

1. Introduction

1.1 HISTORICAL BACKGROUND



Ranchi is after the name of Purnia Ranchi, a small hamlet on the foot of a hillock popularly known as Ranchi hill. The old administrative core of Ranchi known as Kishanpur derived its name from Wilkinson, the first gent to the Governor General in the

province of West Bengal. Finally, however, the name was changed to Purani Ranchi after the name of village Arachi. Thus, Ranchi came into existence mainly for the convenience of administration sometimes in 1834. In the year 1842, the headquarters of the Principal Assistant were transferred from Lohardaga to Kishanpur. The setting up of a regular court brought other subordinate offices to Ranchi and the small hamlet embarked on its career of an administrative headquarters.

On 2nd August 2000, the bill to create a separate state of Jharkhand to be carved out of Bihar was passed in Lok Sabha and the new state of Jharkhand came into being on 15th November 2000. The Ranchi city which used to be summer capital of undivided Bihar state became the capital of new state. Ranchi the Capital City of newly formed Jharkhand State, is known for its rich deposits of minerals, waterfalls, rivers, streams, lakes, dams and forests. Ranchi Municipal Corporation was established on September 15, 1979 vide Government Notification No. 1406

by merging erstwhile Ranchi Municipality, Doranda Municipality and Ranchi Doranda joint water board.

Presently, Ranchi is urban agglomeration of Ranchi Municipal Corporation (RMC) and Kanke Town (C.T.) with total area of 182.09 Sq. kms and population of 8,63,495 (census 2001).

1.2 LOCATION AND REGIONAL SETTING

The district of Ranchi is situated between 20°21' and 23°43' North latitude and between 85°00' and 85°54' East longitude. It is bounded on the north by the district of Palamau and Hazaribagh; on the south by the districts of Singhbhum (Bihar) and Sundergarh (Orissa), on the east by Singhbhum and Purulia (West Bengal) and on the west by the districts of Raigarh and Surguja (Madhya Pradesh) and Palamau. It extends over 7,574.17 sq. km with a population of 29,12,022 (males 14,93,376 and females 14,18,646) as per census figures of 2011. The density of the district is 384 persons per sq. km. Thus Ranchi is the largest district of the State in area and it ranks 1st in respect of population.

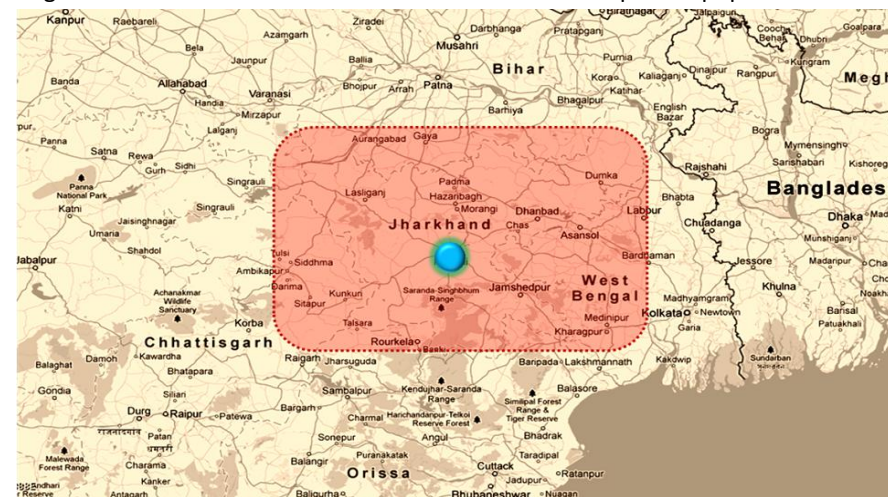


Figure No. 1-1: Location of Ranchi City

Ranchi, capital city of Jharkhand state is situated on 23°23' North latitude and 85°23' East longitude. The city is bounded on the north by the towns of Kanke and Patratu (Ramgarh district); on south by the town of Nagri and Namkum; on eastern side by Angara, Ormanjhi and on the western side by Ratu settlement. The hinterland of the city is flat but dotted with some hillocks like Bariatu hill, Ranchi hill, Tagore hill, Gonda hill etc. There are no physical constraints except railway line running east-west which divides Ranchi city into two parts i.e. Ranchi and Doranda. These two parts are vehicular linked by two over-bridges (ROB). Refer **Map No. 1.1**

