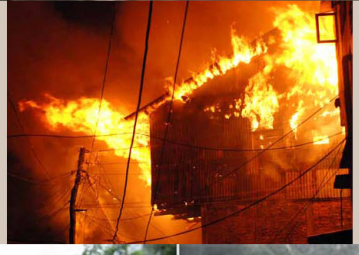
Karnataka State Fire and Emergency Services

EXECUTIVE SUMMARY

Current Fire Hazard Response and Mitigation Plan for Bangalore City

WilburSmith ASSOCIATES



March 2011

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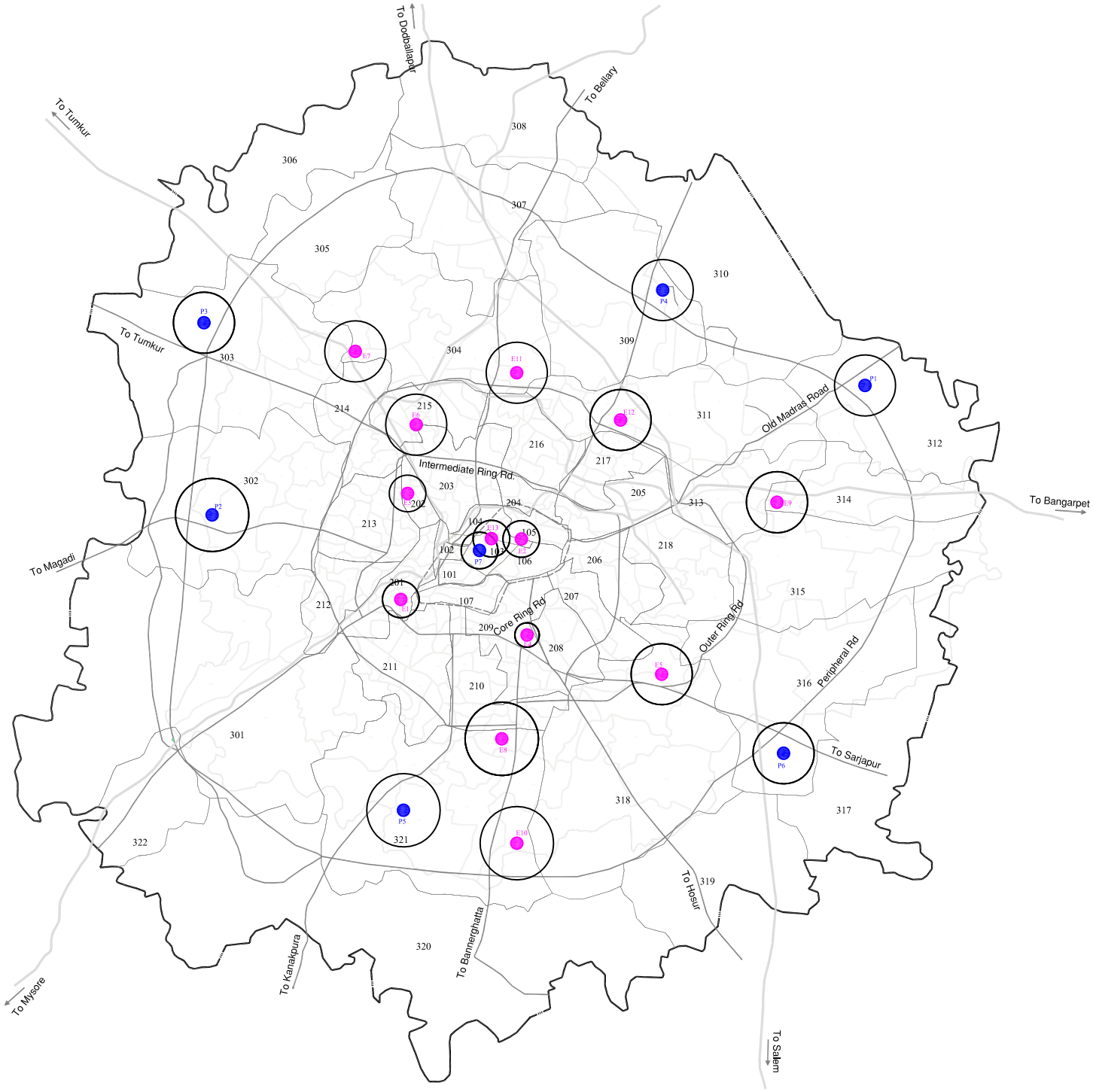
E-1. Introduction

