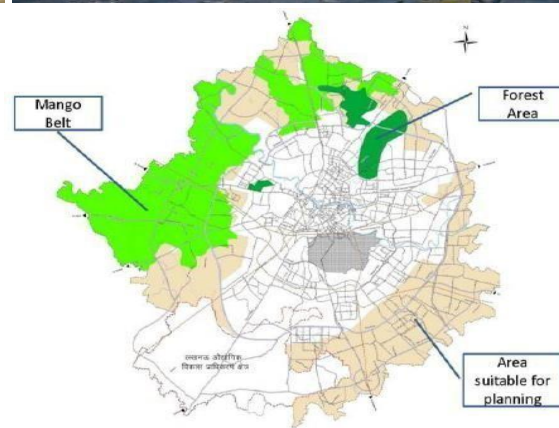
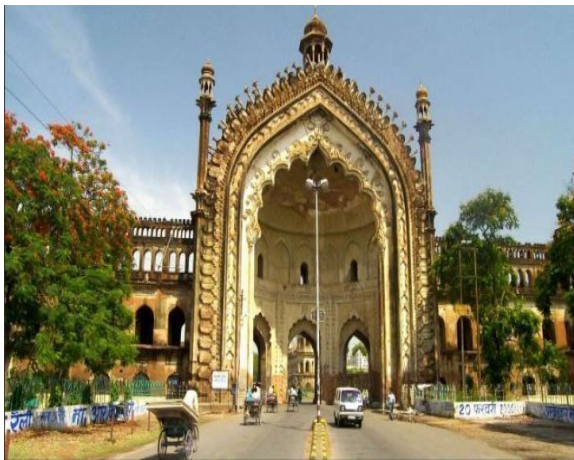




DISTRICT ENVIRONMENT PLAN FOR LUCKNOW



District
LUCKNOW

UTTAR PRADESH

District Environment Plan for Lucknow



Office of District Administration

District Collector- Lucknow

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Divisional Forest Office

Awadh Forest Division

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Contents

1. District Profile.....	3
a.District Administrative Set-up.....	4
b. Local institutions.....	7
c. Natural Resources.....	7
• Water bodies.....	7
• Availability of water resources	8
• Forest coverage.....	8
d. Geography & Demography	8
e. Land-use pattern	10
f. Climate.....	11
2.0 Indicative Gap Analysis and Action Plans for complying with Waste Management Rules ..	12
(i) Solid Waste Management	12
a.. Current status related to solid Waste management	13
b..Identification of gaps and Action plan.....	14
(ii) Plastic waste Management.....	25
(a) Current status related to Plastic waste management	25
(b)Identification of gaps and Action plan.....	26
(iii) C & D Waste Management	28
a. Current status related to C & D Waste	28
b. Identification of gaps and Action plan	29
(iv) Biomedical Waste Management	33
a.Current Status related to biomedical waste.....	34
b.Identification of gaps and Action plan.....	35
(v) Hazardous Waste Management.....	38
a.Current Status related to Hazardous Waste Management	38

b. Identification of gaps and action plan.....	39
(vi) E-Waste Management	40
a.Current Status related to E-Waste Management	41
b.Identification of gaps and action plan.....	41
3.0 Air Quality Management	43
a. Current Status related to Air Quality Management	44
b. Identification of gaps and action plan	45
4.0 Water Quality Management	48
4.1 Water Quality Monitoring.....	48
a.Current Status related to Water Quality Management.....	49
b.Identification of gaps and action plan for water quality monitoring	50
4.2 Domestic Sewage	53
a. Current Status related to domestic sewage	54
b. Identification of gaps and action plan for treatment of domestic sewage	54
5.0 Industrial wastewater management	59
a. Current Status related to Industrial Wastewater Management	59
b. Identification of gaps and action plan for industrial wastewater	59
6.0 Mining Activity Management plan.....	60
a. Current Status related to Mining Activity Management.....	61
b. Identification of gaps and action plan	61
7.0 Noise Pollution Management plan	62
a. Current Status related to Noise Pollution Management	62
b. Identification of gaps and action plan	63

DISTRICT PROFILE

Lucknow, being the capital of Uttar Pradesh, has several unique characteristics. Historically it is known as the Awadh. Famous for courtly manners (*tahzeeb*), beautiful gardens, *gauwwali*, *Chikankari* embroidery, *kababs*, poetry, music, and fine cuisine patronized by the Nawabs. Lucknow is popularly known as the City of Nawabs. It is also known as the *Golden City of the East*, *Shiraz-i-Hind* and *The Constantinople of India*. The city was influenced by various Shaikhs, Pathans, Nawabs and Mughals and thus Lucknow became a multicultural city.

The city is known as cultural heritage city. The city is one of the oldest Indian cities with its unparallel composition of culture and historical buildings. It is situated at the bank of river Gomti. The more densely populated areas of the city are on the southern bank of the river and several planned residential colonies have been developed to the north of the river.

The name of the city is related to the well known Hindu Scripture - Ramayana. According to which the town had been named after Lord Ram's brother Lakshman. Traditions assert that it was originally allied Lakshmanpur after Lakshman. The Lakshman teela an artificial mound within the Macchi Bhawan area is said to be the site of the fort. Lakshman built for the defence of his capital. This teela later on became a place of reputed sanctity around which those existed a regular habitation. Some European authorities date the fort to about 5000 BC, thus claiming Lucknow to be of greater antiquity than Indraprastha. Till 1850 was the golden period when apart from unparallel construction and gardens, the city was recognized for its inherent cultural richness. After 1857, the traditional culture and glory of the city was shattered by the British rulers.

Lucknow is state headquarter of Uttar Pradesh Government. Uttar Pradesh is the most populous state in the country which accounts for nearly 16.4 per cent of the country's population. It is also the fourth largest state in geographical area, covering 9 per cent of the country's geographical area. District Lucknow ranks 5th in terms of population in the state. Total area of the district is 2528.0 Sq. Km. The percentage share of urban population in the district is 66.2 as against 22.3 of the population in urban areas of the state. The city encompasses an approximate area of 349 square kilometers. It consists of three geographical sub-regions: the Gomti basin, the Lucknow-Uparwar plain, and the upper Sai catchments. The landscape is very flat, with virtually no hills.

Lucknow is situated 123 mts above sea level. It is situated on 26.30 & 27.10 North latitude and 80.30 & 81.13 East longitude. It is surrounded on the eastern side by District Barabanki, on the western side by district Unnao, on the southern side by Raebareli and on the northern side by Sitapur and Hardoi districts. The city is linked to the other cities of the country extensively through air, rail and road. The city has expanded gradually. The geographical area of the city in 1951 was reported just 48 sq. km. which has increased to 310 sq. km. in

2001. However, it is expected that city will be further expanded upto 700 km² in the coming years, if the increasing population is to be accommodated.

The MoEF&CC and CPCB has identified the non-attainment cities mostly in Indo-Gangetic Plains based on ambient air quality data for the period 2011 – 2015 and WHO report 2014/2018. However, many of cities in India, including state capital, have similar problems of outdoor air pollution. Lucknow is one of the largest urban agglomerations in the National Capital Region has been identified as a NAC with the objective of evolving an action plan having action points with specific timelines based upon scientific inputs time bound actions and its effective implementation in order to bring down the pollution levels in the city. <https://cpcb.nic.in/approved-city-action-plans/>

Today, Lucknow is among the top ten fastest growing non-metropolitan cities of India. Lucknow also an emerging hub for producers of goods and services with very promising potential. Lucknow has been a *mandi* town of mangoes, melons, and grains grown in the surrounding areas. Sugarcane-growing plantations and sugar industries are also in close proximity. Lucknow is also an important education centre, especially for primary and secondary education (relative to higher education), and houses a number of research and development institutions. The state of infrastructure is one of several constraints that prevents the city from achieving its economic potential.

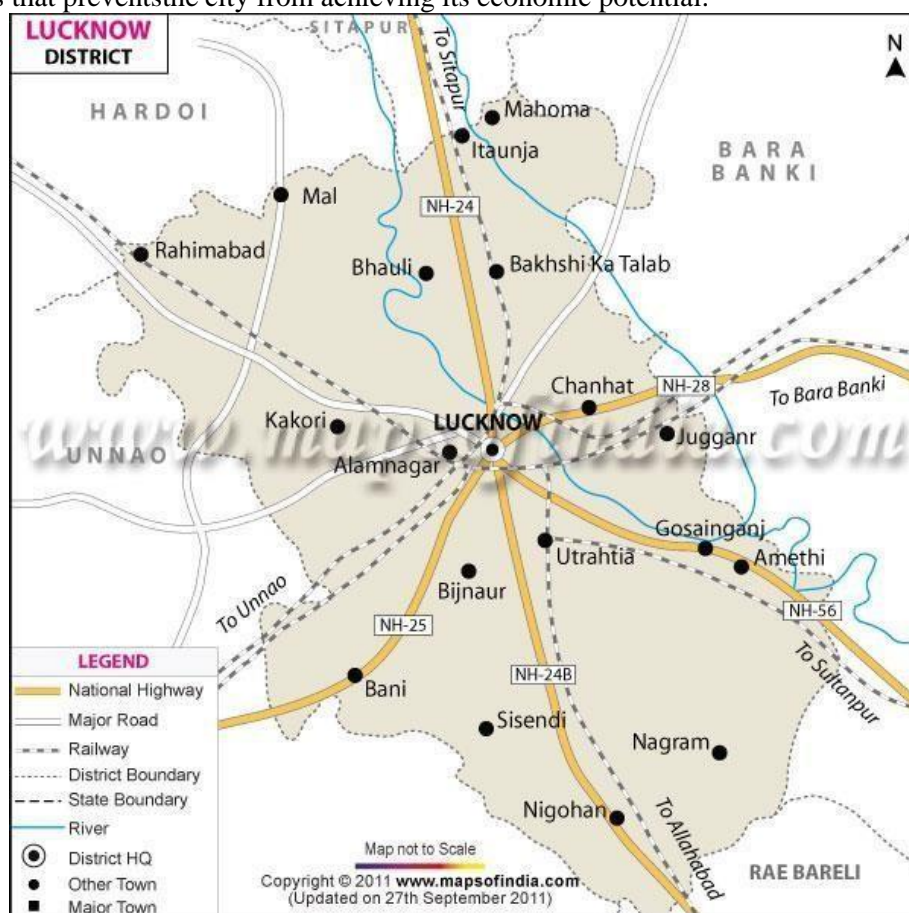


Figure: Boundary of Lucknow District (adapted from map of india.com)

a. District Administrative setup

The seat of state administration and district headquarters is at Lucknow. It is the central part of the State. The district is administratively divided into 04 tahsils namely Malihabad, Lucknow, Bakshi Ka Talab and Mohanlalganj. For implementation and monitoring of development scheme the district is divided into 08 development blocks namely Mal, Malihabad, Bakshi-Ka-Talab, Chinhat, Kakori, Sarojaninagar, Gosainganj and Mohanlalganj.

District administration comprises of Revenue, Development, Police (Law and Order), Judiciary, and Local self-government. District Magistrate is In charge of revenue & administration. He is assisted by Additional District Magistrate (Finance and Revenue) i.e., ADM (F&R).

At the tahsil level, Sub Divisional Magistrate is In-charge, who is now redesignated as Up- Jila Adhikari. He is assisted by Tahsildars in each tahsil and for revenue collection each tahsil is further entrusted to Naib Tahsildars and Kanongos's circles respectively. For each revenue village, Lekhpal is In-charge. Chief Development Officer (C.D.O) and District Development Officer (D.D.O) are In-charge for development activities in the district. They also assist District Magistrate for implementation and monitoring of various development schemes in the district. Project Director is also deployed to assist D.M and C.D.O. informations & supervision of different development programmes in the district. For development of rural area, district is further divided into Development Block well known as Vikas Khand (also known as Office of Kshetra Panchayats). Block Development Officers (B.D.O) look after development works at Blocks level. For his assistance Assistant Development Officer and at village level Village Development Officers have been deployed.

Under the police set-up Senior Superintendent of Police (S.S.P) and Superintendent of Police (S.P) are In-charge of their respective district. Additional Superintendent of Police (A.S.P) is also deployed to assist S.S.P/S.P in their respective area. Deputy Superintendent of Police (D.S.P)/ Circle Officer (C.O) look-after the law and order of the area allotted to them. Police Inspectors and Sub-Inspectors are In-charges of their respective Thanas/Police stations depending upon the population and area.