1.3 LINKAGES AND CONNECTIVITY

Roads

The Ranchi City is located almost in the centre of Chhotanagpur plateau. The city is linked by three modes of transportation i.e. Road, Rail and Air. Its regional road pattern fans out in all directions. Three National highways i.e. NH-75 (Ranchi – Delhi & Ranchi – Jaintgarh), NH-33 (Ranchi – Jamshedpur & Ranchi – Hazaribagh), NH-23 (Ranchi – Ballarchak) converge at Ranchi city. The State Highways, SH-31 (Ranchi - Daltanganj), SH-37 (Ranchi - Silli), SH-38 (Ranchi – Patratu – Ramgarh) and other roads connect the city with the Bihar state capital Patna and other district headquarters of the division and important towns of the district.

Railways

The city is not conveniently served by a broad-gauge line. Rail travel from Ranchi to other big cities like Delhi, Kolkata and even Patna is time consuming and inconvenient because the city has a terminal station for broad-gauge and is connected via Muri. A narrow gauge line however connects it to Lohardaga. The rail line separates the city into two parts i.e. Ranchi – Doranda, which forms a physical barrier for its inter-communications within the city.

Airways

The Birsa Munda airport is located towards Southern direction of the city. The city is connected to important cities of the country i.e. Delhi, Mumbai, Patna, Kolkata etc. Refer **Figure No. 1.2**

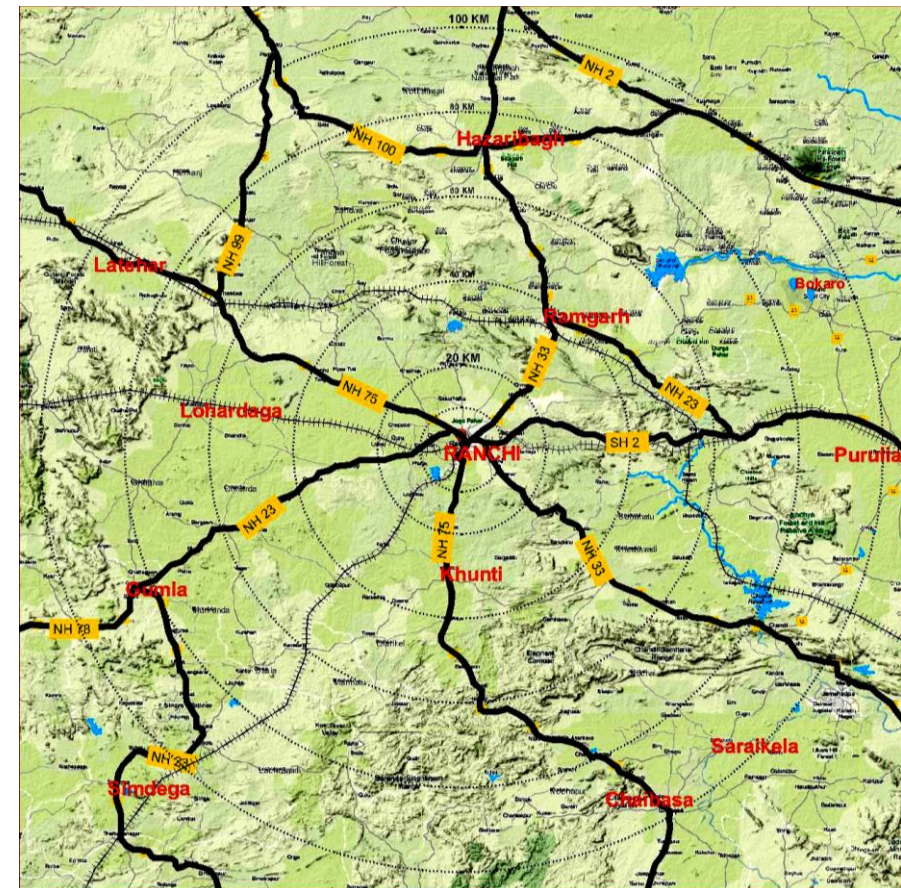
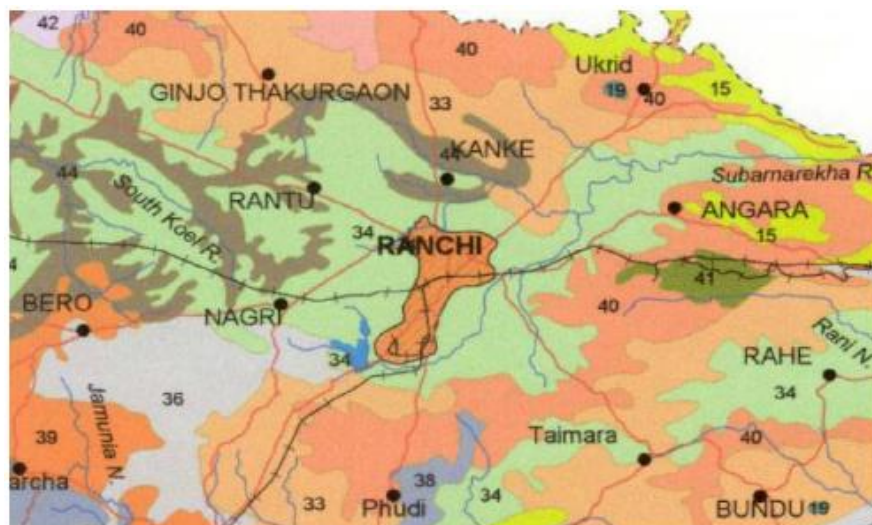


