KATHMANDU METROPOLITAN CITY

# KATHMANDU FIRE BRIGADE SYSTEM

Present situation and need of upgrade

December, 2009

# 1. Introduction

## 1.1 Geography

Kathmandu Metropolitan City is the capital city of Nepal. It is a historic, touristic, cultural and business center of the country. It is the cosmopolitan heart of the Himalayan region and is the largest city in Nepal.

**Kathmandu at a Glance**

| | |
|---|---|
| **Region:** | South Asia |
| **Country/Capital:** | Nepal/Kathmandu |
| **Longitude/Latitude:** | $85^0$ 20' East / $27^0$ 42' |
| **Elevation:** | 1350 m |
| **City Area:** | 5076 ha (51 sq. km.) |
| **Population:( CBS 2001 )** | 671,846(CBS 2001) |
| **Present Population** | 2.5 million (unofficial) |
| **Annual Growth Rate:** | 4.53% |
| **Population Density:** | 13,225 / sq. km. |
| **Number of household:** | 152155(CBS 2001) |
| **Per capita income:** | 360 US$ |
| **Major religions:** | Hinduism, Buddhism |
| **Principal Language:** | Nepali, Nepal Bhasa (Newari) |

Old Kathmandu corresponds to the current city core, encompassing a compact zone of temple squares and narrow streets. The old royal palace complex, Durbar Square, is in the center of Old Kathmandu and was designated as a UNESCO World Heritage Site.

The Kathmandu Metropolitan City adheres to their vision of a ***"Beautiful, well-managed and full of life city where citizens are proud of their natural and cultural heritage and look forward to a bright future."***

The catastrophic earthquake of 1934 destroyed parts of Kathmandu city but they were rebuilt almost like the original. Since the 1980s, the city has been spreading out on the surrounding farmland in an unprecedented building frenzy. The capital now consists of new settlements, medium- and high-rise buildings, and residential suburbs which are fringing the city.

## 1.2 PHYSICAL ENVIRONMENT

mandu Metropolitan City or KMC is located in the Kathmandu district, Bagmati zone, Central Develoment Region of Nepal. It is in the northwestern part of Kathmandu valley. It is surrounded by Madhyapur Thimi Municipality, Gothatar VDC & Kapan VDC in the east, Ichangu Narayan VDC, Sitapaila VDC & Siuchatar VDC in the west, Lalitpur Sub-metropolitan City in the south, and Gongabu VDC & Dhapasi VDC in the north. Snow-covered mountains rise behind the green hills in the north to

provide an awe-inspiring backdrop. Kathmandu Metropolitan City is located at 27°42' north Latitude and 85°20' east Longitude.

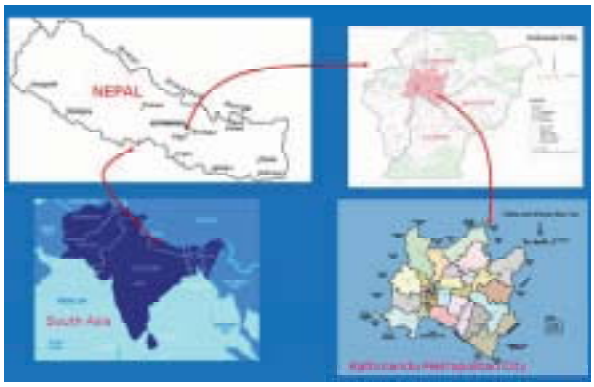



***Figure 2.1* Location Map** (Source: www.kathmandu.gov.np)

## 1.3 Land Area

Kathmandu covers an area of 5076.6 hectares or 51 sq. km with a built-up area of 3844.56 hectares. The city is divided into 35 wards which are clustered into five sectors: Central Sector, East Sector, North Sector, City Core and the West Sector. The East Sector comprises the biggest portion of Kathmandu in terms of land area with 1,859.9 hectares, followed by the North Sector with 1,391.1 hectares. The City Core is the smallest sector with 274.2 hectares.