District boundaries are overlapped with the forest division boundaries which is called as Awadh Forest Division, headed by Divisional Forest Officer (DFO) who is in-charge of all Forestry, Environment and Wildlife related issues. DFO is assisted by 2 sub-divisional officer as S.D.O (Lucknow and Mohanlalganj). S.D.O.'s are assisted by Range officer. There are 7 ranges namely Sarojini Nagar, Malihabad, Lucknow, City, Bakshi-ka-talab, Kukrail and Mohanlalganj.

The Judicial administration of the District is headed by District and Session Judge. In addition to this, there are several Additional District Judge, Civil Judge, Chief Judicial Magistrate and Munsif Magistrate and others judiciary officer are also posted to look after legal matters. The contact details of the district administration is given below.

Officer	Office	Phone no.	Mobile(CUG)	E-mail
District Magistrate	Room no. 49, Collectorate Bhawan, Kaiser Bagh Lucknow	0522-2623024	9415005000	dmluc[at]nic[dot]in

Post	(CUG)	E-mail
C.D.O.	9454465461	cdo.lu-up[dot]gov[dot]in
ADM E	9415005002	adme.lu-up[at]gov[dot]in
ADM Finance & Revenue	9415005004	admfr.lu-up[at]gov[dot]in
ADM TG	9415005005	admtg.lu-up[at]gov[dot]in
ADM East	9415005001	admce.lu-up[at]gov[dot]in
ADM Supply	9415005006	admcs.lu-up[at]gov[dot]in
ADM LA-1	9454416487	admla1.lu-up[at]gov[dot]in
ADMLA-2	9454416488	admla2.lu-up[at]gov[dot]in
City magistrate	9415005007	ctmag.lu-up[at]gov[dot]in
S-D-M Sadar	9454416490	sdmsadar.lu-up[at]gov.in
S-D-M Malihabad	9454416492	sdmmlld.lu-up[at]gov[dot]in
S-D-M Bakshi Ka Talab	9454416493	sdmbkt.lu-up[at]gov[dot]in
S-D-M Sarojini Nagar	9454416511	sdmsng.lu-up[at]gov[dot]in
S-D-M Mohanlal Ganj	9454416491	sdmmlg.lu-up[at]gov[dot]in
ACM-1	9415005008	acm1.lu-up[at]gov[dot]in
ACM 2	9415005009	acm2.lu-up[at]gov[dot]in
ACM 3	9454416496	acm3.lu-up[at]gov[dot]in
ACM 4	9454416497	acm4.lu-up[at]gov[dot]in
ACM 5	9454416498	acm5.lu-up[at]gov[dot]in
ACM 6	9454416499	acm6.lu-up[at]gov[dot]in
ACM 7	9454416500	acm7.lu-up[at]gov[dot]in
Tehsildar Mohanlal Ganj	9454416506	tehmlg.lu-up[at]gov[dot]in
Tehsildar Malihabad	9454416507	tehmlld.lu-up[at]gov[dot]in
Tehsildar Sadar	9454416505	tehsadar.lu-up[at]gov[dot]in
Tehsildar Sarojini Nagar	9454416523	tehsng.lu-up[at]gov[dot]in
Tehsildar Bakshi ka talab	9454416508	tehbkt.lu-up[at]gov[dot]in
Deputy collector	0	dycollrev.lu-up[at]gov[dot]in
ASDO	9454416527	asdo.lu-up[at]gov[dot]in

Divisional Forest Office Details

Officer	Office	Phone no.	Mobile(CUG)	E-mail
Divisional Forest Officer (DFO)	Aranya Vikas Bhavan, 3rd Floor, 21/475 Indira Nagar, Lucknow	0522-2716723	7839435107	dfolucknow[at]gmail[dot]com

Post	(CUG)
S.D.O Lucknow	7839434892
S.D.O Mohanlalganj	7839434891
JRF (Environment Cell)	0522-2716723

b. Local institutions

Uttar Pradesh is the most populous state in the country which accounts for nearly 16.4 per cent of the country's population. It is also the fourth largest state in geographical area, covering 9 per cent of the country's geographical area. Uttar Pradesh has 634 Urban Local Bodies. There are 14 Nagar Nigam, 196 Nagar Palika Parishads and 424 Nagar Panchayats. They account for almost 16% of the total Urban Local Bodies in the country.

The seat of state administration and district headquarters is at Lucknow. It is the central part of the State. The district is administratively divided into 04 tahsils namely Malihabad, Lucknow, Bakshi Ka Talab and Mohanlalganj. For implementation and monitoring of development scheme the district is divided into 08 development blocks namely Mal, Malihabad, Bakshi-Ka-Talab, Chihat, Kakori, Sarojaninagar, Gosainganj and Mohanlalganj. Total area of the district is 2528.0 Sq. Km. The rural area covers 2057.3 Sq. Km. and urban recorded 470.7 Sq. According to census 2011; there are 498 Gram Panchayats and 807 Revenue villages with 803 inhabited villages and 04 uninhabited villages in the district. In urban area there are 10 statutory Towns and 02 Census Towns. Statutory Towns comprises of 01 Nagar Nigam (Municipal Corporation), 08 Nagar Panchayats and 01 cantonment Board.

c. Natural Resources
Water Bodies

The Gomti River is an alluvial river of the Ganga Plain and one of the important tributaries of the Ganga, originates near Mainkot, form a lake- "Fulhar Jheel" in Madhotanda, about 30 Km east of the Pilibhit town in Uttar Pradesh at an elevation of 185 m. (about 55 km. south of the Himalayas foothills). River Gomti is the main source of Surface Water for Lucknow City. Another source for surface water is Sharda Sahayak Poshak Nahar.

Availability of Water Resources

Surface water is available in Lucknow City in the form of Gomti River and Sharda Sahayak Poshak canal. Ground water is available in Lucknow City.

Forest coverage

National Forest Policy, 1988 envisages minimum of 33% of geographical area under forest and tree cover. In continuation, section-2,4 of State Forest Policy 2017 of Uttar Pradesh provide for increase in greenery by promoting plantation as mass movement by engaging different sections of society as students, ladies, farmers, differently able persons, ex army men, BPL families and forest dependent communities.

According to India State of Forest Report-2021, the forest cover of Uttar Pradesh is 14,818 square kilometers which is 6.15% of state's geographical area. In terms of forest canopy density classes, the state has 2627 sq kms under very dense forest (VDF), 4029 sq kms under moderately dense forest (MDF) and 8162 sq kms under Open Forest (OF). Forest cover in the state has increased by 12.24 sq kms as compared to the previous assessment report (2019).

The increase in green cover is attributable to the increase to plantation and conservation efforts. Plantation work in Kukrail and Hardoi Road has contributed majorly to the change. Besides, green belts-plantation on at least 2 hectare of land in urban and 5 hectare in rural areas at several places-have added to the green cover. In 2009, the FSI report had recorded a loss of 1 sq km forest cover. The FSI report is biennial and based on satellite imagery which is at least a year old. The 2011 assessment showed no change in the district's green cover. In 2013, green cover increased by 3 sq km in Lucknow and in 2015, by 17 sq km.

According to India State of Forest Report 2021 (in sq km)

District	Geographical Area (GA)	2021 Assessment				% of GA	Change wrt 2019 assessment	Scrub
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total			
Lucknow	2,528	0.00	162.28	224.92	387.20	15.32	8.33	1.13

d. Geography & Demography

According to the 2011 census, the city had a population of 2817165 from which about 1470133 were men and 1345468 were women. More than 36.38% of the aggregate population lives in rural areas, leaving scarcely around 63.23% made out of the urban population. These were high figures when contrasted with the state as a whole, where the urban population just constituted around 21.2% of the aggregate population.

Old areas of the city close to Hazratganj, Lalbagh, Aminabad have high population density. In the outer city area, which has developed in recent years, the average density is lesser. High population density and increased economic activities in the inner city areas

have resulted in excessive stress on existing infrastructure and urban services causing constrained living conditions. Certain areas under LNN, namely Gomti Nagar, Aliganj, Indira Nagar that form a part of HIG have good infrastructural facilities.

Some of the highlights of the Census 2011 is as under:

- The percentage share of urban population in the district is 66.2 as against 22.3 of the population in urban areas of the state.
- Lucknow district has population density of 1,816 persons per sq.km. which is much more than the state average of 829 persons per sq. km
- Lucknow district ranks 24th in terms of sex ratio (917) which is higher than the state average (912) females per thousand male.
- Lucknow district ranks 6th in literacy with 77.3 percent which is higher than the state average 67.7 percent.
- There are only 4 uninhabited villages out of total 807 villages in the district.
- Decadal growth rate of the district 25.8 is higher to the state average of 20.2 percent.
- Mohan Lal Ganj tehsil has the highest number of inhabited villages (229), while Malihabad and Bakshi Ka Talab each tehsil have the lowest number (185).
- The district has 12 towns out of them 10 are statutory towns and 2 Census towns. One new statutory town, Bakshi Ka Talab (NP) has been added after 2001 Census.
- There are 806,703 households in the district accounting for 2.6 per cent of the total households in the state. The average size of household in the district is 5.3 persons.

Census 2011 at a glance of Lucknow

S.No.	Heading	Details
1	Location	Longitude: 80.30 & 81.13 East Latitude: 26.30 & 27.10 North
2	Geographical Area (2001)	2528.00 per.sq.km
3	Population (2011)	2817165
4	Sex Ratio	917
5	Population Density	1816 per sq Km
6	Literacy	77.29%
7	No. of Sub-district	4

S.No.	Heading	Details
8	No. of Town	12
9	No. of Statutory Town	10
10	No. of Census Town	2
11	No. of Tehsil	4
12	No. of Block	8
13	No. of Gram Panchayats	498
14	No. of Revenue Villages (2011)	807
15	Cantonment Board	1
16	No. of Police Stations	43

Table 1: Population projection for Lucknow City

Year	Total Population
2001	2185927
2011	2817165
Current population	3453902
2021 (Projected)	3480467
2031 (Projected)	4143828

e. Land-use patter:

The land use of the Urban Agglomeration of Lucknow excluding that of the Cantonment along with projections for 2021 and 2031 is shown in Table 2. The residential use will grow significantly in comparison to all other uses. There will also be notable growth in commercial, and public service land use. With the radial growth of the city, new housing colonies have come up in the southeastern and eastern parts of the city. Like most cities, Lucknow has witnessed a real estate boom with a large number of private developers coming in which will necessarily require

infrastructure that needs to be taken into account when planning investments in the future.

Table 2: Existing Land use - Lucknow city area (in Hectares)						
Land use	2010-11		2021(Projected)		2031(Projected)	
	Area	%	Area	%	Area	%
Residential	10278.68	41.99	21018.46	48.65	33395.09	46.89
Commercial	623.14	2.55	1345.84	3.11	3672.82	5.16
Offices	888.76	3.63	421.47	0.98	837.63	1.18
Industrial	940.57	3.84	1647.61	3.81	3683.59	5.17
Public Services	2137.26	8.72	3970.69	9.19	6967.77	9.78
Traffic and Transportation	7842.74	32.04	5332.54	12.34	9207.67	12.93
Recreation	997.71	4.08	9469.41	21.92	13455.81	18.89
Total	23682.0	100.0	43206.03	100.0	71220.39	100.0
<i>Source: Lucknow Master Plan, 2031</i>						

Inspite of boom in real estate, there has been growth in slum conditions. The city continues to attract new migrants, majority of whom end up in informal settlements such as slums. These areas are spread across the city, so that any action to deal with the related challenges has to be on a citywide scale. There is no physical pattern that clearly separates better-off areas from others.

f. Climate

Lucknow is almost on a level plain with a few distinguished features. The district has an average elevation of 123 m. The climate of city is a mean between that of the cooler sub monsoon districts and the dry hot tracts south and west of it. The city has a humid subtropical climate with a cool dry winter from December to February and a hot summer from April to June. The temperature extremes vary from about 45 °C in the summer to 3 °C in the winter. Fog is common in winter while hot dry winds called Loo blow during the summer. The city receives about 100 cm of annual rainfall mostly from the south west monsoons between July and September. About 75 % of the total rainfall is realized during these four months. The year can be broadly divided into four seasons. The cold season starts from December and extends up to end of February. This is followed by the hot weather season which lasts till about first fortnight of June when monsoon arrives over the region. The monsoon continues till September. The two post monsoon months of October and November constitute a transition season from monsoon to winter conditions.

