BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,

PRINCIPAL BENCH, NEW DELHI

Original Application No. 1220/2024

IN THE MATTER OF:

Yadaram Singh ...Applicant

VERSUS

State Level Environment Impact Assessment Authority, Uttar Pradesh & Ors. … Respondents

ADDITIONAL DOCUMENTS ON BEHALF OF APPLICANT

Aaditya Thorat
Counsel for Applicant

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DISTRICT SURVEY REPORT

(As per MoEF & CC, GOI Notification No. S.O. 141(E) dated 15-Jan-2016, S.O.3611 (E) dated 25 July-2018, Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining 2020)

OF

RIVERBED MINING SITES

DISTRICT-BASTI

(UTTAR PRADESH)

CHAIRMAN
STATE ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY (SEIAA, U.P.)
AND
DIRECTORATE OF GEOLOGY & MINING, MINERAL RESOURCES DEPARTMENT, GOVT. OF U.P.

Mine Officer, Basti Member / Convenor	**Regional Officer** Uttar Pradesh Pollution Control Board, Basti Member	**Executive Engineer** Irrigation, Basti Member
Sub District Magistrate (Judicial) Mr. Manoj Prakash Member	**Divisional Forest Officer** Basti Member	**Additional District Magistrate (F/R)** Chairman Sub-Divisional Committee

MAY - 2024

Client:

District Magistrate, Basti
Mining Section, DM Camp Office, Katra, Basti,
Nauachh, 272001 Uttar Pradesh

Consultant:

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ENV Developmental Assistance Systems (I) Pvt. Ltd.
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1.0 INTRODUCTION

Basti was originally known as Vaishishthi. The origin of the name Vaishishthi is attributed to the fact that this area was the ashram of Rishi (sage) Vashistha in ancient period. Rama with his younger brother Lakshmana had resided here for some time with Rishi Vashistha. The tract comprising the present district was remote and much of it was covered with forest. But gradually the area became habitable, for want of recorded and reliable history it cannot, with any degree of certainty, be said how the district came to be known by its present name. In 1801, the town Basti became a ***tehsil*** headquarter, and in 1865, it was chosen as the headquarters of the newly established Basti district of Gorakhpur Division, on 6 May 1865. At first, the plan was to use the Rapti and Jamuwar rivers as the boundary between Basti and Gorakhpur districts, but this plan was abandoned. Instead, the boundary cut across existing parganas, with a few areas east of the Jamuwar becoming part of Basti district, while the eastern parts of Maghar and Binayakpur parganas remained in Gorakhpur district. New tehsils were established, and most of the original 8 parganas were split into two, for a new total of 13 parganas. Subordinate to the parganas were 131 tappas, which were of significant administrative significance. Amorha Khas is a historical place situated at a distance of 41 km from the district headquarter. Its old name is Ambodha, and it was once a province (state) of Raja Zalim Singh. Raja Zalim Singh's Mahal is here, old wall of mahal is still visible with the marks of bullets used by the English. The famous Ramrekha Temple is one of the most ancient Hindu Mandir of Lord Ram and Goddess Sita. Lord Shri Ram stayed here for one day during his journey of Janakpur-Ayodhya. Lord Shri Rama and Sita with Lakshmana journeyed towards Ayodhya by the road called Ram Janki Marg (present-day State Highway 72) near Chhawani. In the Great Revolt of 1857, about 250 martyrs of Amorha State were hanged by the British Government from peepal trees located at Chhawani.

2.0 OVERVIEW OF MINING ACTIVITY IN THE DISTRICT (BRIEF HISTORY OF OLD WORKING, PRE-EXISTING AND PROPOSED MINING ACTIVITIES)

There is no major or minor mineral available in the district. However, substantial deposits of sand are available in the district. At present there are 10 mines in Basti district. On the basis of the information given in ECs, these mines are situated on Ghaghra River covering an area of 57.09 ha and total production is more than 8,90,554 cum.

3.0 LIST OF MINING LEASES IN THE DISTRICT WITH LOCATION, AREA AND PERIOD OF VALIDITY

Sl. No.	River Details	Lease Details	Area (in Ha)	Total excavation in Tonnes / Annum	Validity of Lease/ Mineral
1.	Ghaghra River	Village-Majha Sitarampur, Tehsil- Harraiya, District- Basti Gata No.- 109 / 7	10.125	5,10,908 cum	Existing
2.	Ghaghra River	Village- Bardiya Lohar, Tehsil- Harraiya, District- Basti Gata No.- 413 Da / 1 Mi, 413 Mi, 412 Da Mi, 413 Ka/53	4.340	2,18,996 cum	Existing
3.	Ghaghra River	Village- Mahuapar Khurd K-1, Tehsil- Sadar, District- Basti Gata No.- 391ka / 67 K-1	10.0	1,37,500 cum	Existing
4.	Ghaghra River	Village- Majha khurd Tehsil- Sadar, District- Basti Gata No.- 1164/94	15.40	2,77,200 cum	Proposed
5.	Ghaghra River	Village- Aaraji Duhi Musinne Pure Chetan Tehsil- Harraiya, District- Basti Gata No.- 02 mi	10.0	1,80,000 cum	Proposed
6	Ghaghra River	Village - Majha Khurd Tehsil - Sadar, District - Basti, Gata No. 1164Ja, 1164/12 Ka Mi, 1164/54Ka	1.42	71,000 cum	Proposed
7	Ghaghra River	Village - Majha Khurd Tehsil - Sadar, District - Basti, Gata No.1164/33Ka, 1164Ka/51	1.29	64,500 cum	Proposed
8	Ghaghra River	Village - Majha Kala Tehsil - Sadar, District - Basti, Gata No. 553	2.06	51,500 cum	Proposed
9	Ghaghra River	Village - Majha Kala Tehsil - Sadar, District - Basti, Gata No. 1456 Mi	1.02	30,600 cum	Existing
10	Ghaghra River	Village - Devariya Urf Tangaria Babu (Mahuli Pashim) Tehsil - Sadar, District - Basti, Gata No. 568 Ka/63	1.09	30,700 cum	Existing

4.0 DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEAR

Mineral	**Revenue received in 2020-21 (in Rs.)**	**Revenue received in 2021-22 (in Rs.)**	**Revenue received in 2022-23 (in Rs.)**
Sand	93336659	33742800	7438135
Morrum	-	-	-
Bajri	-	-	-

5.0 DETAILS OF PRODUCTION OF SAND / MORRUM / RBM OR OTHER MINOR MINERAL IN LAST THREE YEARS

Mineral	**Production in 2020-21**	**Production in 2021-22**	**Production in 2022-23**
Sand	117425 Cum	171002 Cum	60987 Cum
Morrum	-	-	-
Bajri	-	-	-

DISTRICT WISE DETAILS OF EXISTING MINING LEASE OF SAND AND AGGREGATES AND STATUS OF NOC FROM VARIOUS DEPARTMENTS

S. No.	Details of lease	Location	Area	Annual Volume	Details of Lease holders	Previous mining details	NOC from Irrigation Department	NOC from Agriculture Department
1	Tehsil Harraiya Village Bardiya Lohar	Harraiya	4.34	86,800 cum	Sri Deependra Kumar Budhauliya S/o Motilal Budhauliya Mohalla Deevanpur kasba Thana Rath Distt Hamirpur	-	Yes	-
2	Tehsil Harraiya Village Majha Sitarampur	Harraiya	10.125	2,93,625 cum	Shri Awadh Narayan Pandey S/o Shri Krishn Kant Dev Pandey village and post Taravan Tehsil Rabertganj Distt Sonbhadra	-	Yes	-
3	Tehsil	Basti	1.02	30,600	Shri Ram Lalit	-	Yes	-

	Basti Sadar Village Majha Kala	Sadar		cum	S/o Shri Pillu Village Phoolpur Post Kalwari Distt Basti			
4	Tehsil Basti Sadar Village Devariya Urf Tengariya Babu	Basti Sadar	1.09	30,700 cum	Shri Constructions Prop. Shri Rohit Mishra S/o Ramesh Kumar Mishra Village Togpur Post Sahadat Ganj Thana Cant District Ayodhya	-	Yes	-

6.0 PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVERS OF THE DISTRICT (RIVER GEOMETRY)

The river rises in Tibet, flows through Nepal and, crosses the Himalayas at Chisha Pani before finally confluence with the Ganga. The substrate is largely composed of sand and silt. Riverbanks are largely sandy and both the banks were exposed. the Ghaghara river at this site is characterized by a braided morphology and is anabranched with large alluvial islands, small mid channel bars and lateral bars. The channel is mostly asymmetric with a wide main channel (avg. 300 m in low flow condition) and is susceptible to floods along the right bank of the channel belt. A sandy channel substrate and banks are noted. Many reaches upstream as well as downstream are identified as highly aggrading. A sandy channel substrate and banks are noted, with calcretic bed material exposed in some areas in low flow condition and portions of pedogenic calcrete bank material. The sediment load at Ayodhya site is 398217 tonnes per day (145.45million tonnes/year) for 80,889 km^2 i.e. 4.92 tonnes per day per km^2. This corresponds to a catchment denudation rate of 1.29 mm/year. In low flow years the sediment load is low while the high flow years have high sediment load. The sediment load is maximum in the month of August in correspondence to stream flow. In lean flow years the sediment load is low while the high flow years have high sediment load. The sediment load is maximum in the month of August in correspondence to stream flow. T h e Ghaghara Sinuosity index is indicating high sinuous in nature due to high discharges and sudden reduction in gradients as well as flow velocity in the channel during the river's different flow conditions. The high discharge during the monsoon is the most prominent effective factor behind the flood of the Ghaghara River during its course. This seems to be a heavy rainfall receiving area in the Ghaghara River Basin. The result reveals that morphological activity which indicates mature stage of topographic evolution and erosion on the hydrological significance as well and analysis provides information that identification of flood process to study of Sinuosity indexes leading destroyed infrastructural equipment and houses and agricultural plants. The river's hydrology is influenced by the South Asian monsoon and glacial melt in its source region in the Himalayas. Heavy rains occur during the summer monsoon (June to September), and the glaciers provide their greatest amount of water to the river during the same period. Vegetation varies from low-lying alpine plants at high elevations to tropical forest where the river crosses the Siwalik Range.

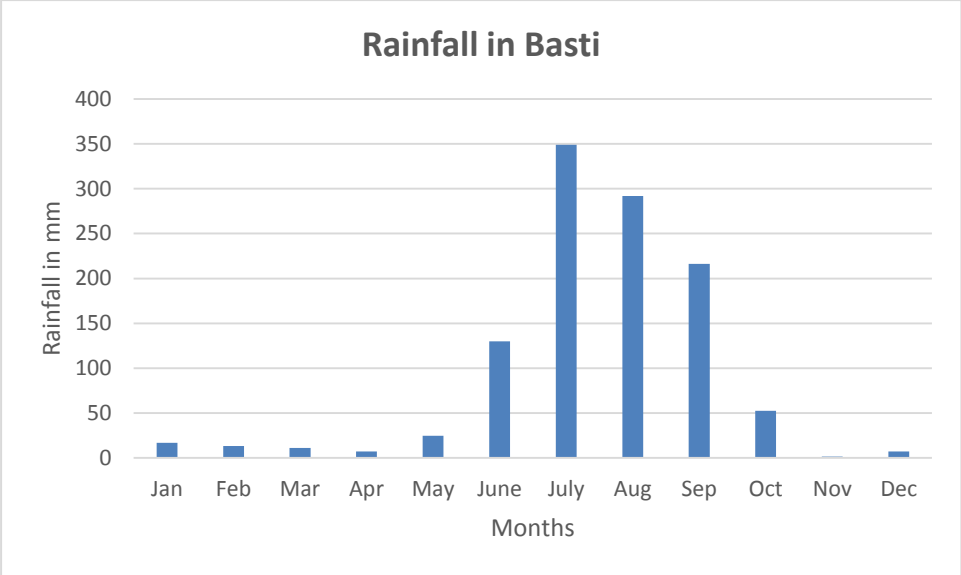
6.1 EVOLUATION

The sandy units of Ghaghara include planar cross-bedding, trough cross-bedding, and ripple lamination makes the major portion and is present in the lower to middle part of the channel bar deposits. Silt and clay unit, showing climbing ripple lamination and laminated mud, constitutes minor portion and is present above the sandy facies. Aeolian sandy facies, if present, makes the negligible percentage of the channel bar deposits. The facies of the river bank deposits are sandy, silty, and clayey. The sandy facies is prominent in the lower and middle part. This 120- to 200-cm thick unit is devoid of sedimentary structures, only faint low-angle discordances are visible at some places. The sandy unit is underlain by 20- to 40-cm thick silty unit. The upper most part is 40- to 50-cm thick clayey unit. The facies of the river bank deposits are laterally persistent, only thickness and percentage of different litho units may vary from place to place. The granulometric parameters indicate that the sediment size is 2.4 and 2.28 Ø for lateral and braid bar deposits, respectively. The sediments are fine sand, and its size varies between 2 and 3 Ø for different sandy facies of the channel bar deposits. The sediment size in the river bank deposits varies from 2.3 to 3.5 Ø for sandy units. The river bank sediments are made up of fine sand. Sand is a non-cohesive granular material with low degree of compaction and has a capacity for sliding, removal, and scouring. Finer sediment (clay) has resistance against sliding, removal, and scouring action.

6.2 ANNUAL RAINFALL OF THE DISTRICT

The rainy season commences by late June when south western monsoon sets in over the State. The humidity gradually increases and reaches above 80%. August is the peak rainy season.

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
16.8	13.2	11.1	7.2	24.6	130	348.9	291.8	216.4	52.4	1.5	7.2



Rainfall in Basti

The bulk of annual rainfall about 85% occurs during monsoon period (June to September). The rainfall is variable over the District ranging from maximum 348.9 to minimum of 1.5 mm.. The annual rainfall for the year 2021 is 1121.1 mm. The amount of average monsoonal rainfall of 987.1 mm.

Monsoon Rainfall	Non-Monsoon Rainfall	Total Rainfall
987.1	134	1121.1

(Source: GWYBUP 2021-22)

6.3 PROCESS OF DEPOSITION

Rivers are one of the major sources to supply sand and gravel for construction projects. Heavy water flow in key rivers will bring alone fresh sand and fill deep pits on riverbeds. The factors for the replenishment of the river are such as catchment area, tributaries, general profile of the river system- geology/lithostratigraphy, climate and annual precipitation, erosion and weathering, sedimentation and transportation, engineering structures like stop dam, check dam, barrage, activity near river bank, turbidity, bird habitat, riparian habitat, flora and fauna, groundwater etc. Depending on river morphology and hydraulic characters, sediment transport capacity may vary. It is important to study in detail about pre-monsoon and post-monsoon status of river and sand deposition.

Sediment transport is critical to understanding how rivers work because it is the set of processes that mediates between the flowing water and the channel boundary. Erosion involves removal and transport of sediment (mainly from the boundary) and deposition involves the transport and placement of sediment on the boundary. Erosion and deposition are what form the channel of any alluvial river as well as the floodplain through which it moves. The amount and size of sediment moving through a river channel are determined by three fundamental controls: competence, capacity and sediment supply. Competence refers to the largest size (diameter) of sediment particle or grain that the flow is capable of moving; it is a hydraulic limitation. If a river is sluggish and moving very slowly it simply may not have the power to mobilize and transport sediment of a given size even though such sediment is available to transport. So a river may be competent or incompetent with respect to a given grain size. If it is incompetent it will not transport sediment of the given size. If it is competent it may transport sediment of that size if such sediment is available (that is, the river is not supply-limited).

6.4 MODE OF SEDIMENT TRANSPORT

The sediment load of a river is transported in various ways although these distinctions are to some extent arbitrary. The loose boundary (consisting of movable material) of an alluvial channel deforms under the action of flowing water and the deformed bed with its changing roughness (bed forms) interacts with the flow. The resulting movement of the bed material (sediment) in the direction of flow is called sediment transport and a critical bed shear stress (t) must be exceeded to start the particle movement. Such a critical shear stress is referred to as incipient (threshold) motion condition, below which the particles will be at rest and the flow is similar to that on a rigid boundary.

6.5 REPLENISHMENT

Distribution of various rock types in the Ganges River Basin are as follows: Recent Alluvium (57%), Deccan and Rajmahal traps (10%) (Tertiary), Granites, Gneisses and Charnokites (11 %) (Tertiary), (Archean) Granites and Gneisses (5%), Cambrian and Upper Precambrian sedimentary rocks (16%). The impact of the monsoon in leading to highly episodic sediment transport has been observed the different size fractions which make up the sediment load carried by the River Ganges. It has to be recognised that

changes in sediment load through time, or over space, may simply be reflecting the addition from different sources or the subtraction in different locations of material of a specific size. Other sediment properties, in addition to particle size, are also known to vary in Indian rivers. Clay mineralogy, for example, is known to be dominated by illite also called hydromica or hydromuscovite in May, but by kaolinite in August. Sand may be replaced from one location to another on the river course. It may not increase the existing (sand) stock, but will partially refill the pits, where sand was mined in the past, as water flows from the upstream, Sand will not replenish with just a rain or excessive inflow, it takes centuries for the process.

High water during monsoon, low degree of compaction of the sediments, and a large amount of runoff materials from watershed cause the river channel to shift laterally. It is considered that the stream bank erosion is caused by flooding and erosion is greater on sandy than on silty soils. The lateral erosion is common all along the Ghaghara River, but is more prevalent in the in middle reaches where narrow channel is confined within wide valley made up of sandy and silty sediments with low degree of compaction. Such events may become more frequent and severe in future with changes in land use and rapid urbanization. The main tributaries of Ghaghara are Sharda, Sarju, Chauka, Kuwana, Rapti, Chhoti Gandak, Jharahi, and Daha. Rapti and Chhoti Gandak rivers join with Ghaghara near Barhaj in Deoria district of Uttar Pradesh. Ghaghara is very notorious and is prone to fluvial hazards. Ghaghara is a unique river with respect to fluctuation of discharge (Very high discharge during monsoon and very low discharge during dry season), high sediment load, and channel instability. It has higher discharge than the Ganga before its confluence near Maharajganj, Chhapra district of Bihar. It consists of alluvium deposited by various river systems under different climatic conditions and surface processes in which coarser sediments were deposited under high-energy environment and finer sediments during low energy environment. Older alluvium (Bhangar) and newer alluvium (Khadar) are the two morpho-stratigraphic units in the classical literature of the Ganga Plain. Older alluvium is located at an elevation of 10–20 m above the river level and makes the higher interfluve areas. It is free from frequent flooding and therefore most suitable for settlement and agriculture. Newer alluvium forms the river valley terrace and is located at an elevation of 5–10 m above river level. This terrace is not suitable for settlement but can be used for agriculture, as it is often affected by flood. The flood plain is located at an elevation of 2–5

m above the river level. Water reaches almost every year on this plain. It is neither suitable for settlement nor for agriculture.

6.6 SEDIMENT DISCHARGE RATE

The Ganga River is one of the world's largest sediment dispersal systems, with a channel length of 2974 km and a basin area of 965 936 km^2, transporting an extremely high suspended sediment load of 356×10^6t $year^{-1}$. The Ganga and Brahmaputra rivers yield approximately 10^9t $year^{-1}$ of suspended sediment at a point in Bangladesh about200 km from the ocean, which is perhaps the highest suspended load carried by any river system in the world (Wasson2003). Abbas and Subramanian (1984) estimated the sediment load of the Ganga at Farakka to be nearly 7.29×10^8t $year^{-1}$ of which 328×10^6t $year^{-1}$ is transported downstream. The Himalayas are the major supplier of sediments to the Ganga plain but the southern peninsular rivers have also contributed significantly to alluvial fills in the geological past (Sinha and Sarkar2009). The Himalayan rivers are characterized by higher flows higher basin relief, larger catchment area, greater basin instability involving landslides and earthquakes, and younger geological formations as compared to the peninsular rivers. In addition, they also differ in terms of climatic conditions, degree of urbanization and in the use of water resources, which affect the magnitude and nature of sediment transport (Subramanian1996).Sinha and Friend (1994) categorized the Himalayan River system into three distinct classes on the basis of the source area: mountain-fed, foothills-fed and plains-fed river systems. The mountain-fed rivers (e.g. Kosi, Gandak) derive their water and sediments from the High Himalayas and they have a much larger hinterland compared to the alluvial part. The foot-hills-fed (e.g. Baghmati, Rapti) and plains-fed rivers (e.g. Burhi Gandak, Gomti) drain the inter-fluve region between the fans and derive sediments partly from the foothills but mostly within the plains. The plains-fed rivers cause rigorous and repeated reworking of the sediments deposited by the mountain-fed or foothills-fed rivers. In the Himalayan region, natural hazards such as floods, landslides (triggered by heavy monsoon and tectonic activity) and glacial lake outburst floods (GLOFs) are frequent and they contribute large volumes of sediments. Human activity has significantly altered the unregulated flow characteristics of the Ganga River system. The Ghaghara river at this site is characterized by a sinuous pattern and hosts large lateral bars, mid channel bars and few alluvial islands. The channel

is mostly asymmetric with a wide main channel (avg. 450 in low flow condition) and is susceptible to floods along the right bank of the channel belt. A sandy channel substrate and banks are noted, with calcretic bed material exposed in some areas in low flow condition and portions of pedogenic calcrete bank material. In lean flow years the sediment load is low while the high flow years have high sediment load. The sediment load is maximum in the month of August in correspondence to stream flow.

6.7 SEDIMENTATION YIELD

Sediment, the end product of erosion, has a twofold effect:

1- It depletes the Land from which it is derived

2- It impairs the quality of the water-resources in which it is entrained and deposited.

The importance of the sediment-yield-surveys, as preventive and corrective measures, can be attributed to the erosional-processes. (Kumar, 1992) Naturally, sand is a granular material consisting of rock particles and fine minerals measuring between 0.06 mm to 2 mm. Sand is formed from decompactions of rocks due to mechanical strength where decomposed rocks form gravel and then sand. The Ganga basin mainly consists of alluvial sediments, which has been collected over most of the Quaternary period building one of the largest alluvial plains in the world. The basin covers 11 States of India, viz., Uttarakhand, Uttar Pradesh, Madhya Pradesh, Rajasthan, Haryana, Himachal Pradesh, Chhattisgarh, Jharkhand, Bihar, West Bengal and Delhi. With a mean annual flow of $5.9\times10^{11}m^3yr^{-1}$ and sediment load of $1600x10^{12}gyr^{-1}$ the Ganges river ranks second and third, respectively, in terms of water flow and sediment load among the world's rivers. Considering the enormous sediment transport by Ganges to the Bay of Bengal, a study was conducted on the size distribution and mineral characteristics of the suspended sediments of the Ganges river and is reported here. Most of the sediment load has a size range between <4–5.75 φ). The sediments are mostly medium to coarse silt and are poorly sorted. Mica dominates among the clay minerals, followed by chlorite, vermiculite, kaolinite, and smectite. Due to differences in geology, smectite becomes a major clay mineral in downstream rivers. The Ganges River system has wide diurnal, seasonal and annual variations in the sediment-carrying capacity and it varies from 403 to 660×10^6 tonnes/year (Subramanian, V. et al, 1984).

7.0 GENERAL PROFILE OF THE DISTRICT

The district is situated in the north – eastern part of Uttar Pradesh. It forms part of the stretch of country lying beyond the river Ghaghra in northeast corner of Uttar Pradesh. The district lies between the parallels of 26 o 23' and 27 o 30' North latitude and 82 o 17' and 82 o 59' East longitude. It comprises of a tract of somewhat irregular shape. The district is surrounded by Sant Kabir Nagar on the east and Gonda on west, on the south, Ghaghara river separate it from Ayodhya and Ambedker Nagar while on the north the boundary matches with Siddharth Nagar district.

(Source: mineral.up.nic.in)

Fig 1: Location Map of Basti District

The seat of district administration is at Basti. To provide efficient administration the district is administratively divided into 04 Tehsils namely, Harraiya, Bhanpur, Basti and Rudhauli (newly created after 2001 Census). For implementation and monitoring of development scheme the district is divided into 14 Development Blocks namely, Ramnagar, Saltaua Gopal Pur, Paras Rampur, Gaur, Harraiya, Vikram Jot, Kaptanganj, Rudhauli, Sau Ghat, Basti, Bankati, Bahadurpur, Kudaraha and Dubaulia (newly created in year 2002). Total area of the district is 2688.0 Sq. Km. The rural area covers 2662.0 Sq. Km. and urban recorded 26.0 Sq. Km. There are 1047 Gram Panchayats and 3348 Revenue villages with 3160 inhabited villages and 188 uninhabited villages in the district. In urban area there are 03 statutory Towns. Statutory Towns comprises of 01 Nagar Palika Parishad and 02 Nagar Panchayats.

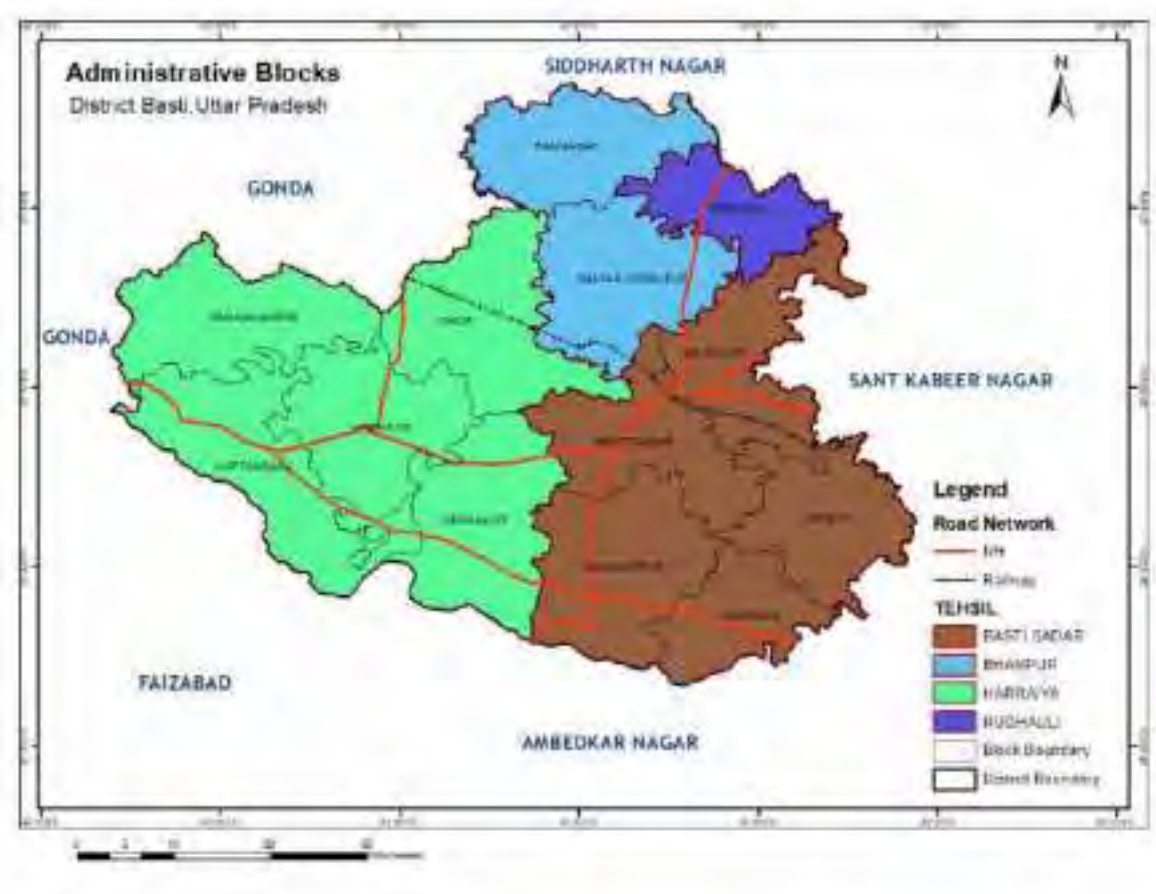


Fig 2: Administrative Map of Basti District

7.1 ADMINISTRATIVE DETAILS

The seat of district administration is at Basti. To provide efficient administration the district is administratively divided into 04 Tehsils namely, Harraiya, Bhanpur, Basti and

Rudhauli (newly created after 2001 Census). For implementation and monitoring of development schemes the district is divided into 14 Development Blocks namely, Ramnagar, Saltaua Gopal Pur, Paras Rampur, Gaur, Harraiya, Vikram Jot, Kaptanganj, Rudhauli, Sau Ghat, Basti, Bankati, Bahadurpur, Kudaraha and Dubaulia (newly created in year 2002). Total area of the district is 2688.0 Sq. Km. The rural area covers 2662.0 Sq. Km. and urban recorded as 26.0 Sq. Km. There are 1047 Gram Panchayats and 3348 Revenue villages with 3160 inhabited villages and 188 uninhabited villages in the district. In urban area there are 03 statutory Towns. Statutory Towns comprises of 01 Nagar Palika Parishad and 02 Nagar Panchayats.

Table 1: List of Blocks of Basti District

S. No.	Name of Tehsil	S. No.	Name of Block
1.	Basti sadar	**1.**	Basti
2.	Rudhauli,	**2.**	Bankati
3.	Bhanpur	**3.**	Dubauliya
4.	Harraiya	**4.**	Gaur
		5.	Harraiya
		6.	Kaptanganj
		7.	Kudaraha
		8.	ParasRampur
		9.	Ramnagar
		10.	Rudhauli (Tehsil)
		11.	Saltaua Gopal Pur
		12.	Sau Ghat
		13.	Vikram Jot
		14.	Bahadurpur

Basti district, a part of Basti division, is formed of four tehsils: Basti Sadar, Harraiya, Bhanpur and Rudhauli and 14 development blocks, 139 Nyay Panchayats, two Parganas named Amorha and Nagar as well as 10 Gram Sabhas. Basti district police is headed by a Superintendent of Police. It has 06 Circle Offices and 17 Police Stations. Basti is well

connected to other places by railway lines and metalled roads. All the blocks and tehsil headquarters of the district are also connected through rail or road network.

7.2 TRANSPORTATION

The district Basti has well laid out road and rail links. The service of north eastern railway (broad gauge) is available in the district. Availability of road communication is important perquisite for infrastructural development of any area. The means of transport is mainly roads and rails. The transport on the main road of the district are run by the state road transport while on other roads transport are carried out by the private buses and taxies. Transport facilities access to anywhere in the district is available at the private bus stand.

S. No.	Name of Authorities	Metalled roads (Kms.)	Unmetalled roads (Kms.)	Total roads (Kms.)
1	P.W.D.	520	96	616
2	Zila Parishad	26	755	781
3	Municipal Board	44	7	51

Fig 3: Transportation Map of Basti District

SH-05 (Lumbini-Dudhi Road) passes through Basti and SH-26 which ends in Basti from Bahraich. SH-64 started from Basti and ends in Tamkukhi Road. NH-28 started from Indo/Nepal Border, Naugarh, Sidarth Nagar, Bansi, Basti Tanda, Azamgarh and terminating at its junction with NH-31 at Varanasi in the State of Uttar Pradesh. NH-328 starting from its junction with NH-28 near Basti and connecting to Mehdawal, Karmaini (junction on NH-24 near Campierganj) and terminating at its junction with NH-730 near Partawal (Kaptanganj) in the state of Uttar Pradesh.

7.3 DEMOGRAPHY

In 2011, Basti had population of 2,464,464 of which male and female were 1,255,272 and 1,209,192 respectively. Average literacy rate of Basti in 2011 were 67.22 compared to 67.22 of 2001. Male and female literacy were 77.88 and 56.23 respectively. Sex Ratio in Basti stood at 963 per 1000 male and child sex ratio is 929 girls per 1000 boys as per 2011 census data. Literacy rate in rural areas of Basti district is 66.27 % as per census data 2011. The density of Basti district for 2011 is 917 people per sq. km.

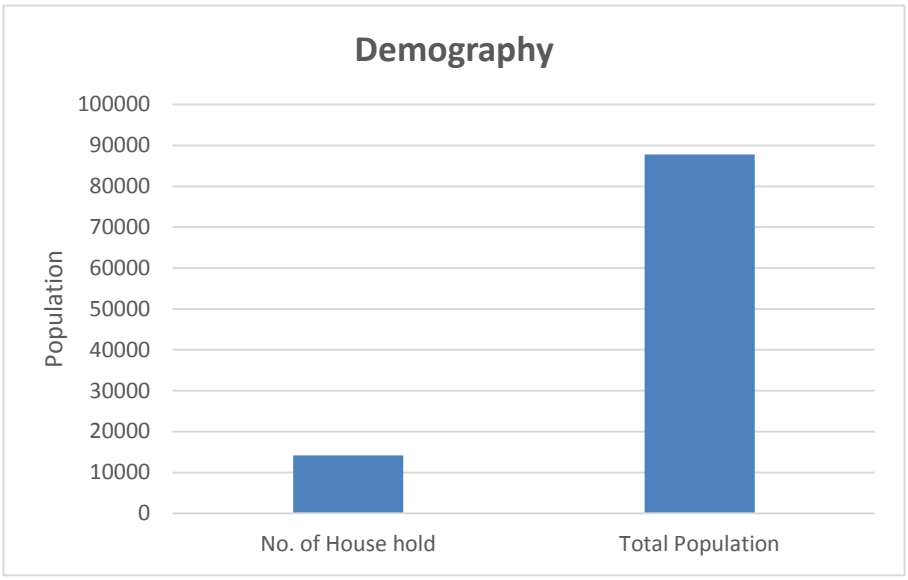


Fig 4: Total population along with number of households in the villages of Basti on the River Banks of Ghaghra

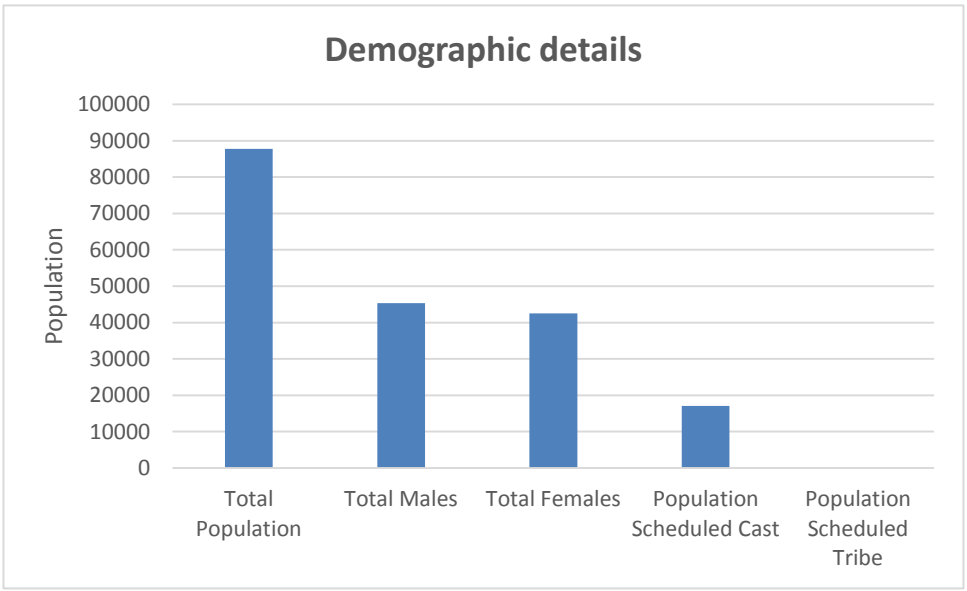


Fig 5: Total population, males, females along with SC/ST population in the villages of Basti on the River Banks of Ghaghra

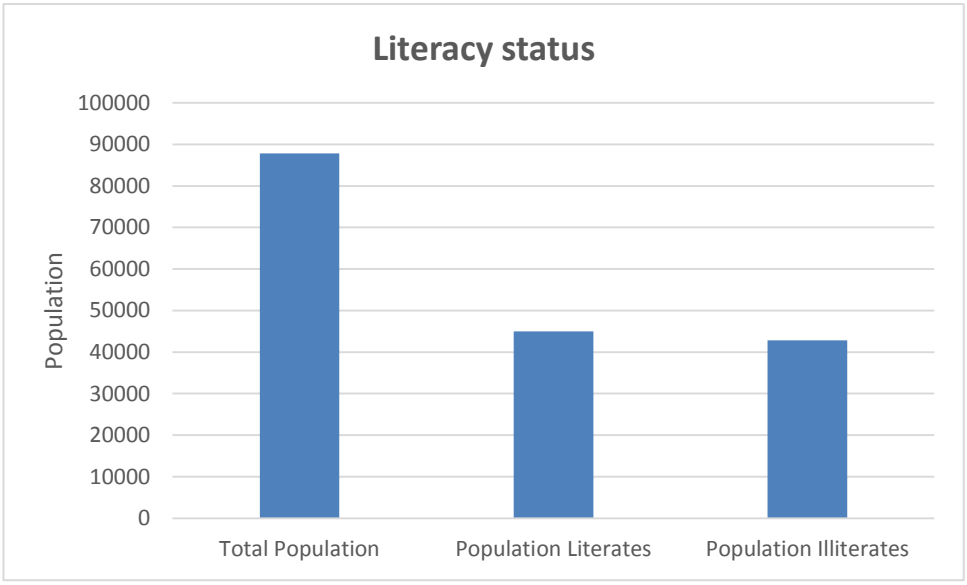


Fig 6: Literacy status in the villages of Basti on the River Banks of Ghaghra

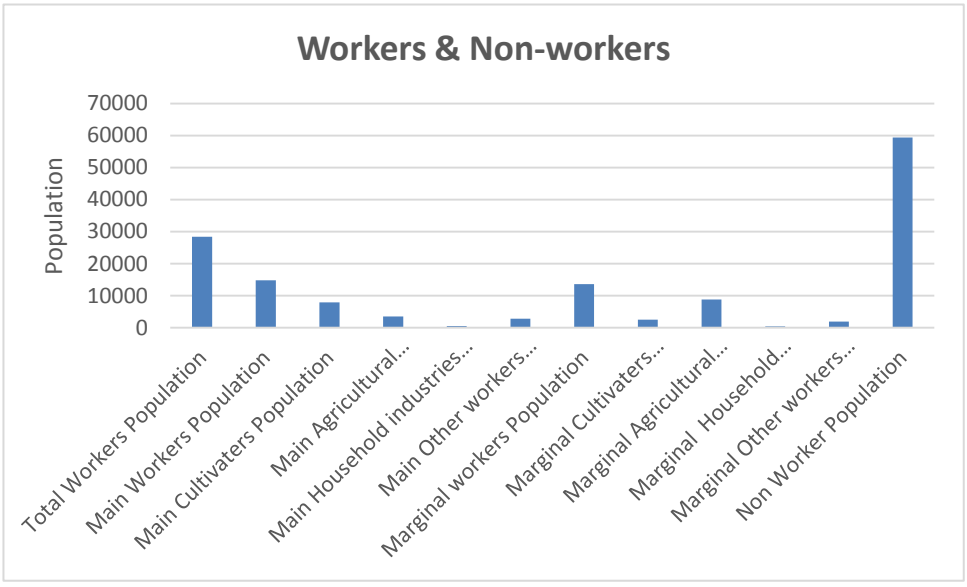


Fig 7: Worker and non-workers in villages of Basti on the River Banks of Ghaghra

Table 2: Villages of Basti on the banks of Ghaghra River

S. No.	Tehsil	Name of Village	S. No.	Tehsil	Name of Village
1.	Bhanpur	Achalpur	**2.**	Harraiya	Gokul
3.	Bhanpur	Dagdaua	**4.**	Harraiya	Paikoliya
5.	Bhanpur	Pakari Chaube	**6.**	Harraiya	Mahil Gaon
7.	Bhanpur	Shivpur	**8.**	Harraiya	Akala
9.	Harraiya	Macha	**10.**	Harraiya	Pure Laxiram
11.	Harraiya	Barsav	**12.**	Harraiya	Balua Pacha Bheti
13.	Harraiya	Pure Ori Raya	**14.**	Harraiya	Balua Rudani
15.	Harraiya	Tendhwa	**16.**	Harraiya	Jajupur
17.	Harraiya	Devnathpur	**18.**	Harraiya	Bhikhi Ban
19.	Harraiya	Mirjapur	**20.**	Harraiya	Ahra Pureno
21.	Harraiya	Gauriya Nain	**22.**	Harraiya	Gobindapur
23.	Harraiya	Laxmanpur	**24.**	Harraiya	Baidauliya
25.	Harraiya	Chhitauna	**26.**	Harraiya	Kashipur
27.	Harraiya	Sadalpur	**28.**	Harraiya	Sarverpur
29.	Harraiya	Vikramjot	**30.**	Harraiya	Pati Mafi
31.	Harraiya	Sahjaura Pathak	**32.**	Harraiya	Chandaha
33.	Harraiya	Kalyanpur	**34.**	Harraiya	Pariyadih
35.	Harraiya	Marthapur	**36.**	Harraiya	Himayupur
37.	Harraiya	Kaulpur	**38.**	Harraiya	Basavanpur
39.	Harraiya	Bagha Nala	**40.**	Harraiya	Dhirauli Babu
41.	Harraiya	Lalpur	**42.**	Harraiya	Gangapur Dube
43.	Harraiya	Paraura	**44.**	Harraiya	Jaitapur
45.	Harraiya	Ram Nagar	**46.**	Harraiya	Ramvapur

47.	Harraiya	Keshawapur	**48.**	Harraiya	Niyamatpur
49.	Harraiya	Ranipur	**50.**	Harraiya	Banipur
51.	Harraiya	Kadkaniya	**52.**	Harraiya	Pure Motiram
53.	Harraiya	Madoi	**54.**	Harraiya	Sanghwapur
55.	Harraiya	Munderipur	**56.**	Harraiya	Pure Narga
57.	Harraiya	Khatan Sarai	**58.**	Harraiya	Ram Nagar
59.	Harraiya	Raidaspur	**60.**	Harraiya	Chhapiya Malik
61.	Harraiya	Sauri	**62.**	Harraiya	Bardiya Lohar
63.	Harraiya	Lakani Dubey	**64.**	Harraiya	Pithiya Laskari
65.	Harraiya	Narsinghpur	**66.**	Harraiya	Araji Duhi Muntasil Pithia Las
67.	Harraiya	Shambhupur	**68.**	Harraiya	Rasoolpur
69.	Harraiya	Khemrajpur	**70.**	Harraiya	Majha Begam Ganj
71.	Harraiya	Chandawaliya	**72.**	Harraiya	Majha Akhanpur
73.	Harraiya	Bara Gaon	**74.**	Harraiya	Ashokpur
75.	Harraiya	Aaliya Jugram	**76.**	Harraiya	Bhuwaria
77.	Harraiya	Trilokpur	**78.**	Harraiya	Sakhiyapur
79.	Harraiya	Jagarnathpur	**80.**	Harraiya	Khushhal Ganj
81.	Harraiya	Sukhrampur	**82.**	Harraiya	Dubaulia Khas
83.	Harraiya	Salempur	**84.**	Harraiya	Bisun Daspur
85.	Harraiya	Kajipur	**86.**	Harraiya	Banjariya Subi
87.	Harraiya	Bharpapur Gairmustakham	**88.**	Harraiya	Katariya
89.	Harraiya	Betavan	**90.**	Harraiya	Gangapur
91.	Harraiya	Pure Chetan	**92.**	Harraiya	Bhiura
93.	Harraiya	Ashaji Duhi Pure	**94.**	Harraiya	Avdhut Nagar

		Chetan			
95.	Harraiya	Puresoni	**96.**	Harraiya	Bisunpura
97.	Harraiya	Karvana	**98.**	Harraiya	Tilakpur
99.	Harraiya	Tursi	**100.**	Harraiya	Majhiyar
101.	Harraiya	Pure Teli	**102.**	Harraiya	Bhankharpur
103.	Harraiya	Sikaraha Panday	**104.**	Harraiya	Gaura
105.	Harraiya	Dudhaura Pure Kuwar	**106.**	Harraiya	Tiwaripur
107.	Harraiya	Pure Hemghar	**108.**	Harraiya	Shukulpura
109.	Harraiya	Jamuar Siddik	**110.**	Harraiya	Dalpatpur
111.	Harraiya	Galriha	**112.**	Harraiya	Baragal
113.	Harraiya	Pure Riksha	**114.**	Harraiya	Devara Ganj Barar
115.	Harraiya	Badhuapar	**116.**	Harraiya	Chandpur
117.	Harraiya	Ramvapur Panday	**118.**	Harraiya	Dharmupur
119.	Harraiya	Sugaha Badali	**120.**	Harraiya	Kaithaliya
121.	Harraiya	Arjunpur	**122.**	Harraiya	Natava Jot
123.	Harraiya	Kanja Misir	**124.**	Harraiya	Saraiya Baxi
125.	Harraiya	Kakari Panday	**126.**	Harraiya	Bhatiha
127.	Harraiya	Pakari Sangram	**128.**	Harraiya	Para
129.	Harraiya	Gopalpur Panday	**130.**	Harraiya	Mojpur
131.	Harraiya	Shiv Garh	**132.**	Harraiya	Karmi Gosain
133.	Harraiya	Pure Hasan Nalband	**134.**	Harraiya	Unji Mustahakam
135.	Harraiya	Naipura	**136.**	Harraiya	Ghosiyapur
137.	Harraiya	Pipari Sangram	**138.**	Harraiya	Dingrapur Ahatmali
139.	Harraiya	Pure Sangram	**140.**	Basti	Pikaura

141.	Harraiya	Majha Bhatna	**142.**	Basti	Chilwaniya
143.	Harraiya	Pure Keshavdas	**144.**	Basti	Jaipur
145.	Harraiya	Chirgahna	**146.**	Basti	Dakhi
147.	Harraiya	Kuraniya	**148.**	Basti	Lutfabad
149.	Harraiya	Bhat Purva	**150.**	Basti	Bairari Ahatmali
151.	Basti	Deoria Urf Tenghriha Babu	**152.**	Basti	Mahuwapur Kalan
153.	Basti	Chakiya	**154.**	Basti	Mahuapar Khurd
155.	Basti	Deoria Urf Tengriha Raja			

The data above indicates the potential population which can be positively or negatively impacted by riverbed mining. There is potential impact on direct and indirect employment opportunities which needs to be focused by the district administration.

7.4 CLIMATIC CONDITION

The climate of Basti somewhat resembles that of the other sub montane tracts in the north of Rohilkhand and Avadh, though it is milder than in the case with the districts in west. The heat in the summer months is less extreme and the west winds of the hot weather are rarely experienced. On the other hand the cold of the winter months is less extreme, and frost seldom occurs. For a number of years no thermo metrical observations have been recorded in the district, but past experience shows that the maximum temperature is (seldom) 43.0^0C in the shade in summer, and that the minimum on few occasions falls to 5.6^0C.

7.5 RAINFALL AND HUMIDITY

The average and real rainfall in the year 2011 were 1,166 m.m. and real rainfall was 808 m.m. respectively. Maximum rainfall occurs during the monsoon period i.e. June to September having 87% of annual rainfall. July is the wettest month having the normal rainfall of 341.50 mm followed by August with normal rainfall of 311 mm. The rainfall becomes more in southern area in comparison of northern region.

7.6 CROPPING PATTERN

Kharif and Rabi are two principal crops grown in the district. The small area under Zaid or hot whether harvest of miscellaneous crops is of little importance. In the main kharif crops are paddy, maize, jwar, bazra, moong, urd and sugarcane and the wheat, barly, gram and peas are the main Rabi crops, which are sown in the district. The kharif is more important harvest owing chiefly to the large area under paddy and maize. Paddy occupies predominant position followed by wheat. Thus, it is clear that main crops of the district are paddy, wheat, maize, jwar, bazra, sugarcane and pulses etc.. High yielding variety seeds of wheat, paddy, and sugarcane have enhanced productivity manifolds. However marginal and poor farmers of the district have not been benefited fully by modern technological advances due to poor operational capacity.