The largest ward in Kathmandu is Ward No. 16 with a land area of 437.4 hectares. Warn No. 16 encompasses the Balaju locality and is situated in the North Sector of the metropolis. The second largest is Ward No. 35 with 395 hectares. It consists of the Koteswar region. It is located at the other end of the city in the East Sector. The urban core areas of KMC are Wards 12, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, and 30 while the remaining wards are considered as urban fringe areas.

## 1.4 Climate

KMC has a temperate climate and it experiences four seasons a year. Temperature ranges between 1 degree Celsius and 35 degrees Celsius. The annual rainfall is 1,407 millimeters, with most of it occurring during the rainy months of June, July and August.

## 1.5 Population

The population of KMC has been swelling rapidly because of its economic opportunities, medical and social facilities, modern comforts and international connectivity being the capital of the country. Also, migration due to ongoing political conflict played a great role in the city's population increase. As a result, the city population have been many times greater that census statistics.

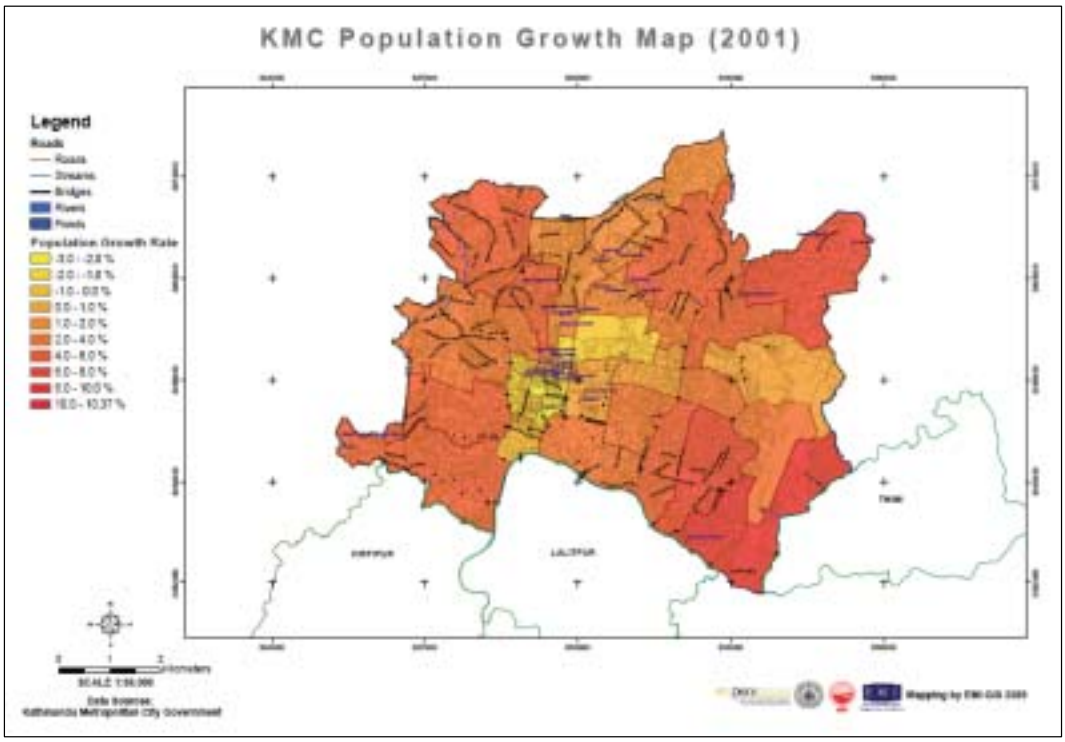



***Figure 3.1* KMC Population Growth Rate, 2001** (Source: JOSHI, 2004)

According to official census documents from the Census Bureau of Statistics (CBS) Kathmandu registered a total population of 427,045 in 1991. This increased to 671,846 according to the 2001 official census count. This makes for an annual growth rate of 4.53 percent each year. Given this growth rate, Kathmandu is expected to break the 1 million mark by 2010. But an unofficial data states that the present population is estimated to be more than 2.5 million. Kathmandu's population represents 20.81 percent of the total urban population of Nepal.