The summers in Lucknow are very hot and winters very cold. The months of March, April and May constitute the summer season. The season is characterized by dry and hot weather in Lucknow. Dust storms, often referred to as “Andhi” are common during the season.

The winter season in Lucknow starts in the month of December and lasts up to February. Though the winters are not bitterly cold on most of the days, the temperature may fall to 3-4 degree Celsius on few days in the season when cold winds from Himalayas prevail over the region making the winter chilly. The winters are also marked by mist and fog during night and in the mornings.

Details of Nagar nigam, Nagar Palika Parishad, Nagar Panchayat, etc individually.

2.0 Indicative Gap Analysis and Action Plans for complying with Waste Management Rules

(i) Solid Waste Management

The Ministry of Environment, Forest and Climate Change, Government of India has notified the **Solid Waste Management Rules, 2016**. Role of local body has been defined as per the Rule 15 of Solid Waste Management Rules, 2016 and as per Rule 16, Uttar Pradesh Pollution Control Board has been given the responsibility to enforce these rules through local bodies. Municipal Solid Waste (Management and Handling) Rules, 2000 are applicable to every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid waste.

There are 8 blocks in the district: Mall, Malihabad, Chinhat, Bakhshi Ka Talab, Kakori, Gosain ganj, Sarojni nagar, and Mohanlal Ganj. District Lucknow has Lucknow Nagar Nigam (LMC), Lucknow Cantonment Board (LCB), UP Housing Development Board (Avas Vkas), Lucknow Industrial Development Authority (LIDA) and Nagar Panchayat which are mainly responsible for Solid Waste Management within their control areas. There are revenue villages in the District which manage waste at their level.

The Municipal Commissioner heads the whole LMC and the department of Solid Waste Management comes under the ambit of one of the two Additional Municipal Commissioners. The head of the Solid Waste Management Department is the Municipal Health Officer. At the zonal level it is either Zonal Sanitary Officer or Chief Sanitary and Food Inspector. Wards are grouped and the incharge is given to Sanitary and Food Inspector(SFI). Under them sanitary supervisor/beat incharge manages the safai karamcharis. The safai Karmcharis are either direct, contractual or outsourced through NGOs.

As per SWM rules, 2016, Bulk waste generators (BWGs) must make their own arrangements for managing their wet waste to the extent possible. The Bulk waste generators includes malls, RWA, Government and private institutions, industries, Hotels, Hospitals, Hostels, Schools and etc. within municipal limits.

As per Census 2011, the population of Lucknow Municipal Corporation is 2817165 comprises 538149 households in the city. The projected population in 2021 is 3480467 and corresponding Projected Households in 2021 is around 665000. Recently , Lucknow Municipal Corporation has extended its boundaries and incorporated 88 new villages with 3.20 Lacs Population and the number of households is 64000. For Administrative purposes, the boundaries of Lucknow Municipal Corporation is divided into 8 zones comprising of 110 wards.

The entire waste of the city shall be treated on the following places:

Name of places	Type of waste	Waste treatment method
MRF (Material recovery facility centre). There shall be 1 MRF for every 3000 households	Dry waste Segregation and recycling of dry waste	The dry recyclables will be sorted and stored in Material Recovery Facility Centre (MRF) and later sold either to Kabadiwallas or recycling units.
Portable Compactor Transfer Station (PCTS) There are 65 PCTS currently available in the city. Proposed-01 PCTS in each ward	Wet Waste The wet component of the waste shall be collected through PCTS and transported to SWM processing plant for further treatment and disposal in the form of compost.	Drum composting Some of the wet waste will be composted at one of the compost yards created at parks/gardens or spaces created exclusively for composting through drum composting method.
Open Transfer sites There are 300+ open transfer sites currently available in the city.	Inert waste	The waste collected from street sweeping shall be collected at open transfer sites and transported to processing plant on the same day.
SWM Processing Plant	Inert waste Wet waste	The wet waste received at processing plant shall be converted into compost through biological and mechanical means. The inert generated by composting and transported from open transfer stations shall be dumped in scientific sanitary landfill constructed for this purpose.

Legacy Waste – A huge quantity of legacy waste is dumped at Ghaila Dump site on IIM Road. To cater this legacy waste a plan has been prepared and Bio-Mining technique is considered appropriate for the same. This dump site was previously used to dump the municipal waste and it is now closed since 2015. The work of bio-mining/remediation of the legacy waste is under progress through contractor's agreement at the site by procuring screening machines, belt conveyors and other vehicles/machinery as required. The by-products generated through Bio-Mining shall be used for landfilling, soil conditioning and as RDF. The total cost of the project is approximate Rs. 1300 Lacs and expected time of completion is 12 Months.

Methodology Creation of Solid Waste Management Clusters To facilitate 100% door to door collection and decentralized processing and treatment of waste, it is envisaged to further divide wards into SWM clusters. Working at cluster level will improve service delivery efficiency and faster grievance redressal. A cluster will ideally consist of 250 households and may vary based on geography and other factors. Planning of manpower, infrastructure services and IEC dissemination will be done at the cluster level in order to reach out to every citizen and penetrate every household effectively thus improving service delivery of door to door collection. Decentralized treatment of waste will cut down the huge costs involved in transportation of crude waste and also extend the life of the landfill by saving precious space.

Establishment of MRF Centres and Compost Units A decentralized waste treatment unit would be set up ideally for every 10 clusters. The unit will consist of a Material Recovery Facility (MRF), a composting unit or both. They will be located based on space availability and accessibility from the respective clusters. An MRF is a facility where non-compostable solid waste is temporarily stored to facilitate segregation, sorting and recovery of recyclables from various components of waste. A compost yard is a place where controlled microbial decomposition of organic matter happens. Suitable sites for this purpose will be identified. The infrastructure cost for setting up one MRF is approximately Rs.25 lakhs. Waste collected will be transported to the MRF and compost yards once it starts functioning. At the MRF dry waste will be further segregated into paper, plastic, cardboard, etc and stored. After a sufficient quantity gets accumulated, it will be sent/sold for recycling. Wet waste will be transported to the compost yard where it will be composted in a suitable method. Manpower for running MRF and compost yard will be sourced locally by tapping the current unorganized sector involved in waste management. Kabadiwallas and ragpickers will be enumerated and their associations/SHGs will be created and they will be formally involved to run these units.

Integrating Waste Pickers into an Improved SWM System would mean they co-exist with the private players and ULB. As this would give them job security and the entry of private agencies (companies as well as contractors) into waste management would not hamper their livelihood. The only sustainable way to upgrade and protect the livelihoods of the informal waste workers is to involve them in a formal waste management system. A model of waste management thus developed will integrate the informal waste workers, while at the same time offering better accountability and cheaper services to the citizens. This model will also improve their working conditions and the respectability of their work.

Responsibilities of Bulk Waste Generators Bulk Waste Generators(BWGs) means and includes buildings occupied by the Central government departments or undertakings, State government departments or undertakings, local bodies, public sector undertakings or private companies, hospitals, nursing homes, schools, colleges, universities, other educational institutions, hostels, hotels, commercial establishments, markets, places of worship, stadium and sports complexes having an average waste generation rate exceeding 100 kg per day but could be modified with respect to ULB. All BWGs will be instructed to segregate their wastes and make arrangements for treatment at their own premises. Wet waste can be composted on site and dry waste can be sold to recyclers. All hotels and restaurants should segregate biodegradable waste and ensure that it is utilized for composting / bio-methanation in a standalone or a common plant. All Resident Welfare and market associations, gated communities and institution with an area >5,000 sq. m. should segregate waste at source into valuable dry waste like plastic, tin, glass, paper, etc. and handover recyclable material to the authorized recyclers. The bio-degradable waste should be processed, treated and disposed of through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local authority.

Information Education and Communication for Solid Waste Management The quintessence of Swachh Bharat Mission-Urban incepted in 2014 is the Social Behavior Change Communication to sensitize Indians about cleanliness/sanitation and its linkages to public health through IEC activities. The Information, Education & Communication (IEC) strategy aims to create awareness and disseminate information regarding the benefits available under the schemes/programmes to guide the citizens on how to access them. The IEC strategy is supposed to cater to the different needs of the urban masses through various tools used for communication.

One of the key elements to the success of SBM is the effective implementation of the Information, Education and Communication (IEC) strategy. City shall prepare an annual action plan, with details of City level funding commitment, for Public awareness & IEC. At least 50% of the IEC fund in each annual plan, as approved by State HPC, must go to the ULB's for IEC activities at the grass root level. HPEC at State level shall be the competent authority to authorize and delegate administrative powers for use of the state level funds within the approved plan. ULB's shall be competent to spend the minimum 50% part of the ULB level funds, as per approved plan.

Stakeholder's engagement in Implementation of IEC Strategy The implementation of the IEC plan will revolve around various stakeholders involved in the process. The stakeholders will be sensitized and mobilized to demonstrate their engagement with high levels of commitment. The IEC activities shall include nukkad natak, posters, banners, frescoes, wall paintings, and advertisements through media and workshops. The different stakeholders will be ward committees, all councillors, Mayor, Staff of Lucknow Municipal Corporation, school children, slum dwellers, RWAs, NGOs, Hotel/ Hospitals/Markets/ Vending Associations, Institutions like LDA, AwasVikas, Railways, Airports etc., Marriage lawns, Petrol pumps, banquet halls and etc.

a. Current status related to solid Waste management

	Urban Local bodies		No of Wards	No of Households	Population	Solid Waste Generated per day
1	Municipal corporations (Nagar Nigam or Mahanagar Palika)		110	538149	28.17 Lacs (as per 2011)	400 grams per capita per day = 1200 TPD
				665000	34.80 Lacs (as per 2021)	400 grams per capita per day= 1400 TPD
2	Municipalities (Nagar Palikas)		--	-	-	-
3	Nagar panchayats (Town area Councils)	Amethi	11	2158	13530	3.33 MT
		Bakshi-ka Talab	19	9722	49166	13MT
		Gosaiganj	10	2210	9649	2.4MT
		Itaunja	10	1356	7352	0.250 MT
		Kakori	13	2256	19403	0.450 MT
		Mahona	10	1875	8557	0.335 MT
		Malihabad	13	3032	17818	8081
		Nagram	10	1831	10648	4.8 MT

	Local Bodies	No of Village panchayats / Blocks	No of Households	Population	Solid Waste Generated per day
1	Nagar Panchayat/Blocks	Amethi	2158	13530	3.33 MT
		Bakshi-ka Talab	9722	49166	13MT
		Gosaiganj	2210	9649	2.4MT
		Itaunja	1356	7352	0.250 MT
		Kakori	2256	19403	0.450 MT
		Mahona	1875	8557	0.335 MT
		Malihabad	3032	17818	8081
		Nagram	1831	10648	4.8 MT
2	Village/Gram Panchayats	—	—	—	—

b. Identification of gaps and Action plan:

S. No .	Action points for villages / blocks/ town municipal ities/ City corporations	Identificati on ofgap	Action Plan			Responsib le agencies	Timeline for completion of action plan
			Action Point	Budget Required	Bu dget Avail able		
1. Segregation							
(i)	Segregatio n of waste at source	Only 50 % (Approx) HH are in practice of segregation at source level.	Awareness programs through person to person communications via dedicated team for IEC, paper and electronic media, NN vehicles are under process.	12.0 Cr for 3 Bin System at Public/ Comm ercial places and in Parks for extende d area of Nagar Nigam	1.5 Cr Av ava ila ble	LMC	By December 2023
2. Sweeping							
(i)	Manual Sweeping	88 New villages have been added in LNN area. These villages are to be covered under manual sweeping	Manpower as per specifications, 28 workers per 10000 populations, is being managed in all the wards as well as new area.	18.00 Cr for Manpo wer for sweepi ng etc and for collecti on of Door to door waste	15.0 Cr Av ail able	LMC	Regular Process

