

Environmental Impact Assessment

October 2020

India: Bengaluru Metro Rail Project

Phase 2A (Outer Road Ring Metro Line)

Volume 3
Annexes 1 to 4

CURRENCY EQUIVALENTS

(as of 9 June 2020)

Currency unit	–	Indian rupee (₹)
₹1.00	=	\$0.0132661
\$1.00	=	₹75.380000

ABBREVIATIONS

ADA	Aeronautical Development Agency
ADB	Asian Development Bank
AL	Acceptable Limit
AMSL	Above Mean Sea Level
ASI	Archaeological Survey of India
ASR	Air Sensitive Receptors
ASS	Auxiliary Sub-Stations
AW2	Normal Loading Condition - Seating + 4 passenger per Sq. m in standee area
AW3	Crush Loading Condition - Seating + 6 passenger per Sq. m in standee area
AW4	Exceptional Dense Crush Condition –Seating+8 passenger per Sq. m in standee area
BBMP	Bruhat Bengaluru Mahanagara Palike
BDA	Bangalore Development Authority
BDL	Below Detectable Limit
BESCOM	Bengaluru Electricity Supply Company Limited
BMA	Bangalore Metropolitan Area
BMRCL	Bangalore Metro Rail Corporation Ltd
BMTC	Bangalore Metropolitan Transport Corporation
BOD	Biochemical Oxygen Demand
BWSSB	Bangalore Water Supply & Sewerage Board
CAGR	Compound Annual Growth Rate
CAAQMS	Continuous Ambient Air Quality Monitoring Stations
CBTC	Communication Based Train Control
CGWB	Central Ground Water Board
CMC	City Municipal Council
CMP	Comprehensive Mobility Plan
CPCB	Central Pollution Control Board
CSB	Central Silk Board
DMC	Driving Motor Car
DPR	Detailed Project Report
DRDO	Defense Research and Development Organization
DTG	Distance to Go
DULT	Directorate of Urban Land Transport
EC	Environmental Clearance
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan

EP	Environment Protection
ESMF	Environmental and Social Management Framework
GDDP	Gross District Domestic Product
GDP	Gross Domestic Product
GOI	Government of India
GOK	Government of Karnataka
GSDP	Gross State Domestic Product
HAL	Hindustan Aeronautics Limited
HSR	Hosur-Sarjapur Road
IBAT	Integrated Biodiversity Assessment Tool
IBL	Inspection Bay Lines
IDC	Interest During Construction
IFC	International Finance Corporation
IISC	Indian Institute of Science
ILO	International Labor Organization
IRJ	Insulated Rail Joints
ISRO	Indian Space Research Organization
KBA	Key Biodiversity Areas
KIA	Kempe Gowda International Airport
KIADB	Karnataka Industrial Area Development Board
KSPCB	Karnataka State Pollution Control Board
LHS	Left Hand Side
MC	Motor Car
MLD	Million Liters per Day
MOEFCC	Ministry of Environment, Forest and Climate Change
MOHUA	Ministry of Housing and Urban Affairs
MU	Million Units
MVA	Mega Volt Ampere
MW	Mega Watt
NAAQS	National Ambient Air Quality Standards
NAL	National Aerospace Laboratories
NGT	National Green Tribunal
NH	National Highway
NIMHANS	National Institute of Mental Health and Neuroscience
NOC	No Objection Certificate
OCC	Operations Control Centre
O&M	Operation and Maintenance
ORR	Outer Ring Road
OSHA	Occupational Safety and Health Administration
PA	Protected Area
PAH	Polycyclic Aromatic Hydrocarbons
PAP	Project Affected Persons
PL	Permissible Limit
PHPDT	Peak Hour Peak Direction Traffic

