FPASA

FIRE PROTECTION ASSOCIATION
OF SOUTHERN AFRICA

SANS 10090;

COMMUNITY PROTECTION AGAINST FIRE

CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996

CHAPTER 7;

156. Powers and functions of municipalities

1. A municipality has executive authority in respect of, and has the right to administer

   a. the local government matters listed in Part B of Schedule 4 and Part B of Schedule 5; and

   b. any other matter assigned to it by national or provincial legislation.

2. A municipality may make and administer by-laws for the effective administration of the matters which it has the right to administer.

Constitution of the Republic of South Africa, 1996 - Schedule 4: Functional areas of concurrent national and provincial legislative competence

Part B

The following local government matters to the extent set out in section 155(6)(a) and (7):

- Air pollution
- Building regulations
- Child care facilities
- Electricity and gas reticulation
- Firefighting services
- Local tourism
- Municipal airports
- Municipal planning
- Municipal health services
- Municipal public transport
- Municipal public works only in respect of the needs of municipalities in the discharge of their responsibilities to administer functions specifically assigned to them under this Constitution or any other law
- Pontoons, ferries, jetties, piers and harbours, excluding the regulation of international and national shipping and matters related thereto
- Stormwater management systems in built-up areas
- Trading regulations
- Water and sanitation services limited to potable water supply systems and domestic waste-water and sewage disposal systems

LEGISLATIVE FRAMEWORK

1. A legislative framework is a set of laws, regulations, and principles that guide how governments, organizations operate.
2. A legislative act is a decision made by a law-making body, such as Parliament, to create a law. Legislative acts are also known as legislation, statutes, or acts.
3. A "national standard" refers to a level of quality or achievement considered acceptable across a whole country, established by a national organization and published for public use, essentially acting as a benchmark for consistency in a specific field, like education, healthcare, or product manufacturing, within that nation; it sets a minimum expectation for quality or performance across different regions or providers within the country.
4. A by-law is a set of rules that a community or organization creates to regulate itself. By-laws are made by local governments and are similar to legislation made by the national and provincial governments.

REFERENCED STANDARDS TO SANS 10090;

- NFPA 291, Recommended practice for fire flow testing and marking of hydrants.
- NFPA 1201, Standard for providing fire and emergency services to the public.
- NFPA 1500, Standard on fire department occupational safety, health, and wellness program.
- NFPA 1561, Standard on emergency services incident management system and command safety.
- NFPA 1710, Standard for the organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments.
- NFPA 1901, Standard for automotive fire apparatus.
- SANS 10400-A, The application of the National Building Regulations – Part A: General principles and requirements.
- SANS 10400-T, The application of the National Building Regulations – Part T: Fire protection

FIRE RISK CATEGORIES;

A fire area should be divided into sub-areas which fall into one of the following.

CATEGORY A;	Central business districts and extensive commercial and industrial areas normally found in cities and large towns (areas where the risk to life and property due to fire occurrence and spread is likely to be high).
CATEGORY B;	Limited central business districts, smaller commercial or industrial areas normally associated with small towns and decentralized areas of cities and large towns (areas where the risk to life and property due to fire occurrence and spread is likely to be moderate).
CATEGORY C;	Residential areas of conventional construction.
CATEGORY D;	Rural areas of limited buildings and remote from urban areas.
CATEGORY E;	Special risk areas. Individual areas requiring a pre-determined attendance over and above the predominant risk category in an area. Includes large shopping/entertainment centers, informal settlements, harbours, hospitals, prisons, large airport buildings and petrochemical plants.

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NFPA 1710;2020

RISK CATEGORY (SANS 10090;2018) = HAZARD CLASSIFICATION(NFPA 1710;2020)

- LIGHT HAZARD
- MEDIUM HAZARD
- HIGH HAZARD

FIRE BRIGADE CLASSIFICATIONS;

CATEGORY 5(A) :

A brigade with adequate arrangements and provisions in place in relation to risk as given in annex A and annex C for:

1) risk profile of area of jurisdiction;

2) weight and speed of response;

3) call receipt and processing requirements;

4) vehicle/equipment availability and maintenance;

5) incident management procedures;

6) pre-fire planning and risk visits;

7) training/personnel;