7.7 LAND FORM & SEISMICITY

The District partly in Zones IV (high damage risk zone) and III (moderate damage risk zone). The last earthquake in Basti was in June, 1965. The earthquake had a magnitude 5.7 on the richter scale

7.8 FAUNA

Wildlife in the area includes nilgai (***Boselaphus tragocamelus***), antelope (***Anelok cervicapra***), pigs (***Sus scrofa***), wolves (***Canis lupus***), jackals (***Conis aureus***), foxes (***Vulpes bengalensis***) and hares (***Lepus ruficandatus***). And so on. monkeys (***Macaca mulatta***),

wildcats (***Felis bengalensis***), porcupines (***Hystric leucura***). Several species of game birds can also be seen, including peacocks (Pavo cristatus), black partridges (Frencolinus francolinus) and gray partridges (***Francalinuspondicervanus***). In winter, many migratory birds visit the area's waters, including geese (***Anser anser***), teal (***Anas crecca***), crested pochard (***Netta rufina***) and white-eye pochard (***Aythya rufa***). Wigeon (***Maleca penelope***). Cobras (***Naja naja***), giant snakes (***Bungarus caeruleus***), and rat snakes (***Ptyas mucosus***) are common sights. Indian crocodiles or nakas (***Crocodylus palustris***) and ghariyals (***Gavialis gangeticus***) are also found in the Ghagra River. Common fish species are lof (***Lebeo rohita***), bakul (***Catla catla***), nain (***Cirrina mrigala***), parhin (***Wallagonia attu***), crunch (***Labeo calbasu***) and tengan (***Mystus seenghala***). In the northern parganas were the hunt of tigers, leopards,bears and even buffalo while spotted deer and other animals, which are now either extent or extremely rare, were common in many parts. The wild animals that remain in the district include the Nilgai, Antelope, Pig, Wolves, jackals, Foxes, Heres, Monkeys and wild Cat. The Indian Crocodile or Nak is common in Ghaghara, and other rivers and also in the larger lakes, especially the Bakhira tal, and the long nosed variety called the Ghariyal, is also found in the those places. Similarly birds and reptiles found in the district are also of usual type which is generally seen in the northern part of India.

7.9 FLORA

As agricultural land use increased, the area's forest area decreased. There are areas dominated by mango (Mangifera indica), mahua (Madhuca longifolia), sal (Shorea robusta) and bamboo (Bambusa arundinacea) trees. In the former days large part of the district was covered with forest of Sal and other trees. The two long stunted jungles of Mahuli are now represented nearly by a strip of dhak which has been left in a tract of usar land to the north of Kuwana, and by small patches which have been preserved in many of the villages for the sake of fuel. The one extensive forest in pargana Basti has been reduced to narrow fring along the banks of the Kuwana river, while the woods that border the Ami and Budha streams have for the most part been cleared, though, there is a certain proportion of shrub jungle remaining in the broken ground along these channels. Mango, Mahua and Bamboo a part from usual type of species of trees are found in the district. In

former days when most of country was under forest, the district was rich in large game. The area of forest is less in the district. In the forest, Neem, Mahuva, Sheesham, Babool, Jamun and Ecluptus are main tree. Generally, the fuel wood, herbal medicine, and grass etc for animal feeding are got from the forest. The present area available for forest is not enough to cover the necessities. The land & climate are suitable for forest in the southern part of the district. So the forestry work can be done successfully is this region.

7.10 TOPOGRAPHY & TERRAIN

The district, in spite of its apparent uniformity of aspect, is divided topographically into several distinct tracts namely, the low valley of the Ghaghra in the south, extending from that river to its tributary, the Kuwana; the central upland, between the latter river and the rapti; and the low and ill-drained paddy belt between the Rapti and the Nepal boundary.The altitude of the Basti district ranges between76 to 92 m amsl. The district can be almost divided into two identifiable units, the upland plains underlain by Older Alluvium and the lowland plains underlain by Newer Alluvium. Younger alluvial plain is found along the Ghaghra river and it is flat to sloping slightly undulated terrain. It is produced by extensive deposits of alluvium and usually occur adjacent to flood plains and consist of various fluvial land forms which include back swamp, oxbow lake, old meander, meander scar, paleochannel and point bar. It mainly comprises of younger unconsolidated alluvial materials of varying lithology. In the younger alluvial plain area the ground water table is very shallow and ground water yield prospects are excellent. Older alluvial plain is similar to younger alluvial plain but are formed at the earlier stage of depositional regimes comprising of unconsolidated sediments, hence occurring comparatively far from the present flood plains of the river. Groundwater prospects are good to very good.

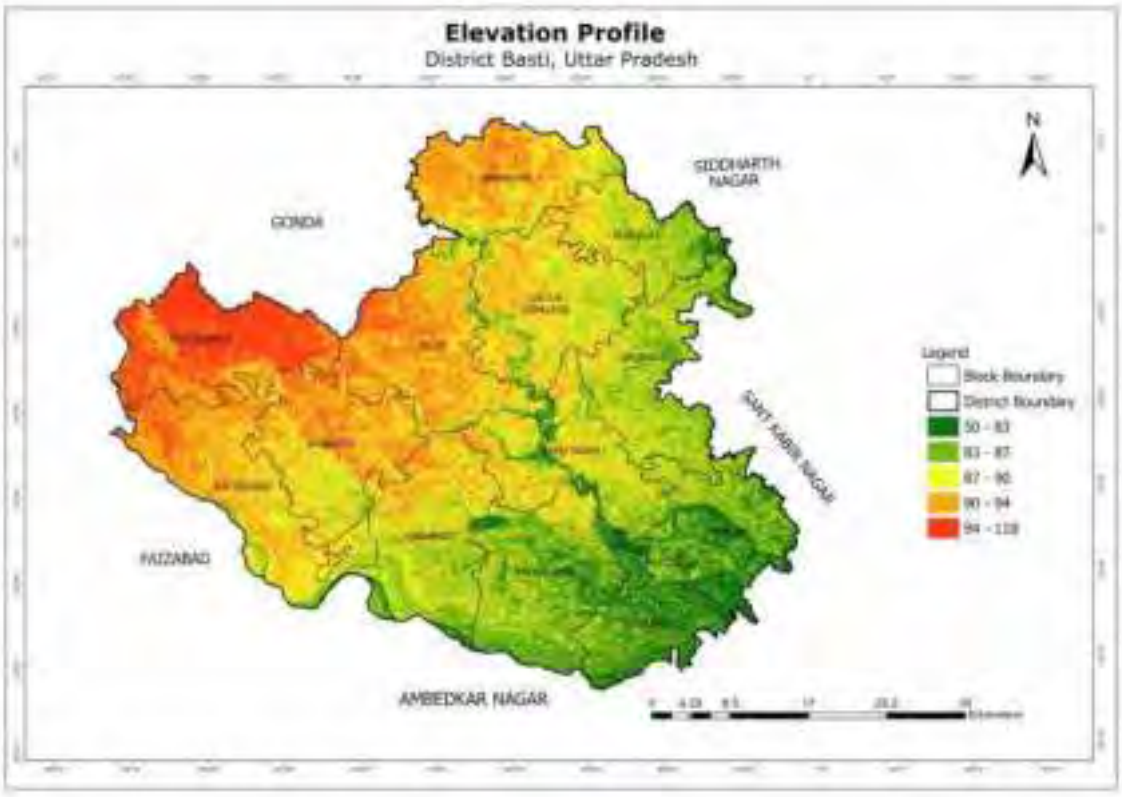


Fig 8: Elevation profile of Basti District

7.11 WATER COURSE & HYDROLOGY

Ground water occurs in the pore spaces of unconsolidated alluvial material in the zone of saturation. The near surface, clay kankar and sand beds support mainly open wells where ground water occurs under water table conditions. Kankar occurring at shallow depths, also yield sufficient water. Most of shallow tubewells tap water only from kankar and sandy horizons. The shallow aquifers occur under unconfined conditions, while deeper aquifers occur under semi confined to confined state of disposition. The confining layers are impermeable clay beds. Aquifer geometry Alluvial tract of Basti district is underlain by sands of various grades, gravels, silt and clay. The actual thickness of the sediments is not known as CGWB has not carried out exploration in Basti district and the deepest well-constructed by state government is only down to depth of 134.12 m bgl. However exploratory well have been constructed by CGWB in adjoining district Siddharthnagar upto a depth of 310 m bgl. The result of exploratory drillings indicates that the aquifers vary great deal in extent, both vertically as well as laterally. The southern part of the

district is characterized by thicker aquifers, where sand and gravel predominate over clays. The northern part comprises of thinner granular zones and lenses of sand of varying lateral extent, dominated by thick clay. Broadly, a two (2) tier aquifer system can be inferred in the area down to depth of 300 mbgl. The sticky and yellowish clay marks the boundary between these aquifers at 114 m bgl.Ground water in the topmost aquifer occurs under phreatic or water table conditions while in intermediate and deeper aquifer it occur under semi confined to confined condition.

7.12 GROUND WATER DEVELOPMENT

The stage of ground water development in the district is 75.43 %.Ground water development in all blocks is above 60%. Less ground water development has been observed in Kudraha and Ramnager block. Depth to water level is shallow in most part of the district, shallow tubewell (upto depth of 35 m), constructed by hand boring sets, is suitable to meet out the domestic/irrigation requirement. Rotary (direct/Reverse) is suitable for construction of shallow tubewell. Deep tubewell is constructed through direct rotary method. The well assembly for moderately deep tubewells may have 40-50 m housing, tapping 30 to 40 m of granular zone. Since fine sand are encountered in granular zones, it is advised that slot size is between 0.75 to 1.00 mm. To increase the life and discharge of well, after lowering of well assembly tube well should be developed initially by air compressor followed by turbine pump till water is sand free.

7.13 WATER LEVEL FLUCTUATION

As per depth to water level data of ground water monitoring stations of Basti district of year 2012, pre monsoon water level varies from 2.75 mbgl (Kalwari) to 5.67 mbgl (Basti) .In Post monsoon period depth to water level varies from 1.92 mbgl (Rudauli) to 4.57 mbgl (Basti). Annual water level fluctuation (2012) varies from 0.13 to 3.19 meters. The perusal of the pre - monsoon depth to water level map reveals that depth to water level in the central part is deep, having water level in the ranges of 5 – 6 mbgl whereas in the rest of the district shallower water levels(2-5 mbgl) are observed. The highest annual decline in the water levels is was observed at Basti 0.092 m/year.

8.0 LAND UTILIZATION PATTERN OF THE DISTRICT: FOREST, AGRICULTURE, HORTICULTURE, MINING ETC.

This district lies in the north part of Ganga, Yamuna plain and in the north of Saryu River, thus the whole land of the district is cultivable land & fertile. The land level is plain and most fertile of the total area available for cultivation, most of the area is used as double cropped area. The position of land holdings in the district are mostly small size holding but some land holding in the district are categorized in medium and large stake holder. The land is covered by the forest area, cultivable banjar land, fallow (parti) land, Usar and uncultivable land and land use other than agriculture. The total reported area of the district was 295239.23 hectares. There are total 3160 inhabited villages in the district having total area 295239.23 hectares. The percentage of cultivable area to total area is 77.06 percent in the district. At district level 83.23 percent of total cultivable area has got the irrigation facility

Table 3: Land use pattern of Basti District

Land Use Types	Land Use Classification	Area (in Sq. Kms.)
Agriculture	Crop land	2136.85
	Current Shifting cultivation	
	Fallow	57.81
	Plantation	57.78
Barren/unculturable/ Wastelands	Barren Rocky	
	Gullied / Ravinous Land	
	Rann	
	Salt Affected Land	2.58
	Sandy Area	
	Scrub Land	20.34
	Mining	3.90
Builtup	Rural	100.77
	Urban	50.12
Forest	Deciduous	43.24

	Evergreen/Semi evergreen	
	Forest Plantation	0.16
	Scrub Forest	
	Swamp / Mangroves	
Grass / Grazing	Grass / Grazing	
Snow and Glacier	Snow and Glacier	
Wet lands / Water bodies	Inland Wetland	12.09
	Coastal Wetland	
	River/Stream/Canals	134.85
	Water bodies	11.60

Fig 9: Land use Map of Basti District

Fig 10: Agricultural land use Map of Basti District

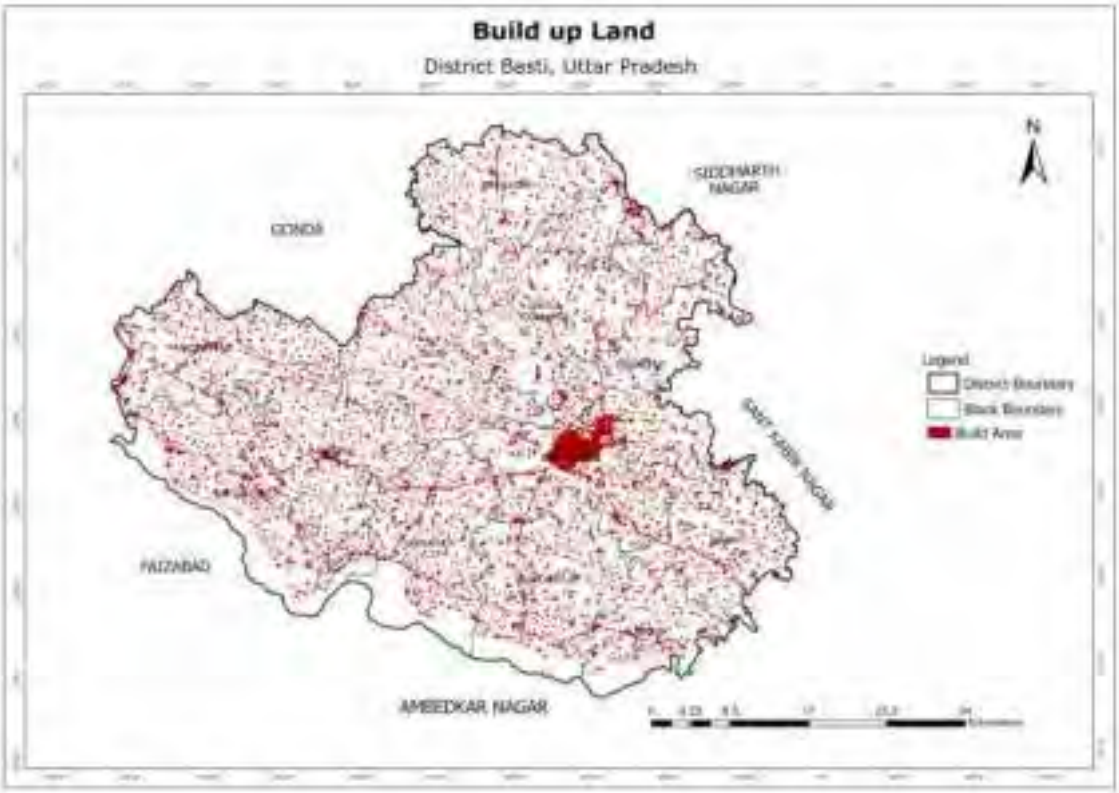


Fig 11: Buildup Map of Basti District

Fig 12: Forest land use Map of Basti District

9.0 PHYSIOGRAPHY OF THE DISTRICT

The north portion of the district is along with the boundary of district Siddharta Nagar. In this area there are small nalas & ponds. The river Ami is flowing on the north eastern border. The Garia River is regularised the eastern border of the district, at some distance. In the middle and southern part of the district, the river Kuwana and Ghaghara are the main rivers, besides these rivers there are so many rivers, nalas and ponds in the area. The whole land of the district is made by the soil carried out by the Ghaghara and tributaries. This is generally plain and fertile land which is situated in the north revage of Ghaghra River. The normal flow of water is in the direction of northwest to southeast. The district is drained by Ghaghara like big rivers along with so many small & big nalas. The river Ghaghara is flowing through the south corner of the district towards the Tehsil Harraiya, Basti in the direction of west to east and makes the boundaries of district Basti and Ayodhya and the river Kuwana is flowing through the tehsil Basti & Bhanpur. The river Manwan is flowing through tehsil Harraiya, Basti in northwest to southeast direction. The river Ami, in the north, has been divided, the boundaries of district Basti & Siddharth Nagar and in the east, the river Garia makes the boundary line of district Sant Kabir Nagar and flows in Tehsil Basti in east direction.

On the Basis of geology, soils, topography, climate and natural divisions, the district is sub divided into the following two regions.

1. Basti Plain
2. Ghaghara Khadar

1. Basti Plain:

It covers the central and major part of the district. The plain is locally known as 'Uparhar'. It is an upland zone which has higher surface area in the western side and slopes towards southeast direction. There are numerous streams which originate from the western side and drains this tract. These are Kuwana, Ami and Garia etc. Which are the parts of the Ghaghara drainage systems known for their flood havoc. Many embankments along with streams have been constructed to provide protection from the flood water. In the region, there numerous water bodies which are basically the abandoned courses if the rivers. The plain is very rich in agriculture.

2. Ghaghara Khadar:

The region is situated parallel to Ghaghara river in east-west direction. Its northern extent is delimited by watershed line of the Kuwana river. The area in immediate neighbourhood of the river is low land tract. Flood causes change in the course of river. The tracts in between deep stream and higher bank is known as manjha which are invariably flooded but in north of this it is called as Tarhar or Khadar. The Tarhar zone ends in Basti plain in different proportion, Natural levees, dead arms of the rivers and deposits ox bow lakes are the other physiographic features. To protect the flood, embakments have been constructed at different places.

10.0 RAINFALL : MONTHWISE

The rainy season commences by late June when south western monsoon sets in over the State. The humidity gradually increases and reaches above 80%. August is the peak rainy season

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
16.8	13.2	11.1	7.2	24.6	130	348.9	291.8	216.4	52.4	1.5	7.2

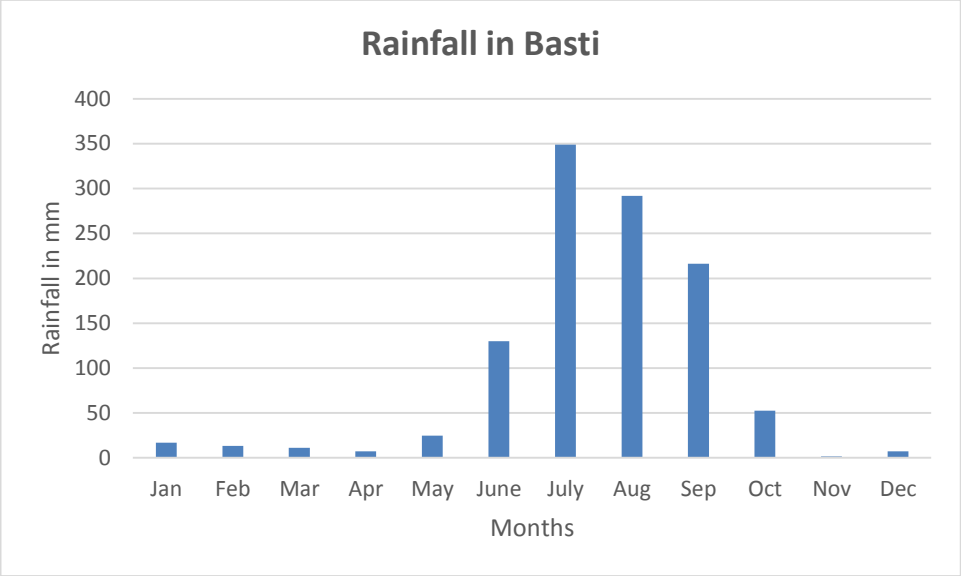


Fig 13: Rainfall in Basti District

11.0 GEOLOGY AND MINERAL WEALTH

11.1 Regional Geology

Geologically the district forms part of the vast Indo-Gangetic alluvial tract, of which the origin is attributed to a sag in the Earth's crust formed in the upper Eocene times, between the northwardly drifting Gondwana land and the rising Himalayan belt, and gradually filled in by sediments so as to constitute a level plane with a very gentle slope. The alluvium formation of the District, comprising sand, silt & clay with occasional gravel, is of the early quaternary to sub- recent age. The older alluvium called Bhangar, forms slightly elevated terraces usually above the flood level. It is rather dark in colour generally rich in concentrations and nodules of impure calcium carbonate, locally known as kankar. The newer alluvium called Khadar, forming the lowlands between the Ghaghra and Bhangar, is right coloured, poor in calcareous contain and composed of lenticular beds of sand, gravel and clays. The economic minerals found in the district are kankar, reh and sand. The Basti district is a part of the Central Ghaghra alluvial plain manly constituted of clay, silt, sand, gravel and kankar sediments of Quaternary age.

The district is underlain by Quaternary alluvium comprising and of various grades, gravel, kankar and clay. The Alluvium can be classified into two groups, the Older alluvium and the Newer alluvium. Older alluvium:- It is of middle Pleistocene age and generally occupies high ground which is not affected by floods during the rainy season. The Newer alluvium:- It covers the lower height and is mainly conferred to the flood plains along the river channels and belongs to the upper Pleistocene to the recent age.

Group	Age	Formation	Lithology
Quaternary	Recent to Upper Pleistocene to	Newer Alluvium	Unconsolidated sand, silt and clay
	Upper Pleistocene to Lower Pleistocene	Older alluvium	Fairly consolidated clay with kankar, sand, fine to medium with same gravel
Purana	Pre-Cambrian	Vindhyan	Sand Stone & Shale and Lime stone

11.2 Local Geology

The facies of the river bank deposits are sandy, silty and clayey. The sandy older alluvium is located at an elevation of 10-20m above the river level and makes the higher interfluve areas. It is free from frequent flooding and therefore most suitable for settlement and agriculture. Newer alluvium forms the river valley terrace and is located at an elevation of 5-7 m above river level. This terrace and is located at an elevation of 5-7 m above river level. This terrace is not suitable for settlement but can be used for agriculture, as it is often affected by flood.

11.3 SOIL

The soils of the district are slightly matiyar and baluai, domat in the north and middle region. The region which is close to district Siddharth Nagar and situated in the eastern part of the Khalilabad, the soil of this area are slitely calcarium. Generally this district lies in the north part of Ganga, Yamuna plain and in the north of Saryu river, thus the whole land of the district is cultiviable land & fertile. Basti has Alluvial plain, densely populated and in some parts highly cultivated, though the level is only broken by the shallow valleys of the rivers, which generally run in a south-easternaly direction. The surface of the country is a gentle slope from the North West to the south east. The mean elevation is about 290 feet above the sea, this is the height of the railway station of Basti while in south of district the level drops from 306 feet above the sea at Belwa, The nearest point to Ayodhya to 300 feet at Harraiya.

Fig 14: Soil Map of Basti District

11.4 OVERVIEW OF MINERALS

The minor mineral that is found in Basti is Sand. Silt and clay, occurring mainly in Alluvium, are exploited for manufacturing bricks. Sand deposits associated with channel alluvium of Ghaghra River are excavated for construction material.

11.5 DETAILS OF RESOURCES

Soils are formed by the weathered rock and are dominant in the district. The minerals of Basti include earth material for filling and brick making and sands from the river Ghaghra. Since the entire area is characterized by alluvium the soil consists of sand, clay, kankar and silt. The coarser sediments are part of newer alluvium. Finer sediments are observed in older alluvium. Loam and clay are characteristic soils of uplands. In most parts of the uplands there is a large amount of kankar in subsoil. The silty loam deposits are found all over flood plains in the district. Soil of the Upland area is pale reddish – brown colour, kankar disseminated throughout the area.

12.0 SAND AND OTHER RIVER MINERAL RESOURCES

The main mineral wealth of the district is sand and the local geology of the area is sandy. No mineral deposit is available in Basti except for Ordinary sand/ clay reported in some parts of the District. The main sand mineral wealth of the district is in approx. 57.09 ha area has been marked having potential of 8,90,554 Cum from Ghaghra River.

12.1 DISTRICT WISE DETAIL OF RIVER OR STREAM AND OTHER SAND SOURCE.

S. No.	Name of River	Total length in the district	Area recommended for mineral concession
1.	**Ghaghra River**	67 km.	Approx. 8070 ha

12.2 DISTRICT WISE AVAILABILITY OF SAND OR GRAVEL OR AGGREGATE RESOURCES.

S. No.	Name of River	Total Area for mining	Sand mined in the District
1.	**Ghaghra River**	57.09 ha	8,90,554 Cum (from 06 leases)

12.3 DISTRICT WISE DETAIL OF EXISTING MINING LEASES OF SAND AND AGGREGATES

Sl. No.	River Details	Lease Details	Area (in Ha)	Total excavation in Tonnes / Annum	Validity of Lease/ Mineral
1.	Ghaghra River	Village-Majha Sitarampur, Tehsil- Harraiya, District- Basti Gata No.- 109 / 7	10.125	5,10,908 cum	Existing
2.	Ghaghra River	Village- Bardiya Lohar, Tehsil- Harraiya, District- Basti Gata No.- 413 Da / 1 Mi, 413 Mi, 412 Da Mi, 413 Ka/53	4.340	2,18,996 cum	Existing
3.	Ghaghra River	Village- Mahuapar Khurd K-1, Tehsil- Sadar, District- Basti Gata No.- 391ka / 67 K-1	10.0	1,37,500 cum	Existing
4.	Ghaghra River	Village- Majha khurd Tehsil- Sadar, District- Basti Gata No.- 1164/94	15.40	2,77,200 cum	Proposed
5.	Ghaghra River	Village- Aaraji Duhi Musinne Pure Chetan Tehsil- Harraiya, District- Basti Gata No.- 02 mi	10.0	1,80,000 cum	Proposed
6	Ghaghra River	Village - Majha Khurd Tehsil - Sadar, District - Basti, Gata No. 1164Ja, 1164/12 Ka Mi, 1164/54Ka	1.42	71,000 cum	Proposed
7	Ghaghra River	Village - Majha Khurd Tehsil - Sadar, District - Basti, Gata No.1164/33Ka, 1164Ka/51	1.29	64,500 cum	Proposed
8	Ghaghra River	Village - Majha Kala Tehsil - Sadar, District - Basti, Gata No. 553	2.06	51,500 cum	Proposed
9	Ghaghra River	Village - Majha Kala Tehsil - Sadar, District - Basti, Gata No. 1456 Mi	1.02	30,600 cum	Existing
10	Ghaghra River	Village - Devariya Urf Tangaria Babu (Mahuli Pashim) Tehsil - Sadar, District - Basti, Gata No. 568 Ka/63	1.09	30,700 cum	Existing

13.0 DRAINAGE SYSTEM WITH DESCRIPTION OF MAIN RIVERS

The district has two main river systems namely, the Ghaghra and Rapti, both of which ultimately form a part of the great Gangetic system. The other streams of the district are the Kuwana, its tributaries are, the Rawai, the Manwar and the Katnehia, and the Ami is a tributary of Rapti. River Ghaghra is formed by the combined waters of Kauriyala, Girwa, Chauka and other streams, which have their origin in the mountains of Kumaun and Nepal. The Ghaghra forms the southern boundary of the district. The river flows continually shifting channel within a broad sandy bed. During the rains it carries immense volume of water, but in dry weather it shrinks to small dimensions. The river has a constant tendency to change its course during the floods, and in this manner large tracts of land from time to time are shifted either to the northern or southern banks, rendering the total area of the district subject to incessant variation. Many point bar deposits are present within the course of river, locally known as Deyara. In monsson season Ghaghra river cross its bank and submerges adjoining areas. Manwar & Kuwana are tributaries of Ghaghra River in the district. In spite of its apparent uniformity of aspect, the district is divided topographically into several tracts roughly speaking these comprise the low valley of the Ghaghara in the south extending from that river to it's tributary Kuwana. The central upland extends between the Kuwana and the Ami river. These two belts contain several minor divisions, which call for a more detailed description; generally, it may be summarised that Basti is very similar in its conformation to the Avadh districts. Basti has wide alluvial plain, densely populated and in some parts highly cultivated, though the level is only broken by the shallow valleys of the rivers, which generally run in a south-easterly direction.

The Ghaghra

River Ghaghra is formed by the combined waters of Kauriyala,Girwa, Chauka and other streams, which have their origin in the mountains of Kumaun and Nepal. The Ghaghra forms the southern boundary of the district, from its entry opposite the sacred town of Ayodhya, where for a short distance it is usually known as the Saryu, as far as Belghat on the border of Gorakhpur. The river flows continually shifting cannel within a broad sandy

bed. During the rains it carries as immense volume of water, but in dry weather it shrinks to small dimensions. The river has a constant tendency to change its course during the floods, and in this manner large tracts of land from time to time are transferred either to the northern or southern banks, rendering the total area of the district subject to incessant variation. These changes have occasionally been accompanied by the formation of large islands and deep stream rule prevails, the constant shifting of the jurisdiction of such lands from one district to another results in considerable inconvenience.

Tributaries of the Ghaghra:-

The Ghaghra receives directly hardly any of the drainage of the district, as exception the immediate neighborhood of its bands, all the surplus water is intercepted by its affiance. Occasionally the river overflows its banks and submerges the adjoining lowlands, with the result the water is actually transferred from the river to the Manwar or Kuwana. The latter, in its lower reaches near Bhanpur, is joined with the Ghaghra by cross channel and from that point onwards it acts as an arm of the Ghaghra.

The Kuwana

The Kuwana also known as Kuano, rises in the low ground in the east of Bahraich district and thence flows through the centre of Gonda. It first touches the district in the stream west of Rasulpur. It then separates the Basti east pargana from Basti West, Nagar West, Nagar East and after passing through Mahuli West and Mahuli East leaves the district in the south-Easter corner, at short distance from its junction with the Ghaghra in Gorakhpur.

Tributaries of the Kuwana

It has several tributaries, the important ones being Rawai, Manwar and Katnehia.

The Rawai

The Rawai joins the Kuwana on the right bank and is a small stream which rises in the north of Amorha and thence flows between steep and sandy banks frequently infected with

reh, through the western half of paragana Basti for a short distance and ultimately joins the Kawana.

The Manwar

The Manwar Manorama, rises in Gonda and flows in an easterly direction along the edge of Sikri forest to the district boundary. For a short distance it separates the latter district from Gonda and is then joined by the Chamnai, a small and sluggish stream. after the junction the Manwar bents to the south-east and flows through the centre of pargana Amorha, on the eastern boundary of which it receives a small tributary called Ramrekha on its right bank. It then passes through the two paraganas of Nagar East and Nagar West and joins the Kawana in Lalganj in Mahuli West.

The Kathnaya

The only tributary of any importance that is received by the Kuwana on its left bank is the Katnehia, which rises in the swamps to the north of Basti East and flows in the south easterly direction along the borders of the Nagar East, where it units with the Garehia, a similar stream which has its origin in the south of Rasulpur. Their combined water continues in a south easterly direction along the borders of Nagar East and Mahuli West parganas, then turning south to join the Kuwana at Mukhlishpur in Mahuli East.

The Ami

The Ami is the chief tributary of the Rapti. The Ami is a stream which commences at a short distance from Rapti in Rasulpur and form a large tract of paddy land.

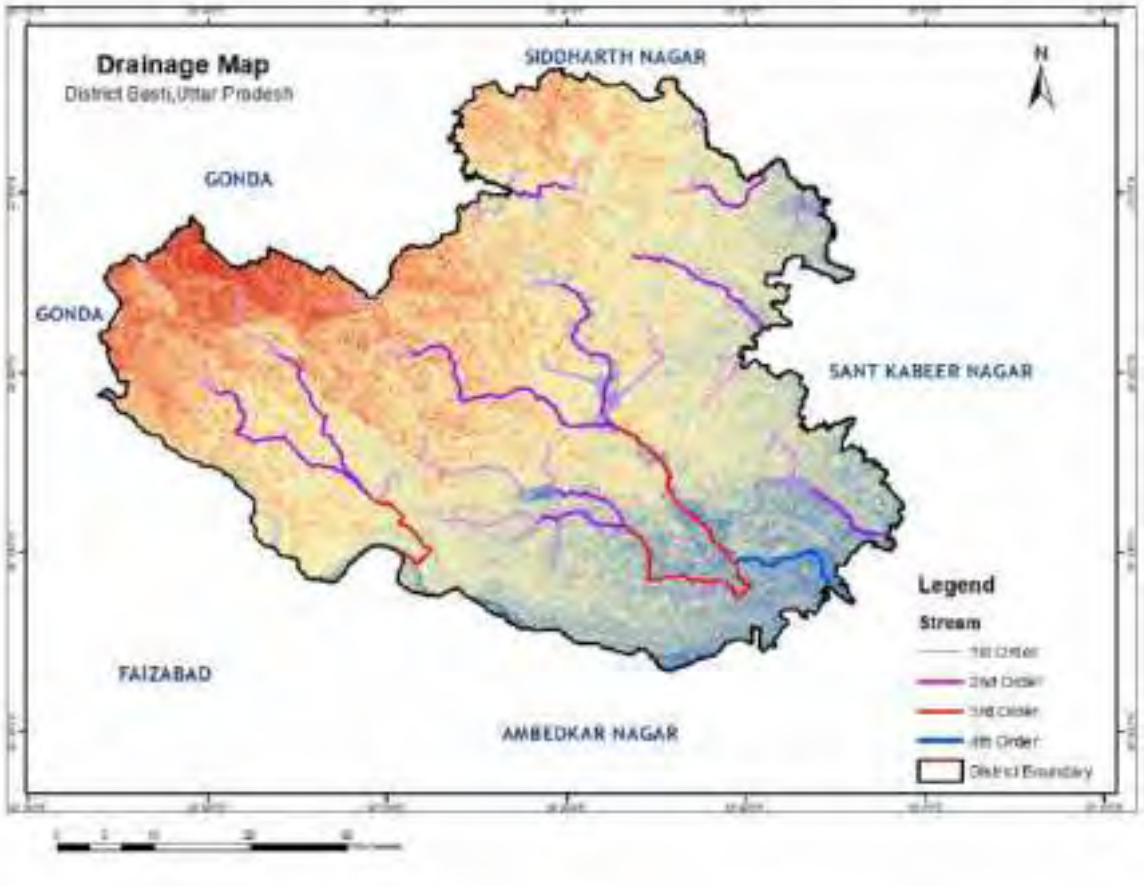


Fig 15: Drainage map of Basti District

14.0 SALIENT FEATURES OF IMPORTANT RIVERS AND STREAMS:

S. No.	Name of River	Total length in the district	Area recommended for mineral concession
1.	**Ghaghra River**	67 km.	Approx. 8070 ha

DEPOSITION AND AVAILIBILITY OF RESOURCES

Sl. No.	River/ Stream	Portion of the river / stream recommended for mineral concession	Length of the recommended area for mineral concession (in kilometer)	Average width of the recommended area for mineral concession (in meters)	Area recommended for mineral concession (in sq.mtrs.)	Mineable mineral potential (in metric tonne) (60% of total mineral potential
1	Ghaghra River	Full length	67 km	2 km	8070 ha	14,52,60,000 cum
Total for the District					**14,52,60,000 cum**	

15.0 MINERAL POTENTIAL

Boulder (MT)	Bajari (MT)	Sand (MT)	Total Mineable Mineral Potential (MT)
-	-	14,52,60,000 cum	24,21,00,000 cum
Annual Deposition			
-	-	14,52,60,000 cum	24,21,00,000 cum

16.0 ANNUAL DEPOSITION

DEPOSITION AND AVAILIBILITY OF RESOURCES

Sl. No.	River/ Stream	Portion of the river / stream recommended for mineral concession	Length of the recommended area for mineral concession (in kilometer)	Average width of the recommended area for mineral concession (in meters)	Area recommended for mineral concession (in sq.mtrs.)	Mineable mineral potential (in metric tonne) (60% of total mineral potential
1	Ghaghra River	Full length	67 km	2 km	8070 ha	14,52,60,000 cum
Total for the District					**14,52,60,000 cum**	

17.0 ADDITIONAL INFORMATION

12.1 METHOD OF MINING

- Extracting gravel from an excavation site that does not penetrate the water table and is located away from an active stream channel should cause little or no change to the natural hydrologic processes unless the stream captures the pit during periods of flooding. The exception is that the changes in evapotranspiration, recharge, and runoff may create minor changes to the ground-water system, which may in turn affect stream flow.
- Limiting extraction of material in floodplains to an elevation above the water table generally disturbs more surface area than allowing extraction of material below the water table.
- In-stream extraction of gravel from below the water level of a stream generally causes more changes to the natural hydrologic processes than limiting extraction to a reference point above the water level.
- In-stream extraction of gravel below the deepest part of the channel (the thalweg) generally causes more changes to the natural hydrologic processes than limiting extraction to a reference point above the thalweg.
- Excavating sand and gravel from a small straight channel with a narrow floodplain generally will have a greater impact on the natural hydrologic processes than excavations on a braided channel with a wide floodplain.
- Extracting sand and gravel from a large river or stream will generally create less impact than extracting the same amount of material from a smaller river or stream

12.2 RIVERBED MATERIAL & ITS REGULATORY FRAMEWORK

As a resource, sand by definition as a loose, incoherent mass of mineral materials and is a product of natural processes. These processes are the disintegration of rocks and corals under the influence of weathering and abrasion. When sand is freshly formed the particles are usually angular and sharply pointed but they gradually become smaller and more rounded as they are continuously worn down by the wind or water (ISM Envis, Dhanbad).

Ordinary earth and sand have become very important minerals for our society due to their uses in basic infrastructure & housing. Ordinary earth can be used for making brick, filling roads, whereas sand may be used as building sites, brick-making, making glass, sandpapers, reclamations etc. The role of sand is very vital with regards to the protection of the coastal environment. It acts as a buffer against strong tidal waves and storm surges by reducing their impacts as they reach the shoreline. Clean sand is indeed a rare commodity on land, but common in sand dunes and beaches. The composition of sand is highly variable, depending on the local rock sources and conditions, but the most common constituent of sand in inland continental settings and non-tropical coastal settings is silica (silicon dioxide, or SiO2), usually in the form of quartz which because of its chemical inertness and considerable hardness, is the most common mineral resistant to weathering and it has become a very important mineral for the infrastructural development. Sand is a naturally occurring granular material composed of finely divided rock and mineral particles. River sand is one of the world‘s most plentiful resources (perhaps as much as 20% of the Earth‘s crust is sand) and gets replenished by geogenic factors. River sand is vital for human well-being & for sustenance of rivers. Sand mining is a sensitive environmental issue which is taken into the consideration by Geology & Mining Department, Government of U.P. and Ministry of Environment & Forest, Climate Change. Government of India, Geology & Mining Department, Government of U.P. had notified in Rule **No. 42 of Uttar Pradesh Minor Mineral Concession Rules, 2021** and MoEF&CC in **Standard Environmental Condition For Sand Mining, of SSMMG, 2016** has given extraction guidelines with distance from the mining lease area compared to minimum distance permissible from the Mining Lease Area as given in **Table 4**.

S. No.	Feature	Max. distance	Reference
1.	School	50 m	UPMMCR,2021*
2.	Hospital	50m	UPMMCR,2021*
3.	Road(NH)	100 m	SSMMG,2016
4.	Road(SH)	50 m	UPMMCR,2021*
5.	MDR	50 m	UPMMCR,2021*
6.	Railway Station	100 m	UPMMCR,2021*

7.	Chak Road	10 m	UPMMCR,2021*
8.	Bridge or embankment	200 m	UPMMCR,2021*
9.	Water supply /Irrigation scheme	200 m	UPMMCR,2021*

**** Rule No. 42***

18.0 DETAILS OF MINES IN THE DISTRICT

18.1 LEASE WISE DISCUSSION OF EXISTING / NEW PROPOSED LEASES

Site-1:- [EXISTING LEASE]

The mining site is situated on the river bank of Ghaghra at Gata No. 109 / 7, Village-Majha Sitarampur, Tehsil-Harraiya, District- Basti, U.P., is having an area of 10.125 Ha. The co-ordinates of Mining lease area are:

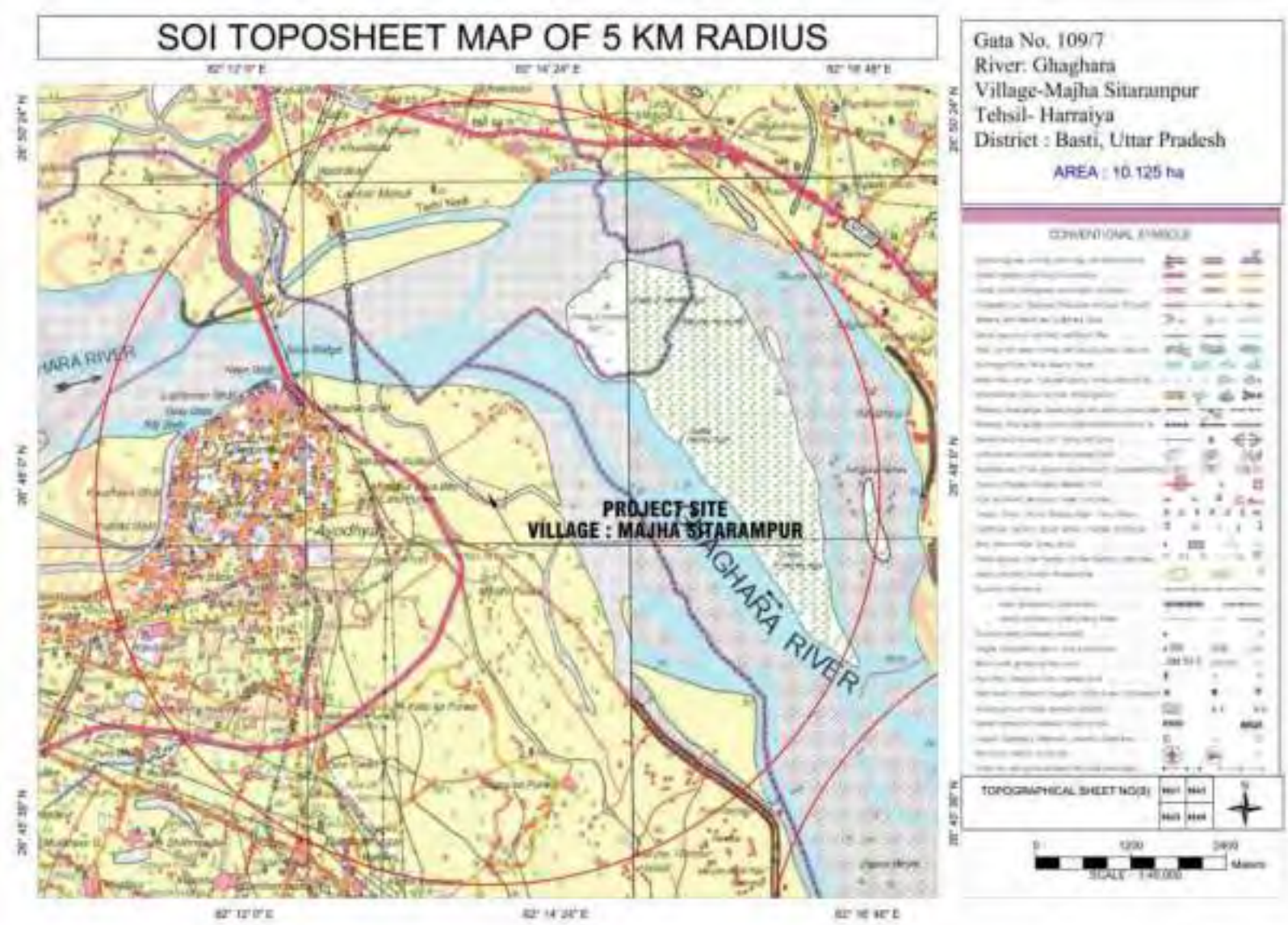
Table 5:- Co-ordinates of Mining lease at Village - Majha Sitarampur

Pillar No.	Latitude	Longitude
A	26°47'44.15"N	82°14'02.28"E
B	26°47'51.77"N	82°14'3.16"E
C	26°47'57.40"N	82°13'45.55"E
D	26°47'51.60"N	82°13'44.67"E

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	1.7	50 m	50 m	No
2.	Hospital	2.5	50 m	50 m	No
3.	Road (NH)	0.50	50 m	25 m	No
4.	Railway Station	3.02	100 m	100 m	No
5.	Chak Road	0.18	10 m	10 m	No
6.	Bridge or Embankment	1.60	200 m	200 m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone From Mine Site Route No.1
(River Bed Morrum Mining- Ghaghara River, Village– Majha Sitarampur, Tehsil- Harraiya, District- Basti, (Uttar Pradesh)


SOI TOPOSHEET MAP OF 5 KM RADIUS
PROJECT SITE
VILLAGE : MAJHA SITARAMPUR
GHAGHARA RIVER
Gata No. 109/7
River: Ghaghara
Village-Majha Sitarampur
Tehsil- Harraiya
District : Basti, Uttar Pradesh
AREA : 10.125 ha

Site-2:- [EXISTING LEASE]

The mining site is situated on the river bank of Ghaghra at Gata No. 413 Da / 1 Mi, 413 Mi, 412 Da Mi, 413 Ka / 53, Village-Bardiya Lohar, Tehsil-Harraiya, District- Basti, U.P., is having an area of 4.340 Ha. The co-ordinates of Mining lease area are:

Table 6:- Co-ordinates of Mining lease at Village - Bardiya Lohar

Pillar No.	Latitude	Longitude
A	26°40'44.50"N	82°24'23.54"E
B	26°40'45.48"N	82°24'26.22"E
C	26°40'55.74"N	82°24'25.16"E
D	26°41'03.71"N	82°24'25.18"E
E	26°41'04.18"N	82°24'22.99"E
F	26°40'55.53"N	82°24'22.46"E

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No. 42	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	1.3	50 m	50 m	No
2.	Hospital	8.11	50 m	50 m	No
3.	Road (NH)	3.6	50 m	25 m	No
4.	Railway Station	10.6	100 m	100 m	No
5.	Chak Road	0.61	10 m	10 m	No
6.	Bridge or Embankment	23.11	200 m	200 m	No
7.	Water Supply / Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone From Mine Site Route No.2
(River Bed Morrum Mining- Ghaghara River, Village– Bardiya Lohar, Tehsil- Harraiya, District- Basti, (Uttar Pradesh)


SOI TOPOSHEET MAP OF 5 KM RADIUS
PROJECT SITE
VILLAGE : BARDIYA LOHAR
Gata No. 413 Da / 1 Mi, 413 Mi,
412 Da Mi, 413 Ka / 53
River: Ghaghara
Village-Bardiya Lohar
Tehsil-Harraiya
District : Basti, Uttar Pradesh
AREA : 4.340 HA
CONVENTIONAL SYMBOLS
TOPOGRAPHICAL SHEET NO(S)
SCALE 1:50,000

Site-3:- [EXISTING LEASE]

The mining site is situated on the river bank of Ghaghra at Gata No. 391ka / 67 / K-1, Village- Mahuapar Khurd K-1, Tehsil-Sadar, District- Basti, U.P., is having an area of 10.0 Ha. The co-ordinates of Mining lease area are:

Table 7:- Co-ordinates of Mining lease at Village - Mahuapar Khurd K-1

Pillar No.	Latitude	Longitude
A	26°34'28.32"N	82°46'21.87"E
B	26°34'24.03"N	82°46'24.23"E
C	26°34'33.65"N	82°46'46.38"E
D	26°34'37.94"N	82°46'43.99"E

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No. 42	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	1.6	50 m	50 m	No
2.	Hospital	9.3	50 m	50 m	No
3.	Road (SH)	5.1	50 m	25 m	No
4.	Railway Station	13.1	100 m	100 m	No
5.	Chak Road	1.02	10 m	10 m	No
6.	Bridge or Embankment	14.5	200 m	200 m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone From Mine Site Route No.3