S. No.	Action points for villages / blocks/ town municipal ities/ City corporations	Identificati on of gap	Action Plan			Responsib le agencies	Timeline for completion of action plan
			Action Point	Budget Required	Budget Available		
				in extended area of Nagar Nigam (1000 Sweepers+ 200 Door to Door collectors and Taxi Drivers + 300 others for PCTS etc.)			
(ii)	Mechanical Road Sweeping & Collection	09 Mechanical Road Sweeping Vehicle available for the mechanize road sweeping.	09 Mechanical Road Sweeping Machine presently operate by LMC and further machines tender purchase and operated by contractor that's all process under bid	3.5 Cr Required	3.0 Cr Available	Lucknow Nagar Nigam	Regular Process
3. Waste Collection							
(i)	100%	No, Approx	1. According to 1.	For	6.0	LMC	Regular Process

S. No.	Action points for villages / blocks/ town municipal ities/ City corporations	Identificati on of gap	Action Plan			Responsib le agencies	Timeline for completion of action plan
			Action Point	Budget Required	Budget Available		
	collection of solid Waste	100% Collection of Solid waste achieved.	1. According to HH data of Lucknow Nagar Nigam optimum vehicles & other resources have been deployed. 2. IEC activities are planned and going on in all wards as per the schedule.	L.S.= 20.0 Cr (in extended household areas of Nagar Nigam)	Cr Available		
(ii)	Arrangement for door to-Door collection	Total 545 on an average primary vehicle are deploying for the coverage of Door to Door MSW collection including 75 primary commercial coverage vehicles in the morning shift. i.e. 470 for D2D residential and 75 for commercial.	Additional some tricycles are on procurement stage to cover 100% door to door collection	7.00 Cr (Vehicles require for door to door collection in extended household areas)	6.0 Cr Available	Ecogreen Energy Lucknow Pvt. Ltd. & LMC	By December 2023

S. No.	Action points for villages / blocks/ town municipal ities/ City corporations	Identificati on of gap	Action Plan			Responsib le agencies	Timeline for completion of action plan
			Action Point	Budget Required	Bu dg et Av ail abl e		
		And also minimum 50 No's vehicles are deploying in the second shift for the coverage of market areas and commercial/ hotels and restaurants etc. 70% HH are door to door collection system, remaining 30% and new 88 villages are to be covered.					
(iii)	Waste Collection trolleys with separate compartm ents	Adequate No's of trolleys with separate compartments have been deployed in zones.	Procurement of some additional trolleys has been done already. It only needs some design up gradation.	3.6 Cr (Manua l ricksha w/ Trolley for collecti on of waste	3.0 Cr Av ail abl e	LMC	March, 2023

S. No.	Action points for villages / blocks/ town municipalities/ City corporations	Identification of gap	Action Plan			Responsible agencies	Timeline for completion of action plan
			Action Point	Budget Required	Budget Available		
				in extended household areas of Nagar Nigam)			
(iv)	Mini Collection Trucks with separate compartments	There are adequate no's of mini collection trucks with separate compartments. No any up gradation is required.	Some additional vehicles have been already procured with separate compartments to ensure 100% door to door collection.	3.2 Cr	3.0 Cr	LMC	By March 2023
(v)	Waste Deposition centres (for domestic hazardous wastes)	Adequate no's of waste deposition centres are there in the project area and some extra is required for which process have been initiated.	Centres/PCTS in different wards to cover all the zones. 20 more points are to be started within few months to deal with all zones waste.	14.0 Cr (No. of PCTS in extended areas required)	12.5 Cr Available	LMC	By December 2023

S. No .	Action points for villages / blocks/ town municipal ities/ City corporations	Identificati on of gap	Action Plan			Responsib le agencies	Timeline for completion of action plan
			Action Point	Budget Required	Bu dg et Av ail abl e		
4.Waste Transport							
(i)	Review existing infrastructure for waste Transport.	1. Existing fleet is not adequate so some more fleet is to be procured in near future. 2. In present system, segregated waste transportation system is not possible.	1. More fleet are to be procured in coming days and some more transfer station are to be installed to improve and facilitate the present transportation system. 2. Segregation at source is being requested from our side and for this many different IEC activities are also planned. So that segregated waste can be transported in future.	24.0 Cr	12.0 Cr	LMC	Before April, 2023
(ii)	Bulk Waste Trucks	Adequate bulk waste trucks are not available.	Procurement of additional bulk waste trucks are to be done in future	4.00 Cr. (Vehicl es for second ary transpo rtation in extende	N A	Ecogreen Energy Lucknow Pvt. Ltd. & LMC	Before April,2023

S. No.	Action points for villages / blocks/ town municipalities/ City corporations	Identification of gap	Action Plan			Responsible agencies	Timeline for completion of action plan
			Action Point	Budget Required	Budget Available		
				d household areas)			
(iii)	Waste Transfer points	There are many waste transfer points available zone wise but needs some more.	03 no's of extra PCTS are to be installed in coming days and 02 new Transfer Stations are to be installed in coming days.	14.00 Cr (Transfer station in extended household areas)	14.00 Cr	LMC	Before April, 2023
5	Waste Treatment and Disposal						
(i)	Wet-waste Management: On-site composting by bulk waste generators (Authority may decide on requirement as per Rules)	Whether number of bulk waste generators identified for installation	2 trammel & 1 ballastic installed for prepare the pre-composting & 2 final trammel installed for final compost product Total 5 machinery system setup for manage the wet-waste treatment.	10.0 Cr Required	03.0 Cr Available	Ecogreen Energy Lucknow Pvt. Ltd. & LMC	Before December, 2023

S. No.	Action points for villages / blocks/ town municipal ities/ City corporations	Identificati on of gap	Action Plan			Responsib le agencies	Timeline for completion of action plan
			Action Point	Budget Required	Bu dg et Avail abl e		
(ii)	Wet-waste Managem ent: Facility(ies) for central Biometha nation / Composti ng of wets waste.	facility exists but Needs upgradation	We are working on improving the compost production with the new trammels installation it will be increase more than 30%.	2.0 Cr (Transfe r station in extende d househo ld areas)	NA	Ecogreen Energy Lucknow Pvt. Ltd. & LMC	April, 2023
(iii)	Dry- Waste Managem ent: Material Recovery for dry- waste fraction	01 MRF Facility available and 10 MRFcentre under installation process and 03 transfer station under modification process	1. We are already sailing the Dry RDF with the EPR companies (15%). 2. We have proposed WTE project to the management which is under observation.	4.50 Cr for establis hment of MRF setup in in extende d househ old areas	N A	Ecogreen Energy Lucknow Pvt. Ltd. & LMC	April, 2023
(iv)	Disposal of inert and non-recyclable wastes: Sanitary Landfill	Sanitary landfill site available at the LMC but currently filled that's why we proposed new sanitary landfill	1. We have available SLF with the capacity to manage 500000 MT inert which is under operational. 2. Another SLF construction	15.0 Cr Require d	NA	Ecogreen Energy Lucknow Pvt. Ltd. & LMC	On before December, 2023

S. No.	Action points for villages / blocks/ town municipal ities/ City corporations	Identificati on of gap	Action Plan			Responsib le agencies	Timeline for completion of action plan
			Action Point	Budget Required	Bu dg et Avail abl e		
		site	survey completed for manages the 3 to 4 lakh tones inert.				
(v)	Remediati on of historic / legacy dumpsite	Old dumpsite Bio-remediate on before April 2023	Legacy waste is dumped at Ghaila Dump site on IIM Road. To cater this legacy waste a plan has been prepared and Biomining technique is considered appropriate for the same. The work of bio-mining/remediati on of the legacy waste in under progress through contractor's agreement at the site. Plan for remediation of legacy / historic dumpsite.	21.0 Cr	21.0 Cr	LMC	On before April, 2023
(vi)	Involveme nt of NGOs	Yes involvement of NGOs & SHGs	NGOs can be involved for management of solid waste campaign	1.0 Cr	N A	Lucknow Nagar Nigam	Ongoing process

S. No.	Action points for villages / blocks/ town municipal ities/ City corporations	Identificati on of gap	Action Plan			Responsib le agencies	Timeline for completion of action plan
			Action Point	Budget Required	Bu dg et Avail abl e		
(vii)	EPR of Producers: Linkage with Producers / Brand Owners	As per rules, producers and brand-owners should facilitate in collection of packaging waste	We have following agencies which are working under EPR. 1.Shakti plastic 2.Zero waste management 3.Zero Trash	1.0 Cr	NA	Lucknow Nagar Nigam/ Ecogreen Energy Lucknow Pvt. Ltd.	Ongoing Process
(viii)	Authorizat ion of Waste Pickers	Yes	List of authorized waste pickers should be available	-	-	No	-
(ix)	Preparatio n of own by-laws to comply with SWM Rules 2016	Yes	If not prepared action plan for preparation of by-laws which maybe applicable in cantonment Board jurisdiction.		-	-	

This Action Plan is designed in order to achieve the objectives of the Solid Waste Management as per SWM Rules 2016. As per SWM rules, 2016, the waste has been classified as domestic waste, commercial waste, C&D waste, biomedical waste, e-waste including street sweepings and drain silt.

The action plan for solid waste management focuses on 100% collection and transportation with proper segregation of waste and then processing to achieve the status of GFC. There shall be 1 cycle rickshaw with 2 employees on every 250 households for door to door

collection and 1 TATA ACE with 3 employees (1 driver+ 1 helper+1 Segregator) on every 1000 households whereas 1 cycle rickshaw with 2 employees on every 500 households shall be required in case of slum households.

In case of street sweeping, 2 sanitation workers with 1 hand cart shall be required for every 10000 square meter of sweeping area whereas 4 sanitation workers shall be required with 1 cycle rickshaw for every 20000 square meter.

In case of commercial establishments, there shall be 1 TATA ACE for every 500 shops to collect the waste. There shall be 1 TATA ACE required exclusively for the following :-

Type of waste to be collected	Approx. Quantity of waste	Vehicle required
Hairs	1.5 Ton	1 TATA ACE
Flowers	1.5 Ton	1 TATA ACE
Cow dung	4.0 Ton	1 Tractor Trolley
Horticulture Waste	1.5 Ton	1 TATA ACE
Waste from street vendor	1.5 Ton	1 TATA ACE
C&D Waste	250.0 Ton	08 HYWA / TRUCK+ 1 JCB

- Through IEC dissemination citizens will be sensitized on waste reduction, waste segregation, door to door collection, anti-littering, home composting, handling of domestic hazardous wastes, etc. Behaviour Change Communication is the key to achieve these targets. **The IEC activities shall include Nukkad Natak, posters, banners, frescoes, wall paintings, and advertisements through media.** The target groups is school children, slum dwellers, RWAs, NGOs, Hotel/ Hospitals/Markets/Vending Associations, Institutions like LDA, AwasVikas, Railways, Airports etc., Marriage lawns, Petrol pumps, banquet halls.
- Under the Swachh Bharat Mission, the staff of the Municipal Corporation including the SFIs, Supervisors and Zonal Officers, staff of the Concessionaire including the Ward Managers and their IEC team were oriented on Solid Waste Management in about 10 batches at the Raj Kumar Training Hall, Municipal Corporation Office. Apart from this, bulk waste generators including RWAs, Hotel Associations, Hospital Associations and Market Associations etc were also oriented on how to manage their solid waste and start composting their waste on their own. In addition to this, more than 120 gardeners who are engaged on regular basis with Nagar Nigam were also oriented on composting in the parks by a resource person.
- Further, SFIs have been oriented on maintenance and upkeep of Community Toilets/Public Toilets. The SBM team has also developed kabaddiwala survey format and ragpickers survey formats which has been briefed to the SFIs. The process of the survey has already been initiated.

- Training programmes and field visits to know the BEST PRACTICES of other cities will be scheduled in due course of time for field staff as well as for administrative staff.

Night Sweeping- It is proposed to clean all the commercial areas in evening from 6 pm to 12 mid night. At present 9 mechanical sweeping machines are working on daily basis on main roads of the city. Manual Night sweeping is being done in all commercial areas in each ward.