Figure No. 1-2: Linkages and Connectivity of Ranchi

1.4 TOPOGRAPHY

The district consists of three plateaus. The first and the highest plateau in the north-west of the district and comprises the areas including Thanas of Chainpur, Bishunpur and the western part of Lohardaga. The planning area falls in the second and the central plateau, which includes the eastern portion of the Gumla subdivision, the whole of the Sadar subdivision and the western part of Khunti subdivision. The greater part of the plateau particularly in the central tract has an average elevation of about 609.6 m above mean sea level. The third plateau consists of the extreme southern and eastern portion of the district with elevation of more than 600.9 m MSL.



Characteristics	Upland	Medium land	Low land
Colour	Red or Brown red	Yellow yellowish or Grey Greyish	Grey Greyish
Texture	Light textured (Sandy loam)	Medium textured (Sandy clay loam)	Heavy textured
Drainage	Well drained	Moderately drained	Poorly drained
Soil reaction	Low pH	Moderately acidic	Neutral pH
Soil fertility	Poor in organic carbon, Ca, Mg, N, P&S	Poor in organic carbon N, Ca, Mg	Medium in N & organic carbon



Figure No. 1-3: Geological Composition of Ranchi

The land surface occupied by Ranchi city is fairly undulating. The well marked contours show that the general slope is from west to east for eastern section of the city has an average elevation of about 624.84 m, which gradually increases to 655.32 m in the west. The two hills, which are conspicuous in the monotonous rolling surface of the city, are the Tagore or Morabadi hill on the northern margin and the curious pyramidal shaped Ranchi hill on the western margin of the city. These are among the highest points in the city rising to height of 794.6 m and 738.5 m respectively. The other hills in the city are Bariatu hill (794.6 m), on the north-east and Gonda hill in the northern margin of the city.

The geological composition of Ranchi can be understood only in context with Chhotanagpur, which is formed by a great complex of very ancient gneiss and granites. The geological formations belong to the well-known groups of the Precambrian, Dharwars and lower Gondwanas. Refer **Figure 1.3**.

As Ranchi is located in the heart of a geological belt, rich in minerals, presently, the city is fast growing as an industrial hub of the region.