PM	Particulate Matter
PPE	Personal Protective Equipment
RBL	Repair Bay Lines
REA	Rapid Environmental Assessment
RFCTLARR	Right to Fair Compensation and Transparency in Land Acquisition and Rehabilitation and Resettlement
RHS	Right Hand Side
RMP	Revised Master Plan
RSS	Receiving Sub-Station
SBL	Stabling Bay Lines
SCADA	Supervisory Control and Data Acquisition
SEC	Specific Energy Consumption
SEIAA	State Environmental Impact Assessment Authority
SIA	Social Impact Assessment
SOD	Schedule of Dimensions
SPCB	State Pollution Control Board
SPS	Safeguard Policy Statement
SWR	South Western Railways
TBM	Tunnel Boring Machine
TC	Trailer Car
TEC	Tree Expert Committee
TMC	Town Municipal Council
TSS	Traction Sub-Station
V/C	Volume-Demand-to-Capacity
WBG	World Bank Group

WEIGHTS, MEASURES AND UNITS

dB (A)	–	A-weighted decibel
ha	–	hectare
km	–	kilometer
Cum	–	Cubic meter
Kg/ha	--	kilogram per hectare
km ²	–	square kilometer
KWA	–	kilowatt ampere
Leq	–	equivalent continuous noise level
meq/L	–	milli-equivalents per liter
mg/kg	–	milligram/kilogram
ml	–	milliliter
MPN	–	Most Probable Number
NTU	–	Nephelometric Turbidity Unit
ppm	–	parts per million
µg	–	microgram
µs/cm	–	micro siemens per centimeter
m	–	meter
MW	–	megawatt
PM 2.5	–	particulate matter of 2.5-micron size
PM 10	–	particulate matter of 10-micron size

NOTES

- (i) The fiscal year (FY) of the Government of India and its agencies ends on 31 March. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2019 ends on 31 March 2019.
- (ii) In this report, "\$" refers to United States dollars.

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ANNEXURES

**ANNEXURE - 1: Rapid Environmental Assessment (REA) Checklist prepared by
BMRCL**

Country/Project Title: India: Bangalore Metro Rail Corporation Limited Project (Phase 2 A)
Sector Division: Silk Board to KR Puram

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting –			
Is the Project area adjacent to or within any of the following Environmentally sensitive areas?			
• Cultural heritage site		X	There is no Cultural heritage site is located close to the alignment and nearby
• Protected Area		X	There is no Wildlife Protected Area is located close to the proposed alignment and nearby (Bannerghatta National Park is located at a distance of approximately 9.5 km from the project alignment.
• Wetland		X	There are no protected or classified wet lands located close to the project alignment.
• Mangrove		X	Project is not located in Coastal Area.
• Estuarine		X	None
• Buffer zone of protected area		X	None
• Special area for protecting biodiversity		X	None.
B. Potential Environmental Impacts - Will the Project cause...			
• Encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?		X	There are no notified cultural heritage sites along the proposed metro alignment.
• Encroachment on precious ecology (e.g. sensitive or protected areas)?		X	There is no ecologically sensitive or protected area along the proposed alignment except it involves cutting of some trees which are either being transplanted or compensated suitably, and attempt will be made to minimize cutting of trees.
• Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?		X	The proposed metro alignment does not cross any waterways but passes adjacent to 12 water bodies. However, there is no change in surface water hydrology of water bodies by construction of metro structure (Which is elevated in nature).
• Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?		X	There is no significant deterioration of surface water quality as most of the water bodies are 30 to 50 m away from the proposed metro alignment and the metro alignment is following the median of the Outer Ring Road. Further, solid barricades will be erected to prevent any silt spill out of construction site. Other mitigation measures such as construction of garland drain and silt traps at construction sites will be taken to minimize the silt runoff. Construction camps and labor camps shall be sited away from the surface water bodies. Waste water from labor camps shall be disposed after suitable treatment.
• Increased local air pollution due to rock crushing, cutting and	X		Impacts on air quality during construction stage are transitory in nature and can be largely prevented by mitigating measures.