(River Bed Morrum Mining- Ghaghara River, Village– Mahuapar Khurd K-1, Tehsil- Sadar, District- Basti, (Uttar Pradesh)


SOI TOPOSHEET MAP OF 5 KM RADIUS
PROJECT SITE
VILLAGE : MAHUAPAR KHURD K-1
GATA No. 391ka / 67 / K-1
River: Ghaghara
Village- Mahuapar Khurd K-1
Tehsil- Sadar
District : Basti, Uttar Pradesh
AREA : 10.00 HA
CONVENTIONAL SYMBOLS
TOPOGRAPHICAL SHEET NO(S)
SCALE

Site-4:- [PROPOSED LEASE]

The mining site is situated on the river bank of Ghaghra at Gata no. 1164/94 Village- Majha khurd, Tehsil – Sadar, District- Basti, U.P., is having an area of 15.40 Ha. The co-ordinates of Mining lease area are:

Table 8:- Co-ordinates of Mining lease at Village - Majha khurd

Points	Latitude	Longitude
A	26°36'54.41"N	82°37'39.65"E
B	26°36'42.15"N	82°38'0.41"E
C	26°36'36.08"N	82°37'56.38"E
D	26°36'47.20"N	82°37'36.04"E

Environmental Sensitivity Analysis

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No. 42	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	2.4	50 m	50 m	No
2.	Hospital	7.1	50 m	50 m	No
3.	Road (SH)	0.49	50 m	25 m	No
4.	Railway Station	22.3	100 m	100 m	No
5.	Chak Road	0.42	10 m	10 m	No
6.	Bridge or Embankment	0.49	200 m	200 m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone From Mine Site Route No.4
(River Bed Morrum Mining- Ghaghara River, Village– Majha khurd ,Tehsil- Sadar, District- Basti, Uttar Pradesh)


SOI TOPOSHEET MAP OF 5 KM RADIUS
PROJECT SITE
VILLAGE : Majha Khurd
GHAGHARA RIVER
Gata No. 1164/94
River: Ghaghara
Village- Majha Khurd
Tehsil- Sadar
District : Basti, Uttar Pradesh
AREA : 15.40HA
CONVENTIONAL SYMBOLS
TOPOGRAPHICAL SHEET NO(S)
SCALE

Site-5:- [PROPOSED LEASE]

The mining site is situated on the river bank of Ghaghra at Gata no. 02 mi, Village- Aaraji Duhi Musinne Pure Chetan, Tehsil – Harraiya, District- Basti, U.P., is having an area of 10.0 Ha. The co-ordinates of Mining lease area are:

Table 9:- Co-ordinates of Mining lease at Village - Aaraji Duhi Musinne Pure Chetan

Points	Latitude	Longitude
A	26°44'21.89"N	82°18'43.23"E
B	26°44'25.84"N	82°18'49.24"E
C	26°44'14.18"N	82°19'5.87"E
D	26°44'11.43"N	82°19'0.62"E

Environmental Sensitivity Analysis

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No. 42	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	4.3	50 m	50 m	No
2.	Hospital	12.2	50 m	50 m	No
3.	Road (MDR)	5.0	50 m	25 m	No
4.	Railway Station	7.7	100 m	100 m	No
5.	Chak Road	0.29	10 m	10 m	No
6.	Bridge or Embankment	12.0	200 m	200 m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone from Mine Site Route No.5

(River Bed Morrum Mining- Ghaghara River, Village– Aaraji Duhi Musinne Pure Chetan,Tehsil- Harraiya, District- Basti, Uttar Pradesh)


SOI TOPOSHEET MAP OF 5 KM RADIUS
GHAGHARA RIVER
PROJECT SITE
VILLAGE : AARAJI DUHI
MUSINNE PURE CHETAN
Gata No. 02 mi
River: Ghaghara
Village-Rajudubhi Prechtan
Tehsil- Sadar
District : Basti, Uttar Pradesh
AREA - 10.0 ha
CONVENTIONAL SYMBOLS
TOPOGRAPHICAL SHEET NO(S)

Site-6:- [PROPOSED LEASE]

The mining site is situated on the river bank of Ghaghra at Gata no.-1164Ja, 1164/12ka mi, 1164/54k, Village- Majha khurd, Tehsil – Sadar, District- Basti, U.P., is having an area of 1.42 Ha. The co-ordinates of Mining lease area are:

Table 10:- Co-ordinates of Mining lease at Village - Majha khurd

Points	Latitude	Longitude
A	26°36'51.90"N	82°37'19.40"E
B	26°36'51.00"N	82°37'23.10"E
C	26°36'46.10"N	82°37'23.30"E
D	26°36'46.90"N	82°37'19.90"E

Environmental Sensitivity Analysis

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No. 42	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	1.0	50 m	50 m	No
2.	Hospital	7.8	50 m	50 m	No
3.	Road (SH)	1.2	50 m	25 m	No
4.	Railway Station	21.8	100 m	100 m	No
5.	Chak Road	0.45	10 m	10 m	No
6.	Bridge or Embankment	1.2	200 m	200 m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone From Mine Site Route No.6

(River Bed Morrum Mining- Ghaghara River, Village– Majha Khurd, Tehsil- Sadar, District- Basti, Uttar Pradesh)


SOI TOPOSHEET MAP OF 5 KM RADIUS
PROJECT SITE
VILLAGE :MAJHA KHURD
GHAGHARA RIVER
Gata No. 1164J,1164/12kami,1164/54k
River: Ghaghara
Village-Majha Khurd
Tehsil- Sadar
District : Basti, Uttar Pradesh
AREA - 1.42 ha

Site-7:- [NEW PROPOSED LEASE]

The mining site is situated on the river bank of Ghaghra at Gata No.1164/33Ka, 1164/51 Ka,Village- Majha khurd, Tehsil – Sadar, District- Basti, U.P., is having an area of 1.29 Ha. The co-ordinates of Mining lease area are:

Table 11:- Co-ordinates of Mining lease at Village - Majha khurd

Points	Latitude	Longitude
A	26°36'58.29"N	82°37'33.71"E
B	26°36'56.85"N	82°37'37.91"E
C	26°36'53.75"N	82°37'36.78"E
D	26°36'55.17"N	82°37'32.40"E

Environmental Sensitivity Analysis

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No. 42	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	1.0	50 m	50 m	No
2.	Hospital	7.8	50 m	50 m	No
3.	Road (SH)	1.2	50 m	25 m	No
4.	Railway Station	21.8	100 m	100 m	No
5.	Chak Road	0.45	10 m	10 m	No
6.	Bridge or Embankment	1.2	200 m	200 m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone From Mine Site Route No.7
(River Bed Morrum Mining- Ghaghara River, Village– Majha khurd ,Tehsil- Sadar, District- Basti, Uttar Pradesh)


SOI TOPOSHEET MAP OF 5 KM RADIUS
PROJECT SITE
VILLAGE :MAJHA KHURD
GHAGHARA RIVER
Gata No. 1164/33 ka & 1164/51 ka
River: Ghaghara
Village-Majha Khurd
Tehsil- Sadar
District : Basti, Uttar Pradesh
AREA : 1.29HA
CONVENTIONAL SYMBOLS
TOPOGRAPHICAL SHEET NO(S)

Site-8:- [PROPOSED LEASE]

The mining site is situated on the river bank of Ghaghra at Gata no. 553, Village- Manjha Kala, Tehsil – Sadar, District- Basti, U.P., is having an area of 2.06 Ha. The co-ordinates of Mining lease area are:

Table 12:- Co-ordinates of Mining lease at Village – Manjha Kala

Points	Latitude	Longitude
A	26°35'57.28"N	82°39'24.37"E
B	26°35'58.37"N	82°39'20.95"E
C	26°35'55.06"N	82°39'19.49"E
D	26°35'53.88"N	82°39'22.43"E

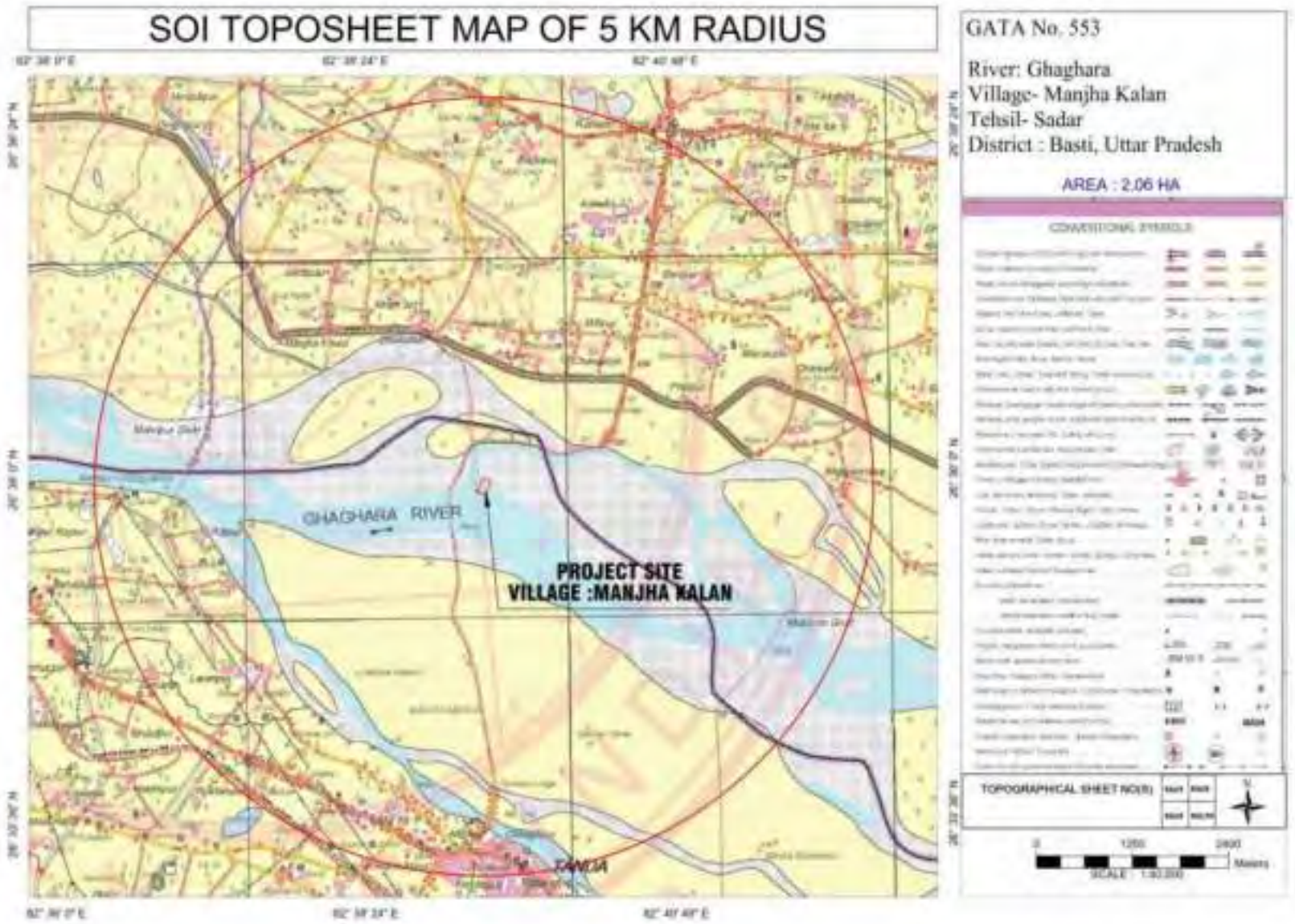
Environmental Sensitivity Analysis

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No. 42	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	2.1	50 m	50 m	No
2.	Hospital	5.1	50 m	50 m	No
3.	Road (SH)	2.2	50 m	25 m	No
4.	Railway Station	22.0	100 m	100 m	No
5.	Chak Road	0.20	10 m	10 m	No
6.	Bridge or Embankment	2.2	200 m	200 m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone From Mine Site Route No.8

(River Bed Morrum Mining- Ghaghara River, Village– Manjha Kala, Tehsil- Sadar, District- Basti, Uttar Pradesh)


SOI TOPOSHEET MAP OF 5 KM RADIUS
GHAGHARA RIVER
PROJECT SITE
VILLAGE :MANJHA KALAN
GATA No. 553
River: Ghaghara
Village- Manjha Kalan
Tehsil- Sadar
District : Basti, Uttar Pradesh
AREA : 2.06 HA
CONVENTIONAL SYMBOLS
TOPOGRAPHICAL SHEET NO(S)
SCALE

Site-9:- [EXISTING LEASE]

The mining site is situated on the river bank of Ghaghra at Gata No. 1456 mi, Village- Manjha Kala, Tehsil – Sadar, District- Basti, U.P., is having an area of 1.02 Ha. The co-ordinates of Mining lease area are:

Table 13:- Co-ordinates of Mining lease at Village – Manjha Kala

Points	Latitude	Longitude
A	26°35'44.3"N	82°39'49.0"E
B	26°35'43.8"N	82°39'47.1"E
C	26°35'37.4"N	82°39'51.6"E
D	26°35'38.6"N	82°39'53.0"E

Environmental Sensitivity Analysis

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No. 42	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	4.4	50 m	50 m	No
2.	Hospital	11.0	50 m	50 m	No
3.	Road (SH)	1.9	50 m	25 m	No
4.	Railway Station	21.0	100 m	100 m	No
5.	Chak Road	0.25	10 m	10 m	No
6.	Bridge or Embankment	3.0	200 m	200 m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone From Mine Site Route No.9

(River Bed Morrum Mining- Ghaghara River, Village– Manjha Kala, Tehsil- Sadar, District- Basti, Uttar Pradesh)

Sanctioned Area- 1.02 ha		
Points	Latitude	Longitude
A	26°35'44.3"N	82°39'49.0"E
B	26°35'43.8"N	82°39'47.1"E
C	26°35'37.4"N	82°39'51.6"E
D	26°35'38.6"N	82°39'53.0"E

Haulage Route
500m Radius buffer zone
Mine Lease Area

Sanctioned Area – 1.02 ha.

Gata No. 1456 mi,
Village- Manjha Kala,
Tehsil – Sadar,
District- Basti, U.P.


SOI TOPOSHEET MAP OF 5 KM RADIUS
GATA No. 1456 mi
River: Ghaghara
Village- Manjha Kalan
Tehsil- Sadar
District : Basti, Uttar Pradesh
AREA : 1.02 HA
GHAGHARA RIVER
PROJECT SITE
VILLAGE : MANJHA KALAN
TANDA
TOPOGRAPHICAL SHEET NO(S)
SCALE

Site-10:- [EXISTING LEASE]

The mining site is situated on the river bank of Ghaghra at Gata no. 568 Ka/63, Village- Devariya urf Tangaria Babu, Tehsil – Sadar, District- Basti, U.P, is having an area of 1.09 Ha. The co-ordinates of Mining lease area are:

Table 14:- Co-ordinates of Mining lease at Village - Devariya urf Tangaria Babu

Points	Latitude	Longitude
A	26°34'46.23"N	82°48'17.33"E
B	26°34'46.51"N	82°48'22.70"E
C	26°34'44.10"N	82°48'22.90"E
D	26°34'44.00"N	82°48'17.30"E

Environmental Sensitivity Analysis

The Environmental Sensitivity Analysis of the proposed project has been carried out as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No. 42	Min. distance as per SSMMG, 2016, Page. 76, 77	Sensitivity
1.	School	2.0	50 m	50 m	No
2.	Hospital	14.4	50 m	50 m	No
3.	Road (SH)	3.6	50 m	25 m	No
4.	Railway Station	23.5	100 m	100 m	No
5.	Chak Road	0.50	10 m	10 m	No
6.	Bridge or Embankment	17.3	200 m	200 m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Satellite Imagery of 500m Radius Buffer Zone From Mine Site Route No.10

(River Bed Morrum Mining- Ghaghara River, Village– Devariya Urf Tangaria Babu, Tehsil- Sadar, District- Basti, Uttar Pradesh)


SOI TOPOSHEET MAP OF 5 KM RADIUS
PROJECT SITE
VILLAGE : DEVARIYA URF TANGARIA BABU
(MAHULI PASHIM)
GATA No. 568 Ka/63
River: Ghaghara
Village- Devariya urf Tangaria Babu
(Mahuli Pashim)
Tehsil- Sadar
District : Basti, Uttar Pradesh
AREA : 1.09 HA
CONVENTIONAL SYMBOLS
TOPOGRAPHICAL SHEET NO(S)
SCALE : 1:40,000

At present there are 10 mines in Basti district. On the basis of the information given in ECs there are these mines are situated on Ghaghra River covering an area of 57.09 ha and total production is more than 8,90,554 cum.

Cluster Situation

01 cluster exist in Basti. There are 03 mines in cluster efficient.

18.2 IMPACT ON ENVIRONMENT AND SOCIO-ECONOMIC ASPECT OF THE DISTRICT

Primarily, the role of sand is very vital with regards to the protection of the banks, it acts as a buffer against strong flow by reducing their impacts as they reach to the bank. Sand being a habitat for crustacean species and other aquatic organisms, when mined excessively than it is being replenished would pose a threat to the lives and livelihoods of aquatic organisms. Sand, when mined in larger quantities that exceed the rate at which it is being replenished would pose a threat to nearby bridges since erosion will cause the river mouth to widen. Unscientific mining which causes river bed degradation (Channel incision) can undermine bridge piers and expose buried pipelines and other infrastructure causing damage to public and private property. Unscientific mining activities will have an impact upon the river's water quality. Impacts include increased short term turbidity at the mining site due to suspension of sediment, sedimentation due to stockpiling and dumping of excess mining materials and organic particulate matter, and oil spills or leakage from excavation machinery and transportation vehicles. Unscientific mining can have other costly effects beyond the immediate mine sites. Many hectares of fertile land are lost, as well as valuable timber resources and wildlife habitats in the riparian areas. Unscientific mining can cause changes to channel morphology in rivers through the lowering of the riverbed during extraction. This is enhanced by the disruption to bed amour caused by excavations and the movement of machinery which makes the bed vulnerable to fluvial erosion. Unscientific mining can have other costly effects beyond the immediate mine sites resulting in the destruction of riparian habitat through large changes in the channel morphology. Impacts include river bed degradation, river bed coarsening, lowered water table near the streambed, and channel instability. Continued extraction may also cause the

entire stream bed to degrade to the depth of excavation. Impacts to the biological resources include extinction and destruction of aquatic life due to the removal of in fauna, epi-fauna, and some benthic fishes and alteration of the available substrate and also destroy fisheries, causing problems for people who rely on fishing for their livelihood. This process can also destroy riverine vegetation, cause erosion, pollute water sources and reduce the variety of animals supported by these woodlands habitats. The positive impact of sand mining on socio-economic status of community occurred in job opportunities, income, economic activities, social activities and infrastructure. These 08 mines, which exist in the district Basti in the river bed of the Ganga and are providing direct livelihood for more than 150 persons. In a district like Basti with no large industry and MSME Industries are very few in number, these mining projects play an important role. More than 400 persons are directly involved in mining operations and approx. 150 persons are involved in transportation activities on a daily basis. Besides satellite occupations in the vicinity like food joints, tea stalls, vehicle repairing workshops, vehicle washing shops will get a boom, not to mention local shopkeepers and businessmen. The proposed plantation of approx. 400 saplings (as a part of EMP) definitely helps in improving air quality and land scape and attracts avifauna. The amount earmarked for Environmental Management Plan (approximately Rs. 43,00,000/-) will make the area more sustainable. More than Rs. 20,00,000/- is allocated for Corporate Social Responsibility of the project proponents towards the betterment of project villages that may be used as per the requirements of local people. This amount may be used in school/Primary Health Care building repairing, public toilet construction, solar light installation, automatic sanitary pad wending machine, infrastructure support to the schools and regular road repairing. All this need proper planning and execution.

19.0 SUMMARY

Table 15: Present Status of Mining

Potential area for Mining	Ghaghra
Mineable mineral Potential (Cum)	8,90,554 Cum
Total existing area for Mining (Ha)	57.09

River sediments are essentially mixtures of particles and minerals derived from the erosion of rocks exposed in the catchment area. Sand of The Ganga is derived from both Himalayan as well as cratonic sources which form several kilometres thick alluvial strata. The sediments consist of alluvial and alluvial plain deposits, grainy-decreasing conglomeratic lithic arenites and intercalations of mudstones, and calcareous arenites and coarse-grained to conglomeratic quartz sandstones and more than 859979 CuM sand is being mined out annually. There are 09 mines on River Ghaghra.

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ANNEXURES

Annexure-I

DETAILS OF SAND/M-SAND SOURCES

a) Rivers:

21.0

River Name / M-Sand Plant	Total Stretch of River (in KM)	Type of River (Perennial or Non-Perennial)
Ghaghra River	67.0	Perennial

b) De-Siltation Location: (Lakes/Ponds/Dams etc.)

22.0

Name of Reservoir / Dams	Maintain/Controlled by State Govt./PSU etc.	Location	District	Tehsil	Village	Size (Ha)
Nil	Nil	Nil	Nil	Nil	Nil	Nil

c) Patta Lands/Khatedari Land:

Owner	Sl. No	Area (Ha)	District	Tehsil	Village	Agricultural Land (Yes/No)
Shri Ashok Kumar Yadav S/o Shri Sumiran Yadav	6	1.42	Basti	Sadar	Majha Khurd Gata No. 1164Ja, 1164/12 Ka Mi, 1164/54Ka	Yes
Shri Arun Kumar Singh S/o Shri Jagdish Singh	7	1.29	Basti	Sadar	Majha Khurd Gata No.1164/33Ka, 1164Ka/51	Yes
Smt. Ramkumari W/o Shri Sarju Saran	8	2.06	Basti	Sadar	Majha Kala Gata No. 553	Yes
Shri Ram Lalit S/o Shri Kullu	9	1.02	Basti	Sadar	Majha Kala Gata No. 1456 Mi	Yes
Shri Constructions Prop. ShriRohit Mishra S/o RameshKumar Mishra	10	1.09	Basti	Sadar	Devariya Urf Tangaria Babu (Mahuli Pashim) Gata No. 568 Ka/63	Yes

d) M-Sand Plants:

23.0

Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity Tonnes/Annum
Nil	Nil	Nil	Nil	Nil	Nil	Nil

Note: For inclusion of M-Sand Plant/Patta Land in DSR the plant/landowners need to submit the request to the Mining Department with complete details. Inclusion in DSR does not give them the right to operate the M-Sand Plant/Sand Mining lease.

Annexure-II

List of Potential Mining Leases (existing & proposed) Rivers

Sl. No.	River Details	Lease Details	Area (in Ha)	Distance (in KM) from PA/BR/ WC/	Distance from Forest Area (in KM)	Mining leases within 500 meters (if yes cluster area)	Total excavation in Tonnes /Annum considering digging depth max as 3 meters	Mineral to be mined (Sand/ Bajri/ RBM etc.)	Existing / Proposed
1.	Ghaghra River	Village-Majha Sitarampur, Tehsil- Harraiya, District- Basti Gata No.- 109 / 7	10.125	None	None in 100m radius	-	2,93,625 cum 5,28,525 Tonne	4,89,375 cum 8,80,875 Tonne	Existing
2.	Ghaghra River	Village- Bardiya Lohar, Tehsil- Harraiya, District- Basti Gata No.- 413 Da / 1 Mi, 413 Mi, 412 Da Mi, 413 Ka/53	4.340	None	None in 100m radius	-	86,800 Cum 1,56,240 Tonne	1,44,667 cum 2,60,400 Tonne	Existing
3.	Ghaghra River	Village- Mahuapar Khurd K-1, Tehsil- Sadar, District- Basti Gata No.- 391ka / 67 K-1	10.0	None	None in 100m radius	-	1,37,500 cum 2,47,500 Tonne	2,29,166 cum 4,12,500 Tonne	Existing
4.	Ghaghra River	Village- Majha khurd Tehsil- Sadar, District- Basti Gata No.- 1164/94	15.40	None	None in 100m radius	Yes	2,77,200 cum 4,98,960 Tonne	4,62,000 cum 8,31,600 Tonne	Proposed
5.	Ghaghra River	Village- Aaraji Duhi Musinne Pure Chetan Tehsil- Harraiya, District- Basti Gata No.- 02 mi	10.0	None	None in 100m radius	-	180000 cum 324000 Tonne	3,00,000 cum 5,40,000 Tonne	Proposed

Patta Lands/Khatedari Land: (existing & proposed)

Owner	SL. No	Area	District	Tehsil	Village	Total Reserve (MT)	Total Mineral to be mined (MT)	Existing / Proposed
Shri Ashok Kumar Yadav S/o Shri Sumiran Yadav	6	1.42	Basti	Sadar	Majha Khurd Gata No. 1164Ja, 1164/12 Ka Mi, 1164/54Ka	71,000 cum/ 1,27,800 MT	42,600 cum/ 76,680 MT	Proposed
Shri Arun Kumar Singh S/o Shri Jagdish Singh	7	1.29	Basti	Sadar	Majha Khurd Gata No.1164/33Ka, 1164Ka/51	64,500 cum/ 1,16,100 MT	38,700 cum/ 69,660 MT	Proposed
Smt. Ramkumari W/o Shri Sarju Saran	8	2.06	Basti	Sadar	Majha Kala Gata No. 553	85,833cum/ 1,54,500 MT	51,500 cum/ 92,700 MT	Proposed
Shri Ram Lalit S/o Shri Kullu	9	1.02	Basti	Sadar	Majha Kala Gata No. 1456 Mi	51,000 cum/ 91,800 MT	30,600 cum/ 55,080 MT	Existing
Shri Constructions Prop. ShriRohit Mishra S/o RameshKumar Mishra	10	1.09	Basti	Sadar	Devariya Urf Tangaria Babu (Mahuli Pashim) Gata No. 568 Ka/63	51,167 cum/ 92,100 MT	30,700 cum/ 55,260 MT	Existing

De-Siltation Location: (Lakes/Ponds/Dams etc.) (Existing & proposed)

Name of Reservoir /Dams	Maintain/ Controlled by State Govt. / PSU etc.	Location	District	Tehsil	Village	Size (Ha)	Quantity MT / Year	Existing /Propose d
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

M-Sand Plants :(existing & proposed)

Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity Tonnes / Annum	Existing/Proposed
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Annexure-III

CLUSTER & CONTIGUOUS CLUSTER DETAILS

Clusters:

River Name	Cluster No.	Lease No	Location (Riverbed / Patta Land)	Village	Area (in Ha)	Total Excavation (Ton)	Total Mineral Excavation (Ton)
Ghaghra River	1	4	Riverbed	Majha khurd Gata No.-1164/94	15.40	4,62,000 cum/ 8,31,600 Tonne	2,77,200 cum/ 4,98,960 Tonne
Ghaghra River		6	Riverbed	Majha khurd 1164Ja, 1164/12 Ka Mi, 1164/54Ka	1.42	71,000 cum/ 1,27,800 MT	42,600 cum/ 76,680 MT
Ghaghra River		7	Riverbed	Majha Khurd Gata No.1164/33Ka, 1164Ka/51	1.29	64,500 cum/ 1,16,100 MT	38,700 cum/ 69,660 MT

Contiguous Clusters:

River Name	Contiguous Cluster No.	Cluster No	Number of leases in the cluster	Location (Riverbed /Patta Land)	Distance between clusters	Village	Area of Cluster (Ha)	Total Mineral Excavation (Ton)
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Annexure-IV

TRANSPORTATION ROUTES FOR INDIVIDUAL LEASES AND LEASES IN CLUSTER:

TRANSPORTATION ROUTES FOR INDIVIDUAL LEASES:

Lease No	Transportation Route No	Number of tippers /day of lease	Number of tipper s /day of all the lease on route	Length of Route in KM	Type of Road (Black Topped/ unpaved)	Recommendation for road (Black Topped/ unpaved)	The road will be Constructed by Govt. / Lease Owner	Route Map & Location
1	1	76	76	0.56	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
2	2	23	23	0.75	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
3	3	36	36	0.70	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
4	4	72	93	0.50	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
5	5	47	47	0.45	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached

6	6	11	93	0.43	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
7	7	10	93	0.27	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
8	8	14	14	0.21	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
9	9	8	8	0.28	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
10	10	8	8	0.22	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached

TRANSPORTATION ROUTES FOR LEASES IN CLUSTER:

Cluster No.	Transportation Route No.	Number of tippers/day of cluster	Number of tippers /day of all the clusters on route	Length of Route in KM	Type of Road (Black Topped/ unpaved)	Recommendation for road (Black Topped/ unpaved)	The road will be Constructed by Govt. / Lease Owner	Route Map & Location
1	4	72	93	0.43	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
	6	11	93	0.27	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
	7	10	93	0.50	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached

Annexure-V

FINAL LIST OF POTENTIAL MINING LEASES (EXISTING & PROPOSED)

Sl. No.	River Details	Lease Details	Area (in Ha)	Distance (in KM) from PA/BR/ WC/	Distance from Forest Area (in KM)	Mining leases within 500 meters (if yes cluster area)	Total excavation in Tonnes /Annum considering digging depth max as 3 meters	Mineral to be mined (Sand/ Bajri/ RBM etc.)	Existing / Proposed
1.	Ghaghra River	Village-Majha Sitarampur, Tehsil- Harraiya, District- Basti Gata No.- 109 / 7	10.125	None	None in 100m radius	-	2,93,625 cum 5,28,525 Tonne	4,89,375 cum 8,80,875 Tonne	Existing
2.	Ghaghra River	Village- Bardiya Lohar, Tehsil- Harraiya, District- Basti Gata No.- 413 Da / 1 Mi, 413 Mi, 412 Da Mi, 413 Ka/53	4.340	None	None in 100m radius	-	86,800 Cum 1,56,240 Tonne	1,44,667 cum 2,60,400 Tonne	Existing
3.	Ghaghra River	Village- Mahuapar Khurd K-1, Tehsil- Sadar, District- Basti Gata No.- 391ka / 67 K-1	10.0	None	None in 100m radius	-	1,37,500 cum 2,47,500 Tonne	2,29,166 cum 4,12,500 Tonne	Existing
4.	Ghaghra River	Village- Majha khurd Tehsil- Sadar, District- Basti Gata No.- 1164/94	15.40	None	None in 100m radius	Yes	2,77,200 cum 4,98,960 Tonne	4,62,000 cum 8,31,600 Tonne	Proposed
5.	Ghaghra River	Village- Aaraji Duhi Musinne Pure Chetan Tehsil- Harraiya, District- Basti Gata No.- 02 mi	10.0	None	None in 100m radius	-	180000 cum 324000 Tonne	3,00,000 cum 5,40,000 Tonne	Proposed

Patta Lands/Khatedari Land: (existing & proposed)

Owner	SL. No	Area	District	Tehsil	Village	Total Reserve (MT)	Total Mineral to be mined (MT)	Existing / Proposed
Shri Ashok Kumar Yadav S/o Shri Sumiran Yadav	6	1.42	Basti	Sadar	Majha Khurd Gata No. 1164Ja, 1164/12 Ka Mi, 1164/54Ka	71000 cum/ 127800 MT	42600 cum/ 76680 MT	Proposed
Shri Arun Kumar Singh S/o Shri Jagdish Singh	7	1.29	Basti	Sadar	Majha Khurd Gata No.1164/33Ka, 1164Ka/51	64500 cum/ 116100 MT	38700 cum/ 69660 MT	Proposed
Smt. Ramkumari W/o Shri Sarju Saran	8	2.06	Basti	Sadar	Majha Kala Gata No. 553	85833cum/ 154500 MT	51500 cum/ 92700 MT	Proposed
Shri Ram Lalit S/o Shri Kullu	9	1.02	Basti	Sadar	Majha Kala Gata No. 1456 Mi	51000 cum/ 91800 MT	30600 cum/ 55080 MT	Existing
Shri Constructions Prop. ShriRohit Mishra S/o RameshKumar Mishra	10	1.09	Basti	Sadar	Devariya Urf Tangaria Babu (Mahuli Pashim) Gata No. 568 Ka/63	51167 cum/ 92100 MT	30700 cum/ 55260 MT	Existing

De-Siltation Location: (Lakes/Ponds/Dams etc.) (Existing & proposed)

Name of Reservoir / Dams	Maintain/ Controlled by State Govt. / PSU etc.	Location	Distt.	Tehsil	Village	Size(Ha)	Quantity MT/Year	Existing/ Proposed
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

M-Sand Plants :(existing & proposed)

Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity MT/Annum	Existing/Proposed
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Annexure-VI

FINAL LIST OF CLUSTER & CONTIGUOUS CLUSTER

Clusters:

River Name	Cluster No.	Lease No	Location (Riverbed / Patta Land)	Village	Area (in Ha)	Total Excavation (Ton)	Total Mineral Excavation (Ton)
Ghaghra River	1	4	Riverbed	Majha khurd Gata No.-1164/94	15.40	4,62,000 cum/ 8,31,600 Tonne	2,77,200 cum/ 4,98,960 Tonne
Ghaghra River		6	Riverbed	Majha khurd 1164Ja, 1164/12 Ka Mi, 1164/54Ka	1.42	71000 cum/ 127800 MT	42600 cum/ 76680 MT
Ghaghra River		7	Riverbed	Majha Khurd Gata No.1164/33Ka, 1164Ka/51	1.29	64500 cum/ 116100 MT	38700 cum/ 69660 MT

Contiguous Clusters:

River Name	Contiguous Cluster No.	Cluster No	Number of leases in the cluster	Location (Riverbed/ Patta Land)	Distance between clusters	Village	Area of Cluster (in Ha)	Total Mineral Excavation (Ton)
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Annexure-VII

FINAL TRANSPORTATION ROUTES FOR INDIVIDUAL LEASES AND LEASES IN CLUSTER

TRANSPORTATION ROUTES FOR INDIVIDUAL LEASES:

Lease No	Transportation Route No	Number of tippers /day of lease	Number of tipper s /day of all the lease on route	Length of Route in KM	Type of Road (Black Topped/ unpaved)	Recommendation for road (Black Topped/ unpaved)	The road will be Constructed by Govt. / Lease Owner	Route Map & Location
1	1	76	76	0.56	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
2	2	23	23	0.75	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
3	3	36	36	0.70	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
4	4	72	93	0.50	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
5	5	47	47	0.45	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached

6	6	11	93	0.43	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
7	7	10	93	0.27	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
8	8	14	14	0.21	Unpaved road (width 6m) further connected to Black paved road	Temporary road must be constructed	Lease Owner	Attached
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REVISED
DISTRICT SURVEY REPORT – YEAR 2024

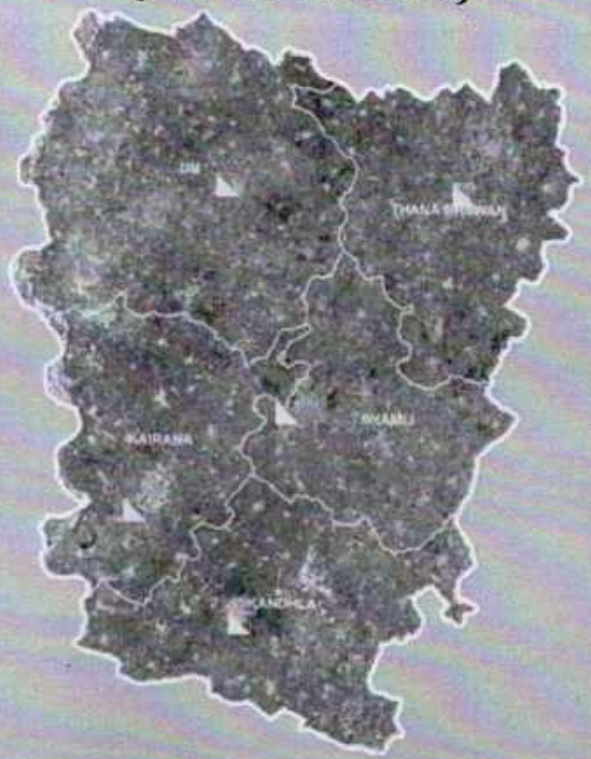
[As per Sustainable Sand Mining Guidelines 2016 & Enforcement & Monitoring Guidelines for Sand Mining 2020 & SOP issued by SEIAA/SEAC,UP]

OF

RIVERBED SAND MINING SITES

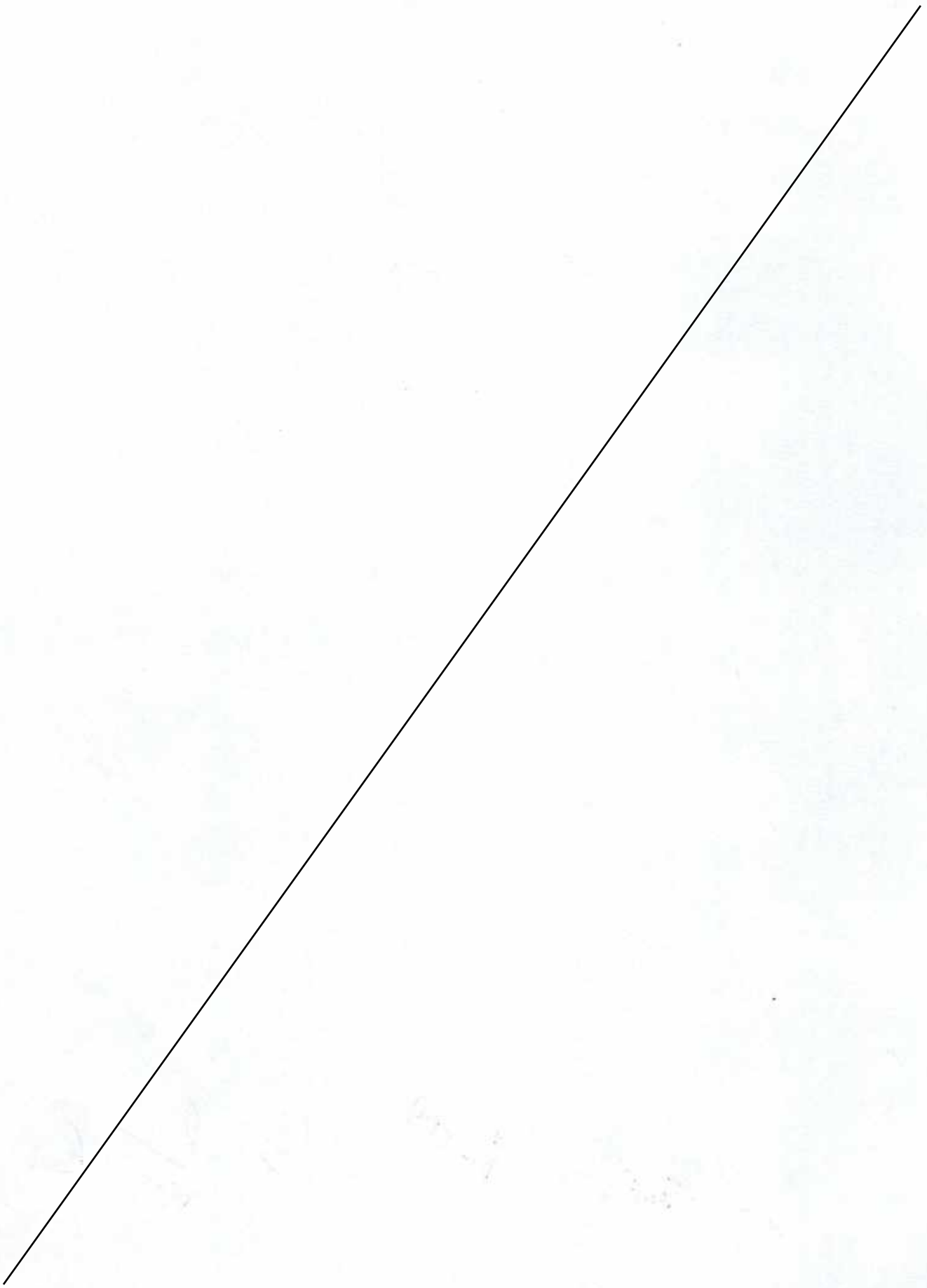
DISTRICT-SHAMLI

(UTTAR PRADESH)



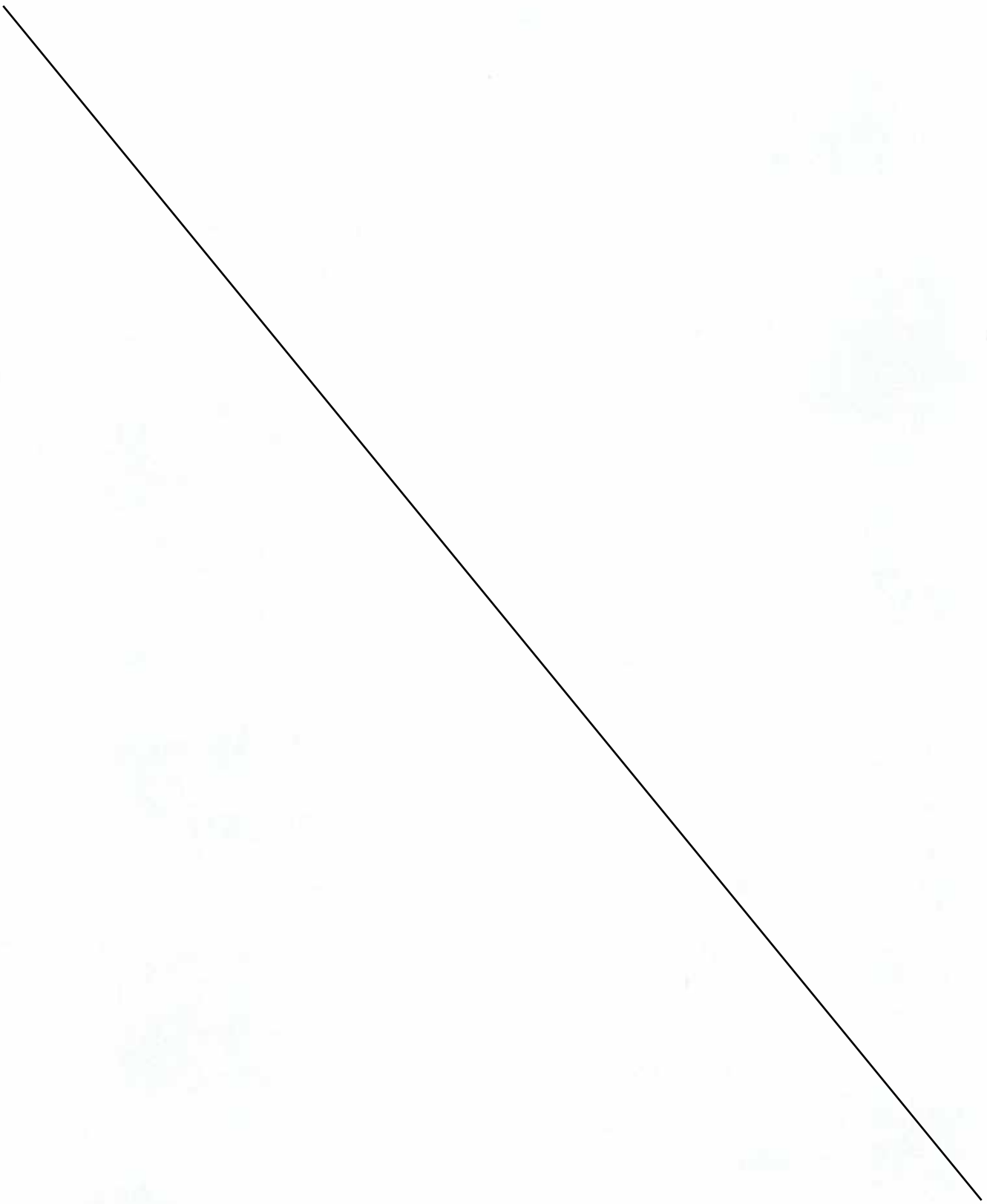
M.O J.R.F SDM(IN) SDM(OOM) DFO

PREPARED BY – SUB-DIVISIONAL COMMITTEE, DISTRIC SHAMLI, U.P.



CONTENT

	8.1 Cropping Pattern 8.2 Land form & Seismicity 8.3 Fauna 8.4 Flora
9.0	**Physiography of the District** 9.1 Topography & Terrain 9.2 Water Course & Hydrology 9.3 Ground Water Development 9.4 Drainage System 9.5 Soil
10.0	**Rainfall: Month Wise**
11.0	**Geology and Mineral Wealth** 11.1 Geology 11.2 Mineral Wealth
12.0	a) District wise detail of river or stream and other sand source; b) District wise availability of sand or gravel or aggregate resources; c) District wise detail of existing mining leases of sand and aggregates.
13.0	**Drainage System with Description of Main Rivers** a) Name of the river. b) Area drained (sq. km) c) Percentage area drained in the District.
14.0	**Salient Features of Important Rivers and Streams** a) Name of the river or stream. b) Total length in the district.(in Km.) c) Place of origin.



LIST OF FIGURES, TABLES AND PLATES

FIGURES

TABLES

PREFACE

On 15 January 2016, Ministry of Environment, Forest and Climate Change, Government of India issued a notification and in which Para 7(iii) (a) and Annexure (x) purpose and structure of District Survey Report has been On 15 January 2016, Ministry of Environment, Forest and Climate Change, Government of India issued a notification and in whose Para 7(iii) (a) and Annexure (x) purpose and the structure of District Survey Report have been discussed. District Survey report (DSR) is to be prepared in every district for each minor mineral. The DSR will guide systematic and scientific utilization of natural resources, so that present and future generations may benefitted large. The purpose of DSR is "*Identification of areas of aggradations or deposition where mining can be allowed: and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area*". The DSR will contain mainly data published and endorsed by various departments and websites about the geology of the area, mineral wealth details of rivers, details of lease and mining activity in the district along with sand mining and revenue of minerals. this report also contains details of forest, rivers, soil, agriculture, road, transportation and climate etc.

Further, MoEF&CC has issued two Guidelines Sustainable Sand Mining Management Guidelines-2016 (SSMG-2016) and Enforcement & Monitoring Guidelines for Sand Mining-2020 (EMGSM-2020) and guided that EMGSM-2020 and SSMG-2016 shall be read and implemented in sync with each other. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement & Monitoring Guidelines for Sand Mining-2020 "shall prevail.

The Revised DSR has been prepared in conformity to the SOP issued by SEIAA, UP.

Disclaimer:- The data may vary due to flood, heavy rains and other natural calamities. Therefore, it is recommended that SEIAA may take into consideration all its relevant aspects / data while scrutinizing and granting the application for EC.

1.0 INTRODUCTION

Shamli is a district of Uttar Pradesh. This district was formed by fragmentation of Muzaffarnagar District on 28 September 2011 as Prabudh Nagar and later on renamed Shamli in July 2012.

Shamli is located along the Delhi-Saharanpur-Dehradun Expressway, Ambala-Shamli Expressway, Gorakhpur-Shamli Expressway, Delhi–Saharanpur (National Highway-709B), Meerut-Karnal (National Highway-709A) and Panipat-Khatima (National Highway-709AD) Highways.

Shamli district also comes in National Capital Region (NCR) of India. The district is 100 kilometres (62 mi) from Delhi, 65 kilometres (40 mi) from Meerut and Saharanpur, 60 km (37 mi) from Baghpat, and 40 kilometres (25 mi) from Muzaffarnagar, Karnal, Panipat, and Baraut.

Economically, Shamli district has an agriculture and industry based economy where sugarcane is the main crop. There are three major sugar mills located at Shamli, Un and Thanabhawan. Shamli is known worldwide for its Rim-Axle industry which also got selected under Uttar Pradesh Governments One District One Product Scheme.