1.5 CLIMATE

The climate of the Ranchi is cool and pleasant. The general elevation of 664.5 m above sea level gives it a uniformly lower range of temperature than the plains. It is only during the month of April or May that the temperature rises occasionally from 40.6° C to 43.3° C. However, in spite of the high day temperature, the nights are cool and the atmosphere is so dry that the heat is by no means as oppressive as that in plains. About 5 to 6 thunder storms occur in each of these months and cause refreshing fall in the temperature. The rains break usually before the end of second week of June. Unlike the Himalayan slopes, the Ranchi plateau does not remain for days or weeks enveloped in fog and mist and visibility is very good. Due to excellent drainage, the rainwater flows away quickly. The rainy season usually ends by the last week of September. The cold

weather may be said to begin in the first week of November. In December and January, the temperature on the grass sometimes falls to the freezing point. At the end of February, the day temperature rises considerably and continues to rise till it reaches its maximum in April or May. The year may be divided into three main seasons. The cold season is from November to February and is followed by the summer season from March to May. The period June to September is the south-west monsoon season and October is a transitional month between monsoon and winter conditions.

1.5.1 Temperature

The temperatures begin to drop rapidly from November. December is the coldest month with the mean daily maximum temperature at 22.9°C and the mean daily minimum at 10.3° C. The temperature in January and February are slightly higher than in December. After February, the temperature rises steadily till May which is the hottest month. The mean daily maximum temperature in May is 37.2°C. In April, May and early part of June the maximum temperature may be well above 40°C on some days. The highest maximum temperature recorded at Ranchi was 45°C on May 22, 1948 and the lowest minimum temperature was 2.8°C on February 11, 1950.

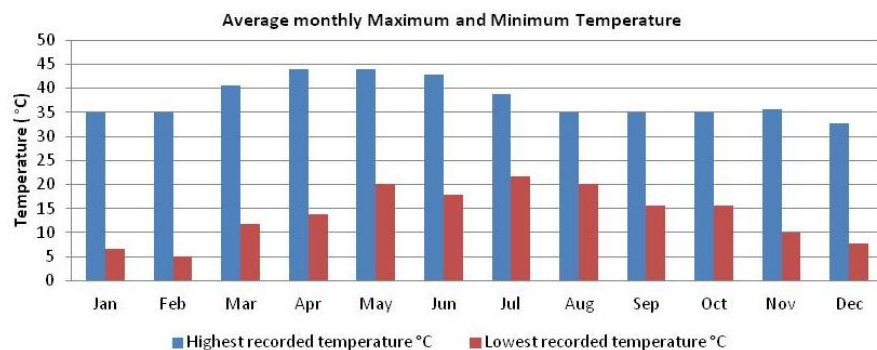


Figure No. 1-4: Average monthly Maximum and Minimum Temperature

Table No. 1-1: Average Temperature (°C) over last 17 years in Ranchi

Month	Temperature (Over 17 yrs), °C	Average high temperature (Over 18 years), °C	Average low temperature (Over 17 years), °C	Highest recorded temperature (Over 18 years), °C	Lowest recorded temperature (Over 17 years), °C
January	18.89	23.89	13.89	35.00	6.67
February	21.67	26.67	16.67	35.00	5.00
March	26.67	32.78	20.56	40.56	11.67
April	30.56	36.67	25.56	43.89	13.89
May	31.67	36.67	26.67	43.89	20.00
June	30.56	33.89	26.67	42.78	17.78
July	28.89	30.56	26.67	38.89	21.67
August	27.78	30.56	25.56	35.00	20.00
September	27.78	30.56	25.56	35.00	15.56
October	26.67	30.00	22.78	35.00	15.56
November	22.78	27.78	17.78	35.56	10.00
December	18.89	23.89	13.89	32.78	7.78

1.5.2 Humidity

The relative humidity is generally high in the monsoon season. In the rest of the year, the air is generally dry. The summer months are the driest with relative humidity, especially in the afternoons of the order of 50 percent.

Table No. 1-2: Average Relative Humidity over last 12 years in Ranchi

Month	Average morning relative humidity (Over 12 years), %	Average evening relative humidity (Over 12 years), %
January	85	48
February	79	39
March	72	32
April	71	29
May	77	41
June	85	63
July	92	78
August	93	78
September	93	76
October	91	64
November	87	57
December	88	53

1.5.3 Cloudiness

In the winter and the early part of summer, skies are generally clear or lightly clouded. The cloudiness increases in April and May, particularly in the afternoons. During the south-west monsoon, season skies are heavily clouded to overcast.