SCREENING QUESTIONS	Yes	No	REMARKS
filling works, and chemicals from asphalt processing?			<p>Rock crushing units will be sited away from the human settlements, sensitive ecosystems such as forests. SPCB consents for establishing and operating will be obtained and conditions laid will be complied.</p> <p>Air pollution due to cutting and filling works at construction sites will be prevented by mitigation measures.</p> <p>There is no hot mix plant required for metro projects except for minor road restoration works.</p>
<ul style="list-style-type: none"> ▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation? 	X		<p>Minimal occupational health and safety risks are involved in the project during construction and erection as the project alignment is passing through dense traffic corridors.</p> <p>Risks and vulnerabilities related to health and safety hazards during project construction are addressed through risk prevention and reduction by onsite safety monitoring and management; imparting training and skill development on occupational health and safety to construction workers; insisting contractor to comply with all the applicable labor laws applicable to the construction workers employment, health, safety and welfare; ensuring provision of Personnel Protective Equipment (PPE); conducting periodical safety audits; preparing traffic management plans; taking necessary precautions to maintain the health and safety of construction workers and ensuring medical staff and first aid facilities at the construction site.</p>
<ul style="list-style-type: none"> ▪ Noise and vibration due to blasting and other civil works? 	X		<p>Project does not involve blasting works as there is no construction of underground tunnels. However, there will be insignificant noise and vibrations from pile foundation excavation and construction activities.</p> <p>Noisy equipment such as DG sets will be provided with enclosures and mufflers. People working near excess noise producing equipment and machinery will be provided with ear plugs.</p>
<ul style="list-style-type: none"> ▪ Dislocation or involuntary resettlement of people 	X		<p>About 108 families will be dislocated due to the project particularly at metro station locations. The BMRCL will adopt the Resettlement and Rehabilitation (R and R) Policy and suitable compensation to address the adverse impacts arising from the project in line with the National Policies and Asian Development Banks Safeguard Policy 2009.</p>
<ul style="list-style-type: none"> ▪ Dislocation and compulsory resettlement of people living in right-of-way? 		X	<p>There is no dislocation and compulsory resettlement of people living in right of way as the metro alignment of Phase 2A follows the median of Outer Ring Road. However, about 108</p>

SCREENING QUESTIONS	Yes	No	REMARKS
			<p>families will be dislocated due to the project particularly at metro station locations.</p> <p>Resettlement Plan will be prepared in accordance with the guidelines of National Policy and Asian Development Banks Safeguard Policy 2009 to address dislocation and compulsory resettlement.</p>
<ul style="list-style-type: none"> ▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups? 		X	<p>There are no disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups by the proposed metro project.</p> <p>Proposed project impacts positively by providing quicker, comfortable and safe access to offices and other necessary services thus improving the quality of life of poor, women and other vulnerable groups.</p>
<ul style="list-style-type: none"> ▪ Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress? 		X	<p>Construction activities of metro stations near residential areas and operating construction equipment generate insignificant quantity of dust which is limited to construction phase only.</p> <p>All precautionary and mitigation measures for mitigating dust such as sprinkling water along the haulage roads on a regular basis during construction period; siting of construction establishments away from the human habitats; installing pollution control devices and increasing the stack height of DG sets; covering the truck carrying loads of construction materials; etc. will be taken up to prevent and reduce dust generation which causes upper respiratory problems and stress.</p>
<ul style="list-style-type: none"> ▪ Hazardous driving conditions where construction interferes with pre-existing roads? 	X		<p>As the alignment is proposed in the median of Outer Ring Road there will be hazardous driving conditions during construction phase of the project.</p> <p>Site specific traffic management plans will be prepared. Assistance from local police will be taken. Temporary diversions will be provided by maintaining adequate carriage way for diversion traffic. Barricades, traffic safety signs, caution boards, road markings, flags, lights and flagmen as may be required will be provided to avoid interference to the flow of traffic at pre-existing roads.</p>
<ul style="list-style-type: none"> ▪ Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations? 		X	<p>Construction camps will be provided with sanitary latrines and urinals. The sewage system will be operated properly to avoid health hazards, ground water and soil contamination. Garbage and other biodegradable wastes generated from the camps will be properly collected, transported and disposed of.</p>