Three Bins – To collect the waste from daily commuters, market goers and customers, three bin system at every 500 meters in market/ commercial areas, bus stops and near parks will be provided and to collect the segregated waste from household, it is proposed to distribute two bins (green and blue) to every household. The total number of bins required will be as under-

Three bins system at public places requires 3580 Nos.@ 10,000 each that would cost about Rs.358 Lakhs and Two bins System at 10 Lakh Nos.@ 50 each would cost about Rs.500 Lakhs .Therefore total of Total Rs.858 Lakhs required for 2 bin and 3 bin system

- It is proposed to collect the Organic waste from vegetable markets, fruit Markets, Juice Shops, Restaurants, and etc. in small tippers and the same can be served for stray animals at a designated place resulting in reduction of Organic waste quantity reaching SWM Processing plant.
- **Drain Cleaning** –There are 978 Nos. of small drains (less than 3 feet of width/depth), 508Nos.of large drains (more than 3 feet of width/depth, covered or open) and 83 Nos.of very large nalas to be cleaned every year before monsoon period. The work of Nala Safai of these drains/ Nalas has already been completed and if there is any obstruction in the flow during rains, it will be cleared immediately. **The total cost incurred shall be approximate Rs. 700 Lakhs.**
- **Fogging** – To prevent from Vector borne diseases, fogging is being done by NN through 30 Vehicle mounted machines and 185 cycle mounted machines. It is proposed to procure another 20 vehicle mounted machines through GeM portal costing Rs. 350 Lacs. The funds for **fogging** will be provided by Ministry of Health, Government of UP.
- **Spot fine** - The provision of spot fine, in case not to follow the SWM rules 2016, has already been made and published in various newspapers. It includes spot fine for littering, burning of solid waste, to defecate or urinate in open, use of prohibited polythene encroached drain and public utilities. Regular inspections are being made to control the above activities and penalty is being imposed on defaulters. A proposal for the same is under consideration in the House of Nagar Nigam.

Solid Waste Management Plan for Extended Area

Lucknow Nagar Nigam

Present Population	
	28.17 Lacs (Census 2011)

House Holds		5.38 Lacs (Census 2011)	
Extended Area		88 New Villages 3.20 Lacs Population 64000 HHs	
The extended area is to be covered with Door to Door collection, transportation of waste and itsfinal disposal. The gap analysis is as under :-			
1.	No. of House holds	64,000	
2.	Vehicles required of Door to Door collection	100 Nos.@7 Lacs each	= 7.00 Crore
3.	Manual Rickshaws/Trolley for collection of waste	200 Nos. @ 20000/- each 1000 Nos. @ 5000/- each	=0.90 Cr
4.	Manpower for sweeping etc + collection of Door to Door waste (1000 Sweepers + 200 Door to Door collectors and Drivers + 300 other for PCTS etc.)	1500 Nos.@15,000/- each per month	= 27.00 Cr. per Annum
5.	Three Bins at Public/commercial places and in Parks	500 Nos. @ 10000/- each	= 0.50 Cr
6.	Transfer Station	2 Nos.@400 Lacs each	= 8.00 Cr
7.	Vehicles for Seondry Transportation	10 Nos.@40 Lacs each	= 4.00 Cr
8.	No. of PCTS	25 Nos.@50 Lacs each	= 12.50 Cr
9.	L.S. for others	= 5.00 Cr	
Thus a total amount of Rs. 38.00 Cr. is one time investment on infrastucture and machinery. The manpower cost will be Rs. 27.00 Cr. Annually. The running/O&M cost per month will be around 5 Cr.			

ii . Plastic waste Management

Plastic products become an integral part of our daily life. That's why Plastic became menace worldwide as plastic polymer is produced at massive scale worldwide. On an average, production of plastic crosses 150 million tones globally per year. It has wide application in packaging, films, wrapping materials, shopping and garbage bags, fluid containers, clothing, toys, household and industrial products and building materials.

According to a report of Central Pollution Control Board (CPCB) of 2017-18, it is estimated that India generates approximately 9.4 million tones/ annum plastic waste (which amounts to 26000 tones of waste per day) and out of this approximately 5.6 million tones

per annum plastic waste is recycled (i.e. 15600 tones per day) and 3.8 million tones per annum plastic waste is left uncollected or littered (9400 tones per day).

The Government of India notified Plastic Waste Management (PWM) Rules, 2016 on 18th March, 2016. These rules were further amended and named as “Plastic Waste Management (Amendment) Rules, 2018”. These rules shall apply to every Waste Generator, Local Body, Gram Panchayat, Manufacturer, Importer, Producer and Brand Owner. At domestic level, plastic waste constitutes a part of municipal

(a) Current status related to Plastic waste management

	Urban Local bodies	Estimated quantity of Plastic Waste Generated per day
1	Municipal corporations (Nagar Nigam or Mahanagar Palika)	300 MT (approx.) Plastic Waste generated per day
2	Municipalities (Nagar Palikas)	-
3	Nagar panchayats (Town area Councils)	Amethi = 0.015 MTPD Bakshi-ka-talab = 0.1 ton Gosaiganj = 0.020 MTPD Itaunja = 0.001 ton Kakori = 0.001 ton Mahona = 0.001 ton Malihabad = 0.8 MT Nagram = 0.001 ton

	Local Bodies	Plastic Waste Generated per day
2	Block /Taluk / Mandal Tehsils	300 MT (approx.) Plastic Waste generated per day
3	Village/Gram Panchayats	-

(b) Identification of gaps and Action plan:

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
1.	Door to Door collection of	Partial collection is there by Door	100% Door to Door collection	NA	NA	Ecogreen	December,

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
	dry waste including PW	to Door collection.	of MSW by Dec-2023			Energy Lucknow Pvt. Ltd.	2023
2.	Facilitate organised collection of PW at Waste transfer point or Material Recovery Facility	This infrastructure is linked to SW management. May check gaps with respect to: • Availability of transfer points and material recovery facility • Involvement of informal sector / NGO. • Registering waste pickers • Linkage with PW recyclers Involvement of producers and brand-owners	Yet to identified agencies.	-	-	Identify agencies at local and district level to implement and monitor progress respectively	December, 2023
3.	PW collection Centres	Local Bodies may set-up own centres and also involve producers and	Plastic waste collection centres should be established in adequate	-	-	Nagar Nigam Lucknow	March, 2023

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
		brand-owners or their PROs to facilitate setting up of collection centres.	numbers. Coordination with State Urban Department may be necessary				
4.	Awareness and education programs implementation	Review existing gaps in creating awareness among public for minimizing and recycling PW	Education through mass media, schools, Producer / brand owner campaigns and other channels	-	-	Lucknow Nagar Nigam is initiating the awareness programmes and campaigns	December, 2023
5.	Access to Plastic Waste Disposal Facilities	Yet to Develop PW recycling/utilization or disposal facilities.	From the plant processing and RDF production is there by Ecogreen	-	-	Lucknow Nagar Nigam/ Ecogreen Energy Lucknow Pvt. Ltd.	December, 2023

iii. **C & D Waste Management**

Safe and cost effective management of construction and demolition wastes is a significant environmental challenge for modern society. Rapid urbanization is changing the nature of construction and demolition waste management from a low priority, localized issue to pervasive social and environmental problem. Construction and demolition waste means comprising of building materials, debris and rubble resulting from construction, remodeling, repair and demolition of any civil structure.

The quantity of Construction and Demolition wastes generated varies from time to time depending upon the construction or demolition activities in Lucknow city. A major portion of this waste is generally used in reconstruction activities or for filling up of the low lying areas or kuchha road. The individual generating construction waste generally engages private vehicles to collect the construction waste and dump it elsewhere in the city for a nominal cost. The construction and demolition debris is carried to the low lying areas in JCB tippers/tractors or in hydraulic three wheelers owned by LNN or by the private individuals.

The quantity of Construction and Demolition wastes generated varies from time to time depending upon the construction or demolition activities in Lucknow city. A major portion of this waste is generally used in reconstruction activities or for filling up of the low lying areas or kuchha road. The individual generating construction waste generally engages private vehicles to collect the construction waste and dump it elsewhere in the city for a nominal cost.

The construction and demolition debris is carried to the low lying areas in JCB tippers/tractors or in hydraulic three wheelers owned by LNN or by the private individuals. Approximate 250 MT of C & D Waste is generated daily and 01 No. of 100 TPD C & D

Waste Processing Plant is already under construction at Harikanshgarhi, Mohanlalganj,

Lucknow under NCAP as per Construction and Demolition, Rules 2016. Again, it is proposed to establish another C&D waste treatment plant of 100 TPD and 8 no. of C&D waste collection Depo in the next 06 months. The RFP for the same will be floated through e-tendering

a. Current status related to C & D Waste

Details of Data Requirement	Present Status
Total C & D waste generation in MT per day (As per data from Municipal Corporations / Municipalities)	250 MTD
Does the District has access to C&D waste recycling facility?	01 No. of 100 TPD C & D Waste Processing Plant is already under construction at Harikanshgarhi, Mohanlalganj, Lucknow under NCAP as per Construction and

b. Identification of gaps and Action plan:

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
1.	Arrangement for separate collection of C&D waste to C&D waste deposition point.	Check gaps w.r.t: - Separate collection point of C&D Waste - Identification of common C&D waste deposition points	Lucknow Nagar Nigam has taken initiative to install a C&D waste processing plant of 100 TPD capacity under decentralize approach to cater collected C&D waste from their municipal jurisdiction and proposed to establish another a C&D waste treatment plant of 100 TPD and 8 no. of C&D waste collection Depo in the next 06 months. The work order for the same will be issued to the contractor. The Concessionaire is expected to use a combination of	1.8 Cr	1.8	Lucknow Nagar Nigam	September, 2023

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
			mechanical processes technologies/ systems that include crushing, screening and separation which would maximize waste treatment and ensure only 10% rejects The concessionaire will separate mixed C& D waste from different parts of the city and from various activities needs to be separated after crushing and screening.				
2.	Whether local authority have fixed user fee on C&D waste and introduced permission system for bulk waste generators who generate more than 20 tons or more	Check gaps with respect to: <input type="checkbox"/> Local by-laws to pay user fee <input type="checkbox"/> Implementation of a system to permit bulk generators (>20 tons in one day or 300 tons per project)	Common By-laws may be implemented in District Local C & D Waste management plans can be integrated to develop common collection and recycling facilities which include:-	-	-	Lucknow Nagar Nigam	Under process

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
	in one day or 300 tons per project in a month?	<input type="checkbox"/> Registering waste pickers <input type="checkbox"/> Linkage with PW recyclers <input type="checkbox"/> Involvement of producers and brand-owners	Issue directions with regard to proper management of construction and demolition waste within its jurisdiction in accordance with the provisions of these rules of construction and demolition waste. Whether Nagar Nigam have penalty/user fee 50,000 on C &D waste deposited on public place or roads.				
3.	C&D recycling Facility	Check whether district has any C&D waste recycling facility	Lucknow Nagar Nigam has taken initiative to install a C&D waste processing plant of 100 TPD capacity under decentralize approach to cater collected C&D waste from their municipal jurisdiction. The concessionaire	1.8 Cr	1.8 Cr	Lucknow Nagar Nigam	One facility installed and other in tender process

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
			should maximize the recycling, reusing as well reducing the waste at the end of the treatment cycle. Recycle products will include concrete/stone/tile aggregate in different sizes, recycled manufactured sand mix of coarse, medium and sand brick etc.				
4.	Usage of recycled C&D waste in non-structural concrete, paving blocks, lower layers of road pavements, colony and rural roads	Is there any policy on usage or promotion on usage of C&D waste?	Local authority may make give appropriate incentives on usage of C&D waste. The concessionaire will make curb stones, paving blocks, tiles and bricks. Establishment of an efficient, effective, affordable and accountable system for	0.5 Cr	NA	Lucknow Nagar Nigam	Before December, 2023

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
			managing the C&D waste effectively recycling and its reuse.				
5.	ICE on C & D waste management	Is there any sustained system of creating awareness created among local communities.	Educate the public through various public awareness programs about the advantage associated with the C&D waste handling and processing towards making it successful.	1.0 Cr	NA	Lucknow Nagar Nigam	Continuous process

iv. **Biomedical Waste Management**

Bio-medical waste is defined as “any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological”. The biomedical waste management and handling has been assuming increasing significance for the past few years. The responsibility of medical administrators as regards proper handling and disposal of this category of waste has now become a statutory requirement with the promulgation of Government of India.