1.5.4 Wind Speed

The annual average of daily wind speed in the region is 6.4 km per hour. The mean wind speed is 8.1 km per hour in the months of April to July. Both easterly and westerly winds prevail in the monsoon months of June to September. In the morning during these months, 50 % to 60 % of the winds are from the westerly direction and 30 % from the direction between east and south. In the afternoon, however, the westerly winds forms less than 30 %, while winds between east and south account for 30 % to 50 % of the total. During October to December, west to north-west winds prevail in the morning while in the afternoon the winds are more from the northern direction. Similarly, winds are experienced in the months of January to May also. There is a tendency in the morning of April and May to have more winds from south-west direction. It is interesting to observe that during November to April; nearly 60 % to 70 % of the afternoon winds come from a direction between north-west and north.

Table No. 1-3: Average Wind Speed over 11 years in Ranchi

Month	Average Wind Speed (kmph)
January	6.4
February	8.0
March	8.0
April	8.0
May	6.4
June	6.4
July	6.4
August	8.0
September	8.0
October	4.8
November	4.8
December	6.4

1.5.5 Rainfall

The Ranchi receives rainfall almost throughout the year, through the concentration is during the monsoon months, from June to September. The average annual rainfall in the region as whole is 1315.68 mm. During the monsoon months, June to September, the region receives about 85 % of the annual rainfall. July and August are the rainiest months. The highest rainfall of 480.4 mm recorded in the region during the month of July in 2008.

Table No. 1-4: Average Monthly Rainfall during 2006-2011 in Ranchi

Month	2006	2007	2008	2009	2010	2011
January	0.0	0.0	12.3	10.2	0.0	21.8
February	0.0	62.8	12.9	0.0	0.0	24.4
March	44.4	33.4	25.0	35.6	0.0	22.8
April	0.6	35.2	14.5	3.4	8.5	27.3
May	127.3	49.0	53.5	150.3	28.7	59.6
June	242.8	142.2	407.3	128.5	55.9	250.9
July	428.1	480.4	473.0	277.0	152.0	341.9
August	340.9	326.5	271.6	324.2	152.0	341.3
September	338.9	320.8	184.3	320.4	221.7	266.2
October	24.6	18.9	19.8	63.6	69.8	80.2
November	8.3	0.4	1.2	24.9	8.7	14.4
December	0.0	0.0	0.0	5.0	37.1	11.9

1.6 SEISMIC ZONES

Jharkhand state has not recorded any moderate to large earthquakes. Small tremors have occurred in the region as well as along the borders with the adjoining states of Bihar, Orissa and West Bengal. The Tatapani Fault in the western part of the state has been active since the Holocene period, which extends across the border into the neighbouring state of Chhattisgarh. The Munger-Saharsa Ridge Marginal Fault runs in a north-south direction through the eastern districts of the state before entering the West Bengal. However, it must be stated that proximity to faults does not necessarily translate into a higher hazard as compared to areas located further away, as damage from earthquakes

depends on numerous factors such as subsurface geology as well as adherence to the building codes.

Northern districts of Jharkhand that lie along the border with the neighbouring state of Bihar as well as the districts in the north-eastern part of the state lie in Seismic Zone III. The maximum intensity expected in these areas would be around MSK VII. All of the southern districts including the cities of Ranchi and Jamshedpur lie in Seismic Zone II. The maximum intensity expected in these areas would be around MSK VI.

1.7 HYDROGEOLOGY

The region is having varied hydrogeological characteristics due to which ground water potential differs from one region to another. It is underlain by Chhotanagpur granite gneiss of pre-Cambrian age in three-fourth of the region. In Ratu and Bero blocks, thick lateritic capping is placed above granite gneiss. A big patch of older alluvium is found in Mandar block extending in Broombay, Murma areas. Khelari (northern most portions) area consists of Limestone rocks. The region has two aquifer types i.e. weathered aquifer and fractured aquifer. The thickness of weathered aquifers varied from 10-25 m in granite terrain and 30-60 m in lateritic terrain. In weathered aquifer ground water occurs in unconfined condition while in fractured aquifer ground water occurs in semi-confined to confined condition.