The district, covering an area of 1167.58 Sq. Km. which is located in the north-west of Uttar Pradesh. It lies to the east of the Yamuna River, which marks the borders of two Indian states, Haryana and Uttar Pradesh. The district falls in Survey of India Toposheet No. 53G, covering north latitudes $29^0 45' 49.33''$ and $29^0 42' 33.33''$ and east longitude $77^0 23' 10.06''$ and $78^0 08' 13.18''$.

Source (https://shamli.nic.in/ ; https://en.wikipedia.org/wiki/Shamli_district)

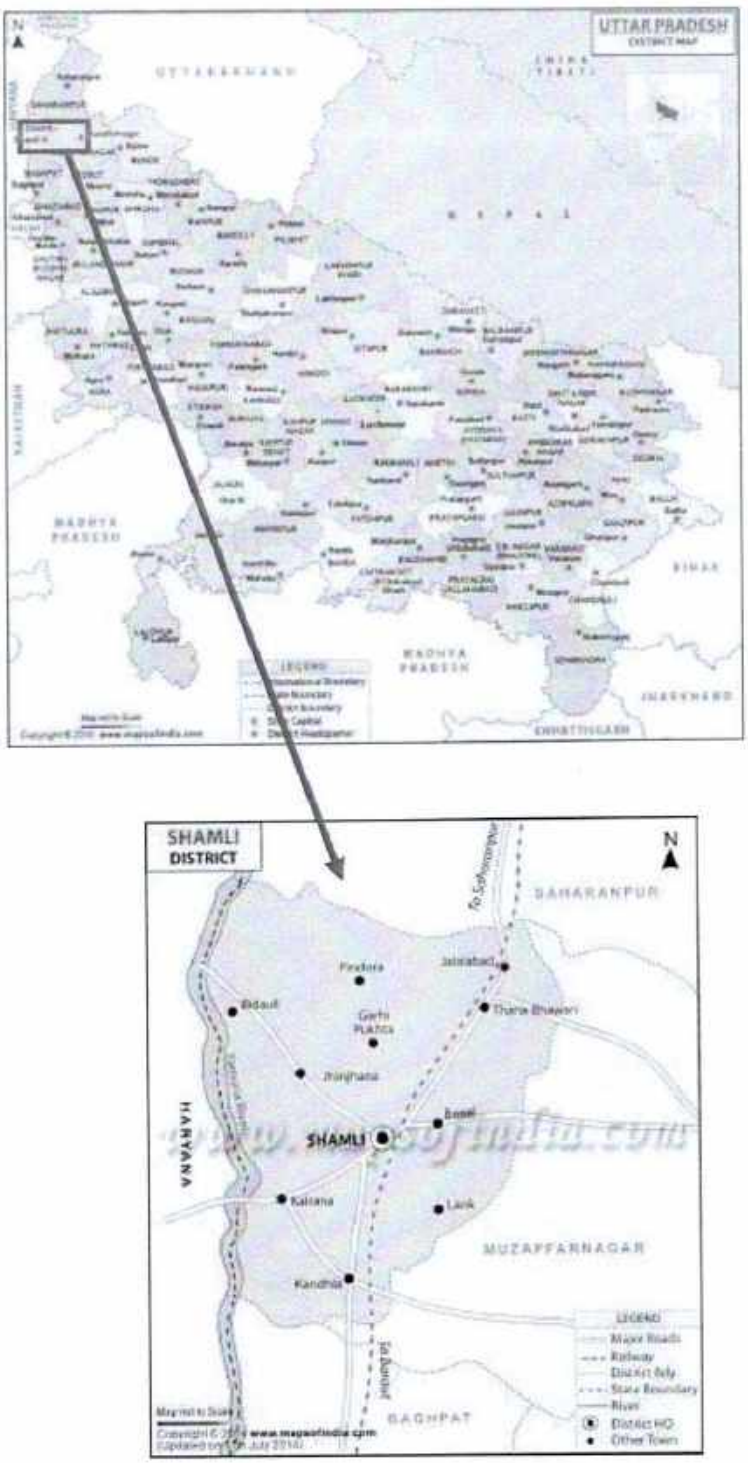


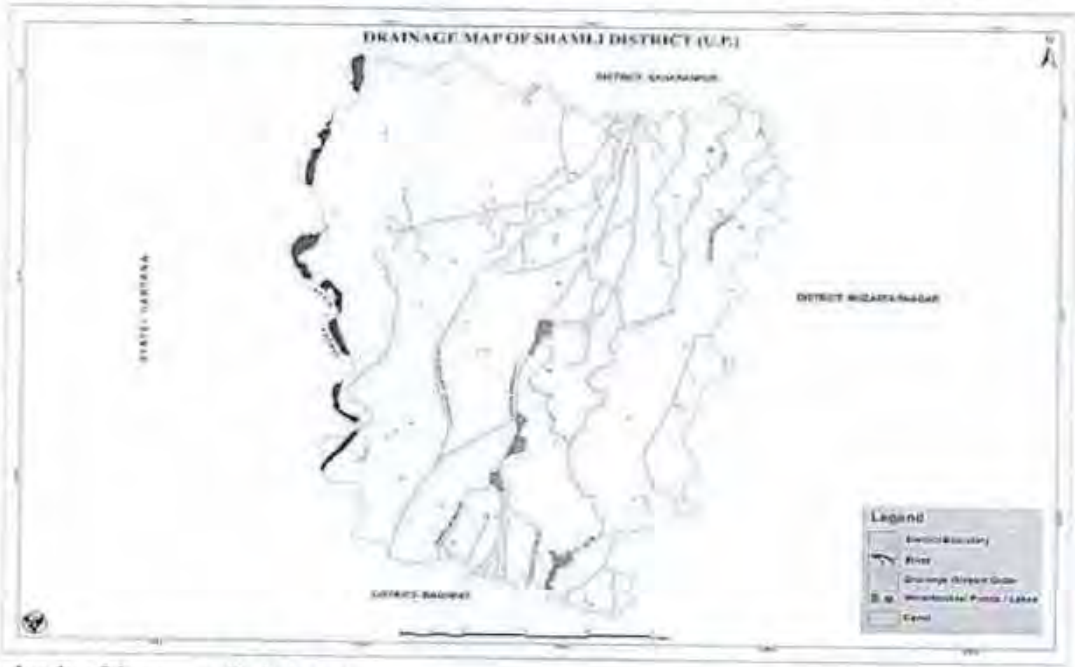
Fig 1: Location map of District Shamli

2.0 OVERVIEW OF MINING ACTIVITIES IN THE DISTRICT

Shamli district is demarcated by rivers Yamuna in the west and Krishni in the east. In fact, the drainage pattern of the district is strictly governed by these rivers which form western boundary of Haryana state and eastern boundary of Muzaffarnagar district. Both the rivers in their respective course flow more or less north to south. The district occupies the northern part of Ganga basin and Yamuna Sub basin.

Source : CGWB Report

The eastern part of the district occupies by Ganga basin and western part of the



district by Yamuna Sub basin.

Sand is naturally occurring granular material composed of finely divided rock and mineral particles varying from 150 micron to 4.75 mm in diameter. Sand is formed due to weathering of rocks due to mechanical forces. In the process the weathered rocks forms gravel and then sand. Sand and gravel together known as aggregate, represent the highest volume of raw material used on earth after water.

The mining of aggregate and sand have been continuing for many years in the district. Directorate of Geology & Mining, UP, since its inception in 1955 is actively engaged in search of mineral wealth as well as promotion of scientific development

of mineral resources along with conservation and development of mineral based industries in the state.

The sand and gravel are one of the most important construction materials. Ensuring their availability is vital for the development of the infrastructure in the country. There are different sources of sand and gravel, the most important among them is the river. River Bed Sand Mining is a common practice as habitation concentrates along the rivers and the mining locations are preferred near the markets or along the transportation route, for reducing the transportation cost.

BACKGROUND OF MINING OPERATIONS:-

- Total 12 leases were identified in phases/time-to-time since implementation of initial DSR in year – 2017
- Out of total 12 leases, 7 leases secured E.C. and operated in this period.
- Out of 7 leases which secured E.C., the period/validity of 1 lease has expired, 2 leases were forfeited, and remaining 4 leases are currently under operations.

CURRENT SCENARIO:-

- Out of 12 leases identified in initial DSR of 2017, a total of 5 leases has been dropped/not proposed in the Revised DSR-2024.
- 1 new lease (private land patta) has been added in the Revised DSR.
- Hence the total 8 number of leases (7 old and 1 new lease) has been proposed in the Revised DSR-2024.

3.0 LIST OF MINING LEASES WITH LOCATION, AREA AND PERIOD OF VALIDITY

Table 2:

Sl. No.	River	Village/Tehsil	Lease Details	Area (ha.)	Total Quantity (cum)	Mineral	Period of validity
1	Yamuna	Village-Mandawar, Tehsil-Kairana	**Mandawar-4** Gata No. 622MA, 622MA	20.34	**203400**	**Sand**	**1/1/2020 To 31/12/2026**
2	Yamuna	Village-Mandawar, Tehsil-Kairana	Mandawar-3 Gata No. 622MA, 622MA	20.34	**203400**	**Sand**	**5/6/2020 to 4/5/2025**
3	Yamuna	Village-Nanglarai Ahatmal, Tehsil-Kairana	Gata No. 19, 20, 21, 23, 24, 57, 58, 59, 61, 62, 63, 67, 68 KHA. 69MA, 70, 71 ,72GHA. 73GHA. 75, 82GA, 83, 84, 314GHA, 315KHA. 86, 87, 88, 306, 310, 311, 312, 313, 314KA, 317, 321, 322/39	24.92	**354440**	**Sand**	**4/3/2020 to 3/3/2025**
4	**Private Land**	Village-Kalri, Tehsil-Kairana	Gata No. 202, 203 & 201	2.2145	**39850**	**Sand**	**Vacant**
5	Yamuna	Village-Nai Nagla Manglora Jadid, Tehsil-Una	Gata No. 108/1	9.02	**162350**	**Sand**	**Vacant**
6	Yamuna	Village-Bidauli, Tehsil-Una	Gata No. 228	20.469	**307035**	**Sand**	**2/3/2021 To 1/3/2026**
7	Yamuna	Village-Issospur Khurgan, Tehsil-Kairana	Gata No. 553, 554	3.96	**95040**	**Sand**	**Vacant**
8	Yamuna	Village-Issospur Khurgan, Tehsil-Kairana	Gata No. 671, 674	4.213	**101040**	**Sand**	**Vacant**

4.0 DETAILS OF REVENUE OR ROYALTY RECEIVED IN LAST THREE YEARS

Table 3:

Sl. No.	Financial Year	Total Revenue (Lakh Rs.)
1	2020-2021	1628.66
2	2021-2022	1750.50
3	2022-2023	2133.05

5.0 DETAILS OF PRODUCTION OF SAND OR BAJRI OR MINOR MINERAL IN LAST THREE YEARS

Table 4:

Sl. No.	Financial Year	Production (cubic-m)
1	2020-2021 (Sand)	6,65,814.00
2	2021-2022 (Sand)	6,42,036.00
3	2022-2023 (Sand)	8,34,659.00

6.0 PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVERS OF THE DISTRICT

Sediment transport is critical to understanding how rivers work because it is the set of processes that mediates between the flowing water and the channel boundary. Erosion involves removal and transport of sediment (mainly from the boundary) and deposition involves the transport and placement of sediment on the boundary. Erosion and deposition are what form the channel of any alluvial river as well as the floodplain through which it moves. The amount and size of sediment moving through a river channel are determined by three fundamental controls: competence, capacity and sediment supply. Competence refers to the largest size (diameter) of sediment particle or grain that the flow is capable of moving; it is a hydraulic limitation. If a river is sluggish and moving very slowly it simply may not have the power to mobilize and transport sediment of a given size even though such sediment is available to transport. So a river may be competent or incompetent with respect to a given grain size. If it is incompetent it will not transport sediment of the given size. If it is competent it may transport sediment of that size if such sediment is available (that is, the river is not supply-limited).

6.1 Modes of Sediment Transport

The sediment load of a river is transported in various ways although these distinctions are to some extent arbitrary. The loose boundary (consisting of movable material) of an alluvial channel deforms under the action of flowing water and the deformed bed with its changing roughness (bed forms) interacts with the flow. The resulting movement of the bed material (sediment) in the direction of flow is called sediment transport and a critical bed shear stress (t) must be exceeded to start the particle movement. Such a critical shear stress is referred as incipient

(threshold) motion condition, below which the particles will be at rest and the flow is similar to that on a rigid boundary.

6.2 Replenishment

Detrital input reaching river Yamuna is generated from various sources i.e. exposed fresh and weathered rocks recycled marine martial and fluvial sediment and soils. The catchments outcrops are exposed to variable rates and intensity of weathering and there weathering products may vary mineralogical characteristics because of mixing mineral component during erosion and transport prior to final deposition.

6.3 Sediment Discharge Rate

The soil characteristics of the Yamuna have a large spectrum of particle sizes from 30 µm to 1 mm. A flow velocity of 0.75 m/s can move only silt-sized particles of size up to ~ 60 µm. The total monsoon discharge for a set of average monsoon river stages and the corresponding water flow velocity in the main channel and in the shoulder areas were estimated. The average monsoon river stage of 208.9 m amsl (above mean sea level) corresponds to the flow of 3.9 TMCM (~ 36% of the total mean annual monsoon flow) through the river Yamuna. The velocity in the main river channel at this total discharge was estimated at ~ 1.57 m/s. This velocity of flow can dislodge sediment particles of size ~ 265 µm. An average monsoon flow of 5.5 TMCM (50% of the total mean annual monsoon flow) through river Yamuna corresponds to a river stage of 209.2 m amsl. The velocity in the main river channel at this total discharge was estimated at 1.8 m/s. This velocity of flow can dislodge sediment particles of size ~ 340 µm (medium sand). The main channel can thus be cleared of the larger and heavier sediments more efficiently at this flow velocity. Field-based observations show average monsoon peak flow to be approximately 1.4 m above the average

monsoon river stage. Based on this, the peak flow associated with the average monsoon river stage of 209.2 m amsl (corresponding to total flow of 5.5 TMCM) would be 210.6 m amsl. The flow velocity in the main river channel at the river stage of 210.6 m amsl would be 3.4 m/s. This river flow velocity is sufficient to dislodge particles of size ~ 1200 µm (1.2 mm; coarse sand). Hence this river flow velocity will efficiently remove most of the heavy sediments and grit from the main river channel and prevent siltation and shallowing of the river channel. The water flow velocity in areas adjacent to the main river channel corresponding to the monsoon flow of 5.5 TMCM at a river stage of 209.2 m amsl has been estimated at 0.93 m/s). This flow velocity can dislodge sediments particle of size ~ 95 µm (very fine sand). Such well-sorted sediments will have higher permeability leading to enhancement in river bank storage during the monsoon floods. Empirically, it is clear that the river is heavily silted and at present has a depth of only 0.6 m in summer. To remove all riverbed particles of diameter up to 1–2 mm (coarse sand to very fine gravel) will require a monsoon flow larger than 50% (5.5 MCM), but we also have to balance this with reality (agricultural needs). A 50% (5.5 MCM) monsoon flow can dislodge particles of diameter up to ~ 1.2 mm; however, when such particles are transported and desilting occurs, the main channel will deepen enhancing the flow velocity. Consequently, even particles of larger size will be transported. We conclude that at least 50% (5.5 TMCM) of the monsoon virgin flow of river Yamuna is the flushing flow required in this stretch *(Soni et al., 2014)*.

6.4 Sedimentation Yield

Sediment, the end product of erosion, has a twofold effect:

1- it depletes the Land front which it is derived

2- it impairs the quality of the water-resources in which it is entrained and deposited.

The importance of the sediment-yield-surveys, as preventive and corrective measures, can be attributed to the erosional-processes. (Kumar, 1992) Naturally, sand is a granular material consisting of rock particles and fine minerals measuring between 0.06 mm to 2 mm. Sand is formed from decompotion of rocks due to mechanical strength where decomposed rocks form gravel and then sand. Almost the entire suspended load of Yamuna River is transported during the monsoon period; quartz and illite are the dominant minerals of these suspended sediments. Basin lithology, tributary contributions, and sediment grain size seem to control mineral distribution in the sediments. Trace metal concentrations of Yamuna core sediments reflect their mineralogical composition. Illite is the chief clay mineral of the Himalayan river sediments. The mineralogical characteristics of the Himalayan river sediments differ significantly from the Peninsular Indian Rivers, which chiefly carry montmorillonite. The annual sediment load of Indian rivers is a little more than 1.2 billion tonnes which is roughly 10% of the global sediment flux to the world oceans. Indian rivers show pronounced seasonal and spatial variability in their sediment discharge. Maximum mass transfer, in the Yamuna River takes place during the monsoon season. The sediment load constitutes 58–86% of the total load carried by the river depending upon the sites. Tributaries carry sediments more actively than the mainstream. The total load of the river seems to be controlled by lithology. At Prayagraj, the Yamuna carries 64 × 106 tonnes sediment load to the Ganges river. The TSM/TDS ratio shows that upstream physical weathering is more dominant than chemical weathering. The negative relation between basin area and total erosion

rate and the positive relation between the chemical and sediment erosion in the Yamuna basin agrees with the global trend. The average chemical erosion rate (165 tonnes km−2yr−1) of the Yamuna is much higher than that of the Ganges and the Indian average. The total erosion rate (973 t km−2yr−1) is 1.7 times greater than that of the Ganges. Upstream, the Yamuna removes 1.04 mm yr−1 of the basin surface; the removal rate decreases downstream to 0.19 mm yr−1 at Prayagraj, the point of confluence with the Ganges (Jha et al., 1988). The rate of sedimentation at the station Sharanpur (UP) the highest rate of sedimentation (5.99 cm/y) was noticed, most probably due to deforestation and other human influences in the Himalayan regions, while the lowest rate was observed in Hamirpur(UP) (2.48 cm/yr). Yamuna River sediments are mainly composed of very fine sand, silt and clay derived from the Himalayan region. Granulometric analysis shows that the ~20-mm particles are found in the Yamuna River sediments. The total river sediment shows the presence of quartz, feldspar and illite minerals in bulk mineralogical composition. Metal ratios for the river sediments show various degrees of enrichment. A river has two sources of heavy metals: lithogenic sources from weathering of rocks and anthropogenic. The values are greater than one except for Manganese, Iron and to some extent for Cobalt. High ratios of Chromium, Nickle, Copper, Zinc, Lead and an exceptionally high ratio of Cadmium for some sediment samples have been found.

6.5 Method of Mining

a) Extracting gravel from an excavation that does not penetrate the water table and is located away from an active stream channel should cause little or no change to the natural hydrologic processes unless the

stream captures the pit during periods of flooding. The exception is that changes in evapotranspiration, recharge, and runoff may create minor changes to the ground-water system, which may in turn affect stream flow.

b) Limiting extraction of material in floodplains to an elevation above the water table generally disturbs more surface area than allowing extraction of material below the water table.

c) In-stream extraction of gravel from below the water level of a stream generally causes more changes to the natural hydrologic processes than limiting extraction to a reference point above the water level.

d) In-stream extraction of gravel below the deepest part of the channel (the thalweg) generally causes more changes to the natural hydrologic processes than limiting extraction to a reference point above the thalweg.

e) Excavating sand and gravel from a small straight channel with a narrow floodplain generally will have a greater impact on the natural hydrologic processes than excavations on a braided channel with a wide floodplain.

f) Extracting sand and gravel from a large river or stream will generally create less impact than extracting the same amount of material from a smaller river or stream.

7.0 GENERAL PROFILE OF THE DISTRICT

7.1 General Information

Shamli District is situated in the western corner of Uttar Pradesh and falls under upper gangetic plains – western plains agro climatic zone. The Hindon river forms the Eastern boundary while Yamuna river forms the western boundary of the district. The total geographical area of the district is 1167.58 Sq. Km. The district has a population of 15,61,543.

Administratively , Shamli is divided into 5 blocks - Shamli, Thanabhawan, Kandhala, Kairana and Uun and 3 tehsils – Shamli, Kairana and Uun with 322 villages. The district is surrounded to the north by Muzaffarnagar, to the east by Meerut district, to the south by Ghaziabad district, and to the west, across the Yamuna, Delhi, and Sonipat district in Haryana state. *(source:- https://shamli.nic.in/)*

Fig 2: Administrative Map of District Shamli

Table 5: List of Blocks of Shamli District

S. No.	Block
1.	Shamli
2.	Kandhala
3.	Uun
4.	Kairana
5.	Thanabhawan

Shamli is well connected to other places by railway and metalled roads. All the blocks and tehsil headquarters of the district are also connected through rail or road network

Fig 3: Transportation map of District Shamli

Specification	Year	Length
(a) National Highway	2013-14	0 km
(b) State Highway	2013-14	97 km

(c) Important Roads of District	2013-14	32 km
(d) Other District & Rural Roads	2013-14	1204 km
(e) Rural road/ Agriculture Marketing Board	2013-14	11 km
(f) Kachacha Road	2013-14	N.A.

Shamli is located along the Delhi-Saharanpur-Dehradun expressway, Ambala-Shamli Expressway, Gorakhpur - Shamli Expressway, Delhi – Saharanpur (National Highway-709B), Meerut-Karnal (National Highway-709A) and Panipat - Khatima (National Highway-709AD) Highways.

7.2 Climatic Condition &
7.3 Rainfall & Humidity

The average annual rainfall in the district is 869 mm. About 80% of rainfall takes places from June to September. During monsoon surplus water is available for deep percolation to ground water. The climate is sub humid and it is characterized by general dryness except in the brief period during the monsoon season. Summer is hot and winter is pleasant cold season. There is a meteorological observatory at Meerut, which may be taken as representative of meteorological condition. May is the hottest month. The mean daily maximum temperature is about 40^0C, mean daily minimum temperature is about 24^0C and maximum temperature some time rises to 44^0C. With the onset of southern monsoon by the end of June, there is appreciable drop in temperature. January is the coldest month with mean daily temperature at about 20^0C and mean daily minimum at 7^0C.The air is dry during the major parts of the year. In southwest monsoon season, the air is very humid and April and May are usually driest months. The mean monthly relative humidity is 67%.

The mean wind velocity is 6.70 Km.p/h. The potential evapotranspiration is 1545.90 mm. *(source : CGWA Report – Shamli District)*

7.4 Demography

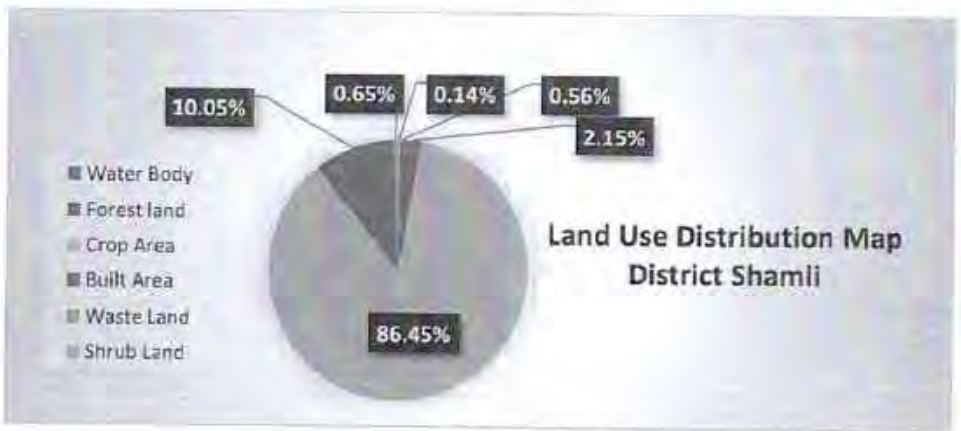
- As per the latest information available in the district portal, the total population of district Shamli is 15,61,543 in which 8,31,366 are males and 7,30,177 are females.
- The district was formed after past census of 2011. According to 2011 census, Shamli (erstwhile tehsil of muzaffarnagar district) had sex ratio of 876.
- The literacy rate in 2011 was 74.18% in Shamli (erstwhile tehsil of muzaffarnagar district)

8.0 LAND UTILISATION PATTERN IN THE DISTRICT: FOREST, AGRICULTURE, HORTICULTURE, MINING ETC.

The land use pattern in the Shamli district has been indicated in Table 7. The Pattern indicates that out of total geographical area of 1167 sq km. The Crop Area (Agricultural Area) at 1109 sq km constitutes the largest percentage 86.45% in the district. The Built-Up Area (117 sq km) percentage in the district is 9.28 sq km. Forest Land Area in Shamli district is 25 sq km which is 1.82% area of the total geographical area of the district. The waterbodies in the district (7 sq km) constitute 0.52% area in the district. Wasteland and Shrub land are at 0.6% and 0.13% area respectively.

Table 7: Land use pattern of Shamli

Sl. No.	Particulars	Area (sq km)
1.	Total Geographic area	1167 sq km
2.	Forest Land	25
3.	Crop Land	1009
4.	Built Area	117
5.	Waste Land	8
6.	Shrub Land	2



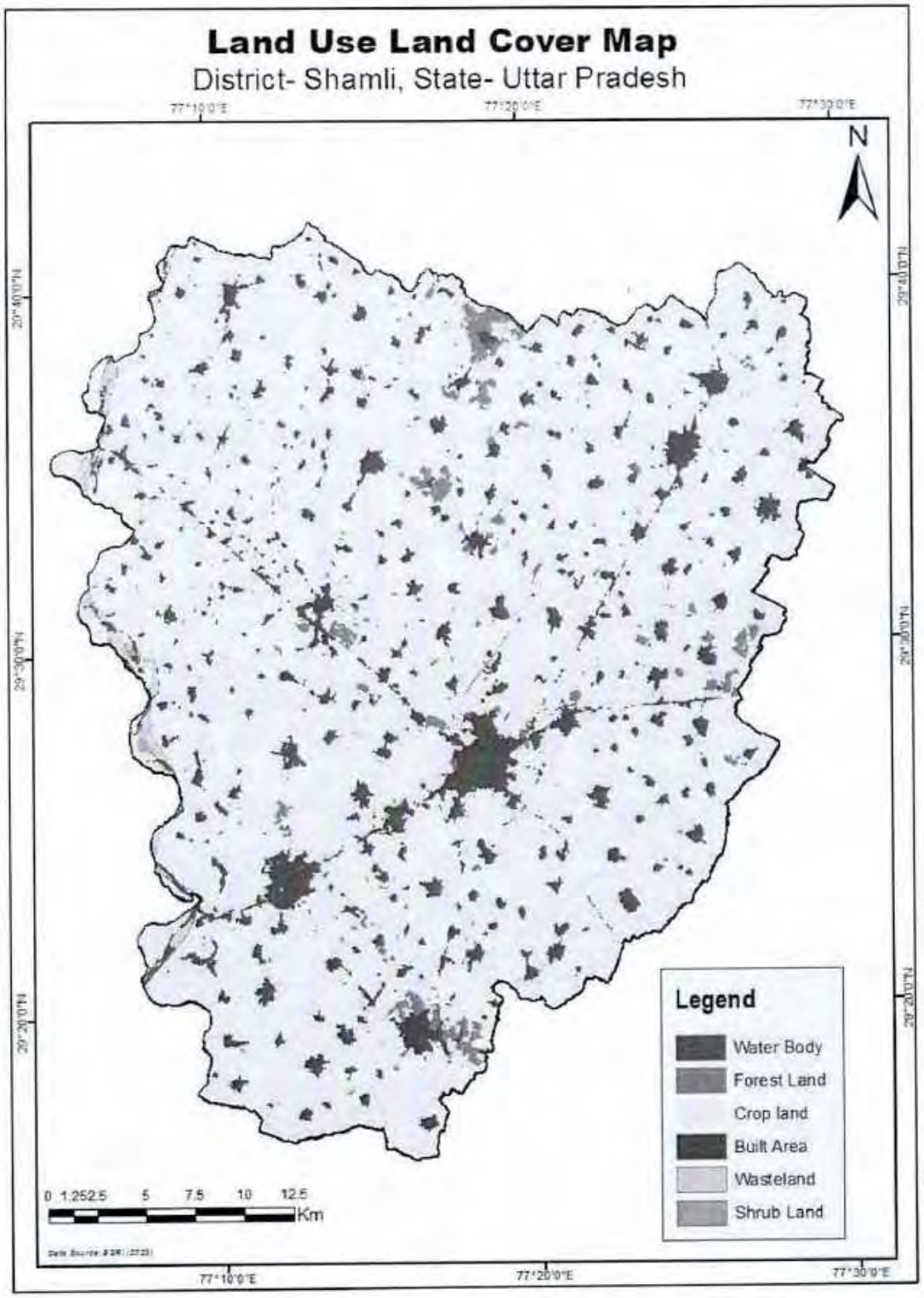


Fig 8: Land Use / Land Cover map of District Shamli

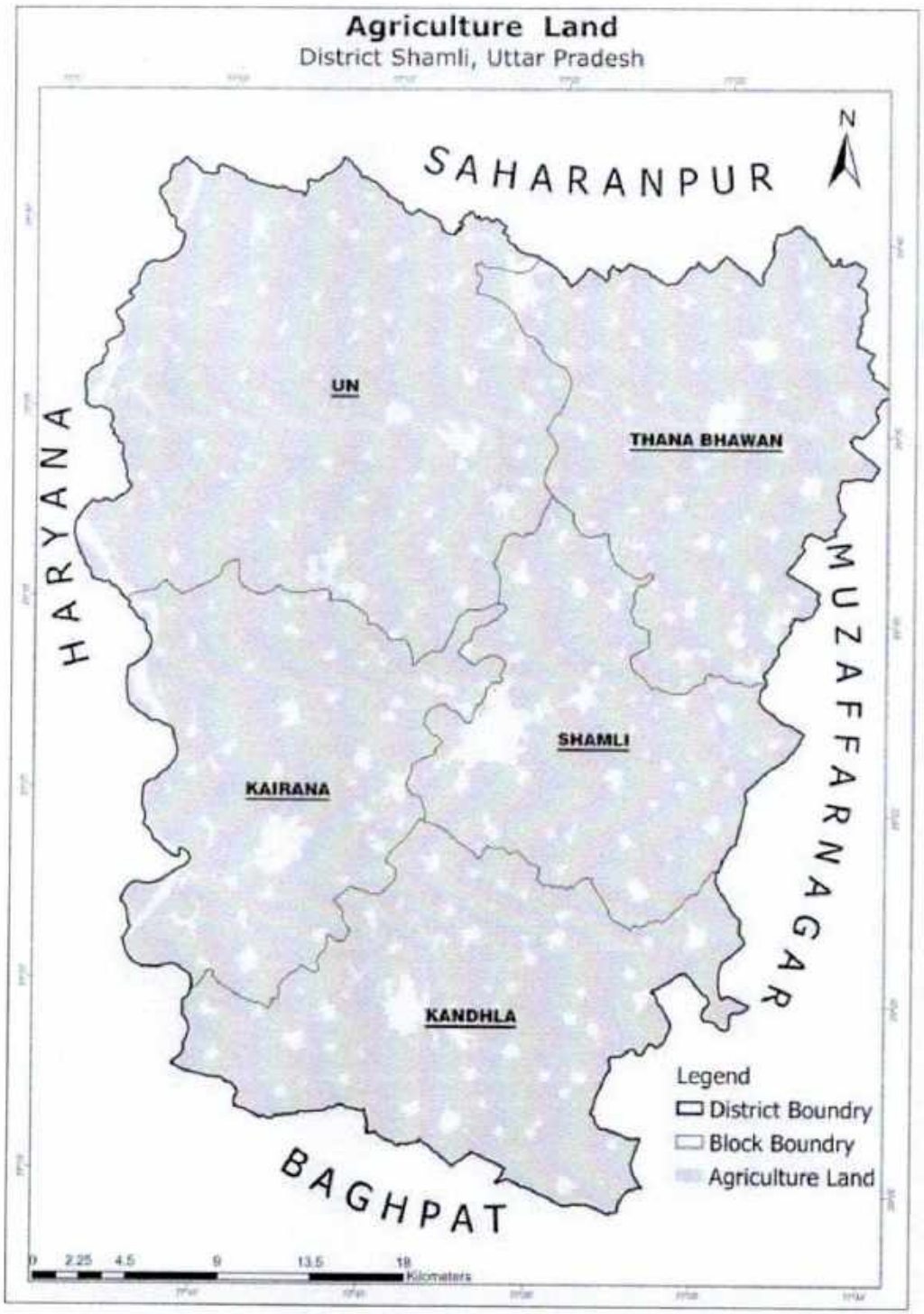


Fig 9: Agriculture map of District Shamli

Fig 10: Build-up Land map of District Shamli

Fig 11: Forest, Bare & Shrub Land map of District Shamli

8.1 Cropping Pattern:

In Shamli district the main food crops are wheat and rice. Some area is cultivated under pulses like Arhar and Urad. The principal sources of irrigation are canals and tubewells. Entire district of Shamli falls between Yamuna and Krishni rivers. The loamy soils of the area are very fertile. About 80% of the total geographical area of the district is cultivated area. The main rabi crops are wheat and oil seeds while paddy and pulses are the main crops of kharif. The abundantly produced sugarcane is a perennial crop. The maximum irrigational needs are met by ground water in Shamli district. The total ground water contribution in the district is 94.43% The area irrigated by ground water is maximum in Shamli block and minimum in Un block whereas maximum canal irrigation is in the Thana Bhawan block and minimum in Kandhala block.

8.2 Land form & Seismicity: -

The district falls in seismic zone IV, and lies in high damage risk zone. Most recent earth quack was experienced on 3rd Feb, 2023 having 3.2 magnitude on Richter scale.

8.3 Fauna:-

The most commonly spotted bird species of this area were: Cattle Egret, Intermediate Egret, Black-winged Stilt, Red-wattled Lapwing, Rock Pigeon, Eurasian Collared-Dove, Spotted Dove, Chestnut-headed Bee-eater, Bank Myna and Common Myna. Only one Indian Peafowl was observed which is listed as schedule –I as per IWPA, 1972.

8.4 Flora:-

The dominant trees in the study area are Azadirachta indica (Limbado), Mangifera indica (Aam), Bombax ceiba (Semal), Delonix regia (Gaulmor). The flora of Shamli (U.P.) comprises 566 species belong to 371 genera

distributed among 102 families of flowering plants. Poaceae (60 species) Fabaceae (41 species) are the largest families among monocotyledons and dicotyledons respectively. There are 39 families which are represented each by single species and single genus. The 11 families are represented by single genus but more than one species.

9.0 PHYSIOGRAPHY OF THE DISTRICT

Physiographically, the area is divided into southern and western stretches confined by the Yamuna River and ravines which further divided into Khadar lowland, Trans Yamuna plain, Yamuna upland and Yamuna-Chambal ravines. Topography of the Yamuna River basin excluding the Himalayan catchment, the upper Yamuna catchment falls into three defined physiographic belts: the Lesser Himalaya, the Siwalik, and the Doon Valley.

9.1 Topography & Terrain: -

The eastern part of the district occupies by Ganga basin and western part of the district by Yamuna Sub basin. The district forms a part of Yamuna-Hindon doab in Yamuna sub-basin of Indogangetic plain. It occupies part of interfluvial belt of Ganga-Yamuna in the extreme western part of the state. The area presents an even topography with elevation of land surface from 218 to 233 m above mean sea level. The area shows a gentle slope with general average gradient 0.15m/km. The central part of the district exhibit slightly higher region which acts as water divide between rivers Yamuna and Hindon. The main eastern Yamuna canal is flowing along this, divide from north to south.

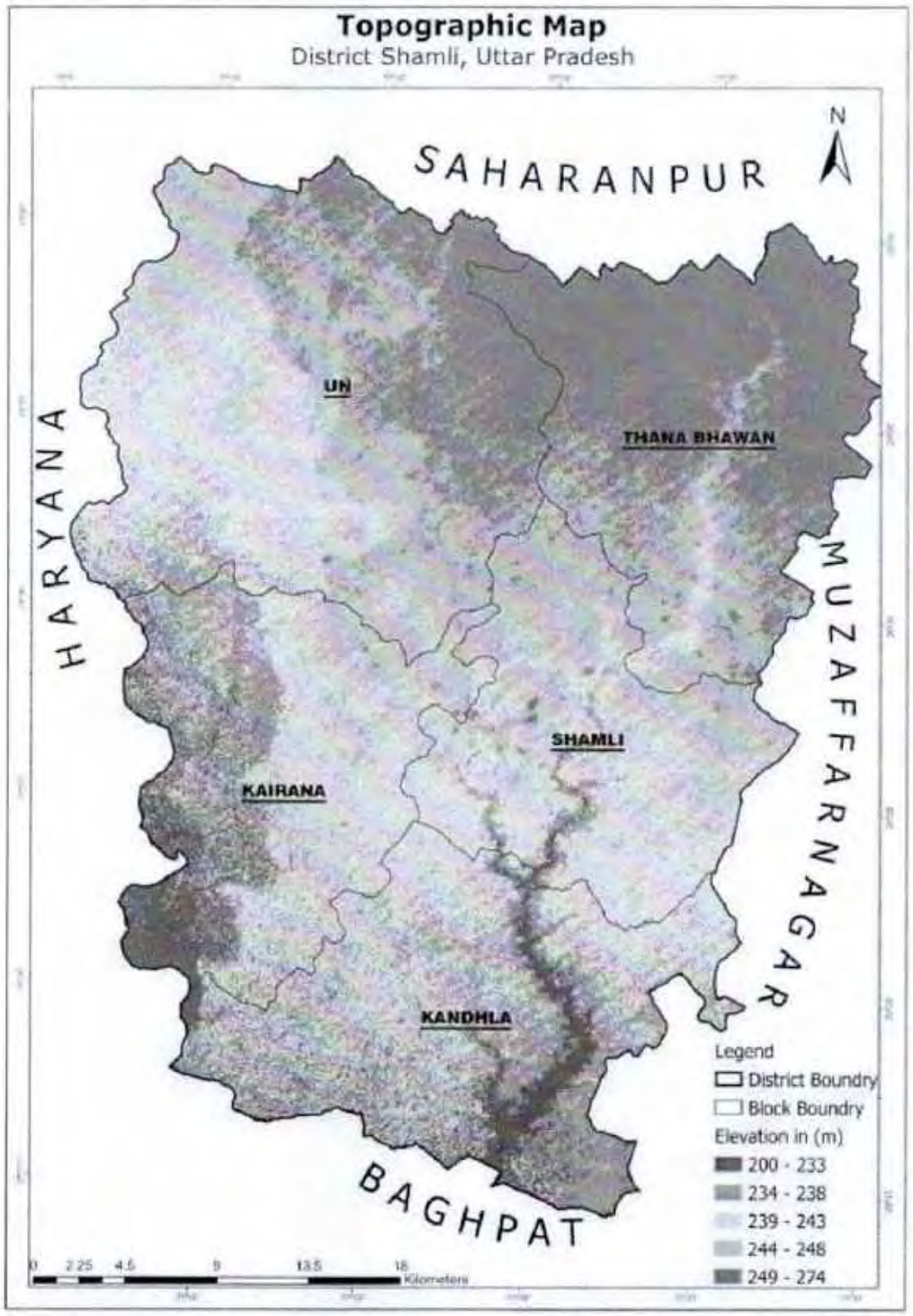


Fig 12: Topographic map of District Shamli

9.2 Water Course & Hydrology:-

Shamli district is underlain by Quaternary alluvium deposited by Ganga and Yamuna river system. Lithologically the alluvial sediments comprise of sand, silt, clay and kankars in varying proportions. Perusal of all available lithological logs of tubewells in the area reveal the complex configuration of alluvium showing alteration from finer to coarser sediments in quick succession. By and large there are four distinct groups of aquifers occurring in the area down to 452.00 mbgl. The entire district is underlain by top sandy clay bed ranging in thickness from 5 to 35m and followed by first aquifer with varying in thickness at different places and continues down to 160mbgl (Bottom between 128 and 160mbgl). Lithologically the aquifer comprises medium to coarse sand but gravels and kankars are also encountered sometimes. This aquifer at places can also be sub divided into two sub groups due to the presence of either clay lenses or sub regional clay layers. The second aquifer occurring at varying depths between 114mbgl (Top between 114 and 185 mbgl) and 320mbgl (Bottom between 203 and 327 mbgl) is separated by 10- 15m thick clay layer from the first aquifer. The second group of aquifer consists of finer sediments than that of first one and at places kankar and clay lenses are also found. The separating clay layer at places pinches out merging the first and second aquifer groups. The third aquifer is separated by second aquifer with thick clay layer. The fine grained third aquifer lies between the depths from 219 (Top between 219 and 384mbgl) to 452mbgl (Bottom between 283and 452 m bgl). At places the truncated third aquifer is followed by a clay layer and underlain by fourth aquifer between the depths of 283-452mbgl. The aquifer material becomes coarser from north to south. The top clay layer is thickest at in the north western part of the district. In general it can be observed that the river Ganga has deposited coarser material compared to those deposited by the Yamuna in river system.

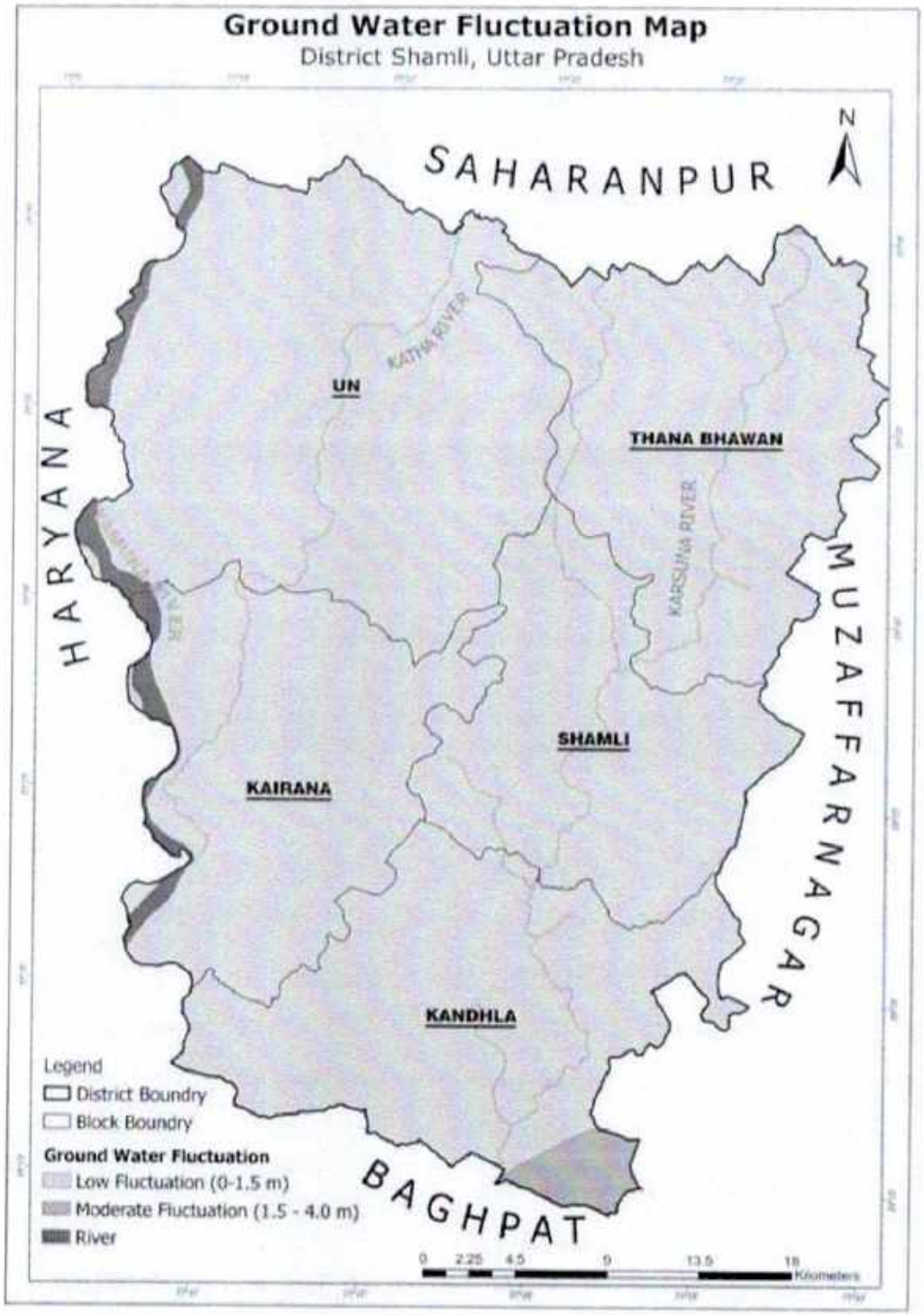


Fig 13: Groundwater Fluctuation map of District Shamli

9.3 Ground Water Development:-

The stage of ground water development in the district is 116.61 %. This is quite high and calls for adoption of a careful strategy for further ground water development due to declining ground water trend. In canal command area, strategy of conjunctive use of surface and ground water needs to be adopted for future ground water development. Keeping in view the negative availability of ground water resources in the district, over exploited category of ground water development for all the blocks except only one block i.e. Baraut, that too falls in semi critical category and very high overall stage of development for whole of the district, there is no feasibility for further ground water abstraction structures in the district.

Status of Ground Water Development

Presently ground water is being developed through 31076 private tubewells & borewells. The total ground water draft is 49082.02 ham, which is being used in present for domestic, irrigation & industrial purposes against the ground water availability of 42551.16ham. Out of 5 blocks, three blocks falls under over exploited category which are Un, Kairana, and Kandhla and rest two (2) blocks (Shamli and Thana Bhawan) are under Critical category. Ground water development is basically a peoples programme undertaken through individual and collective efforts from finance obtained as loans from institutional sources or invested by the farmers from their own sources. Ground water development has several advantages over surface water and has become a vital factor in promoting innovating agriculture practices through high yielding varieties of crops. Ground water is widely distributed and provides an assured and dependable source of irrigation input. Net ground water availability for future irrigation is 1027.96ham. *(source : CGWB Report – Shamli district)*

9.4 Soil

The development of soils in the district can be attributed to differential erosional and depositional activities. Different morphological units have been bestowed with different types of soils. The soil ranges from pure sand to stiff clays and with combinations of these are two extreme litho units. The pure sand is called Bhur, clay is called Matiyar. When the sand is mixed with clay in equal proportion, the soil may be termed as Domat or loam – a good agricultural soil. Depending upon the contents of sand and clay, there can be further classification of Domat. The word Kalhar is used to denote the bold patches where nothing grows and may be infested with Reh at patches. Alluvial soil occurring in flood plain of river is called Kamp and yield good crop – Gauhan is highly manured soils and is restricted close to villages. The area is also marked by the development of ravines and bad land at places along the banks of Yamuna, Hindon and Krishni rivers. The ravinous soils are generally rich in (Fe) iron and (Al) aluminium contents.