1. The State Fire Services was initiated in 1965 under the Karnataka Fire Force Act, 1964. Since 1942, the Department was initially a part of the Police Department but 1965 onwards, it started functioning independently. The department, mainly a service oriented department, has now been reorganized as a Multi-hazard Response Department (Karnataka State Fire & Emergency Services Department - KSFES) and the first of the responders in all emergencies like fire, building collapses, aviation & major road accidents, floods and other calamities. The overall control of the Department lies with the Home Department of State Government. The KSFES currently manages 169 fire stations in the entire state. In Bangalore, KSFES has established 13 fire stations, 4 Fire Protection Squads, a Training Academy and a State level workshop. 7 more fire stations are already sanctioned for Bangalore city and are in a process of opening. Karnataka State Fire and Emergency Services, has the dual mandate of fire fighting (including fire prevention and fire safety) and Disaster Management.

2. Bangalore, the administrative capital of Karnataka State has been substantially affected by globalization and rapid urbanization over the last decade. It is the fifth largest metropolis and is one of the fastest growing cities in Asia. The total area of Bruhat Bengaluru Mahanagara Palike's (BBMP) jurisdiction has also grown considerably from 512 sq. km in 2001 to presently at 709.34 sq. km. The population of Bangalore has rapidly grown from 1.7 million in 1971 to 6.5 million in 2005, and is expected to be around 10 million by 2021. As a result, the City witness considerable horizontal and vertical growth.

3. Bangalore is expected to experience significant growth and development in future, which will instigate high-density development and in turn, correspondingly increases risk of fire/anthropogenic disasters. Considering an average of 5 years data (2006-10), KSFES receives about 1,200 fire calls and 185 rescue calls annually. Department has succeeded in saving on an average of about 80 percent of the total properties involved in the fire incidences per annum and also saved many lives. The 13th Finance Commission Report for 2010-2015 recommend that grants provided to urban local bodies can be utilized to revamp the fire services within the jurisdiction.

4. To achieve the objective of revamping the fire services, these local bodies could provide financial support to the State Fire Services Department. As a result, KSFES was longing for the preparation of Fire Hazard Response and Mitigation Plan for Bangalore City to revamp and modernize the fire services in Bangalore. The Project preparation involved (i) review of existing situation analysis; (ii) rapid risk assessment; (iii) infrastructure needs assessment; (iv) review of modernization requirements of fire services; (v) institutional assessment; (vi) assessment of training and capacity building needs; and (vii) capital investment plan.



Fire Hazard Response and Mitigation Plan For Bangalore City

Location and Spatial Coverage of Fire Stations in Bangalore City

Legend:-

- BBMP Boundary
- BDA Boundary
- Planning District Boundary
- Roads
- Existing Fire Station
  - E1 North Fire Station
  - E2 South Fire Station
  - E3 Rajajinagar Fire Station
  - E4 Jayanagar Fire Station
  - E5 Electronic City Fire Station
  - E6 Yeshwanthpur Fire Station
  - E7 Peenya Fire Station
  - E8 Banashankari Fire Station
  - E9 Mahadevapura Fire Station
  - E10 Sarjapur Fire Station
  - E11 Hebbal Fire Station
  - E12 Banasawadi Fire Station
  - E13 Highgrounds Fire Station
- Proposed Fire Station
  - P1 EPIP KIDA
  - P2 Nagarbhavi
  - P3 Sunkadakatte Magadi Road
  - P4 Jakkur
  - P5 Anjanapura
  - P6 Hulimavu
  - P7 Secretariat