SCREENING QUESTIONS	Yes	No	REMARKS
			Construction and labor camps will be sited away from human settlements to avoid possible transmission of communicable diseases from workers to local populations.
▪ Creation of temporary breeding habitats for mosquito vectors of disease?		X	Better sanitation will be maintained in construction and labor camps. Open pits near settlements will be filled with construction debris and covered with soil.
▪ Gaseous and odor emissions to the atmosphere from processing operations?	X		Construction equipment, transportation vehicles and DG sets will emit gaseous emissions to atmosphere during construction phase. Consents to establish and operate will be obtained from State Pollution Control Board and mitigation measures will be strictly adhered as per the consent conditions.
▪ Uncontrolled in-migration with opening of roads to forest area and overloading of social infrastructure?		X	The project does not have any forest in the vicinity and do not cause uncontrolled in-migration and overloading of social infrastructure doesn't arise.
▪ Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life?		X	Should an accidental spill occur, the applicable emergency spill procedure such as stopping the flow; removing ignition source; initiating emergency response; cleanup and safe disposal will be followed.
▪ Increased noise and air pollution resulting from traffic volume?		X	After the completion of project, there will be a significant reduction in noise and air pollution as the metro operation will reduce the traffic volume along the Outer Ring Road and contributes to smooth and uniform flow of traffic.
▪ Increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?		X	There is no increased risk of water pollution from small quantities of oil, grease and fuel spills and other materials from vehicles using the road.
▪ Social conflicts if workers from other regions or countries are hired?		X	Construction laborers shall be hired locally to avoid any sort of social conflicts. If workers are hired from other regions, construction camps shall be located away from human habitations to avoid the social conflicts rising between locals and laborers.
▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		X	Construction laborers shall be hired locally. If workers are hired from other regions, construction camps shall be located away from human habitations to avoid the increased burden on social infrastructure and services such as water supply and sanitation systems, etc.
▪ Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		X	Statutory rules such as Hazardous Waste (Management and Handling) Rules, 1989 governing transport, storage and handling of hazardous chemicals shall be strictly adhered.

SCREENING QUESTIONS	Yes	No	REMARKS
			<p>Hazardous Waste Management and Disposal Plan shall be prepared to avoid risks associated with transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation.</p> <p>Accident Safety and Hazardous Chemical Spill Management Plan including details of detours in case of emergency shall be prepared for an accidental release or spill of such chemicals.</p> <p>Training and awareness shall be given to transport crews and personnel handling such substances.</p>
<ul style="list-style-type: none"> ▪ Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning. 	X		<p>Community safety risks due to accidental causes will be prevented by erecting proper barricades and enclosures to seclude community entering construction sites accidentally.</p> <p>If the project activities pose potential safety risks to the members of the affected family by structural elements used in the project, it shall be disclosed along with relevant project-related information to enable the affected communities to understand these risks and potential impacts, all efforts shall be made for prevention, mitigation including emergency response measures.</p> <p>Efforts shall also be made to design, construct, operate and decommission the structural elements of the project giving special consideration to potential exposure to natural hazards, especially where the structural elements are accessible to members of the affected community.</p> <p>All necessary measures for the safety of affected community and traffic during construction by providing, erecting and maintaining barricades, signboards, pavement markings, flags, lights and flagmen as proposed in the Traffic Management and Control Plan.</p>

ANNEXURE - 2: Clearance from Lake Development Authority for Benniganahalli Lake


ಕರ್ನಾಟಕ ಕೆರೆ ಸಂರಕ್ಷಣೆ ಮತ್ತು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ
ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಸಂಖ್ಯೆ : ಕ.ಕೆ.ಸಂ.ಅ.ಪ್ರಾ.ಬೆಂ/ಪಾಂತ್ರಿಕ/92/2018-19/2.17
 ದಿನಾಂಕ : 04.06.2019

ಇವರಿಗೆ,
 ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು,
 ಬೆಂಗಳೂರು ಮೆಟ್ರೋ ರೈಲ್ ನಿಗಮ ನಿಯಮಿತ,
 ಕೆ.ಹೆಚ್. ರಸ್ತೆ, ಶಾಂತಿನಗರ, ಬೆಂಗಳೂರು.