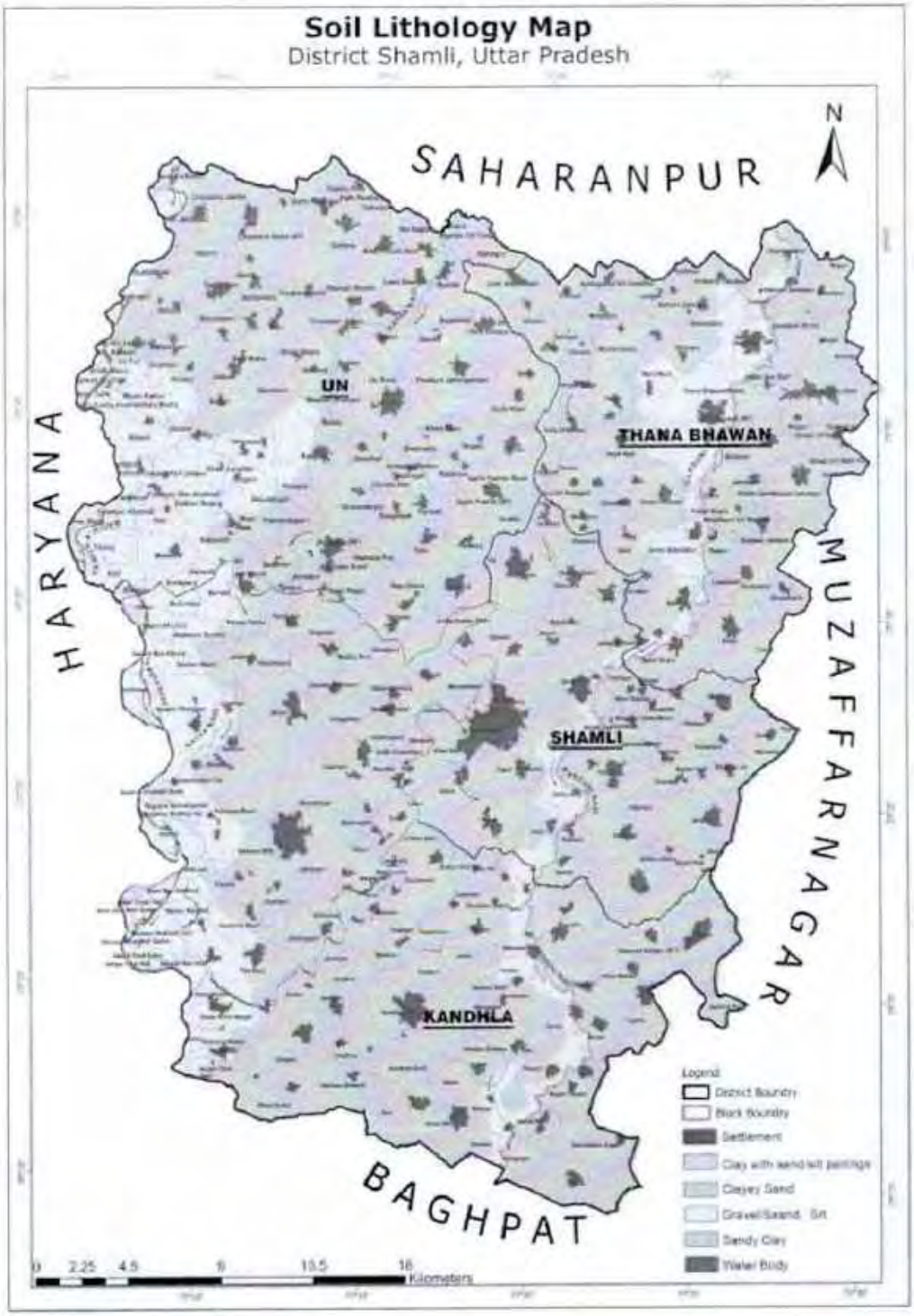


Fig 14: Soil Lithology map of District Shamli

10.0 RAINFALL: MONTH WISE

The average annual rainfall in the district is 869 mm. About 80% of rainfall takes places from June to September. During monsoon surplus water is available for deep percolation to ground water. The climate is sub humid and it is characterized by general dryness except in the brief period during the monsoon season. Summer is hot and winter is pleasant cold season.

11.0 GEOLOGY AND MINERAL WEALTH

11.1 Geology

The district virtually forms a flat terrain forming a part of Yamuna Plains. Geologically the area is underlain by thick fluvial Quaternary sediments, deposited by Yamuna River and its tributaries. Sediments comprise sand, silt, clay and kankars. (calcareous concretions) in varying proportions and show quick alteration from finer to coarser at places. The alluvium is subdivided into Older Alluvial and Younger Alluvial Plain. Older alluvium occupies higher elevation whereas newer alluvium is of recent origin and is restricted to river courses. The entire Shamli district is a flat terrain falling in middle Yamuna plain. The highest point in the district is 265.00 m (amsl) in the north and the lowest 230.00 m (amsl) in the south, giving rise to an average slope of about 0.40 m/ km towards south. The district can be sub divided into five geographic units.

a. Sand Bars:

It occurs along the courses of Yamuna river, the characteristic sand bars are changing dynamically during the floods.

b. Flood Plain:

It is a flat, low lying poorly drained area adjacent to river Yamuna forming the flood plains and gets flooded during monsoon season.

c. Ravines:

In the western part of the district, this unit is characterized by the deep gullies along the river Krishni. This is probably due to the erosion of unconsolidated material by localized surface run off forming channels and ultimately giving rise to undulating topography and hence the formation of ravines.

d. Younger Alluvial Plains:

This unit occupies the eastern bank of Yamuna River. The gently sloping (southward) and slightly undulating terrain having ox-bow lakes, back swamp and paleo-channels. This unit is also called as Khadar. The Yamuna Khader lying east of riverYamuna.

e. Older Alluvial Plain:

Older alluvial plain may be Tract between Krishni and Yamuna rivers. This area lies between the Khadar of Yamuna and Krishni rivers. Topography along the rivers is uneven due to poor soil character. This area is drained by Yamuna Canal and Katha Nala flows through it forming a depression along the tract with development of reh all along the course.

f. Land Forms:

Palaeo-channels: In the western part of the district, cut-off meanders forming oxbow lakes suggest the buried paleo-channels along the Yamuna River in the younger alluvial plains.

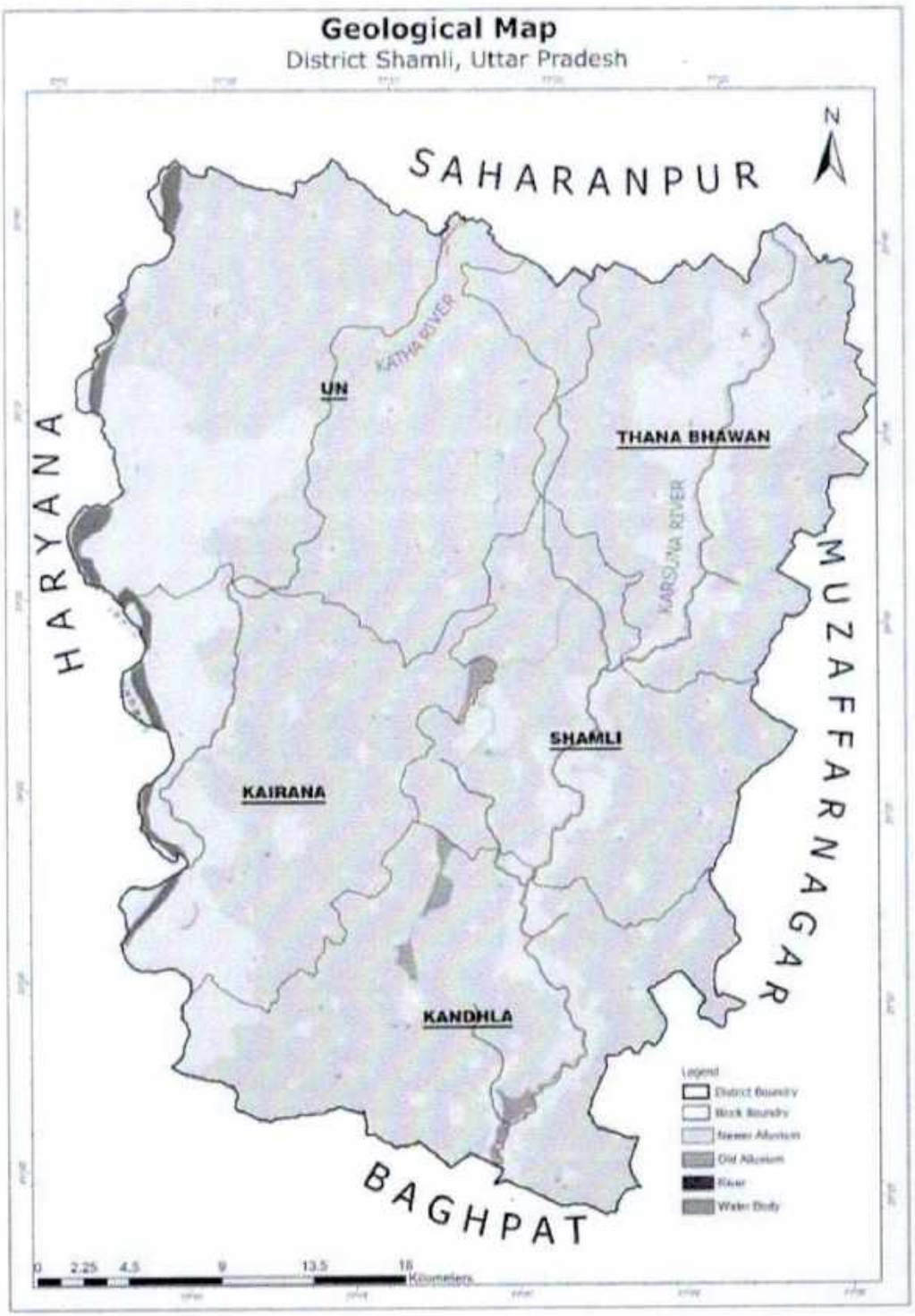


Fig 16: Geological map of District Shamli

11.2 Mineral Wealth

11.2.1 Overview of Minerals

As per geological and mineral atlas of India sheet no 14, miscellaneous bulletin no-30 and mineral resource map of district, the area contains alluvial loam along with some percentage of sand up-to a deep layer of 1000 m (Alam Fakhra, 2015). Mineral wealth of the district has great significance in terms of socio-economic prosperity and economic base. Sand is the main mineral available in the basin of Ganga which is used in civil construction work. Few bricks manufacturing units are working in this area.

Soils in Shamli District have enough clay to store adequate amounts of water and plant nutrients for optimum plant growth, containing appropriate ratio of sand, silt and clay. Percent of clay content is not much as to cause poor aeration or to make the working difficult. The soil of the district is containing 7 to 27% clay and approximately equal amount of silt and sand and it has been designated as loam textured soil. The minerals of Shamli include earth material for filling and brick making and sands from the river Yamuna.

11.2.2 Details of Resources

The development of soils in the district can be attributed to differential erosional and depositional activities. Different morphological units have been bestowed with different types of soils. The soil ranges from pure sand to stiff clays and with combinations of these are two extreme litho units. The pure sand is called Bhur, clay is called Matiyar. When the sand is mixed with clay in equal proportion, the soil may be termed as Domat or loam – a good agricultural soil. Depending upon the contents of sand and clay, there can be further classification of Domat. The word Kalhar is used to denote the bold patches where nothing grows and may be infested with Reh at patches. Alluvial soil occurring in flood plain of river is called Kamp. The area is also marked

by the development of ravines and bad land at places along the banks of Yamuna, Hindon and Krishni rivers.

Texture and mineralogy of clay in Shamli

The ravinous soils are generally rich in (Fe) iron and (Al) alluminium contents which form clay mineral kaolinite, illite, montmorrillonite. These clay minerals are suitable for brick manufacturing.

11.2.3 Sand and Other River Mineral Resources

The district consists of a polycyclic sequence of large alluvial fans comprising clastic material brought down by perennial Himalayan Rivers. Consequently, considerable lateral and vertical variations are witnessed in size and shape of elastics and sand grains depending upon the provenance and size of the river. The Newer Alluvium is restricted to river channels. The river Yamuna traversing north-south forming the boundary between Uttar Pradesh and Haryana, 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. The monotony of alluvial plains in district is intercepted by sand deposits, not more than 2 metres in elevation from the plain lands surrounding them. Sand dunes are prominent in parts of Uttar Pradesh.

Texture and mineralogy of Yamuna sand at Shamli, Uttar Pradesh

Texture-Medium to coarse grain sand

Minerals- Mostly constituted of Quartz and feldspar mineral with little micaceous minerals and heavies. It contains very little amount of clayey minerals.

Shamli district is demarcated by rivers Yamuna in the west and Krishni in the east. In fact, the drainage pattern of the district is strictly governed by these

rivers which form western boundary of Haryana state and eastern boundary of Muzaffarnagar district. Both the rivers in their respective course flow more or less north to south. The district occupies the northern part of Ganga basin and Yamuna Sub basin.

11.2.4 Evaluation

There is a geochemical split between the river channel and suspended sediments of the Yamuna rivers for sharing different sources, i.e., the dominant contribution of felsic sources to the river channel and mafic sources to the suspended sediments like felsic crystallines and sedimentary lithologies of the Aravalli range, Bundelkhand and Chhotanagpur granite and gneisses, and Vindhyan sandstones. Whereas, the mafic lithologies such as the Deccan traps and mafic components of the felsic lithologies appear to be the major sources of the suspended sediments. Within the range of intermediate composition, the overbank sediment chemistry reflects more contribution of the mafic sources. The geochemical split between the river channel and suspended sediments of the Yamuna river's sediments for the different provenances indicates differential weathering of the Deccan basalts, Bundelkhand crystalline, and Vindhyan sedimentary rocks; and also the hydrodynamic control of the Yamuna rivers during erosion, transport, and deposition. River Yamuna in its upper stretch in the plains is River Hindon, which originates in the Sivalik hills and drains an area of about 7,080 sq. km along its 256-km-long route running parallel to River Yamuna. Hindon joins the Yamuna on its left bank only downstream of Delhi (at Ballabhgarh in Haryana). River Yamuna is relatively shallow, with an average depth of about 3 m during the monsoon season. Its channel width ranges from about 30 m in the Himalayan stretch to >200 m in the plains. However, at several places within the Himalayan stretch, the river passes through very wide valleys. The rivers carries large boulders and gravel

in its upper reaches which turn to fine gravel and coarse sand as the river enters the plains. Further down between Yamunanagar and Delhi, the bed sediments are sandy being derived chiefly from basaltic rocks, and often have large proportions silt.

12 ADDITIONAL INFORMATION

a) District wise detail of river or stream and other sand source

Yamuna River Yamuna enters in Shamli District in Bodha village then passes through Tanda village. Subsequently river passes through Dhaka, Badrakha and Subhanpur is the last census village through which Yamuna river passes through in District Shamli. Bed of the stream is tortuous and uncertain. At the several points the river cuts towords the east, but only to be thrown to the west lower down. At four places in its course the channel takes a sharp turn to the west and river has tendency to flow straight on at the duration of floods.

Kantha-It is a small stream, which flows along the north west corner of the district, it is depressed and flow roughly parallel to the Hindon River. It joins Yamuna river in village of Muhamadpur Rain in the three miles northwest of Kairana.

Krishni- It flows in a southerly course and parallel to the Hindon River in Thana Bhawan then enter in Shamli at the village of Kairi. Here it bends to the south-west but turns south again at Banat, where it is bridged and crossed by the road from Shamli to Muzzafarnagar.

Hindon_River Hindon enters in District Shamli through Avelagarhi Reserved Forest and the last village through which it exits feom Shamli District is Buranpur Kalan. It is fordable except after heavy rainfall, and it is neither used for irrigation nor navigation. In north banks are steep, but towards the south they are sloping and the low lands are broader.

b) District wise availability of sand or gravel or aggregate resources

The details about the resources are given in Annexures 1 to 7

c) **District wise detail of existing mining leases of sand and aggregates**
The details are given in Annexures 1 to 7 and also in Chapter 2.

13 DRAINAGE SYSTEM WITH DESCRIPTION OF MAIN RIVERS

Shamli district is demarcated by rivers Yamuna in the west and Krishni in the east. In fact, the drainage pattern of the district is strictly governed by these rivers which form western boundary of Haryana state and eastern boundary of Muzaffarnagar district. Both the rivers in their respective course flow more or less north to south. The district occupies the northern part of Ganga basin and Yamuna Sub basin.

Fig 17: Drainage map of District Shamli

14 SALIENT FEATURES OF IMPORTANT RIVERS AND STREAMS

The description is provided under Annexure-1

15. MINERAL POTANTIAL

The river potential of carrying sediments has been discussed and elaborated in Chapter-6 of the document. The area lies in the upper Yamuna basis which geologically has greater potential of carrying sediments. Lease wise mineral potential has been calculated on the basis of field studies and surveys and on the basis of data collected the necessary description and details are covered under Annexure-1 to Annexure-4.

16. ANNUAL DEPOSITION

The necessary description and compliances are covered under Annexure-1 to Annexure-4 as per the latest requirement of Enforcement Sand Management Guidelines – 2020 issued by MoEF&CC.

In addition to this respective lease holders conduct replenishment study in annual basis and submit reports which are evaluated and on the basis of this the year on year operations of mining leases are regulated.

17 DISCUSSION

Ordinary earth and Sand has become very important minerals for our society due to its many uses. Ordinary earth can be used for making brick, filling roads, whereas sand may be used as building sites, brick-making, making glass, sandpapers, reclamations, and etc. The role of sand is very vital with regards to the protection of the coastal environment. It acts as a buffer against strong tidal waves and storm surges by reducing their impacts as they reach the shoreline. Clean sand is indeed a rare commodity on land, but common in sand dunes and beaches. The composition of sand is highly variable, depending on the local rock sources and conditions, but the most common constituent of sand in inland continental settings and non-tropical coastal settings is silica (silicon dioxide, or SiO2), usually in the form of quartz which because of its chemical inertness and considerable hardness, is the most common mineral resistant to weathering and it has become a very important mineral for the expansion of society. Sand is a naturally occurring granular material composed of finely divided rock and mineral particles. River sand is one of the world's most plentiful resources (perhaps as much as 20% of the Earth's crust is sand) and has the ability to replenish itself. River sand is vital for human well being & for sustenance of rivers. Sand mining is a sensitive environmental issue which is taken into the consideration by Geology & Mining Department, Govt. of U.P. and Ministry of Environment & Forest, Climate Change. Govt. of India. Geology & Mining Department, Govt. of U.P. had notified in rule no. 41 of Uttar Pradesh Minor Mineral Concession Rules, 2021 and MoEF &CC in **Standard Environmental Condition For Sand Mining, of SSMMG, 2016** has given minimum distance from the mining lease

area are compared and maximum distance permissible from the MLA is given in **Table 9**.

Table 11: Environmental Sensitivity Analysis of Site

S. No.	Feature	Max. distance	Reference
1.	School	50 m	UPMMCR, 2021
2.	Hospital	50m	UPMMCR, 2021
3.	Road(NH)	100 m	SSMMG, 2016
4.	Road(SH)	50 m	UPMMCR, 2021
5.	MDR	50 m	UPMMCR, 2021
6.	Railway Station	100 m	UPMMCR, 2021
7.	Chak Road	10 m	UPMMCR, 2021
8.	Bridge or embankment	200 m	UPMMCR, 2021
9.	Water supply /Irrigation scheme	200 m	UPMMCR, 2021

As a resource, sand by definition is 'a loose, incoherent mass of mineral materials and is a product of natural processes.' These processes are the disintegration of rocks and corals under the influence of weathering and abrasion. When sand is freshly formed the particles are usually angular and sharply pointed but they grow gradually smaller and more rounded as they become constantly worn down by the wind or water (ISM Envis, Dhanbad)

Lease wise discussion

Site-01

The mining site is situated on the river bank of Yamuna at Village-Mandawar, Tehsil-Kairana, District- Shamli, Gata No. 621MA, 622MA /4, is having an area of 20.34 Ha. The co-ordinates of Mining lease area are:

Pillar No.	Longitude	Latitude
A	77°08'15.08" 'E	29°27'21.79"N
B	77°08'13.42" 'E	29°27'57.48"N
C	77°08'17.59" 'E	29°27'57.59"N
D	77°08'25.16" 'E	29°27'58.67"N
E	77°08'25.03" 'E	29°27'09.49"N
F	77°08'24.46" 'E	29°27'14.84"N
G	77°08'28.28" 'E	29°27'15.02"N
H	77°08'28.45" 'E	29°27'16.66"N
I	77°08'26.02" 'E	29°27'14.95"N
J	77°08'15.07" 'E	29°27'21.36"N
K	77°08'14.96" 'E	29°27'19.04"N

The Environmental Sensitivity Analysis of the lease as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No.42	Min. distance as per SSMMG, 2016, Page. 76,77	Sensitivity
1.	School	1.0	50m	50m	No
2.	Hospital	8.8	50m	50m	No
3.	Road (SH)	6.4	50m	25m	No
4.	Railway Station	17.0	100m	100m	No
5.	Chak Road	0.15	10m	10m	No

6.	Bridge or Embankment	7.5	200m	200m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Site-02

The mining site is situated on the river bank of Yamuna at Village-Mundawar, Tehsil-Kairana, District- Shamli, Gata No. 621MA, 622MA / 3 is having an area of 20.34 Ha. The co-ordinates of Mining lease area are:

Pillar No.	Longitude	Latitude
A	77°08'15.08" 'E	29°27'21.79"N
B	77°08'13.42" 'E	29°26'57.48"N
C	77°08'17.59" 'E	29°26'57.59"N
D	77° 8'04.79"E	29°27'21.67"N

The Environmental Sensitivity Analysis of the lease as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No.42	Min. distance as per SSMMG, 2016, Page. 76,77	Sensitivity
1.	School	1.0	50m	50m	No
2.	Hospital	8.7	50m	50m	No
3.	Road (SH)	6.3	50m	25m	No
4.	Railway Station	17.0	100m	100m	No
5.	Chak Road	0.20	10m	10m	No
6.	Bridge or Embankment	7.4	200m	200m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Site-03

The mining site is situated on the river bank of Yamuna at Village-Nanglarai Ahatmal, Tehsil-Kairana, District- Shamli, Gata No. 19, 20, 21, 23, 24, 57, 58, 59, 61, 62, 63, 67, 68 KHA, 69MA, 70, 71 ,72GHA, 73GHA, 75, 82GA, 83, 84, 314GHA, 315KHA, 86, 87, 88, 306, 310, 311, 312, 313, 314KA, 317, 321, 322/39 is having an area of 24.92 Ha. The co-ordinates of Mining lease area are:

Pillar No.	Longitude	Latitude
A.	77° 8' 20.17"	29° 25' 22.65"
B.	77° 8' 18.37"	29° 25' 21.93"
C.	77° 8' 17.45"	29° 25' 15.26"
D.	77° 8' 12.61"	29° 25' 12.17"
E.	77° 8' 9.70"	29° 25' 05.76"
F.	77° 8' 13.26"	29° 24' 59.99"
G.	77° 8' 10.31"	29° 24' 56.14"
H.	77° 8' 13.80"	29° 24' 54.03"
I.	77° 8' 11.90"	29° 24' 51.18"
J.	77° 8' 7.50"	29° 24' 53.40"
K.	77° 8' 5.80"	29° 24' 53.10"
L.	77° 8' 6.08"	29° 24' 50.90"
M.	77° 8' 11.38"	29° 24' 48.90"
N.	77° 8' 9.35"	29° 24' 44.48"
O.	77° 8' 7.24"	29° 24' 42.31"
P.	77° 8' 7.28"	29° 24' 40.15"
Q.	77° 8' 11.37"	29° 24' 37.81"
R.	77° 8' 11.72"	29° 24' 27.51"
S.	77° 8' 7.57"	29° 24' 29.19"
T.	77° 8' 3.88"	29° 25' 00.91"
U.	77° 8' 7.22"	29° 25' 12.50"
V.	77° 8' 12.26"	29° 25' 23.09"

The Environmental Sensitivity Analysis of the lease as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No.42	Min. distance as per SSMMG, 2016, Page. 76,77	Sensitivity
1.	School	0.80	50m	50m	No
2.	Hospital	6.5	50m	50m	No
3.	Road (SH)	2.5	50m	25m	No
4.	Railway Station	16.0	100m	100m	No
5.	Chak Road	0.25	10m	10m	No
6.	Bridge or Embankment	3.5	200m	200m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Site-04

The mining site is situated on the river bank of Yamuna at Village-Kalri, Tehsil-Kairana, District- Shamli, Gata No. 202, 203 & 201, is having an area of 2.2145 Ha. The co-ordinates of Mining lease area are:

Pillar No.	Longitude	Latitude
A	77° 6'58.68"E	29°30'28.50"N
B	77° 6'53.78"E	29°30'31.98"N
C	77° 6'49.89"E	29°30'27.17"N
D	77° 6'53.99"E	29°30'25.88"N
E	77° 6'55.77"E	29°30'27.70"N
F	77° 6'57.27"E	29°30'26.80"N

The Environmental Sensitivity Analysis of the lease as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No.42	Min. distance as per SSMMG, 2016, Page. 76,77	Sensitivity
1.	School	2.8	50m	50m	No
2.	Hospital	Not Found In 10 km buffer zone radius	50m	50m	No
3.	Road (SH)	7.3	50m	25m	No
4.	Railway Station	Not Found In 10 km buffer zone radius	100m	100m	No
5.	Chak Road	0.26	10m	10m	No
6.	Bridge or Embankment	9.72	200m	200m	No
7.	Water Supply / Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Site-05

The mining site is situated on the river bank of Yamuna at Village-Nai Nagla Manglora Jadid, Tehsil-Unn, District- Shamli, Gata No. 108/1, is having an area of 9.02 Ha. The co-ordinates of Mining lease area are:

Pillar No.	Longitude	Latitude
A	77° 6'57.10"E	29°37'32.90"N
B	77° 7'6.00"E	29°37'43.90"N
C	77° 6'57.90"E	29°37'45.80"N
D	77° 6'48.60"E	29°37'36.20"N

The Environmental Sensitivity Analysis of the lease as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No.42	Min. distance as per SSMMG, 2016, Page. 76,77	Sensitivity
1.	School	1.5	50m	50m	No
2.	Hospital	13.0	50m	50m	No
3.	Road (SH)	1.8	50m	25m	No
4.	Railway Station	14.30	100m	100m	No
5.	Chak Road	0.20	10m	10m	No
6.	Bridge or Embankment	1.70	200m	200m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Site-06

The mining site is situated on the river bank of Yamuna at Village-Bidauli, Tehsil-Unn, District- Shamli, Gata No. 228 is having an area of 20.469 Ha. The co-ordinates of Mining lease area are:

Pillar No.	Longitude	Latitude
A	77°06'16.84"E	29°34'54.07"N
B	77°06'02.54"E	29°34'57.59"N
C	77°06'15.33"E	29°34'33.62"N
D	77°06'28.58"E	29°34'34.77"N

The Environmental Sensitivity Analysis of the lease as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No.42	Min. distance as per SSMMG, 2016, Page. 76,77	Sensitivity
1.	School	1.5	50m	50m	No
2.	Hospital	13.0	50m	50m	No
3.	Road (SH)	1.80	50m	25m	No
4.	Railway Station	25.0	100m	100m	No
5.	Chak Road	0.15	10m	10m	No
6.	Bridge or Embankment	1.6	200m	200m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Site-07

The mining site is situated on the river bank of Yamuna at Village-Issospur Khurgan, Tehsil- Kairana, District- Shamli. Gata No. 553, 554 is having an area of 3.96 Ha. The co-ordinates of Mining lease area are:

Pillar No.	Longitude	Latitude
A	77°8'36.28"E	29°26'56.56"N
B	77°8'32.50"E	29°27'6.19"N
C	77°8'29.07"E	29°27'5.45"N
D	77°8'28.25"E	29°26'56.61"N

The Environmental Sensitivity Analysis of the lease as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No.42	Min. distance as per SSMMG, 2016, Page. 76,77	Sensitivity
1.	School	1.4	50m	50m	No
2.	Hospital	6.5	50m	50m	No
3.	Road (SH)	6.0	50m	25m	No
4.	Railway Station	17.0	100m	100m	No
5.	Chak Road	0.20	10m	10m	No
6.	Bridge or Embankment	7.2	200m	200m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

Site-08

The mining site is situated on the river bank of Yamuna at Village-Issospur Khurgan, Tehsil- Kairana, District- Shamli, Gata No. 671, 674 is having an area of 4.213 Ha. The co-ordinates of Mining lease area are:

Pillar No.	Longitude	Latitude
A	77°08'45.80" E	29°26'40.24" N
B	77°08'47.33" E	29°26'31.80" N
C	77°08'40.29" E	29°26'32.83" N
D	77°08'41.93" E	29°26'41.36" N

The Environmental Sensitivity Analysis of the lease as per UPMMCR 2021, Rule No. 42 and as per SSMMG, 2016, is given in following table:

S. No.	Feature	Actual Distance (Km)	Min. distance as per UPMMCR, 2021, Rule No.42	Min. distance as per SSMMG, 2016, Page. 76,77	Sensitivity
1.	School	2.6	50m	50m	No
2.	Hospital	6.3	50m	50m	No
3.	Road (SH)	5.6	50m	25m	No
4.	Railway Station	16.6	100m	100m	No
5.	Chak Road	0.15	10m	10m	No
6.	Bridge or Embankment	6.6	200m	200m	No
7.	Water Supply /Irrigation Scheme	Not found in 10 km buffer zone radius	200 m	200 m	NA
8.	Reservoir / Canal	Not found in 5 km buffer zone radius	50 m	50 m	NA

18.- Summary

Unscientific Sand mining has been one of the serious environmental problems in recent years, as the rivers are widely exploited for river bed materials like sand. This often results in land degradation, loss of aesthetic beauty of the land, loss of agricultural lands, river bed degradation and lost riparian habitat. The positive impact of sand mining on socio-economic status of community occurred in job opportunities, income, economic activities, social activities and infrastructure. These 08 mines, which are existing in the district Shamli in the river bed of the Yamuna River are providing direct livelihood to around 430 persons. In a district like where marginal Industrial workers in the villages along the river bank are 3478 and cultivars are only 687, these mining projects play a very important role. 430 persons are directly involved in mining operations and 2,144 persons are involved in transportation activities on daily basis. Besides satellite occupations in the vicinity like food joints, tea stalls, vehicle repairing workshops, vehicle washing workshops will get a boom, not to mention local shopkeepers and businessman. Proposed plantation of 3,280 saplings definitely help in improving air quality and land scape and attract avifauna. The amount earmarked for Environmental Management Plan will make the area more sustainable. Funds allocated for Corporate Social Responsibility of the project proponents towards the betterment of project villages that may be used as per the requirements of local people. This amount along with DFM funds may be used in school/Primary Health Care building repairing, public toilet construction, solar light installation, automatic sanitary pad wending machine, infrastructure support to the schools and regular road repairing. All this need proper planning and execution. Primarily, the role of sand is very vital with regards to the protection of the banks, it acts as a buffer against strong flow by reducing their impacts as they reach to the bank. Sand being a habitat for crustacean species and other aquatic organisms, when mined excessively than it is being replenished would pose a threat to the lives and livelihoods of aquatic organisms. when mined in larger quantities that exceeds the rate at which it is being replenished would pose a threat to nearby bridges since erosion will cause the river mouth to widen. Unscientific

mining which causes river bed degradation (Channel incision) can undermine bridge piers and expose buried pipelines and other infrastructure causing damage to public and private property. Unscientific mining activities will have an impact upon the river's water quality. Impacts include increased short term turbidity at the mining site due to suspension of sediment, sedimentation due to stockpiling and dumping of excess mining materials and organic particulate matter, and oil spills or leakage from excavation machinery and transportation vehicles. Unscientific mining can have other costly effects beyond the immediate mine sites. Many hectares of fertile land are lost, as well as valuable timber resources and wildlife habitats in the riparian areas. Unscientific mining can cause changes to channel morphology in rivers through the lowering of the riverbed during extraction. This is enhanced by the disruption to bed amour caused by excavations and the movement of machinery which makes the bed vulnerable to fluvial erosion. Unscientific mining can have other costly effects beyond the immediate mine sites resulting in the destruction of riparian habitat through large changes in the channel morphology. Impacts include river bed degradation, river bed coarsening, lowered water table near the streambed, and channel instability. Continued extraction may also cause the entire stream bed to degrade to the depth of excavation. Impacts to the biological resources include extinction and destruction of aquatic life due to the removal of in fauna, epi-fauna, and some benthic fishes and alteration of the available substrate and also destroy fisheries, causing problems for people who rely on fishing for their livelihood. This process can also destroy riverine vegetation, cause erosion, pollute water sources and reduce the variety of animals supported by these woodlands habitats.

19 References

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21.	Survey of India Toposheet No.53G/3, G/4, G/7 and G/8
22.	Sustainable Sand Mining Management Guidelines 2016,MoEF & CC, Government of India, New Delhi
23.	The Uttar Pradesh Minor Minerals (Concession) Rules, 2021
24.	The Environmental (Protection) Act, 1986 and Amendments

Annexure-I

Details of Sand/M-Sand Sources

a) Rivers:

River Name / M-Sand Plant	Total Stretch of River (in KM)	Type of River (Perennial or Non-Perennial)
Yamuna	54 Kms	Perennial

b) De-Siltation Location: (Lakes/Ponds/Dams etc.)

Name of Reservoir / Dams	Maintain/Controlled by State Govt./PSU etc.	Location	District	Tehsil	Village	Size (Ha)
Nil	Nil	Nil	Nil	Nil	Nil	Nil

c) Patta Lands/Khatedari Land:

Owner	Sy. No	Area (Ha)	District	Tehsil	Village	Agricultural Land (Yes/No)
Nil	Nil	Nil	Nil	Nil	Nil	Nil

d) M-Sand Plants:

Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity Tonnes/Annum
Nil	Nil	Nil	Nil	Nil	Nil	Nil

Note: For inclusion of M-Sand Plant/Patta Land in DSR the plant/landowners need to submit the request to the Mining Department with complete details. Inclusion in DSR does not give them the right to operate the M-Sand Plant/Sand Mining lease.

Annexure-II

List of Potential Mining Leases (existing & proposed) Rivers

River Details	Lease Details	Area (in Ha)	Distance (in KM) from PA/BR/ WC/	Distance from Forest Area (in KM)	Mining leases within 500 meters (if yes cluster area)	Total excavation in Tonnes /Annum considering digging depth max as 3 meters	Mineral to be mined (Sand/ Bajri/ RBM etc.)	Existing / Proposed
Yamuna River	Village-Mandawar, Tehsil-Kairana, District- Shamli Gata No. 621MA, 622MA /4	20.34	-	-	Yes	3,05,100	Sand/ Morrum	Existing
Yamuna River	Village-Mandawar, Tehsil-Kairana, District- Shamli Gata No. 621MA, 622MA / 3	20.34	-	-	Yes	3,05,100	Sand/ Morrum	Existing
Yamuna River	Village-Nanglarai Ahatmal, Tehsil-Kairana, District- Shamli Gata No. 19, 20, 21, 23, 24, 57, 58, 59, 61, 62, 63, 67, 68 KHA, 69MA, 70, 71 ,72GHA, 73GHA, 75, 82GA, 83, 84, 314GHA, 315KHA, 86, 87, 88, 306, 310, 311, 312, 313, 314KA, 317, 321, 322/39	24.92	-	-	-	5,31,660	Sand/ Morrum	Existing
Yamuna River	Village-Kalri, Tehsil-Kairana, District- Shamli Gata No. 202, 203 & 201	2.2145	-	-	-	59,775	Sand/ Morrum	Proposed

Yamuna River	Village-Nai Nagla Manglora Jadid, Tehsil-Unn, District- Shamli Gata No. 108/1	9.02	-	-	-	2,43,525	Sand/ Morrum	Existing
Yamuna River	Village-Bidauli, Tehsil-Unn, District- Shamli Gata No. 228	20.469	-	-	-	4,60,553	Sand/ Morrum	Existing
Yamuna River	Village-Issapur Khurgan, Tehsil- Kairana, District- Shamli Gata No. 553, 554	3.96	-	-	Yes	1,42,560	Sand/ Morrum	Existing
Yamuna River	Village-Issapur Khurgan, Tehsil- Kairana, District- Shamli Gata No. 671, 674	4.213	-	-	-	1,51,560	Sand/ Morrum	Existing

Patta Lands/Khatedari Land: (existing & proposed)

Owner	Sy. No	Area	District	Tehsil	Village	Total Reserve (MT)	Total Mineral to be mined (MT)	Existing / Proposed
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

De-Siltation Location: (Lakes/Ponds/Dams etc.) (Existing & proposed)

Name of Reservoir /Dams	Maintain/ Controlled by State Govt. / PSU etc.	Location	District	Tehsil	Village	Size (Ha)	Quantity MT / Year	Existing / Proposed
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

M-Sand Plants :(existing & proposed)

Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity Tonnes / Annum	Existing/Proposed
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

M.O. J.R.F SDM(Lg) SDM(O) DFO

Annexure-III

Cluster & Contiguous Cluster details

Clusters:

River Name	Cluster No.	Lease No	Location (Riverbed / Patta Land)	Village	Area (in Ha)	Total Excavation (Ton)	Total Mineral Excavation (Ton)
Yamuna River	1	1	Riverbed	Mandawar-4	20.34	3,05,100	3,05,100
Yamuna River	1	2	Riverbed	Mandawar-3	20.34	3,05,100	3,05,100
Yamuna River	1	7	Riverbed	Issapur Khurgan	3.96	1,42,560	1,42,560

Contiguous Clusters:

River Name	Contiguous Cluster No.	Cluster No	Number of leases in the cluster	Location (Riverbed / Patta Land)	Distance between clusters	Village	Area of Cluster (Ha)	Total Mineral Excavation (Ton)

M.O. IRF SDM(F) SDM(O) DFO

Annexure-IV

Transportation Routes for individual leases and leases in Cluster
Transportation Routes for individual leases and leases in Cluster

Lease No	Transportation Route No	Number of tippers /day of lease	Number of tippers /day of all the lease on route	Length of Route in KM	Type of Road (Black Topped/ unpaved)	Recommendation for road (Black Topped/ unpaved)	The road will be Constructed by Govt. / Lease Owner	Route Map & Location
1	1	51	51	2.13	-	-	-	Attached
2	2	51	51	2.13	-	-	-	Attached
3	3	89	89	1.00	-	-	-	Attached
4	4	14	14	0.51	-	-	-	Attached
5	5	41	41	1.86	-	-	-	Attached
6	6	77	77	1.13	-	-	-	Attached
7	7	24	24	0.30	-	-	-	Attached
8	8	25	25	0.60	-	-	-	Attached

Cluster No	Transportation Route No	Number of tippers /day of cluster	Number of tippers /day of all the clusters on route	Length of Route in KM	Type of Road (Black Topped/ unpaved)	Recommendation for road (Black Topped/ unpaved)	The road will be Constructed by Govt. / Lease Owner	Route Map & Location
1	1	90	204	2.1	-	-	-	Attached
1	2	82	204	0.51	-	-	-	Attached
1	7	32	204	0.30	-	-	-	Attached

M.D. JR.F SDM(I) SDM(O)

Annexure-V

(will be finalized once DSR is withdrawn from public domain after 30 days)

Final List of Potential Mining Leases (existing & proposed) Rivers

River Details	Lease Details	Area (in Ha)	Distance (in KM) from PA/BR/WC/	Distance from Forest Area (in KM)	Mining leases within 500 meters (if yes cluster area)	Total excavation in (MT/Yr) (Mine depth max as 3 m)	Mineral to be Mined (Sand / Bajri / RBM etc.)	Existing / Proposed
-	-	-	-	-	-	-	-	-

Patta Lands/Khatedari Land: (existing & proposed)

Owner	Sy. No	Area	District	Tehsil	Village	Total Reserve (MT)	Total Mineral to be mined (MT)	Existing / Proposed
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

De-Siltation Location: (Lakes/Ponds/Dams etc.) (Existing & proposed)

Name of Reservoir / Dams	Maintain/ Controlled by State Govt. / PSU etc.	Location	Distt.	Tehsil	Village	Size(Ha)	Quantity MT/Year	Existing/ Proposed
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

M-Sand Plants :(existing & proposed)

Plant Name	Owner	District	Tehsil	Village	Geo-location	Quantity MT/Annum	Existing/Proposed
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

T.O. J.R.F SDM(IC) SDM(O)

Annexure-VI

(will be finalized once DSR is withdrawn from public domain after 30 days)

Final List of Cluster & Contiguous Cluster

Clusters:

River Name	Cluster No.	Lease No	Location (Riverbed / Patta Land)	Village	Area (in Ha)	Total Excavation (Ton)	Total Mineral Excavation (Ton)
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Contiguous Clusters:

River Name	Contiguous Cluster No.	Cluster No	Number of leases in the cluster	Location (Riverbed/ Patta Land)	Distance between clusters	Village	Area of Cluster (in Ha)	Total Mineral Excavation (Ton)
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

M.O. J.R.F SDM(U) SDM(U) DFO

Annexure-VII

Final Transportation Routes for individual leases and leases in Cluster

Lease No	Transportation Route No	Number of tippers / day of lease	Number of tippers/ day of all the lease on route	Length of Route in KM	Type of Road (Black Topped/ unpaved)	Recommendation for road(Black Topped / unpaved)	The road will be Constructed by Govt / Lease Owner	Route Map & Location
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

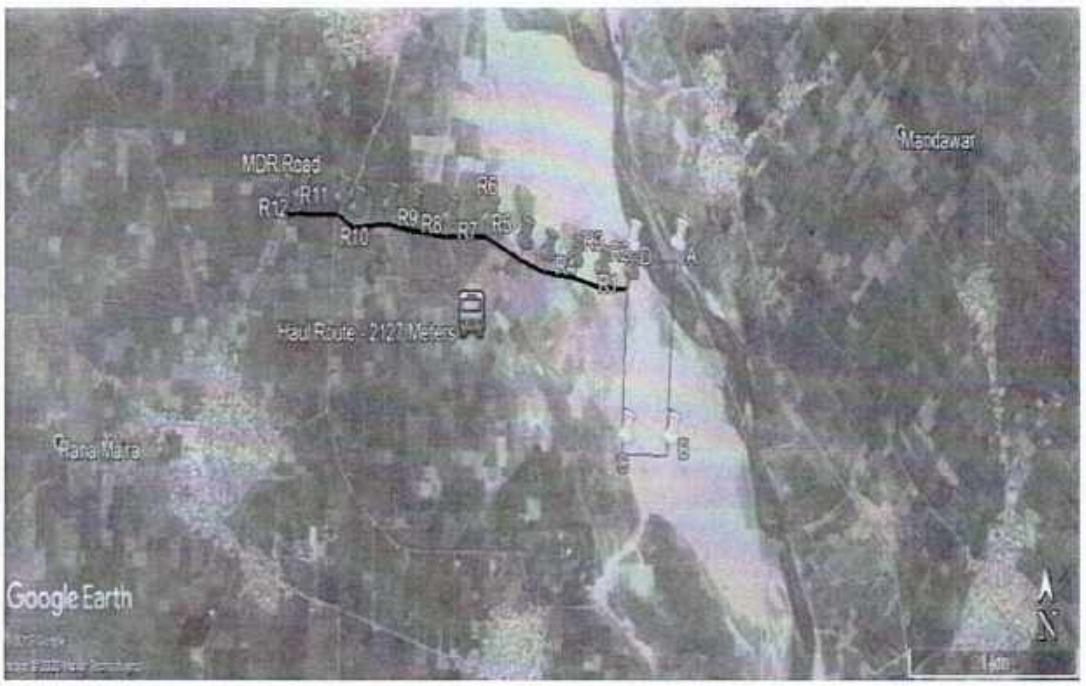
Cluster No	Transportation Route No	Number of tippers / day of cluster	Number of tippers / day of all the clusters on route	Length of Route in KM	Type of Road (Black Topped / unpaved)	Recommendation for road (Black Topped / unpaved)	The road will be Constructed by Govt / Lease Owner	Route Map & Location
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

 # The volume calculated are as reserve up to 3m depth as suggested in Standard Environmental Conditions for Sand Mining in SUSTAINABLE SAND MINING MANAGEMENT GUIDELINES – 2016, issued by MoEF & CC, GOI, Delhi. The mineable volume will be finalized based on the Mine Plan and Environmental Clearance and may vary by 10% to 20% considering the concept of safety and stability of Riverbanks & site situation. And this will form the basis of Final Royalty.

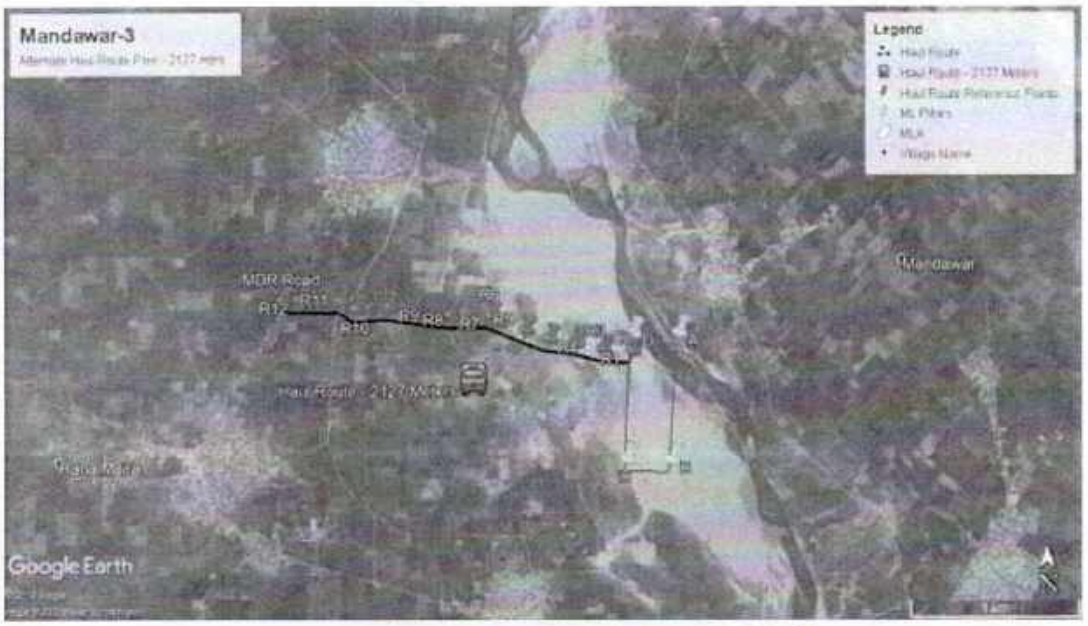
Considering the density of Sand 1.50 g/cm^3.