Categories of Bio-medical waste

There are ten defined categories of bio-medical waste which are as below:

1. Human anatomical waste (tissues, organs, body parts)
2. Animal Waste (including animals in research and waste originating from veterinary hospitals and animal houses)
3. Microbiological and biotechnology waste (including waste from lab cultures, stocks or specimens of microorganisms, live or attenuated vaccines, wastes from production of biological etc)
4. Waste sharps (used/ unused needles, syringes, lancets, scalpels, blades, glasses etc)
5. Discarded medicines and cytotoxic drugs

6. Soiled wastes (items contaminated with blood and body fluids, including cotton dressings, linen, plaster casts, bedding etc)
7. Solid wastes (wastes generated from disposal items other than waste sharps such as tubing, catheters, i.v. sets etc)
8. Liquid wastes (wastes generated from washing, cleaning, housekeeping and disinfection activities including these activities in labs)
9. Incineration ash (from incineration of any biomedical waste)
10. Chemical waste (chemicals used in production of biological and disinfection)

a. Current Status related to biomedical waste

Inventory of BMW in the District	Quantity	
	Government HCF	Private HCF
Total no of Bedded Healthcare Facilities	81 Hospital	1334 Hospital
Total no. of non-bedded HCF	00	668
No. of HCFs authorised by SPCBs/PCCs	81	2002
No of Common Biomedical waste Treatment and Disposal Facilities (CBWTFs)	03	03
Capacity of CBWTFs		1- M/s SMS Water Grace Medi-waste Management Pvt. Ltd. Lucknow Incinerator(250 kg/hr) Autoclave(175 kg/Batch) Shredder(200 kg/hr) 2- M/s Spectrum Waste Solution Pvt. Ltd. Lucknow Incinerator(250 kg/hr) Autoclave(200 kg/Batch) Shredder(50 kg/hr)
No. of Deep burials for BMW if any	Nil	Nil
Quantity of biomedical waste generated per day	As per CBWTF Data	As per CBWTF Data
Quantity of biomedical waste treated per day	As per CBWTF Capacity	As per CBWTF Capacity

b. Identification of gaps and Action plan:

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
1.	Inventory and Identification of Healthcare Facilities	Check whether all HCFs including, clinics, hospitals, Veterinary hospitals, Aayush hospitals, animal houses, etc generating biomedical waste area identified and authorised by SPCBs/PCCs	All the HCF to whom the Department areee providing Permission to cater their services are registered under SPCB authorization.	NA	NA	Health Department / UPPCB	Ongoing Processes
2	Adequacy of facilities to treat biomedical waste	Check if there is any gap between Quantity of Biomedical Waste generated per day and quantity of Biomedical Waste treated and disposed in the district? In case of no access to CBWTFs, adequacy of existing disposal of BMW	Action plan for setting-up CBWTF or providing access to CBWTF with 75 Km from places waste generation including identification of site for setting up such facility. Action plan for management of BMW	NA	NA	UPPCB	Completed 02 CBWTF are Operational in District Lucknow

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
			through captive facilities in case of no access to CBWTF				
3	Tracking of BMW	Check whether bar code system is implemented by all HCFs and CBWTFs?	CBWTF namely 1.M/s SMS Water Grace Mediawaste Management Pvt. Ltd. Lucknow 2.M/s Spectrum Waste Solution Pvt. Ltd. Masti Mau Sultanpur 3. M/S Synergy waste Management Pvt. Ltd. using bar code enabled system. & through them all govt HCF'S around 100-132 pvt HCF'S are using Bar Code Enabled	NA	NA	UPP CB	Regular Activities

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
			system for biomedical waste management.				
4	Awareness and education of healthcare staff	Whether training has been organized For all stakeholders?	Action plan for awareness programmes And training to healthcare staff and ULB officials	NA	NA	Health Department	To be submitted by the health department
5	Adequacy of funds	Whether adequate funds is allocated to Government health care facilities for bio-medical waste management by State Govt.?	Action plan for ensuring adequate funds to Government health care facilities for bio-medical waste	NA	NA	Government	-
6	Compliance to Rules by HCFs and CBWTFs	Is there any district level mechanism to monitor compliance by Hospitals/ HCFs?	Draw action plan to monitor compliance of HCFs and CBWTFs through SPCBs/PCCs.	NA	NA	UPP CB	On going Process
7	District Level Monitoring Committee	Check whether District Level Monitoring Committee has	District Level Monitoring Committee was	NA	NA		Monthly Meeting is

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
		been constitute and meetings are being organised?	conducted on March 30, 2022.				done check the compliance
8.	Wastewater Treatment	Check if HCFS are required to install ETPs for wastewater generated.	Action plan by HCFs where applicable.	NA	NA	UPP CB	Regular Activities

v. Hazardous Waste Management

a. Current Status related to Hazardous Waste Management

At present, there are about 51 units that generate hazardous wastes. The total amount of waste generated from these units is about 3263 MT per annum.

Details of Data Requirement	Present Status
No of Industries generating HW	51
Quantity of HW in the district	3262.819 MT/annum
(i) Quantity of Incinerable HW	525.832 MT/annum
(ii) Quantity of land-fillable HW	1715.665 MT/annum
(iii) Quantity of Recyclable / utilizable HW	1021.322 MT/annum
No of captive/common TSDF	Nil
Contaminated Sites or probable contaminated sites	04

Note: In Lucknow district there is no TSDF established.

b. Identification of gaps and action plan:

S.No.	Action points For village panchayats/ blocks/ municipalities /corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
1.	Regulation of industries and facilities generating Hazardous Waste	All 51 hazardous waste industries are identified and authorized by UPPCB	Regular monitored All hazardous waste Industries by UPPCB	NA	NA	UPPCB	Regular Activity
2.	Establishment	All identified hazardous wastes industries linkage to common TSDFs /recyclers	Regular monitored All hazardous waste Industries by UPPCB	NA	NA	NA	Regular Activity
3.	Training of workers involved in handling / recycling / disposal of HW	Regular Trained	Regular Trained	NA	NA	UPPCB /DIC	Regular Activity
4.	Availability / Linkage with common TSDF or disposal facility	No	NA	NA	NA	NA	NA

S.No.	Action points For village panchayats/ blocks/ municipalities /corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
5.	Contaminated Sites	No Contaminated sites	NA	NA	NA	UPPC B/ Nagar Nigam	NA

vi. E-Waste Management

In the modern times, electronic equipments have become an integral part of our daily life. With increasing use, waste electrical and electronic equipments is becoming a major threat to the whole world. Rapid growth of technology, up-gradation of technical innovations and a high rate up-gradation by exchanging old electronic items have led to one of the fastest growing waste in the world. Its toxic emissions mixed with virgin soil and air and causing harmful effects to the entire biota either directly or indirectly. Direct impacts include release of acids, toxic compounds including heavy metals, carcinogenic chemicals and indirect effects such as bio-magnification of heavy metals. Many private firms are involved in collecting, dismantling, separation and exporting e-wastes for recyclers. However, strict regulations are currently being followed as on approval of such firms such as e-steward certification by Basel network in US, they are also involved in public awareness programs. E-Waste consists of end of electric and electronic equipments and products such as: Refrigerator,

Washing Machines, Computers/ printers, TVs, Mobiles etc Current Status related to E-Waste Management

a. Current Status related to e- waste management

Details of Data Requirement	Present Status
Inventory of E-Waste in MT/year	No E-waste recycler/ Dismantler Unit installed in District - Lucknow
Collection centers established by ULBs in the District	Information by ULB
Collection centers established by Producers or their PROs	No E-waste recycler/ Dismantler Unit installed in District - Lucknow
No authorized E-Waste recyclers / Dismantler	No any unit authorized e-waste recycler/ Dismantler Unit installed in District - Lucknow

Note:- No e-waste unit is identified in district Lucknow

b. Identification of gaps and action plan:

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
1	Inventory / Generation of E-Waste / Bulk-waste generators	Check whether SPCB/PCC has completed inventory of E-Waste in the District. Inventory of bulk wastegenerators	Completion of inventory	0	0	SPCB / PCC/ UPPCB/DIC	No e-waste / Bulk waste generator. Regular activity
2	E-Waste collection points	Availability of E-Waste collection points / call centres / kiosks in villages - Blocks / towns / cities	Identification / registering E-Waste collection centres in association with	0	0	E-waste recycler/producer/s/ Local	Information by ULB

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
			Producers - their PROs or Recyclers			bodies	
3	Linkage among Stakeholders to channelize E-Waste	Check whether District administration has information on collection centres established by Producers / PROs? Administration should also identify authorised E- Waste recyclers in the district or in State to channelize E- waste collected in District.	Action plan to establish linkages between ULBs / Collection Centres of Producers and PROs / SPCBs / Bulk waste generators / Recyclers / SPCBs / District Administration / Public	0	0	Local bodies / UPPCB/ District administration	No e- waste / Bulk waste generator. Regular activity
4	Regulation of Illegal E- Waste recycling / dismantling	Prevalence of informal trading, dismantling, and recycling of E- waste is in District	Action plan in coordination with SPCBs/PCCs and District Administration to check this activity.	0	0	UPPCB	No illegal E- waste recycling / dismantling Unit
5	Integration of informal sector	Whether mechanism exists for bringing informal sector	Evolve mechanism by involving producers /	0	0	UPPCB /DIC	No e- waste / Bulk waste

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
		into main stream in collection and recycling of E- Waste	PROs.				generator. Regular activity
6	Awareness and Education	Are there any programs at district level for awareness about E-waste management?	Plan special workshops and awareness campaigns through Producers / PROs	0	0	E-waste producers and UPPCB	No e- waste / Bulk waste generator. Regular activity

3.0 Air Quality Management

Air quality affects our health our livability of our cities and towns, and our environment. Air pollution, particularly from human activity, can cause health problems that affect the heart and lungs, and can cause cancer. Even short-term exposure to air pollution can cause health problems. Children, the elderly and people with existing heart and lung condition are especially affected by air pollution.

Air pollution has been aggravated in most of the Indian cities over the years by higher levels of energy consumption, increasing traffic and motorization, industrialization, construction and road dust entrainment and other enhanced domestic activities due to increased city population. The emissions of these ground and elevated level sources significantly deteriorate the air quality of city and subsequently have the greatest impact on the health of the population exposed to it. The key pollutants such as PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, CO, HC and PAH's major culprits for the environmental, health and climate damage. Most localized sources have significant forte to introduce these criteria pollutants in the ambient environment. Although the pollutants are regulated with compliance limits, the synergetic impact of these pollutants gives chronic and instant consequences. Air quality management refers to all the activities a regulatory undertakes to protect human health and the environment from the harmful effects of air pollution. There is a continuous review and assessment of goals and strategies based on their effectiveness. All parts of this process are

informed by scientific research that provides air quality managers with essential understanding of how pollutants are emitted, transported in air and their effects on human health and the environment.

The sources of air pollution include Industrial, Vehicular, and Domestic fronts together with Brick Kilns, and Stone crushers. The NH-25 passes through the area and divides the area into two parts. Congestion of traffic with increase in vehicular movement is causing air pollution in the area. Ambient air quality also degenerates with development. Increased vehicular load has significantly contributed to the issue of air pollution in the city of Lucknow in the last decade. The more vehicular load is present in the city, the more it will contribute to thesevere problem of air pollution due to the emission of harmful greenhouse gases and other pollutants.

The number of registered vehicles and amount of fuel consumption has been found to be simultaneously increasing in the last decade in the city of Lucknow contributing to increased concentration of air pollutants. Particulate matter (PM 2.5 & PM10) because of high deposition efficiency has been found to be among the major cause of air pollution in the city, levels of which have surpassed the permissible limits of NAAQ standards.