Client:
Karnataka State Fire & Emergency Services

Consultant
Wilbur Smith Associates

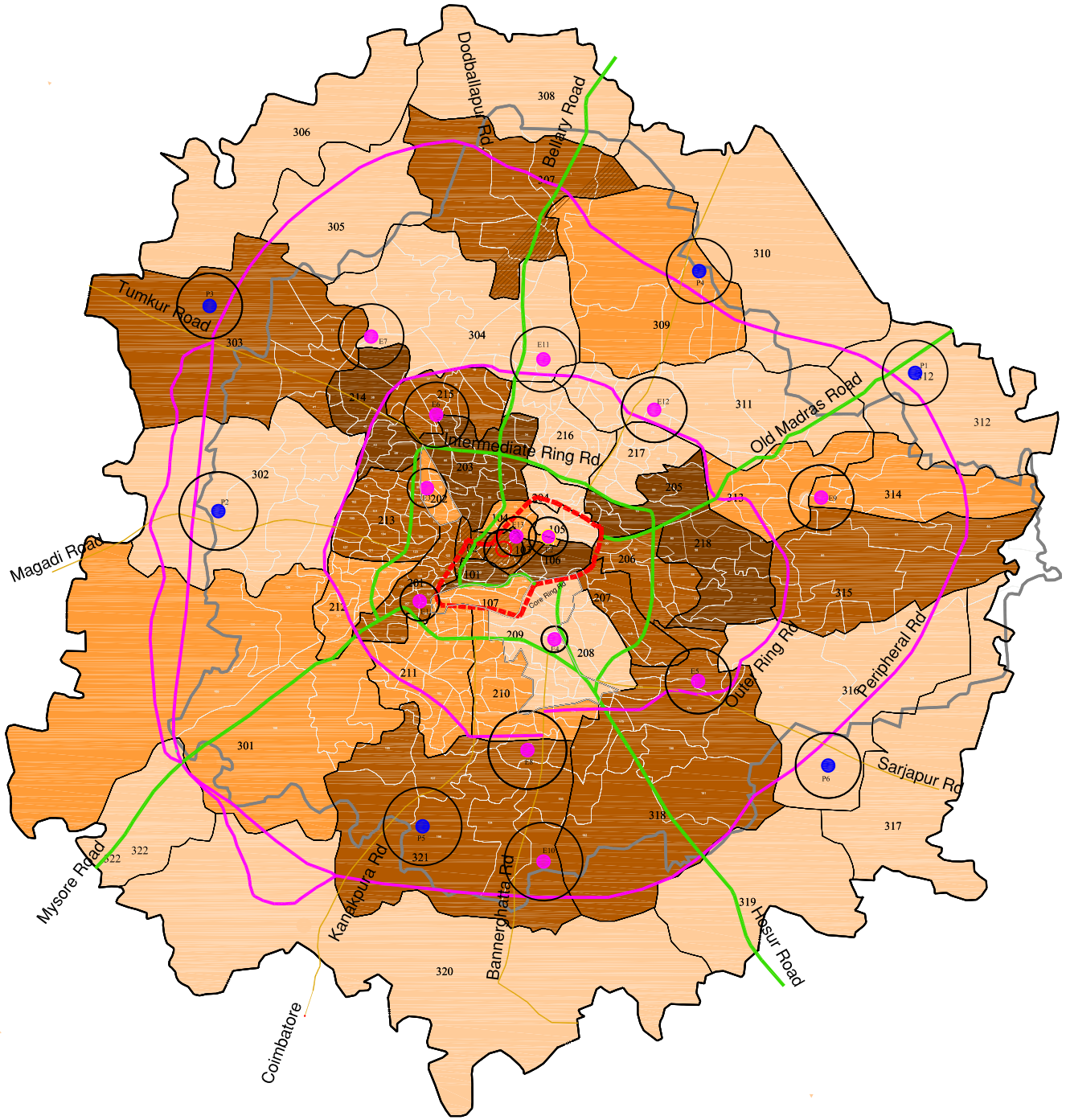
Drawn: Roopa	Checked:
Date: March 2011	Approved:
Scale: Not to scale	