M.O. J.K.F SDM(IC) SDM(O) DFO

Transport Route – 1



Transport Route – 2

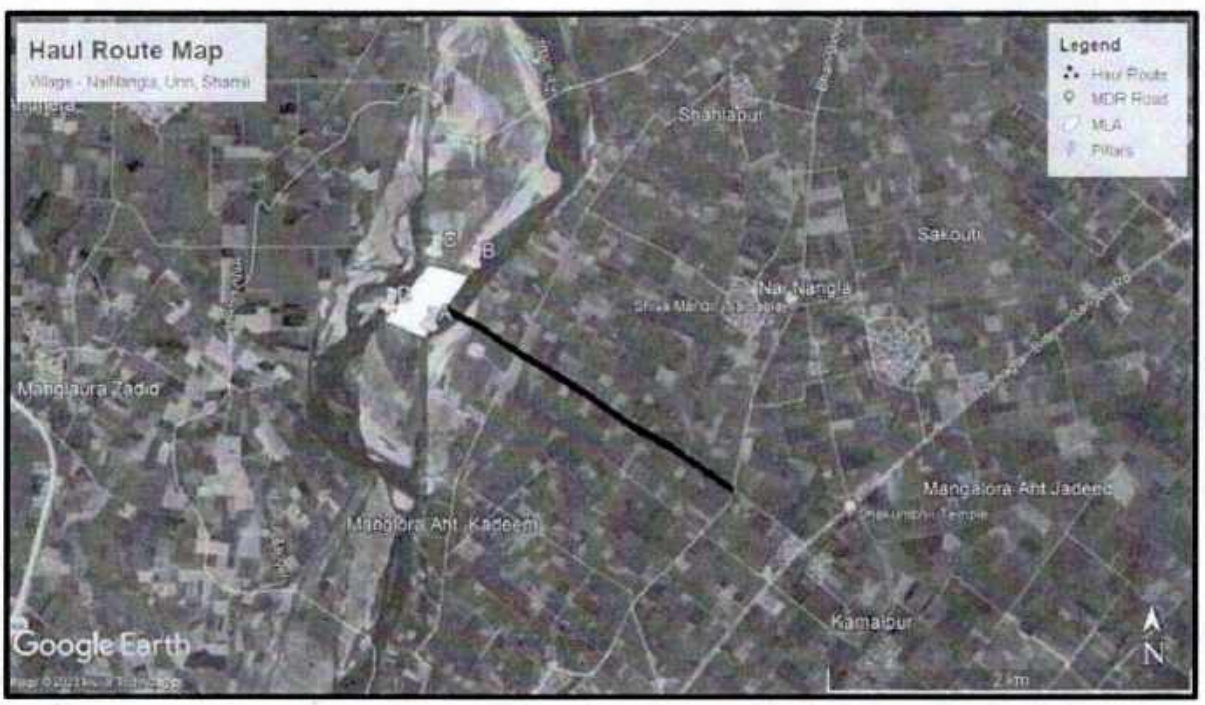


M.O. J.R.F SDM(K) SDM(O) DFO

Transport Route – 3

Transport Route – 4

Transport Route – 5



M.O. J.R.F DM(19) SA SDM(O) DFO

SOI TOPOSHEET MAP OF 5 KM RADIUS

Gata No. 108/1, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135
Village: Nai Nagla
District: Shamli, Uttar Pradesh

AREA : 9.02 HA

CONVENTIONAL SYMBOLS

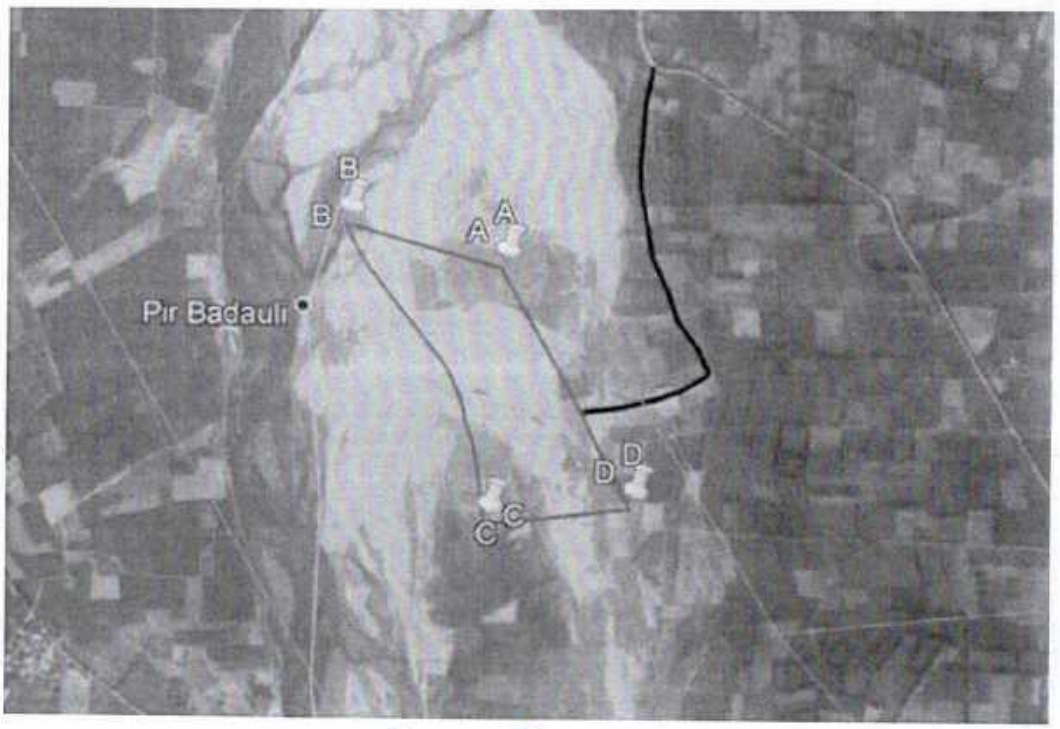
TOPOGRAPHICAL SHEET NO(S) 53G/6 53G/7 53G/3 53G/2

0 1200 2400 Meters
SCALE : 1:40,000

974

192

Transport Route – 6



Transport Route – 7

M.O. F.R.F SDM(IC) SDM(O) DFO

Transport Route – 8

2-Judge Bench 2020 March 17

(2020) 15 Supreme Court Cases 63

(BEFORE DR D.Y. CHANDRACHUD AND HEMANT GUPTA, JJ.)

BENGALURU DEVELOPMENT AUTHORITY . . Appellant;

Versus

SUDHAKAR HEGDE AND OTHERS . . Respondents.

Civil Appeal No. 2566 of 2019†, decided on March 17, 2020

A. **Environment Law — Environment (Protection) Act, 1986 — S. 3(2)(v)(1) r/w R. 5(3)(d) of 1986 Rules — Development project — Obligation to seek prior EC under Noti. dt. 14-11-2006 (2006 Notification) — Environmental Impact Assessment (EIA) process leading up to the grant of the EC — Compliance with the procedure stipulated under the 2006 Notification**

— Quashment of Environmental Clearance (EC) by NGT under purview of the 2006 Notification on ground that primary data on which EIA report was based was collected 3 yrs prior to its submission to State Environment Impact Assessment Authority (SEIAA) — Therefore, NGT ordering the conduct of a fresh rapid EIA — Legality

— Held, terms of reference (TOR) was issued on 21-11-2009, prior to the issue of the Notification dt. 22-3-2010 under which an outer limit of three years prescribed for the validity of the TORs with effect from 1-4-2010 — By virtue of the aforesaid notification, the appellant Bangalore Development Authority (BDA) was required to submit the EIA report within four years from the date of the issuance of the TOR i.e. before 21-11-2013 — State Expert Appraisal Committee (SEAC) was under a corresponding obligation to refuse the consideration of any EIA report prepared after the expiry of the TOR — Public hearing was conducted belatedly and the EIA report prepared thereafter was placed before the SEAC one year after the TOR had expired — Project proponent is under an obligation to comply with the OMs issued by MoEFCC prescribing a time-limit for the validity of the TOR — Decision of SEAC to proceed with the EIA report as well as seek additional information from the project proponent despite the expiry of the TOR suffers from a non-application of mind and is unsustainable

— Further EIA reports have prepared by relying on primary data which was collected between the months of December 2009 and February 2010 — EIA report was prepared prior to the coming into force of the OM dt. 7-11-2014 by which MoEFCC extended the validity of primary data collected from a period of three years to four years — Even if the benefit under the notification were extended to the appellant, it was duty-bound to collect fresh primary data upon the expiry of four years from the date of issuance of the TOR — This was not done

— Thus, held, the final EIA report prepared on the basis of an expired TOR and primary data was in contravention of the OMs dt. 22-3-2010, 22-8-2014 and 7-11-2014 issued by MoEFCC thus, could not form the basis of a validly issued

† Arising from the Judgment and Order in APP No. 27 of 2015 (National Green Tribunal, Principal Bench at Delhi, dt. 8-2-2019)

EC — Merely because some additional information was sought which required the furnishing of additional details and the collection of fresh samples, it cannot be said that such an exercise cures the defect arising from the preparation of an EIA report outside the time period prescribed by MoEFCC — Even at the relevant time when information was sought from the project proponent, both the TOR as well as the primary data upon which the EIA report was prepared was beyond the period of their validity — In such a case, the SEAC, by seeking additional information, traversed beyond the power conferred upon it under the 2006 Notification — Hence quashment of EC by NGT under the purview of the 2006 Notification cannot be said to be illegal — Environment (Protection) Rules, 1986, R. 5(3)(d)

B. **Environment Law — Environment (Protection) Act, 1986 — S. 3(2)(v)(1) r/w R. 5(3)(d) of 1986 Rules — Noti. dt. 14-11-2006 — Development project — Peripheral ring road project, being an "expressway", held, falls within the ambit of Schedule to the 2006 Notification and thus project proponent was under an obligation to seek a prior EC to implement the project**

— Amending Noti. dt. 1-12-2009 issued amending Para 7(f) of Schedule to the 2006 Notification to clarify that highways include expressways — EIA report stipulates that the PRR project was conceptualised with the salient purpose of decongesting the traffic in the city and catering to intercity connectivity and intercity traffic — This would significantly reduce pollution intensity and travel time — EIA report clarifies that the project is designed to cater to high speed vehicular traffic with vehicles plying at speeds of 100 km/hr, where possible, and 80 km/hr in other places — Further the report stipulates that the project also comprises of ten interchanges and sixteen toll booths — Access to the road is restricted only to national highways, State highways and major district roads

— In this view of the matter, there is no doubt that the PRR project is an expressway falling within the ambit of Para 7(f) of the Schedule to the 2006 Notification — PRR project commenced on the issuance of the final notification under S. 19(1) of the BDA Act on 29-6-2007 — On facts, held, the appellant as project proponent was under an obligation under Para 7(f) of the Schedule to the 2006 Notification to seek a prior EC to implement the project — Development vis-a-vis Ecology: National, Urban and Rural Development — Development Projects — Airports, Highways and expressways

C. **Environment Law — Environment (Protection) Act, 1986 — S. 3(2)(v)(1) r/w R. 5(3)(d) of 1986 Rules — EIA Noti. dt. 14-11-2006 — Interpretation of, in view of Ss. 17 and 19 of BDA Act**

— Basic postulate of the 2006 Notification is that the path which is prescribed for disclosures, studies, gathering data, consultation and appraisal is designed in a manner that would secure decision-making which is transparent, responsive and inclusive — The 2006 Notification embodies the notion that the development agenda of the nation must be carried out in compliance with norms stipulated for the protection of the environment and its complexities —

The BDA Act and 2006 Notification operate in different fields — It cannot be said that a site is deemed identified for the purpose of triggering the obligations under the 2006 Notification only upon the issuance of a preliminary Noti. under S. 17 of the BDA Act (*see* Shortnote *D*) — Local Government, Municipalities, and Panchayats — Town Planning — Bangalore Development Authority Act, 1976 (12 of 1976), Ss. 17 and 19

D. **Environment Law — Environmental Clearance/NOC/Environment Impact Assessment (EIA) — EIA Notification 2006 — Whether it is the issuance of a preliminary notification under S. 17 of the BDA Act, 1976 or a final notification under S. 19 of the BDA Act, 1976 that constitutes the identification of the proposed site for the project concerned and marks its commencement for the purposes of the EIA Notification 2006**

— Held, the action by the project proponent that is relevant to the obligation to seek a prior EC under the 2006 Notification is the identification of the prospective site for the execution of the proposed project — As per the scheme of the BDA Act, 1976, the prospective site is deemed to be identified only upon the issuance of the final notification under S. 19 of the BDA Act after the proposed scheme has received government sanction under S. 18(3) of the BDA Act

— 2006 Notification stipulates an obligation to commence the EIA process once a prospective site is identified and before the commencement of any construction or preparation of the land — Ss. 17, 18 and 19 of the BDA Act stipulate the mechanism that must be followed by the appellant leading up to the grant of government sanction for a scheme formulated under S. 15 — It is only upon the grant of sanction by the Government under S. 18(3) of the BDA Act, that a final notification under S. 19 is issued

E. **Environment Law — Environmental Clearance/NOC/Environment Impact Assessment (EIA) — Diversion of forest land for the purpose of development project — Environmental clearance — Post facto explanation — Providing alternative site for afforestation — Propriety**

— Held, post facto explanations are inadequate to deal with a failure of due process in the field of environmental governance — Project proponent sought to substitute the requisite forest clearance with an agreement with the Forest Department to provide an alternative site for afforestation — This is not sustainable in law — Compliance with the 2006 Notification and other statutory enactments envisaged in the EIA process cannot be reduced to an ad hoc mechanism where the project proponent seeks to remedy its abject failure to disclose material information and seek the requisite clearances at a belated stage

F. **Environment Law — Environmental Clearance/NOC/Environment Impact Assessment (EIA) — Diversion of forest land for the purpose of development project — Environmental clearance — Power of EAC or SEAC to re-examine the project and decide whether there is a need for the reappraisal of the project, where the project proponent fails to submit the requisite forest clearance within the prescribed time**

— If the competent authority has granted the EC for a project, the project proponent is then duty-bound to obtain and submit to the competent authority the requisite Stage I forest clearance for the proposed project within 12 months

or 18 months, as the case may be — Where the project proponent fails to submit the requisite forest clearance within the prescribed time, the EAC or the SEAC are authorised to re-examine the project and decide whether there is a need for the reappraisal of the project — If there is requirement of additional document upon the failure of the project proponent to submit the requisite forest clearance within the prescribed time, the EAC or the SEAC may direct that a fresh public hearing be conducted

G. **Environment Law — Environmental Clearance/NOC/Environment Impact Assessment (EIA) — Duty of SEAC — Explained**

— SEAC is under an obligation to record the specific reasons upon which it recommends the grant of an EC — SEAC, as an expert body, must speak in the manner of an expert — Its remit is to apply itself to every relevant aspect of the project bearing upon the environment and scrutinise the document submitted to it — SEAC is duty-bound to analyse the EIA report — In the absence of cogent reasons by the SEAC for the recommendation of the grant of EC, the process by its very nature, together with the outcome, stands vitiated

H. **Statute Law — Amendatory/Repeal/Suspension or Clarificatory Provision — Clarificatory amendment — Retrospective or prospective — Held, an amendment which is clarificatory in nature is deemed to be retrospective in its application — The position of the retrospective application of clarificatory amendments to notifications is analogous to the position under statutory enactments — Administrative Law — Subordinate/Delegated Legislation — Amendment/Repeal/Supersession or Clarification**

I. **Roads and Highways — Generally — "Expressway" — What is — Expressway is defined as an arterial highway for motorised traffic, with divided carriageways for high speed travel, with full control of access and provided with grade separators at location of intersections — The assessment of whether a road project is an expressway is to be determined on a case-by-case basis — Words and Phrases — "Expressway"**

In a bid to address the growing need for efficient commutation, address traffic congestion and connect the Bangalore-Mysore Infrastructure Corridor (NICE road) with more access points, the appellant Bengaluru Development Authority ("BDA") formulated the peripheral ring road ("PRR") project scheme in 2005. A preliminary Notification was issued on 27-5-2005 under Sections 17(1) and (3) of the Bangalore Development Authority Act, 1976 to acquire certain land for the execution of the project. A final Notification under Section 19(1) of the BDA Act was issued on 29-6-2007 for the acquisition of the proposed land.

The appellant, as project proponent, submitted an application to the SEIAA on 10-11-2009 under the EIA Notification, 2006 seeking an EC for the PRR. The terms of reference ("TOR") were prepared by the State Expert Appraisal Committee on 21-11-2009. Primary data was collected between December 2009 and February 2010. The final EIA report was placed before the SEAC and the SEIAA in October 2014. An EC was granted by the SEIAA on 20-11-2014. The first and second respondents filed an appeal to the NGT challenging the grant of the EC. The NGT noted the discrepancy between the submission of the appellant and the existence of a reserved forest through which the proposed road was to pass. By its final order

dated 8-2-2019, the NGT stayed the operation of the EC granted by the SEIAA. The NGT directed the appellant to conduct a fresh rapid EIA.

Aggrieved with the order of the NGT, the appellant challenged it before the Supreme Court.

Assailing the order of the NGT, the appellant BDA contended that the 2006 Notification obliges a project proponent to seek prior EC only for projects that are listed in the Schedule to the Notification. Para 7(*f*) of the Schedule includes only those projects that are either National or State Highways. The PRR project does not fall within the ambit of either the National Highways Act, 1956 or the Karnataka Highways Act, 1964. Consequently, the appellant was under no obligation under the 2006 Notification to seek a prior EC for the PRR project. The 2006 Notification came into effect from the date of its publication in the Official Gazette on 14-9-2006. It is prospective in its application. The PRR project commenced on 23-9-2005 upon the issuance of the preliminary notification under the BDA Act and as such, on the date of the coming into force of the 2006 Notification, no obligation existed on the appellant to seek a prior EC for the PRR project. The appellant executed the EIA process and applied for the grant of an EC out of abundant caution. The SEAC acceded to the request of the appellant to not forward to the SEIAA a recommendation for the closure of the proposal. The SEAC recommended to the SEIAA the grant of the EC to the project in question after due consideration of the EIA report in its meeting to be held between 11-11-2014 and 18-11-2014. All objections raised by the first respondent concerning forests, the cutting of trees and the protection of the reservoir were adequately addressed in the EIA report submitted in 2014, on which basis an EC was granted to the PRR project.

The respondent (applicant before NGT) contended that the term "highway" or "expressway" used in the 2006 Notification must be given a wide interpretation and not be restricted to the issuance of a notification under Central or State enactments. Both the National Highways Act, 1956 and the Karnataka State Highways Act, 1964 concern the acquisition of land, its development and permissions concerning the collection of toll/fee. The statutory framework does not envisage the wide definition to be attributed to the term "highway" in matters concerning the protection of the environment. The appellant itself admitted in its EIA report that the PRR project is a Category 'B' project falling under the purview of Para 7(*f*) of the Schedule under the 2006 Notification. The primary data for the PRR project was collected between December 2009 and February 2010. The EAC conducted the appraisal process after a substantial delay of over four years in the year 2014. This defeats the purpose for which TORs are issued as the state of the environment is constantly changing. An OM dated 22-3-2010 issued by the Ministry of Environment and Forests stipulates that EIA reports for projects where the TORs have been granted prior to the date of the coming into force of the OM must be based on primary data that is not older than three years. The OM further stipulates that a TOR is valid only for a period of four years. The EIA report was prepared after the expiry of the TOR and is legally unsustainable. The SEIAA decided to close the file for the PRR project on 17-5-2013, which decision was communicated to the appellant on 25-7-2013. A party aggrieved by the action of the SEIAA may only file an appeal under Section 16 of the NGT Act and the SEIAA was not authorised to reopen the file on the request of the appellant. There was no collection of additional data in the year 2014. The report which is styled as a

rapid EIA report in the year 2014 is nothing but the final EIA report under the 2006 Notification which was prepared after the public consultation process was conducted in February 2014. There are significant omissions in the EIA report concerning forest land, green cover, number of trees required to be cut, etc. Material concealment by the project proponent invalidates the EC which was granted by the SEIAA.

The MoEF, in exercise of the powers conferred by sub-section (1) and clause (*v*) of sub-section (2) of Section 3 of the Environment (Protection) Act read with clause (*d*) of sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986 on 14-9-2006 released the 2006 Notification in supersession of the previous notification. The 2006 Notification came into force on the date of its publication and obliges every project proponent to seek prior EC for the projects and activities which are listed in the Schedule to the Notification. According to Para 2 of the 2006 Notification, all new projects or activities listed in the Schedule to the 2006 Notification shall require a prior EC from the regulatory authority concerned.

The BDA Act was enacted with the purpose of establishing a development authority for the development of the city of Bangalore and adjacent areas. Sections 17, 18 and 19 of the BDA Act stipulate the mechanism that must be followed by the appellant leading up to the grant of government sanction for a scheme formulated under Section 15 of the BDA Act. The purpose underlying Section 17 of the BDA Act is to grant to both the Corporation and the persons whose lands are proposed to be acquired, an opportunity to file their objections to the proposed scheme and the acquisition of land required for the execution of the project. Though the land proposed to be acquired for the scheme is stipulated in the preliminary notification under Section 17, the provision to forward to the Corporation a copy as well as serve notices to persons whose lands are proposed to be acquired subserves the principles of natural justice where an affected party is extended the right to object to a proposed scheme. Upon the receipt of suggestions and objections, if any, the appellant may modify the scheme in accordance with the suggestions received and thereafter forward to the Government the scheme for the grant of sanction. However, it is only upon the grant of sanction by the Government under Section 18(3), that a final notification under Section 19 is issued. It is only upon the grant of sanction by the Government that a proposed scheme is deemed to be finalised and carried into effect.

The issues for determination before the Supreme Court were:

(*i*) Whether quashment of environmental clearance (EC) under purview of the 2006 Notification on ground that primary data on which EIA report was based was collected 3 years prior to its submission to State Environment Impact Assessment Authority (SEIAA) and further order to conduct a fresh rapid EIA is illegal?;

(*ii*) Whether it is the issuance of a preliminary notification under Section 17 of the BDA Act or a final notification under Section 19 of the BDA Act that constituted the identification of the proposed site for the project and marked its commencement for the purposes of the 2006 Notification?;

(*iii*) Applicability of the EIA Notification 2006;

(*iv*) Whether a peripheral ring road project could not fall within the ambit of the Schedule to the 2006 Notification and thus project proponent was not under an obligation to seek a prior EC to implement the project?;

(*v*) Whether the project proponent has complied with the conditions stipulated in the 2006 Notification and the OMs issued by MoEFCC from time to time?

Dismissing the appeal, the Supreme Court

Held :

The 2006 Notification stipulates an obligation to commence the EIA process once a prospective site is identified and before the commencement of any construction or preparation of land. It may be possible that following the formulation of a scheme under Section 15 of the BDA Act and the issuance of a preliminary notification under Section 17 of the BDA Act, government sanction is denied or the appellant drops the proposed scheme prior to the grant of sanction or the issuance of the final notification. In such situations, if it were held that it is the issuance of the preliminary notification identifying the proposed site for the project that marked the commencement of the project for the purposes of the 2006 Notification, the appellant would be under an obligation to carry out the EIA process for a proposed scheme which may not eventually materialise. (Para 20)

The EIA process under the 2006 Notification serves as a balance between development and protection of the environment; there is no trade-off between the two. In laying down a detailed procedure for the grant of an EC, the 2006 Notification attempts to bridge the perceived gap between the protection of the environment and development. The basic postulate of the 2006 Notification is that the path which is prescribed for disclosures, studies, gathering data, consultation and appraisal is designed in a manner that would secure decision-making which is transparent, responsive and inclusive. While the BDA Act was enacted with the purpose of establishing a development authority for the development of the city of Bangalore and adjacent areas, the 2006 Notification embodies the notion that the development agenda of the nation must be carried out in compliance with norms stipulated for the protection of the environment and its complexities. The BDA Act and the 2006 Notification operate in different fields. It cannot be said that a site is deemed identified for the purpose of triggering the obligations under the 2006 Notification upon the issuance of a preliminary notification under Section 17 of the BDA Act. Adopting a contrary interpretation would lead to the absurd result where a project proponent is obligated to carry out the EIA process for a scheme even prior to the grant of government sanction and a final notification carrying into effect the proposed scheme. In this view of the matter, the prospective site is deemed to be identified only upon the issuance of the final notification under Section 19 of the BDA Act after the proposed scheme has received Government sanction under Section 18(3) of the BDA Act. (Para 21)

In the instant case, the final notification under Section 19(1) of the BDA Act was issued on 29-6-2007 following the grant of government sanction for the acquisition of the land. This being after the coming into force of the 2006 Notification, the contention urged by the appellant that the project commenced prior to the coming into force of the 2006 Notification cannot be accepted. (Para 22)

Para 7(*f*) of the Schedule to the 2006 Notification has been amended since the coming into force of the 2006 Notification. In the draft notification, Para 7(*f*) to the Schedule included the term "expressway" under Category 'A' projects. However, in the final 2006 Notification, the word "expressway" was deleted. Absent any

conclusive reason for the deletion from the draft notification prior to it coming into force, such deletion cannot be used to construe the terms of the 2006 Notification or subsequent amendments thereto. (Paras 27 and 28)

In exercise of the powers conferred by sub-section (1) and clause (*v*) of sub-section (2) of Section 3 of the Environment (Protection) Act, 1986 read with clause (*d*) of sub-rule (3) of Rule 5 of the Environment (Protection) Rule, 1986, the Central Government issued a Notification dated 1-12-2009 amending, inter alia, Para 7(*f*) of the Schedule to the 2006 Notification. Following the 2009 Amendment, Column (5) of Para 7(*f*) to the Schedule which read "General Conditions shall apply" was substituted to stipulate that in addition to the application of the general conditions, highways include expressways. (Para 29)

Prior to the amendment, a draft notification was published seeking comments and objections thereto. MoEFCC constituted a Committee. The analysis of the Committee recorded that the main suggestions related to the expansion of the scope of the Notification by including within its ambit expressways, bypasses, major district roads, tunnelling for roads within city limits and peripheral roads around municipal corporation limits. Significantly, the Committee took note of the perception that highways and expressways differed from each other. Though it appeared from the comments that an expansion was sought in the scope of the 2006 Notification, the Committee explicitly clarified that the term "highways" includes "expressways". For other items, the Committee stated that they may be considered separately. The clarification issued for highways and expressways did not amount to an expansion in the scope of the 2006 Notification but only made clear that the term highways always included expressways. Where an amendment is clarificatory in nature, such amendment is deemed to be retrospective in its application. (Paras 29, 30 and 32)

SBI v. *V. Ramakrishnan*, (2018) 17 SCC 394 : (2019) 2 SCC (Civ) 458, *relied on*

SBI v. *V. Ramakrishnan*, 2018 SCC OnLine NCLAT 384, *held, reversed*

G.P Singh: Principles of Statutory Interpretation, *referred to*

The position of the retrospective application of clarificatory amendments to notifications is analogous to the position under statutory enactments. In the present case, the Committee appointed by MoEFCC clarified that the term "highways" included expressways and suggested that a suitable amendment be issued to that effect. Based on the report of the Committee, a clarificatory amendment was issued in Column (5) of Para 7(*f*) to stipulate that highways include expressways. (Para 35)

Neither the National Highways Act, 1956 nor the Karnataka Highways Act, 1964 define the term "highway". The 2009 Amendment to the 2006 Notification is silent on the definition of the term "expressway". The Indian Road Congress ("IRC") defined an "expressway" in the Manual of Specifications and Standards for expressways as an arterial highway for motorised traffic, with divided carriageways for high speed travel, with full control of access and provided with grade separators at location of intersections. Generally, only fast-moving vehicles are allowed access on expressways. The assessment of whether a road project is an expressway is to be determined on a case-by-case basis. (Paras 36 and 37)

The primary purpose of the PRR project is to ease vehicular traffic congestion in the city. The main road and the service road are to be separated by access-controlled facilities. The engineering designs are to be carried out in accordance with the standards laid down by the IRC. The PRR project is expected to be an

8 lane main carriageway highway (4 + 4 bi-directional), along with a 6 lane road service road (3 + 3 bi-directional) having a right of way of 75 meters and total length of 63.5 km. The EIA report stipulates that the PRR project was conceptualised with the salient purpose of decongesting the traffic in the city and catering to intercity connectivity and intercity traffic. This, it was stated, would significantly reduce pollution intensity and travel time. The EIA report clarifies that the project is designed to cater to high speed vehicular traffic with vehicles plying at speeds of 100 km/hr, where possible, and 80 km/hr in other places. Moreover, the report stipulates that the project also comprises of ten interchanges and sixteen toll booths. It is stated that access to the road is restricted only to national highways, State highways and major district roads. In this view of the matter, there is no doubt that the PRR project is an expressway falling within the ambit of Para 7(*f*) of the Schedule to the 2006 Notification. The PRR project commenced on the issuance of the final notification under Section 19(1) of the BDA Act on 29-6-2007. Having concluded that the PRR project is an expressway, the appellant as project proponent was under an obligation under Para 7(*f*) of the Schedule to the 2006 Notification to seek a prior EC to implement the project. (Paras 38 to 42)

Under the 2006 Notification, the process to obtain an EC for new projects comprises a maximum of four stages, all of which may not apply depending on the specific case stipulated under the Notification: screening, scoping, public consultation and appraisal. The process of obtaining an EC commences from the production of the information stipulated in Form 1/Form 1A. Information submitted in Form 1 relies on data and information on an "as is" basis at the relevant time of submitting information. Material information regarding the particulars of the proposed project as well as the potential impact on the environment is sought to enable the EAC or the SEAC to prepare a comprehensive TOR on which basis the applicant proceeds to prepare the EIA report. As the information in Form 1 is submitted on the basis of prevailing environmental conditions as on the date of its preparation, it is necessary to ensure that the EIA process is contemporary to the submission of information in Form 1 and the issuance of the TOR. MoEFCC, noting situations where some EIA reports were prepared belatedly on the basis of outdated TORs, issued a Notification on 22-3-2010 prescribing an outer limit of three years for the validity of the TORs with effect from 1-4-2010. The Notification dated 22-3-2010 stipulates that where TORs were granted prior to the issue of the OM, the EIA report must be submitted within four years from the date on which the TOR was issued, with primary data not being older than three years. (Paras 47 to 49)

Another Notification dated 7-11-2014 issued by MoEFCC stipulated that the "authority concerned" shall consider EIA reports for the grant of EC even where the primary data relied upon was collected beyond three years from the preparation of the EIA report. However, the stipulation that a fresh EIA process must be undertaken where the TOR has expired was retained. (Paras 50 to 52)

The EIA reports prepared in August and October 2014 relied on primary data which was collected between the months of December 2009 and February 2010. The EIA report was prepared prior to the coming into force of the OM dated 7-11-2014 by which MoEFCC extended the validity of primary data collected from a period of three years to four years. Even if the benefit under the notification were extended to the appellant, it was duty-bound to collect fresh primary data upon the expiry of four years from the date of issuance of the TOR i.e. 21-11-2013.

This was evidently not done. This being the case, there is no manner of doubt that the final EIA report prepared on the basis of an expired TOR and primary data was in contravention of the OMs dated 22-3-2010, 22-8-2014 and 7-11-2014 issued by MoEFCC and could not form the basis of a validly issued EC. (Para 55)

The submission of additional fresh data on a few points raised in the form of a query on behalf of the SEAC does not remedy the general obligation to ensure that the EIA report was prepared within a time period of four years from the date of the issuance of the TOR, relying on primary data that was not older than four years. Merely because some additional information was sought which required the furnishing of additional details and the collection of fresh samples, it cannot be said that such an exercise cures the defect arising from the preparation of an EIA report outside the time period prescribed by MoEFCC. Significantly, even at the relevant time when information was sought from the project proponent, both the TOR as well as the primary data upon which the EIA report was prepared was beyond the period of their validity. In such a case, the SEAC, by seeking additional information, has traversed beyond the power conferred upon it under the 2006 Notification. (Para 60)

The SEAC proceeded to recommend to the SEIAA the grant of the EC to the PRR project in contravention of the obligations stipulated under the OMs issued by MoEFCC. Significantly, the SEAC considered the final EIA report only at its 121st meeting between 11-11-2014/18-11-2014 when the OM dated 22-8-2014 issued by MoEFCC was in force. The SEAC was under an obligation to direct the appellant to conduct the EIA process de novo. The SEAC and the project proponent cannot circumvent the obligation to ensure reliance on contemporary data by seeking additional information beyond the prescribed validity of the TOR and primary data. The SEAC has clearly erred in recommending to the SEIAA the grant of EC despite the non-compliance by the appellant with the prescribed time-limit for the preparation of the EIA report. (Para 61)

There was a patent and abject failure on the part of the appellant BDA as project proponent to disclose the diversion of forest land for the proposed PRR project. The appellant concealed material information concerning the diversion of forest land and absent the requisite forest clearance, the EC granted for the PRR project stands vitiated. The EIA report affirms at numerous places that 1.5 hectares of forest land will be affected by a part of the project. Despite this, the EIA report proceeds on the assumption that no forest clearance is required despite the diversion of 1.5 hectares of forest land. No explanation has been provided by the appellant BDA either in the EIA report or in the written submissions before the Supreme Court as to why it was exempt from seeking the requisite forest clearance. (Paras 66 to 68)

The appellant BDA confirmed that 1.5 hectares of forest land is proposed to be diverted. It was stated that in lieu of the 25 acres of forest land required, the appellant shall make available to the Forest Department 25 acres of land available with it. However it cannot be glossed over the patent contradiction of the appellant as the project proponent in disclosing the existence of forest land to be diverted for the purposes of the PRR project. Despite a clear indication that a total 1.5 hectares of forest land is to be diverted for the purpose of the PRR project, the appellant sought to remedy its failure in seeking the requisite clearances in a post facto manner by stipulating that 25 acres of land available with it is to be given to the Forest Department in lieu of the forest cover proposed to be diverted for the project. Post facto explanations are inadequate to deal with a failure of due

process in the field of environmental governance. The contention of the appellant BDA to substitute the requisite forest clearance with an agreement with the Forest Department to provide an alternative site for afforestation is not sustainable in law. Compliance with the 2006 Notification and other statutory enactments envisaged in the EIA process cannot be reduced to an ad-hoc mechanism where the project proponent seeks to remedy its abject failure to disclose material information and seek the requisite clearances at a belated stage. (Paras 70 to 73)

Project proponents are duty-bound to disclose the existence of forest land and inform the SEAC of the status of their application for forest clearance at the time of submitting the EIA report for the grant of the EC. Where the competent authority has granted the EC for a project, the project proponent is then duty-bound to obtain and submit to the competent authority the requisite Stage I forest clearance for the proposed project within 12 months or 18 months, as the case may be. Where the project proponent fails to submit the requisite forest clearance within the prescribed time, the EAC or the SEAC are authorised to re-examine the project and decide whether there is a need for the reappraisal of the project. Where the EAC or the SEAC is of the opinion that additional documents are required upon the failure of the project proponent to submit the requisite forest clearance within the prescribed time, it may direct that a fresh public hearing be conducted. (Para 78)

The analysis by the SEAC is both perfunctory and fails to disclose the reasons upon which it recommended to the SEIAA the grant of EC for the PRR project. The SEAC is under an obligation to record the specific reasons upon which it recommends the grant of an EC. The requirement that the SEAC must record reasons, besides being mandatory under the 2006 Notification, is of significance for two reasons: (*i*) The SEAC makes a recommendation to the SEIAA in terms of the 2006 Notification. The regulatory authority has to consider the recommendation and convey its decision to the project proponent. The regulatory authority, as Para 8(*ii*) of the 2006 Notification provides, shall normally accept the recommendations of the EAC. Thus, the role of the SEAC in the grant of the EC for a proposed project is crucial; and (*ii*) The grant of an EC is subject to an appeal before the NGT under Section 16 of the NGT Act, 2010. The reasons furnished by the SEAC constitute the link upon which the SEIAA either grants or rejects the EC. The reasons form the material which will be considered by the NGT when it considers a challenge to the grant of an EC. (Paras 88 and 89)

Lafarge Umiam Mining (P) Ltd. v. *Union of India*, (2011) 7 SCC 338, *relied on*

Sreeranganathan K.P. v. *Union of India*, 2014 SCC OnLine NGT 15 : 2014 All (l) NGT Reporter (1) SZ 1, *approved*

The SEAC, as an expert body, must speak in the manner of an expert. Its remit is to apply itself to every relevant aspect of the project bearing upon the environment and scrutinise the document submitted to it. The SEAC is duty-bound to analyse the EIA report. Apart from its failure to repudiate a process conducted beyond the prescribed time period stipulated by MoEFCC, the SEAC failed to apply its mind to the abject failure of the appellant in conducting the EIA process leading up to the submission of the EIA report for the grant of EC. The SEAC is not required to accept either the EIA report or any clarification sent to it by the project proponent. In the absence of cogent reasons by the SEAC for the recommendation of the grant of EC, the process by its very nature, together with the outcome, stands vitiated. (Para 92)

In this view of the matter, neither the process of decision-making nor the decision itself can pass legal muster. For balancing the development of infrastructure and the environment, while the need for a road project is factored into the decision-making calculus, equal emphasis should be placed on the prevailing state of the environment. (Para 98)

Thus, it is directed that:

(*i*) the appellant is directed to conduct a fresh rapid EIA for the proposed PRR project;

(*ii*) The appellant shall, for the purpose of conducting the rapid EIA, hire a sector-specific accredited EIA consultant;

(*iii*) The appellant shall have due regard to the various deficiencies noted in the present judgment as well as ensure that additional precautions are taken to account for the prevailing state of the environment;

(*iv*) The appellant shall ensure that the requisite clearances under various enactments have been obtained and submitted to the SEAC prior to the consideration by it of the information submitted by the appellant in accordance with the OMs issued by the MoEFCC from time to time;

(*v*) The SEAC shall thereafter assess the rapid EIA report and other information submitted to it by the appellant in accordance with the role assigned to it under the 2006 Notification. If it is of the opinion that the appellant has complied with the 2006 Notification as well as the directions issued by this Court, only then shall it recommend to the SEIAA the grant of EC for the proposed project. The SEAC and the SEIAA would lay down appropriate conditions concerning air, water, noise, land, biological and socio-economic environment and other conditions it deems fit; and

(*vi*) The appellant shall consult the requisite authority to ensure that no potential damage is caused by the project to the petroleum pipelines over which the proposed road may be constructed. (Para 99)

Sudhakar Hegde v. *State of Karnataka*, 2014 SCC OnLine Kar 8851 : ILR 2014 Kar 4995; *Sudhakar Hegde* v. *State of Karnataka*, 2017 SCC OnLine Kar 590; *BDA* v. *Sudhakar Hegde*, 2019 SCC OnLine SC 1818, *referred to*

RM-D/64250/S

Advocates who appeared in this case :
Shyam Divan, Senior Advocate, for the Appellant;
Nikhil Nayyar, Senior Advocate, for the Respondents.

Chronological list of cases cited ***on page(s)***

1. 2019 SCC OnLine SC 1818, *BDA* v. *Sudhakar Hegde* 77*d*
2. (2018) 17 SCC 394 : (2019) 2 SCC (Civ) 458, *SBI* v. *V. Ramakrishnan* 88*e-f*, 89*d-e*
3. 2018 SCC OnLine NCLAT 384, *SBI* v. *V. Ramakrishnan* **(held, reversed)** 88*f*
4. 2017 SCC OnLine Kar 590, *Sudhakar Hegde* v. *State of Karnataka* 76*b*
5. 2014 SCC OnLine Kar 8851 : ILR 2014 Kar 4995, *Sudhakar Hegde* v. *State of Karnataka* 76*a-b*
6. 2014 SCC OnLine NGT 15 : 2014 All (l) NGT Reporter (1) SZ 1, *Sreeranganathan K.P.* v. *Union of India* 111*a-b*
7. (2011) 7 SCC 338, *Lafarge Umiam Mining (P) Ltd.* v. *Union of India* 111*e-f*

The Judgment of the Court was delivered by

DR D.Y. CHANDRACHUD, J.—

INDEX

A. *Introduction*

1. The present appeal arises from a judgment of the Principal Bench of the National Green Tribunal ("NGT") dated 8-2-2019 quashing the Environmental Clearance ("EC") granted to the appellant for the development of an eight lane peripheral ring road ("PRR") connecting Tumkur Road to Hosur Road and totalling a length of 65 km. The NGT was of the view that the primary data upon which the Environment Impact Assessment ("EIA") report was based was collected more than three years prior to its submission to the State Environment Impact Assessment Authority ("SEIAA"). The NGT was of the view that it was not necessary to adjudicate upon the other contentions that were urged in support of quashing the EC as there was a substantial delay in the preparation of the EIA report. Accordingly, the NGT directed the appellant to conduct a fresh rapid EIA and clarified that the "project proponent will not proceed on the basis of the impugned Environmental Clearance". Assailing the order of the NGT, the appellant, as project proponent, is in appeal before this Court.

2. In a bid to address the growing need for efficient commutation, address traffic congestion and connect the Bangalore-Mysore Infrastructure Corridor (NICE road) with more access points, the appellant formulated the PRR project scheme in 2005. A preliminary Notification was issued on 27-5-2005 under Sections 17(1) and (3) of the Bangalore Development Authority Act, 1976 ("the BDA Act") to acquire certain land for the execution of the project. The stated purpose of the project was:

> "(1) To decongest the traffic in Bangalore City;
> (2) To cater intercity connectivity and intercity traffic;
> (3) To reduce pollution in the city;
> (4) To reduce heavy vehicles traffic i.e. lorry and trucks; and
> (5) To decongest the traffic on outer ring road."

3. Another preliminary Notification was issued on 23-9-2005 which concerned the realignment of the proposed road project. A final Notification under Section 19(1) of the BDA Act was issued on 29-6-2007 for the acquisition of the proposed land. The notifications were challenged before the High Court of Karnataka in writ proceedings[1] on the ground that the appellant had no authority to issue the notifications and acquire land for the proposed PRR project. By a judgment dated 22-7-2014[2], the High Court dismissed the writ petition on the ground that the appellant was authorised under the BDA Act to acquire the land for the project in question. The writ appeal against this was dismissed on the ground of default on 9-2-2017[3].

4. The appellant, as project proponent, submitted an application[4] to the SEIAA on 10-9-2009 under the EIA Notification, 2006 ("the 2006 Notification") seeking an EC for the PRR. The terms of reference ("TOR") were prepared by the State Expert Appraisal Committee ("SEAC") on 21-11-2009. Primary data was collected between December 2009 and February 2010. The final EIA report was placed before the SEAC and the SEIAA in October 2014. An EC was granted by the SEIAA on 20-11-2014. The first and second respondents filed an appeal to the NGT challenging the grant of the EC. The NGT, by an interim order dated 15-4-2015 granted an interim stay of the EC. The relevant portion of the order reads:

> "Pointing to the EIA report which was placed before the 1st respondent, the counsel for the appellant would submit that the first part of the report would clearly indicate that if the road was constructed, it would pass through the reserve forest and the later part it would submit that the forest clearance is not necessary which by itself would suffice to reject the recommendation. The EIA report would clearly indicate that if the proposed road has got to be constructed approximately 200 trees were to be cut which is thoroughly inconsistent to the report given by the Horticulture and Forest Department. According to their report, it would require felling of 16,685 trees. Added further by the counsel for the appellant that if the proposed road is allowed to be constructed it would be above the underground pipeline already laid for transporting petroleum from Mangalore to Bangalore and if any leakages happen in future it would bring forth serious consequence…
>
> There exists a prima facie case in favour of the appellant for granting an interim order of stay…."

5. The NGT noted the discrepancy between the submission of the appellant and the existence of a reserved forest through which the proposed road was to pass. The NGT recorded that while the EIA report stated that only 200 trees would be cut for the proposed project, the report given by the Horticulture and Forest Department indicated that about 16,685 trees would be required to be felled for the proposed project. By its final order dated 8-2-2019, the NGT

1 WP No. 4550 of 2008
2 *Sudhakar Hegde* v. *State of Karnataka*, 2014 SCC OnLine Kar 8851 : ILR 2014 Kar 4995
3 *Sudhakar Hegde* v. *State of Karnataka*, 2017 SCC OnLine Kar 590
4 No. BDA/EM/TA3/PRR/EIA/T333/09-10

stayed the operation of the EC granted by the SEIAA. The relevant portion of the order reads:

> "The environmental clearance was granted on 20-11-2014. Thus, the primary data was more than three years prior to the EIA report. There are omissions in the EIA report with regard to data of forest land as well as the provisions of revised Master Plan, 2015 prepared by the BDA. Thippagondanahalli Reservoir (TGR) catchment area has been suppressed in the EIA report. Green cover particulars have been overlooked. Further objection is that there is proximity of the area to the petroleum pipelines and land earmarked for petroleum pipelines overlaps the project. According to the appellant, Stage I Forest Clearance was not obtained as required...
>
> It is not necessary to adjudicate on the contentions raised, having regard to the patent fact that there was substantial delay in EIA and a period of almost five years passed even thereafter. This Tribunal, vide order dated 15-4-2015, considered the issue...It will, thus, be in the interest of justice that a fresh rapid EIA is conducted. If the project is found viable after incorporating due abatement measures, including the suggestions of the appellant, the same can be taken up without further delay...."

The NGT directed the appellant to conduct a rapid EIA. It was further directed that if the project is found to be viable after incorporating abatement measures, "the same can be taken up without delay". Notice was issued by this Court on 15-3-2019[5].

B. ***Submissions***

6. Assailing the order of the NGT, Mr Shyam Divan, learned Senior Counsel appearing on behalf of the appellant contended that:

6.1. The 2006 Notification obliges a project proponent to seek prior EC only for projects that are listed in the Schedule to the Notification. Para 7(*f*) of the Schedule includes only those projects that are either National or State Highways. The PRR project does not fall within the ambit of either the National Highways Act, 1956 or the Karnataka Highways Act, 1964. Consequently, the appellant was under no obligation under the 2006 Notification to seek a prior EC for the PRR project;

6.2. The 2006 Notification came into effect from the date of its publication in the Official Gazette on 14-9-2006. It is prospective in its application. The PRR project commenced on 23-9-2005 upon the issuance of the preliminary notification under the BDA Act and as such, on the date of the coming into force of the 2006 Notification, no obligation existed on the appellant to seek a prior EC for the PRR project;

6.3. The appellant executed the EIA process and applied for the grant of an EC out of abundant caution;

6.4. The first respondent has challenged the grant of the EC by the SEIAA only because his appeal before the Karnataka High Court challenging the acquisition of land for the PRR project was unsuccessful. The present proceedings are merely a method of delaying the acquisition proceedings;

5 *BDA* v. *Sudhakar Hegde*, 2019 SCC OnLine SC 1818

6.5. The SEAC acceded to the request of the appellant to not forward to the SEIAA a recommendation for the closure of the proposal. The SEAC recommended to the SEIAA the grant of the EC to the project in question after due consideration of the EIA report in its 121st meeting between 11 and 18-11-2014; and

6.6. All objections raised by the first respondent concerning forests, the cutting of trees and the protection of the reservoir were adequately addressed in the EIA report submitted in 2014, on which basis an EC was granted to the PRR project.

7. On the other hand, Mr Nikhil Nayyar, learned Senior Counsel appearing on behalf of the first respondent contended:

7.1. The term "highway" or "expressway" used in the 2006 Notification must be given a wide interpretation and not be restricted to the issuance of a notification under Central or State enactments;

7.2. Both the National Highways Act, 1956 and the Karnataka State Highways Act, 1964 concern the acquisition of land, its development and permissions concerning the collection of toll/fee. The statutory framework does not envisage the wide definition to be attributed to the term "highway" in matters concerning the protection of the environment;

7.3. The appellant itself admitted in its EIA report that the PRR project is a Category 'B' project falling under the purview of Para 7(*f*) of the Schedule under the 2006 Notification;

7.4. The primary data for the PRR project was collected between December 2009 and February 2010. The EAC conducted the appraisal process after a substantial delay of over four years in the year 2014. This defeats the purpose for which TORs are issued as the state of the environment is constantly changing;

7.5. An OM dated 22-8-2010 issued by the Ministry of Environment and Forests (MoEF, later renamed as MoEFCC in 2014) stipulates that EIA reports for projects where the TORs have been granted prior to the date of the coming into force of the OM must be based on primary data that is not older than three years. The OM further stipulates that a TOR is valid only for a period of four years. The EIA report was prepared after the expiry of the TOR and is legally unsustainable;

7.6. The SEIAA decided to close the file for the PRR project on 17-5-2013, which decision was communicated to the appellant on 25-7-2013. A party aggrieved by the action of the SEIAA may only file an appeal under Section 16 of the NGT Act and the SEIAA was not authorised to reopen the file on the request of the appellant;

7.7. There was no collection of additional data in the year 2014. The report which is styled as a rapid EIA report in the year 2014 is nothing but the final EIA report under the 2006 Notification which was prepared after the public consultation process was conducted in February 2014; and

7.8. There are significant omissions in the EIA report concerning forest land, green cover, number of trees required to be cut, the catchment area in the Thippagondanahalli Reservoir and proximity of the PRR project to the petroleum pipelines underneath. Material concealment by the project proponent invalidates the EC which was granted by the SEIAA.