Vehicular traffic has been found to be the main source of particulate air pollution in Lucknow city. Lucknow city has become denser with traffic congestion which increases the vehicle emissions and subsequent health impact mainly for drivers, commuters, and individuals living near roadways. The number of different categories of vehicles registered with RTO (Regional Transport Office) Lucknow is 21,94,261 as on 31.03.2019 which is 9.24% higher over the last year 2018.

a. Current Status related to Air Quality Management

Details of Data Requirement	Present Status
Number of Automatic Air Quality monitoring stations in the district. - Operated by SPCB / State Govt / Central govt./ PSU agency : - Operated by Industry:	06 CAAQMS CPCB-03 UPPCB-03 NO
Number of manual monitoring States operatedby SPCBs	UPPCB-07
Name of towns / cities which are failing to comply with national ambient air quality stations	01

No of air pollution industries	68
Prominent air polluting sources [Large Industry] / [Small Industry] / [Unpaved Roads] / [Burning of Waste Stubble] / [Brick Kiln] / [Industrial Estate] / [Others] (Multiple selection)	Industry-68 Brick Klins-263

b. Identification of gaps and action plan:

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
1.	Identification of prominent air polluting sources?	Carry out inventory of air pollution sources in District including hotspots or areas of concern pertaining to air pollution in association with SPCBs/PCCs may	Hot Spot Action Plan prepared 09 zone	No	NA	All NACP Department	Ongoing Processes
2.	Ambient Air quality data?	Plan to get access to available air quality monitoring stations in the District operated by both Public and private agencies.	06 CAAQMS 07 MAQMS	0	0	03 CPCB 03 UPPCB 06 UPPCB	Regular Activity
3	Setting up of Continuous	Like weather station, District	CAAQMS-06 1. Ind.	0	0	03 CPCB	Regular

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
	Ambient Air Quality Monitoring Station	may also have ambient air quality monitoring at major urban settlements or populated areas. Action plan may propose setting up at least one CAAQMS in District. Also access data generated by CAAQM stations installed by other pvt/public agencies District authority in association with local office of SPCB/PCC should also ensure that at least one manual Air Quality monitoring station is available in each city [District admin may set- up its own network of CAAQMS or	Area Talkatora 2. Lalbagh 3. Central School, Aliganj 4. Vibhuti khand, gomti nagar 5. BR Ambedkar University 6. Kukrail Picnic Spot Manul Station- UPPCB 07 1. Visnu puri 2. Foransic Lab Mahanagar 3. Nagar Nigam Hazratganj 4. Saraimalikh a Chowk 5. Nagar Nigam Gomti Nagar 6. Ansal Technical Campus 7. DIC Talkatora			03 UPPC B 06 UPPC B	Activity

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
		manual stations]					
4.	District Level Action Plan for Air Pollution	Action plan should be prepared for both improvement of existing air quality as well as for non-attainment days to national ambient air quality standards. [Measures may include multi sectoral approach for air pollution control such as promotion of public transport, use of green fuels, E MoEF&CC may be referred]	Preposed NACP	120.0 Cr	77.0 Cr	All concerned department	Prepared
5.	Hotspots of air pollution in District	hotspot with respect to air pollution (such as stubble burning, illegal waste burning, unauthorised operations, should be prepared	Hot Spot Action Plan Preposed	0	0	NA	Regular Activity
6.	Awareness on	Plan for	• Sameer	0.25	0	Nagar	Regula

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
	Air Quality	dissemination of information on local airquality in towns and cities located in District. May consider developing Mobile App / Online portal for dissemination of airquality as well as to take complaints on local air pollution.	App by CPCB • Swachh Vayu App by UPPCB • Dust App by UPPCB	Cr		Nigam & UPPCB	Activity

4.0 Water Quality Management

4.1 Water Quality Monitoring

Systematic management of water resources is necessary to ensure the required balance between development pressures and the safeguarding of the natural and built environment for future generations. The purpose of Water Quality management Plan (WQMP) is to reduce discharge of pollutants into urban runoff from development projects by reducing or eliminating sources of pollutants, and managing site runoff volumes and flow rates through best Management Practices.

The piped water supply in Lucknow was introduced in 1892 to serve the population of 2 Lacs. However, the population has risen exponentially since then from 2.1 million in 2001 to 2.86 million in 2011 according to the census data of the Government of India. It is projected that the population of Lucknow will be as high as 4.2 million in 2025 followed by 6.42 million in 2040. Since the water demand is proportional to the population, it is projected that present water demand of 550 million liters per day (MLD) would rise to the maximum of 1300 MLD in the year 2040 which is twice more than the present volume. The major concern

of Lucknow city is the efficiency of wastewater treatment facilities which are deteriorating the quality of underground water and surface sources. The major concern lies in Gomti River.

The wastewater generation in 2025 would be as high as 700 MLD while for the year 2040 it would be 1100 MLD. To meet the given figures a well-planned and effective wastewater treatment system has to be designed and implemented which may include centralized and decentralized treatment facilities in accordance with the need of the particular division followed by up-gradation of the present water supply and sewerage system. Care should be taken while discharging the sewage into river Gomti and other natural streams as it should strictly follow the prescribed standards by central state pollution control boards, also there should be the least disturbance of aquatic ecosystem. Furthermore, deterioration of the water quality must be minimized to a large extent.

The formation of Lucknow municipal board took place in 1882, while as the water supply demand is fulfilled by tube wells, river Gomti, Sharda Sahayak feeder canal, aquifers, and so on, the maximum source of intake is Gomti which is geographically distinguished as Cis and Trans Gomti. The Cis Gomti side is comparatively lower than the area on Trans Gomti side. Since the city is located on alluvial aquifers of Indo-Gangetic plain, where due to easy accessibility, private tube well construction activity is going on unchecked, especially in residential colonies and multi-storeyed buildings and this is the reason why the private tube wells/borings have almost mushroomed in this capital city. This has led to heavy pumpage/continuous abstraction of groundwater resources, widespread depletion of aquifers and as a result, going down of groundwater levels drastically to almost unsustainable levels, from where it seems very difficult that the depleted conditions of ground water could ever improve. The water supply network depends on sources like tube wells, river Gomti and the Sharda Sahayak feeder canal. The distribution of water supply has a very vast network and it is reported to be 2884 km. The rate of water supply is assumed to be 150 LPCD and water demand is calculated accordingly.

a.Current Status related to Water Quality Management

Details of Data Requirement	Present Status
Rivers	Approx 100km length of Gomti River in District Lucknow
Length of Coastline (if any)	-
Nalas/ Drains/Creeks meeting Rivers	34 No. Municipal Drain meeting in River 09 Nos of Nalas (In Amethi Nagar Panchayat) 20 nos of nala (In Gosaiganj Nagar Panchayat)

Lakes / Ponds	11 (In Amethi Nagar Panchayat) 9 (In Gosaiganj Nagar Panchayat)
Total Quantity of sewage from towns and cities in District	784 MLD
Quantity of industrial wastewater	Waste water generation and treatment 3.4 MLD by 35 Industry Treated effluents discharge 2.6 MLD. There are no Gaps
Percentage of untreated sewage	Approx 43%
Details of bore wells and number of permissions given for extraction of groundwater	UPGWD
Groundwater polluted areas if Any	No identified
Polluted river stretches if any	Gomti River- Lucknow City Area

b. Identification of gaps and action plan for water quality monitoring:

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
1.	Inventory of water bodies	An environmental monitoring cell shall maintain data of all water bodies (rivers / canals / natural drains / creeks / estuaries / groundwater / ponds / lakes / etc.) in district including its water Quality	UPPCB have been monitoring regular activity	NA	NA	Jal Nigam/ Irrigation Department/ UPPCB / Local Bodies	Regular Activity

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
2.	Quality of water bodies in the district	Regular Monitoring being done	NA	NA	NA	NA	Regular Activity
3.	Hotspots of water contamination	Regular Monitoring being done of Gomti River	NA	NA	NA	NA	Regular Activity
4.	Protection of river / lake water front	Regular Monitoring being done of Gomti River	NA	NA	NA	NA	Regular Activity

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
		immersion etc.					
5.	Inventory of sources of water pollution		NA	NA	NA	NA	NA
6.	Oil spill disaster management (for coastal districts)	NA	NA	NA	NA	NA	NA
7.	Protection of flood plains	NA	NA	NA	NA	NA	NA
8.	Rejuvenation	NA	NA	NA	NA	NA	NA

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
9.	Complaints	Check whether there is any complaint redressing system based on Mobile App / Online, is available? If not, a complaint redressing system based on Mobile App / Online should be available at district level	NA	NA	NA	NA	NA

4.2 Domestic Sewage

Domestic sewage is generated by domestic activities including toilet, bathroom, clothes washing and kitchen cleaning activities. This sewage water contains high levels of micro-organisms, chemicals (nutrients) and other contaminants capable of causing human illness and adversely impacting on the local environment.

The sewerage system of Lucknow is divided into four separate sewerage districts, which are further divided into zones. These zones are further divided into several sewer sub-catchment areas. The entire city is divided into 4 different sewerage districts, namely I, II, III, and IV. It is reported in the Lucknow development plan that 100% sewer lines have been laid for the districts I and III, while the sewerage system for the district IV has become defunct due to lack of maintenance and old system. Furthermore, district II lacks sewerage system completely.

The anticipated rate of water supply of 150 lpcd and interception factor of 0.80 is considered for waste water generation. The projected population and sewage generation is tabulated below:

S.No	Sewerage District	Population/WW generation (in mld)							
		2011		2022		2037		2052	
		Pop	W/W	Pop	W/W	Pop	W/W	Pop	W/W

1	I	300849	36	422519	51	709442	85	979953	118
2	II	328865	39	428031	51	782824	94	1124749	135
3	III	1079614	130	1409311	169	2318525	278	3212232	385
4	IV	110777	133	1389113	167	1825160	219	2207667	265
	G Total	2817105	338	3648974	438	5635952	676	7524600	903

So total Sewage generation for whole of the Lucknow city in year 2037 is 676 mld while in year 2052 is 903 mld. This is considered for W/S rate @ 150 lpcd and no infiltration and unaccounted for water.

The overall rate of water supply is about 230 lpcd in Lucknow City as per the CA& FS reports of WAPCOS (appointed by NMCG for feasibility study). However the distribution is highly uneven and ranges between 70 lpcd to 330 lpcd. The high rate of water supply is due to higher availability of water from surface source and as well as matching availability from ground source. However the ground water resources are declining day by day and it is expected to contribute little towards the future water availability. This shall lead to decrease in rate of water supply and the overall rate is expected to be 150 lpcd by the year 2037 for Lucknow City which will be attained by projects proposed for reorganization of water supply under AMRUT and decrease in contribution from ground water.

From the above tables it is evident that the waste water generation (as per measured discharge) in year 2015 and year 2019 for Lucknow city is 674.73 and 784.20 mld respectively, however discharge based on population projection for year 2022 is 438 mld as seen in previous table. This high variation is owing to the fact that currently average water supply rate in Lucknow city is around 230 lpcd. However the design discharge for STP has been kept considering the water supply rate @ 150 lpcd as per the norms laid in the CPHEEOManual/NMCG Guideline which is in line with the proposed water supply reorganization projects under AMRUT with an aim to distribute the water supply at even rate. Coupled with reorganization water supply projects, as ground water source is exhausted, this will bring down the high water supply rate as per the norms.

Total treatment capacity proposed for Lucknow city in year 2037 is 793 MLD (446 existing+120 MLD G.H. Canal under construction + 1 MLD Barikala, sanctioned + 39 MLD Daulatganj, sanctioned + 22 MLD Ghaila + 85 MLD Bharwara + 80 MLD Bijnor) which seems realistic with expected population growth and targeted decrease in rate of water supply of 150 lpcd. Capacity of STP is determined on higher of current measured discharge (June, 2019) or discharge based on projected population of Year 2037 and in this case measured discharge is higher and is adopted for capacity calculations.

As the population of the city is growing exponentially, the water demand and the wastewater generation would be more than the calculated value and it may surpass the projected value.

a. Identification of gaps and action plan for treatment of domestic sewage

Details of Data Requirement	Present Status
No of Class-II towns and above	NA
No of Class-I towns and above	1
No of Towns STPs installed	1
No of Towns needing STPs	1
No of ULBs having partial underground sewerage network	1
No of towns not having sewerage network	NA
Total Quantity of Sewage generated in District from Class II cities and above	NA
Quantity of treated sewage flowing into Rivers(directly or indirectly)	445 MLD
Quantity of untreated or partially treated sewage (directly or indirectly)	339 MLD
Quantity of sewage flowing into lakes	NA
Total available Treatment Capacity	446 mld

b. Identification of gaps and action plan for treatment of domestic sewage:

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
1.	Sewage Treatment Plants (STPs)	Check whether Existing capacity of STPs is adequate for treatment of sewage? If no, action plan for additional treatment capacity required should be prepared in	Action points and Gaps are described below the table in heading <u>“A” as Gaps and Action Plan for Sewage Treatment Plants</u>	YES Required and details mentioned in the respective heading.	NA	UPJN	After allotment of funds STP for next 15 years will be commissioned

S.No.	Action points For village panchayats/ blocks/ municipalities / corporations	Identification of gap	Action plan			Agencies Responsible	Target time for Compliance
			Action Point	Budget Required	Budget Available		
		association with ULBs / department of UD,					in 30 months
2.	Underground sewerage network	Check available Sewerage network and prepare Action plan for laying of sewerage network in town and cities. The project may be executed through ULBs and Department of UD.	Action points and Gaps are described below the table in heading “B” as <u>Gaps and Action Plan for Sewerage network</u>	YES Required and detail s menti oned in the respe ctive headi ng.	NA	UPJN, Luckn ow Naga r Niga m	After allotme nt of funds sewer networ k for whole city shall be commis sioned in 30 months

A. Gaps and Action Plan for Sewage Treatment Plants

As per discharge measurement of 33 no.'s drains falling in River Gomti and predicted discharge of 1 drain falling in River Sai, a total of 784 mld capacity of STP has to be installed in Lucknow city for the next 15 years.