Map E-1

E-2. Rapid Risk Assessment

5. The risk identification and hazard mapping exercise forms the basis for planning or decision-making, such as ways to prevent the hazard (the cause), or minimize or mitigate the resultant harm (the effect). Given the scope of work and time frame, a rapid fire risk assessment has been undertake for Bangalore city considering various factors such as population density, concentration of commercial, public assembly, industrial areas, high rise building and Major Accident Hazard (MAH) units, etc. Base unit for the analysis was the Planning District as defined by Revised Master Plan 2020, Bangalore.

6. Total study area falls in 38 of the total 47 planning districts approximately. Some of the wards which are very partially falling in the outer planning districts are considered as part of the nearest planning districts to simplify the analysis. Of the 38, seven are classified under “Very High Risk (Petta, Richmond Town, Malleshwaram, Baiyyappanahalli, Peenya, CV Raman Nagar, Byatarayanapura), 12 as “High Risk”, 10 “Medium” and remaining 9 as “Low Risk” zones. Overall 14 percent of total area is classified as Very High Risk and this houses 19 percent of total population.



Fire Hazard Response and Mitigation Plan For Bangalore City

Composite Potential Risk Zones

Legend:-

- BBMP Boundary
- Ward Boundary
- BDA Boundary
- Planning District Boundary
- National Highway
- State Highway
- Ring Road
- Low
- Medium
- High
- Very High

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Map E-2

E-3. Needs Assessment

1. Present Scenario

7. **Table 1** indicates the present scenario of 13 existing & 7 sanctioned fire stations to combat the fire hazards in Bangalore City covering 198 BBMP wards in an area of 709.34 sq. km area.

Table 1: Present Scenario

Vehicles / Equipments	**Actual Requirement**	**Available**	**Shortfall**	**Total Cost**
	Nos.	*Nos.*	*Nos.*	*Rs. Lakh*
Hazmat Van	2	-	2	1,000.00
Advanced Rescue Vans	4	2	2	200.00
Water Tender	44	28	16	480.00
Water Lorry	10	10	-	-
Water Bouzer	10	7	3	90.00
Foam Tender	2	2	-	-
Water Mist on Motorbike (Agni)	20	3	17	170.00
Water Mist on Jeep (Varun)	10	3	7	105.00
High Pressure Pumps	20	2	18	90.00
Portable Pumps	44	27	17	51.00
Aerial Ladder Platform	5	2	3	1500.00
Turn Table Ladder	3	1	2	1000.00
Control Post Van (Incident Control Vehicle)	2	1	1	30.00
Jeep	20	16	4	28.00
Light Tower-Inflatable Light Mast	27	9	18	54.00
Generator	29	12	17	10.20
Motor Cycle	28	8	20	10.00
Total	**280**	**133**	**147**	**4,818.20**

2. Future Plan

8. All though at present the department is in a position to handle the emergencies in Bangalore city, the department is in a constant endeavour to improve infrastructure and vehicles/equipments. Based on the Standing Fire Advisory Committee (SFAC) recommendations, one fire station should cover 10 sq. km of geographical area; accordingly 71 additional fire stations are required. SFAC also recommends that the requirement of fire station should also be worked out based on the risk involved and response time. A response time of a maximum of 3 minutes should be aimed at in high hazards areas, and in other areas the response time should not exceed 5 minutes. Based on average speeds in various zones and the response time, the area coverage, the total number of fire stations required has been worked out as 79, of which 20 are available, and the remaining 59 needs to be developed.

officials.

E-4. Capital Investment Plan (CIP)

11. The total cost of proposed infrastructure under Fire Hazard Response and Mitigation Plan is estimated at ₹ 39,007 lakhs (₹ 390.07 crores). The break-up of cost estimation is given in the following **Table 4**.