8) water supplies; and

9) fire safety functions

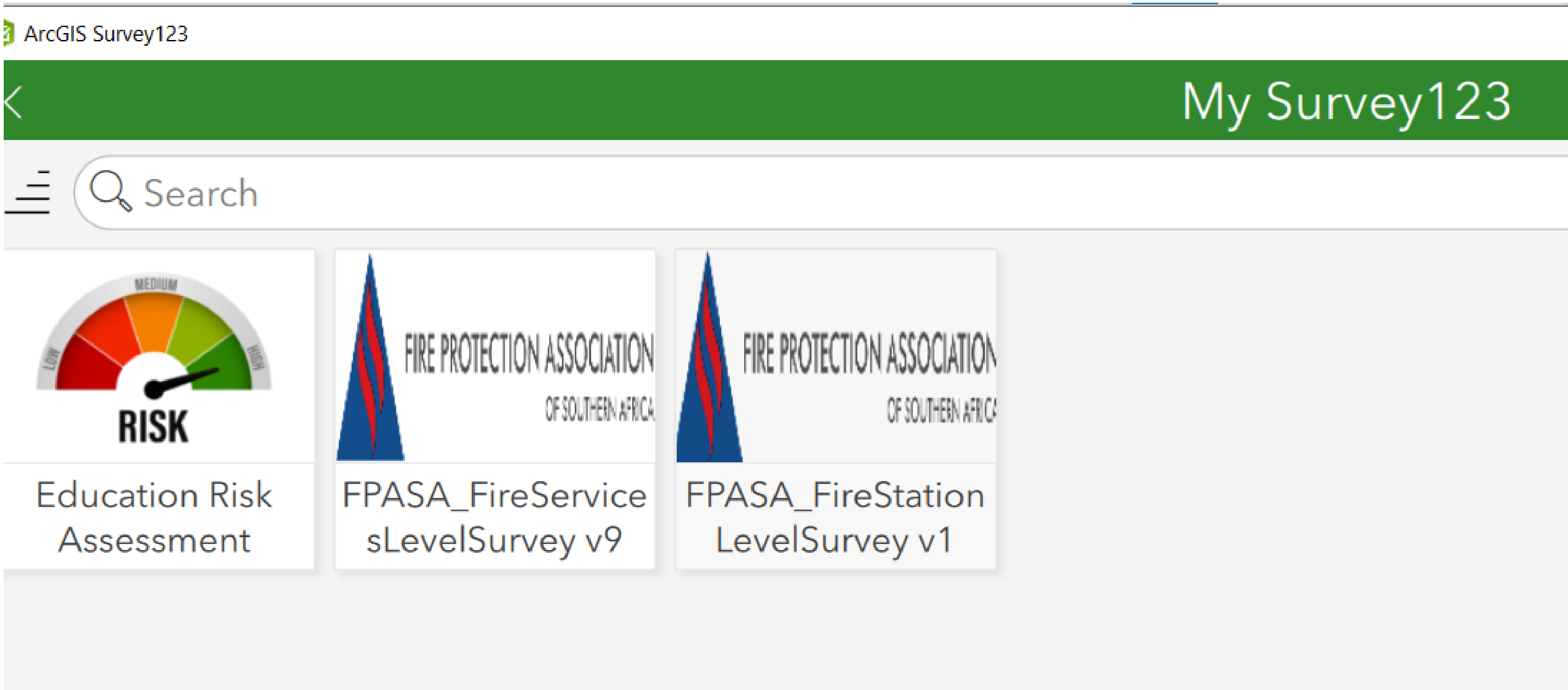
CATEGORY 5(B): A brigade that is able to meet performance criteria for staff availability per appliance availability, pre-determined attendance (PDA), manning levels and attendance times, 35 % to 45 % of the time, measured annually.

CATEGORY 4: A brigade as given in category 5(a) as monitored by relevant performance indicators or statistics, or both, and which is able to meet performance criteria given for category 5(b) 46 % to 55 % of the time, measured annually.

CATEGORY 3: A brigade as given for category 5(a) as monitored by relevant performance indicators or statistics, or both, and which is able to meet performance criteria as given for category 5(b) 56 % to 65 % of the time, measured annually.

Category 2: A brigade as given for category 5(a) as monitored by relevant performance indicators or statistics, or both, able to meet performance criteria as given for category 5(b) 66 % to 75 % of the time, measured annually.

CATEGORY 1: A brigade as given for category 5(a) as monitored by relevant performance indicators or statistics, or both, and which is able to meet performance criteria as given for category 5(b) more than 75 % of the time, measured annually.



FIRE SERVICE ASSESSMENT TOOL USED BY FPASA

WEIGHT OF RESPONSE;

Table 1 — Weight of response at fires

1	2	3	4
Risk category	**Minimum number of pumping units**	**Minimum manning level per appliance**	**Minimum pumping capacity of each unit (L/min)**
A	2	5	3 850
B	2	4	3 850
C	1	4	2 250
D	1	4	2 250
E	As determined by individual risk assessment		
NOTE Arrangements for vehicle fires, grass/bush and special services and the need for specialist vehicles such as aerial appliances and water carriers will be determined by local conditions.			

