towards compliance with the *GSFPA Policies, Rules, and Recommendations* for landowners within the registered area of GSFPA.
  - Implement the GSFPA compliance questionnaire with members.
  - Distribute the GSFPA compliance questionnaire ahead of each fire season.
- **Ensure the ongoing compliance of GSFPA with the NVFFA**
    - GSFPA will measure itself against the Act and the regulations thereto, the GSFPA constitution, and the KPA's as per the Strategic Plan.
    - GSFPA will endeavour to distribute the weather forecast and predicted FDR to members and non-members during fire season.
    - GSFPA will send out FDI warnings to members on days with a very high forecasted FDI.
    - Ensure that GSFPA will have a legally appointed FPO.
- **Maintain a high level of communication on and across various platforms.**
    - Utilise a wide variety of communication methods (e.g., verbal, written).
    - Utilise a wide variety of communication channels (e.g., social media, newsletter, radio, cell phone)
    - Make alternative communication technologies available to members of GSFPA (pool radios will be available and distributed as required).
- **Promote Environmental compliance and Awareness within GSFPA**
    - Ensure that our GSFPA Rules, Policies, and Recommendations are not intentionally in contravention of the prescriptions of applicable environmental legislation.
    - Advise landowners of any well-known environmental considerations that could affect their burning regime.
    - Encourage members to consider environmental impacts when undertaking burning and clearing.
    - Advocate for environmentally sound burning practices and regimes across vegetation types.

**Additional Objectives of GSFPA:**

1. To be proactive in fire management in the GSFPA area.

2. To provide best practice solutions for prescribed burning and fuel load management.
3. Implement a synergistic approach to fire management in the GSFPA area.

## 11. References:

**National Veldfire Risk Assessment: Analysis of Exposure of Social, Economic, and Environmental Assets to Veldfire Hazards in South Africa** by Authors: *GG Forsyth, FJ Kruger, and DC Le Maitre*, March 2010.

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