ಬೆಂಗಳೂರು ಮೆಟ್ರೋ ರೈಲ್ ನಿಗಮ ನಿಯಮಿತ

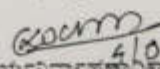
ಸಂಖ್ಯೆ: 1751

ದಿನಾಂಕ: 07/06/19

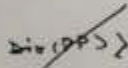
ಮಾನ್ಯರೇ,

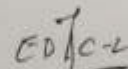
ವಿಷಯ : ಸಣ್ಣ ನೀರಾವರಿ ಇಲಾಖೆಯ ಸ್ವತ್ತುಗಳನ್ನು ಬಿ.ಎಂ.ಆರ್.ಸಿ.ಎಲ್ (BMRCL) ಗೆ ಹಸ್ತಾಂತರಿಸುವ ಬಗ್ಗೆ.
 ಉಲ್ಲೇಖ : ತಮ್ಮ ಕಛೇರಿ ಪತ್ರ ಸಂಖ್ಯೆ : ಬಿ.ಎಂ.ಆರ್.ಸಿ.ಎಲ್/ಭೂಸ್ವಾ/ಪಂತ್-2ಬಿ/ಎಲ್‌ಪೋರ್ಟ್‌ಲೈನ್ /2019-20/118, ದಿ: 03-04-2019.


ಮೇಲಿನ ವಿಷಯ ಹಾಗೂ ಉಲ್ಲೇಖಿತ ಪತ್ರಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಬೆಂಗಳೂರು ನಗರ ಪಕ್ಷ, ಬೆಂಗಳೂರು ಪೂರ್ವ ತಾಲ್ಲೂಕಿನ ಬೆನ್ನಿಗಾನಹಳ್ಳಿ ಗ್ರಾಮದ ಸರ್ವೆ ಸಂ. 55 ರಲ್ಲಿ 132.25 ಚ.ಮೀ ಬೆಂಗಳೂರು ಮೆಟ್ರೋ ರೈಲ್ ನಿಗಮ ನಿಯಮಿತ ರವರು ವಯಾಡಕ್ಟ್ ನಿರ್ಮಾಣಕ್ಕಾಗಿ, ವಿತ್ತಸಾಧನಾಗೇನಹಳ್ಳಿ ಗ್ರಾಮದ ಸ.ನಂ.13ರಲ್ಲಿ 800.00 ಚ.ಮೀ ಸ್ವೇಷ್ಡ್ ನಿರ್ಮಾಣಕ್ಕಾಗಿ ಮತ್ತು 211.324 ಚ.ಮೀ ಬಳಾಬೇ ನಿರ್ಮಾಣಕ್ಕಾಗಿ ಬೆನ್ನಿಗಾನಹಳ್ಳಿ ಕೆರೆಗೆ ಹೊಂದಿಕೊಂಡಂತೆ ಹಾಗೂ ಕೆರೆಗೆ ಹಾನಿಯಾಗದಂತೆ ನಿರ್ಮಿಸುವ ಕಾಮಗಾರಿಗಳನ್ನು ಮುಂದುವರಿಸಲು ಪ್ರಾಧಿಕಾರದಿಂದ ನಿರಾಪೇಕ್ಷಣಾ ಪತ್ರವನ್ನು ನೀಡಲಾಗಿದೆ ಹಾಗೂ ಕರ್ನಾಟಕ ಕೆರೆ ಸಂರಕ್ಷಣೆ ಮತ್ತು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರದ ಅಧಿನಿಯಮ-2014 ಮತ್ತು ತದ ನಂತರ ತಿದ್ದುಪಡಿಗಳನ್ನು ಪಾಲಿಸುವಂತೆ ಕೋರಿದೆ.