Table 4: Estimated Capital Investment

Sr. No	Project Components	Numbers	Total Cost
		Nos.	*Rs. Lakh*
	Existing Fire Stations - 20 (Nos.)		
1	Hazmat Van	2	1,000.00
2	Advanced Rescue Vans	2	200.00
3	Water Tender	16	480.00
4	Water Lorry	-	-
5	Water Bouzer	3	90.00
6	Foam Tender	-	-
7	Water Mist on Motorbike (Agni)	17	170.00
8	Water Mist on Jeep (Varun)	7	105.00
9	High Pressure Pumps	18	90.00
10	Portable Pumps	17	51.00
11	Aerial Ladder Platform	3	1,500.00
12	Turn Table Ladder	2	1,000.00
13	Control Post Van (Incident Control Vehicle)	1	30.00
14	Jeep	4	28.00
15	Light Tower-Inflatable Light Mast	18	54.00
16	Generator	17	10.20
17	Motor Cycle	20	10.00
	Proposed Fire Stations - 59 (Nos.)		
1	Water Tender	118	3,540.00
2	Rescue Van	5	500.00
3	Water Bouzer	10	300.00
4	Portable Pumps	118	354.00
5	Motor Cycle	59	29.50
6	Procurement of Personal Protective Equipments	89	445.00
7	Turn Table Ladder	4	2,000.00
8	Foam Tenders	4	120.00
9	Procurement of Vehicles*	60	750.00
10	Modernization of Fire Stations (GIS, GPS, Wireless, etc.)		2,000.00
11	Capacity Building (Training needs including Disaster Management Academy)		2,500.00
12	Aerial Ladder Platforms	2	1,000.00
13	For New Fire Station Buildings at 59 Locations & 826 Staff Quarters (14 Quarters at each Fire Station)		20,650.00
	Total		**39,006.70**

Note: * Vehicles like (a) 30 Nos. of Bike (AGNI) with mist technology equipments (b) 20 Nos. of Jeep (VARUNA) with mist technology equipments & (c) 10 Nos. of Mini Water Tender working on mist technology.

E-5. Institutional Arrangement

12. KSFES works under the administrative control of the Director General of Police and Director General Fire & Emergency Services. Normally the post is held by an officer of the rank of Director General of Police. The Director General of Police also functions as the Commandant General of Home Guards and Ex-officio Director of Civil Defence. KSFES is a closely knit Department with clear-cut reporting guidelines. Self-discipline and alertness is promoted in the Department at all levels and are generally strictly dealt with, in view of the State's perspective that public safety cannot be compromised at any cost. Generally, IPS Officers are policy decision making and sanctioning authority.

13. From the operational point of view, the Bangalore City has been given under the control of 2 Chief Fire Officers: 1. Chief Fire Officer, Bangalore East and 2. Chief Fire Officer Bangalore West. Bangalore City is further divided in to 4 Regions – 1. Bangalore-East, 2. Bangalore-West, 3. Bangalore-North and 4. Bangalore-South. Under each Regional Fire Officer, 2-3 District Fire Officers function. These district Fire Officers are drawing and disbursing officers of respective district. They are also supervisory officers of the fire stations, falling under their jurisdiction. Under each District Fire Officer, 3-4 fire Station Officers work. Fire Station Officers are the unit officers directly looking after a Fire Station. They are assisted by Assistant Fire Station Officers. Each Fire Station has Leading Firemen, Driver Mechanics, Fireman Drivers and Firemen.

14. Some of the needs to be focused are:
    (i) Infrastructure improvements/developments.
    (ii) Provision of physical fitness equipments.
    (iii) Provision of live simulation exercises.
    (iv) Knowledge Park - A well equipped library with the latest fire & rescue related publications.
    (v) Qualified and competent faculty.
    (vi) Latest teaching aids - Computer based trainings.
    (vii) New syllabus - Interactive and feedback based system along with practical oriented trainings.
    (viii) Establishment of Proposed Karnataka Disaster Management Academy in Bangalore
    (ix) Building a Search and Rescue Training Facility.