8. The rival submissions fall for our consideration.

C. ***Issues***

9. Essentially this Court is required to decide:

9.1. (*i*) Whether the PRR project commenced prior to the coming into force of the 2006 Notification;

9.2. (*ii*) Whether the PRR project falls within the scope of Para 7(*f*) of the Schedule to the 2006 Notification obliging the project proponent to seek a prior EC; and

9.3. (*iii*) Whether the appellant has complied with the conditions stipulated in the 2006 Notification and the OMs issued by MoEFCC from time to time.

D. ***Date of commencement of the PRR project***

10. This Court is required to adjudicate whether it is the issuance of a preliminary notification under Section 17 of the BDA Act or a final notification under Section 19 of the BDA Act that constituted the identification of the proposed site for the project and marked its commencement for the purposes of the 2006 Notification.

11. On 27-1-1994, the MoEF, in exercise of the powers conferred by sub-section (1) and clause (*v*) of sub-section (2) of Section 3 of the Environment (Protection) Act, 1986 read with clause (*d*) of sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986, issued a Notification imposing restrictions and prohibitions on the expansion and modernisation of any activity or a new project unless a prior EC was granted in accordance with the procedure stipulated in the notification. On 14-9-2006, the MoEF released the 2006 Notification in supersession of the previous notification. The 2006 Notification directed that:

> "*... on and from the date of its publication* the required construction of new projects or activities or the expansion or modernisation of existing projects or activities *listed in the Schedule to this notification* entailing capacity addition with change in process and or technology *shall be undertaken in any part of India only after the prior environmental clearance* from the Central Government or as the case may be, by the State Level Environment Impact Assessment Authority, duly constituted by the Central Government under sub-section (3) of Section 3 of the said Act, in accordance with the procedure specified hereinafter in this notification." (emphasis supplied)

12. The 2006 Notification came into force on the date of its publication and obliges every project proponent to seek *prior* EC for the projects and activities which are listed in the Schedule to the Notification. According to Para 2 of the 2006 Notification, all new projects or activities listed in the Schedule to

the 2006 Notification shall require a prior EC from the regulatory authority concerned:

> "2. *Application for Prior Environmental Clearance (EC)*: An application seeking prior environmental clearance in all cases shall be made in the prescribed Form 1 annexed herewith and Supplementary Form 1-A, if applicable, as given in Appendix II, *after the identification of prospective site(s) for the project and/or activities to which the application relates, before commencing any construction activity, or preparation of land, at the site by the applicant*. The applicant shall furnish, along with the application, a copy of the pre-feasibility project report except that, in case of construction projects or activities (Item 8 of the Schedule) in addition to Form 1 and the Supplementary Form 1-A, a copy of the conceptual plan shall be provided, instead of the pre-feasibility report." (emphasis supplied)

Once a prospective site has been identified by the applicant for the proposed project, all applications seeking an EC shall be made in the prescribed Form 1 and Supplementary Form 1-A, if applicable which contains a detailed list of the extent and potential impact of the proposed project. The application must be submitted after the identification of the prospective site and prior to the commencement of any construction activity, or preparation of the land. Thus, the action by the project proponent that is relevant to the obligation to seek a prior EC under the 2006 Notification is the identification of the prospective site for the execution of the proposed project.

13. Section 2(*a*) of the BDA Act defines "authority" as the Bangalore Development Authority constituted under Section 3 of the Act. Chapter III of the Act deals with development schemes and the procedures that must be complied with in the carrying out of a development scheme. Under Section 15, the appellant may draw up a detailed development scheme for the development of the Bangalore metropolitan area. Section 16(1) mandates that the appellant must also provide, in the formulation of the scheme, the details of the land proposed to be acquired for the development scheme. Section 17 contemplates the issuance of a preliminary notification. It reads:

> "**17.** ***Procedure on completion of scheme.***—(1) When a development scheme has been prepared, the Authority shall draw up a notification stating the fact of a scheme having been made and the limits of the area comprised therein, and naming a place where particulars of the scheme, a map of the area comprised therein, a statement specifying the land which is proposed to be acquired and of the land in regard to which a betterment tax may be levied may be seen at all reasonable hours.
>
> (2) A copy of the said notification shall be sent to the Corporation which shall, within thirty days from the date of receipt thereof, forward to the Authority for transmission to the Government as hereinafter provided, any representation which the Corporation may think fit to make with regard to the scheme.
>
> (3) The Authority shall also cause a copy of the said notification to be published in the Official Gazette and affixed in some conspicuous part of its

own office, the Deputy Commissioner's Office, the office of the Corporation and in such other places as the Authority may consider necessary.

(4) If no representation is received from the Corporation within the time specified in sub-section (2), the concurrence of the Corporation to the scheme, shall be deemed to have been given.

(5) During the thirty days next following the day on which such notification is published in the Official Gazette the Authority shall serve a notice on every person whose name appears in the assessment list of the local authority or in the land revenue register as being primarily liable to pay the property tax or land revenue assessment on any building or land which is proposed to be acquired in executing the scheme or in regard to which the Authority proposes to recover betterment tax requiring such person to show cause within thirty days from the date of the receipt of the notice why such acquisition of the building or land and the recovery of betterment tax should not be made.

(6) The notice shall be signed by or by the order of the Commissioner and shall be served—

(*a*) by personal delivery or if such person is absent or cannot be found, on his agent, or if no agent can be found, then by leaving the same on the land or the building; or

(*b*) by leaving the same at the usual or last known place of abode or business of such person; or

(*c*) by registered post addressed to the usual or last known place of abode or business of such person."

14. Section 17 stipulates that the appellant shall, upon the preparation of a scheme under Section 15, notify that a scheme has been prepared along with the specifications of the scheme, a map of the area comprised therein and the details of the land proposed to be acquired. The notification is forwarded to the Corporation of the City of Bangalore, which is granted thirty days to provide its comments to the appellant authority for transmission to the Government along with the scheme for sanction. Section 17(3) stipulates that a copy of the notification shall be published in the Official Gazette and affixed in conspicuous parts of the offices of the appellant and the Corporation. Section 17(5) mandates that the appellant shall serve on every person whose land is proposed to be acquired a notice to show-cause within thirty days on why the acquisition of the building or land must not take place.

15. Section 18 stipulates that where the procedure stipulated under Section 17 is complete, the appellant shall submit the scheme with any modifications, to the Government of Karnataka for sanction subject to the conditions stipulated therein. Section 18 reads:

"**18.** ***Sanction of scheme.***—(1) After publication of the scheme and service of notices as provided in Section 17 and after consideration of representations, if any, received in respect thereof, the Authority shall submit the scheme, making such modifications therein as it may think fit, to the Government for sanction, furnishing—

(*a*) a description with full particulars of the scheme including the reasons for any modifications inserted therein;

(*b*) complete plans and estimates of the cost of executing the scheme;

(*c*) a statement specifying the land proposed to be acquired;

(*d*) any representation received under sub-section (2) of Section 17;

(*e*) a schedule showing the rateable value, as entered in the municipal assessment book on the date of the publication of a notification relating to the land under Section 17 or the land assessment of all land specified in the statement under clause (*c*); and

(*f*) such other particulars, if any, as may be prescribed.

(2) Where any development scheme provides for the construction of houses, the Authority shall also submit to the Government plans and estimates for the construction of the houses.

(3) After considering the proposal submitted to it the Government may, by order, give sanction to the scheme."

Under this provision, the appellant is required to furnish details of the land proposed to be acquired along with a schedule showing the rateable value, as entered in the municipal assessment book on the date of the publication of the notification. The appellant furnishes to the Government a description with full particulars of the scheme including the reasons for any modifications inserted, plans and estimates of costs and a statement specifying the land proposed to be acquired. Significantly, if the Government is satisfied with the proposed scheme, it may accord sanction to the scheme under Section 18(3) of the Act. A scheme formulated under Section 15 may only be carried out where sanction has been accorded to the scheme by the Government under Section 18(3) of the Act.

16. Section 19 of the Act reads thus:

"**19.** ***Upon sanction, declaration to be published giving particulars of land to be acquired.***—(1) Upon sanction of the scheme, the Government shall publish in the Official Gazette a declaration stating the fact of such sanction and that the land proposed to be acquired by the Authority for the purposes of the scheme is required for a public purpose.

(2) The declaration shall state the limits within which the land proposed to be acquired is situated, the purpose for which it is needed, its approximate area and the place where a plan of the land may be inspected.

(3) The said declaration shall be conclusive evidence that the land is needed for a public purpose and the Authority shall, upon the publication of the said declaration, proceed to execute the scheme.

(4) If at any time it appears to the Authority that an improvement can be made in any part of the scheme, the Authority may alter the scheme for the said purpose and shall subject to the provisions of sub-sections (5) and (6), forthwith proceed to execute the scheme as altered.

(5) If the estimated cost of executing the scheme as altered exceeds, by a greater sum than five per cent the estimated cost of executing the scheme

as sanctioned, the Authority shall not, without the previous sanction of the Government, proceed to execute the scheme as altered.

(6) If the scheme as altered involves the acquisition otherwise than by agreement, of any land other than that specified in the schedule referred to in clause (*e*) of sub-section (1) of Section 18, the provisions of Sections 17 and 18 and of sub-section (1) of this section shall apply to the part of the scheme so altered in the same manner as if such altered part were the scheme."

17. Under Section 19, once the Government sanctions the appellant's scheme, a final notification is published by the Government in the Official Gazette declaring that sanction has been received and that the land proposed to be acquired is required for a public purpose. The final notification specifies the limits within which the land proposed to be acquired is situated and specifies the place at which people may inspect the plan. The appellant is authorised under Section 19(4) to alter the scheme subject to sub-sections (5) and (6). Section 19(6) stipulates that if acquisition of additional land is required over and above the details that were furnished by the appellant under Section 18, and otherwise than by agreement with the person whose land is proposed to be acquired, the procedure stipulated in Sections 17 and 18 shall be followed.

18. The BDA Act was enacted with the purpose of establishing a development authority for the development of the city of Bangalore and adjacent areas. Sections 17, 18 and 19 stipulate the mechanism that must be followed by the appellant leading up to the grant of government sanction for a scheme formulated under Section 15. The purpose underlying Section 17 is to grant to both the Corporation and the persons whose lands are proposed to be acquired an opportunity to file their objections to the proposed scheme and the acquisition of land required for the execution of the project. Though the land proposed to be acquired for the scheme is stipulated in the preliminary notification under Section 17, the provision to forward to the Corporation a copy as well as serve notices to persons whose lands are proposed to be acquired subserves the principles of natural justice where an affected party is extended the right to object to a proposed scheme.

19. Upon the receipt of suggestions and objections, if any, the appellant may modify the scheme in accordance with the suggestions received and thereafter forward to the Government the scheme for the grant of sanction. However, it is only upon the grant of sanction by the Government under Section 18(3), that a final notification under Section 19 is issued. It is only upon the grant of sanction by the Government that a proposed scheme is deemed to be finalised and carried into effect.

20. The 2006 Notification stipulates an obligation to commence the EIA process once a prospective site is identified and before the commencement of any construction or preparation of land. It may be possible that following the formulation of a scheme under Section 15 and the issuance of a preliminary notification under Section 17, government sanction is denied or the appellant drops the proposed scheme prior to the grant of sanction or the issuance of the final notification. In such situations, if it were held that it is the issuance

of the preliminary notification identifying the proposed site for the project that marked the commencement of the project for the purposes of the 2006 Notification, the appellant would be under an obligation to carry out the EIA process for a proposed scheme which may not eventually materialise.

21. The EIA process under the 2006 Notification serves as a balance between development and protection of the environment: there is no trade-off between the two. In laying down a detailed procedure for the grant of an EC, the 2006 Notification attempts to bridge the perceived gap between the protection of the environment and development. The basic postulate of the 2006 Notification is that the path which is prescribed for disclosures, studies, gathering data, consultation and appraisal is designed in a manner that would secure decision-making which is transparent, responsive and inclusive. While the BDA Act was enacted with the purpose of establishing a development authority for the development of the city of Bangalore and adjacent areas, the 2006 Notification embodies the notion that the development agenda of the nation must be carried out in compliance with norms stipulated for the protection of the environment and its complexities. The BDA Act and the 2006 Notification operate in different fields. It cannot be said that a site is deemed identified for the purpose of triggering the obligations under the 2006 Notification upon the issuance of a preliminary notification under Section 17 of the BDA Act. Adopting a contrary interpretation would lead to the absurd result where a project proponent is obligated to carry out the EIA process for a scheme even prior to the grant of government sanction and a final notification carrying into effect the proposed scheme. In this view of the matter, the prospective site is deemed to be identified only upon the issuance of the final notification under Section 19 after the proposed scheme has received government sanction under Section 18(3).

22. The final notification under Section 19(1) of the BDA Act was issued on 29-6-2007 following the grant of government sanction for the acquisition of the land. This being after the coming into force of the 2006 Notification, the contention urged by the appellant that the project commenced prior to the coming into force of the 2006 Notification cannot be accepted.

E. ***Applicability of the EIA Notification, 2006***

23. Essentially, this Court is required to address the contention urged by Mr Shyam Divan, learned Senior Counsel appearing on behalf of the appellant that the PRR project, being neither a project falling within Section 2 of the National Highways Act, 1956 or Section 3 of the Karnataka Highways Act, 1964, does not fall within the ambit of the Schedule to the 2006 Notification.

24. Para 2 of the 2006 Notification reads thus:

> "**2.** ***Requirements of prior Environmental Clearance (EC)***.—The following projects or activities shall require prior environmental clearance from the regulatory authority concerned, which shall hereinafter be referred to as the Central Government in the Ministry of Environment and Forests for matters falling under Category 'A' in the Schedule and at State level the State Environment Impact Assessment Authority ("SEIAA") for matters falling

under Category 'B' in the said Schedule, before any construction work, or preparation of land by the project management except for securing the land, is started on the project or activity:

(*i*) All new projects or activities *listed in the Schedule to this notification*;

(*ii*) Expansion and modernisation of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the sector concerned, that is, projects or activities which cross the threshold limits given in the Schedule, after expansion or modernisation;

(*iii*) Any change in product — mix in an existing manufacturing unit included in Schedule beyond the specified range." (emphasis supplied)

25. Para 2(1) of the 2006 Notification stipulates that only projects listed in the Schedule must be granted prior EC. Para 7(*f*) of the Schedule to the 2006 Notification, as originally enacted reads:

Project or Activity		*Category with threshold limit*		*Conditions, if any*
		A	*B*	
(*1*)	(*2*)	(*3*)	(*4*)	(*5*)
7. (*f*)	Highways	(*i*) New National Highways; and (*ii*) Expansion of National Highways greater than 30 km, involving additional right of way greater than 20m involving land acquisition and passing through more than one State.	(*i*) New State Highways; and (*ii*) Expansion of National/ State Highways greater than 30 km involving additional right of way greater than 20m involving land acquisition.	General conditions shall apply.

26. The Schedule to the 2006 Notification stipulates that projects listed in Column (3) must be granted prior EC from MoEFCC while projects listed in Column (4) must be granted prior EC from the SEIAA. The general conditions applicable are listed at the end of the Schedule.[6] Column (3) of

6 "Any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of: (*i*) Protected areas notified under the Wildlife (Protection) Act, 1972, (*ii*) Critically polluted areas as notified by the Central Pollution Control Board from time to time, (*iii*) Notified ecosensitive areas, (*iv*) inter-State boundaries and international boundaries."

Para 7(*f*) includes new national highways and the expansion of existing national highways while Column (4) includes new State highways and the expansion of existing State highways. Admittedly, in the present case, no notification was issued under either the National Highways Act, 1956 or the Karnataka Highways Act, 1964 notifying the PRR project as a highway under those enactments. Initial discussions took place at the Government of Karnataka level regarding the transfer of the PRR project to the National Highways Authority of India ("NHAI"). On 10-1-2018, the Central Road Transport Ministry was informed that the Government of Karnataka had granted its consent to transfer the said project to the NHAI on an "as it is" basis. However, the Government of Karnataka, by its Order dated 24-6-2008, withdrew the proposal to transfer the PRR project to the NHAI.

27. There is however another aspect of the matter that warrants the attention of this Court. Para 7(*f*) of the Schedule to the 2006 Notification has been amended[7] since the coming into force of the 2006 Notification.

28. Prior to the issuance of the 2006 Notification, a draft notification was published in Official Gazette on 15-9-2005 stipulating that comments may be sent to MoEFCC within sixty days from the date on which the notification was published. Para 7(*f*) of the Schedule to the draft notification reads:

Sl. No.	*Project or Activity*	*NIC code (2004)*	*ISIC code*	*Category*			*Conditions if any*
				A	A/B	B	
7. (*f*)	Roads Highways	45203*		All new National Highways, expressways and bypasses >= 30 km length Or All National Highways, Expressway expansion projects >= 30 km length and additional right of way of more than 20m	-	All State Highway projects >= 30 km length Or All State Highway expansion projects >= 30 km length and additional rights of way of more than 20m	GC-1

[7] Notifications dated 11-11-2007, 1-12-2009, 4-4-2011 and 22-8-2013.

In the draft notification, Para 7(*f*) to the Schedule included the term "expressway" under Category 'A' projects. However, in the final 2006 Notification, the word "expressway" was deleted. Absent any conclusive reason for the deletion from the draft notification prior to it coming into force, such deletion cannot be used to construe the terms of the 2006 Notification or subsequent amendments thereto.

29. In exercise of the powers conferred by sub-section (1) and clause (*v*) of sub-section (2) of Section 3 of the Environment (Protection) Act, 1986 read with clause (*d*) of sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986, the Central Government issued a Notification dated 1-12-2009 amending, inter alia, Para 7(*f*) of the Schedule to the 2006 Notification. Para (*xv*) of the amending notification reads:

> "**(xv)** *against Item 7(f),*
>
> (*a*) *In Column (4), for the entry, the following entry shall be substituted, namely*:
>
> '(*i*) All State Highway Projects; and
>
> (*ii*) State Highway expansion projects in hilly terrain (above 1000 m AMSL) and or ecologically sensitive areas'
>
> (*b*) *in Column (5) for existing entry, the following entry shall be substituted, namely*:
>
> 'General conditions shall apply.
>
> Note: Highways include expressways.' " (emphasis supplied)

Following the 2009 Amendment, Column (5) of Para 7(*f*) to the Schedule which read "General Conditions shall apply" was substituted to stipulate that in addition to the application of the general conditions, highways include expressways.

30. Prior to the amendment, a draft notification was published on 19-1-2009 seeking comments and objections thereto. MoEFCC, by its Order dated 3-7-2009 constituted a Committee under the Chairmanship of Shri J.M. Mauskar, Additional Secretary to consider the comments received on the draft notification, conduct meetings with the various stakeholders and make recommendations for the finalisation of the notification. The Committee held various meetings with stakeholders concerned. MoEFCC published the report of the Committee titled "*Report of the Committee constituted under the Chairmanship of Shri J.M. Mauskar, Additional Secretary to examine the comments/suggestions on the Draft Amendments to EIA Notification, 2006*" in October 2009. Numerous comments were received by the Committee on various aspects of the draft notification including the proposed amendment to Para 7(*f*) of the Schedule. The initial draft notification only sought to modify Column (4) of Para 7(*f*). However, comments were received by the Committee stating that a specific reference to expressways must be made. The Committee formulated its analysis in the following terms:

"*Analysis*: The main suggestion relates to expansion of the scope of the notification by including expressways, bypasses, major district roads, tunnelling for roads within city limits, peripheral roads around municipal corporation limits. There is also a request for expanding the right of way limit from 20 m to 60 m. BRO has sought exemption of their projects up to 50 km. *From the comments received, it is perceived that expressways are different from highways. However, keeping in view the objective of the Notification, it needs to be explicitly clarified in the Notification that highways include expressways*. In regard to other items these may be considered separately. In regard to the proposal for enhancing the right of way limit from 20 m to 60 m, this may not be accepted as it would involve significant changes in land use and issues of rehabilitation." (emphasis supplied)

31. The analysis of the Committee recorded that the main suggestions related to the expansion of the scope of the Notification by including within its ambit expressways, bypasses, major district roads, tunnelling for roads within city limits and peripheral roads around municipal corporation limits. Significantly, the Committee took note of the perception that highways and expressways differed from each other. Though it appeared from the comments that an expansion was sought in the scope of the 2006 Notification, the Committee explicitly clarified that the term "highways" includes "expressways". For other items, the Committee stated that they may be considered separately. The clarification issued for highways and expressways did not amount to an expansion in the scope of the 2006 Notification but only made clear that the term highways always included expressways.

32. Where an amendment is clarificatory in nature, such amendment is deemed to be retrospective in its application.

33. In *SBI* v. *V. Ramakrishnan*[8], the question before a two-Judge Bench of this Court concerned whether Section 14 of the Insolvency and Bankruptcy Code, 2016 which provides for a moratorium for the limited period mentioned, on admission of an insolvency petition, would apply to a personal guarantor of a corporate debtor. In the judgment[9] of the National Company Law Appellate Tribunal which was under appeal, it was held that as a Resolution Plan binds personal guarantors as well under Section 31, the moratorium under Section 14 would apply to personal guarantors. Assailing this, the appellant relied upon the Insolvency Law Committee proceedings to contend that an amendment to Section 14 which stipulated that the moratorium shall not apply to a surety in a contract of guarantee to a corporate debtor was clarificatory in nature and that personal guarantors were always intended to fall outside the operation of the

8 (2018) 17 SCC 394 : (2019) 2 SCC (Civ) 458
9 *SBI* v. *V. Ramakrishnan*, 2018 SCC OnLine NCLAT 384

moratorium. Accepting this contention, R.F. Nariman, J. speaking for the Court held: (SCC pp. 417 & 419, paras 31-33)

> "*31*. The Insolvency Law Committee, appointed by the Ministry of Corporate Affairs, by its Report dated 26-3-2018, made certain key recommendations, one of which was:
>
> > '(*iv*) to clear the confusion regarding treatment of assets of guarantors of the corporate debtor vis-à-vis the moratorium on the assets of the corporate debtor, *it has been recommended to clarify by way of an explanation that all assets of such guarantors to the corporate debtor shall be outside scope of moratorium imposed under the Code*;'
>
> * * *
>
> *32*. … '5.11. The Committee concluded that Section 14 does not intend to bar actions against assets of guarantors to the debts of the corporate debtor and recommended that an explanation to clarify this may be inserted in Section 14 of the Code. The scope of the moratorium may be restricted to the assets of the corporate debtor only.'
>
> *33*. The Report of the said Committee makes it clear that the object of the amendment was to clarify and set at rest what the Committee thought was an overbroad interpretation of Section 14." (emphasis in original)

34. The Court in *V. Ramakrishnan*[8] noted that the Committee clarified that it was never intended that the moratorium under Section 14 applied to personal guarantors of corporate debtors. Accordingly, an amendment was enacted to Section 14. The Court then proceeded to hold, relying on consistent precedent of this Court, that a clarificatory amendment has retrospective application. A similar position is expounded by G.P. Singh in his seminal work *Principles of Statutory Interpretation*. He states:

> "… An amending Act may be purely clarificatory to clear a meaning of a provision of the principal Act which was already implicit. A clarificatory amendment of this nature will have retrospective effect and, therefore, if the principal Act was existing law when the amendment came into force, the amending Act also will be part of the existing law."

35. An amending provision which clarifies the position of law which was considered to be implicit, is construed to have retrospective effect. The position of the retrospective application of clarificatory amendments to notifications is analogous to the position under statutory enactments. In the present case, the Committee appointed by MoEFCC clarified that the term "highways" included expressways and suggested that a suitable amendment be issued to that effect. Based on the report of the Committee, a clarificatory amendment was issued in

8 *SBI* v. *V. Ramakrishnan*, (2018) 17 SCC 394 : (2019) 2 SCC (Civ) 458

Column (5) of Para 7(*f*) to stipulate that highways include expressways. This being the position, this Court is required to analyse whether the PRR project qualifies as an expressway falling within the ambit of Para 7(*f*) of the Schedule. *a*

36. Neither the National Highways Act, 1956 nor the Karnataka Highways Act, 1964 define the term "highway". The 2009 Amendment to the 2006 Notification is silent on the definition of the term "expressway". It was submitted by the learned Senior Counsel appearing on behalf of the respondents that the definition by the Indian Road Congress ("IRC") in the Manual of Specifications and Standards for expressways is instructive. *b*

37. The IRC was set up in 1934 on the recommendation of the Indian Road Development Committee constituted by the Government of India for the development of roads in the country. An expert group was constituted in 2013 to formulate a Manual of Specifications and Standards for expressways. The report, which was released in the same year, defined an "expressway" in the following terms: *c*

> "… For this purpose, the expressway is defined as an arterial highway for motorised traffic, with divided carriageways for high speed travel, with full control of access and provided with grade separators at location of intersections. Generally, only fast-moving vehicles are allowed access on expressways…." *d*

An "expressway" is defined as an arterial highway designed for high-speed travel with the objective of reducing traffic and generally involving control of access. Other indicators are the provision of toll booths, divided carriageways and grade separators located at intersections. The assessment of whether a road project is an expressway is to be determined on a case-by-case basis. *e*

38. In the present case, the stated purpose of the PRR project is thus:

> "(1) To decongest the traffic in Bangalore City;
> (2) To cater intercity connectivity and intercity traffic;
> (3) To reduce pollution in the city;
> (4) To reduce heavy vehicles traffic i.e. lorry and trucks; *f*
> (5) To decongest the traffic on outer ring road."

39. The brief note submitted by the appellant to this Court states that:

> "… the PRR proposed to be implemented by the BDA is an 8 lane divided road around Bangalore City is primarily to *ease the vehicular traffic congestion on its city roads*. The proposed cross-section consists of 4 lane main road in each traffic direction and 3 lane service road on either side of the main road for local traffic. The main road and the service road will be *separated by access-controlled facility. The engineering designs will be carried out in accordance with Indian Roads Congress standards*." (emphasis supplied) *g*

h

40. The primary purpose of the PRR project is to ease vehicular traffic congestion in the city. The main road and the service road are to be separated by access-controlled facilities. The engineering designs are to be carried out in accordance with the standards laid down by the IRC. The EIA report prepared by the appellant describes the PRR project in the following terms:

> "The proposed peripheral ring road (PRR) project alignment starts from — Tumkur Road as CH.17*a* (distance of 16-20 km from Bangalore City Railway Station on NH4 & terminates at Hosur Road near Begur CH.64.65 km (65 km) for a smooth flow of traffic, to reduce the *traffic congestion, pollution intensity and travel time*.
>
> *Highway Design*
>
> The proposed peripheral ring road (PRR) alignment has been designed for a *speed of 100 kmph wherever possible*. However, at a few locations that designs have been carried out for 80 kmph owing to restrictions at site. The vertical curves are designed as per the guidelines of IRC SP:23.
>
> * * *
>
> *Interchanges*
>
> An interchange is a *grade separated intersection with connecting roadways for turning traffic* between highway and approaches. The intersections are designed during the construction of peripheral ring road (PRR) after contemplating the guidelines and schemes given in AASHTO and IRC:92 guidelines.
>
> * * *
>
> *Toll Plaza*
>
> … All the traffic passing through the toll plaza section of road will have to pay toll. The public bus transport will be exempted from paying the toll.
>
> *Accessibility*
>
> The peripheral ring road (PRR) is speculated as a toll road. Provisions are provided for toll booths for tolling the road system. *Accessibility to peripheral ring road (PRR) is restricted* to the following categories of roads:
>
> National Highways;
>
> State Highways;
>
> Major District roads.
>
> The proposed project being a new State highway having 65 km length with right of way of 75 m the project falls under Category "B" in the Schedule of the EIA Notification, 2006 and requires environmental clearance from SEIAA." (emphasis supplied)

41. The PRR project is expected to be an 8 lane main carriageway highway (4 + 4 bi-directional), along with a 6 lane road service road (3 + 3 bi-directional) having a right of way of 75 m and total length of 63.5 km. The EIA report stipulates that the PRR project was conceptualised with the salient purpose of decongesting the traffic in the city and catering to intercity connectivity and intercity traffic. This, it was stated, would significantly reduce pollution intensity and travel time. The EIA report clarifies that the project is designed to cater to high speed vehicular traffic with vehicles plying at speeds of 100 km/hr, where possible, and 80 km/hr in other places.

42. Moreover, the report stipulates that the project also comprises of ten interchanges and sixteen toll booths. It is stated that access to the road is restricted only to national highways, State highways and major district roads. In this view of the matter, there is no doubt that the PRR project is an expressway falling within the ambit of Para 7(*f*) of the Schedule to the 2006 Notification. The PRR project commenced on the issuance of the final notification under Section 19(1) of the BDA Act on 29-6-2007. Having concluded that the PRR project is an expressway, the appellant as project proponent was under an obligation under Para 7(*f*) of the Schedule to the 2006 Notification to seek a prior EC to implement the project.

F. ***Compliance with the procedure under the EIA Notification, 2006***

43. The next question to be analysed is whether the EIA process followed by the appellant was in compliance with the procedure stipulated under the 2006 Notification. In the written submissions and the rejoinder filed by the appellant before this Court, it was contended that the EIA process leading up to the preparation and submission of the EIA report to the SEAC was in compliance with the procedure stipulated under the 2006 Notification. It was contended that the NGT erred in concluding that there was a substantial delay in the preparation of the EIA report and in suspending the operation of the EC granted to the PRR project. On the other hand, in the written submissions filed by the respondents, it was contended that the delay in the preparation of the EIA report was in contravention of the OM dated 22-3-2010 issued by MoEFCC prescribing a validity period of four years for TORs from the date on which they are issued. In assessing the rival contentions, it becomes necessary to analyse the EIA process followed by the appellant, leading up to the grant of the EC.

44. On 10-9-2009, the appellant filed an application with the SEAC seeking a prior EC for the PRR project as a Category 'B' project under the 2006 Notification. In accordance with the 2006 Notification, the SEAC at its 46th meeting held on 21-11-2009 formulated and issued the TOR for the PRR project on which basis the appellant was required to carry out the EIA process. The final EIA report was placed before the SEAC and the SEIAA in November 2014. The SEAC held meetings on 5-4-2013, 9-6-2014, 11-8-2014, 12-8-2014 and 11-11-2014, 18-11-2014. At its final meeting between 11-18 November, the SEAC recommended the grant of an EC for the PRR project to the SEIAA. The EC was granted on 20-11-2014.

45. The SEAC, at its 101st meeting dated 5-4-2013 decided to recommend to the SEIAA the closure of the project file since the TORs were issued over two years prior to the meeting and there was no correspondence by the appellant indicating any progress on the EIA process. Acting upon the letter of the SEAC, the SEIAA, at its 66th meeting dated 17-5-2013 closed the file relating to the grant of EC for the PRR project and communicated its decision to the appellant on 25-7-2013. By a letter dated 24-8-2013, the appellant requested the SEIAA to reopen the file. The SEIAA, at its 71st meeting dated 3-9-2013 decided to reopen the file, subject to the payment of the requisite processing fee. A public hearing was conducted on 6-2-2014. The SEAC, at its 111th meeting dated 9-6-2014, decided to defer the consideration of the appellant's proposal as the EIA report was not made available to the Committee members. By a letter dated 2-8-2014, the appellant placed before the SEAC the EIA report which was prepared after the public hearing was conducted in February 2014. The SEAC, at its 115th meeting dated 11-8-2014 to 12-8-2014 noted numerous deficiencies in the information submitted by the appellant and decided to obtain additional information which was communicated to the appellant on 28-8-2014.

46. The appellant provided to the SEAC a point-wise reply to the information sought along with additional samples on groundwater, surface water and soil. A final EIA report was prepared by the appellant in October 2014 and submitted to the SEAC. At its 121st meeting between 11-11-2014 and 18-11-2014, the SEAC recommended to the SEIAA the grant of EC to the PRR project. The SEIAA issued the EC on 20-11-2014.

47. Under the 2006 Notification, the process to obtain an EC for new projects comprises a maximum of four stages, all of which may not apply depending on the specific case stipulated under the Notification: screening, scoping, public consultation and appraisal. At the scoping stage, the project proponent submits information in Form 1 to the EAC or the SEAC, as the case may be, for the preparation of a comprehensive TOR. Following this, the project proponent prepares a summary EIA for the purpose of the public consultation process. The summary EIA is presented at the public hearing to invite comments and objections, if any. Based on the comments received and after addressing the objections raised, a final EIA report is prepared and sent to the regulatory authority concerned. At this stage, the regulatory authority must examine the documents "strictly with reference to the TOR" and communicate any inadequacy to the EAC or the SEAC, as the case may be, within 30 days of the receipt of the documents. Within sixty days of the receipt of all the documents, the EAC or the SEAC, as the case may be, shall complete the appraisal process as prescribed in Appendix V. The appraisal stage involves detailed scrutiny by the EAC or the SEAC of all the documents submitted by the applicant for the grant of EC. The EAC and the SEAC are charged with evaluating the information submitted by the applicant in Form 1/Form 1-A with reference to the TOR which was issued for the preparation of the EIA report.

48. Significantly, the process of obtaining an EC commences from the production of the information stipulated in Form 1/Form 1-A. Information submitted in Form 1 relies on data and information on an "as is" basis at the relevant time of submitting information. Material information regarding the particulars of the proposed project as well as the potential impact on the environment is sought to enable the EAC or the SEAC to prepare a comprehensive TOR on which basis the applicant proceeds to prepare the EIA report. As the information in Form 1 is submitted on the basis of prevailing environmental conditions as on the date of its preparation, it is necessary to ensure that the EIA process is contemporary to the submission of information in Form 1 and the issuance of the TOR. MoEFCC, noting situations where some EIA reports were prepared belatedly on the basis of outdated TORs, issued a Notification on 22-3-2010 prescribing a time-limit for the validity of TORs which stated thus:

"Office Memorandum

Sub.: Time-limit for validity of terms of reference (TORs) prescribed under EIA Notification, 2006 for undertaking detailed EIA studies for developmental projects requiring environmental clearance — Regarding.

The EIA Notification, 2006 has prescribed a time-limit for validity environmental clearance granted to a project. However, no time-limit has been specifically provided under the EIA Notification for the TORs prescribed for undertaking detailed EIA studies. *As a result, the TORs once prescribed would continue to be valid indefinitely, which is definitely not desirable because the TORs are very much site specific and are dynamic to some extent depending upon the site features, its land use and the nature of development around it.* The matter has been considered in the Ministry of Environment & Forests.

It has been decided that from 1-4-2010, the prescribed TORs would be valid for a period of two years for submission of the EIA/EMP reports, after public consultation where so required. This period will be extendable to the 3rd year, based on proper justification and approval of the EAC/SEAC, as the case may be. Thus, an outer limit of three years has been prescribed for the validity of the TORs with effect from 1-4-2010.

In case of the proposals which have been granted TORs prior to the issue of this OM, the EIA/EMP reports should be submitted, after public consultation where so required, no later than four years from the date of the grant of the TORs, with primary data not older that three years." (emphasis supplied)

49. MoEFCC stated that it was clearly undesirable to indefinitely continue a TOR. The environment is, by its very nature, dynamic. Soil quality, air characteristics and surrounding flora and fauna are among the characteristics of the environment which are constantly in a state of flux. A robust framework of environmental governance accounts for the dynamic nature of the environment. It is for this reason that project proponents are also required to ensure the submission of an Environmental Management Plan and compliance with the

monitoring procedures envisaged under the 2006 Notification. An indefinite TOR defeats the very purpose which underlies the 2006 Notification for it may lead to situations where the state of the environment has changed drastically, yet the EIA process is carried out on the basis of outdated information. For this reason, MoEFCC prescribed a validity period of two years for TORs, which could be extended by the EAC or the SEAC only by another year. Furthermore, extension is to be granted only where the project proponent provides adequate justification in writing. Relevant to the present case, the Notification dated 22-3-2010 stipulates that where TORs were granted prior to the issue of the OM, the EIA report must be submitted within four years from the date on which the TOR was issued, with primary data not being older than three years.

50. By another Notification dated 22-8-2014, MoEFCC clarified the validity of the TORs prescribed under the 2006 Notification in the following terms:

> "… 2(*iv*) Extension of validity of TORs beyond the outer limit of three years for all projects or activities and four years for River Valley and HEP projects *shall not be considered by the Regulatory Authority. In such cases, the project proponent will have to start the process de novo and obtain fresh TORs in case the proponent is still interested in pursuing the clearance for the project. Reuse of old baseline data (provided it is not more than 3 years old) for the purpose of preparation of fresh EIA and EMP report will be considered subject to due diligence by the EAC/SEAC which may make appropriate recommendations including the need for revalidation.* Baseline data older than 3 years will not be used for preparation of EIA/EMP report. In any case, the PH shall have to be considered afresh in such cases." (emphasis supplied)

MoEFCC clarified that where the time period prescribed for the TOR has expired, the regulatory authority "shall not" consider any further extension and a project proponent seeking to continue the project must initiate the EIA process *de novo*. This includes the submission of fresh information in Form 1 and the prescription of a new TOR to guide the preparation of the EIA report. The extraordinary prescription of conducting the EIA process afresh was in keeping with the commitment to a framework of environmental governance which accounts for the dynamic nature of the environment.

51. By another Notification dated 7-11-2014, MoEFCC issued a notification clarifying the time-limit prescribed for TORs as well as the consideration of EIA reports by the SEAC which relied on primary data older than three years. The notification, insofar as it is relevant reads:

> "2. The matter has been further examined in the Ministry in the light of the decision taken as part of clearance reform and it is felt that it would not be logical to start the process of environment clearance de novo including taking fresh terms of reference (TORs), *if the baseline data collected for preparation of EIA/EMP report and/or public consultation are more than three years old.*

3. Thus, it has been decided to substitute Para 2(*v*) of the abovereferred Office Memorandum No. J-110113/41/2006-IA.II(I) (part) dated 22-8-2014 with the following:

> '(*v*) (*a*) All the projects which have been recommended by the Expert Appraisal Committee (EAC) shall be considered by the competent authority even if data collected has become more than three years old *as the TORs itself used to have three years' validity and extendable by one more year*.
>
> (*b*) All the projects where the project proponents have already submitted their EIA/EMP Report for consideration by the EAC though the cases have still not been placed before the EAC and meanwhile the data has become more than three years old, shall be considered for the same reasons as given in para (*a*) above.' " (emphasis supplied)

52. This notification stipulated that the "authority concerned" shall consider EIA reports for the grant of EC even where the primary data relied upon was collected beyond three years from the preparation of the EIA report. This was because the TOR itself was extendable beyond three years by an additional year. Thus, where the EIA report is prepared within the prescribed time period for the validity of the TOR, the authority concerned may consider an EIA report which relies on primary data which was collected more than three years ago i.e. in the fourth year preceding the preparation of the EIA report. The effect of the notification was to prescribe a uniform validity period of four years for both TORs and the primary data collected. However, the stipulation that a fresh EIA process must be undertaken where the TOR has expired was retained.

53. In the present case, the TOR was issued on 21-11-2009, prior to the issue of the OM dated 22-3-2010. Hence, by virtue of the notification, the appellant was required to submit the EIA report within four years from the date of the issuance of the TOR i.e. before 21-11-2013. The SEAC was under a corresponding obligation to refuse the consideration of any EIA report prepared after the expiry of the TOR. Public hearing was conducted belatedly only on 6-2-2014 and the EIA report prepared thereafter was placed before the SEAC only on 2-8-2014, nearly a year after the TOR had expired. We cannot gloss over the failure of the project proponent to comply with the OMs issued by MoEFCC prescribing a time-limit for the validity of the TOR. The decision of the SEAC to proceed with the EIA report as well as seek additional information from the project proponent despite the expiry of the TOR suffers from a non-application of mind and is unsustainable.

54. Moreover, primary data was collected in December 2009 and February 2010. The EIA report was prepared after the public hearing was conducted in February 2014, nearly a year after the primary data had expired in terms of the OMs issued by MoEFCC. In the final EIA report prepared in October 2014, it is stated:

"1.8. Study Period

To prepare the Rapid Environmental Impact Assessment (REIA) report for the proposed project, *the data was collected from December to February (2009-2010)* in the study area. Micro Meteorological parameters were recorded such as wind speed, wind direction and relative humidity on hourly basis during the study period."

"3.5. Monitoring period

Meteorological data was collected for the study area during *the months of winter [December, January and February (2009-2010)],* wind speed, wind direction, temperature and relative humidity were recorded on hourly basis for the total study period." (emphasis supplied)

55. Admittedly, the EIA reports prepared in August and October 2014 relied on primary data which was collected between the months of December 2009 and February 2010. The EIA report was prepared prior to the coming into force of the OM dated 7-11-2014 by which MoEFCC extended the validity of primary data collected from a period of three years to four years. Even if the benefit under the notification were extended to the appellant, it was duty-bound to collect fresh primary data upon the expiry of four years from the date of issuance of the TOR i.e. 21-11-2013. This was evidently not done. This being the case, there is no manner of doubt that the final EIA report prepared on the basis of an expired TOR and primary data was in contravention of the OMs dated 22-3-2010, 22-8-2014 and 7-11-2014 issued by MoEFCC and could not form the basis of a validly issued EC.

56. It is also pertinent to note that a rapid EIA along with a socio-economic study was prepared by M/s Ramky Enviro Engineers Ltd., the EIA consultant for the PRR project on behalf of the appellant in November 2010. This EIA report relied on primary data collected between the months of December 2009 and February 2010 and analysed the impact of the proposed PRR project on the environment. A perusal of both the 2010 rapid EIA report and the EIA report prepared in October 2014 reveals that the data as well as the analysis of the impact of the proposed PRR project on the environment in the 2014 report is similar to that in the 2010 rapid EIA report. It appears that the EIA consultant has reproduced verbatim, portions of the rapid EIA report which was prepared in the year 2010. No effort was taken by the appellant to ensure the fresh collection of data in compliance with its obligations under the OMs issued by MoEFCC. In this view of the matter, the contention urged on behalf of the respondents that there was a substantial delay in the carrying out of the EIA process, vitiating the process commends itself for our acceptance.

57. In the rejoinder and brief note of submissions filed before this Court by the appellant, it was contended that any delay in the collection of primary data was remedied by the collection of fresh samples in reply to the questions raised by the SEAC in its 115th meeting dated 11-8-2014 to 12-8-2014. The primary data furnished in reply, it was urged, dated to the year 2014 and not 2010. In

assessing this contention, it is necessary to advert to the questions raised by the SEAC to the appellant. The SEAC, at its 115th meeting noted shortfalls in the information submitted by the appellant and decided to obtain additional information. This was communicated to the appellant on 28-8-2014. The SEAC sought additional information on the following:

"1. EIA accredited consultant for Highway projects was not present.

2. Declaration of experts involved in preparation of EIA report is not furnished in the report.

3. Accessibility to all villages on either sides of the proposed road has to be preferably through underpasses.

4. Baseline data of hardness of borewell water furnished in the report is found to be wrongly analysed.

5. Surface water analysis report is found to be with wrong results.

6. All the parameters required to be tested as per NABET guidelines are to be analysed and furnished with lab reports.

7. Sampling locations are to be marked on maps windrose diagram to be superimposed.

8. In AAQ analysis, CO concentration is reported to be at dangerous level and this has to be checked again.

9. EMP to be revised and has to be site specific.

10. Sensitive location monitoring to be explicitly mentioned in EIA report with details of location.

11. Regarding information on forest land in the EIA report there is contradicting information in the report.

12. Trees to be planted are to be known in advance to grow samplings.

13. Soil analysis to be revalidated.

14. Borrow area of earth to be part of EIA report.

15. Emergency relief operation to be included.

16. As per the proposals submitted in page 10, "No forest land is involved in the proposed project. Hence forest clearance is not required" whereas in the same proposal page 21 "the total forest land to be diverted is estimated to be 1.5 ha in Jarakbande Kaval at Ch. 12.000 to 12.500". The contradictory information to be explained with documents.

17. In the same proposal under the head 10.3 afforestation plan: "Species proposed for afforestation plan are avicennia officinalis, avicennia alba, rhizophora mucronara & rhizophora aciculate, etc. They are mangrove-tropical trees growing in shores i.e. they are endemic in seashores (coastal area in the Kundapur coast), etc.

18. PP is advised to consult the forest wing under BDA to design (1 to 2) rows depending on the availability of the area, the strip plantations on either side of the proposed road with suitable native fruit-yielding shade-bearing & fast-growing species (instead of this consultant), to improve the

micro climate. Committee decided to obtain additional information sought above and to recall the proposal after receipt of the information."

By its letter dated 12-11-2014, the appellant provided to the SEAC a point-wise reply to the information sought along with additional samples on groundwater, surface water and soil.

58. The questions framed by the SEAC and responses filed by the appellant demonstrate that there existed serious deficiencies in the EIA report which was submitted to the SEAC. This included outdated data on the AAQ air analysis, soil quality, forest land and the number of trees to be planted. The SEAC noted certain shortfalls which concerned limited aspects of the EIA report including the baseline data of hardness of borewell water, soil analysis and forest land. In addition to this, the SEAC directed that certain samples collected were to be marked on the map submitted to the SEAC in the EIA report. Significantly, the SEAC noted the discrepancy concerning the disclosure of the existence of forest land. This aspect shall be explored in the course of the judgment.

59. The SEAC framed questions and sought information which was clarificatory in nature and covered specific substantive aspects of the data submitted in the EIA report. The EIA report on the other hand covers a wide range of matters which include terrain, topography, land requirements, terrain classification, wind and noise pattern analysis, air quality analysis, surface and groundwater analysis, soil environment analysis, impact of flora and fauna and environmental monitoring plans.

60. The submission of additional fresh data on a few points raised in the form of a query on behalf of the SEAC does not remedy the general obligation to ensure that the EIA report was prepared within a time period of four years from the date of the issuance of the TOR, relying on primary data that was no older than four years. Merely because some additional information was sought which required the furnishing of additional details and the collection of fresh samples, it cannot be said that such an exercise cures the defect arising from the preparation of an EIA report outside the time period prescribed by MoEFCC. Significantly, even at the relevant time when information was sought from the project proponent, both the TOR as well as the primary data upon which the EIA report was prepared was beyond the period of their validity. In such a case, the SEAC, by seeking additional information, has traversed beyond the power conferred upon it under the 2006 Notification.

61. The SEAC proceeded to recommend to the SEIAA the grant of the EC to the PRR project in contravention of the obligations stipulated under the OMs issued by MoEFCC. Significantly, the SEAC considered the final EIA report only at its 121st meeting between 11-11-2014—18-11-2014 when the OM dated 22-8-2014 issued by MoEFCC was in force. The SEAC was under an obligation to direct the appellant to conduct the EIA process *de novo*. The SEAC and the project proponent cannot circumvent the obligation to ensure

reliance on contemporary data by seeking additional information beyond the prescribed validity of the TOR and primary data. The SEAC has clearly erred in recommending to the SEIAA the grant of EC despite the non-compliance by the appellant with the prescribed time-limit for the preparation of the EIA report.

G. ***Deficiencies in the EIA report***

G.1. ***Accreditation of the EIA consultant***

62. In the written submissions submitted by the appellant, it was contended that the EIA process was undertaken on behalf of the appellant by M/s Ramky Enviro Engineers (P) Ltd., a non-accredited EIA consultant. This, it was submitted, was in contravention of the OM dated 2-12-2009 issued by MoEFCC mandating that only sector-specific accredited EIA consultants should be engaged to carry out the EIA process.