Gaps

From preceding paragraphs following gaps is identified in Sewage Treatment Plant Capacity:-

Total Capacity Required -	784 mld
Existing Capacity -	446 mld
Under Construction -	120 mld
Sanctioned -	40 mld
Balance Requirement -	178 mld
Proposals Sent against S No e	-187 mld

Action Plan

Short Term Action Plan

As per instructions circulated by Principal Secretary, Nagar Vikas Vibhaag, GoUP vide GO no 3146/nau-5-2020-284sa/2019 dated 11.08.2020, short term measures like

bioremediation/phytoremediation for treatment of untapped drains or partially tapped drains and other measures needs to be carried out by concerned local bodies.

In Lucknow city, 7 no.'s drains flowing towards River Gomti are untapped and 10 no.'s drains tapped in GoAP are overflowing during peak or otherwise due to increase in discharge or pumping plants outliving their design life.

Apar Nagar Ayukt vide his letter 1977/PM/J/21-22 dated 10.09.2021 has enquired about the cost implications of bioremediation/phytoremediation of the 10 no.'s tapped drains that are overflowing and has informed that the cost shall be borne by Lucknow Nagar Nigam, Lucknow. The cost of the 10 no.'s untapped drains shall be made available to Lucknow Nagar Nigam in 2 weeks' time and after allotment of funds the treatment of drains shall commence within 2 months for 10 no.'s overflowing drains. In case some other technology is employed requiring land, then the land shall be made available to UPJN free of cost by Lucknow Nagar Nigam.

Long Term Action Plan

Detailed Project Report for the 7 new drains and required STP's were forwarded to NMCG, New Delhi. Current status of the DPR's is as follows :-

S No	Particular	Proposed Works	Estimated Cost (Rs In Cr)	Current Status
1	Phase I part 1	1 No I& D at Barikala 1 mld STP at Barikala 39 mld STP & MPS at Daulatganj 3 No SPS Strengthening	213.91 (Work Cost – 101.31 O&M – 40.35 Electricity – 65.28 Centage – 6.97)	Sanctioned by NMCG in May 2020 Date of Start- 25.08.2021, Work stopped due to SLP in Supreme Court
2	Phase 2	2 No.'s I& D (Faizullaganj U/S and Faizullaganj D/S) 22 mld STP at Ghaila 80 mld STP and MPS at Bijnor 3.2 kms Gravity Mains 15 years O&M	557.74 (Work Cost – 290.95 O&M – 123.76 Electricity – 112.09 Centage – 30.93)	Phase 2 and Phase 3 DPR forwarded to NMCG, New Delhi by NMCG, Lucknow vide letter 510/0-369- T/SMCG-UP/02 Dt 5 June 2020 and 1042/0369- T/SMCG-UP/08 dt 14 Oct 2020 respectively. Queries raised by NMCG and received in March 2021. Latest discharge to be measured. Funds demanded for measurement of discharge and other queries related survey. After allotment of funds 4 months will be taken to forward revised DPR.
3	Phase 3	3 No.'s I& D (Sahara, Gomti Nagar, Gomti Nagar Extension) 85 mld STP at Bharwara 15 years O&M	402.64 (Work Cost – 195.12 O&M – 82.06 Electricity – 105.23 Centage – 20.23)	

Since no funds were allotted by NMCG or SMCG for further survey works, instructions were issued by Head Office UP Jal Nigam, Lucknow vide letter 849/022-0A116/2021 dated 08.09.2021 to send the revised DPR by 10.09.2021 to be funded under state sector. However the base year adopted in sent DPR was year 2022 which has to be changed, also 15 years O&M work has been taken in the earlier sent DPRs to NMCG as per NMCG guidelines which needs to be changed as per State Government guidelines. So the revised DPR's shall be forwarded to State Government within 4 weeks' time. After the allotment of funds the works shall be executed within 30 months' time.

B. Gaps and Action Plan for Sewerage network

• Gaps

Total Required	-	6500 kms
Existing	-	2100 kms
Under Construction	-	345 kms
Sanctioned	-	NA
Balance Requirement	-	4055 kms

As per Service Level improvement plan under AMRUT a total of Rs 5950 cr was required for all STP's and sewer network work. However only Rs 585 cr was sanctioned for Lucknow city under different State Annual Action Plan. DPR amounting to Rs 1432.64 cr is sanctioned for the Lucknow city and works are under progress.

• Action Plan

Short Term Action Plan

Septage management works were sanctioned for Lucknow city as a short term measures to collect the septage from the septic tank and dispose it at specified location for treatment purpose. The works shall be completed by December 2021. No further action is required.

Long Term Action Plan

Recently 88 villages have been incorporated in Lucknow Nagar Nigam area and UPJN was directed by General Manager, Jal Kal Vibhaag, Lucknow vide 11623/LJS-2B/GW dt 26.11.2020 to submit DPR for 88 villages. Funds of Rs 100 lacs for survey was demanded by UPJN vide letter 2912/W-17/284 dt 02/12/2020. However no funds were allotted to UPJN.

Further, Nagar Ayukt, Lucknow Nagar Nigam, Lucknow directed UPJN to submit PFR of water supply and sewerage works for 110 wards and 88 newly added village in the Nigam's area. In compliance of above a PFR amounting to Rs 1201.71 cr was submitted to Lucknow Nagar Nigam.

The PFR included works for sewerage infrastructure including STP's of capacity 279 mld and amounted to Rs 6801.82 cr. After allotment of funds the city shall be 95-100% sewered. The works shall take around 30 months's time complete after allotment of funds.

5.0 Industrial wastewater management

Industrial waste water is one of the important and major pollution sources of Water. A huge

amount of industrial waste water was discharged into rivers, lake & sand coastal areas. This resulted in serious pollution problems in the water environment and causes negative effects to the eco-system and human's life. There are many types of industrial waste water based on different industries and contaminants. Each sector produces its own particular combination of pollutants.

a. Current Status related to Industrial Wastewater Management

Number of Red, Orange, Green and White industries in the district	36- Red industries, 72- Orange industries, 131- Green industries, Nos of White industries-
No of Industries discharging wastewater	36
Total Quantity of industrial wastewater generated	3.4
Quantity of treated industrial wastewater discharged into Nalas / Rivers	2.60
Common Effluent Treatment Facilities	Nil
No of Industries meeting Standards	36
No of Industries not meeting discharge Standards	Nil

b. Identification of gaps and action plan for industrial wastewater:

S. No	Action Points	Gaps and Action Plan	Action Plan			Responsible Agency	Timeline for completion of action plan
			Action point	Budget Required	Budget available		
1.	Compliance to discharge norms by Industries	ALL 36 industries Meeting standards	NA	NA	NA	UPPCB	Regular activities

2.	Complaint redressal system	Check if there is any complaint redressing system based on MobileApp/ Online, is available? If not, a complaint redressing system based on MobileApp / Online portal may be prepared at district level.	<ul style="list-style-type: none"> • Sameer App by CPCB • Swach Vayu App by UPPC • Dust App by UPPCB 	NA	NA	UPPCB	Regular activities

6.0 Mining Activity Management plan

Mining sector has observed considerable rise in past few years. Extraction of minerals consists of several steps few of which need considerable attention otherwise these results in irreparable loss. Sand mining of sand is the major mining activity. It is important that mining is done from identified areas, river bed mining must be strictly prohibited and strict action should be against those involved in illegal mining activities. Role of district administration, police department and mining department is very important. Mining activities inside Forest Areas should be discouraged and Eco Sensitive Zone guidelines should be strictly implemented around Protected Areas.

As per the Regional Officer UPPCB; no application for mining permission has been received in the district during the last three years. Therefore, there is no mining activity in the district.

a. Current Status related to Mining Activity Management

Details of Data Requirement	Existing Mining operations
Type of Mining Activity	- As per the Regional Officer UPPCB; no application for mining permission has been received in the district during the last three years. Therefore, there is no mining activity in the district.
No of licenced Mining operations in the District	- As per the Regional Officer UPPCB; no application for mining permission has been received in the district during the last three years. Therefore, there is no mining activity in the district.
% Area covered under mining in the District	As per the Regional Officer UPPCB; no application for mining permission has been received in the district during the last three years. Therefore, there is no mining activity in the district.
Area of Sand Mining	-
Area of sand Mining	-

b. Identification of gaps and action plan:

S. No	Action Points	Gaps and Action Plan	Action Plan			Responsible Agency	Timeline for completion of action plan
			Action point	Budget Required	Budget available		
1.	Monitoring of Mining activity	A district level task team may be identified to identify mining activity and to	-	-	-	-	-

S. No	Action Points	Gaps and Action Plan	Action Plan			Responsible Agency	Timeline for completion of action plan
			Action point	Budget Required	Budget available		
		monitor status wither respect to environmental compliance					
2.	Inventory of illegal miningif any mining	Action plan to identifyillegal sand and other mining activity in the District. District Level task Force may be constituted for control of illegal mining activity	-	-	-	-	-
3.	Environment complianceby Mining industry	Action plan for periodic verification of compliance to environmental conditions stipulated by SPCBs/PCC, MoEF&CC department of mines etc. SPCBs/PCC may be involved in this activity.	-	-	-	-	-

7.0 Noise Pollution Management plan

a. Current Status related to Noise Pollution Management

Details of Data Requirement	Measurable Outcome
No. of noise measuring devices available with various agencies indistrict	UPPCB have one Noise Level Meter for Monitoring of Noise Level.

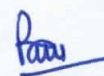
b. Identification of gaps and action plan:

S. No	Action Points	Gaps and Action Plan	Action Plan			Responsible Agency	Timeline for completion of action plan
			Action point	Budget Required	Budget available		
1.	Availability of Sound/ Noise level meters.	Need to check whether concerned agencies that are ULBs,SHOs, Traffic police andSPCB/PCC have noise level meters. District administrationmay ensure through an action plan that concerned agencies and environmental cell under district administration have adequate number of portable noise level meters.	UPPCB Monitoring 04 Zone in City on Monthly basis	NA	NA	ULB/SHOs, Traffic Police and SPCB UPPCB has one Noise Level Metre and Noise Level Monitoring on monthly basis four place in Lucknow city.	UPPC B has been complying of action plan and monthly monitoring of noise Level at four zone in Lucknow City.
2.	Ambient Noise Level monitorin	ULBs shall ensure that ambient sound levels comply with notified standards for	Monitoring by UPPCB 04	NA	NA	Ambient Noise level monitoring Place zone wise four	Regular Activity

S. No	Action Points	Gaps and Action Plan	Action Plan			Responsible Agency	Time line for completion of action plan
			Action point	Budget Required	Budget available		
	g.	residential, sensitive zones. An action. Apart from portable analyzers, fixed ambient noiselevel monitoring stations may be installed in major cities and towns, such stations may be installed aby ULBs and SPCB/PCC,	Zone on Monthly Basis			place identified by UPPCB.	
3.	Signboards in Noise zones	District administration may ensure that adequate number of sign boards installed at sensitive zones in towns / cities in towns and cities. An action plan may be prepared by district authority.	Nagar Nigam Lucknow	NA	NA	NA	NA

District Environment Plan *Lucknow*

S. No	Action Points	Gaps and Action Plan	Action Plan			Responsible Agency	Timeline for completion of action plan
			Action point	Budget Required	Budget available		
4.	Complaint redressing system	Action plan may envisage implementing a public complaint redressal system for noise pollution. Such application may be used by SHOs, Traffic police ULBs and SPCBs in the district.	Traffic Police	NA	NA	NA	NA



(Dr. Ravi Kumar Singh)
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Divisional Forest Officer
District Environment Committee,
Lucknow