ತಮ್ಮ ವಿಶ್ವಾಸಿ,

 ಮುಖ್ಯಕಾರ್ಯನಿರ್ವಾಹಕಾಧಿಕಾರಿಗಳು,
 ಕರ್ನಾಟಕ ಕೆರೆ ಸಂರಕ್ಷಣೆ ಮತ್ತು ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ
 04.6.2019

ಪ್ರತಿಯನ್ನು :- ಸರ್ಕಾರದ ಕಾರ್ಯದರ್ಶಿಗಳು, ಸಣ್ಣ ನೀರಾವರಿ ಮತ್ತು ಅಂತರ್ಜಲ ಅಭಿವೃದ್ಧಿ ಇಲಾಖೆ, ನಿಲಾಸಬೆಂಧ ಬೆಂಗಳೂರು ರವರಿಗೆ ಮಾಹಿತಿಗಾಗಿ ಸಲ್ಲಿಸಿದೆ.


 8/6/19
 ACO-2


 ED/C-2
 6/6/19


 ED-C-1
 6/6/19



ಕೆರೆ ಮತ್ತು, ಡ್ಯಾಂ, ಛಾವಣಿ, ಒಳದಂಡೆ, ಕಟ್ಟಡ, ಬೆಂಗಳೂರು-560024
 ಸಂಪರ್ಕ: 080-23533711/12, 080-23034173 ಉಪ-ತಾಂತ್ರಿಕ- tankdevelopmentauthorityk@gmail.com

ANNEXURE - 3: List of Birds and Reptiles commonly found around Bengaluru

1. The list of important birds commonly found in and around Bengaluru in addition to Nandi hills and Bannerghatta forest ranges roughly extending 40 km around the city center are Common quail, Grey jungle fowl, Indian peafowl, Lesser whistling-duck, Bar-headed goose, Spot-billed duck, Northern shoveler, Common teal, Greater flamingo, Lesser flamingo, Painted stork, Asian open bill, Black-headed ibis, Red-napped ibis, Eurasian spoonbill, Little egret, Grey heron, Purple heron, Intermediate egret, Cattle egret, Indian pond heron, Spot-billed pelican, Great white pelican, Little cormorant, Indian cormorant, Great cormorant, Oriental darter, Crested honey buzzard, Brahminy kite, Grey-headed fish eagle, Egyptian vulture, Indian vulture, Crested serpent eagle, Marsh harrier, Montagu's harrier, Eurasian sparrow hawk, Indian spotted eagle, Common buzzard, Red-necked falcon, Laggar falcon, Great Indian bustard, White-breasted water hen, Water cock, Grey-headed swamp hen, Common moorhen, Eurasian coot, Barred buttonquail, Pacific golden plover, Common ringed plover, Yellow-wattled lapwing, Grey-headed lapwing, Red-wattled lapwing, Pheasant-tailed jacana, Bronze-winged jacana, Eurasian woodcock, Marsh sandpiper, Common sandpiper, River tern, Whiskered tern, Painted sandgrouse, Chestnut-bellied sandgrouse, Rock pigeon, Spotted dove, Red turtle dove, Yellow-footed green pigeon, Rose-ringed parakeet, Pied cuckoo, Indian cuckoo, Common cuckoo, Grey-bellied cuckoo, Asian koel, Barn owl, Oriental scops owl, Indian scops owl, Mottled wood owl, Jungle owlet, Common kingfisher, White-throated kingfisher, Stork-billed kingfisher, Blue-bearded bee-eater, Blue-tailed bee-eater, Chestnut-headed bee-eater, Indian grey hornbill, Brown-capped woodpecker, Yellow-crowned woodpecker, White-cheeked barbet, Coppersmith barbet, Indian golden oriole, Black drongo, White-bellied drongo, Indian paradise flycatcher, White-bellied tree pie, House crow, Red-whiskered bulbul, White-eared bulbul, Yellow-throated bulbul, Paddy field warbler, Common starling, Common myna, Jungle myna, Indian blue robin, House sparrow, Yellow-throated sparrow, Red munia, Forest wagtail, Common rose finch, etc.
2. Snakes such as Cobra, Russels Viper, Common Krait, Saw Scaled Viper, Checkered Keel back, Common Verm or Blind Snake, Russell's Earth Boa, Trinket Snake, Rat Snake, Indian Python, etc. and many types of lizards and insects.