63. MoEFCC, by its Notification dated 2-12-2009, mandated the registration of EIA consultants under the scheme of Accreditation and Registration of the National Accreditation Board of Education and Training/ Quality Council of India. The relevant portion of the Notification reads:

> "… It has been felt in the Ministry that there is a need to enhance the quality of EIA reports as the consultants generally undertake preparation of EIA/EMP Reports in many sectors and in some instances without requisite expertise and supporting facilities like laboratories for testing of samples, qualified staff, etc. The good quality EIA Reports are prerequisites for improved decision-making.
>
> * * *
>
> 3. After detailed consideration of the issues relating to the accreditation of the consultants, the following decisions have been taken:
>
> • *All the consultants/public sector undertaking (PSUs) working in the area of Environmental Impact Assessment would be required to get themselves registered under the scheme of Accreditation and Registration of the* NABET/QCI.
>
> • *Consultant would be confined only to the accredited sectors and parameters for bringing in more specificity in the EIA document.*
>
> * * *
>
> 4. It is decided, in the above factual matrix that no EIA/EMP Reports prepared by such consultants who are not registered with NABET/QCI shall be considered by the Ministry after 30-6-2010." (emphasis supplied)

64. MoEFCC prescribed that it is mandatory for every consultant or PSU acting as an EIA consultant to get themselves registered under the accreditation scheme of the NABET/QCI. Moreover, a consultant would be confined to the sector for which they receive accreditation to ensure expertise and specificity in the carrying out of the EIA process. This was also to ensure the availability of facilities like laboratories. It was stated that a good quality EIA report is a precondition for improved decision-making. In the written submissions before this Court, the appellant urged that M/s Ramky Enviro Engineers (P) Ltd. was hired in November 2009 upon the issuance of the TORs prior to the coming

into force of the OM dated 2-12-2009. Consequently, there was no obligation to engage an accredited consultant for the preparation of the EIA report. Be that as it may, Ramky Enviro Engineers (P) Ltd., Hyderabad was granted the status of a "consultant with accreditation" vide OM dated 30-6-2011 issued by MoEFCC. At the time of the preparation of the EIA report which was submitted to the SEAC, the EIA consultant had received accreditation. However, the learned counsel appearing on behalf of the respondents has also placed on record a copy of the minutes of the 4th Accreditation Committee Meeting for Re-Accreditation held on 22-11-2013. Ramky Enviro Engineers (P) Ltd., Hyderabad was considered in the following terms:

> "21. Ramky Enviro Engineers (P) Ltd., Hyderabad
>
> The case of Ramky Enviro Engineers was discussed earlier in RAAC meeting dated 28-10-2013. Inadequacies with respect to (*a*) Variation in names of candidate in list of experts/persons included in EIA (*b*) Implementation of QMS, and (*c*) Quality of EIA were observed. Ramky Enviro was asked to explain the reasons for shortfalls to Accreditation Committee (AC)
>
> * * *
>
> Results of the Re-accreditation (RA) assessment are given below:
>
> Ramky Enviro Engineers have scored more than 60% as an organisation and therefore qualifies for Cat. A EIA projects. However, in respect of completeness and quality of EIA, the marks are less that 60% indicating scope of improvement vide points mentioned below in relevant section.
>
> 2.1.1. Scope of accreditation

Sl. No.	*Sector No. as NABET Scheme*	*Name of Sector*	*Cat.*
1.	1	Mining	A
2.	40	Thermal power plants	A
3.	20	Petrochemical based processing	A
4.	21	Synthetic organic processing	A
5.	1	Industrial estate/parks/SEZ	A
6.	32	TSDF	A
7.	38	Building and large construction	A
8.	39	Area and township projects	A"

65. The Committee noted the deficiencies in the performance of M/s Ramky Enviro Engineers (P) Ltd. as an EIA consultant and indicated a scope for improvement. The Committee then proceeded to record the sectors for which M/s Ramky is granted accreditation. Conspicuous in its absence is the grant of accreditation for serving as an EIA consultant for highway projects. When the final EIA report for the PRR project was prepared in August/October 2014, M/s Ramky lacked accreditation to serve as an EIA consultant for highway projects. This aspect shall be borne in mind in deciding the eventual directions which this Court seeks to issue.

G.2. ***Forest land***

66. Essentially, the contention urged on behalf of the respondents in its written submissions before this Court is that there was a patent and abject failure on the part of the appellant as project proponent, to disclose the diversion of forest land for the proposed PRR project. The appellant, it was contended, concealed material information concerning the diversion of forest land and absent the requisite forest clearance, the EC granted for the PRR project stands vitiated.

67. In the draft EIA report prepared for the PRR project, it was stated:

> "The Forest (Conservation) Act, 1980
>
> …No forest land is involved in the proposed project. Hence, forest clearance is not required."

Despite an indication that the proposed PRR project did not involve the diversion of forest land, the draft EIA report stated:

> "…As per the proposed design, the total forest land to be diverted is estimated to be 1.5 ha and the chainage wise details of the same are presented as:
>
> Table 2.2 B. Details of forest area proposed to be diverted for the Project Road

Sl. No.	*Proposed chainage*	*Length (km)*	*Forest*	*Village*	*Survey No.*	*Area of the forest to be diverted in ha*
1.	Ch 12.000 to 12.500	763 M	Jarakabande kavalu	Yelahanka	59	1.5"

The draft EIA report noted that 1.5 ha of forest land in Jarakabande kavalu is proposed to be diverted between linkages Ch 12.000 and 12.500 for a portion of the proposed road totalling 763 m. A similar contradiction is noted in the final EIA report prepared in October 2014:

> "Initial portion of the Highway is along protected forest areas. From the site visits and discussion with officials, it is inferred that there are no noticeable habitats or wild or endangered animal habitats along close vicinity of the project road…."

The EIA report affirms at numerous places that 1.5 ha of forest land will be affected by a part of the project. Despite this, the EIA report proceeds to state:

"Sl. No.	*Type of clearance*	*Statutory Authority*	*Applicability*	*Project stage*	*Responsibility*
1.	Prior environmental clearance under EIA Notification, 2006	SEIAA	Applicable	Pre-construction	BDA

2.	*Forest clearance under Forest Conservation Act, 1980*	*Karnataka State and Forest Dept & MoEF*	*Not applicable*	*Pre construction*	*BDA"*

68. The EIA report proceeds on the assumption that no forest clearance is required despite the diversion of 1.5 ha of forest land. No explanation has been provided by the appellant either in the EIA report or in the written submissions before this Court as to why it was exempt from seeking the requisite forest clearance. The only indication of remedying the loss of forest cover provided in the EIA report is thus:

> "10.4. Afforestation Plan
>
> Affected Area — Around 1.50 ha.
>
> Area proposed to be afforested — 4.5 ha (three times the affected area)
>
> Afforestation programme will be implemented through the Forest Department, BDA and regular monitoring will be ensured.
>
> Land will be identified in consultation with State Forest Department, Bangalore."

69. The contradictory stand by the appellant on the forest cover proposed to be diverted for the proposed project was noted by the SEAC in its 115th meeting dated 11-8-2014 to 12-8-2014. The SEAC sought additional information from the appellant on numerous grounds, of which one concerned the potential loss of forest cover. The SEAC, in its letter to the appellant, noted the contradictory stand of the appellant and stated:

> "…16. As per the proposals submitted in p. 10, 'No forest land is involved in the proposed project. Hence forest clearance is not required" whereas in the same proposal p. 21 "the total forest land to be diverted is estimated to be 1.5 ha in Jarakbande Kaval at Ch. 12.000 to 12.500". The contradictory information to be explained with documents."

70. The appellant furnished a pointwise reply to the question raised by the EAC. It replied to the question concerning forest land by stating:

> "As per the proposed design the total forest land to be diverted is estimated to be 1.5 ha in Jarakbande Kaval at Ch. 12.000 to 12.500.
>
> 25 acres of land available in possession with BDA is proposed to be given to Forest Department in lieu of 25 acres of forest land (PRR chainage between 12th and 13th km in Survey No. 59 of Jarakbande Kaval approved vide by authority Subject No. 80/89 dated 17-3-2009) needed to PRR."

The appellant confirmed that 1.5 ha of forest land is proposed to be diverted. It was stated that in lieu of the 25 acres of forest land required, the appellant shall make available to the Forest Department 25 acres of land available with it.

71. We cannot gloss over the patent contradiction of the appellant as the project proponent in disclosing the existence of forest land to be diverted for the purposes of the PRR project. Despite a clear indication that a total 1.5 ha of forest land is to be diverted for the purpose of the PRR project, the appellant

sought to remedy its failure in seeking the requisite clearances in a post facto manner by stipulating that 25 acres of land available with it is to be given to the Forest Department in lieu of the forest cover proposed to be diverted for the project. Post facto explanations are inadequate to deal with a failure of due process in the field of environmental governance. While the appellant submitted to the EAC that it had already obtained the consent of the Forest Department to divert the proposed forest land, a contradictory stance was taken in the written submissions filed by the appellant:

> "It is stated herein that the PRR passes through 25 acres of forest land situated in Jarakbande Kaval Forest Area, Yelahanka Hobli, Bangalore, North Taluk and since the alignment inevitably passed through this, the Forest Department was requested on 28-8-2018 to handover the forest land to the appellant for the purpose of the PRR project. Thereafter, the Forest Department replied on 12-1-2019 requesting for alternate land of 25 ac."

72. It was stated by the appellant that it was only on 28-8-2018 that it sought to remedy its failure in obtaining the requisite forest clearance by requesting the Forest Department to handover the forest area involved in the project. The appellant, in its rejoinder filed before this Court states:

> "…*It is admitted that the PRR does indeed pass through the forest land in Jarakabande Kavalu forest area*. It is also pertinent to point out here that the appellant has also taken necessary steps to ensure that land measuring 25 acres have also been provided as alternate land for the afforestation plan due to the forests to be cleared in the Jarakabande Kavalu forest area as shown in p. 238 of IA No. 53243. *The contradictions mentioned in the EIA report have subsequently stood corrected and clarified before the EAC and the SEIAA*." (emphasis supplied)

73. In addition to the admission by the appellant of the contradictions in the EIA report, it sought to substitute the requisite forest clearance with an agreement with the Forest Department to provide an alternative site for afforestation. This is not sustainable in law. Compliance with the 2006 Notification and other statutory enactments envisaged in the EIA process cannot be reduced to an ad-hoc mechanism where the project proponent seeks to remedy its abject failure to disclose material information and seek the requisite clearances at a belated stage.

74. The Karnataka SEIAA, in its affidavit before the NGT sought to contend that the EC was granted subject to the appellant obtaining the required forest clearance. It was stated:

> "Forest Area
>
> (*b*) Environmental clearance has been provided by SEIAA is for the present alignment of the road as submitted to SEIAA and any change in the scope of the project requires fresh appraisal. In this regard, it may be noted that details of the forest land involved are covered in the Environment Impact Assessment Report. The proponent has decided to provide 25 acres of land available with them to the Forest Department.

It may also be noted that as per law, clearances from other statutory authorities is not mandatory for consideration of the application for environment clearance (hereafter, also referred to as "EC") as it is prior environmental clearance. Nonetheless, specific conditions have been imposed in the EC that such permission shall be obtained by the project proponent.

* * *

It is also important to note that the EC is subject to compliance with the conditions requiring obtaining of required clearances from the competent authority in accordance with the applicable law such as prior clearances relating to forests and lakes. Any non-compliance will be construed as a violation of the EC conditions and will be dealt with in accordance with law."

In the view of the Karnataka SEIAA, there was no deficiency in the grant of the EC so long as specific conditions were imposed on the project proponent to seek the requisite clearance.

75. Prior to the notification, prior clearance from regulatory bodies or authorities was not required. MoEFCC, by a Notification dated 31-3-2011, prescribed the procedure to be followed for projects which involve forest land in the grant of an EC. The relevant portion reads:

"…In this regard, reference is also invited to Para 8(*v*) of the EIA Notification, 2006 which reads as follows:

'Clearances from other regulatory bodies or authorities shall not be required prior to receipt of applications or prior environmental clearance of projects or activities, or screening, or scoping, or appraisal, or decision by the regulatory authority concerned, unless any of these is sequentially dependent on such clearance either due to a requirement of law, or for necessary technical reasons.

* * *

However, in view of the complexity of the issues involved, the matter has been considered further in the Ministry and in suppression of the earlier instructions, it has now been decided to adopt the following procedure for consideration of such projects.'

* * *

I. (B) *Projects for which TORs have already been prescribed by the proposal for environmental clearance is yet to be submitted*:

In case of the proposals, which involve forest land, in part or in full, and for which TORs have already been prescribed, the project proponents are advised to ensure that the requisite Stage I forestry clearance has been granted and its copy is submitted along with their application/proposal for environmental clearance. Alternatively, the proponent should delete from their land requirement, the forest land involved in the project and the proposal so amended without any forest land may be submitted for appraisal by the EAC.

In case of projects where forest diversion (Stage I clearance) has been approved for part of the total forest land involved in the project, the proposal will be considered only for the land for which forest diversion has been approved and the non-forest land, if any…"

76. MoEFCC stipulated that where TORs have been issued and the EIA report for the grant of EC is yet to be submitted, project proponents must ensure that the requisite forest clearance has been granted. A copy of the grant should be submitted along with their application for the grant of EC. Alternatively, the project proponent may delete from the proposed project any forest land that may be affected by the project. MoEFCC clarified that where forest clearance has been obtained for only a part of the total forest land involved in the project, the proposal will be considered only to the extent of the land for which forest diversion has been approved.

77. By two subsequent Notifications dated 9-9-2011 and 18-5-2012, the procedure concerning the grant of EC for projects involving forest land stood amended in the following terms:

"… (*ii*) At the stage of consideration of proposals for EC in respect of projects involving forest land, the project proponent would inform the respective EACs about the status of their application for forestry clearance along with necessary supporting documents from the Forest Authorities concerned. It will clearly be informed to the EAC whether the application is at the State level or at the Central level. The EAC will take cognizance of the involvement of forest land and its status in terms of forestry clearance and make their recommendations on the project on its merits. After the EAC has recommended the project for environmental clearance, it would be processed on file for obtaining decision of the competent authority for grant of environmental clearance. In the cases where the competent authority has approved the grant of environmental clearance, the proponent will be informed of the same and a time-limit of 12 months, which may be extended in exceptional circumstances to 18 months, a decision on which will be taken by the competent authority, will be given to the proponent to submit the requisite Stage I forestry clearance. *The formal environmental clearance will be issued only after the Stage I forestry clearance has been submitted by the proponent.*

(*iii*) In the eventuality that the Stage I forestry clearance is not submitted by the project proponent within the prescribed time-limit mentioned at Para (*ii*) above, as and when the Stage I forestry clearance is submitted thereafter, such projects would be referred to EAC for having *a relook on the proposal on case-by-case basis depending on the environmental merits of the project and the site*. In such a situation the EAC may either reiterate its earlier recommendations or decide on the need for its reappraisal, as the case may be. In the eventuality, a reappraisal is asked for, the Committee will simultaneously decide on the requirement of documents/information for reappraisal as also the need for a fresh public hearing." (emphasis supplied)

78. Project proponents are duty-bound to disclose the existence of forest land and inform the SEAC of the status of their application for forest clearance at the time of submitting the EIA report for the grant of the EC. Where the competent authority has granted the EC for a project, the project proponent is then duty-bound to obtain and submit to the competent authority the requisite Stage I forest clearance for the proposed project within 12 months or 18 months, as the case may be. Where the project proponent fails to submit the requisite forest clearance within the prescribed time, the EAC or the SEAC are authorised to re-examine the project and decide whether there is a need for the reappraisal of the project. The process envisaged for the disclosure of the forest clearance procedure as well as the submission of the grant of forest clearance subserves the purpose of ensuring timely and adequate protection of forest land. Where the EAC or the SEAC is of the opinion that additional documents are required upon the failure of the project proponent to submit the requisite forest clearance within the prescribed time, it may direct that a fresh public hearing be conducted.

79. The appellant attempted to remedy its contradictory stand on the forest land proposed to be diverted and its failure to obtain the requisite forest clearance by submitting to the SEAC an undertaking to ensure afforestation in an alternate plot of land owned by it in collaboration with the Forest Department. Such a procedure is neither envisaged under the 2006 Notification nor is in compliance with the notifications issued by MoEFCC from time to time. Similarly, the SEAC was under an obligation to ensure that the project proponent had complied with the stipulated procedure for the grant of forest clearance. Instead, the SEAC proceeded on the clarification issued by the appellant in contravention of the OMs dated 31-3-2011, 9-9-2011 and 18-5-2012. Despite the numerous deficiencies that were noted in the minutes of the SEAC meeting, it proceeded to recommend to the SEIAA the grant of EC for the PRR project. The decision of the SEAC to recommend to the SEIAA the grant of the EC, despite the contradictory stand of the appellant as well as its failure to furnish adequate reasons as to why it was exempt from seeking forest clearance, suffers from a non-application of mind.

G.3. ***Trees***

80. In the written submissions filed before this Court, it was contended by the respondents that there was a material concealment by the project proponent of the number of trees proposed to be felled for the PRR project. While the appellant stated that only 200-500 trees were required to be felled, the number was in fact as high as 16,000 trees. The appellant, as project proponent, stated in the 2014 EIA report:

> "Around 519 plants are felled for the project; the minimum of three times the number of felled plants will be replanted in the nearby areas."

81. The Deputy Conservator of Forests, BDA, in a reply dated 24-4-2009 to a right to information query stated:

"With respect to the information sought under the Right to Information Act, 2005, the number of trees that will be cut for the formation of the peripheral ring road — Part I have been provided below:

Sl. No.	*Information sought for*	*Information provided*
	Here is the information sought regarding cutting of trees for the formation of the peripheral ring road Part I	The below mentioned trees belong to the Horticulture & Forest Department will be cut for the formation of the peripheral ring road Part I *1*. Coconut trees: 3837 *2*. Mango trees: 3142 *3*. Guava trees: 1361 *4*. Sapota trees: 0818 *5*. Arecanut trees: 0287 *6*. Jamun trees: 0084 *7*. Jackfruit trees: 0059 *8*. Tamarind trees: 0040 *9*. Teak trees: 0201 *10*. Silver oak trees: 0028 *11*. Neem trees: 0028 *12*. Eucalyptus trees: 7000
	Total ...	16,785"

82. The Deputy Conservator of Forests revealed that around 16,785 trees were proposed to be cut for the purpose of executing the PRR project. The abject failure of the project proponent in disclosing the number of trees required to be felled is also evident from the rejoinder filed by the appellant before this Court. It was submitted:

"13. In reply to Para 6: As had been stated earlier, the clarifications regarding cutting of trees and the corrections have been made subsequently and additionally a further 25 acres of land has been provided for the purpose of afforestation in an alternate piece of land. The same has been shown in p. 184 of IA No. 53243 of 2019."

83. The EIA report prevaricated by recording that the area required for the proposed PRR project has only a few trees. Though the development of infrastructure may necessitate the felling of trees, the process stipulated under the 2006 Notification must be transparent, candid and robust. Hiding significant components of the environment from scrutiny cannot be an acceptable method of securing project approvals. There was a serious lacuna in regard to disclosures and appraisal on this aspect of the controversy.

G.4. ***Pipelines***

84. The EIA process was challenged on the ground that by virtue of a Notification dated 12-6-1999, the Central Government acquired certain lands for laying a petroleum pipeline between Mangalore and Bangalore. Petronet MHB Ltd., by its letters dated 7-11-2005 and 21-11-2007 sought to inform the appellant of the potential crossover of the PRR project over the pipelines. The same was reiterated in its meeting with the appellant dated 4-2-2008. Petronet MHB Ltd. was of the opinion that as the pipelines contain hazardous material which is highly inflammable, care should be taken to either relocate parts of the project or ensure that adequate safeguards were put in place.

85. The respondents have placed on record the minutes of the meeting dated 2-2-2008 between the appellant authority and the representatives of M/s Petronet MHB Limited. It was noted that the proposed PRR project crosses the Petronet pipeline at three locations — PRR CH 7600, PRR CH 29100 to 29500 and CH 31100 to 31800 and PRR CH 39500. It was agreed that a joint inspection would take place for one crossing, while for the other two crossings it was agreed that the PRR project would be raised for clearance height. It was stated:

> "The MD, M/s Petronet MHB Limited agreed that the PRR may be taken over at higher level with a clearance of minimum 5.20 m from the ground level and the crossing shall be preferably at right angles. He also insisted that no supports shall be constructed within their right of user (ROU) of 18.00."

86. In this view of the matter, the appellant sought to take adequate precautions to ensure that the proposed PRR project did not cross a pipeline and where it did, it was at a sufficient height without the use of support pillars. The respondent contended that the appellant was constrained to revert to the proposed alignment prior to the meeting by virtue of various orders passed by the High Court of Karnataka. This shall be dealt with in the directions which this Court seeks to issue.

H. ***Appraisal by the SEAC***

87. In addition to the finding that the SEAC erred in recommending to the SEIAA the grant of EC on the basis of an expired TOR and primary data, there is another aspect of the matter that warrants the attention of this Court. The SEAC, in its 121st meeting between 11-11-2014—18-11-2014 proceeded to recommend to the SEIAA the grant of EC for the PRR project. Appraisal by the SEAC is structured and defined by the 2006 Notification. At this stage, the SEAC is required to conduct "a detailed scrutiny" of the application and other documents including the EIA report submitted by the applicant for the grant of an EC. Upon the completion of the appraisal process, the SEAC makes "categorical recommendations" to the SEIAA either for: (*i*) the grant of a prior EC on stipulated terms and conditions; or (*ii*) the rejection of the application. Significantly, the recommendations made by the SEAC for the grant of EC, are

normally accepted by the SEIAA and must be based on "reasons". At its 121st meeting, the SEAC recorded the following reasons for its recommendations:

> "PP and environmental consultant were present in the meeting.
>
> PP stated that the project was conceived and the consultant was engaged in 2003 prior to 2006 EIA Notification. Now JICA is insisting for EC.
>
> PP have submitted the compliance for the above queries raised by the committee vide their letter dated 12-11-2014.
>
> After due deliberations the committee decided to recommend the proposal to SEIAA for consideration to issue EC.
>
> PP has submitted an undertaking on the day of the meeting on the following points:
>
> 1. To provide pedestrian crossings in the utility crossings facility taking all the precautions.
> 2. Adequate CD works.
> 3. To maintain Raja Kalave.
> 4. To take up afforestation work separately.
> 5. Major crossings of NH/SH/MDR/VR.
> 6. Accessibility to proposed road from all villages without charging toll.
>
> Action to be taken: Secretary, SEAC to submit the proposal to SEIAA accordingly."

88. The reasons furnished by the SEAC must be assessed with reference to the norm that it is required to submit *reasons* for its recommendation. The analysis by the SEAC is, to say the least, both perfunctory and fails to disclose the reasons upon which it recommended to the SEIAA the grant of EC for the PRR project. The SEAC proceeds merely on the reply furnished by the appellant to the queries raised by the SEAC at its 115th meeting dated 11-8-2014 to 12-8-2014. In this view, the procedure followed by the SEAC suffers from a non-application of mind.

89. The SEAC is under an obligation to record the specific reasons upon which it recommends the grant of an EC. The requirement that the SEAC must record reasons, besides being mandatory under the 2006 Notification, is of significance for two reasons: (*i*) The SEAC makes a recommendation to the SEIAA in terms of the 2006 Notification. The regulatory authority has to consider the recommendation and convey its decision to the project proponent. The regulatory authority, as Para 8(*ii*) of the 2006 Notification provides[10], shall *normally* accept the recommendations of the EAC. Thus, the role of the SEAC

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10 "(*ii*) The regulatory authority shall normally accept the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned…."

in the grant of the EC for a proposed project is crucial; and (*ii*) The grant of an EC is subject to an appeal before the NGT under Section 16 of the NGT Act, 2010. The reasons furnished by the SEAC constitute the link upon which the SEIAA either grants or rejects the EC. The reasons form the material which will be considered by the NGT when it considers a challenge to the grant of an EC.

90. In *Sreeranganathan K.P.* v. *Union of India*[11], the grant of an EC to the KGS Aranmula International Airport Project was challenged. The NGT found fault with the process leading up to the grant of the EC since sector specific issues had not been dealt with. The NGT extensively reviewed the information submitted with regard to the construction of the airport and held thus: (SCC OnLine NGT para 182)

> "*182*. … a duty is cast upon the EAC or SEAC as the case may be to apply the cardinal principle of Sustainable Development and Principle of Precaution while screening, scoping and appraisal of the projects or activities. While so, it is evident in the instant case that the EAC has miserably failed in the performance of its duty not only as mandated by the EIA Notification, 2006, but has also disappointed the legal expectations from the same. For a huge project as the one in the instant case, *the consideration for approval has been done in such a cursory and arbitrary manner without taking note of the implication and importance of environmental issues. …Thus, the EAC has not conducted itself as mandated by the EIA Notification, 2006 since it has not made proper appraisal by considering the available materials and objections in order to make proper evaluation of the project before making a recommendation for grant of EC*." (emphasis supplied)

The Court held that the EAC had not conducted a proper appraisal given its failure to consider the available material and objections before it. The EAC had thus failed to conduct a proper evaluation of the project prior to forwarding to the regulatory authority its recommendation.

91. In *Lafarge Umiam Mining (P) Ltd.* v. *Union of India*[12] an application was made under the 1994 Notification for the grant of an EC to a proposed limestone mining project at Nongtrai Village, East Khasi Hills District, Meghalaya. A three-Judge Bench of this Court rejected the challenge and upheld the grant of the EC to the proposed project. Chief Justice S.H. Kapadia noted that the doctrine of proportionality must be applied to matters concerning the environment as part of judicial review. The principles of judicial review in environmental matters have been enunciated thus: (SCC p. 380, para 119)

> "*119*. … In the circumstances, barring exceptions, decisions relating to utilisation of natural resources have to be tested on the anvil of the well-recognised principles of judicial review. Have all the relevant factors been taken into account? Have any extraneous factors influenced the decision? Is the decision strictly in accordance with the legislative policy underlying the law (if any) that governs the field? Is the decision consistent with the principles of sustainable development in the sense that has the decision-

11 2014 SCC OnLine NGT 15 : 2014 All (1) NGT Reporter (1) SZ 1
12 (2011) 7 SCC 338

maker taken into account the said principle and, on the basis of relevant considerations, arrived at a balanced decision? Thus, the Court should review the decision-making process to ensure that the decision of MoEF is fair and fully informed, based on the correct principles, and free from any bias or restraint."

92. The SEAC, as an expert body, must speak in the manner of an expert. Its remit is to apply itself to every relevant aspect of the project bearing upon the environment and scrutinise the document submitted to it. The SEAC is duty-bound to analyse the EIA report. Apart from its failure to repudiate a process conducted beyond the prescribed time period stipulated by MoEFCC, the SEAC failed to apply its mind to the abject failure of the appellant in conducting the EIA process leading up to the submission of the EIA report for the grant of EC. The SEAC is not required to accept either the EIA report or any clarification sent to it by the project proponent. In the absence of cogent reasons by the SEAC for the recommendation of the grant of EC, the process by its very nature, together with the outcome, stands vitiated.

I. ***Courts and the environment***

93. Courts today are faced with increasing environmental litigation. A development project that was conceptualised as early as in the year 2005 has surfaced before this Court over 15 years later. The period that has led up to the present litigation has involved a myriad of decisions and processes, each contributing to the delay of a project that was outlined to subserve a salient development policy of decongesting the city. Where project proponents and institutions envisaged under the 2006 Notification abdicate their duty, it is not only the environment that suffers a serious setback, but also the development of the nation. In the eventual analysis, compliance with the deliberative and streamlined process envisaged for the protection of the environment ensures a symbiotic relationship between the development of the nation and the protection of the environment.

94. The adversarial system is, by its nature, rights based. In the quest for justice, it is not uncommon to postulate a winning side and a losing side. In matters of the environment and development however, there is no trade-off between the two. The protection of the environment is an inherent component of development and growth. Professor Charles E. Corker of the University of Washington School of Law said in a speech titled "Litigating the Environment — are we overdoing it?"[13]:

> "My answer is yes. We are overdoing our litigation of the environment. I do not mean that there are necessarily too many lawsuits being filed on environmental issues, and that we should somehow cut back — I would not know how, in any case — the number of those suits by ten per cent, twenty per cent, or fifty per cent. I do mean that a disproportionately large share of attention, effort and environmental concern is being focused on

13 Speech to the Thirteenth Annual Meeting of the Interstate Conference on Water Problems, Portland, Oregon delivered on 29-10-1970.

lawsuits. Lawsuits cannot accomplish, by themselves, solutions to the most pressing of our environmental problems. As a result, we are in some danger of leaving the most pressing environmental problems unsolved — or even made worse — because the commotion of litigation has persuaded us that something has been accomplished."

Professor Corker draws attention to the idea that the environmental protection goes beyond lawsuits. Where the State and statutory bodies fail in their duty to comply with the regulatory framework for the protection of the environment, the courts, acting on actions brought by public-spirited individuals are called to invalidate such actions. Equally important however, is to be cautious that environmental litigation alone is not the panacea in the quest to ensure sustainable development.

95. The protection of the environment is premised not only on the active role of courts, but also on robust institutional frameworks within which every stakeholder complies with its duty to ensure sustainable development. A framework of environmental governance committed to the rule of law requires a regime which has effective, accountable and transparent institutions. Equally important is responsive, inclusive, participatory and representative decision-making. Environmental governance is founded on the rule of law and emerges from the values of our Constitution. Where the health of the environment is key to preserving the right to life as a constitutionally recognised value under Article 21 of the Constitution, proper structures for environmental decision-making find expression in the guarantee against arbitrary action and the affirmative duty of fair treatment under Article 14 of the Constitution. Sustainable development is premised not merely on the redressal of the failure of democratic institutions in the protection of the environment, but ensuring that such failures do not take place.

96. In the present case, as our analysis has indicated, there has been a failure of due process commencing from issuance of the TOR and leading to the grant of the EC for the PRR project. The appellant, as project proponent sought to rely on an expired TOR and proceeded to prepare the final EIA report on the basis of outdated primary data. At the same time, the process leading to the grant of the EC was replete with contradictions on the existence of forest land to be diverted for the project as well as the number of trees required to be felled.

97. The SEAC, as an expert body abdicated its role and function by relying solely on the responses submitted to it by the appellant and failing to comply with its obligations under the OMs issued by MoEFCC from time to time. In failing to provide adequate reasons for its recommendation to the SEIAA for the grant of an EC, it failed in its fundamental duty of ensuring both the application of mind to the materials presented to it as well as the furnishing of reasons which it is mandated to do under the 2006 Notification.

98. In this view of the matter, neither the process of decision-making nor the decision itself can pass legal muster. Equally, this Court must bear in mind the need to balance the development of infrastructure and the environment. We are of the view that while the need for a road project is factored into the decision-making calculus, equal emphasis should be placed on the prevailing state of the

environment. The appeal which was filed before the NGT in 2015, was finally disposed of at a belated stage only in 2019.

J. ***Directions***

99. Bearing in mind the need to bring about a requisite balance, we propose to issue the following directions under Article 142 of the Constitution:

99.1. The appellant is directed to conduct a fresh rapid EIA for the proposed PRR project;

99.2. The appellant shall, for the purpose of conducting the rapid EIA, hire a sector-specific accredited EIA consultant;

99.3. The appellant shall have due regard to the various deficiencies noted in the present judgment as well as ensure that additional precautions are taken to account for the prevailing state of the environment;

99.4. The appellant shall ensure that the requisite clearances under various enactments have been obtained and submitted to the SEAC prior to the consideration by it of the information submitted by the appellant in accordance with the OMs issued by MoEFCC from time to time;

99.5. The SEAC shall thereafter assess the rapid EIA report and other information submitted to it by the appellant in accordance with the role assigned to it under the 2006 Notification. If it is of the opinion that the appellant has complied with the 2006 Notification as well as the directions issued by this Court, only then shall it recommend to the SEIAA the grant of EC for the proposed project. The SEAC and the SEIAA would lay down appropriate conditions concerning air, water, noise, land, biological and socio-economic environment and other conditions it deems fit; and

99.6. The appellant shall consult the requisite authority to ensure that no potential damage is caused by the project to the petroleum pipelines over which the proposed road may be constructed.

100. In moulding the above directions, this Court has factored into its decision-making calculus the fact that the appeal from the judgment of the NGT was filed by the project proponent and no appeal was filed by the respondents. The order of the NGT directing the appellant to conduct a rapid EIA is upheld, though for the reasons which we have indicated above. We clarify that no other court or tribunal shall entertain any challenge to the ultimate decision of the SEAC or the SEIAA. Liberty is granted to the parties to approach this Court upon any grievance from the decision of the SEAC or the SEIAA pursuant to the order of this Court.

101. The appeal is disposed of in the above terms. There shall be no order as to costs. Pending application(s), if any, shall stand disposed of.

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3J

(BEFORE L. NAGESWARA RAO, SANJIV KHANNA AND B.R. GAVAI, JJ.)

STATE OF BIHAR AND OTHERS . . Appellants;

Versus

PAWAN KUMAR AND OTHERS . . Respondents.

Civil Appeals Nos. 3661-62 of 2020†, Order dated November 10, 2021

Environment Law — Mining and Industries — Mining lease — Grant of — Preparation of District Survey Report (DSRs) through private consultants for identification of potential sites for mining — Whether necessary

— In view of provision for constitution of Sub-Divisional Committees comprising of officers of State Government from various Departments for identification of potential sites for mining in the Enforcement and Monitoring Guidelines for Sand Mining, 2020, and notification issued by MoEF and CC of 2016, held, there was no necessity of DSRs being prepared through private consultants — It would also unnecessarily burden public exchequer

— Ministry of Environment, Forest and Climate Change (MoEF and CC) in accordance with directions of National Green Tribunal, had issued Enforcement and Monitoring Guidelines for Sand Mining (2020 Guidelines) — In accordance with 2020 Guidelines, DSR is required to be prepared before auction/e-auction/grant of mining lease by Mining Department or Department dealing with mining activity in respective States — For this, a Sub-Divisional Committee is required to be formed which, after site visit, is required to decide regarding suitability of sites for mining — Sub-divisional committee is further required to record its reasons for selecting mining lease in patta land — With advent of modern technology, various technological gadgets like drones and satellite imaging, etc. can be used for identification of potential sites and preparation of DSR and also to check misuse and unauthorised mining

— Therefore, when 2020 Guidelines as well as notification issued by MoEF and CC of 2016 itself provide for constitution of Sub-Divisional Committees comprising of officers of State Government from various Departments for identification of potential sites for mining, there would be no necessity of DSRs being prepared through private consultants as directed by Tribunal — Sub-divisional committee consists of various officers from Revenue Department, Irrigation Department, State Pollution Control Board, Forest Department and Geology and Mining Department of State Government — They are better equipped to visit sites and prepare draft DSR for district concerned — Apart from that, preparation of DSR through private consultants would also unnecessarily burden public exchequer — Exercise of preparation of DSR for purpose of mining in State in all the districts directed to be undertaken afresh — Draft DSRs shall be prepared by Sub-Divisional Committees — Further until DSRs are finalised and granted

† Arising from the Judgment and Order in *Pawan Kumar* v. *State of Bihar*, 2020 SCC OnLine NGT 2848 (National Green Tribunal, Original Application No. 40 of 2020, dt. 14-10-2020) **[Modified]**

approval by State Expert Appraisal Committee and State Environment Impact Assessment Authority, State Government permitted to continue with legal mining activities (Paras 10 to 16)

Pawan Kumar v. *State of Bihar*, 2020 SCC OnLine NGT 2848, *modified*

Satendra Pandey v. *Ministry of Environment, Forest & Climate Change*, 2018 SCC OnLine NGT 2388; *Deepak Kumar* v. *State of Haryana*, (2012) 4 SCC 629, *referred to*

RM-D/68186/C

Chronological list of cases cited ***on page(s)***

1. 2020 SCC OnLine NGT 2848, *Pawan Kumar* v. *State of Bihar* 349*d*, 350*a-b*, 350*f*, 350*g-h*, 351*a*, 353*d*, 353*f-g*
2. 2018 SCC OnLine NGT 2388, *Satendra Pandey* v. *Ministry of Environment, Forest & Climate Change* 349*e-f*, 350*c-d*, 351*d-e*, 351*e*
3. (2012) 4 SCC 629, *Deepak Kumar* v. *State of Haryana* 351*e*

ORDER

Per Court

1. The present appeals challenge the judgment and order dated 14-10-2020, passed by the National Green Tribunal, Principal Bench, New Delhi (hereinafter referred to as "the Tribunal") in *Pawan Kumar* v. *State of Bihar*[1], thereby issuing the following directions: (SCC OnLine NGT para 103)

> "*103*. … (*i*) Having regard to the findings at (*a*), (*b*) and (*c*) above, we direct the State to undertake further exercise for preparation of a fresh DSR for the Banka District.
>
> (*ii*) As DEIAA is not functioning as a consequence of the decision of the Tribunal in *Satendra Pandey*[2], the DSR shall be prepared through a consultant(s) accredited by the National Accreditation Board of Education and Training/Quality Control Council of India in terms of OM of MoEF & CC dated 16-3-2010.
>
> (*iii*) The DSR so prepared shall be submitted to the District Magistrate who shall verify the DSR only in respect of the relevant facts pertaining to the physical and geographical features of the district which shall be distinct from the scientific findings based on the parameters prescribed in the SSMMG-2016. After such verification, the District Magistrate shall forward the DSR for examination and evaluation by the State Expert Appraisal Committee ("SEAC") having regard to the fact that SEIAA comprises of technical/scientific experts. SEAC after appraisal of the report shall forward it to SEIAA for consideration and approval if it meets all scientific/technical requirements.

1 2020 SCC OnLine NGT 2848

2 *Satendra Pandey* v. *Ministry of Environment, Forest & Climate Change*, 2018 SCC OnLine NGT 2388

(*iv*) While preparing the DSR, the MoEF & CC accredited agency/ consultant shall scrupulously follow the procedure and the parameters laid down under the SSMMG-2016 and EMGSM-2020 read in sync with each other."

2. The appellant State of Bihar has assailed the said judgment and order dated 14-10-2020[1], on various grounds.

3. Shri Atmaram Nadkarni, learned Senior Counsel appearing on behalf of the State of Bihar submitted that the Tribunal has grossly erred in holding that unless the State Expert Appraisal Committee (hereinafter referred to as "SEAC") and the State Environment Impact Assessment Authority (hereinafter referred to as "SEIAA") grants approval to the District Survey Report (hereinafter referred to as "DSR") for the purpose of mining of sand, the same cannot be carried out. He submitted that the Tribunal has further held that the very invitation of the tenders without preparing the DSR in accordance with the judgment of the Tribunal in *Satendra Pandey* v. *Ministry of Environment, Forest & Climate Change*[2] could not have been done. He submitted that after the tenders are invited in accordance with the DSR prepared by the District Level Committee, the successful bidder will be required to prepare a mining plan and unless such a mining plan is approved by SEAC and SEIAA, the environmental clearance would not be granted and in turn, mining activities cannot be carried out. He submitted that the finding of the Tribunal is like putting the cart before the horse.

4. Shri Nadkarni further submitted that the Tribunal has also grossly erred in holding that the DSRs prepared by the State were without following the requisite procedure and without considering the relevant factors. He submitted that not only the procedure as prescribed under the relevant rules and regulations was complied with, but the voluminous material in support of the same was also placed on record before the Tribunal. He submitted that the Tribunal has not taken into consideration the said material. He therefore submitted that the judgment and order passed by the Tribunal dated 14-10-2020[1], needs to be set aside and the State needs to be permitted to finalise the tenders received by it.

5. Shri Nadkarni further submitted that on account of the orders passed by the Tribunal, the old lessees are continuing with the mining activities by paying a meagre amount to the State Government. He therefore submitted that on account of this, a huge loss would be caused to the public exchequer. In the alternative, he submitted that the State, at least, needs to be permitted to undertake mining activities through Bihar State Mining Corporation until the DSRs are finalised in accordance with the judgment[1] of the Tribunal.

1. *Pawan Kumar* v. *State of Bihar*, 2020 SCC OnLine NGT 2848
2. 2018 SCC OnLine NGT 2388

6. Shri P.S. Patwalia, learned Senior Counsel appearing on behalf of the original applicant vehemently opposed the appeals. He submitted that the Tribunal has rightly held[1] that the DSRs are not prepared in accordance with the relevant rules as well as policy guidelines. He submitted that it is apparently clear that the State has taken into consideration only financial enrichment without considering the environmental aspects.

7. Though, we have heard the learned counsel for both the parties at length on merits, we find that it will be appropriate that the appeals are kept pending for further consideration and till then, certain interim orders are passed.

8. It cannot be in dispute that though the developmental activities are not stalled, the environmental issues are also required to be addressed. A balanced approach of sustainable development ensuring environmental safeguards, needs to be resorted to. At the same time, it also cannot be ignored that when legal mining is banned, it gives rise to mushroom growth of illegal mining, resulting into clashes between sand mafias, criminalisation and at times, loss of human lives. It also cannot be disputed that sand is required for construction of public infrastructural projects as well as public and private construction activities. A total ban on legal mining, apart from giving rise to illegal mining, also causes huge loss to the public exchequer.

9. Taking into consideration these aspects of the matter, we propose to issue certain interim directions.

10. The Tribunal, in *Satendra Pandey*[2], has found that the Notification dated 15-1-2016, which provided environmental clearance to be given by the District Environment Impact Assessment Authority (hereinafter referred to as "the DEIAA") was not in consonance with the judgment of this Court in *Deepak Kumar* v. *State of Haryana*[3]. The Tribunal therefore in *Satendra Pandey*[2], had directed Ministry of Environment, Forest and Climate Change (hereinafter referred to as "MoEF and CC") to take steps to revise the procedure laid down in the Notification dated 15-1-2016. It is to be noted that MoEF and CC, in accordance with the directions of the Tribunal, had issued Enforcement and Monitoring Guidelines for Sand Mining (hereinafter to referred to as "the 2020 Guidelines") in the month of January 2020.

11. Chapter 4 of the 2020 Guidelines deals with identification of possible sand mining sources and preparation of DSR. It will be relevant to refer to Clauses 4.1.1(*a*), (*o*) and (*p*) of the 2020 Guidelines:

> "4.1. *Identification of possible sand mining sources and preparation of District Survey Report (DSR)*
>
> 4.1.1. *Preparation of District Survey Report.*
>
> * * *

1. *Pawan Kumar* v. *State of Bihar*, 2020 SCC OnLine NGT 2848
2. *Satendra Pandey* v. *Ministry of Environment, Forest & Climate Change*, 2018 SCC OnLine NGT 2388
3. (2012) 4 SCC 629

(*a*) District Survey Report for sand mining shall be prepared before the auction/e-auction/grant of the mining lease/ Letter of Intent ("LoI") by Mining Department or department dealing the mining activity in respective states.

* * *

(*o*) Potential site for mining having its impact on the forest, protected area, habitation, bridges, etc. shall be avoided. For this, a Sub-Divisional Committee may be formed which after the site visit shall decide its suitability for mining. The list of mining lease after the recommendation of the Committee needs to be defined in the following format given in as *Annexure II*. The Sub-Divisional Committee after the site visit shall make a recommendation on the site for its suitability of mining and also records the reason for selecting the mining lease in the Patta land. The details regarding cluster and contiguous cluster needs to be provided as in *Annexure III*. The details of the transportation need to be provided as in *Annexure IV*.

(*p*) *Public consultation*—The comments of the various stakeholders may be sought on the list of mining lease to be auctioned. The State Government shall give an advertisement in the local and national newspaper for seeking comments of the general public on the list of mining lease included in the DSR. The DSR should be placed in the public domain for at least one month from the date of publication of the advertisement for obtaining comments of the general public. The comments so received shall be placed before the Sub-Divisional Committee for active consideration. The final list of sand mining areas [leases to be granted on riverbed & patta land/khatedari land, de-siltation location (ponds/ lakes/dams), M-Sand Plants (alternate source of sand)] after the public hearing needs to be defined in the final DSR in the format as per *Annexure V*. The details regarding cluster and contiguous cluster needs to be provided in *Annexure VI*. The details of the transportation need to be provided in *Annexure VII*."

12. It could thus be seen that in accordance with the 2020 Guidelines, the DSR is required to be prepared before the auction/e-auction/grant of mining lease by Mining Department or Department dealing with mining activity in the respective States. It is further provided that the potential site for mining having its impact on the forest, protected area, habitation and bridges should be avoided. For this, a Sub-Divisional Committee is required to be formed which, after the site visit, is required to decide regarding the suitability of the sites for mining. The Sub-Divisional Committee is further required to record its reasons for selecting the mining lease in the patta land. Various details are required to be given in the annexures appended to the said policy.

13. It is further to be noted that Appendix X of the Notification dated 15-1-2016, issued by MoEF and CC also provides for composition of the Sub-Divisional Committee:

> "A Sub-Divisional Committee comprising of Sub-Divisional Magistrate, Officers from Irrigation Department, State Pollution Control Board or Committee, Forest Department, Geology or Mining Officer shall visit each site for which environmental clearance has been applied for and make recommendation on suitability of site for mining or prohibition thereof."

14. It is to be noted that with the advent of modern technology, various technological gadgets like drones and satellite imaging, etc. can be used for identification of the potential sites and preparation of the DSR and also to check misuse and unauthorised mining.

15. We further find that when the 2020 Guidelines as well as the notification issued by MoEF and CC of 2016 itself provide for constitution of Sub-Divisional Committees comprising of the officers of the State Government from various Departments for identification of the potential sites for mining, there would be no necessity of the DSRs being prepared through private consultants as directed by the Tribunal in the impugned order[1]. The Sub-Divisional Committee consists of various officers from Revenue Department, Irrigation Department, State Pollution Control Board, Forest Department and Geology and Mining Department of the State Government. They are better equipped to visit the sites and prepare the draft DSR for the district concerned. Apart from that, preparation of DSR through private consultants would also unnecessarily burden the public exchequer. We are therefore of the view that the direction in that regard issued by the Tribunal requires to be modified. We are further of the considered view that until the DSRs are finalised and granted approval by SEAC and SEIAA, it is appropriate that certain necessary arrangements are permitted so that the State can continue with legal mining activities. This apart from preventing illegal mining activities, would also ensure that the public exchequer is not deprived of its share in legalised mining.

16. We therefore find it appropriate to substitute the directions issued by the Tribunal vide judgment and order dated 14-10-2020[1], with the following directions:

16.1. The exercise of preparation of DSR for the purpose of mining in the State of Bihar in all the districts shall be undertaken afresh. The draft DSRs shall be prepared by the Sub-Divisional Committees consisting of the Sub-Divisional Magistrate, Officers from Irrigation Department, State Pollution Control Board or Committee, Forest Department, Geological or Mining Officer. The same shall be prepared by undertaking site visits and also by using modern technology. The said draft DSRs shall be prepared within a

1 *Pawan Kumar* v. *State of Bihar*, 2020 SCC OnLine NGT 2848

period of 6 weeks from the date of this order. After the draft DSRs are prepared, the District Magistrate of the district concerned shall forward the same for examination and evaluation by SEAC. The same shall be examined by SEAC within a period of 6 weeks and its report shall be forwarded to SEIAA within the aforesaid period of 6 weeks from the receipt of it. SEIAA will thereafter consider the grant of approval to such DSRs within a period of 6 weeks from the receipt thereon.

16.2. Needless to state that while preparing DSRs and the appraisal thereof by SEAC and SEIAA, it should be ensured that a strict adherence to the procedure and parameters laid down in the policy of January 2020 should be followed.

16.3. Until further orders, we permit the State Government to carry on mining activities through Bihar State Mining Corporation for which it may employ the services of the contractors. However, while doing so, the State Government shall ensure that all environmental concerns are taken care of and no damage is caused to the environment.

17. List the matter after 20 weeks.