## 2.0 Fire and natural Hazards

Although according to the Kathmandu Valley DRM Profile (EMI, 2005), the most frequent natural disasters in the valley are earthquake, flood, landslide etc., fire is also a common hazards causing loss of life and sever damage of the property.

### 2.1.1 Fire

Fire occurs mainly between April and June during the dry season when temperatures of the region reaches higher than 35˚ Celsius and it seldom rains. Fire

are common to central core area where houses are old and made with wooden joists and closely attached to each other thereby increasing the risk of fire and fire spread. Fire also occurs in winter season due to short circuit of electricity while using excessive heaters and electrical appliances with poor electrification. Other causes of fire are due to leakage in cooking gas, careless handling of petroleum product, burning of vehicles by agitating people etc.

### 2.1.2 Earthquake

Nepal, which spans about one third (i.e. ~800 km) of the length of the Himalaya, is located at the very central part of the active Himalayan belt. Because of its location in the active tectonic zone and fragile geological structures, Nepal is vulnerable to major earthquake. The earthquakes are the most disastrous
since its impacts can cover large areas causing deaths, injuries and destruction on a massive scale. In case of great earthquake, the destruction is pervasive even it can stand-still the country from days to months.
Although earthquakes are not frequent, major earthquakes periodically occurs between 80 to 100 years. In 1934, an earthquake of Magnitude 8.4 caused serious damages to 60% of the buildings and killed about 4,300 people within Kathmandu Valley. Thus Earthquakes are inevitable for the Kathmandu Valley

## 2.2 History of the Fire Fighting

The only fire brigade of Kathmandu, The Juddha Fire Brigade (Kathmandu Fire Brigade), was previously operated under the Ministry of Home Affairs which was later handovered to KMC after the decision of Cabinet of Ministries in 2008. Since then it is operating under KMC for fire fighting as well as search and rescue in natural disasters. Its office is now located in New Road, near Basantapur Durbar Square.

This fire fighting station was established in 1938, four years after the major earthquake in 1934, by then Rana Prime Minister, Juddha Samsher. The fire engines were brought from England. Later the fire station was named after the Prime Minister. The population of the city at that time was merely 60,000 and the houses were mostly concentrated in the area near the Durbar Square, once a palace of the King. Houses at that time were only about five storey tall. Since then the technology and fire fighting system has not been much improved.

## 2.3 Present Situation

### 2.3.1 Manpower

Until now , Juddha Fire Brigade is operating with limited man power without any proper trainings. There are total 39 staffs in the office including 11 policemen from Armed Police Force, 10 City Policemen from Kathmandu Metropolitan City Enforcement Division and 18 staff from Ministry of Home Affairs. A team of 9 Firemen including the driver comprises a task force. The duration fire fighting takes as long as 5 hours. A Fire near the Pashupati temple once took about 4 to 5 days due to fire in a straw store. Recently a blaze in a house near Naryanhiti Museum, once the Royal Palace took 7 hours to douse the fire. The loss of the property in that case was estimated to be more than NRs. 5 million. The fire brigade station is also serving to adjacent cities like Lalitpur, Bhaktapur, Kirtipur as well as adjacent Village Development Committee.

The position of Kathmandu Fire Brigade and manpower in KMC Organization Chart is as follows.

