2.1 CONSTITUENT AREA

The National Capital Region includes NCT-Delhi, nine districts of Haryana, six districts of Uttar Pradesh and one district of Rajasthan. Total area of the region is 34,144 sq. km. (Map 2.1 National Capital Region Regional Plan-2021: Constituent Areas). Subsequent to the preparation of the Regional Plan-2021, a few districts were bifurcated and reorganized by the participating States. The current administrative units and their land areas are as follows (Figure 2.1):

a) National Capital Territory of Delhi (1,483 sq. km.) accounting for 4.4% of the total area of NCR.

b) Haryana Sub-Region with an area of 13,428* sq. km. accounting for 30.3% of the area of the State and 39.3% of the area of NCR comprising following nine districts:

   i) Faridabad  vi) Jhajjar
   ii) Gurgaon    vii) Rewari
   iii) Rohtak  viii) Mewat
   iv) Sonepat  ix) Palwal
   v) Panipat

c) Rajasthan Sub-region comprises Alwar district which has an area of 8,380** sq. km. This account for 2.5% of the total area of the State and 24.5% of the area of NCR.

d) Uttar Pradesh Sub-region with an area of 10,853 sq. km. accounting for 4.5% of the area of the State and 31.8% of the area of NCR comprising following six districts:

   i) Meerut      iii) Gautam Budh Nagar  v) Baghpat
   ii) Ghaziabad  iv) Bulandshahr        vi) Hapur

2.2 PHYSICAL SETTING

The National Capital Region lies between 27° 03’ and 29° 29’ North latitude and 76° 07’ and 78° 29’ East longitude. The physiography of the region is characterized by the presence of the river Ganga skirting it as its eastern boundary, the river Yamuna traversing north-south forming the boundary between Uttar Pradesh and Haryana, and the sand dunes and barren low hills of the Aravalli chain and its outcrops in the west, flat topped prominent and precipitous hills of the Aravalli range enclosing fertile valleys and high table lands in the south-west, and the rolling plains dominated by rain-fed torrents in the south. The rest of the region is plain with a gentle slope from north-east to south and south-west. (Map 2.2 National Capital Region: Physiography and Slope).

2.3 GEOLOGY

The rock type exposed in the area belongs to Delhi Super-group of Lower Proterozoic age and consists of Quartzite of the Alwar Group, Phyllite and Slate of the Ajabgarh Group. The Quartzites are massive, thickly bedded, hard, compact and highly jointed and are intercalated with thin beds of Phyllite and Slates. The strike of the beds is NNE-SSW and dip westerly at moderate angles. These rocks are mostly covered by quaternary sediments and are exposed in isolated residual and structural hills and pediments.

Note: * Increase in area of Haryana Sub-region is due to reorganization of Panipat district as per Statistical Abstract, Haryana.

** Area of Rajasthan Sub-region is as per letter dated 24.5.2013 from the Government of Rajasthan.
These hills are exposed in south and south-west of Delhi at Delhi, Gurgaon, Rewari and Alwar. The rocks near Delhi consist of narrow strike-ridges and are moderately folded and they are over-folded in the south-east as a series of isoclines (Map 2.3 National Capital Region: Lithology).

### 2.4 GEOMORPHOLOGY

Topographically the NCR has two major sub-units. The alluvial plains whose monotonity is intercepted by isolated hillock or fairly continuous ridges of hard rock and sand dunes not more than 50 metres in elevation from the plain lands surrounding them. NCR terrain around Delhi, Haryana and U.P. constitutes such a plain. Sand dunes are prominent in parts of Haryana and Rajasthan and hard rock ridges bending NE to SW is seen in south and south-west of NCR covering good parts of the Alwar district and Delhi (Map 2.4 National Capital Region: Geomorphic Units).

The Ganga Sub-basin is a major part of the Ganga, the largest river basin in India. The watershed of the Ganga covers almost the entire northern India including Yamuna basin. A clear watershed line divides the area between Ganga basin and Yamuna basin within NCR. The topography of the main Ganga river system varies from rugged hills of the Himalayas to the alluvial plains. The soil generally consists of alluvium deposits in the Gangetic plains.

The Yamuna river system is bounded by the Himalayas on the north and the Vindhyas on the south. In the east, it is separated by the ridge from the main Ganga catchment and on the west by the ridge separating it from the Luni and the Ghaggar basins. Most parts of catchment in Haryana and U.P. lies in the Gangetic alluvial plains.

The important tributary of the Yamuna in NCR is the Hindon, which rises from southern slopes of the Shivalik in Saharanpur district of U.P. and ultimately meets the Yamuna from the left downstream of Okhla. The other tributary which is not having a defined course is the Sahibi river, which rises from the hills in Jaipur district of Rajasthan and after flowing through Haryana enters NCT of Delhi through Dhansa Bund into Najafgarh Jheel and then joins the Yamuna in NCT of Delhi. The paleo-channels are confined in between the Ganga and the Yamuna courses in the eastern and the central part of the area.

Prominent structural hills in NCR are noticed around Delhi, Rewari, Gurgaon and Alwar. The residual hills are found in and around Rewari, Alwar and Delhi. The alluvial plain occupies a major portion of NCR and is formed by the Yamuna and the Ganga rivers. The sand dunes are present around Jhajjar and Rohtak in the western part of NCR.

### 2.5 RIVER SYSTEM

NCR is drained by three perennial rivers viz. the Ganga, the Yamuna and the Hindon. The Ganga forms the easternmost boundary of the area and flows southerly direction for the entire length of the area. The Yamuna forming a boundary between Haryana and Uttar Pradesh also flows southerly direction and almost bisects the area. Hindon river also flows in southerly direction. There are many other small streams falling in U.P. viz. Karavan Nadi, Kali Nadi, Nim Nadi, all flowing towards south. The southern and south-western parts of NCR area is deprived of perennial river. The line of natural drainage in this part is from south-west to north-east or north namely Sahibi Nadi, which is ephemeral, enters the area at about 5 kms. south of Behror in Alwar district in Rajasthan. It flows in a north-east direction towards Rewari, in Haryana. It carries away the water of the western slope of the central range of Aravalli hills. Another ephemeral stream in the area is Ruparch which is in the extreme south of the area falling in Alwar district.

### 2.6 GROUND WATER

The quartzite and its associated rocks of the Delhi series are traversed by joints and are folded, faulted and fractured. The joints persists deeper down often to about 100 metres depth, which is the maximum depth to which most of the tube wells to date exist. The joints and fractures are open, often filled with debris and mutually interconnected; cavities created by the erosion of mica-schist add to the secondary porosity developed by these joints and fractures. Ground water occurs in the consolidated rocks both in confined and semi-confined conditions. Mostly the top water table zone and the deeper semi-confined aquifer have the same static water level surface because of their interconnections. The details about ground water in NCR have been elaborated in the Chapter 8 of the Regional Plan.
Regional Plan 2021

National Capital Region Physiography and Slope

Legend

Physiography: Gently Sloping Plains 0 – 1%, Moderately Sloping Plains 1 – 3%, Undulating Terrain 3 – 5%, Foot Hills 5 – 10%, Hills 10% +

Source: NRSA Study (Using Global DEM)-2005

National Capital Region Planning Board
MAP 2.2