ATTENDANCE TIME ACCORDING TO SANS 10090;

Table 2 — Attendance times at fires

1	2	3	4
Risk category	**Maximum call receipt and turn-out time** min	**Maximum appliance travel time** min	**Maximum attendance time** min
A	3	5	8
B	3	7	10
C	3	10	13
D	3	20	23
E	Within requirement of appropriate risk category		

ATTENDANCE TIME ACCORDING TO NFPA 1710;

- Turnout time ≤ 80 seconds
- First engine arrive on scene ≤ 240 seconds (four minutes)
- Second company arrive on scene ≤ 360 seconds (six minutes)
- Low and medium hazard: Initial full alarm on scene ≤ 480 sec (eight minutes)
- High hazard/high-rise: Initial full alarm ≤ 610 sec (10 minutes, 10seconds)

Telephone lines;

Table 4 — Emergency lines

1	2
Population served	**Number of dedicated emergency lines**
Up to 40 000	1
40 001 – 125 000	2
125 001 – 300 000	3
Over 300 000	4

Replacement of vehicles;

Table 5 — Replacement periods

1	2
Type of vehicle/equipment	**Period**
	Max. number of years service
Pumping appliances	15
Aerial appliances	20
Off-road vehicles	10
Special appliances	20
Light vehicles	8

Water Supply;

The following should be taken into consideration when doing an assessment of the water supply potential of an area:

a) Quantities available;

b) Sources of supply (including emergency arrangements);

c) Minimum residual pressure;

d) Reticulation components including pumps, filters and piping systems; and

e) Type, size, distribution and availability of hydrants.

MINIMUM FIRE FLOW;

Table 8 — Minimum fire flow

1	2	3
Risk category	**Possible fire sizes**	**Flow in** L/min
A	Non-residential buildings with divisions not greater than 5000 m^2.	13 000
B	Non-residential buildings having divisions not greater than 2 500 m^2.	9 000
C	Non- residential premises not greater than 1 250 m^2.	6 000
D1 D2 D3 D4	Houses > 30 m apart. Houses 10,1 m to 30 m apart. Houses 3 m – 10 m apart Houses < 3 m apart	1 900 2 850 3 800 5 700
E	As determined by risk assessment.	

- The minimum quantity of water available should be based on the highest daily consumption plus the required fire flow and must be sustainable for the minimum duration period at the required residual pressure.

  The supply requirements should be calculated in accordance with the following formula:

$$SR = \frac{(FF + HDC) \times D}{1\ 000}$$

  where

  SR is the supply requirement expressed in cubic meter (m3)

  FF is the required fire flow in relation to risk as given in 11.3

  HDC is the highest daily consumption as given in 11.2

  D is the duration

- When the duration is up to and includes 6 000 L/min, the minimum duration shall be 2 h.

- When the duration is greater than 6 000 L/min, minimum duration shall be 4 h.

HYDRANT FLOW AND SPACING;

Table 9 — Hydrants flow and spacing

1	2	3
Risk category	**Minimum hydrant flow** L/min	**Max. distance between hydrants** m
A	2 000	85
B	2 000	120
C	2 000	200
D1 (Houses > 30 m apart) D2 (Houses 10,1 m – 30 m apart) D3 (Houses 3 m – 10 m apart) D4 (Houses < 3 m apart)	1 200 1 200 1 400 2 000	300 200 200 200

REB BOOK; PROVISION FOR FIRE FIGHTING WATER;

J.4.5.8 Provision of water for firefighting

(i) Fire flow

The water requirements for firefighting are dependent on the relevant fire-risk classification as indicated in Table J.17.

Table J.17: Design criteria for the provision of fire flow

Risk classification	Total fire flow (L/s)	Minimum flow at one hydrant (L/s)	Minimum pressure at fire node (m)	Minimum pressure at rest of system (m)
High risk: CBD and high-risk industrial	100	25	15	5
Moderate risk 1: Industrial, business, high-rise flats ≥ four storeys	50	25	15	5
Moderate risk 2: Cluster & low-income housing, high rise flats ≤ three storeys	25	25	10	5
Low risk: Single residential housing	15	15	10	5

Table J.18: Duration of design fire flow	
Fire-risk category	Duration of design fire flow (h)
High risk	6
Moderate risk 1	4
Moderate risk 2	2
Low risk	1

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