Kathmandu Metropolitan City

Administration Department

Enforcement Division

Kathmandu Fire Brigade Unit

(Sub Inspector: KMC Police)-1

KMC

No of Departments - 6

No of Divisions - 13

No of Sections - 31

Armed Police Force (APF)

APF Sub Inspector - 1

APF Supreme Head Cons. - 2

APF Head Constable - 3

APF Asst. Head Cons. - 2

APF Constable - 3

(Total 11 persons )

KMC Police

Head Constable - 2

Constable - 7

(Total 9 persons )

Total no. = 39

Kathmandu Fire Brigade

(Ministry of Home Affairs )

Jamdar - 1

Head Constable - 7

Driver - 4

Helper - 2

Peon - 3

(Total 18 Persons)

(Total 11 persons )

## 2.3.2 Equipment and Vehicle.

| | | |
|---|---|---|
| i. Isuzu Morita Fire trucks (Capacity 4000 ltrs.) | - | 2 nos |
| ii. Isuzu Morita Ladder | - | 1 no. |
| iii. Mini Mitsubishi (Canter) | - | 1 no. |

Kathmandu Fire Brigade, Basantapur has now two fire engines and a ladder engine, which were brought as a donation in 1987 after SAARC Summit in Kathmandu. Each has a capacity of 4,000 litres, Which is not enough for major fires. They have to rush to refill to the nearest water sources like reservoir of drinking water supply at Mahankal and Jorpati, north east side of Kathmandu. The fire engines are more than 20 years old and due to scarcity of spare parts and requirement of special technicians and high cost, repair and maintenance is often very tough. The engines are to be overhauled as soon as possible. Two numbers of fire engines brought in 1987 are still lying in the garage which are not functional.

## 2.4 Activities of Kathmandu Fire Brigade.

The Kathmandu Fire Brigade also serves to adjacent Municipalities and VDCs such as Kirtipur Municipality, Panauti VDC, Lubhu VDC, Sankhu VDC upto 30 km far. The past record shows approximately 350 cases each year including search and rescue during people drown in well.

No. of Activities in different Fiscal Year

| S. No. | Fiscal Year | No. of activities |
|---|---|---|
| 1. | Current Fiscal Year (2009/2010) | 98 (6 months record) |
| 2. | 2008/2009 | 376 |
| 3. | 2007/2008 | 367 |
| 4. | 2006/2007 | 297 |
| 5. | 2005/2006 | 301 |

**Some major Fire Fighting Activities**

i. In December 2009, Fire in Lal Durbar due to electric short circuit caused the loss of property about 5 million. It took about 7 hours to control the Fire.

ii. In Novemver 2009, Fire in a restaurant near the Kathmandu Durbar Square due to electric short circuit caused the loss of about 4 million. The fire brigade reached within 5 minutes after the emergency call.

iii. In May 2007, a fire in one of the businessman's house in Makhan , Kathmandu caused the loss of 10 million. All the life saver fire fighter from three municipalities did their best to douse the fire. However it took from 9 o'clock in the night to 6 o'clock the following morning due to narrow road lack of proper equipment.

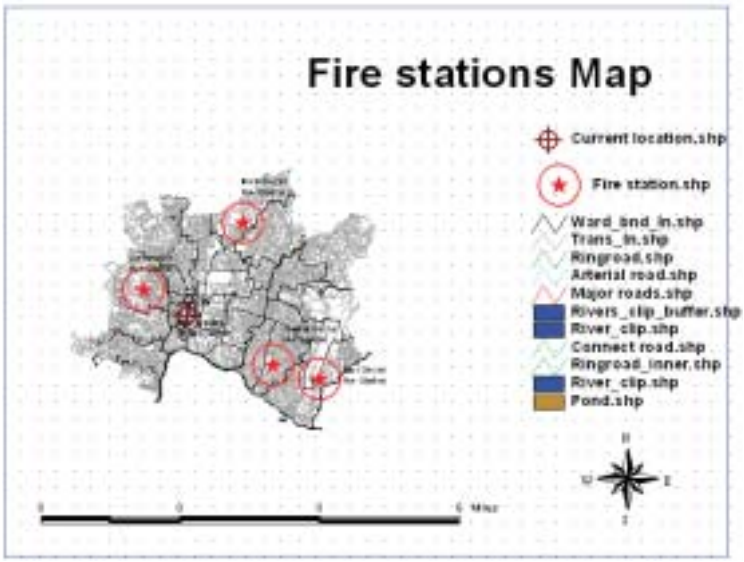
iv. In 2005 a loaded petrol tanker caught fire while unloading petrol in Tinkune, Subidha Nagar. The tanker and some motorcycles nearby were also totally damaged. The fire incurred a loss of around NRs. 3 million. It took the Fire Fighter an hour to extinguish it.

iv. In May 2005, there were fire in 12 different places in and around the Kahmandu city, which took almost 24 hours to get rid of fire. The firemen were on duty without water but at the last location they had to face the anger of the public.