1.8 PLANNING EFFORTS

The first Master plan for the Ranchi city was prepared in year 1965 but due to some unavoidable circumstances it was not approved and the city grew in haphazard manner. The Ranchi Improvement Trust in the year 1965 with the expertise provided by the State Town & Country Planning Organization covering an area of 129.50 Sq. kms which was approved by the State Government in the year 1972 (vide Government Notification No. 6972/L.S.G. Patna dated 28.07.1972. The Plan had perspective 1983.

Again, in year 1983 the state government initiated to revise the master plan of 1965 and tried to guide the city's growth in planned manner. Ranchi master plan 1983 was a major effort taken by the Ranchi Regional Development Authority (RRDA) and to accelerate the growth pattern of the City in a planned manner. The master plan was prepared for the estimated population of 6, 68,433 persons by the year 2001. The total area was covered in the master plan was about 6,12,340 hectares out of which 15,914 hectares are covered by urban centres and 5,96,4326 hectares by the rural areas. The Ranchi urban agglomeration was comprised of five urban centres (Ranchi, Doranda, Jagannathnagar, Kanke and Namkum).

The plan is now being revised to have a Comprehensive Master Plan (CMP) for Ranchi Area with perspective 2037.

The region delineated under Ranchi Planning Area (RPA) constitutes areas of Ranchi Municipal Corporation constituting 55 wards, Urban Growth of Kanke, Tati Census Towns and 116-revenue villages enveloping the city urban area as follows:

Kanke (156), Kadma (155), Garu (153), Jaipur (189), Konje (151), Kamta (152), Naudsoso (150), Chatakpur (148), Dhamaissoso (147), Sundil (146), Jhiri (145), Tendar (77), Ratu (79)

Banhaura (142), Dahisota (143), Kamre (144), Pandra (149), Simliya (139), Tiltla (94), Dandaiphuthattoli (95), Pirra (93)

Dumardaga (181), Sugnu (170), Lalganj (171), Pertol (172), Khatanga (179), Getlatu (166), Hambai (167), Mesra (169), Rudiya (168), Turup (16), Salhan (15), Jamunari (17), Masu (18), Hesal (19), Berwari (20), Tati (173), Silwai (174), Chatra (31), Irba (27), Neyuri (45), Kollari (28), Karma (30), Hutup (29), Lalgah (14), Rukka (31)

Boreya (185), Arsande (159), Hochar (158), Sangrampur (160), Patraru (161), Renro (163), Kadal (165), Chuttu (164), Oyana (46), Chandwe (47), Dubhiya (48), Banhura (49)

Khijiri (219), Bargawon (216), Sidraul (218), Tumbagotu (301), Mariyatu (303), Chandaghas (300)

Lodhma (302), Kutiatu (330), Palandu (331), Ganrke (335), Chene (337), Rampur (336), Sarwal (334), Jordag (324), Tertri (325), Kharsidag (326), Arma (333), Malti (332), Sahera (329), Pindarkom (328), Churu (327), Ithe (304), Kochbang (306), Lolkhatanga (305)
Ara (178), Haratu (175), Mahilong (176), Baram (177), Kewali (217), Ulatu (339)
Daladili (133), Meral (134), Gutuwa (138), Saporom (137), Tundul (231), Kudlum (124), Hotwasi (232), Labed (233), Balalong (236), Harser (235), Nachiyatu (241), Baridih (237), Sombo (239), Bhandratoli (240), Sithiyo (255), Singhpur (238), Chete (256), Sohdag (257), Pundag (228)
Pindarkom (254), Jamgain (264), Ghuthiya (265), Sukurhuttu (269), Jojosiring (252), Hulhundu (266), Gundu (268), Kutetoli (299), Oberiya (297), Dungri (294), Tanko (295), Garhkhatanga (296)

The total area covered under Ranchi Planning Area (RPA) is approximately 652.20 Sq. km. (including Greater Ranchi Phase – I area of 8.32 Sq. km – Villages: Ani, Murma, Kute, Labed, Tiril, Bhusur, Kalyanpur and Jagannathpur)

1.8.1 Division of RPA-2037 into Districts and Planning Units

The proposed Master Plan of Ranchi-2037 is divided into 7-Planning Districts, which further sub-divided into 14-Planning units. The details of each planning units are given in **Table No. 1.5**.