ANNEXURE 4: Applied standards for Ambient Air Quality, Ambient Noise levels and Water Quality

1 Ambient Air Quality Standards

Pollutants	Time-Weighted Average	Concentration in ambient air as per CPCB		Concentration in ambient air as per WBG
		Industrial, Residential, Rural & other Area	Ecologically Sensitive Area (Notified by Central Government)	General
Sulphur Dioxide (SO ₂) µg/m ³	Annual*	50	20	n.a.
	24 Hours**	80	80	20
Nitrogen Dioxide (NO ₂) µg/m ³	Annual*	40	30	40
	24 Hours**	80	80	n.a.
Particulate Matter (size less than 10 µm) or PM ₁₀ µg/m ³	Annual*	60	60	20
	24 Hours**	100	100	50
Particulate Matter (size less than 2.5 µm) or PM _{2.5} µg/m ³	Annual*	40	40	10
	24 Hours**	60	60	25
Lead (Pb) µg/m ³	Annual*	0.5	0.5	n.a.
	24 Hours**	1.0	1.0	n.a.
Carbon Monoxide (CO) mg/m ³	8 Hours**	02	02	n.a.
	1 Hour**	04	04	n.a.
<p>* Annual Arithmetic Mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals</p> <p>** 24 hourly or 8 hourly or 01 hourly monitored values as applicable shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.</p>				

2 Water Quality Parameters and BIS standards for various chemical and biological constituents Drinking Water (IS 10500: 2012)

Sl. No.	Parameters	Permissible Limit	Maximum Limit
1	Odor	Agreeable	Agreeable
2	Taste	Agreeable	Agreeable
3	pH	6.5 to 8.5	No relaxation
4	TDS (mg/l)	500	2000

Sl. No.	Parameters	Permissible Limit	Maximum Limit
5	Hardness (as CaCO ₃) (mg/l)	200	600
6	Alkalinity (as CaCO ₃) (mg/l)	200	600
7	Nitrate (mg/l)	45	No relaxation
8	Sulfate (mg/l)	200	400
9	Fluoride (mg/l)	1	1.5
10	Chloride (mg/l)	250	1000
11	Turbidity (NTU)	5	10
12	Arsenic (mg/l)	0.01	0.05
13	Copper (mg/l)	0.05	1.5
14	Cadmium (mg/l)	0.003	No relaxation
15	Chromium (mg/l)	0.05	No relaxation
16	Lead (mg/l)	0.01	No relaxation
17	Iron (mg/l)	0.3	No relaxation
18	Zinc (mg/l)	5	15
19	Fecal Coliform (cfu)	0	0
20	E. Coli (cfu)	0	0

3 Ambient Noise Level Standards

Area Code	Category of Area / Zone	Limits in dB (A) Leq* CPCB	Limits in dB (A) Leq* WBG	Limits in dB (A) Leq* CPCB	Limits in dB (A) Leq* WBG
		Day Time	Day Time	Night Time	Night Time
A	Industrial area	75	70	70	70
B	Commercial area	65	70	55	70
C	Residential area	55	55	45	45
D	Silence area	50	55	40	45

Note: 1. Day time shall mean from 6.00 AM to 10.00 PM

2. Night shall mean from 10.00PM to 6.00 AM

3. Silence zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authorities.

4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.