## 2.5 Need of upgrade

Due to rapid and haphazard urbanization, highly dense population, dense and old city core, fire fighting has become a great challenges these days. The situation has become further worsened due to narrow roads, high traffic volume and high rise buildings. As the present Fire Brigade office is located at only single location, it has become very difficult to respond quickly.

Present development trend has forced the need to establish and operate from different locations of Kathmandu. Only by establishing in other new locations of fire brigade stations with fully equipped fire trucks and sufficient trained man power, the fire fighting and rescue could be done properly.




**2.5.1 Proposed locations of new stations are :**

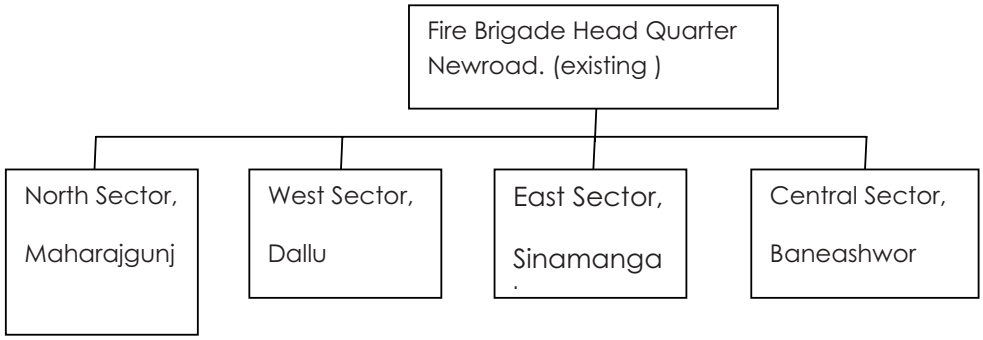
i. North Sector - Maharajgunj, Ward no. 3 premises.

ii. West Sector - Dallu, Ward no. 15 premises.

iii. East Sector - Sinamangal, Ward no. 35 premises.

iv. Central Sector - Baneshwor, Trolley Bus Station Premises.

**2.5.2 Proposed new organogram :**




**2.5.3 Requirement of Fire Engine/ Vehicle**

i. 4000 ltr capacity Fire Engine/Vehicle @ 1 in each station
(with appropriate spare parts back up) - 5 nos

ii. 2000 ltr capacity Fire Engine/Vehicle @ 1 in each station
(with appropriate spare parts back up) - 5 nos

iii. Portable Fire Engine (wheel barrow ) @ 1 in each station - 5 nos

iv.Small vehicle for manpower support @ 2 in each station - 10 nos

v.Fully equipped fire engine/vehicle for head quarter
(with appropriate spare parts back up) - - 2 nos

**2.5.4 Requirement of Fire Fighting Aids/Fire extinguisher**

i. Fire Oxygen (BA) Appropriate nos.

ii. Platinum Chemical Foam - do -

iii. Fire Extinguishing Cylinder ( chemical ) - do -

**2.5.4 Requirement of Fire Fighting clothes / training.**

**(for 50 fire fighting personals, @ 10 in each unit)**

| | | | |
|---|---|---|---|
| i. | Fire Proof Jackets | - | 50 sets |
| ii. | Boots | - | 50 sets |
| iii. | Gloves | - | 50 sets |
| iv. | Flash hood | - | 50 sets |
| v. | Helmet | - | 50 sets |
| vi. | Phase wise Trainings | - | 50 personals |

~~ Thank you ~~