Table No. 1-5: Area covered under each Planning Units

Planning Unit	Area Covered
PU-1	Ward 14, 15, 25, 26, 27, 28 and 29, 47, 48 and 50
PU-2	Ward 16, 17, 18, 19, 22, 23, 24, 30 and 31
PU-3	Ward 1, Jaipur (189), Garu (153), Kadma (155), Ratu (79), Tendar (77), Kamre (144), Jhiri (145), Sundil (147), Dhamaisoso (147), Chatakpur (148), Naudsoso (150), Kamta (152) and Konje (151)
PU-4	Ward 2 and 3, Kanke (156), Arsande (159), Boreya (185), Sangrampur (160), Partial Village Patratu (161), Hochar (158), Banhura (49) and Dubhiya (48)

Planning Unit	Area Covered
PU-5	Ward 4, 6, 8, 9, 10, 20 and 21
PU-6	Ward 5, Lem (162), Partial Ward 5, Kadal (165), Renro (163), Partial Village Patratu (161), Chuttu (164), Chandwe (47), Oyana (46), Partial Village Getlatu (168), Neyuri (45), Kollari (28) and Irba (27)
PU-7	Ward 7, 11, 12, 13, Petrol (172) and Khatanga (179)
PU-8	Lalganj (171), Dumardaga (181), Sugnu (170), Jamunari (17), Partial Village Getlatu (166), Hawbai (167), Mesra (169), Rudiya (168), Rukka (31), Hutup (29), Karma (30), Turup (16) and Salhan (15)
PU-9	Partial Village Hesal (19), Masu (18), Tati (173), Partial Village Silwai (174), Haratu (175), Partial Village Chatra (31), Mahilong (176)
PU-10	Ward 49, Ara (178), Bargawon (216), Baram (177), Kewali (217), Sidraul (218), Kutiatu (330), Sahera (329), Village Tetri (325), Arma (333), Malti (332), Palandu (331), Village Ganrke (335), Village Ulatu (339), Berwari (20), Partial Village Hesal (19), Partial Village Silwai (174), Partial Village Chatra (31), Chene (337), Rampur (336), Sarwal (334), Jordag (324)
PU-11	Ward 45, 46, 51, 52, 53, 54, Khijri (219), Tumbagutu (301)
PU-12	Kutetoli (299), Oberiya (297), Mariyatu (303), Chandaghasi (300), Ithe (304), Dungri (294), Tanko (295), Garhkhatanga (296), Lolkhatanga (305), Gundu (268) and Kochbang (306), Lodhma (302), Churu (327), Pindarkom (328) and Kharsidag (326)
PU-13	Ward 38, 39, 40, 41, 42, 43, 44, 55, Labed (233), Hotwasi (232), Balalong (236), Harser (235), Nachiatu (241), Bhandratoli (240), Semba (239), Baridih (237), Singhpur (238), Chete (256), Sithiyo (255), Pindarkom (254), Balsiring (253), Sukurhutu (269), Ghuthia (265), Sohdag (257), Jamgain (264), Hulhundu (266) and Jujosiring (252), Daladili (133), Meral (134), Gutuwa (138), Saporom (137), Tundul (231), Pundag (228) and Kudlum (124)
PU-14	Ward 32, 33, 34, 35, 36, 37, Partial Village Pandra, Pirra (93), Dandaiphuthat (95), Tilta (94), Simliya (139) and Dahisota (143)

Refer to Map No. 1.2

To facilitate higher order planning, the Planning Units have been further grouped to form Planning Districts with an average 4-5 lakh population. **Refer to Map No.**

1.2**Table No. 1-6: Distribution of Planning Units in Planning Districts**

District	Planning Units (PUs)
A	PU-1 and PU-2
B	PU-3 and PU-4
C	PU-5 and PU-6
D	PU-7 and PU-8
E	PU-9 and PU-10
F	PU-11 and PU-12
G	PU-13 and PU-14